Final
Quality Assurance Project Plan
Former Fort Ord, California

Volume II
Appendix A
Munitions and Explosives of Concern Remedial Action

Worldwide Environmental Remediation Services Contract
Contract No. W912DY-10-D-0027
Task Order No. CM01

Prepared for:
United States Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814

Prepared by:
KEMRON Environmental Services Inc.
1359-A Ellsworth Industrial Boulevard
Atlanta, GA 30318

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ABBREVIATIONS AND ACRONYMS

ACC	Air Combat Command
ANSI-ASQ	American National Standards Institute – American Society of Quality
APP	Accident Prevention Plan
Army	United States Department of the Army
ASQ	American Society for Quality
BCT	BRAC Cleanup Team
BLM	Bureau of Land Management
BRA	Basewide Range Assessment
BRAC	Base Realignment and Closure
BSI	Blind Seed Item
CAP	Corrective Action Plan
CAR	Corrective Action Request
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeter
CQA	Certified Quality Auditor
CQCSM	Contractor Quality Control System Manager
CQM	Construction Quality Management
CSM	Conceptual Site Model
DB	database
DDESB	Department of Defense Explosives Safety Board
DFW	Definable Feature of Work
DGM	Digital Geophysical Mapping
DMM	Discarded Military Munitions
DQI	Data Quality Indicator
DQO	Data Quality Objective
EOD	Explosive Ordnance Disposal
EM	Engineer Manual
EPA	Environmental Protection Agency
ESS	Explosives Safety Submission
ESTCP	Environmental Security Technology Certification Program
FADL	Field Activity Daily Log
FCA	Function Check Area
FFA	Federal Facility Agreement
FODIS	Fort Ord Data Integration System
FP	Follow-up Phase
FS	Feasibility Study
FTP	File Transfer Protocol
GIS	Geographic Information System
GPS	Global Positioning System
GSV	Geophysical System Verification
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMP	Installation-wide Multispecies Habitat Management Plan
IDQTF	Intergovernmental Data Quality Task Force
IP	Initial Phase
ISO	Industry Standard Object

IVS	Instrument Verification Strip
LUC	Land Use Control
MAJCOM	Major Command Manager
MD	Munitions Debris
MDAS	Material Documented as Safe
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
mm	millimeter
MMRP	Military Munitions Response Program
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Presenting an Explosive Hazard
MRA	Munitions Response Area
MRS	Munitions Response Site
mV	milliVolt
OESS	Ordnance and Explosives Safety Specialist
PMP	Project Management Professional
PP	Preparatory Phase
PP	Person-Portable
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Action
RAR	Remedial Action Report
RCA	Root-cause Analysis
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SOW	Scope of Work
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TBD	To Be Determined
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
WERS	Worldwide Environmental Remediation Services
WS #	Worksheet Number

EXECUTIVE SUMMARY

This document is Appendix A to Volume II of the Quality Assurance Project Plan (QAPP). This document is also referred to as the MEC QAPP. This document has been prepared in support of the United States Army Corps of Engineers (USACE), Sacramento District, under the Worldwide Environmental Remediation Services (WERS) Contract, contract number W912DY-10-D-0027, Task Order CM01, for the continuation of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Action (RA) at the former Fort Ord in accordance with the requirements of the *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP Manual (Intergovernmental Data Quality Task Force [IDQTF], March 2005), *Optimized UFP-QAPP Worksheets* (IDQTF, March 2012), and the Interim Guidance Document 14-01, *Technical Guidance for Military Munitions Response Actions,* Engineer Manual (EM) 200-1-15 (USACE, October 2013). The Munitions and Explosives of Concern (MEC) RA in the Impact Area Munitions Response Area (MRA) is being conducted in accordance with the *Final Track 3 Record of Decision (ROD), Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California* (Army, 2008) and *Final Work Plan, Remedial Design/Remedial Action (RD/RA), Track 3 Impact Area Munitions Response Area, Former Fort Ord, California* (USACE, 2009).

This MEC QAPP is based on the 28 optimized worksheets as described in the Optimized UFP-QAPP Worksheets and is intended to provide standard procedures and processes to support MEC removal at the former Fort Ord, California. The included worksheets will serve as a guideline for project activities and data quality assessment. This MEC QAPP addresses the Quality Assurance (QA) and Quality Control (QC) elements of the American National Standards Institute - American Society for Quality (ANSI/ASQ) E4-2004 and meets the requirements of Environmental Protection Agency (EPA)/QA G-5. This document is divided into the following seven sections:

- 1.0 Project Management
- 2.0 Project Quality Objectives
- 3.0 Sample Design
- 4.0 Sampling Requirements
- 5.0 Analytical Requirements
- 6.0 Data Management and Data Review
- 7.0 References

This MEC QAPP contains a series of worksheets that are for both general and specific information pertaining to the MEC remediation activities to be completed in the Impact Area MRA and planned MEC remediation activities anticipated to be conducted in Bureau of Land Management (BLM) Area B (based on the Track 2 Remedial Investigation (RI) / Feasibility Study (FS) and Proposed Plan for BLM Area B and Munitions Response Site [MRS]-16). The QAPP for evaluation of potential soil contamination under the Basewide Range Assessment (BRA) program is provided in Fort Ord QAPP Volume I.

This MEC QAPP and Attachments (A-G), is supported by the following standalone project plans:

- Installation Wide Accident Prevention Plan (APP) – Site safety and health are controlled by the APP with its supporting Site Safety and Health Plan (SSHP).
- Explosives Safety Submission (ESS) – Explosives safety for the project is governed by the ESS.

This MEC QAPP describes the planning, implementation, acquisition, and assessment of data using effective methodologies and thorough QC activities that KEMRON Environmental Services (KEMRON), directed by the USACE, will use during MEC RAs at the former Fort Ord, California. This MEC QAPP also includes information for data management, data analysis and QC activities in support of the MEC response actions. This document is intended for use by field operators, supervisors, data managers and other technical experts responsible for implementing and coordinating field activities for the project.

Crosswalk: UFP-QAPP to 2106-G-05

Optimized UFP-QAPP Worksheets		2106-G-05 QAPP Guidance Section	
Project Management			
1 & 2	Title and Approval Page	2.2.1	Title, Version, and Approval/Sign-Off
3 & 5	Project Organization and QAPP Distribution	2.2.3	Distribution List
		2.2.4	Project Organization and Schedule
4, 7 & 8	Personnel Qualifications and Sign-off Sheet	2.2.1	Title, Version, and Approval/Sign-Off
		2.2.7	Special Training Requirements and Certification
6	Communication Pathways	2.2.4	Project Organization and Schedule
9	Project Planning Session Summary	2.2.5	Project Background, Overview, and Intended Use of Data
Project Quality Objectives			
10	Conceptual Site Model	2.2.5	Project Background, Overview, and Intended Use of Data
11	Project/Data Quality Objectives	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
12	Measurement Performance Criteria	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
13	Secondary Data Uses and Limitations	3	QAPP Elements for Evaluation Existing Data
14 & 16	Project Tasks & Schedule	2.2.4	Project Organization and Schedule
15	Project Action Limits and Laboratory-Specific Detection / Quantitation Limits (Not Applicable)	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
Sample Design			
17	Sampling Design and Rationale	2.3.1	Sample Collection Procedure, Experimental Design, and Sampling Tasks
18	Sampling Locations and Methods (Not Applicable)	2.3.1	Sample Collection Procedure , Experimental Design, and Sampling Tasks
		2.3.2	Sampling Procedures and Requirements
Sampling Requirements			
19 & 30	Sample Containers, Preservation, and Hold Times (Not Applicable)	2.3.2	Sampling Procedures and Requirements
20	Field Quality Control	2.3.5	Quality Control Requirements
21	Field Standard Operating Procedures	2.3.2	Sampling Procedures and Requirements
22	Field Equipment Calibration, Maintenance, Testing, and Inspection	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables
Analytical Requirements			
23	Analytical Standard Operating Procedures (Not Applicable)	2.3.4	Analytical Methods Requirements and Task Description

Optimized UFP-QAPP Worksheets		**2106-G-05 QAPP Guidance Section**	
24	Analytical Instrument Calibration (Not Applicable)	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection (Not Applicable)	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables
26 & 27	Sample Handling, Custody, and Disposal (Not Applicable)	2.3.3	Sample Handling, Custody Procedures, and Documentation
28	Analytical Quality Control and Corrective Action (Not Applicable)	2.3.5	Quality Control Requirements
Data Management and Data Review			
29	Project Documents and Records	2.2.8	Documentation and Records Requirements
31, 32 & 33	Assessments and Corrective Action	2.4	Assessments and Data Review (Check)
		2.5.5	Reports to Management
34	Data Verification and Validation Inputs	2.5.1	Data Verification and Validation Targets and Methods
35	Data Verification Procedures	2.5.1	Data Verification and Validation Targets and Methods
36	Data Validation Procedures	2.5.1	Data Verification and Validation Targets and Methods
37	Data Usability Assessment	2.5.2	Quantitative and Qualitative Evaluations of Usability
		2.5.3	Potential Limitations on Data Interpretation
		2.5.4	Reconciliation with Project Requirements

1.0 PROJECT MANAGEMENT

1.1 Title and Approval Page (QAPP Worksheets #1 & 2)

Site Name: Fort Ord Munitions Response Areas
Site Location: Former Fort Ord, California
Document Title: Final, Quality Assurance Project Plan, Munitions and Explosives of Concern Remedial Action, Former Fort Ord, California
Contract Number: W912DY-10-D-0027

Investigative Organization

AUTHOR SIGNATURE

Jeff Sabol Digitally signed by Jeff Sabol
DN: cn=Jeff Sabol, o=KEMRON, ou, email=JSabol@kemron.com, c=US
Date: 2016.12.20 15:12:51 -07'00'

Date: 12/20/16

Jeff Sabol, CQA
KEMRON WERS Program Geophysicist

REVIEW SIGNATURES

Erin K. Caruso Digitally signed by Erin K. Caruso
DN: C=US, E=ecaruso@gilbaneco.com, O=Gilbane, OU=Federal Services, CN=Erin K. Caruso
Reason: I am approving this document
Date: 2016.12.20 14:52:38-08'00'

Date: 12/20/16

Erin Caruso, P.E., PMP
Gilbane Deputy Project Manager

Steve Crane Digitally signed by Steve Crane
DN: cn=Steve Crane, o=KEMRON, ou, email=scrane@kemron.com, c=US
Date: 2016.12.20 14:51:04 -08'00'

Date: 12/20/16

Steve Crane, PE
KEMRON Project Manager

Contracting Organization

EISEN.DAVID.E.1231985146 Digitally signed by EISEN.DAVID.E.1231985146 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=EISEN.DAVID.E.1231985146 Date: 2016.12.16 10:22:14 -08'00' Date: 12/16/16

David Eisen
USACE Project Manager

JACKSON.JOHN.MICHAEL.1396427903 Digitally signed by JACKSON.JOHN.MICHAEL.1396427903 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JACKSON.JOHN.MICHAEL.1396427903 Date: 2016.12.16 11:54:54 -08'00' Date: 12/16/16

John M. Jackson
USACE Quality Assurance Project Geophysicist

Shawn Meek Date: 12/16/16

Shawn Meek
USACE Ordnance and Explosives Safety Specialist

Plans and reports from previous investigations relevant to this project:

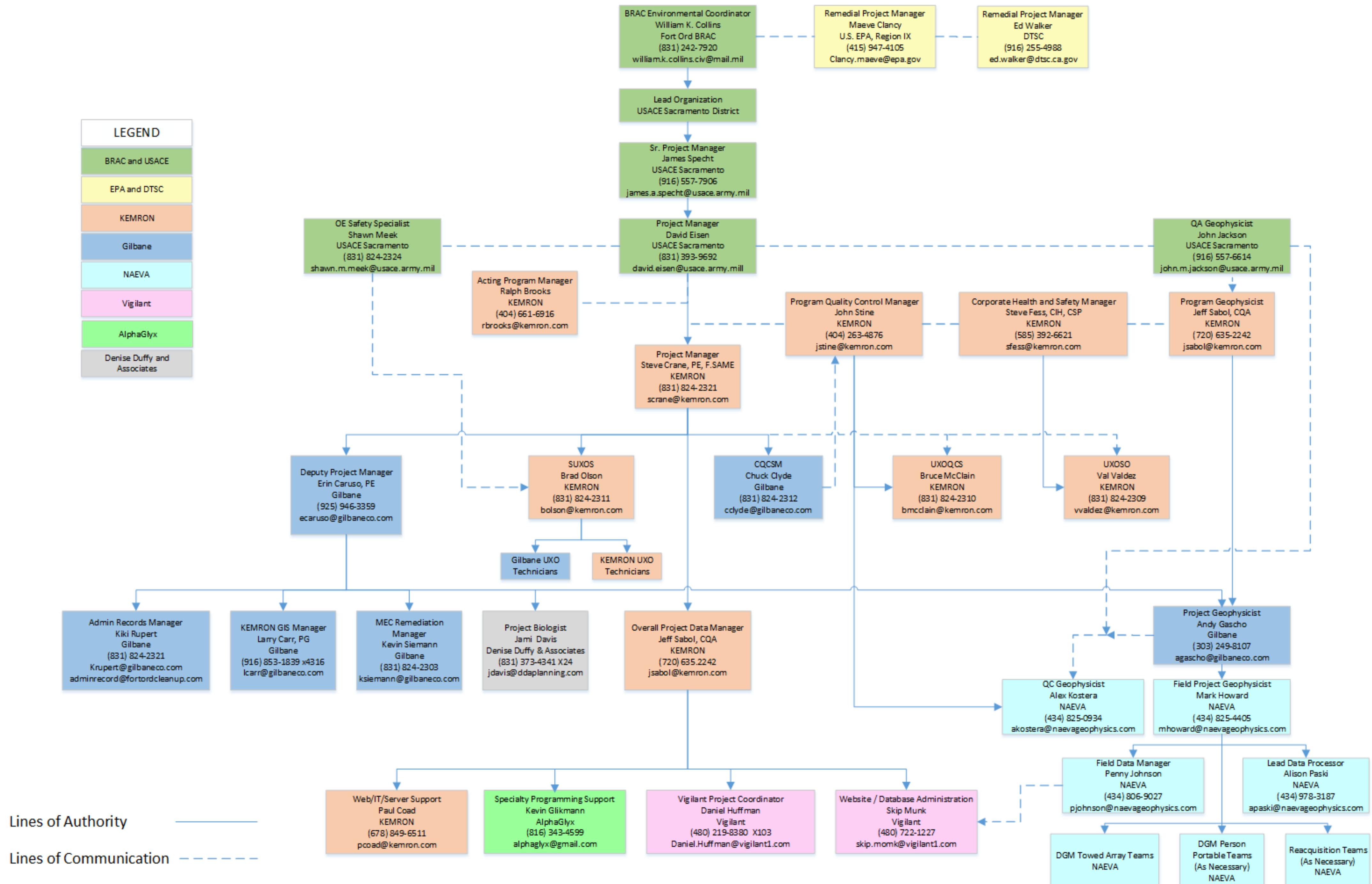
Title	Company	Date
Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California (BW-1787)	USACE	1997
Final Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California (OE-0647)	United States Department of the Army (Army)	05/27/2008
Final Work Plan, Remedial Design (RD)/Remedial Action (RA), Track 3 Impact Area Munitions Response Area (MRA) Munitions and Explosives of Concern (MEC) Removal, Former Fort Ord, California (OE-0660K)	USACE	08/04/2009
Final Track 3 Impact Area Munitions Response Area Munitions Response, Remedial Investigation/Feasibility Study Report, Volumes 1 and 2 (OE-0596R)	MACTEC	06/25/2007
Final Remaining Remedial Investigation/ Feasibility Study Areas Management Plan, Former Fort Ord, California (OE-0687E)	MACTEC/Shaw	2010
Final Ranges 43-48 Site-Specific Work Plan, Former Fort Ord, Monterey, California, Ordnance and Explosives (OE) Cleanup (OE-0408K)	Parsons	8/7/2003
Final Addendum to Ranges 43-48 Site-Specific Work Plan For Sifting Operations at Range 45 (OE-0408R)	Parsons	5/26/2005
Final Site-Specific Work Plan Munitions and Explosives of Concern Remedial Action, Units 18 and 22, Former Fort Ord, California, Revision 0 (OE-0648G)	Shaw	10/8/2008
Final MRS-16 Munitions and Explosives of Concern, Remedial Action Report, Former Fort Ord, California, Revision 1, July 2009. (OE-0682F)	Shaw	7/14/2009
Final Site-Specific Work Plan Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 14 and 19, Former Fort Ord, California, Revision 0 (OE-0688G)	Shaw	10/14/2009
Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas, Former Fort Ord, California (OE-0685D)	Shaw	2/11/2010
Final Site Specific Work Plan, Munitions and Explosives of Concern Remedial Action MRS-BLM Units 15, 21, 32 and 34, Former Fort Ord, California (OE-0711B)	Shaw	7/22/2010
Final MRS-BLM Units 18 and 22, Munitions and Explosives of Concern, Remedial Action Report, (Track 3) Former Fort Ord California (OE-0721B)	Shaw	3/29/2011
Final Site Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 4, 5A, 9, 11 and 12, Former Fort Ord, California (OE-0736B)	ITSI	9/15/2011
Final MRS-BLM Units 14 and 19, Munitions and Explosives of Concern, Remedial Action Report, Former Fort Ord, California (OE-0753B)	Shaw	12/29/2011

Title	Company	Date
Final Site Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 6, 7 and 10, Former Fort Ord, California (OE-0765B)	ITSI	7/20/2012
Final MRS-BLM Units 15, 21, 32, and 34, Munitions and Explosives of Concern, Remedial Action Report, Former Fort Ord, California (OE-0783B)	ITSI Gilbane	6/6/2013
Final Site-Specific Work Plan Munitions and Explosives of Concern Remedial Action MRS-BLM Watkins Gate Burn Area Former Fort Ord California (OE-0794B)	ITSI Gilbane	1/31/2014
Final MRS-BLM Units 4, 11 and 12, Munitions and Explosives of Concern, Remedial Action Report, Former Fort Ord, California (OE-0799B)	ITSI Gilbane	8/1/2014
Draft Final of MRS-BLM Units 6, 7, 10, and 33 MEC Remedial Action Report, Former Fort Ord, California (OE-0867)	Kemron	10/30/2015
Final Site-Specific Work Plan, Munitions and Explosives of Concern, Remedial Action MRS-BLM Unit 23 and in Support of Units 11 and 12 Prescribed Burns (Includes Portions of 5A, 9, 25, 28 and 31) Former Fort Ord, California (OE-0862B)	Kemron	12/15/2015
Final Site-Specific Work Plan, Munitions and Explosives of Concern, Remedial Action MRS-BLM Unit 28 Former Fort Ord, California (OE-0859B)	Kemron	2/29/2016
Draft Final, Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, MRS-BLM Units 25 and 31, Former Fort Ord, California (OE-0880A)	Kemron	7/29/2016
Final, MRS-BLM Units 4, 11, and 12, Munitions and Explosives of Concern, Remedial Action Report, Former Fort Ord, California (OE-0799B)	ITSI Gilbane	07/2014
MRS-BLM Units 7, 10, and 33 MEC Remedial Action, Technical Memorandum, Former Fort Ord, California (OE-0842)	Gilbane	10/2014
MRS-BLM Watkins Gate Burn Area MEC Remedial Action, Technical Memorandum, Former Fort Ord, California (OE-0832)	Gilbane	12/2014
Final Work Plan, MRS-BLM Burn Units 01-05 Munitions and Explosives of Concern Removal, Former Fort Ord, California, Revision 0 (OE-0626L)	Shaw E&I / Presidio of Monterey Fire Department	06/19/2008
Final, Track 2, Remedial Investigation/Feasibility Study, BLM Area B and MRS-16, Former Fort Ord, California (OE-0802D, Revision 2)	Gilbane	05/2015

These documents provide background information on the MEC-related investigations and removal activities conducted in both the Impact Area MRA and BLM Area B.

1.2 Project Organization and QAPP Distribution (QAPP Worksheets #3 & 5)

Figure 1-1



The organizational structure for the geophysical operations is further discussed in Worksheet #12, with additional information being provided in the Blind Seed Firewall Plan located in Attachment A of this MEC QAPP.

1.3 Personnel Qualifications and Sign-off Sheet (QAPP Worksheets #4, 7, & 8)

ORGANIZATION: KEMRON

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Ralph Brooks	Acting Program Manager	AS – Military technology BS – General studies 38 years of combined military and Military Munitions Response Program (MMRP) with Senior Unexploded Ordnance Supervisor (SUXOS) project and program management experience.	Naval Explosive Ordnance Disposal (EOD) School Hazardous Waste Operations and Emergency Response (HAZWOPER)	
John Stine	Program Quality Control Manager	Senior NCO Academy U.S. Navy EOD School, Munitions Disposal Specialist U.S. Air Force Munitions Maintenance Specialist Master EOD Technician Master EOD Training Instructor, USAF Department of Defense Explosives Safety Board (DDESB) TP-18-Qualified SUXOS 39 years of unexploded ordnance (UXO) and MMRP experience, with 32 years of supervisory experience	USACE UXO #0539 NATO QA/QC Evaluator/Inspector/Trainer QA/QC Officer, Unit Level, USAF QA/QC Manager, Air Combat Command (ACC), Major Command Manager (MAJCOM) EOD HQ USAF Munitions Specialist Training NAVSEA Technical Instructors Course HAZWOPER	
Jeff Sabol	Program Geophysicist and Overall Project Data Manager	BS Physics (w/ concentration in Geophysics) 18 years of MMRP geophysical and QC experience	American Society of Quality (ASQ) - Certified Quality Auditor (CQA) Oasis Montaj Geophysical Data Processing for UXO Environmental Security Technology Certification Program (ESTCP) Geosoft UX-Analyze Training ArcGIS HAZWOPER	

Steve Fess, CIH, CSP	Corporate Health and Safety Manager	BS 1995, Health Science (Safety/ Environmental) S.U.N.Y. College at Brockport AAS 1976, Medical Laboratory Technology, Monroe Community College	Certified Industrial Hygienist (CIH) Comprehensive Practice, *American Board of Industrial Hygiene*. Reg. No. 5926 CP (1993) Certified Safety Professional (CSP) Comprehensive Practice, *Board of Certified Safety Professionals*. Reg. No. 9151 (1989). Member - American Industrial Hygiene Association o Member of the Construction Committee and Safety Committee; Currently Past Chair of the Construction Committee o Elected AIHA Association Fellow 2013 Past Professional Member - American Society of Safety Engineers (24 yrs.) Hazardous Materials Incident Response DOT Hazardous Materials Training RCRA Hazardous Waste Training CHMM Review Class / Instructor Laboratory Safety and Health Advanced Ergonomics HAZWOPER Health and Safety Training Course and annual refresher courses HAZWOPER (Instructor) Confined Space Rescue Crane Signaling and Rigging (Instructor) NFPA 70E (Instructor) Mine Safety (Instructor) ISO 14001 Lead Auditor ISO 9001-2015 Internal Auditor	

Steve Crane	Project Manager	MS Civil and Environmental Engineering 35 years of combined experience in environmental engineering, project management, program management, and business unit management Previous Project Manager (2010-2014) for the $60 million Fort Ord MEC Removal and Soil Remediation WERS task order for Gilbane	Registered Civil Engineer (Professional Engineer) [PE] {Arizona} USACE Architect - Engineer (A-E) Contracting Short Course, USACE-Huntsville Program for Manager Development, Univ. of North Carolina – Chapel Hill Graduate Business School	
Bradley Olson	SUXOS	DDESB TP-18-Qualified SUXOS 30 years of EOD and UXO experience	Naval EOD School USACE Construction Quality Management (CQM) HAZWOPER HAZWOPER Supervisor 30-Hour Construction Safety 10-Hour Construction Safety	
Bruce McClain	Unexploded Ordnance Quality Control Specialist (UXOQCS)	DDESB TP-18-Qualified UXOQCS 30 years of EOD and UXO experience	Naval EOD School USACE CQM HAZWOPER HAZWOPER Supervisor 30-Hour Construction Safety 10-Hour Construction Safety	
Val Valdez	Unexploded Ordnance Safety Officer (UXOSO)	DDESB TP-18-Qualified UXOSO 25 years of EOD and UXO experience	Naval EOD School 30 Hour Construction Safety USACE CQM 1st Aid/CPR RAD Safety HAZWOPER Supervisor	

Paul Coad	Web/IT/Server Support	Associate, Psychology. University of Maryland (1993)	PMP (Project Management Professional) – In Progress. MCSE/CCNA – Ameritrain/New Horizons. VMware Certified Professional 5 – (VCP5-DCV). Exchange 2013 – Refresher. CNA – Novell Corporation – Utah. A+/Net+ - Ameritrain. SonicWall e-training certifications - 01-SSC-5612, 01-SSC-5614. Juniper Networks Certified Internet Specialist (JNCIS-FWV). OSHA Training (40 hr., 8 hr. Supervisor, 8 hr. Refresher).	

ORGANIZATION: Gilbane

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Erin Caruso	Deputy Project Manager (Gilbane Project Manager)	MS Engineering 14 years of MMRP experience	PE (California) USACE CQM Project Management Professional (PMP) HAZWOPER	
Kevin Siemann	MEC Remediation Manager	BS Environmental Science 16 years of experience	HAZWOPER	
Chuck Clyde	Contractor Quality Control System Manager (CQCSM)	17 years as Quality Control Manager for various DoD Projects	HAZWOPER 30-Hour Construction Safety First Aid/CPR API -650/653 Storage Tank Management Confined Space Supervisor	
Andy Gascho	Project Geophysicist	MS Geophysics 15 years of MMRP geophysics experience 4 years of geophysical classification experience on 7 geophysical classification projects	Oasis Montaj Geophysical Data Processing for UXO ESTCP Geosoft UX-Analyze Training HAZWOPER 30-Hour Construction Safety	

Larry Carr	KEMRON GIS Manager	BS Geology 14 years of experience GIS (19 years overall experience in industry)	HAZWOPER	
Kiki Rupert	Administrative Records Manager	BS Environmental Studies 14 years of experience in administration and management		

ORGANIZATION: NAEVA Geophysics, Inc. (NAEVA)

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Mark Howard	Field Project Geophysicist	BS Geology 20 years of MMRP geophysics experience 4 years of geophysical classification experience on 6 geophysical classification projects	Professional Geologist (Pennsylvania) ESTCP Geosoft UX-Analyze Training HAZWOPER	
Alison Paski	Lead Data Processor	BS Geophysics 14 years of experience 5 years of geophysical classification experience on 12 geophysical classification projects	Oasis Montaj Geophysical Data Processing for UXO ESTCP Geosoft UX-Analyze Training	
Alex Kostera	QC Geophysicist	BS Geology 15 years of MMRP geophysics experience 2 years of geophysical classification experience on 2 geophysical classification projects	Professional Geologist (Virginia) Oasis Montaj Geophysical Data Processing for UXO HAZWOPER	
Penny Johnson	Field Data Manager	BS Geology 15 years of MMRP geophysics experience 10 years database (DB) management experience on MMRP projects	Microsoft Access Intermediate/SQL Oasis Montaj Geophysical Data Processing for UXO HAZWOPER	

ORGANIZATION: Vigilant Technologies

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Daniel Huffman	Project Coordinator	Director of Business Development and Program Manager for Federal Procurement Team for Vigilant Technologies. Master's degree in education and A+ certification and Cisco Federal Acquisition certifications. Task coordinator for NASA and Vigilant Cloud systems. Manager of consulting services programs, including Burbank Airport, DISA, Navajo Nations services and others including vendor and sub-contractor management.	A+ certification and Cisco Federal Acquisition certifications and progressing towards PMP and VMware certifications	
Skip Munk	DB Administrator	Education: B.S., Business Accounting, University of Phoenix—Sacramento, CA (October 2008) 20 year SQL Server experience, Microsoft SQL Server and SQL Azure. Programming experience: C#, Visual Basic (VB6, VB, .Net, VBA, VB Script), xBase (dBase and FoxPro), Java, JavaScript, Delphi, and SAP ABAP. Experience developing middle tier Windows Service and Web Services using .Net framework. Web development using HTML, ASP, ASP.NET (VB.Net and C#), Java, and JavaScript. SAP applications, using ABAP, ALV Grid, and SmartForms, including BAPI concepts. Experienced with various cloud based systems.	BC400 ABAP Workbench Foundations, SAP Education - Atlanta, GA BC405 Programming ABAP Reports SAP Education—Calgary, Alberta, Canada DB Implementation with SQL Server 6.5 Microsoft Education—Honolulu, HI	

ORGANIZATION: AlphaGlyx

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Kevin Glikmann	Specialty Programming Support	BS Quantitative Economics & Decision Science Making – University California San Diego. 14 years as Chief Technology Officer of Fanscape including website software development, database architecture & admin, network admin, Windows Server admin, IIS. Independent computer consultant 10 years.	ASP.NET, ASP, C#, VB, HTML 5, CSS, Javascript, Jquery, Flash, ActionScript, Python, MSSQL, MS Access, Microsoft Azure & Azure Table Storage, Windows Server, IIS, Exchange Server, MS Office Suite, Adobe Photoshop, Adobe Premier, After Effects, iOS & Android development	

ORGANIZATION: Denise Duffy & Associates

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Jami Davis	Project Biologist	BS Earth Science and Policy – California State University of Monterey Bay. Associate Environmental Scientist / GIS Analyst, DD&A. Staff Biologist, Zander Associates. Field Ecologist/Supervisor for the Parker Flats Burn Project, Lars Pierce/Fort Ord Reuse Authority	Service Federal Recovery Permit TE-091857-0: California tiger salamander and California red-legged frog. DFW Scientific Collection permit 801136-04: Mammals, Reptiles, Amphibians, Freshwater/Terrestrial Invertebrates. Managing Habitats for California Red-legged Frog Workshop (Elkhorn Slough Coastal Training Program). Rare Pond Species Workshop (The Laguna Foundation). Wetland Delineation Training (Wetland Training Institute). Arctostaphylos Workshop (Jepson Herbarium). Basic Botany Workshop (Jepson Herbarium). Poaceae Workshop (Jepson Herbarium). Flora of San Luis Obispo County (Jepson Herbarium). 40 Hour HAZWOPER Certification & annual 8-hour refresher. CEQA Basics Workshop (AEP)	

Signatures indicate personnel have read and agree to implement this MEC QAPP as written.

1.4 Communication Pathways (QAPP Worksheet #6)

Communication Drivers	Organization	Name	Contact Information	Procedure (Timing, pathways, documentation, etc.)
Regulatory agency interface	USACE	David Eisen	(831) 393-9692	USACE Fort Ord Project Manager provides routine project updates to Base Realignment and Closure (BRAC) Cleanup Team (BCT) and stakeholders, including work variances and corrective actions.
Project status reports	KEMRON	Steve Crane	(831) 824-2321	KEMRON Project Manager e-mails weekly status reports to USACE Fort Ord Project Manager for distribution to Fort Ord project delivery team.
Stop work due to safety issues	KEMRON	Val Valdez	(831) 824-2309	UXOSO informs KEMRON Project Manager and Health and Safety Manager of critical safety issues and develops report. Ordnance and Explosives Safety Specialist (OESS) and USACE Fort Ord Project Manager informed of issue and receive report.
MEC QAPP variances during project execution	Gilbane	Kevin Siemann	(831) 824-2303	Gilbane MEC Remediation Manager submits Field Change Request to USACE Project Manager for review and approval.
Field corrective actions	KEMRON NAEVA Gilbane	Bruce McClain Alex Kostera Chuck Clyde	(831) 824-2310 (434) 825-0934 (831) 824-2312	UXOQCS, QC Geophysicist and CQCSM prepare (as applicable) a Root-cause Analysis (RCA), Corrective Action Request (CAR) and Corrective Action Plan (CAP). Forms are provided to the KEMRON Program QC Manager for review and approval. KEMRON Program QC Manager then provides forms to USACE Fort Ord Project Manager for review and approval.
EM61MK2 data and anomaly selection	Gilbane	Andy Gascho	(303) 249-8107	Gilbane Project Geophysicist reviews Digital Geophysical Mapping (DGM) data and anomalies generated by NAEVA and provides the data / target list to the USACE QA Geophysicist for review and approval.
Blind seeding information	KEMRON NAEVA	Bruce McClain Alex Kostera	(831) 824-2310 (434) 825-0934	UXOQCS and QC Geophysicist communicate directly with USACE QA Geophysicist and USACE OESS regarding blind seeding information in accordance with the Blind Seed Firewall Plan (MEC QAPP - Attachment A).

Communication Drivers	Organization	Name	Contact Information	Procedure (Timing, pathways, documentation, etc.)
Quality control variances	KEMRON NAEVA	Bruce McClain Alex Kostera	(831) 824-2310 (434) 825-0934	UXOQCS and QC Geophysicist prepare (as applicable) an RCA, CAR and CAP. Forms are provided to USACE QA Geophysicist, USACE OESS and USACE Fort Ord Project Manager for review and approval.
Data verification issues (e.g., incomplete records)	Gilbane	Kevin Siemann Andy Gascho	(831) 824-2303 (303) 249-8107	MEC Remediation Manager and Gilbane Project Geophysicist prepare (as applicable) and RCA, CAR and CAP. Forms are provided to USACE QA Geophysicist, USACE OESS, and USACE Fort Ord Project Manager for review and approval.
DGM Data review corrective actions	NAEVA	Alex Kostera	(434) 825-0934	QC Geophysicist prepares (as applicable) an RCA, CAR and CAP. Forms are provided to USACE QA Geophysicist, USACE OESS and USACE Fort Ord Project Manager for review and approval.

PROJECT MEETINGS

Project meetings will be held on an as needed basis to discuss planning and scheduling, logistics and may include operational discussions as they relate to project decisions, deliverables, QC issues or concerns, corrective actions and data presentation to support decision making. Meeting attendees will be based on the topic(s) of discussion and may include subject matter experts. Project meeting agendas will be drafted by KEMRON and will be approved by USACE prior to dissemination to meeting attendees. Meeting minutes will be generated by KEMRON and once reviewed and approved by USACE will be maintained by KEMRON.

1.5 Project Planning Session Summary (QAPP Worksheet #9)

If conducted, external Project Planning Sessions will be included in future versions of this QAPP. Meeting minutes will contain a list of all participants, meeting agendas, detailed description of discussions, and action items.

2.0 PROJECT QUALITY OBJECTIVES

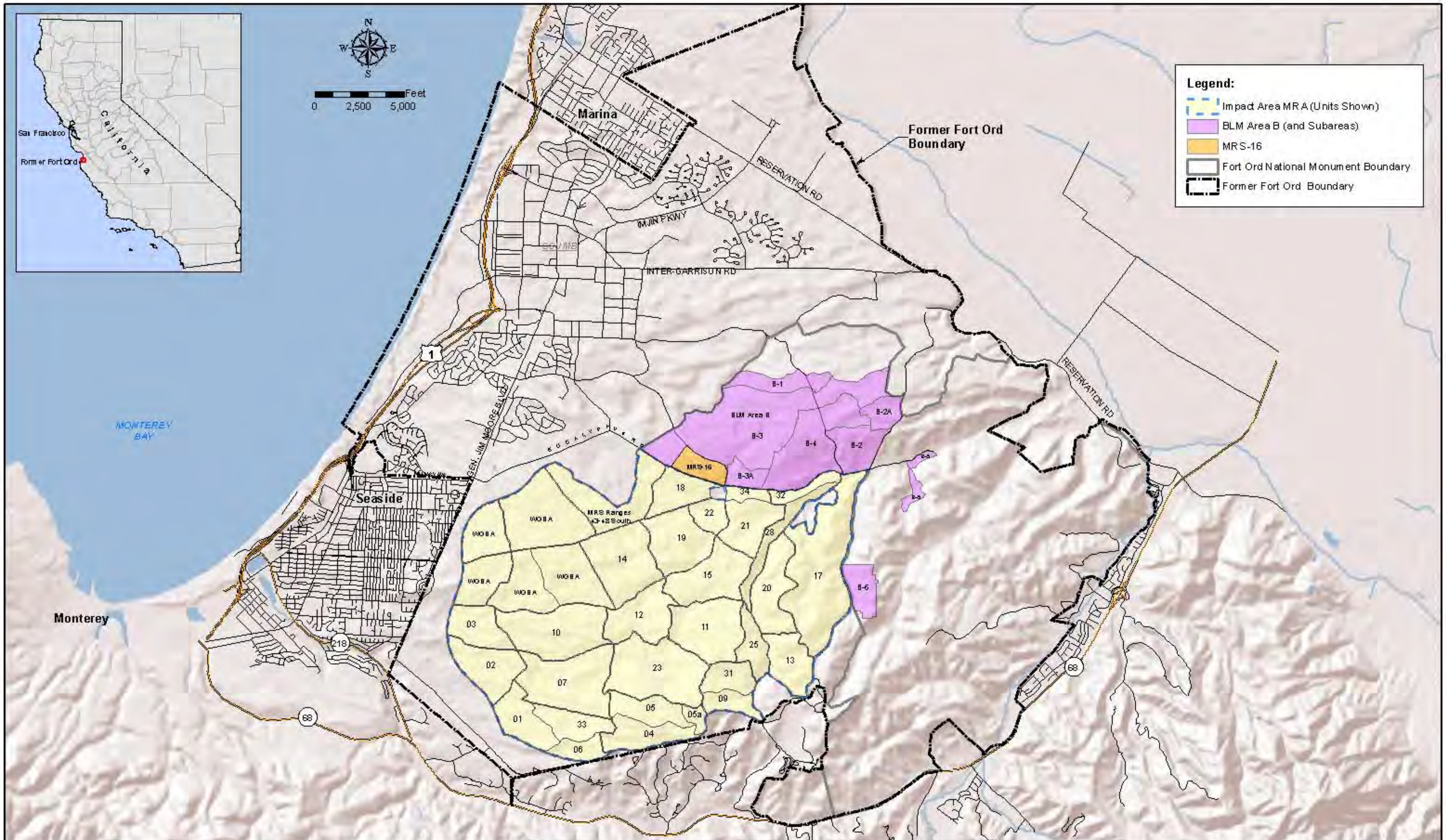
2.1 Conceptual Site Model (QAPP Worksheet #10)

BACKGROUND INFORMATION

The former Fort Ord is adjacent to Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco (Figure 2-1 – Site Location Map). The former Army post consists of approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. Laguna Seca Recreation Area and Toro Regional Park border the former Fort Ord to the south and southeast, respectively. Land use east of the former Fort Ord is primarily agricultural.

The military conducted munitions-related activities (e.g., live-fire training) on the facility and as a result MEC including UXO and discarded military munitions (DMM) may be present in parts of the former Fort Ord. The ROD (Army, 2008) for the Track 3 Impact Area Munitions Response Area (Impact Area MRA) addresses MEC that are known or suspected to be present in the Impact Area MRA. The Impact Area MRA is undeveloped, contains several rare, threatened and endangered species and is designated as a habitat reserve. The Impact Area MRA is part of the Fort Ord National Monument and will be managed by BLM once the RA is completed. The Impact Area MRA is a complex of numerous former military ranges (Figure 2-2 – Impact Area Ranges) with a variety of historical uses, designs and characteristics. The selected remedy includes vegetation clearance (including prescribed burning); technology-aided surface MEC remediation; digital geophysical surveys; subsurface MEC removal in selected areas; and land use controls (LUCs). Access to the Impact Area MRA is currently restricted to authorized personnel only. RA activities have been ongoing in the Impact Area MRA since 2008.

BLM Area B is undeveloped, contains several rare, threatened and endangered species and is designated as a habitat reserve. BLM Area B is a part of the Fort Ord National Monument and is currently open to public recreation. The RI/FS for Track 2, BLM-Area B and MRS-16 was approved as Final (Revision 2) in May 2015. This RI/FS identified Alternative 3, Technology-Aided Surface MEC Remediation, with Subsurface MEC Remediation in Selected Areas, and LUCs as the preferred remedial alternative for BLM Area B sub-areas B-2A and B-3; and Alternative 2, LUCs for MRS-16 and the remainder of BLM Area B. In accordance with the Federal Facility Agreement (FFA), the Proposed Plan and the public meeting for the Proposed Plan are complete and the Army is preparing a ROD for BLM Area B and MRS-16. A portion of BLM Area B has been transferred to BLM.



Munitions and Explosives of Concern
Quality Assurance Project Plan
Former Fort Ord
Monterey County, California

Figure 2-1
Site Locations

SOURCES OF KNOWN OR SUSPECTED MEC

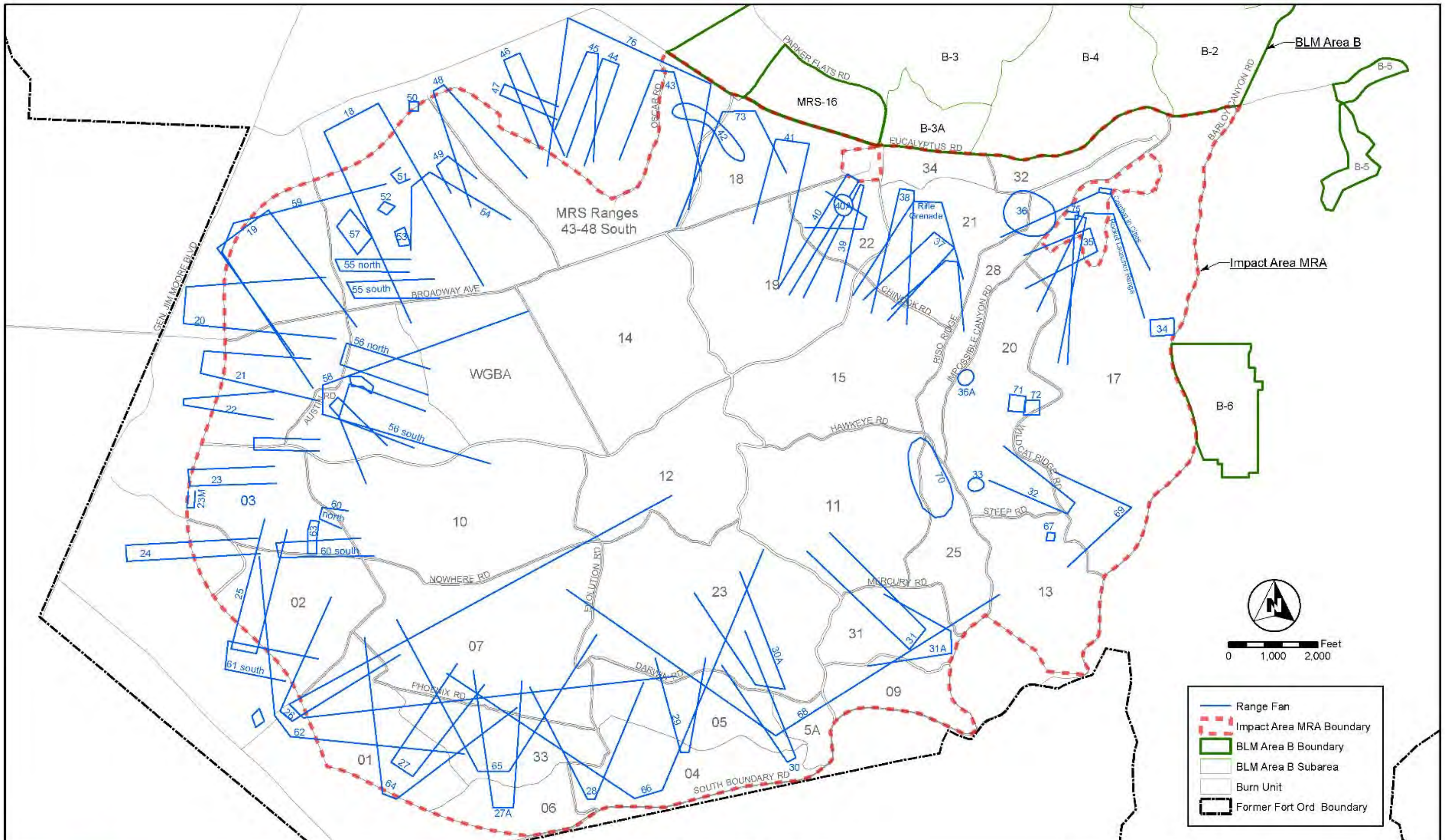
Since 1917 portions of the former Fort Ord were used by cavalry, field artillery, and infantry units for maneuvers, target ranges, and other purposes. From 1947 to 1974, Fort Ord was a basic training center. After 1975, the 7th Infantry Division occupied Fort Ord. Fort Ord was selected in 1991 for decommissioning, but troop reallocation was not completed until 1993, and the base was not officially closed until September 1994.

The purpose of this document is to provide standard procedures and methodologies for conducting munitions response field work at the former Fort Ord. More detailed information is included in previous documents such as *Draft Final Literature Review Report, Ordnance and Explosives Remedial Investigation/Feasibility Study, Former Fort Ord, California* (Administrative Record number: OE-0245H). The paragraphs that follow provide information about the current MEC cleanup area (Impact Area MRA) and a planned cleanup area (BLM Area B).

The Impact Area MRA is a complex of numerous former military ranges with a variety of historical uses, designs, and characteristics (Figure 2-2 – Impact Area Ranges). Various types of munitions have been used during the training activities historically conducted within the Impact Area MRA including artillery and mortar projectiles, rockets and guided missiles, rifle and hand grenades, practice land mines, pyrotechnics, bombs, and demolition materials. Select ranges were used for small arms training activities only, while other ranges are characterized as multi-use. In general, the firing points of the ranges were located near the perimeter of the MRA, and firing was directed toward the interior portion of the range complex. Training activities at the Impact Area MRA ceased after the closure of Fort Ord in 1994. The Impact Area MRA is fenced, warning signs are posted, and access is controlled by the Army. The perimeter of the Impact Area MRA is patrolled to detect and prevent trespassing.

BLM Area B is generally located north-northeast of the Impact Area MRA (Figure 2-1) and is comprised of eight (8) different sub-areas based on historic training uses and the quality, types, and depth of previous munitions responses conducted in the respective areas. Investigations and MEC removal actions performed to date have identified historical use of BLM Area B and MRS-16 for various close combat and weapons training purposes, including use of machine gun, hand grenade, rifle grenade, smoke grenade, flares, 2.36 inch rocket, 37mm projectile and mortars (60mm, 81mm, 3 inch Stokes, and 4.2 inch).

For each unit (or a group of units) where remedial action will be performed, a SSWP will be developed. The SSWP will describe the current understanding of the nature and extent of MEC based on available information such as the military training history and data from previous munitions responses.



Munitions and Explosives of Concern
Quality Assurance Project Plan
Former Fort Ord
Monterey County, California

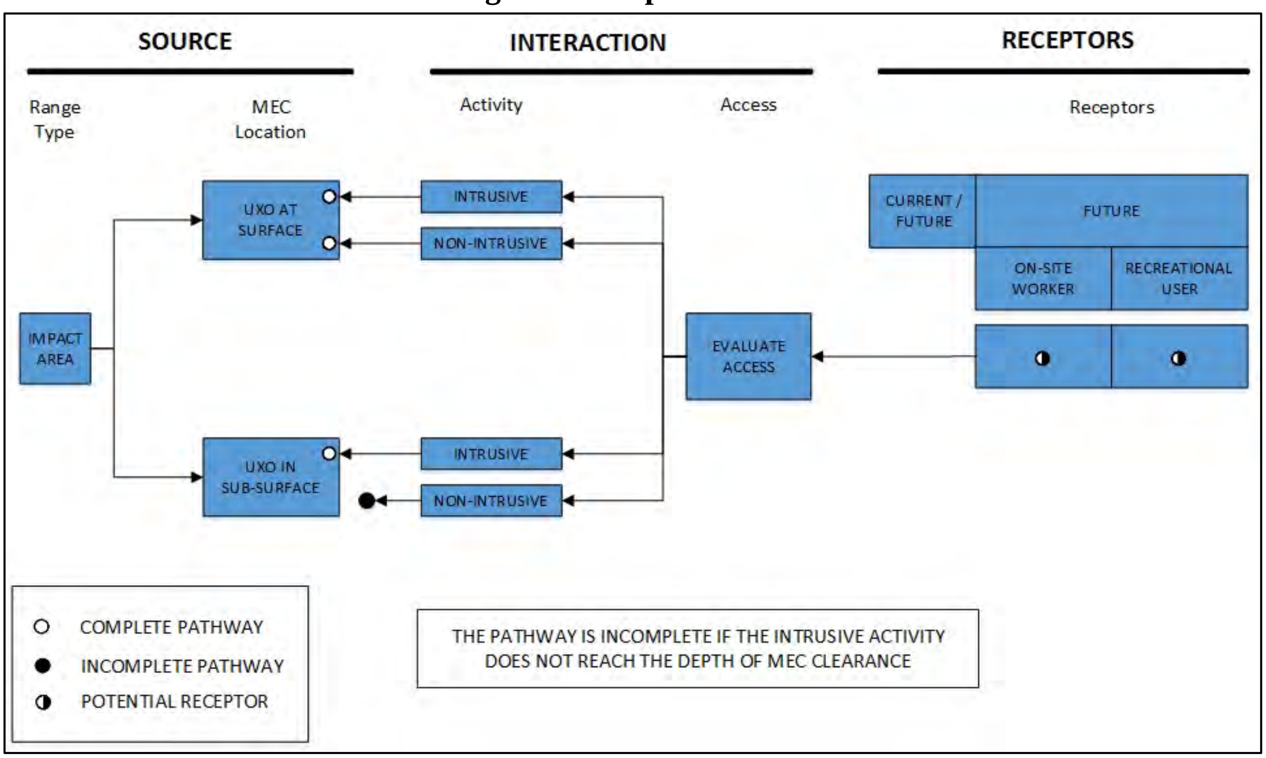
Figure 2-2
Impact Area Ranges

FATE AND TRANSPORT CONSIDERATIONS FOR MEC:
The fate and transport of MEC items within the Impact Area MRA and BLM Area B is governed by various physical factors/transport processes. Natural erosion of soil over time (wind, water, etc.) can result in the exposure (or reburial) and transport of MEC.

POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS:
The Track 3 site, known as the Impact Area MRA, consists of the 6,560-acre portion of the 8,000-acre historical Impact Area that is entirely within the natural resources management area described in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (USACE, 1997), and is currently identified for transfer to the BLM. The Impact Area MRA is currently being used as a habitat for endangered species.

Based on the historical range uses, various types of munitions items are expected on the surface and subsurface within the Impact Area MRA. The potential future receptors for this area include habitat monitors, habitat workers, or visitors that could encounter MEC within the Impact Area MRA. In accordance with the ROD (signed in 2008), RAs have been conducted in several units within the Impact Area MRA and will continue to be implemented. The Track 3 ROD remedy also includes land use controls to manage residual risks during the long-term reuse. The CSM for the Impact Area MRA displayed in Figure 2-3 relates to portions of the Impact Area MRA where remedial action activities have not yet been conducted.

Figure 2-3 Impact Area CSM



2.2 Data Quality Objectives (QAPP Worksheet #11)

Data Quality Objectives (DQOs) have been developed based on the CSM for potential contact with MEC described in Section 2.1 above.

As defined by the USEPA (2006), DQOs are most commonly used during the planning stages of any study that requires data collection. DQOs define the goals of the investigation, guide data collection, and formalize agreement on when data collection is complete, what will be done with the data, and what decisions will be made from the data. In environmental data collection projects, the ultimate goal of the DQO process is to obtain high quality and valid data to support environmental decisions. This goal can be achieved through systematic planning and strict adherence to QA/QC measures. The DQO process is a seven-step iterative process designed to ensure that data collection is resource effective, while meeting the objectives of the study. The DQO process consists of the seven steps below.

Step 1: State the problem
Step 2: Identify the goal of the study
Step 3: Identify information inputs
Step 4: Define the boundaries of the study
Step 5: Develop the analytical approach (Decision rules)
Step 6: Specify performance or acceptance criteria
Step 7: Develop the plan for obtaining data

For the RA that is to be performed in the Impact Area MRA, the seven step DQO process is described in detail for each of the three DQOs below. The three DQOs are:

- DQO #1: Technology-Aided Surface MEC Removal
- DQO #2: DGM
- DQO #3: Subsurface MEC Removal in Selected Areas

The Track 3 ROD identifies the types of areas where additional work (e.g. subsurface MEC removal) would be conducted. They are: (1) regularly maintained fuel breaks and access roads; (2) 100-ft wide buffers along the habitat-development border; and (3) other areas to address specific risk and/or land use needs, such as future habitat restoration sites (discussed on page 3 of the Track 3 ROD). The regularly-maintained fuel breaks are identified in the *Final Site-Specific Work Plan, Munitions and Explosives of Concern Remedial Action, Non-Burn Areas* (OE-0685D). Subsurface removals in the 100-ft buffers have been completed (Letter from BRAC to U.S. EPA, Region IX, 12/17/15 (OE-0854A.3). The third type of areas can be identified through the Technical Memorandum process; once surface MEC removal and DGM are conducted, the data is reviewed and BLM is consulted to identify specific areas that may warrant additional work. The identified areas are then evaluated using the four criteria described in the Track 3 ROD.

When evaluating whether additional removal is recommended, the Army will consider, among other factors: (1) explosive hazards associated with MEC so far recovered; (2) the proximity to potential receptors; (3) the density of MEC recovered; and (4) consistency with ARARs (e.g., HMP and Biological Opinions).

Examples of the third type of areas include “areas where there are high density of anomalies associated with impact areas where military munitions with sensitive fuzes (all-ways-acting or piezoelectric fuzes, or 40mm grenade high explosive or 40mm practice projectiles M382 series or M407 series [or any other 40mm practice series projectiles containing enough explosives to rupture the projectile]) were fired” (page 3 of the Track 3 ROD). These areas are candidates for subsurface removal utilizing excavation and sifting because standard approach of detection and investigation of intrusive anomalies might not be conducted efficiently. Large scale excavation requires careful evaluation before such a decision is made.

The Army is planning a field study to further evaluate approaches and options to address areas with high density of anomalies and where UXO of the type containing sensitive fuzes were recovered. The field study will be designed to provide more information about how areas/grids where UXO of the type containing sensitive fuzes were recovered during surface removal could be approached. Remedial action data (MEC removal and DGM) will be evaluated in conjunction with the results of the field study to identify and evaluate candidate areas. The field study will be described in a site-specific work plan to be issued in Fall 2016.

The following units are remedial action complete: 4, 6, 7, 10, 11, 12, 14, 15, 18, 19, 21, 22, 23, 32, 33, 34. The following units have not had remedial action completed: 1, 2, 3, 5, 13, 17, 20, 25, 28, 31. Ranges 43-48 South, 5A, 9, and WGBA have had remedial action, however a remedial action report has not yet been completed.

The DQOs described below apply to future and remaining work in the Impact Area MRA.

2.2.1 DQO #1: Technology-Aided Surface MEC Removal

Step 1: State the Problem

Per the Track 3 ROD, Technology-Aided Surface MEC remediation operations are to be completed throughout the entire Impact Area MRA.

Step 2: Identify the Goals of the Study

- To complete surface MEC removal in the Impact Area MRA and demonstrate with data, documentation, and the QC program that the operation was adequately completed.

Step 3: Identify Information Inputs

- Data for Technology-Aided Surface MEC Removal operations are collected on a grid by grid basis. Grids are 100-foot by 100-foot in size; however, grids of various sizes are expected due to their location in relation to planned unit boundaries. The grid system is based on the Fort Ord Master Grid System.

- Data related to vegetation and/or terrain that could affect the conduct of the operation.
- QC documentation of Technology-Aided Surface MEC Removal operations (to include Blind Seed Item [BSI] information and QC inspection results).
- Field data related to MEC items that are located and the amount of MD and RRD that is recovered (lbs) on a grid by grid basis.

Step 4: Define the Boundaries of the Study

- The spatial boundaries, as shown in Figure 2-1 above, comprise the RA boundaries. Remedial action has been implemented in several units within the Impact Area MRA.
- Identify and record location of inaccessible areas (i.e. areas with standing water, structures, areas with extreme terrain, etc.) that could preclude the safe conduct of vegetation clearance and surface removal.
- The vertical extent of the Technology-Aided Surface MEC Removal is the ground surface.

Step 5: Develop the Analytical Approach (Decision Rules)

- If the Technology-Aided Surface MEC Removal operation identifies discrete metallic objects on the surface, then the team will investigate the discrete metallic objects to determine their nature (i.e. MEC, MPPEH, MD, RRD, Other).
- If the Technology-Aided Surface MEC Removal team identifies an object that requires detonation (i.e. MEC, MDEH), a description of the item and its location will be recorded by the Team Leader, and the item will then be managed in accordance with UXO SOP 5 (MEC and MPPEH Management).
- If the Technology-Aided Surface MEC Removal operation identifies MD and/or RRD on the surface (other than MEC and/or MPPEH), then the team will record the total weight (lbs) of the MD and/or RRD that are removed on a grid by grid basis and this data is to be provided to the Field Data Manager on a daily basis.
- If the MD is identified as being related to a munitions with sensitive fuzes, then the types (if able to be ascertained) and total weight (lbs) of items related to munitions with sensitive fuzes will be digitally recorded by the Team Leader on a grid by grid basis and this data is to be provided to the Field Data Manager on a daily basis.
- Inaccessible areas will be documented and evaluated for appropriate risk management measures to support long-term reuse.

Step 6: Specify Performance or Acceptance Criteria

Worksheet #12 provides the Measurement Performance Criteria (MPCs) to be used for acceptance of the data that is to be used in decision making. QC activities, including blind seeding, will ensure that measurement errors are managed effectively.

Step 7: Develop the Plan for Obtaining Data (Optimize the Design)

Areas designated for Technology-Aided Surface MEC Removal will have 100% of their area investigated unless unsafe to do so. Areas in which surface removal cannot be conducted safely will be documented. Data for Technology-Aided Surface MEC Removal operations are to be digitally recorded by the Team Leader and are to be provided to the Field Data Manager on a daily basis. Data is to include the type and location of MEC found during the Technology-Aided Surface MEC Removal operation. This data is to include the weight (lbs) of metallic objects (MD and RRD) that have been removed and information related to the type (if able to be ascertained) and total weight of munitions with sensitive fuzes located on a per-grid basis. Data to be recorded for Technology-Aided Surface MEC Removal operations is described in UXO SOP 2 (Technology Aided Surface MEC Removal). A QC program, including blind seeding, will be implemented to demonstrate compliance with the QAPP and successful completion of the surface removal requirements.

2.2.2 DQO #2: DGM

Step 1: State the Problem

Per the Track 3 ROD, DGM operations are to be completed throughout the entire Impact Area MRA following Technology-Aided Surface MEC Removal operations to provide a record of anomalies to assist future property users in identifying areas where explosives safety support may be required for ground disturbing or intrusive activities.

Step 2: Identify the Goals of the Study

- The goals of the study are to:
  - Perform DGM operations throughout the entire Impact Area MRA where DGM operations have not been previously conducted;
  - Provide a record of subsurface anomalies for BLM;
  - Provide anomaly density information; and
  - Demonstrate with data, documentation, and the QC program, that the operation was adequately completed.

Step 3: Identify Information Inputs

- DGM area classification (Category A or Category B). DGM surveys will be categorized as either Category A or Category B. Category A DGM surveys will be conducted in areas where future subsurface removal actions (based on the DGM data) are planned. Subsurface removal requires the most precise level of DGM data, and Category A DGM therefore has the most stringent MQOs. The objective of Category B DGM surveys is to obtain DGM data of sufficient quality to characterize the site for overall anomaly distribution and density. Category B DGM is not intended to support subsurface MEC removal and therefore requires less stringent MQOs. Differences in the MPCs between these two categories are described in Worksheet #12.
- Data for DGM operations on a DGM dataset and/or on a grid by grid basis.
- Data related to vegetation density and/or terrain that could affect the conduct of the operation.
- QC documentation of DGM operations (to include IVS and BSI information, and QC inspection results).

Step 4: Define the Boundaries of the Study

- The spatial boundaries, as shown in Figure 2-1 above, comprise the RA boundaries. Remedial action has been implemented in several units within the Impact Area MRA.

- Identify and record location of inaccessible areas (i.e. areas with standing water, structures, areas with extreme terrain, etc.) that could preclude the safe conduct of DGM operations.
- The vertical extent of the DGM operation is dependent upon the depth of detection of the EM61MK2 instrument which varies depending on a variety of factors including size, shape, wall thickness, metallic composition, and depth of the metallic object that is under the ground surface.

Step 5: Develop the Analytical Approach (Decision Rules)

- If a unit/area/grid is designated for future intrusive investigation, then the area is classified as a DGM Category A area.
- If the unit/area/grid is designated for no future intrusive investigation, then the area is classified as a DGM Category B area.
- For Category A areas, if an anomaly is found to be above the target threshold of 14.0 milliVolts (mV) [or as specified in the SSWP] {using the sum of all 4 EM61MK2 channels}, then the anomaly is to be classified as a target.*
- For Category B areas, a target threshold of 14.0 milliVolts (mV) [or as specified in the SSWP] {using the sum of all 4 EM61MK2 channels} will be used to generate mV contour maps.*
- If a Category A DGM area contains inaccessible areas that do not allow for the collection of DGM data (e.g. standing water, topography, vegetation, etc.), then an alternative approach will be used (e.g., analog subsurface removal).
- If a Category B DGM area contains inaccessible areas that do not allow for the collection of DGM data (e.g. standing water, topography, vegetation, etc.), then the area will be documented.

*The target threshold is based on the geophysical prove-out that was conducted by Shaw Environmental at MRS-16 (Shaw, 2007. [OE-0601F]).

Step 6: Specify Performance or Acceptance Criteria

Worksheet #12 provides the MPCs to be used for acceptance of the data that is to be used in decision making. QC activities, including blind seeding, will ensure that measurement errors are managed effectively.

Step 7: Develop the Plan for Obtaining Data (Optimize the Design)

Areas that are to have DGM operations will be designated as either Category A or Category B by the PDT, with each Category meeting their individual MQOs that are described in Worksheet #12. DGM operations are to follow procedures described in GEO SOP 3 (DGM using a Person-Portable system) and GEO SOP 4 (DGM using a towed array). Data for DGM operations are to be provided to the Field Data Manager on a daily basis. DGM data is to be processed according to GEO SOP 5 (DGM Data Processing using a Person-Portable System) and GEO SOP 6 (DGM Data Processing using a Towed Array System). Once the data is processed, Category A DGM data is to be used to generate DGM maps and target lists for the intrusive investigation team. Category B data is to be used to characterize the site for overall anomaly distribution and density through the generation of maps that show the mV responses in a color contour format. These DGM contour maps will be developed to assist future property users in land management. A QC program, including blind seeding, will be implemented to demonstrate compliance with the QAPP and successful completion of the DGM requirements.

Upon completion of the technology-aided surface MEC removal, standard DGM survey, and the Munitions with Sensitive Fuzes Field Study, this data will then be analyzed, and data related to munitions with sensitive fuzes and high anomaly density areas will then be assessed. Decisions will then be made regarding areas that are potential candidates for future subsurface MEC removal using excavation and/or sifting.

2.2.3 DQO #3: Subsurface MEC Removal in Selected Areas

Step 1: State the Problem

The Track 3 ROD identifies the types of areas where additional work (e.g. subsurface MEC removal) would be conducted (approximately 10 percent of the Impact Area MRA). These types of areas are:

- Designated fuel breaks and access roads; and
- Other areas to address specific risk and/or land use needs, such as future habitat restoration sites.

These areas are to be identified in the SSWP and/or in the TM that will be developed after the completion of surface MEC removal and DGM in a unit. Complete subsurface removal in selected areas as identified in the SSWP and TM.

Step 2: Identify the Goals of the Study

- To perform subsurface MEC removal in the selected areas; and demonstrate with data, documentation, and the QC program that the operation was adequately completed.

Step 3: Identify Information Inputs

- Data for intrusive investigation operations are collected on a grid by grid basis. Grids are 100-foot by 100-foot in size; however, grids of various sizes are expected due to their location in relation to planned unit boundaries. The grid system is based on the Fort Ord Master Grid System.
- Data related to terrain that could affect the conduct of the operation.
- QC documentation of subsurface MEC removal operations (to include BSI information and QC inspection results).
- For the subsurface MEC removal operations using DGM targets, field data related to MEC, MD and RRD that is recovered is to be recorded on a per anomaly basis and is to be provided to the Field Data Manager on a daily basis. For subsurface MEC removal operations using analog methods, field data related to individual MEC items is recorded. The weight (lbs) of MD and RRD is to be recorded on a per grid basis. This data is then provided to the Field Data Manager on a daily basis.

Step 4: Define the Boundaries of the Study

- The spatial boundaries, as shown in Figure 2-1 above, comprise the RA boundaries. Subsurface MEC removal areas will be identified in the SSWP and the TM. Remedial

action has been implemented in several units within the Impact Area MRA.
- Identify and record location of inaccessible areas (i.e. areas with standing water, structures, areas with extreme terrain, etc.) that could preclude the safe conduct of subsurface MEC removal operations.
- The vertical extent of the subsurface MEC removal is from the surface to depths determined in the site-specific work plans based on the military munitions used, the depth to which these types of munitions would penetrate or be found, the planned reuse of the specific areas within the Interim Action site, and the capabilities of the geophysical detection equipment selected for use.

Step 5: Develop the Analytical Approach (Decision Rules)
- If the DGM-based method is selected (as described in DQO #2 – Step 5 – Bullet #5), and if the DGM operation identifies subsurface DGM anomalies, then the intrusive team will investigate the DGM anomalies to determine their nature. Intrusive data for each DGM anomaly will be recorded by the Team Leader and provided to the Field Data Manager on a daily basis.
- If an analog intrusive investigation is selected (as described in DQO #2 – Step 5 – Bullet #5), and if the analog intrusive investigation team identifies subsurface anomalies, then the analog intrusive team will investigate the anomalies to determine their nature. MEC and/or MPPEH items that are identified as part of the subsurface MEC removal operation that require detonation will have their data recorded on an individual basis by the Team Leader as described in UXO SOP 5 (MEC and MPPEH Management); with the data being provided to the Field Data Manager on a daily basis.
- Inaccessible areas will be documented and evaluated for appropriate risk management measures to support long-term reuse.
- If an alternative method of subsurface removal is selected (e.g., advanced geophysical classification, excavation and sifting), a site-specific work plan will be developed.

Step 6: Specify Performance or Acceptance Criteria
Worksheet #12 provides the MPCs to be used for acceptance of the data that is to be used in decision making. QC activities, including blind seeding, will ensure that measurement errors are managed effectively.

Step 7: Develop the Plan for Obtaining Data (Optimize the Design)
Areas designated for intrusive investigation will be investigated. Data for intrusive investigation operations are to be digitally recorded by the Team Leader and are to be provided to the Field Data Manager on a daily basis. Data to be recorded for intrusive investigation operations are described in UXO SOP 3 (Intrusive Investigation using Analog Methods) and UXO SOP 4 (Intrusive Investigation of DGM Targets). A QC program, including blind seeding, will be implemented to demonstrate compliance with the QAPP and successful completion of the subsurface MEC removal requirements.

2.3 Measurement Performance Criteria (MPC) Table (QAPP Worksheet #12)

The tables below identify the Data Quality Indicators (DQIs), QC sample and/or activity to be inspected, MPCs, and QC sample frequency that will be used to assess measurement performance for every Definable Feature of Work (DFW) related to the project. The list below contains a list of all the DFWs for the RA that is to be completed at the former Fort Ord.

- Field Data Management
- GIS Data Management
- MMRP Data Management (Post Migration)
- Field Documentation
- Environmental Protection
- Grid and Border Survey
- Vegetation Removal
- Instrument verification Strip (IVS) Installation and Use
- BSI Installation
- DGM using a Person-Portable System
- DGM using a Towed Array System
- DGM Data Processing for a Person-Portable System
- DGM Data Processing for a Towed Array System
- DGM Target Reacquisition using a Person-Portable System
- DGM Data Transfer to BRAC
- QC of Geophysical Operations
- Function Check Area (FCA) Installation and Use
- Technology-Aided Surface MEC Removal
- Intrusive Investigation using Analog Methods
- Intrusive Investigation of DGM Targets
- Sifting Operations
- MEC and MPPEH Management
- Demolition of MEC and Material Documented as an Explosive Hazard (MDEH)
- Explosives Management
- Explosives Siting

- Exclusion Zones
- QC of MEC and Explosives Related Operations

DFW: FIELD DATA MANAGEMENT

Procedures for Field Data Management operations are located in Attachment B (DATA SOP 1) of this MEC QAPP.

Data Type	Data Quality Indicator (DQI)	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria (MPC)	Frequency	Consequence of Failure
Field Data	Completeness / Accuracy	QC inspection of field data management	• Daily geophysical / positional data are collected and stored in a data logger (for PP DGM) or laptop (for towed array) and subsequently downloaded to a personal computer at the end of each day. • All geophysical data is backed up daily and a copy transferred for off-site storage and archival • Data related to vegetation removal, BSIs and IVSs, Technology-Aided Surface MEC Removal, target reacquisition, intrusive investigation (analog based, DGM based and sifting), and QC operations is recorded on a digital tablet and is downloaded by the field data manager at the end of each day, with data being backed up on a daily basis. • QA data consisting of QA seeds located by the technology-aided surface MEC removal and/or intrusive investigation teams is recorded. • Data related to MEC and MPPEH management and demolition is recorded on a digital tablet, is downloaded by the field data manager at the end of each day, with data being backed up on a daily basis. • Field data management is being conducted in accordance with approved procedures.	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: GIS DATA MANAGEMENT

Procedures for GIS Data Management operations are located in Attachment B (DATA SOP 2) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
GIS Data	Completeness / Accuracy	QC inspection of GIS data management	• GIS data standards are being followed • GIS data file standards are being followed • Geospatial data types for field data are being followed • GIS data feature classes (and specifics for these feature classes) are being used / generated / updated • GIS data deliverables are being generated and submitted	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: MMRP DATA MANAGEMENT (Post Migration)

Procedures for MMRP Data Management (Post Migration) operations are located in Attachment B (DATA SOP 3) of this MEC QAPP

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
MMRP DB	Completeness / Accuracy	QC inspection of MMRP DB management	• The KEMRON DB is loaded to the Fort Ord Data Integration System (FODIS) File Transfer Protocol (FTP) site and appended to the MMRP DB on a weekly basis. • Other external data is being uploaded to the MMRP DB • The IMEC form is updating the MMRP DB automatically • All data is backed up daily and a copy transferred for off-site storage and archival	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: DGM Data Transfer to BRAC

Procedures for the DGM Data Transfer to BRAC operations are located in Attachment B (DATA SOP 4) of this MEC QAPP

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
DGM Data Transfer	Completeness / Accuracy	QC inspection of DGM Data Transfer	• The following is being generated and is being transferred to BRAC: o GIS Grid file is joined with the MMRP DB via grid ops link and grid block tables o Metadata for DGM data for MMRP DB is being generated o Density Excel file for each area (density by grid by acre) is being generated o DGM mV contour maps are following prescribed settings o USACE folder structure is being adhered to	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: FIELD DOCUMENTATION

Procedures for Field Documentation are located in Attachment B (FIELD SOP 1) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Field Documentation	Completeness / Accuracy	QC inspection of Field Documentation	• Field logbooks, forms and data are being kept in accordance with approved procedures. • Appropriate data is being recorded • Field data forms are being used properly • Corrections are made using proper procedures. • Records (both hard copy and digital) are being backed up. • Chain of Custody is being used in accordance with approved procedures.	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: ENVIRONMENTAL PROTECTION

Procedures for Environmental Protection are located in Attachment B (FIELD SOP 2) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Environmental Protection	Completeness / Accuracy	QC inspection of Field Documentation	• Habitat Checklists are being used in accordance with approved procedures. • Forms are being used appropriately and are being submitted in a timely manner • Employees are being trained • Areas where fire retardants are being used are being mapped • Vegetation clearance is being monitored • MEC removal operations are being monitored • Vehicle access is being monitored • Local endangered species are being monitored • Needs for site restoration are being assessed • Invasive weeds are being monitored • Cultural and archeological resources are being monitored • Documentation is being filled out appropriately	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: GRID AND BORDER SURVEY

Procedures for the Grid and Border Survey are located in Attachment B (FIELD SOP 3) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Grid and Border Survey	Completeness / Accuracy	QC inspection of Field Documentation	• Grids are being installed using the Fort Ord Master Grid System • Hand held metal detectors are being tested regularly • Grid stakes are being installed correctly and are labeled properly • Safety procedures are being followed during stake installation	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: VEGETATION REMOVAL

Procedures for the Vegetation Removal are located in Attachment B (FIELD SOP 4) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Vegetation Removal	Completeness / Accuracy	QC inspection of Field Documentation	• Each vegetation removal team has a UXO escort. • Trees are limbed at their correct height (according to the SSWP) • Areas with light to medium vegetation are cut in one stage to 6 inches above ground surface • Areas with dense vegetation - first cut will be made to a height between 18-24 inches about the ground. After a review by the UXO escort has been conducted a second cut is made to a height of no more than six inches above the ground • Site security is established if fencing is removed • Vegetation is removed in accordance with the SSWP • Documentation is in accordance with approved procedures	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.
Planned Burn Area Preparation	Completeness	QC inspection of Field Operations	• Site security is established if fencing is removed. • Vegetation is removed in accordance with the SSWP • Combustible materials that exist within the burn area have been removed prior to the commencement of the burn • Structures not to be burned are protected prior to the commencement of the burn. • Burn support is being conducted appropriately • Documentation is in accordance with approved procedures	Weekly or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: IVS INSTALLATION AND USE

Procedures for the IVS Installation and Use are located in Attachment B (GEO SOP 1) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
IVS Installation	Precision / Accuracy	Geodetic Equipment Functionality	• RTK-GPS units are verified to have a positional accuracy not to exceed ± 3 inches (7.6 cm) from the established baseline position. • IVS is installed in a "quiet" area • Documentation for IVS items is properly recorded, including position	Once during IVS installation	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel. Repair or replace malfunctioning instrument
Analog Instrument Function Check	Sensitivity	Instrument function check of hand-held metal detectors at FCA	Hand-held metal detectors able to detect all FCA items.	Once daily at start of operations	Repair or replace malfunctioning instrument
		Instrument function check of EM61MK2 using jig	EM61MK2 Static spike must be within 10% of expected baseline milliVolt (mV) response (channel 2).	Twice Daily - AM and mid-day	Repair or replace malfunctioning instrument

Note: MPCs for IVS Use are described in DFW: DGM using a person-portable system, and DFW: DGM using a towed array system shown below.

DFW: BSI INSTALLATION

Procedures for BSI Installation are located in Attachment B (GEO SOP 2) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Analog Instrument Function Check	Sensitivity	Instrument function check of hand-held metal detectors at FCA	• Hand-held metal detectors are verified to be functioning properly at FCA • Safety procedures are being followed • Appropriate data for BSI items is being recorded • BSIs have a unique identifier • Documentation for BSI items is properly recorded, including position • BSI integrity is being maintained	Once daily at start of operations	Repair or replace malfunctioning instrument

DFW: DGM USING A PERSON-PORTABLE (PP) SYSTEM

Procedures for the DGM Using a PP System are located in Attachment B (GEO SOP 3) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Cable Shake Test	Sensitivity	Instrument Response Tests at the IVS	Cable shake test: 98% of response values will not exceed +/- 2 mV when system cables are moved (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and cable shake test has passed
Personnel Test	Sensitivity	Instrument Response Tests at the IVS	Personnel test (PP): 98% of response values (due to proximity of data collection personnel) will not exceed +/- 2 mV (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and personnel test has passed.
Static repeatability (instrument functionality) (b)	Accuracy / Precision	Instrument Response Tests at the IVS	98% of the daily static background response values (no test object) will not exceed +/- 2 mV of expected baseline response (for all EM61MK2 channels). (d) 98% of the response values to the standard spike test item (a small Industry Standard Object [ISO] fixed at an orientation and distance from the sensor to provide an approximately 100 mV response on channel 2 of the EM61MK2) will not exceed +/- 10% of the expected baseline response (for all EM61MK2 channels). (d)	Twice Daily (AM / PM)	If failure occurs during the AM static test, do not proceed with DGM field activities until failure is resolved and AM static test(s) have passed. If failure occurs during PM static test, the day's data fails unless BSI is mapped that day with repeatable anomaly characteristics (see dynamic detection repeatability (Geophysical System Verification [GSV] blind seeding).
Along track sampling	Completeness	DGM Data Set or Grid	98% <= 0.65 ft (20 centimeter [cm])	By grid or dataset (c)	Dataset submittal fails.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Coverage	Completeness	DGM using Global Positioning System (GPS) Positioning: DGM Data Set or Grid	Category A (PP): A lane spacing of 2 ft (0.61m) is to be used for the PP system. 95% (or greater) of the line spacing is to be at the project design line spacing of 2 ft. 100% of the line spacing is to be at 3 ft. No unexplained data gaps. Category B (PP): A lane spacing of 2.5 ft is to be used for the PP system. 95% (or greater) of the line spacing is to be at the project design line spacing of 2.5 ft. 98% (or greater) of the line spacing is to be at 3 ft.	By grid or dataset (c)	Data gaps must be filled in before submittal is accepted.
	Completeness	DGM using fiducial positioning: DGM Data Set or Grid	perform random inspection of fiducial positioning methodology used by DGM team	Visual inspection by QC Geophysicist minimum once per day.	Submittal fails.
Dynamic detection repeatability (IVS)	Accuracy / Precision	Instrument Response Tests at the IVS	• 98% of the dynamic background response values during the daily IVS survey will not exceed +/- 3 mV of expected baseline response (for all EM61MK2 channels). (d) • Instrument response to each IVS item will be within +/- 25% or +/- 2 mV (whichever is greater) of the expected baseline response (for all EM61MK2 channels). The baseline response for each IVS item will be the average of the instrument responses to that item measured during the first week of IVS surveys. (d)	Twice daily (AM / PM)	If failure occurs during the AM IVS test, do not proceed with DGM field activities until failure is resolved and AM dynamic IVS test(s) have passed. If failure occurs during PM IVS test, the day's data fails unless BSI is mapped that day with repeatable anomaly characteristics (see Dynamic Detection Repeatability (GSV blind seeding))
Dynamic detection repeatability (GSV blind seeding)	Sensitivity / Accuracy / Precision / Completeness	DGM Data Set or Grid	All BSIs must be located. Peak response >75% of maximum expected BSI response. (d)	1 per day per team (# per acre to be based on production rate)	Submittal fails if BSI was installed but not located by DGM

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Dynamic positioning repeatability (IVS)	Accuracy / Precision	Instrument Response Test at the IVS	Position offset of IVS targets < 25cm.	Twice daily (AM / PM)	If failure occurs during the AM IVS test, do not proceed with DGM field activities until failure is resolved and AM dynamic IVS test(s) have passed. If failure occurs during PM IVS test, the day's data fails unless BSI is mapped that day with repeatable positional characteristics (see Dynamic Positioning Repeatability (GSV blind seeding))
Dynamic positioning repeatability (GSV blind seeding)	Sensitivity / Accuracy / Precision / Completeness	DGM Data Set or Grid	90% positioning offset is <=25 cm + ½ line/sensor spacing and 100% is <=35cm + ½ line/sensor for digital positioning systems (<=50cm + 1/2 line spacing for fiducially positioned data) • For PP using 2 ft line spacing (Category A) and Real-time Kinematic (RTK)-GPS: 90% <= 22 inches 100% <=26 inches • For PP DGM using 2 ft line spacing (Category A) and fiducial positioning: 100% <=32 inches • For PP DGM using 2.5 ft line spacing (Category B) and RTK-GPS: 90% <= 25 inches 100% <= 29 inches • For PP DGM using 2.5 ft line spacing (Category B) and fiducial positioning: 100% <= 35 inches	1 per team per day (# per acre to be based on production rate - same as dynamic detection repeatability (GSV blind seeding)	Submittal fails.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Velocity	Completeness	DGM Data Set or Grid	95% of all geophysical measurements with the EM61MK2 will be collected at a speed not to exceed 4 miles per hour (1.8 meters per second)	By grid or dataset (c)	Submittal fails
Target selection	Completeness	DGM Data Set or Grid	All dig list targets are selected according to project design as detailed in the SSWP	By grid or dataset (c)	Submittal fails.
Geodetic equipment functionality	Accuracy / Precision	GPS Function check at IVS	GPS position checks will not exceed ± 3 inches (7.6 cm) from the established baseline position.	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and positional check has passed
Geodetic internal consistency	Accuracy / Precision	DGM using fiducial positioning: by Grid	Grid corners are internally consistent within 30 cm on any leg or diagonal (only relates if grid corner stakes are installed without using RTK-GPS)	Per grid	Redo affected work (corner placement and data collection, or data processing).
Geodetic accuracy	Accuracy / Precision	GPS Function Check of Positional monuments used for RTK-GPS base station(s)	Project control points that are used more than once must be repeatable to within 5 cm (e)	For points used more than once, occupation will be repeated (f) for each point used, either monthly (for frequently used points) or before re-use (if used infrequently) (g).	Reset points not located at original locations or resurvey point
Verify Field Work Methods	Accuracy / Precision	QC Geophysicist will monitor field team work methods	Verify work methods are being performed in accordance with the MEC QAPP, SOPs, and SSWP	Daily	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
DGM Data Reprocessing	Sensitivity / Accuracy / Precision / Completeness	10% of DGM Data Set or Grid	DGM data will be reprocessed by the QC Geophysicist in accordance with GEO SOP 8 (Geophysical QC)	As necessary	Stop work (data processing only). Generation of an RCA, CAR and CAP (as necessary). Implement corrective actions

(a) All failures require an RCA

(b) Duration of data collection is 1 minute for background, 1 minute for spike and 1 minute for second background measurement. All static repeatability is to be compared to original readings to ensure instrument is consistent throughout the project.
(c) The terms grid and dataset refer to logical groupings of data or data collection event. Logical groupings of data are contiguous areas mapped by the same instrument and in the same relative timeframe. These can be grids, acres, or some other unit of area. A data collection event is similar to logical groupings of data but refers to data collected over a contiguous timeframe, such as morning, afternoon, battery life, or some other measure of contiguous time.
(d) For static background, the expected baseline mV response is to be based on an average of all the static background readings collected during the first four days (or first week). For static spike the expected baseline peak mV response is to be based on an average of all the static spike readings collected during the first four days (or first week). For the IVS background, the expected baseline mV response is to be based on an average of all the IVS background readings for the first four days (or first week). For the IVS spike, the expected baseline mV response is to be based on an average of all the IVS spike readings for the first four days (or first week). For GSV BSI items the baseline mV response will be determined by recording an additional survey line that is offset ½ of the planned survey line spacing (1 ft) from the center of the seeded IVS line. This offset line will be recorded twice daily (am/pm) during the first four days (or first week) of DGM operation with the PP system(s) and the baseline mV response to be used for BSIs (for PP and towed array systems) will then be calculated by averaging all of the peak readings for each ISO at this 1 ft offset. Note that separate baselines will be generated and used for the PP and towed-array system static and IVS tests.
(e) GPS base station coordinates that are currently being used are provided by USACE/BRAC.
(f) Repeat occupation means demonstrate the control points being used can be recovered and reoccupied and that they have not moved more than the requirement specification. This can be accomplished using the same methodology used to initially tie the local network to a HARN, CORS, OPUS, or other recognized network, or it can be accomplished by other means that achieve this requirement.
(g) An example of frequently used control points would be points used as RTK DGPS base stations. Infrequently used points could be those used during GPS operations where the control point was used during mapping and then again at some later time for reacquisition and QC statistical sampling. Infrequently used points also could include grid corners; they are used for line and fiducial positioning and then reused for reacquisition or QC statistical sampling.

Note: Although it is highly unlikely, should an area originally categorized and seeded for Category B (i.e. seeded for DGM at a rate of approximately 1 BSI for every 4 acres and not planned for intrusive investigation) then be upgraded to Category A after DGM has been completed (i.e. should be seeded at a rate of 1 BSI per dig team per day and planned for intrusive investigation), that if the dig team does not have 1 BSI per dig team per day that this would not constitute a QC failure because the density of BSIs installed would have been based on the original selection of this area as Category B. The rational for stating this scenario is that once the DGM data has been collected, it is impossible to add additional BSIs (i.e. add additional anomalies to the previously collected DGM data). If this scenario does occur, it has been identified in the QAPP and discussed in relation to QC objectives and their pass/fail criteria.

DFW: DGM USING A TOWED ARRAY SYSTEM

Procedures for the DGM Using a Towed Array System are located in Attachment B (GEO SOP 4) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Cable Shake Test	Sensitivity	Instrument Response Tests at the IVS	Cable shake test: 98% of response values will not exceed +/- 2 mV when system cables are moved (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and cable shake test has passed

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Personnel Test	Sensitivity	Instrument Response Tests at the IVS	Personnel test (PP): 98% of response values (due to proximity of data collection personnel) will not exceed +/- 2 mV (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and personnel test has passed.
Tow Vehicle Test	Sensitivity	Instrument Response Tests at the IVS	Tow vehicle test (towed array): 98% of response values (due to elevated tow vehicle RPM) will not exceed +/- 2 mV (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and tow vehicle test has passed.
Static repeatability (instrument functionality) (b)	Accuracy / Precision	Instrument Response Tests at the IVS	98% of the daily static background response values (no test object) will not exceed +/- 2 mV of expected baseline response (for all EM61MK2 channels). (d) 98% of the response values to the standard spike test item (a small ISO fixed at an orientation and distance from the sensor to provide an approximately 100 mV response on channel 2 of the EM61MK2) will not exceed +/- 10% of the expected baseline response (for all EM61MK2 channels). (d)	Twice Daily (AM / PM)	If failure occurs during the AM static test, do not proceed with DGM field activities until failure is resolved and AM static test(s) have passed. If failure occurs during PM static test, the day's data fails unless BSI is mapped that day with repeatable anomaly characteristics (see dynamic detection repeatability (GSV blind seeding)).
Along track sampling	Completeness	DGM Data Set or Grid	98% <= 0.65 ft (20 cm)	By grid or dataset (c)	Dataset submittal fails.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Coverage	Completeness	DGM using GPS Positioning: DGM Data Set or Grid	Category A (towed array): A lane spacing of 2 ft is to be used for the towed array. 95% (or greater) of the lane spacing is to be at the project design lane spacing of 2 ft. 100% of the lane spacing is to be at 3 ft. No unexplained data gaps. Category B (towed array): A lane spacing of 2 ft is to be used for the towed array. 95% (or greater) of the lane spacing is to be at the project design lane spacing of 2 ft. 98% (or greater) of the lane spacing is to be at 3 ft.	By grid or dataset (c)	Data gaps must be filled in before submittal is accepted.
Dynamic detection repeatability (IVS)	Accuracy / Precision	Instrument Response Tests at the IVS	• 98% of the dynamic background response values during the daily IVS survey will not exceed +/- 3 mV of expected baseline response (for all EM61MK2 channels). (d) • Instrument response to each IVS item will be within +/- 25% or +/- 2 mV (whichever is greater) of the expected baseline response (for all EM61MK2 channels). The baseline response for each IVS item will be the average of the instrument responses to that item measured during the first week of IVS surveys. (d)	Twice daily (AM / PM)	If failure occurs during the AM IVS test, do not proceed with DGM field activities until failure is resolved and AM dynamic IVS test(s) have passed. If failure occurs during PM IVS test, the day's data fails unless BSI is mapped that day with repeatable anomaly characteristics (see Dynamic Detection Repeatability (GSV blind seeding))
Dynamic detection repeatability (GSV blind seeding)	Sensitivity / Accuracy / Precision / Completeness	DGM Data Set or Grid	All BSIs must be located. Peak response >75% of maximum expected BSI response. (d)	1 per day per team (# per acre to be based on production rate)	Submittal fails.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Dynamic positioning repeatability (IVS)	Accuracy / Precision	Instrument Response Test at the IVS	Position offset of IVS targets < 25cm.	Twice daily (AM / PM)	If failure occurs during the AM IVS test, do not proceed with DGM field activities until failure is resolved and AM dynamic IVS test(s) have passed. If failure occurs during PM IVS test, the day's data fails unless BSI is mapped that day with repeatable positional characteristics (see Dynamic Positioning Repeatability (GSV blind seeding))
Dynamic positioning repeatability (GSV blind seeding)	Sensitivity / Accuracy / Precision / Completeness	DGM Data Set or Grid	90% positioning offset is <=25 cm + ½ line/sensor spacing and 100% is <=35cm + ½ line/sensor for digital positioning systems • For Towed Array DGM using 2 ft line spacing (Category A and Category B) and RTK-GPS: 90% <= 22 inches 100% <=26 inches	1 per team per day (# per acre to be based on production rate - same as dynamic detection repeatability (GSV blind seeding))	Submittal fails.
Velocity	Completeness	DGM Data Set or Grid	95% of all geophysical measurements with the EM61MK2 will be collected at a speed not to exceed 4 miles per hour (1.8 meters per second)	By grid or dataset (c)	Submittal fails
Target selection	Completeness	DGM Data Set or Grid	All dig list targets are selected according to project design as detailed in the SSWP	By grid or dataset (c)	Submittal fails.
Geodetic equipment functionality	Accuracy / Precision	GPS Function check at IVS	GPS position checks will not exceed ± 3 inches (7.6 cm) from the established baseline position.	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and positional check has passed

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure (a)
Geodetic accuracy	Accuracy / Precision	GPS Function Check of Positional monuments used for RTK-GPS base station(s)	Project control points that are used more than once must be repeatable to within 5 cm (e)	For points used more than once, occupation will be repeated (f) for each point used, either monthly (for frequently used points) or before re-use (if used infrequently) (g).	Reset points not located at original locations or resurvey point
Verify Field Work Methods	Accuracy / Precision	QC Geophysicist will monitor field team work methods	Verify work methods are being performed in accordance with the MEC QAPP, SOPs, and SSWP	Daily	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
DGM Data Reprocessing	Sensitivity / Accuracy / Precision / Completeness	10% of DGM Data Set or Grid	DGM data will be reprocessed by the QC Geophysicist in accordance with GEO SOP 8 (Geophysical QC)	Daily	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

(a) All failures require an RCA
(b) Duration of data collection is 1 minute for background, 1 minute for spike and 1 minute for second background measurement. All static repeatability is to be compared to original readings to ensure instrument is consistent throughout the project.
(c) The terms grid and dataset refer to logical groupings of data or data collection event. Logical groupings of data are contiguous areas mapped by the same instrument and in the same relative timeframe. These can be grids, acres, or some other unit of area. A data collection event is similar to logical groupings of data but refers to data collected over a contiguous timeframe, such as morning, afternoon, battery life, or some other measure of contiguous time.
(d) For static background, the expected baseline mV response is to be based on an average of all the static background readings collected during the first four days (or first week). For static spike the expected baseline peak mV response is to be based on an average of all the static spike readings collected during the first four days (or first week). For the IVS background, the expected baseline mV response is to be based on an average of all the IVS background readings for the first four days (or first week). For the IVS spike, the expected baseline mV response is to be based on an average of all the IVS spike readings for the first four days (or first week). For GSV BSI items the baseline mV response will be determined by recording an additional survey line that is offset ½ of the planned survey line spacing (1 ft) from the center of the seeded IVS line. This offset line will be recorded twice daily (am/pm) during the first four days (or first week) of DGM operation with the PP system(s) and the baseline mV response to be used for BSIs (for PP and towed array systems) will then be calculated by averaging all of the peak readings for each ISO at this 1 ft offset. Note that separate baselines will be generated and used for the PP and towed-array system static and IVS tests.
(e) GPS base station coordinates that are currently being used are provided by USACE/BRAC.
(f) Repeat occupation means demonstrate the control points being used can be recovered and reoccupied and that they have not moved more than the requirement specification. This can be accomplished using the same methodology used to initially tie the local network to a HARN, CORS, OPUS, or other recognized network, or it can be accomplished by other means that achieve this requirement.
(g) An example of frequently used control points would be points used as RTK DGPS base stations. Infrequently used points could be those used during GPS operations where the control point was used during mapping and then again at some later time for reacquisition and QC statistical sampling. Infrequently used points also could include grid corners; they are used for line and fiducial positioning and then reused for reacquisition or QC statistical sampling.

Note: Although it is highly unlikely, should an area originally categorized and seeded for Category B (i.e. seeded for DGM at a rate of approximately 1 BSI for every 4 acres and not planned for intrusive investigation) then be upgraded to Category A after DGM has been completed (i.e. should be seeded at a rate of 1 BSI per dig team per day and planned for intrusive investigation), that if the dig team does not have 1 BSI per dig team per day that this would not constitute a QC failure because the density of BSIs installed would have been based on the original selection of this area as Category B. The rational for stating this scenario is that once the DGM data has been collected, it is impossible to add additional BSIs (i.e. add additional anomalies to the previously collected DGM data). If this scenario does occur, it has been identified in the QAPP and discussed in relation to QC objectives and their pass/fail criteria.

DFW: DGM DATA PROCESSING FOR A PERSON-PORTABLE (PP) SYSTEM

Procedures for DGM Data Processing for a PP System are located in Attachment B (GEO SOP 5) of this MEC QAPP.
MPCs associated with the entire PP DGM operation (which by definition including data processing) are described above (DFW: DGM (EM61MK2) Using a PP System).

DFW: DGM DATA PROCESSING FOR A TOWED ARRAY SYSTEM

Procedures for DGM Data Processing for a Towed Array System are located in Attachment B (GEO SOP 6) of this MEC QAPP.
MPCs associated with the entire towed array DGM operation (which by definition including data processing) are described above (DFW: DGM (EM61MK2) Using a Towed Array System).

DFW: DGM TARGET REACQUISITION USING A PERSON-PORTABLE (PP) SYSTEM

Procedures for Target Reacquisition using a PP System are located in Attachment B (GEO SOP 7) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Positioning	Precision, Accuracy, Repeatability	GPS positional check	GPS position checks will not exceed ± 3 inches (7.6 cm) from the established baseline position.	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and GPS positional check has passed

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Geophysical	Accuracy	Personnel Test	• Personnel test (PP): 98% of response values (due to proximity of data collection personnel) will not exceed +/- 2 mV (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and personnel test has passed.
Geophysical	Precision, Accuracy, Repeatability	Cable shake test	• Cable shake test: 98% of response values will not exceed +/- 2 mV when system cables are moved (for all EM61MK2 channels).	Once Daily (AM)	Do not proceed with DGM field activities until failure is resolved and cable shake test has passed
Geophysical	Precision, Accuracy, Repeatability	Static Background and Spike Readings	• 98% of the daily static background response values (no test object) will not exceed +/- 2 mV of expected baseline response (for all EM61MK2 channels). • 98% of the response values to the standard spike test item (a small ISO fixed at an orientation and distance from the sensor to provide an approximately 100 mV response on channel 2 of the EM61MK2) will not exceed +/- 10% of the expected baseline response (for all EM61MK2 channels).	Twice Daily AM/PM	If failure occurs in the morning, do not proceed with DGM field activities until failure is resolved and static checks have passed. If failure occurs at the end of the collection day, day's data fails unless seed item is mapped that day with repeatable anomaly characteristics (see Dynamic Detection Repeatability (GSV blind seeding))

DFW: QC OF GEOPHYSICAL OPERATIONS

Procedures for the QC of Geophysical Operations are located in Attachment B (GEO SOP 8) of this MEC QAPP.
The QC Geophysicist is to verify that all MPCs associated with the entire DGM operation are being achieved. As such there are no MPCs for the QC of Geophysical Operations because they are intrinsic to this QC operation.

DFW: FCA INSTALLATION AND USE

Procedures for FCA Installation and Use are located in Attachment B (UXO SOP 1) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Analog Instrument Function Check	Sensitivity	Instrument function check of hand-held metal detectors at FCA	Hand-held metal detectors able to detect all FCA items.	Once daily at start of operations	Repair or replace malfunctioning instrument

Note: FCA use is described in DFW: Technology-Aided Surface MEC Removal, and DFW: Intrusive Investigation using Analog Methods, and DFW: Intrusive Investigation of DGM Targets shown below.

DFW: TECHNOLOGY-AIDED SURFACE MEC REMOVAL

Procedures for the Technology-Aided Surface MEC Removal operations are located in Attachment B (UXO SOP 2) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Instrument Function Check	Sensitivity	Instrument function check at the FCA	Hand-held metal detectors able to detect all FCA items.	Once daily at start of operations	Repair or replace malfunctioning instrument
Verify Field Work Methods	Accuracy / Precision	UXOQCS to monitor field team work methods	Verify work methods are being performed in accordance with the MEC QAPP, SOPs, and SSWP.	Daily	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
Grid QC inspection	Completeness	UXOQCS to inspect a minimum of 10% of each grid completed	Location of any MEC or Munitions Debris (MD) item that could be mistaken for MEC will constitute a QC grid failure. Location of any metallic object the size of an LE, MK1, 37mm projectile (without fuze) [1.47" x 1.47" x 3.5"] or larger will constitute a QC failure. Location of single expended small arms cartridge casing(s) on the surface will not constitute a QC failure.	Per QC Lot (a)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

Verification of BSI recovery	Completeness	UXOQCS places QC seeds within surface removal area	QC seeds identified during surface removal operations.	One per team per day (minimum of 1 every 4 acres)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

(a) QC Lot size and criteria for designation will be detailed in the SSWP generated for each area/unit.

DFW: INTRUSIVE INVESTIGATION USING ANALOG METHODS

Procedures for the Intrusive Investigation Using Analog Methods are located in Attachment B (UXO SOP 3) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Analog Instrument Function Check	Sensitivity	Instrument function check of hand-held metal detectors at FCA	Hand-held metal detectors able to detect all FCA items.	Once daily at start of operations	Repair or replace malfunctioning instrument
		Instrument function check of EM61MK2 (if used) using jig	EM61MK2 Static spike must be within 10% of expected baseline mV response (channel 2). (EM61MK2 data is not recorded in the allegro. Team Leader records mV spike reading in digital tablet)	Twice Daily - AM and mid-day	Repair or replace malfunctioning instrument
Verify Field Work Methods	Accuracy / Precision	UXOQCS to monitor field team work methods	Verify work methods are being performed in accordance with the MEC QAPP, SOPs, and the SSWP	Daily	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
Grid QC Inspection	Completeness	UXOQCS to inspect a minimum of 10% of each grid completed (a)	Verify grid has been cleared in accordance with criteria established in the MEC QAPP and SSWP.	Per QC Lot (b)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Grid QC Inspection	Completeness	UXOQCS to inspect 10% of each grid completed (a)	Location of any metallic object the size of an LE, MK1, 37mm projectile (without fuze) [1.47” x 1.47” x 3.5"] or larger will constitute a QC failure. Note: if the EM61 is used in analog mode to verify that anomaly locations are clear, depending on the subsurface clearance depth (typically 4 ft.), and the mV reading is above target threshold, and the clearance depth has been reached, then the anomaly location will be deemed “clear” by the intrusive team. For this scenario, if the mV reading is still above target threshold (as detailed in the SSWP) during QC inspection, this would not constitute a QC failure.	Per QC Lot (b)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
Verification of BSI recovery	Completeness	UXOQCS places QC seeds within analog intrusive investigation removal area	QC seeds identified during subsurface removal operations.	One per team per day (minimum of 1 every acre)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

(a) Analog intrusive investigations do not require the use of pin flags. UXOQCS may use an EM61MK2, Schonstedt GA-52Cx or White DFX 300 to check holes.
(b) QC Lot size and criteria for designation will be detailed in the SSWP generated for each area.

DFW: INTRUSIVE INVESTIGATION OF DGM TARGETS

Procedures for the Intrusive Investigation of DGM Targets are located in Attachment B (UXO SOP 4) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Analog Instrument Function Check	Sensitivity, Accuracy, Repeatability	Instrument function check of hand-held metal detectors at FCA	Hand-held metal detectors able to detect all FCA items.	Once daily at start of operations	Repair or replace malfunctioning instrument

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
		Instrument function check of EM61MK2 using jig	EM61MK2 Static spike must be within 10% of expected baseline mV response (channel 2). (EM61MK2 data is not recorded in the Allegro. Team Leader records mV spike readings in digital tablet.)	Twice Daily AM and mid-day	If failure occurs in the morning, do not proceed with intrusive field activities until failure is resolved and static checks have passed. If failure occurs at mid- day notify QC Geophysicist and UXOQCS for corrective action
Anomaly resolution (a)	Completeness	UXOQCS to inspect a minimum of 10% of the DGM Targets that are intrusively investigated within each grid (b)	Location of any metallic object the size of an LE, MK1, 37mm projectile (without fuze) [1.47” x 1.47” x 3.5"] or larger will constitute a QC failure. Note: when the EM61 is used in analog mode to verify that anomaly locations are clear, depending on the subsurface clearance depth (typically 4 ft.), and the mV reading is above target threshold, and the clearance depth has been reached, then the anomaly location will be deemed “clear” by the intrusive team. For this scenario, if the mV reading is still above target threshold (as detailed in the SSWP) during QC inspection, this would not constitute a QC failure.	Per QC Lot (c)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
Anomaly resolution (a)	Completeness	QC Geophysicist to inspect a minimum of 10% of the DGM Targets that are intrusively investigated within each grid using an EM61MK2	Verify grid has been cleared in accordance with criteria established in the MEC QAPP and SSWP. Anomaly location is below 14.5 mV (sum 4 EM61MK2 channels)	Per QC Lot (c)	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions
Verify BSI Recovery	Completeness	QC Geophysicist places BSIs within areas to have DGM	QC seeds identified during intrusive investigation operations.	one per team per day	Stop work. Generate an RCA, CAR and CAP (as necessary). Implement corrective actions

(a) Resolved is defined as 1) there is no geophysical signal remaining at the flagged/selected location; 2) a signal remains but it is too low or too small to be associated with TOI; 3) a signal remains but is associated with surface material which when moved (if possible) results in low, or no, signal at the interpreted location; or 4) a signal remains and a complete rationale for its presence exists.
(b) Flags associated with DGM targets will be left at excavated locations until QC is complete. Holes that knowingly have metal left in them will be indicated as such by the intrusive team on the dig sheet. UXOQCS may use an EM61MK2, Schonstedt GA-52Cx or White DFX 300 to check holes.
(c) QC Lot size and criteria for designation will be detailed in the SSWP generated for each area.

DFW: SIFTING OPERATIONS

Procedures for Sifting Operations are to be generated based on site specific information and requirements.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Analog Instrument Function Check	Sensitivity	Instrument function check of hand-held metal detectors at FCA	• Hand-held metal detectors able to detect all FCA items. • Safety procedures are being adhered to • Documentation is filled out appropriately	Once daily at start of operations	Repair or replace malfunctioning instrument

DFW: MEC AND MPPEH MANAGEMENT

Procedures for the MEC and MPPEH Management are located in Attachment B (UXO SOP 5) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
MEC Management	Accuracy Completeness	Random Inspection	• Safety procedures are being adhered to • Regulatory guidance is being followed • MEC items are properly identified • MEC is transported using appropriate procedures and precautions	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

MPPEH Management	Accuracy	Random Inspection	• Materials are correctly segregated and identified as MEC, MDEH, or Material Documented as Safe (MDAS). • MDAS is properly certified • MDAS is secured in lockable containers with serialized locks • Chain-of-custody procedures are being followed • Procedures for item(s) with unknown fillers are being followed • New MEC model information is being uploaded to the MMRP DB	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel. Should any comingling of MEC/MDEH/MDAS occur, all affected material will undergo another 100% inspection and 100% re-inspection to properly classify and re-document the explosive status of the material
Documentation	Accuracy Completeness	UXOQCS verification of documentation	All required documentation has been completed	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: DEMOLITION OF MEC AND MDEH

Procedures for the Demolition of MEC and MDEH are located in Attachment B (UXO SOP 6) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Demolition of MEC and MDEH	Accuracy	Demolition Supervisor verification of proper positioning of explosives for disposal	Donor explosives are placed correctly for the type of munition(s) being destroyed. Demolition team must perform MEC demolition in accordance with DDESB-approved ESS and USACE disposal manuals	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.
Demolition of MEC and MDEH	Completeness	SUXOS verification of complete destruction	All explosive materials (MEC, MDEH and donor explosives) placed in a demolition shot are consumed by the explosion and there are no kickouts.	Per event or as necessary	If MPC is not met, perform an additional demolition of remaining materials.

Documentation	Accuracy Completeness	UXOQCS verification of documentation	All required documentation has been completed	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: EXPLOSIVES MANAGEMENT

Procedures for the Explosives Management are located in Attachment B (UXO SOP 7) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Documentation	Accuracy Completeness	UXOQCS verification of documentation	All required documentation has been completed	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: EXPLOSIVES SITING

Procedures for the Explosives Siting are located in Attachment B (UXO SOP 8) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Documentation	Accuracy Completeness	UXOQCS verification of documentation	All required documentation has been completed	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: EXCLUSION ZONES

Procedures for establishing Exclusion Zones are located in Attachment B (UXO SOP 9) of this MEC QAPP.

Data Type	DQI	QC Sample and/or Activity to Assess Measurement Performance	MPC	Frequency	Consequence of Failure
Documentation	Accuracy Completeness	UXOQCS verification of documentation	All required documentation has been completed	Per event or as necessary	Stop activity until full compliance is assured. Brief and retrain personnel, or replace personnel.

DFW: QC OF MEC AND EXPLOSIVES RELATED OPERATIONS

Procedures for the QC of MEC and Explosives Related Operations are located in Attachment B (UXO SOP 10) of this MEC QAPP. The UXOQCS is to verify that all MPCs associated with the MEC and explosives related operations are being achieved. As such there are no MPCs for the QC of MEC and explosives related operations because they are intrinsic to this QC operation.

2.4 Secondary Data Uses and Limitations Table (QAPP Worksheet #13)

Secondary Data	Data Source (originating organization, report title and date)	Data Generator(s) (data types, data generation / collection dates)	How Data Will Be Used	Limitations on Data Use
MMRP DB	BRAC / USACE	Data type: spatial Data generation: field operations Collection dates: ~15 years	Data will be used in conjunction with all spatial and project related information that is generated.	No
GIS	BRAC / USACE	Data type: spatial (topographical, vegetation, and historical ranges) Data generation: field operations Collection dates: ~15 years	Data will be used in conjunction with all spatial and project related information that is generated.	No
LIDAR	Sigma Space Corporation	LIDAR Data	Data will be used in conjunction with all spatial and project related information that is generated	No

2.5 Project Tasks and Schedule (QAPP Worksheets #14 and #16)

Project Tasks

DFW	Summary of Tasks
Field Data Management	• Attend a daily safety briefing and sign attendance roster • Perform field data and records management in accordance with DATA SOP 1 (Field Data Management)
GIS Data Management	• Perform GIS data and record management in accordance with DATA SOP 2 (GIS Data Management)
MMRP Data Management (post migration)	• Perform MMRP data and record management in accordance with DATA SOP 3 (MMRP Data Management – post migration)
DGM Data Transfer to BRAC	• Perform transfer of DGM data to BRAC in accordance with DATA SOP 4 (DGM Data Transfer to BRAC)
Field Documentation	• Generate field documentation in accordance with FIELD SOP 1 (Field Documentation)
Environmental Protection	• Attend a daily safety briefing and sign attendance roster • Don the appropriate PPE for the task assigned • Conduct environmental protection operations in accordance with FIELD SOP 2 (Environmental Protection) • Determine if a habitat checklist is required.
Grid and Border Survey	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the grid and border survey in accordance with FIELD SOP 3 (Grid and Border Survey)
Vegetation Removal	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Establish environmental controls for refueling and fuel spill prevention and cleanup • Don the approved PPE for the task assigned • Conduct vegetation removal in accordance with FIELD SOP 4 (Vegetation Removal)

DFW	Summary of Tasks
IVS Installation and Use	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the IVS Installation (and use of the IVS) in accordance with GEO SOP 1 (IVS Installation and Use)
BSI Installation	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the BSI Installation in accordance with GEO SOP 2 (Blind Seed Item Installation)
DGM using a PP System	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the DGM using a PP system operation in accordance with GEO SOP 3 (DGM Using a PP System)
DGM using a Towed Array System	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the DGM using a towed array system operation in accordance with GEO SOP 4 (DGM Using a Towed Array System)
DGM Data Processing for a PP System	• Conduct the DGM data processing for a PP system in accordance with GEO SOP 5 (DGM Data Processing for a PP System)
DGM Data Processing for a Towed Array System	• Conduct the DGM data processing for a towed array system in accordance with GEO SOP 6 (DGM Data Processing for a Towed Array System)
DGM Target Reacquisition using a PP System	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the DGM target reacquisition using a PP system in accordance with GEO SOP 7 (DGM Target Reacquisition using a PP system)

DFW	Summary of Tasks
QC of Geophysical Operations	• Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct the QC of Geophysical Operations in accordance with GEO SOP 8 (Geophysical QC)
FCA Installation and Use	• Completion of a habitat checklist (if not already prepared. Not required for FCA currently located adjacent to field office) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct FCA installation and use in accordance with UXO SOP 1 (FCA Installation and Use)
Technology-Aided Surface MEC Removal	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct Technology-Aided Surface MEC Removal operations in accordance with UXO SOP 2 (Technology-Aided Surface MEC Removal)
Intrusive Investigation Using Analog Methods	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct intrusive investigation using analog methods in accordance with UXO SOP 3 (Intrusive Investigation Using Analog Methodologies)
Intrusive Investigation of DGM Targets	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct intrusive investigation of DGM targets in accordance with UXO SOP 4 (Intrusive Investigation of DGM Targets)
Sifting Operations	• Note that the SOP and QC checklist for sifting operations will be generated only when this DFW is to be used because generation of the sifting operation SOP will depend on a variety of site and operational specific details.

DFW	Summary of Tasks
MEC and MPPEH Management	• Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct MEC and MPPEH management in accordance with UXO SOP 5 (MEC and MPPEH Management)
Demolition of MEC and MDEH	• Completion of a habitat checklist (if not already prepared) • Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct demolition of MEC and MDEH in accordance with UXO SOP 6 (Demolition of MEC an MDEH)
Explosives Management	• Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct explosives management in accordance with UXO SOP 7 (Explosives Management)
Explosives Siting	• Conduct explosives siting in accordance with UXO SOP 8 (Explosives Siting)
Exclusion Zones	• Generate and employ exclusion zones in accordance with UXO SOP 9 (Exclusion Zones)
QC of MEC and Explosives Related Operations	• Attend a daily safety briefing and sign attendance roster • Don the approved PPE for the task assigned • Conduct QC of MEC and explosives related operations in accordance with UXO SOP 10 (QC of MEC and Explosives Related Operations)

The project schedule is not included as part of this MEC QAPP because the schedule of events will change frequently over time due to numerous variables.

2.6 Project Action Limits and Laboratory-Specific Detection/Quantitation Limits (QAPP Worksheet #15)

Worksheet #15 is not applicable to surface or subsurface MEC remediation or DGM activities.

3.0 SAMPLE DESIGN

3.1 MEC Investigation Design and Rationale (QAPP Worksheet #17)

This MEC RA is being conducted in accordance with the *Final Track 3 Record of Decision (ROD), Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California* (U.S. Department of the Army [Army], 2008a) and *Final Work Plan, Remedial Design/Remedial Action (RD/RA), Track 3 Impact Area Munitions Response Area, Former Fort Or*d (U.S. Army Corps of Engineers [USACE], 2009). The Track 3 ROD was signed in May 2008 after the completion of a public comment period for the Track 3 Proposed Plan dated June 25, 2007. The selected remedy for the Impact Area MRA is *Technology-Aided Surface MEC Remediation, With Subsurface MEC Remediation in Selected Areas and LUCs*. The remedy was selected because it will achieve both substantial risk reduction through MEC remediation and risk management through implementation of LUCs. The selected remedy best balances the risk reduction and associated environmental impacts in supporting the anticipated future use of the site as a habitat reserve.

Per the Track 3 ROD, subsurface MEC remediation (intrusive investigation of all anomalies) is to be conducted on fuel breaks and roads essential to habitat management activities, and in select areas that require subsurface MEC removal for specific purposes to support the reuse (estimated to be approximately 10 percent of the Impact Area MRA). Additionally, per the Track 3 ROD, areas where there are high density anomalies associated with impact areas where military munitions with sensitive fuzes were fired would also be candidates for subsurface MEC removal utilizing excavation and sifting because the standard approach of detection and investigation of intrusive anomalies might not be conducted efficiently. Large scale excavation requires careful evaluation before such a decision is made.

Applicable MEC standard procedures, protocols, and methodologies that are to be followed during execution of MEC activities at the former Fort Ord are presented in this MEC QAPP and subsequent SOPs (MEC QAPP - Attachment B). Activities specific to an individual or group of Units within the Impact Area MRA are to be specified in the SSWP for that Unit(s).

3.2 Sampling Locations and Methods (QAPP Worksheet #18)

Worksheet #18 is not applicable to surface or subsurface MEC remediation or DGM activities because no samples are being collected/taken.

4.0 SAMPLING REQUIREMENTS

4.1 Sample Containers, Preservation, and Holding Times (QAPP Worksheets #19 & 30)

Worksheet #19 and #30 are not applicable to surface or subsurface MEC remediation or DGM activities because no samples are being collected/taken.

4.2 Field Quality Control Summary (QAPP Worksheet #20)

Technology-Aided Surface MEC Removal, DGM, Intrusive Investigation (Analog and DGM Target Related)

Matrix	Procedure	Sample Population Applicable to QC Inspection	Minimum Number of BSIs	Size of QC Sample
Surface Removal	Technology-Aided Surface MEC Removal	QC Inspections (Preparatory Phase [PP], Initial Phase [IP], Follow-up Phase [FP]))	N/A	Variable (duration dependent)
Surface Removal	Technology-Aided Surface MEC Removal	TBD based on production rate	1 per team per day	To be determined (TBD) based on production rate
Surface Removal	Technology-Aided Surface MEC Removal	Minimum of 10% of each grid surface swept to be inspected by UXOQCS	N/A	1 grid
DGM Data Collection	All DGM related field operations	QC Inspections (PP, IP, FP)	N/A	Variable (duration dependent)
DGM Data Collection	PP DGM Survey using RTK-GPS	1 acre	1 per team per day (a)	1 acre
DGM Data Collection	PP DGM Survey using Fiducials	1 acre	2 per team per day (b)	1 acre
DGM Data Collection	Towed Array DGM Survey	4 acres	1 per team per day (c)	4 acres
DGM Data Collection and Data Processing	DGM Data Collection and Data Processing	Minimum of 10% of DGM data (including targeting) to be inspected and reprocessed by QC Geophysicist	N/A	10% of DGM data
Sub-Surface Removal	Analog and DGM Target Related	QC Inspections (PP, IP, FP)	N/A	Variable (duration dependent)
Sub-Surface Removal	Intrusive Investigation Using Analog Methodologies	TBD based on production rate	1 per team per day	TBD based on production rate
Sub-Surface Removal	Intrusive Investigation Using Analog Methodologies	Minimum of 10% of each grid intrusively investigated using analog methodologies to be inspected by UXOQCS	N/A	1 grid

Matrix	Procedure	Sample Population Applicable to QC Inspection	Minimum Number of BSIs	Size of QC Sample
Sub-Surface Removal	Intrusive Investigation of Selected DGM Anomalies	TBD based on production rate	1 per team per day	TBD based on production rate
Sub-Surface Removal	Intrusive Investigation of Selected DGM Anomalies	Minimum of 10% of all DGM anomalies intrusively investigated in each grid to be inspected by UXOQCS	N/A	1 grid
Sub-Surface Removal	Intrusive Investigation of Selected DGM Anomalies	Minimum of 10% of all DGM anomalies intrusively investigated in each grid to be inspected by the QC Geophysicist using an EM61MK2	N/A	1 grid

(a) 1 per team per day (estimate 1 BSI every acre however is TBD based on production).
(b) 2 per team per day (estimate 2 BSIs every acre however is TBD based on production).
(c) 1 per team per day (estimate 1 BSI every 4 acres however is TBD based on production).

4.3 Field SOPs/Methods (QAPP Worksheet #21)

This worksheet documents specific field procedures and methods that will be implemented for work conducted at the Impact Area MRA. Applicable field SOPs will be readily available to all field personnel responsible for their implementation. The SOPs listed below are included in Attachment B of this MEC QAPP.

SOP Reference Number	Title, Revision Date and/or Number	Revision Date and/or Number	Originating Organization	Equipment Type	Is SOP specific to this project? (Yes/No)
DATA SOP 1	Field Data Management	August 2016	NAEVA	Digital Tablet	Yes
DATA SOP 2	GIS Data Management	August 2016	KEMRON	N/A	Yes
DATA SOP 3	MMRP Data Management (post migration)	December 2016	Vigilant Technologies	N/A	Yes
DATA SOP 4	DGM Data Transfer to BRAC	August 2016	NAEVA	N/A	Yes
FIELD SOP 1	Field Documentation	August 2016	KEMRON	Digital Tablet, GPS (if used)	No
FIELD SOP 2	Environmental Protection	August 2016	KEMRON	Digital Tablet, GPS (if used)	Yes
FIELD SOP 3	Grid and Border Survey	August 2016	KEMRON	Digital Tablet, RTK-GPS	No
FIELD SOP 4	Vegetation Removal	December 2016	KEMRON	Vegetation removal equipment	Yes
GEO SOP 1	IVS Installation and Use	August 2016	KEMRON	Digital Tablet, RTK-GPS	Yes
GEO SOP 2	Blind Seed Item Installation	August 2016	KEMRON	Digital Tablet, RTK-GPS	Yes
GEO SOP 3	DGM Using a PP System	December 2016	NAEVA	Digital Tablet, RTK-GPS, EM61MK2	Yes
GEO SOP 4	DGM Using a Towed Array System	December 2016	NAEVA	Digital Tablet, RTK-GPS, EM61MK2	Yes
GEO SOP 5	DGM Data Processing for a Person-Portable System	August 2016	NAEVA	Geosoft Software	Yes
GEO SOP 6	DGM Data Processing for a Towed Array System	August 2016	NAEVA	Geosoft Software	Yes
GEO SOP 7	DGM Target Reacquisition using a Person-Portable System	December 2016	NAEVA	Digital Tablet, RTK-GPS, EM61MK2	Yes

SOP Reference Number	Title, Revision Date and/or Number	Revision Date and/or Number	Originating Organization	Equipment Type	Is SOP specific to this project? (Yes/No)
GEO SOP 8	Geophysical QC	August 2016	KEMRON	Digital Tablet, RTK-GPS (if used), EM61MK2	Yes
UXO SOP 1	FCA Installation and Use	August 2016	KEMRON	Digital Tablet, GPS	Yes
UXO SOP 2	Technology-Aided Surface MEC Removal	August 2016	KEMRON	Digital Tablet, GPS, hand-held metal detector	Yes
UXO SOP 3	Intrusive Investigation Using Analog Methods	August 2016	KEMRON	Digital Tablet, GPS (RTK-GPS may be used), hand-held metal detector, EM61MK2	Yes
UXO SOP 4	Intrusive Investigation of DGM Targets	December 2016	KEMRON	Digital Tablet, GPS (RTK-GPS may be used), hand-held metal detector, EM61MK2	Yes
UXO SOP 5	MEC and MPPEH Management	August 2016	KEMRON	Digital Tablet (if used), GPS (if used) [may be RTK-GPS]	Yes
UXO SOP 6	Demolition of MEC and MDEH	August 2016	KEMRON	Digital Tablet (if used)	Yes
UXO SOP 7	Explosives Management	August 2016	KEMRON	Digital Tablet (if used)	Yes
UXO SOP 8	Explosives Siting	December 2016	KEMRON	N/A	Yes
UXO SOP 9	Exclusion Zones	December 2016	KEMRON	N/A	Yes
UXO SOP 10	QC of MEC and Explosives Related Operations	August 2016	KEMRON	Digital Tablet, GPS [RTK-GPS may be used], hand-held metal detector, EM61MK2 (if used)	Yes

4.4 Field Equipment Calibration, Maintenance, Testing, and Inspection Table (QAPP Worksheet #22)

Field Equipment	Calibration Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	Document / SOP Reference[1]	Comments
Hand-held metal detectors	Standardization	Daily	Per manufacturer's specifications	Fix or replace	Field Team Leader	UXO SOP 1 UXO SOP 2 UXO SOP 3 UXO SOP 4	NA
	Repeatability	Daily	Per manufacturer's specifications	Replace instrument or retrain operator			NA
Geophysical Instruments (Geonics EM61MK2)	Standardization	Daily	Per manufacturer's specifications	Fix or replace	DGM and UXO team members	GEO SOP 1 GEO SOP 3 GEO SOP 4 GEO SOP 7 GEO SOP 8 UXO SOP 3 UXO SOP 4	NA
	Repeatability	Daily	**Static Repeatability – Background:** 98% of the daily static background response values (no test object) will not exceed +/- 2 mV of expected baseline response (for all EM61MK2 channels). **Static Repeatability – Spike:** 98% of the response values to the standard spike test item (a small ISO fixed at an orientation and distance from the sensor to provide an approximately 100 mV response on channel 2 of the EM61MK2) will not exceed +/- 10% of the expected baseline response (for all EM61MK2 channels). **Dynamic Repeatability (IVS) – Background:** 98% of the dynamic background response values during the daily IVS survey will not exceed +/- 3 mV of expected baseline response (for all EM61MK2 channels). **Dynamic Repeatability (IVS) – Spike**: Instrument response to each IVS item will be within +/- 25% or +/- 2 mV (whichever is greater) of the expected baseline response (for all EM61MK2 channels). The baseline response for each IVS item will be the average of the instrument responses to that item measured during the first week of IVS surveys. **Cable Shake Test.** 98% of response values will not exceed +/- 2 mV when system cables are moved (for all EM61MK2 channels). **Personnel Test (PP EM61MK2 only).** 98% of response values (due to proximity of data collection personnel) will not exceed +/- 2 mV (for all EM61MK2 channels). **Tow Vehicle Test (Towed Array only).** 98% of response values (due to elevated tow vehicle RPM) will not exceed +/- 2 mV (for all EM61MK2 channels).	Replace instrument or retrain operator			NA
RTK-GPS	Repeatability	Daily (for DGM related operations)	**GPS Static Position Check:** GPS position checks will not exceed +/- 3 inches (7.6 cm) from the established baseline position.	Replace instrument or retrain operator	GPS Operators (including DGM team members)	GEO SOP 2 GEO SOP 3 GEO SOP 4 GEO SOP 7	NA

[1]SOPs are listed in Worksheet #21

5.0 ANALYTICAL REQUIREMENTS

5.1 Analytical SOP's (QAPP Worksheet #23)

Worksheet #23 is not applicable to surface or subsurface MEC remediation or DGM activities.

5.2 Analytical Instrument Calibration (QAPP Worksheet #24)

Worksheet #24 is not applicable to surface or subsurface MEC remediation or DGM activities.

5.3 Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table (QAPP Worksheet #25)

Worksheet #25 is not applicable to surface or subsurface MEC remediation or DGM activities.

5.4 Sample Handling, Custody, and Disposal (QAPP Worksheets #26 & 27)

Worksheet #26 and #27 are not applicable to surface or subsurface MEC remediation or DGM activities.

5.5 Analytical QC and Corrective Action (QAPP Worksheet #28)

Worksheet #28 is not applicable to surface or subsurface MEC remediation or DGM activities.

6.0 DATA MANAGEMENT AND DATA REVIEW

6.1 Project Documents and Records Table (QAPP Worksheet #29)

DGM, Surface and Subsurface MEC Remediation

Document/Record	Generation	Verification	Frequency (generation of document / record)	Where Maintained
Site-Specific Work Plans	MEC Remediation Manager	Project Manager	As Necessary	Electronic project file to be maintained on SharePoint.
Digital field notes / logbook (if used)	Field Team Leaders	UXOQCS QC Geophysicist	Daily	Hardcopy onsite (if used). Electronic data to be maintained in the KEMRON DB.
Production/Safety/QC Daily Reports	UXOSO CQCSM UXOQCS	Project Manager	Daily	Electronic project file to be maintained on SharePoint.
Three Phase QC Inspection Forms	UXOQCS QC Geophysicist	CQCSM	As Necessary	Electronic project file to be maintained on SharePoint.
Habitat Checklist Forms	Project Biologist	CQCSM	As Necessary	Electronic project file to be maintained on SharePoint.
Bi-weekly Production / Status Report (MMRP Meeting)	SUXOS MEC Remediation Manager	Project Manager	Bi-weekly (every 2 weeks)	Electronic project file to be maintained on SharePoint.

Document/Record	Generation	Verification	Frequency (generation of document / record)	Where Maintained
BSI Information	UXOQCS QC Geophysicist	Field Data Manager	Daily During QC Seeding Operations	KEMRON DB (limited to QC personnel). Sent to USACE QA Geophysicist and USACE OESS on a weekly basis.
DGM Data (including maps, target lists, data processing logs, QC data, etc.)	Field Geophysicists	QC Geophysicist	Daily During DGM Operations	Electronic data to be maintained on FTP Site
Field Data: Analog Surface Clearance, Target Reacquisition, Analog Intrusive Investigation, DGM Related Intrusive Investigation, Site Feature Data	Field Team Leaders	UXOQCS QC Geophysicist	Daily	Hardcopy onsite (if used) KEMRON DB
MEC / UXO tracking form	SUXOS	UXOQCS	As Necessary	Electronic project file to be maintained on SharePoint.
Grid summary sheet (analog operations)	SUXOS	UXOQCS	Daily	Electronic project file to be maintained on SharePoint.
MEC disposal checklist	SUXOS	UXOQCS	As Necessary	Electronic project file to be maintained on SharePoint.
Fire risk assessment worksheet	SUXOS	UXOQCS	As Necessary	Electronic project file to be maintained on SharePoint.
MD scrap tracking form	SUXOS	UXOQCS	Daily During scrap sorting operations	Electronic project file to be maintained on SharePoint.

Document/Record	Generation	Verification	Frequency (generation of document / record)	Where Maintained
RCA, CAR, CAP	UXOQCS QC Geophysicist	CQCSM	As Necessary	Electronic project file to be maintained on SharePoint.
Field Work Variance	Task Managers	Project Manager	As Necessary	Electronic project file to be maintained on SharePoint. Administrative Record
RAR	Project Team	Project Manager	As Necessary	Electronic project file to be maintained on SharePoint. Administrative Record

6.2 Assessments and Corrective Action (QAPP Worksheets #31, 32, & 33)

The three-phase QC inspection process includes the Preparatory, Initial and Follow-up QC inspections. Preparatory phase QC inspections are to be completed prior to commencement of a DFW. Initial phase QC inspections are to be completed the first time that a DFW is being conducted. Follow-up phase QC inspections are to be completed as the DFW operation is ongoing.

Procedures for the three-phase QC inspection process, and procedures for the QC of operations related to the investigation and management of MEC, and other explosives related operations, are located in UXO SOP 10 (MEC QAPP – Attachment B). Procedures for the three-phase QC inspection process and procedures for the QC of geophysical related operations are located in GEO SOP 8 (MEC QAPP – Attachment B).

The table below lists QC inspection information for each DFW. QC operations are an integral part of each task and will be managed by the CQCSM, UXOQCS and the QC Geophysicist (as appropriate), who will work with the field managers to measure project and quality objectives. MPCs for each DFW are listed in Worksheet #12. QC inspection checklists for each DFW are at the end of each corresponding SOP (MEC QAPP – Attachment B). Note that the SOP and QC checklist for sifting operations will be generated only when this DFW is to be used because generation of the sifting operation SOP will depend on a variety of site and operational specific details.

DFW	Type of Inspection to be Used	Reference	Forms Used	Inspection to be Completed By	Follow-up Phase QC Inspection Frequency	Verify the following	Corrective Action Criteria
Field Data Management	PP, IP, FP inspections. Additional FP inspections as necessary.	DATA SOP 1	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	• Operations are in accordance with the Field Data Management SOP (DATA SOP 1). • Authorize access to BSI data as described in the Blind Seed Firewall Plan (MEC QAPP – Attachment A)	• Operations not in accordance with SOP • Authorization access not compliant with Blind Seed Firewall Plan
GIS Data Management	PP, IP, FP inspections. Additional FP inspections as necessary.	DATA SOP 2	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Operations are in accordance with the GIS Data Management SOP (DATA SOP 2).	Operations not in accordance with SOP
MMRP Data Management	PP, IP, FP inspections. Additional FP inspections as necessary.	DATA SOP 3	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Operations are in accordance with the MMRP Data Management SOP (DATA SOP 3).	Operations not in accordance with SOP
DGM Data Transfer to BRAC	PP, IP, FP inspections. Additional FP inspections as necessary.	DATA SOP 4	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are in accordance with the DGM Data Transfer to BRAC SOP (DATA SOP 4)	Operations not in accordance with SOP
Field Documentation	PP, IP, FP inspections. Additional FP inspections as necessary.	FIELD SOP 1	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Field Documentation is completed in accordance with the Field Documentation SOP (FIELD SOP 1)	Operations not in accordance with SOP
Environmental Protection	PP, IP, FP inspections. Additional FP inspections as necessary.	FIELD SOP 2	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Operations are completed in accordance with the Environmental Protection SOP (FIELD SOP 2)	Operations not in accordance with SOP

DFW	Type of Inspection to be Used	Reference	Forms Used	Inspection to be Completed By	Follow-up Phase QC Inspection Frequency	Verify the following	Corrective Action Criteria
Grid and Border Survey	PP, IP, FP inspections. Additional FP inspections as necessary.	FIELD SOP 3	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Operations are completed in accordance with the Grid and Border Survey SOP (FIELD SOP 3)	Operations not in accordance with SOP
Vegetation Removal	PP, IP, FP inspections. Additional FP inspections as necessary.	FIELD SOP 4	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	Operations are completed in accordance with the Vegetation Removal SOP (FIELD SOP 4)	Operations not in accordance with SOP
IVS Installation and Use	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 1	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Once during IVS installation Weekly or as necessary for IVS use	Operations are completed in accordance with the IVS Installation and Use SOP (GEO SOP 1)	Operations not in accordance with SOP
BSI Installation	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 2 Blind Seed Firewall Plan	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	CQCSM (or designee)	Weekly or as necessary	• Operations are completed in accordance with the BSI Installation SOP (GEO SOP 2). • Integrity of BSI data is in compliance with the Blind Seed Firewall Plan (MEC QAPP – Attachment A)	Operations not in accordance with SOP
DGM using a Person-Portable System	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 3	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are completed in accordance with the DGM using a PP System SOP (GEO SOP 3)	Operations not in accordance with SOP
DGM using a Towed Array System	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 4	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are completed in accordance with the DGM using a Towed Array System SOP (GEO SOP 4)	Operations not in accordance with SOP

DFW	Type of Inspection to be Used	Reference	Forms Used	Inspection to be Completed By	Follow-up Phase QC Inspection Frequency	Verify the following	Corrective Action Criteria
DGM Data Processing for a Person-Portable system	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 5	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are completed in accordance with the DGM Data Processing for a PP System SOP (GEO SOP 5)	Operations not in accordance with SOP
DGM Data Processing for a Towed Array System	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 6	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are completed in accordance with the DGM Data Processing for a Towed Array System SOP (GEO SOP 6)	Operations not in accordance with SOP
DGM Target Reacquisition using a PP System	PP, IP, FP inspections. Additional FP inspections as necessary.	GEO SOP 7	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	QC Geophysicist	Weekly or as necessary	Operations are completed in accordance with the DGM Target Reacquisition using a PP System SOP (GEO SOP 7)	Operations not in accordance with SOP
FCA Installation and Use	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 1	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS (or designee)	Once during FCA installation Weekly or as necessary for FCA use	Operations are completed in accordance with the FCA Installation and Use SOP (UXO SOP 1)	Operations not in accordance with SOP
Technology-Aided Surface MEC Removal	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 2	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Weekly or as necessary	Operations are completed in accordance with the Technology-Aided Surface MEC Removal SOP (UXO SOP 2)	Operations not in accordance with SOP
Intrusive Investigation using Analog Methods	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 3	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Weekly or as necessary	Operations are completed in accordance with the Intrusive Investigation using analog methods SOP (UXO SOP 3)	Operations not in accordance with SOP
Intrusive Investigation of DGM Targets	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 4	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Weekly or as necessary	Operations are completed in accordance with the Intrusive Investigation of DGM Targets SOP (UXO SOP 4)	Operations not in accordance with SOP

DFW	Type of Inspection to be Used	Reference	Forms Used	Inspection to be Completed By	Follow-up Phase QC Inspection Frequency	Verify the following	Corrective Action Criteria
MEC and MPPEH Management	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 5	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Weekly or as necessary	Operations are completed in accordance with the MEC and MPPEH Management SOP (UXO SOP 5)	Operations not in accordance with SOP
Demolition of MEC and MDEH	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 6	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Per event or as necessary	Operations are completed in accordance with the Demolition of MEC and MDEH SOP (UXO SOP 6)	Operations not in accordance with SOP
Explosives Management	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 7	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Weekly or as necessary	Operations are completed in accordance with the Explosives Management SOP (UXO SOP 7)	Operations not in accordance with SOP
Explosives Siting	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 8	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Per event or as necessary	Operations are completed in accordance with the Explosives Siting SOP (UXO SOP 8)	Operations not in accordance with SOP
Exclusion Zones	PP, IP, FP inspections. Additional FP inspections as necessary.	UXO SOP 9	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS	Per event or as necessary	Operations are completed in accordance with the Exclusion Zones SOP (UXO SOP 9)	Operations not in accordance with SOP
Sifting Operations	PP, IP, FP inspections. Additional FP inspections as necessary.	TBD	PP, IP, FP check sheets, QC surveillance form, CAR, CAP	UXOQCS or CQCSM (or designee)	Weekly or as necessary	Operations are completed in accordance with the Sifting Operations SOP (TBD)	Operations not in accordance with SOP

6.3 Data Verification and Validation Inputs (QAPP Worksheet #34)

This worksheet lists the inputs that will be used during data verification and validation. Inputs include planning documents, field records, and geophysical analysis records. Data verification is a check that all specified activities involved in collecting and analyzing samples/data have been completed and documented and that the necessary records (objective evidence) are available to proceed to data validation. Data validation is the evaluation of conformance to stated requirements, including those in the contract, methods, SOPs and the MEC UFP-QAPP.

Item	Description	Verification (completeness)	Validation (conformance to specifications)
Planning Documents/Records			
1	Contract	X	
2	Approved MEC UFP-QAPP	X	
3	SSWP	X	
4	Field SOPs	X	
Field Records			
5	Field Activity Daily Log (FADL)	X	X
6	Field Data Forms (digital)	X	X
7	Daily Safety Report	X	X
8	Daily QC Report	X	X
9	DGM Survey and QC Data (including IVS Report, IVS Data and BSI Data)	X	X
10	Intrusive Investigation Data	X	X
11	MEC Data	X	X
12	RCAs and CARs	X	X
Analytical Data Package			
13	Not Applicable		

The three phase QC inspection methods described in GEO SOP 8 and UXO SOP 10 will be used by QC Personnel to assess and document project quality. Data verification procedures that are to be used by QC Personnel are listed in Worksheet #35. Data validation procedures that are to be used by QC Personnel are listed in Worksheet #36.

6.4 Data Verification Procedures (QAPP Worksheet #35)

This worksheet documents procedures that will be used to verify project data. It applies to both field and digital data. Data verification is a completeness check to confirm that all required activities were conducted, all specified records are present, and the contents of the records are complete.

Records Reviewed	Requirement Documents	Process Description	Responsible for Verification (Frequency, Title)
FADL	MEC QAPP	Verify that FADL forms are present and complete for each day of field activities. Very that all activities (including QC) are documented. Verify that changes to equipment / personnel / operations are documented and were reported in accordance with required standards.	Weekly CQCSM, UXOQCS, QC Geophysicist
Field Data Forms (digital)	MEC QAPP	Verify that data for each form have been filled out properly and are complete.	Weekly UXOQCS, QC Geophysicist
Daily Safety Reports	MEC QAPP, APP	Verify that all planned safety audits were conducted. Review safety audit surveillances, inspections and reports. If deficiencies are noted verify that corrective action was implemented according to the CAR (and CAP if generated) that was generated for each deficiency / non-conformance.	Daily UXOSO
Daily QC Reports	MEC QAPP	Verify that all planned QC audits were conducted. Review QC audit surveillances, inspections, checklists and reports. If deficiencies are noted verify that corrective action was implemented according to the CAR that was generated for each deficiency / non-conformance.	Daily PM
DGM Survey and QC Data	MEC QAPP	Verify that the DGM operation (system) met the performance criteria for all days that DGM data was collected. Verify that all DGM data meets requirements in the QAPP. Verify that all DGM IVS metrics described in Worksheet #12 have been met and that all BSIs have been located within metrics described in Worksheet #12.	Daily QC Geophysicist
Intrusive Investigation Data	MEC QAPP	Verify that the intrusive investigation data has been filled out properly and is complete.	Daily UXOQCS

Records Reviewed	Requirement Documents	Process Description	Responsible for Verification (Frequency, Title)
MEC Data	MEC QAPP	Verify that all recovered MEC items are documented in the KEMRON DB, including final disposition and date destroyed.	As Necessary UXOQCS
RCA and CARs	MEC QAPP	Verify that corrective actions were implemented for each deficiency / non-conformance noted according to the CAR.	As Necessary CQCSM

6.5 Data Validation Procedures (QAPP Worksheet #36)

This worksheet lists the inputs that will be used during data validation. Data validation is the evaluation of conformance to stated requirements, including those in the contract, SOPs and the MEC UFP-QAPP.

Inputs	Records Reviewed	Process Description	When is Validation Performed	Responsible for Validation (Title)
MEC UFP-QAPP	FADL	Validate that the FADL Form conforms to requirements.	Every 6 months	UXOQCS
MEC UFP-QAPP	Field Data Forms (digital)	Validate that all field data forms (digital) conform to requirements.	Every 6 months	UXOQCS, QC Geophysicist
MEC UFP-QAPP, APP	Daily Safety Reports	Validate that the Daily Safety Report conforms to requirements.	Every 6 months	UXOSO
MEC UFP-QAPP	Daily QC Reports	Validate that the Daily QC Report conforms to requirements.	Every 6 months	CQCSM, UXOQCS, QC Geophysicist
MEC UFP-QAPP	DGM Survey and QC Data	Validate that the DGM Survey and QC Data (including the IVS report, IVS data and BSI data) conform to requirements. If all IVS and BSI MQO metrics are met, then the data has been verified and validated and is usable.	Every 6 months	QC Geophysicist
MEC UFP-QAPP	Intrusive Investigation Data	Validate that all intrusive investigation data conform to requirements.	Every 6 months	UXOQCS
MEC UFP-QAPP	MEC Data	Validate that all data relating to MEC conform to requirements.	Every 6 months	UXOQCS
MEC UFP-QAPP	RCAs, CARs, CAPs.	Validate that all RCA, CAR and CAP data conform to requirements.	Every 6 months	CQCSM, UXOQCS, QC Geophysicist

6.6 Data Usability Assessment (QAPP Worksheet #37)

This worksheet documents procedures that will be used to perform the data usability assessment and involves a qualitative and quantitative evaluation of the collected data to determine if the project data are of the right type, quality, and quantity to support the decisions that need to be made. It involves a retrospective review of the systematic planning process to evaluate whether underlying assumptions are supported, sources of uncertainty have been managed appropriately, data are representative of the population of interest, and the results can be used as intended, with the acceptable level of confidence.

Personnel responsible for participating in the data usability assessment preparation or review:

Name	**Title**	**Organization**	**Role in Usability Assessment**
Dave Eisen	Project Manager	USACE Project Team	Reviewer
Shawn Meek	OESS	USACE Project Team	Reviewer
John Jackson	Geophysicist	USACE Project Team	Reviewer
Jeff Sabol	Program Geophysicist	KEMRON	Preparation
Steve Crane	Project Manager	KEMRON	Preparation
Kevin Siemann	MEC Remediation Manager	Gilbane	Preparation
Bruce McClain	UXOQCS	Gilbane	Preparation
Andy Gascho	Project Geophysicist	Gilbane	Preparation
Alex Kostera	QC Geophysicist	NAEVA	Preparation

Documents and data to be used as input to the data usability assessment:

- QAPP;
- Contract Specifications;
- Daily / Weekly QC reports and QC inspection forms/data;
- CARs;
- IVS Report;
- IVS Data; and
- BSI data.

The data usability report will be included as an Appendix to the Final Report for each Unit. The steps used in performing the data usability assessment will include the following:

Step 1	**Review the project's objectives and sampling design** Review the DQOs. Are underlying assumptions valid? Were the project boundaries appropriate? Review the sampling design as implemented for consistency with stated objectives. Were sources of uncertainty accounted for

	and appropriately managed? Summarize any deviations from the planned sample design.
Step 2	**Review the data verification/validation outputs and evaluate conformance to MPCs documented on WS #12** Review available QC/QA reports, including QC reports, assessment reports, CARs, and the data validation report. Evaluate the implications of unacceptable QC results. Evaluate conformance to MPCs documented on WS #12. Assess impacts of non-conformances on data usability.
Step 3	**Document data usability, update the CSM, and draw conclusions** Determine if the data can be used as intended, considering implications of deviations and corrective actions. Assess the performance of the sampling design and identify any limitations on data use. Update the CSM and document conclusions.
Step 4	**Document lessons learned and make recommendations** Summarize lessons learned and make recommendations for changes to DQOs or the sampling design for future similar studies. Prepare the data usability summary report.

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ATTACHMENT A

BLIND SEED FIREWALL PLAN

Final
Blind Seed Firewall Plan
Former Fort Ord, California

Volume II
Appendix A
Attachment A
Munitions and Explosives of Concern Remedial Action

Worldwide Environmental Remediation Services Contract
Contract No. W912DY-10-D-0027
Task Order No. CM01

Prepared for:
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814

Prepared by:
KEMRON Environmental Services Inc.
1359-A Ellsworth Industrial Boulevard
Atlanta, GA 30318

Introduction

This Blind Seed Firewall Plan has been developed for the Remedial Action being performed at the former Fort Ord under Contract W912DY-10-0027, Task Order CM01. This plan describes the procedures and methodologies that will be used to create a "firewall" between project personnel that require access to blind seed item (BSI) information and those who are initially denied access because granting them access to this information would compromise the integrity of various project operations.

Data Access

Personnel involved with the following operations will be firewalled from having access to BSI information until the following tasks have been completed for an entire unit: technology-aided surface MEC removal, the collection of DGM data, DGM data processing, DGM target reacquisition and intrusive investigation activities (analog and DGM related). BSI information will be made available to these teams only after permission to share this information has been granted by the U.S. Army Corps of Engineers (USACE). The following personnel are the only members of the team who will have initial access to BSI information:

- Land Survey personnel (if used)
- KEMRON - Unexploded Ordnance Quality Control Specialist (UXOQCS)
- Gilbane – Project Geophysicist
- NAEVA – QC Geophysicist
- NAEVA – Field Data Manager

Information Transfer/Storage

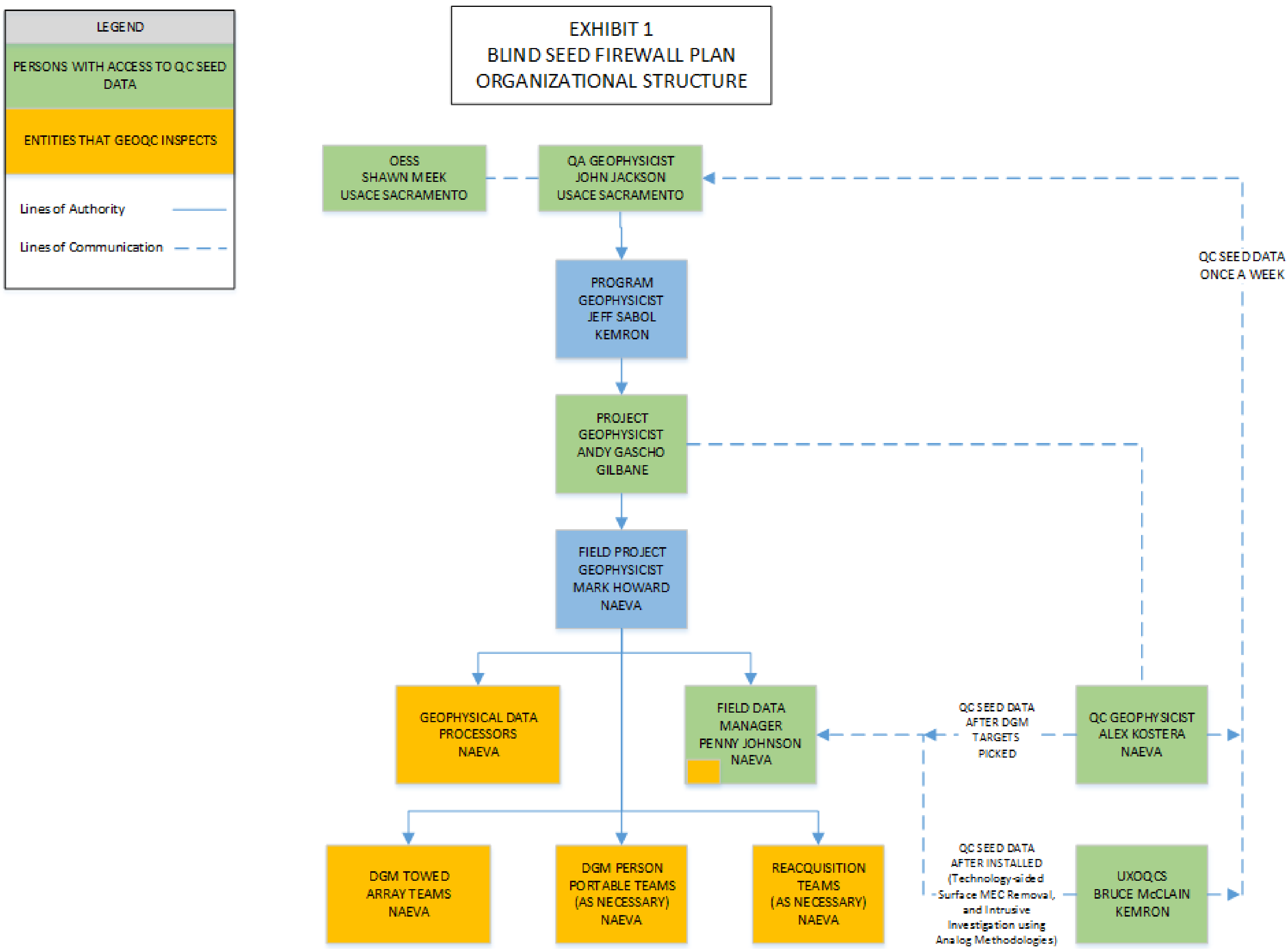
Upon placement of the BSIs the UXOQCS and QC Geophysicist will digitally record the following information for each BSI:

- BSI unique identification number
- Seed Type (Inert ordnance or ISO)
- Nomenclature (if inert ordnance)
- Diameter (if inert ordnance)
- Length (if inert ordnance)
- Max Depth (if inert ordnance)
- Depth of BSI (center of mass) [if buried]
- Date Installed
- GPS coordinate - or X,Y position from the southwest corner stake (if using tape measures)

BSI information related to the Technology-Aided Surface MEC Removal operation and the Intrusive Investigation using Analog Methodologies will be provided to the Field Data Manager by the UXOQCS. BSI information related to DGM operations will be transferred to the Field Data Manager by the QC Geophysicist only after the DGM data has been processed and targets have been generated. The Field Data Manager will store this information in a protected database (KEMRON Database). The Field Data Manager will review and analyze the BSI information and will inform the QC staff of the status of BSIs on a daily basis. Should a BSI be missed by one of the various operations the QC staff will contact USACE in order to get permission to release information for the missed BSI to the appropriate team so that a root-cause analysis can then be conducted as part of the corrective action process. BSI information will be sent to the USACE QA Geophysicist and OESS on a weekly basis. The organizational structure for this Blind Seed Firewall Plan is included as Exhibit 1 of this plan.

Firewall Compliance

All staff identified in this document, or others added with USACE's permission, will be required to provide a written (signed) commitment to comply with the requirements established in this document. These signatures of compliance will be kept on record by the KEMRON PM and added to the project files.


LEGEND
PERSONS WITH ACCESS TO QC SEED DATA
ENTITIES THAT GEOQC INSPECTS
Lines of Authority
Lines of Communication
EXHIBIT 1
BLIND SEED FIREWALL PLAN
ORGANIZATIONAL STRUCTURE
OESS
SHAWN MEEK
USACE SACRAMENTO
QA GEOPHYSICIST
JOHN JACKSON
USACE SACRAMENTO
QC SEED DATA
ONCE A WEEK
PROGRAM
GEOPHYSICIST
JEFF SABOL
KEMRON
PROJECT
GEOPHYSICIST
ANDY GASCHO
GILBANE
FIELD PROJECT
GEOPHYSICIST
MARK HOWARD
NAEVA
GEOPHYSICAL DATA
PROCESSORS
NAEVA
FIELD DATA
MANAGER
PENNY JOHNSON
NAEVA
QC SEED DATA
AFTER DGM
TARGETS
PICKED
QC GEOPHYSICIST
ALEX KOSTERA
NAEVA
DGM TOWED
ARRAY TEAMS
NAEVA
DGM PERSON
PORTABLE TEAMS
(AS NECESSARY)
NAEVA
REACQUISITION
TEAMS
(AS NECESSARY)
NAEVA
QC SEED DATA
AFTER INSTALLED
(Technology-aided
Surface MEC Removal,
and Intrusive
Investigation using
Analog Methodologies)
UXOQCS
BRUCE McCLAIN
KEMRON

ATTACHMENT B

STANDARD OPERATING PROCEDURES

LIST OF SOPs

DATA SOP 1

FIELD DATA MANAGEMENT

STANDARD OPERATING PROCEDURE FOR FIELD DATA MANAGEMENT

DATA SOP 1

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

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LIST OF APPENDICES

LIST OF ACRONYMS

BRA	Basewide Range Assessment
BSI	Blind Seed Item
DGM	Digital Geophysical Mapping
FCA	Function Check Area
FTP	File Transfer Protocol
GPS	Global Positioning System
ID	Identification
IVS	Instrument Verification Strip
MD	Munitions Debris
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RRD	Range Related Debris
SOP	Standard Operating Procedure
UXOQCS	Unexploded Ordnance Quality Control Specialist

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all Field Data Management operations that are to be conducted in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 PURPOSE

The purpose of this SOP is to provide standardized procedures for the management and internal quality control (QC) of data gathered during field operations which is then cataloged and stored in the Microsoft Access field database (KEMRON database). Procedures outlined in this SOP will be conducted in accordance with the MEC Quality Assurance Project Plan (QAPP).

3 SCOPE

This SOP provides technical guidance on the daily gathering of field data as it relates to Military Munitions Response Program (MMRP) operations including, but not limited to, the following operations:

- Field Documentation;
- Environmental Protection;
- Grid and Border Survey;
- Vegetation removal;
- Instrument Verification Strip (IVS) installation, use, and related data;
- Blind Seed Items (BSI)s installation and related data;
- Digital Geophysical Mapping (DGM) [data collection and data processing];
- DGM target reacquisition;
- Geophysical QC;
- Function Check Area (FCA) Installation, use, and related data;
- Technology-aided surface MEC removal;
- Intrusive operations;
- MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) management;
- Demolition of MEC and Material Documented as an Explosive Hazard (MDEH);
- QC of MEC and explosives related operations; and
- Quality assurance (QA).

This document is not intended to contain all requirements needed to ensure the proper management of project data, but should be used in conjunction with the documents listed in the reference section below. Data formats will be consistent with those already existing in the Fort Ord MMRP Database.

4 MAINTENANCE

NAEVA personnel are responsible for the maintenance of this SOP.

5 RESPONSIBILITIES

KEMRON and subcontractor personnel are required to follow the procedures specified in this SOP during the performance of all field data management operations. The Field Data Manager is required to sign off that they have read and understand this SOP prior to beginning field work.

6 PERSONNEL

All field Team Leaders are responsible for the generation of field data. The Field Database Manager is responsible for the input of this data into the KEMRON Database and management of the KEMRON database.

7 EQUIPMENT

- Digital Tablet

8 TYPES OF DATA

The following data types listed below represent a sampling of the information that will be digitally recorded on field tablet forms and otherwise incorporated into the KEMRON Database:

- Surface Clearance and/or Analog Investigation data may include (but are not limited to) anomaly information as it relates to MEC, MPPEH, Munitions Debris (MD), Range Related Debris (RRD), BSIs, or cultural items located during the investigation. Positional information may be in the form of Global Positioning System (GPS) data or local coordinates.
- DGM data collection may include (but are not limited to) function test (static, IVS, geodetic functionality), documentation, dataset identification (ID), locations covered, surface conditions, weather, obstacles encountered, battery voltage, team and personnel ID, file names, and coordinate system.
- DGM data processing information may include (but are not limited to) data processor ID, data correction parameters (leveling, lag correction, filtering), EM61-MK2 channel selected for analysis, gridding parameters, target selection methodology including targeting threshold, and any comments that might prove helpful during the intrusive process.
- DGM target reacquisition data may include (but are not limited to) anomaly information such as the unique ID, original location, offset from original location, reacquired response, and comments that might prove helpful during the intrusive process.
- Intrusive Investigation data may include (but are not limited to) anomaly information as it relates to MEC, MPPEH, MD, RRD, BSIs, or cultural items located during the intrusive investigation, and investigation related QC data. Positional information may be in the form of GPS or local coordinates.
- DGM related BSI data are to be recorded in accordance with the Blind Seed Firewall Plan (MEC QAPP – Attachment A) and are to initially be managed by the QC Geophysicist. DGM related BSI data will not be made available to the Field Data Manager until after the QC Geophysicist has identified as to whether the DGM related BSI(s) match (or do not match) anomalies in the DGM target list. BSI information related to analog operations will be forwarded directly to Field Data Manager on a daily basis by the Unexploded Ordnance Quality Control Specialist (UXOQCS) as they are installed. The Field Data Manager will safeguard the integrity of both the DGM and analog BSI information by keeping this BSI information external to the KEMRON database and will not release it (except to USACE) until the investigation (surface sweep or intrusive) for that unit/area has been completed and an assessment of the status of the BSIs has been made and documented by QC personnel.
- Other items to be tracked include data for sifting operations, MEC and MPPEH management, Demolition of MEC and MDEH, areas with high slope and/or inaccessible areas, and/or other items of interest that are to be used for the Basewide Range Assessment (BRA).

- QC information such as daily instrument test results, BSIs, Anomaly Resolution, QC inspection results, geodetic equipment functionality, Geodetic Accuracy, etc. are also maintained in the KEMRON database.

9 PROCEDURES

The primary method of collecting field data will be through the use of digital tablets assigned to each field team that are pre-loaded with forms designed to capture all of the information pertinent to that activity. These forms are administered by the Field Data Manager using Pendragon Forms software. The form templates are stored on the Field Data Manager's field computer and can be assigned to the appropriate tablet for the day's planned activities. At the end of each field day, information gathered in the forms is synchronized directly to the KEMRON database where it is immediately reviewed for accuracy and completeness by the Field Data Manager. In general, the Field Data Manager will be responsible for performing the following tasks on a daily basis:

- Verify time/date status on tables and distribute to field teams;
- Perform tablet user proficiency training as necessary;
- Update operations status information in database;
- Create updated field Status Maps and distribute as appropriate;
- Track status of QC BSIs and send notifications as appropriate;
- Track demolition items (currently awaiting demo, or have been demolished);
- Assemble data/materials for grids that have moved to a new status (e.g. reacquisition completed grids to intrusive, intrusive completed grids to QC, etc.);
- Create updated forms in Pendragon for distribution to tablets at the end of the field day;
- At end of day, receive all completed materials from field teams and synchronize tablets with KEMRON Database;
- Perform internal QC review of all new information received from field forms;
- Merge new information received from off-site DGM data processors and QC review of new information;
- After completing all daily QC reviews, upload new copy of the master KEMRON database to project File Transfer Protocol (FTP) site (or similar location);
- Send email summary of daily progress to appropriate parties; and
- At least once per week, export KEMRON Database contents and submit for inclusion in Fort Ord MMRP Database

10 DATABASE QC AND ARCHIVING

All data uploaded to the KEMRON Database will be reviewed for appropriateness, quality, and completeness by the Field Data Manager on a daily basis. After this initial QC review, the KEMRON database will be uploaded to the project FTP site for storage and to allow access to other project personnel. Appropriate QC personnel (UXOQCS, QC Geophysicist, etc.) will also perform regular QC reviews and inspections of all aspects of the database that pertain to their specific operations. Once all QC checks have been performed, a minimum of once per week, the updated KEMRON Database contents will be exported in the appropriate format for QA review and ultimate inclusion into the Fort Ord MMRP Database (external operation). The Field Data Manager will be responsible for performing all database updates and edits requested by QC and QA personnel and by other project staff that relate to the KEMRON database.

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for Field Data Management can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

11 ASSOCIATED SOPS

- FIELD SOP 1 – Field Documentation
- FIELD SOP 2 – Environmental Protection
- FIELD SOP 3 – Grid and Border Survey
- FIELD SOP 4 – Vegetation Removal
- GEO SOP 1 – IVS Installation and Use
- GEO SOP 2 – Blind Seed Item Installation
- GEO SOP 3 – DGM Using a Person-Portable System
- GEO SOP 4 – DGM Using a Towed Array System
- GEO SOP 5 – DGM Data Processing Using a Person-Portable System
- GEO SOP 6 – DGM Data Processing Using a Towed Array System
- GEO SOP 7 – DGM Target Reacquisition Using a Person-Portable System
- GEO SOP 8 – Geophysical QC
- UXO SOP 1 – FCA Installation and Use
- UXO SOP 2 – Technology-Aided Surface MEC Removal
- UXO SOP 3 – Intrusive Investigation using Analog Methods
- UXO SOP 4 – Intrusive Investigation of DGM Targets
- UXO SOP 5 – MEC and MPPEH management
- UXO SOP 6 – Demolition of MEC and MDEH
- UXO SOP 10 – QC of MEC and Explosives Related Operations

12 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	**Date:**

Three Phase Quality Control Checklist

DATA SOP 1 – Field Data Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Data Manager:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	2.0	Verify Microsoft Access is being used to develop and manage the database				*(P)*
3	9.0	Verify Pendragon Forms is being used to develop and manage the data acquisition forms				*(P)*
4	7.0	Digital tablets have been acquired for all field teams				*(P)*
5	9.0	Field forms for the day have been distributed to the appropriate tablets				*(I),(F)*
6	9.0	Tablet user proficiency training has been performed				*(I),(F)*
7	9.0	Status information has been updated in the KEMRON database				*(I),(F)*
8	9.0	Field status maps have been created and distributed as appropriate				*(I),(F)*
9	9.0	Blind Seeds have been checked for recovery, as appropriate. Notifications sent.				*(I),(F)*
10	9.0	Demo items have been checked for complete and accurate information				*(I),(F)*
11	9.0	Field materials (maps, targets lists, etc.) have been assembled for grids that have moved to a new status				*(I),(F)*
12	9.0	Updated forms have been created for the next day’s work, as appropriate				*(I),(F)*
13	9.0	All daily forms with new information have been reviewed (internal QC review) and synchronized with the KEMRON database at the end of the day.				*(I),(F)*
14	9.0	New information from off-site data processors has been reviewed and synchronized with the KEMRON database				*(I),(F)*
15	9.0	An updated copy of the KEMRON database has been uploaded to the project FTP site				*(I),(F)*

16	9.0	Daily progress email has been sent to the appropriate parties				*(I),(F)*
17	9.0	Weekly export has been created for updating the Fort Ord MMRP Database				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

DATA SOP 2

GIS DATA MANAGEMENT

Technical Procedure: DATA SOP 2

STANDARD OPERATING PROCEDURE FOR GIS DATA MANAGEMENT

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

BRAC	Base Realignment and Closure
DGM	Digital Geophysical Mapping
ESRI	Environmental Sciences Research Institute
FODIS	Fort Ord Data Integration System
GIS	Geographic Information System
GPS	Global Positioning System
ID	Identification
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MR	Munitions Response
MRA	Munitions Response Area
NAD	North American Datum
NAVD	North American Vertical Datum
OE	Ordnance and Explosives
RA	Remedial Action
RTK	Real-time Kinematic
SOP	Standard Operating Procedure
SQL	Structured Query Language
tiff	Tagged Image File Format

1. POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to Geographic Information System (GIS) data management. This SOP must be distributed to, and signed by all personnel performing GIS data management, and must be adhered to as GIS activities are being performed.

2. PURPOSE

The purpose of this SOP is to provide an overview and standards for the management and delivery of GIS data related to the Munitions Response (MR) Remedial Action (RA) activities that are to be conducted at the former Fort Ord. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3. SCOPE

This scope of this SOP is to provide technical information and guidance on the procedures to be used for GIS data usage, storage, tracking, management and delivery of GIS data as it relates to the MR RA operations that are to be conducted at the former Fort Ord. Specifically, the GIS will be used to produce figures/maps to support project reports, and to document physical progress of MR related field activities, typically shown visually on maps, with percent complete being reported in tabular form. The GIS data will also be used to provide web based mapping services for the two project websites: Fort Ord Data Integration System (FODIS).net, and the public web site (FortOrdCleanup.com).

The GIS provides an efficient mechanism for inputting, tracking and retrieving MR related information for the use of technical evaluation, ongoing removal efforts, reporting, and ultimately to assist in the efficient transfer and reuse of land parcels at the former Fort Ord. The master repository of the geospatial electronic files documenting the MR related field activities will be managed and maintained by the Base Realignment and Closure (BRAC) GIS Manager.

This SOP is not intended to be used on other projects.

4. MAINTENANCE

The KEMRON GIS Manager is responsible for the maintenance of this SOP.

5. PROCEDURES

This SOP describes the following GIS standards and operations to be used on the Fort Ord project:

- GIS Software;
- GIS Data Standards
- GIS Data File Standards
- Geospatial Data Types
- GIS Data Feature Classes

5.1 GIS Software

The Fort Ord GIS project uses Environmental Sciences Research Institute (ESRI) GIS software, which includes ArcGIS and other related extensions such as Spatial and 3D Analyst.

5.2 GIS Data Standards

5.2.1 Geospatial Data Standards

Spatial Data Standards for Facilities, Infrastructure, and the Environment (SDSFIE) shall be used, where applicable. The standard is currently being used in the fort_ord.gdb file geodatabase, and shall continue to be used per the discretion of the BRAC GIS Manager.

5.2.2 Spatial Coordinate Reference System

- Horizontal: California State Plane, Zone IV, U.S. Survey Feet; Datum: North American Datum 1983 (NAD 83)
- Vertical: North America Vertical Datum 1988 (NAVD 1988), U.S. Survey Feet

5.2.3 Metadata Standard

All metadata is to be generated in accordance with Federal Geographic Data Committee (FGDC) standards.

5.3 GIS Data File Standards

The following are file types used on the Fort Ord project:

- GIS software data: ESRI map document files (.mxd - map file document format), ESRI vector files, including ESRI Geodatabase (file and personal) feature classes and shapefiles. The preferred storage method is the geodatabase format, however, shapefiles may be used as needed.

- Raster data: a raster dataset consists of a matrix of cells (or pixels) organized into rows and columns (or a grid) where each cell contains a value representing information, such as elevation. Raster files may include digital aerial photographs, scanned images such as maps, and interpolated surface layers generated from geoprocessing point data (i.e. .grid file, LIDAR files (.las), Digital Geophysical Mapping (DGM) and terrain related files. When possible, an open format such as Tagged Image File Format (.tiff) will be used to ensure long-term compatibility.

- Tabular data: .xls (Excel), .dbf, .csv, and .txt (text/ASCII) file types. When possible, files will be exported to an open format such as ASCII, to ensure long-term compatibility.

- Computer-aided Design (CAD) files: DWG, DGN, and DXF formats.

5.4 Geospatial Data Types

Geospatial data collected during the RA will consist of field data associated with MR field activities and will include GIS data generated as a result of analysis of this field data. This field data includes (but is not limited to) the following:

- Survey Data (i.e. point data from surveyed features);
- MR RA activity being conducted (i.e. operation, location, boundaries, etc.); and
- MR RA related data that is collected during the various RA field operations (i.e. Vegetation removal, Technology-Aides Surface MEC Removal, DGM, Intrusive Investigation, etc.).

5.5 GIS Data Feature Classes

The primary GIS data is stored in the fort_ord.gdb geodatabase. Below is a list of the Geodatabase feature class layers within the fort_ord.gdb that are specific to the MR RA activities that are to be performed at the former Fort Ord. Updates to these feature classes are performed by the KEMRON GIS Manager. These updates are then to be incorporated into the fort_ord.gdb file by the BRAC GIS Manager.

fort_ord.gdb\env_haz_remediation\Fuel_Breaks:
This polygon feature class consists of fuel break grid polygons. Fuel break grids are typically 45 feet wide and 100 feet in length. A fuel break is typically a road or corridor that is 45 foot wide and cleared of MEC to a depth of 4 feet. This layer is typically created by the KEMRON GIS Manager. The fuel break grid locations are determined through discussions with the project team. Once the locations are determined the KEMRON GIS Manager will deliver the fuel break grid boundary and corner files (i.e. a table containing stake point coordinates) to the field survey team, who will use Real-time Kinematic (RTK) Global Positioning System (GPS) to install wooden stakes that will be used to delineate the fuel break grids. This layer is updated on an as-needed basis.

fort_ord.gdb\env_haz_remediation\oe_item_point
This point feature class consists of all MEC items encountered on the former Fort Ord, which includes both historic and recent MEC items that have been located. This is the primary layer used on the project for MEC analysis or maps depicting MEC locations. The *oe_item_point* layer is automatically generated via Python script (currently named *ODBFetchMEC_Well_5_2016_frmServer.py*) which is run daily. The script resides and is executed on a project production server (199.255.250.174) hosted by Vigilant Technologies (current database hosting contractor and database administrator). This script interacts with the Military Munitions Response Program (MMRP) Structured Query Language (SQL) Server database by "fetching" 24 columns from view *dbo.View_MEC_FeatureClass* in the *FTO_OE* database. The script then uses ArcGIS to process the fetched tabular data and converts it into a feature class layer, which is then used to update the *fort_ord.gdb* geodatabase. The BRAC and KEMRON GIS Managers are responsible for the operation and maintenance of this script.

fort_ord.gdb\flora\ flora_fire_area
The *flora_fire_area* polygon feature class contains the estimated and surveyed perimeters of both prescribed burns and accidental fires that have occurred at the former Fort Ord since approximately 1981. The layer is updated by the KEMRON GIS Manager and is managed/updated in the *fort_ord.gdb* by the BRAC GIS Manager.

fort_ord.gdb\flora\ flora_presc_burn_area
The *flora_presc_burn_area* polygon feature class contains the planned prescribed burn areas and associated containment areas. Editing to this layer is coordinated with the BRAC office prescribed burn manager, and integrated into the *fort_ord.gdb* by the BRAC GIS Manager.

fort_ord.gdb\flora\ flora_special_species_area_VEGMONITORING
This polygon feature class contains the locations of sensitive vegetation/species of concern, such as the Monterey spineflower and Sand gilia. This layer is used to determine areas that require special consideration when preparing for MEC remediation activities. The content of the layer is provided by the project biologists (contractor and BRAC). This data is updated in the layer by the KEMRON GIS Manager, and integrated into the *fort_ord.gdb* by the BRAC GIS Manager.

fort_ord.gdb\military_operations\historic_impact_area_TRACK3
This polygon feature class contains the boundary of the current Impact Area (per Track 3 status). This is the primary layer used when depicting the current boundary of the Impact Area Munitions Response Area (MRA). This layer is updated on an as-needed basis by the BRAC GIS Manager.

fort_ord.gdb\military_operations\military_target_point
This point feature class contains suspected former target locations on the training ranges. This layer is typically updated via aerial photo inspection, or field observations/GPS points. The layer is updated by the KEMRON GIS Manager and integrated into the *fort_ord.gdb* by the BRAC GIS Manager.

fort_ord.gdb\cadastre\installation_historical_area
This polygon feature class contains the historic boundary of the former Fort Ord, and is the primary layer used when producing maps for the project. This layer is not anticipated to require updating.

fort_ord.gdb\common\coordinate_grid_area
This polygon feature class contains the standard 100 foot by 100 foot grid system that is used as the basis for the MR RA at the former Fort Ord. This layer contains standardized Identifications (ID)s for each grid. The current grid ID used on this project is the short version of the ID which is contained in the field *GRID_ID_SH.* This layer is not anticipated to require updating.

fort_ord.gdb\military_operations\HA
This line feature class contains historic areas/training ranges previously used at Fort Ord. This line feature class is the primary feature class used to depict range fans on maps for the Fort Ord project. This layer is not anticipated to require updating.

fort_ord_ops.gdb\RA_GridOps
Polygon feature class that consists of polygon representations of grid operations through 2014. This layer was created from the grid operations layer from the Operations_Final.mdb and FortOrd_RA_GridOps_final.mdb geodatabases.

fort_ord_ops.gdb\RA_GridOps_KEMRON
Polygon feature class that consists of grid operations from 2015-present. This layer is created by the KEMRON GIS manager and integrated into the geodatabase by the BRAC GIS manager. It is created by joining a work grid/operations polygon layer (which represents the actual grids that remedial work was be performed in) with dbo_tblGrid_Ops_Lnk from the MMRP database. The resulting output is a GIS layer that contains an individual polygon for every remedial grid operation performed on a particular grid (i.e. removal action, QC, and QA, resulting in three coinciding grids, etc.) This layer is updated routinely, per the discretion of the BRAC and KEMRON GIS managers.

fort_ord_ops.gdb\RA_DGMOps
Polygon feature class that consists of polygon representations of DGM operations through 2014.

fort_ord_ops.gdb\RA_DGMOps_KEMRON
Polygon feature class that consists of DGM operations from 2015-present. This layer is created by the KEMRON GIS manager and integrated into the geodatabase by the BRAC GIS manager. It is created by joining a DGM grid block polygon layer with dbo_tblGeo_GridBlock_Lnk from the MMRP database. The resulting output is a GIS layer that contains an individual polygon for every DGM operation performed on that particular grid. This layer is updated routinely, per the discretion of the BRAC and KEMRON GIS managers.

6. GIS DATA DELIVERABLES

GIS data generated by KEMRON, including field data and reporting data, will be delivered to the BRAC GIS Manager upon completion of each site specific project and/or report. This GIS data will be delivered in ArcGIS formats. Report data will be delivered via ArcGIS map packages, which will include the .mxd map document file. Data used to generate each map will be included as geodatabase or shapefiles (as necessary). Only data not already in the *fortord.gdb* file will be included in the map packages. Field data will be delivered in geodatabase format.

7. QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for GIS Data Management can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

DATA SOP 2 – GIS Data Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Data Manager:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.1	Verify ESRI GIS software (which includes ArcGIS, Spatial and 3D Analyst) are being used				*(P)*
3	5.2.1	Verify SDSFIE is being used				*(I),(F)*
4	5.2.2	Verify correct coordinate system is being used				*(I),(F)*
5	5.2.2	Verify correct vertical datum being used				*(I),(F)*
6	5.2.3	Verify metadata is being generated in accordance with FGDC				*(I),(F)*
7	5.4	Verify Geospatial Data Types for field data are: • Survey data • MR RA activity • MR RA related data				*(I),(F)*
8	5.5	Verify that the 14 feature classes that exist in Section 5.5 of this SOP are being updated.				*(I),(F)*
9	6.0	Verify GIS data is delivered to BRAC GIS Manager upon completion of each site specific project and/or report.				*(I),(F)*
10	6.0	Verify GIS data is delivered in ArcGIS formats				*(I),(F)*
11	6.0	Verify report data is delivered via ArcGIS map packages that include the .mxd map document file.				*(I),(F)*
12	6.0	Verify data used to generate maps are included as geodatabase or shapefiles.				*(I),(F)*
13	6.0	Verify that only data not already in the fortord.gdb file is included in the map packages.				*(I),(F)*
14	6.0	Verify field data is delivered in geodatabase format.				*(I),(F)*

Three Phase Quality Control Checklist

DATA SOP 2 – GIS Data Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

DATA SOP 3

MMRP DATA MANAGEMENT

(Post Migration)

STANDARD OPERATING PROCEDURE
FOR MMRP DATA MANAGEMENT – POST MIGRATION

DATA SOP 3

Original Issue Date: August 2016

Last Review / Implementation Date: December 2016

Prepared by:
Vigilant Technologies
25 S Arizona PL, Suite 430
Chandler, Arizona 85225

Submitted by:
Sherwood N. Munk, DBA, Vigilant Technologies

Table of Contents

List of Appendices

Acronyms

DBA	Database Administrator
DGM	Digital Geophysical Mapping
DOCX	Microsoft Word Document file
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
PDF	Portable Document Format (Adobe Acrobat) file
PNG	Portable Network Graphics image file
QA	Quality Assurance
QC	Quality Control
RRD	Range Related Debris
SSIS	SQL Server Integration Services
USACE	United States Army Corps of Engineers
VBA	Visual Basic for Applications
VSD	Microsoft Visio Document data/image file
XLSX	Microsoft Excel data file

1 Policy

Vigilant, Gilbane, and KEMRON shall follow procedures established in this Standard Operating Procedure (SOP) for integrating third party data into the MMRP database. This SOP must be distributed to, and signed by all personnel performing MMRP data management, and must be adhered to as MMRP DB activities are being performed.

2 Purpose

Establish sound methodologies and mechanisms for loading/importing, updating, and deleting data from the MMRP database.

3 Scope

This document provides technical and procedural guidelines for the handling of data for the MMRP database.

4 Maintenance

Vigilant Technologies Personnel are responsible for the maintenance of this SOP.

5 Responsibilities

The Database Administrator (DBA) shall be responsible for developing mechanisms to facilitate the automated loading/importing, updating, and deleting data from the MMRP database. The DBA shall ensure all imported data conforms to relational requirements. The DBA shall provide templates to providers who submit data to be loaded into the MMRP database.

6 Personnel

Cary Stiebel, BRAC GIS Manager [Chenega Global Services, LLC - acting for BRAC]
Jeff Sabol, Overall Project Data Manager (KEMRON)
Penny Johnson, Field Data Manager (NAEVA)
Sherwood Munk, DBA (Vigilant)

7 Types of data

The following data types listed below represent a sampling of the information that will be recorded on field tablet forms and otherwise incorporated into the KEMRON Database:

- Surface Clearance and/or Analog Investigation data may include (but are not limited to) anomaly information as it relates to MEC, Material Potentially Presenting an Explosive Hazard (MPPEH), Munitions Debris (MD), Range Related Debris (RRD), BSIs, or cultural items located during the investigation. Positional information may be in the form of GPS or local coordinates.
- DGM data may include (but are not limited to) function test (static, instrument verification strip [IVS], geodetic functionality) documentation, dataset ID, locations covered, surface conditions,

weather, obstacles encountered, battery voltage, team and personnel ID, file names, and coordinate system.

- Data processing information may include (but are not limited to) data processor ID, data correction parameters (leveling, lag correction, filtering), EM61-MK2 channel selected for analysis, gridding parameters, target selection methodology including targeting threshold, and any comments that might prove helpful during the intrusive process.
- Reacquisition data may include (but are not limited to) anomaly information such as the unique ID, original location, offset from original location, reacquired response, and comments that might prove helpful during the intrusive process.
- Intrusive Investigation data may include (but are not limited to) anomaly information as it relates to MEC, MPPEH, MD, RRD, BSIs, or cultural items located during the intrusive investigation, and investigation related QC data. Positional information may be in the form of GPS or local coordinates.
- DGM related BSI data are to be recorded and initially managed by the QC Geophysicist. DGM related BSI data will not be made available to the Field Data Manager until after the QC Geophysicist has identified as to whether the DGM related BSI(s) match (or do not match) anomalies in the DGM target list. BSI information related to analog operations will be forwarded directly to Field Data Manager on a daily basis by the UXOQCS as they are installed. The Field Data Manager will safeguard the integrity of both the DGM and analog BSI information by keeping this BSI information external to the KEMRON database and will not release it (except to USACE) until the investigation (surface sweep or intrusive) for that Unit has been completed and an assessment of the status of the BSIs has been made and documented by the QC staff.
- Other items to be tracked include data for sifting operations, MEC and MPPEH management, Demolition of MEC and MDEH, areas with high slope and/or inaccessible areas, and/or other items of interest that are to be used for the Basewide Range Assessment.
- QC information such as daily instrument test results, BSIs, Anomaly Resolution, QC inspection results, geodetic equipment functionality, Geodetic Accuracy, etc. are also tracked.

8 Procedures

Data are collected in the field via a variety of digital and analog mechanisms. Digital mechanisms may include Global Positioning Systems (GPS), Digital Geophysical Mapping (DGM) equipment, and digital based tablets. Digital data is recorded by KEMRON field teams and is reported to the Field Data Manager on a daily basis. Analog mechanisms include analog hand-held metal detectors, and visual observation. Analog data generated by KEMRON field teams is reported to the Field Data Manager on a daily basis. Visual observations of Munitions and Explosives of Concern (MEC) may be reported by Contractors (other than KEMRON), Law Enforcement, First Responders, and the general public via the Fort Ord Munitions and Explosives of Concern (MEC) Incident Recording Form which can be accessed via fortordcleanup.com, or the FODIS web site. MEC items found by KEMRON staff (digital and analog) would be reported via procedures discussed in UXO SOP 5 (MEC and MPPEH Management).

There are currently three primary paths for submitting data to the MMRP Database:

- NAEVA Geophysics (KEMRON Database)
- Other Data (external to KEMRON operations)
- Fort Ord MEC Incident Recording Form

8.1 KEMRON Database

Data collected by field staff are uploaded to the KEMRON Database on a nightly basis. The data are then initially checked by the NEAVA Field Data Manager for errors. At the end of each work week (typically Thursday evening of each week), the KEMRON Database is uploaded to the FODIS FTP site (ftp://199.255.250.171/DATABASE_BACKUPS/EnhancedMMRP). A scheduled job runs on the FORTORD_DATA server at approximately 2:00am every Sunday. This Scheduled Job executes a SQL Server Integration Services (SSIS) package (UploadKemronData). The UploadKemronData SSIS package performs the following tasks:

- Check for records previously loaded to MMRP from the KEMRON Database that no longer appear in the KEMRON Database.
    - If such records are identified, those rows are then cued for deletion in the appropriate "Delete" schema table (please refer to the "KEMRON-MMRP Integration" document for technical details) [see link in Section 11 below. See documentation information in Section 9 below]. After all deletion candidates are cued, those table rows are deleted in reverse hierarchical order, meaning all candidate child or dependent rows are removed prior to a parent/master record's removal. If all records in a given tree (parent to child) were not deleted from the KEMRON Database, then the correlating parent/master record in MMRP will remain cued, but not deleted.
- Check for existing records which need updating. Update accordingly.
- Insert new records.
- Report any irregularities in the migration process. Email to DBA.

Specific instances will occur where data requires editing and/or deletion after it has been loaded onto the MMRP Database. In such instances, corrected records are initiated by UXOQC or the Geophysical QC Manager. The Field Data Manager then reviews the required changes to verify that they are appropriate and then ensures the required changes (including the deletion of the previous incorrect record(s)) are implemented. The KEMRON database and the MMRP DB are backed up on a daily basis. Records that are deleted from these databases can be restored from previous backups.

8.2 Other Data (external to KEMRON operations)

The Weston data is delivered to the Fort Ord project via a combination of Microsoft Excel (xlsx) files. These datasets are not referential packages, and are based upon an obsolete schema which predates the transition from the previous contractor to KEMRON and Vigilant.

The DBA processes the datasets using a combination of VBA modules. These modules produce batch scripts which are then run against the MMRP database manually. We use this process because there are too many possible exceptions in the data to permit automated processing via SSIS or PowerShell. Exceptions produced as a result of content irregularities are reported to the BRAC GIS Manager. The BRAC GIS Manager will then make a determination regarding overriding the affected value(s), or returning the data to Weston for review and correction. If override value(s) are provided, the DBA will incorporate the override and process the dataset.

8.3 Fort Ord MEC Incident Recording Form

The SQL Server has a scheduled job that runs against the MEC database (FTO_MEC) every five minutes. The Scheduled job is "Move MEC Items to FTO_OE" and it in turn calls the Stored Procedure (SP) sp_IncidentalMecUpdate. The SP processes the migration of new MEC data to the MMRP DB.

8.4 Data Backup and Archival

Backup and archiving of all databases on the FORTORD_DATA server is processed weekly via scheduled SQL Agent job. Backups are stored on a virtual hard drive shared between the FORTORD_DATA and FORTORD-DEVDATA servers. Vigilant periodically tests the integrity of these archives by restoring to the Development server.

9 Documentation

All current documents relating to KEMRON Database Integration may be obtained at the Vigilant/KEMRON Change Control web site in the "Kemron-MMRP DB Integration : Documents" path. Documents included are:

- Pre transfer gap analysis: "CBI to MMRP Gap Analysis" (XLSX)
- MMRP Entity Relationship Diagram (ERD): "FTO_OE_NS_Kemron_DBO_Only_20151228" (PDF, PNG, VSD)
- KEMRON to MMRP Integration: "Kemron-MMRP Integration" (DOCX, PDF)

10 Quality Control

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for MMRP Data Management can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

11 References

KEMRON Change Control web site
(https://fortord.vigilant1.com/kemron/ChangeControl/Lists/Open%20Issue%20Tracking/AllItems.aspx)

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	**Date:**

Three Phase Quality Control Checklist

DATA SOP 3 – MMRP Data Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Data Manager:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page.				*(P)*
2	8.1	Verify that the scheduled job runs the SSIS package on 2am every Sunday.				*(I),(F)*
3	8.1	Check for records previously loaded to MMRP from the KEMRON DB that no longer appear in the KEMRON DB.				*(I),(F)*
4	8.1	If such records are identified, verify those rows are then cued for deletion in the appropriate "Delete" schema table.				*(I),(F)*
5	8.1	Check for existing records which need updating and update accordingly.				*(I),(F)*
6	8.1	Verify new records are inserted.				*(I),(F)*
7	8.1	Verify irregularities in the migration process are reported and emailed to DBA.				*(I),(F)*
8	8.1	Verify corrected records are initiated by UXOQC or Geo QC Manager.				*(I),(F)*
9	8.1	Verify Field Data Manager reviews required changes appropriate – that are then verified.				*(I),(F)*
10	8.1	Verify that the KEMRON and MMRO DB are backed up on a daily basis.				*(I),(F)*
11	8.2	Verify DBA processes Weston datasets using combination of VBA modules that are run against the MMRP DB manually.				*(I),(F)*
12	8.2	Verify exceptions produced are reported to the BRAC GIS Manager.				*(I),(F)*
13	8.2	Verify BRAC GIS Manager makes a determination regarding overriding the affected values – or returning the data to Weston for review and correction.				*(I),(F)*
14	8.2	If override values are provided, verify that DBA has incorporated the override and has processed the dataset.				*(I),(F)*
15	8.3	Input test IMEC form. Verify test MEC data is migrated to MMRP DB.				*(I),(F)*

16	8.4	Verify weekly backup is conducted and is stored on a virtual hard drive.				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

DATA SOP 4

DGM DATA TRANSFER TO BRAC

STANDARD OPERATING PROCEDURE FOR DGM Data Transfer to BRAC

DATA SOP 4

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

DGM	Digital Geophysical Mapping
FTP	File Transfer Protocol
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedure

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all Digital Geophysical Mapping (DGM) Data Transfers to BRAC personnel that are to be conducted in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 PURPOSE

The purpose of this SOP is to provide standardized procedures for the preparation of processed data gathered during DGM field operations which is then compiled into a data delivery package per survey Unit. Procedures outlined in this SOP will be conducted in accordance with the MEC Quality Assurance Project Plan (QAPP).

3 SCOPE

This SOP provides technical guidance on the compilation of processed data as it relates to Military Munitions Response Program (MMRP) operations including, but not limited to, the following operations:

- Creation of a survey unit Geosoft database with all processed DGM data;
- Creation of a survey unit Geosoft gridded sum channel data file;
- Creation of a survey Unit pseudocolor GeoTIFF of the sum channel data using the project color scheme;
- Delivery of the data listed above as well as all raw and processed geophysical data to BRAC personnel via File Transfer Protocol (FTP) site, portable hard drive, or other agreed upon transfer medium.

This document is not intended to contain all requirements needed to ensure the proper management of data, but should be used in conjunction with the documents listed in the reference section below. Data formats with be compatible with the current release of the data processing software at the time of their delivery.

4 MAINTENANCE

NAEVA personnel are responsible for the maintenance of this SOP.

5 RESPONSIBILITIES

KEMRON and subcontractor personnel are required to follow the procedures specified in this SOP during the performance of all DGM data transfers to BRAC. The Quality Control (QC) Geophysicist is required to sign off that they have read and understand this SOP prior to beginning work.

6 PERSONNEL

All data processors are responsible for generating processed data files. The QC Geophysicist is responsible for reviewing the processed data and approving it for submission.

7 EQUIPMENT

- Computer with Geosoft's Oasis montaj software with the UX-Detect or UXO-Land module.

8 TYPES OF DATA

The following data types listed below will be included in the BRAC deliverable:

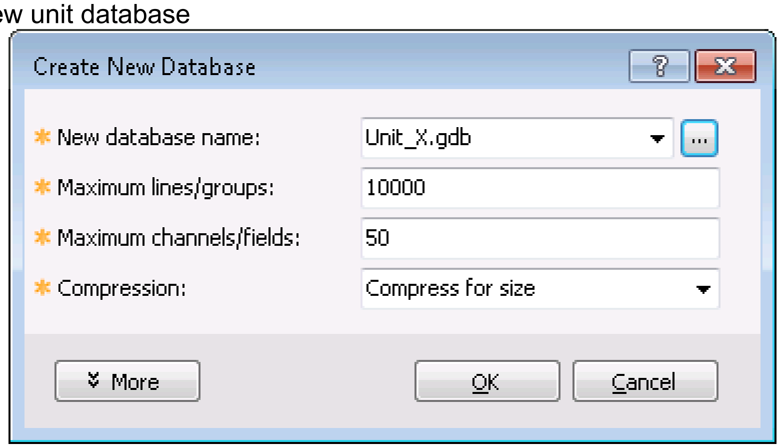
- The complete set of standard data deliverables as listed in GEO-SOP-5 (DGM Data Processing for a Person-Portable System) and GEO-SOP-6 (DGM Data Processing for a Towed Array System);
- Geosoft Oasis Montaj database in .gdb format containing process data for the unit;
- Geosoft grid file in .grd format containing processed sum channel data for the unit;
- GeoTiff pseudocolor georeferenced image of the sum channel data for the unit using the project color scheme;

9 PROCEDURES

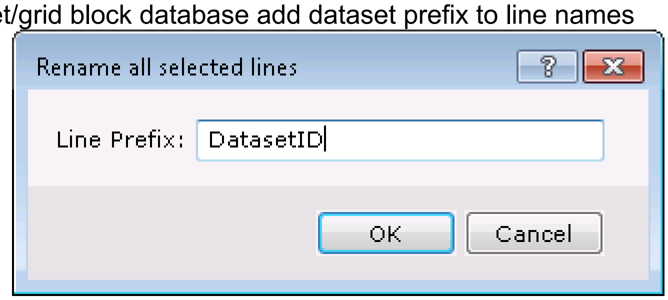
The following procedures will be followed to create the DGM Data Transfer deliverables by unit for BRAC. The creation of standard data deliverables is described in GEO-SOP-5 (DGM Data Processing for a Person-Portable System) and GEO-SOP-6 (DGM Data Processing for a Towed Array System). Geosoft's Oasis Montaj software will be used to generate all deliverable data products.

9.1 Create database

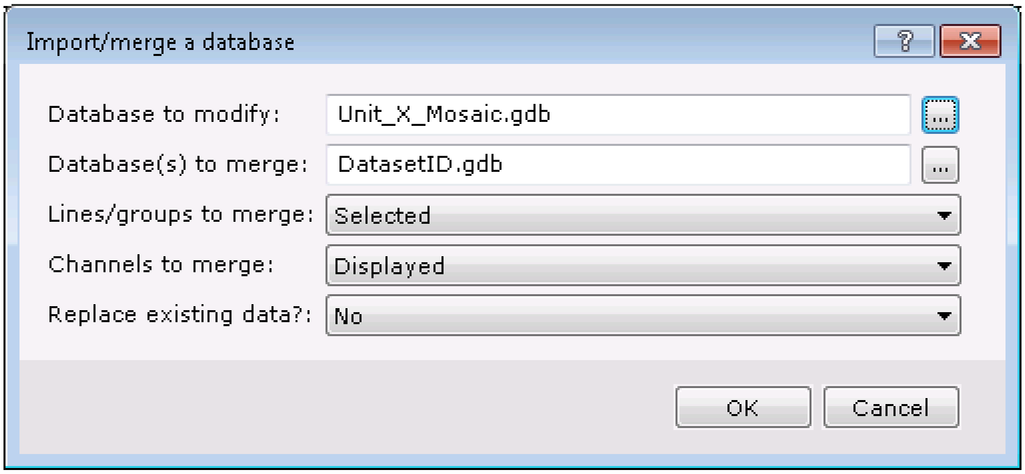
- Create a new unit database



- For each dataset/grid block database add dataset prefix to line names



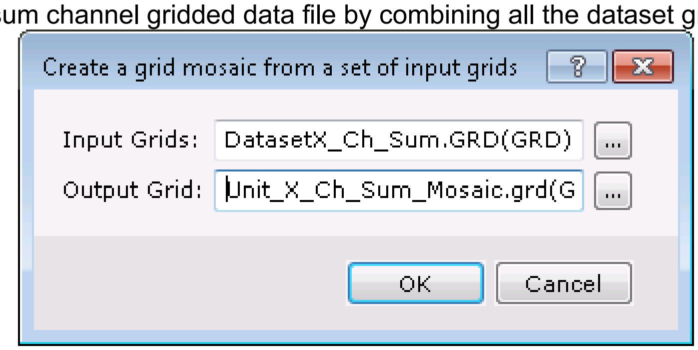
- Merge the dataset/grid block renamed lines into the new unit database



- Remove any unnecessary channels
- Save and defragment the unit database

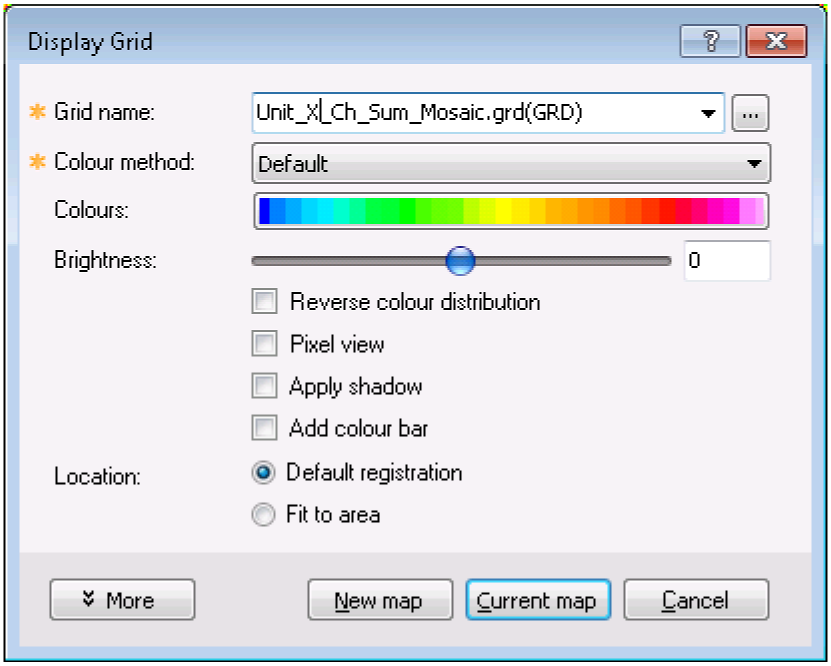
9.2 Create grid file

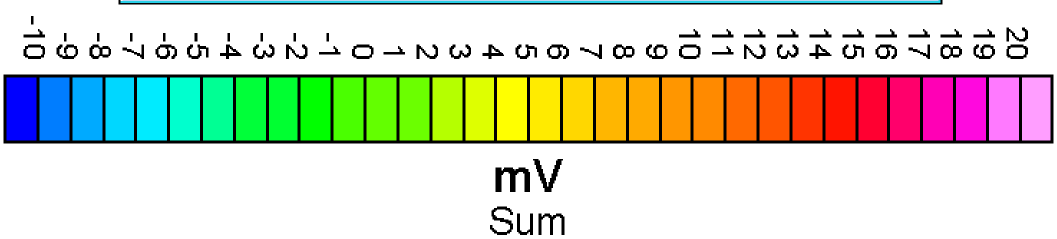
- Create a unit sum channel gridded data file by combining all the dataset grids for the unit



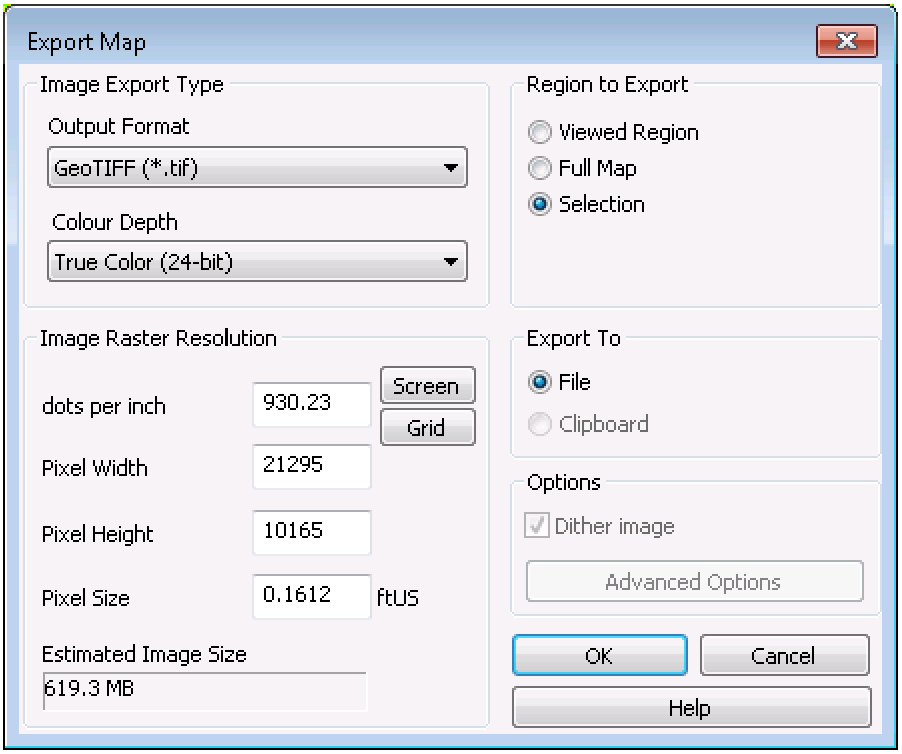
9.3 Create geotiff

- Display the gridded sum channel data on a new map using the project color scheme





- Export the displayed grid as a high resolution GeoTIFF



9.4 Deliver Digital Data

- The QC Geophysicist will work with the data processor to compile the deliverables into a zip file for upload to the project FTP site or for transfer via an alternate agreed upon medium;
- The QC Geophysicist will upload the deliverables to the project FTP site or bring the deliverables physically to the BRAC office via portable hard drive or other media;
- A notification email will be sent to the appropriate members of the project team that the unit deliverables have been generated and are either available on the project FTP site or have been delivered to BRAC personnel
- A GIS polygon layer for DGM operations will be created in GIS by the KEMRON GIS manager. This layer will be created by performing a join in GIS using the work grid polygon GIS layer and tables in the MMRP database (i.e. dbo_tblGrid_Ops_Lnk, etc.). See Data SOP 2 (GIS Data Management).
- Metadata for DGM data for the MMRP DB will be in accordance with EM 200-1-15.
- Density Excel file for each area (density by grid by acre) for use to generate map density plots.
- DGM metadata for operations performed is uploaded and stored in the MMRP database
- Generation of DGM mV contour map using the following settings:
    - mV range of -10 -> 20 mV
    - linear color distribution
    - default Geosoft Color Bar
- USACE folder structure for DGM data delivery is as follows
    - Field Data
    - Geotiff
    - Master Database
    - Processed Data
    - QC Report

10 RELEVANT SOPS

- GEO-SOP-5 – DGM Data Processing Using a Person-Portable System
- GEO-SOP-6 – DGM Data Processing Using a Towed Array System

11 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the DGM data transfer to BRAC can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

12 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	**Date:**

Three Phase Quality Control Checklist

DATA SOP 4 – DGM Data Transfer to BRAC

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Data Manager:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	6.0	Verify that the QC Geophysicist is reviewing the processed data and approving it for submission				*(I),(F)*
3	7.0	Verify Geosoft's Oasis montaj software with the UX-Detect or UXO-Land module is being used				*(I),(F)*
4	9.4	Verify deliverables are provided in a .zip file format				*(I),(F)*
5	9.4	Verify data is uploaded to FTP site or transferred via an alternate medium				*(I),(F)*
6	9.4	Verify notifications have been sent				*(I),(F)*
7	9.4	Verify GIS grid file joins the MMRP DB via grid ops link and grid block tables				*(I),(F)*
8	9.4	Verify metadata is being generated for DGM data for MMRP DB in accordance with EM 200-1-15.				*(I),(F)*
9	9.4	Verify density Excel file for each area (density by grid by acre) is generated				*(I),(F)*
10	9.4	Verify DGM mV contour maps are generated using the following settings: • mV range of -10 -> 20 mV • linear color distribution • default Geosoft Color Bar				*(I),(F)*
11	9.4	Verify that the following USACE folder structure is being followed: • Field Data • Geotiff • Master Database • Processed Data • QC Report				*(I),(F)*

Three Phase Quality Control Checklist

DATA SOP 4 – DGM Data Transfer to BRAC

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

FIELD SOP 1

FIELD DOCUMENTATION

Field Procedure: FIELD SOP 1

STANDARD OPERATING PROCEDURE FOR FIELD DOCUMENTATION

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

ACRONYM LIST

APP	Accident Prevention Plan
CFR	Code of Federal Regulations
CoC	Chain of Custody
FTP	File Transfer Protocol
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan

1 POLICY

KEMRON Environmental Services (KEMRON) and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the recording of field documentation. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed. Appendix A of this SOP contains an SOP Signature Page documenting each employee's review of this SOP.

2 PURPOSE

This SOP provides an overview of required field documentation to be performed as part of Military Munitions Response Program (MMRP) related field operations performed by KEMRON. This documentation occurs through the use of field logbooks and specific field forms applicable to specific work activities that may be performed, as identified in project plans, or as directed by the client. Proper documentation of field activities is a crucial part of any and all field activities, both for technical and legal defensibility.

3 SCOPE

The information presented in this SOP is generally applicable to all MMRP-related project sites. The technical documentation addressed in this SOP applies to field activities that KEMRON directly participates in or where project over-site is provided by KEMRON. Client, federal, state, or project-specific requirements may dictate specific types of equipment or procedures to be used when applying this SOP to a particular project. Deviations from this SOP to accommodate site-specific requirements shall be approved by the KEMRON Program Quality Control (QC) Manager, and/or client representative where applicable, prior to the performance of work.

Field documentation should be recorded on a daily basis and should, at a minimum, provide the basic following information regarding field activity operations: time onsite, names of personnel, list of subcontractor companies, names of visitors (including company affiliation), weather conditions, activities performed, significant findings or observations, and references to the site(s) worked. The extent of the documentation should be such that all activities performed (and personnel performing the various activities) can be recreated. Field documentation may be recorded using paper or digital means, that may make reference to other documents, logbooks, records, or other media (to include digital items).

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 RESPONSIBILITY

5.1 Project Manager Responsibilities

The KEMRON Project Manager ensures that the entire project is performed in accordance with this procedure and project-specific requirements.

5.2 Field Personnel Responsibilities

The KEMRON field personnel will follow the applicable steps and procedures as stated in this SOP, in the Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP), the Accident Prevention Plan (APP), the Site Safety and Health Plan (SSHP), and may include other documents as directed by the Project Manager.

5.3 Subcontractors

All subcontractors will follow the applicable steps and procedures as stated in this SOP, in the MEC QAPP, the APP, the SSHP, and may include other documents as directed by the Project Manager and/or KEMRON personnel. Subcontractors are secured under contract and required to meet all local, state, and federal requirements (i.e., 29 Code of Federal Regulations (CFR) 1910.333(c)(3); 29 CFR 1926.550(a)(15)(i), (ii), (iii)).

6 REQUIRED MATERIALS

The materials required for this SOP include the following:

- Bound field logbooks (if a digital data recording device is not used)
- Black waterproof and/or indelible ink pens (if a digital data recording device is not used)
- Field forms (if a digital data recording device is not used)
- Digital data recording device (if used)

7 FIELD DOCUMENTATION

Field data can be collected via hard copy or digitally. The two types of field documentation routinely completed include a daily field log (logbook) and field data forms. Specific types of field data forms may also be required by the client. If client required forms are used, they are to be used in lieu of any generic field forms used by KEMRON.

7.1 Bound Field Logbooks

Bound field logbooks (if used) are assigned to teach Team Leader. The front of each logbook will state “KEMRON”, KEMRON project office address and phone number, book number, project number and name, name and phone number of the logbook owner, team designation, and start (and end) dates for the logbook. The spine of the logbook will contain (at a minimum) the project number, team designation, and start and end dates. Field personnel will keep accurate written records of their daily activities in a bound logbook (or in a digital data recording device) that will be sufficient to recreate the project field activities without reliance on memory. All entries in the logbook will be legible, written in black indelible ink. Each page of the field logbook will be consecutively numbered, signed and dated by the field author. Pages should not be removed for any reason. There should be no blank lines on a page. A single blank line or a partial blank line (such as at the end of a paragraph) should be lined to the end of the page. If only part of a page is used, the remainder of the page should have a "Z" drawn across it with the initials of the logbook owner and date placed in the middle of the "Z".

7.2 Data to be recorded

Field data may be recorded in a logbook or on a digital tablet (or similar device). All data are to be recorded in chronological order and will contain accurate and inclusive documentation of field activities, including field data observations, deviations from project plans, problems encountered, and actions taken to solve the problem. In addition to documenting field activities, in general, data to be recorded by the field teams will include, but are not limited to, the following:

- Team name and #;
- Team Leader initials;
- Date;
- Site location;
- Time / description of meetings (i.e. safety meeting, tailgate meeting, etc.);
- Site and weather conditions;
- Personnel present:
- Equipment used;
- Results of daily equipment function checks;
- Field Team location (i.e. Grid ID or other location designation);
- Description and time of field operations being conducted;
- Description of results of field operations; and
- Field observations and events.

Specific data that is to be recorded for each of the different operations is listed in their corresponding SOP.

7.3 Field Data Forms

When hard copy field data forms are used, all recorded notes are to be entered using black indelible ink. If multiple pages of a field data form are used, the pages are to be numbered using the following format: "page 1 of 3, page 2 of 3, page 3 of 3" in a conspicuous location on each page of the data form. Personnel will ensure that any unused portion of the data form is "Z'd" out, initialed, and dated.

Additional field records may be required for specific field events. These additional records may include: Explosive Operations Demolition Forms, Motor Vehicle Inspection Forms, Preparatory, Initial and Follow-Up Phase Inspection Forms, Corrective Action Request Forms, Field Activity Daily Log Forms, etc.

8 CORRECTIONS

If an error is made in the field, logbook corrections will be made by drawing a single line through the error, entering the correct information, and initialing and dating the change. Materials that obliterate the original information, such as correction fluids and/or mark-out tapes are prohibited.

9 FIELD RECORD BACKUP

Periodically, the Project Manager, or designee, will determine if and when field logbooks and records need to be photocopied and/or scanned to produce digital copies. Photocopies will be maintained in the project files. Digital copies are to be kept on a data portal, File Transfer Protocol (FTP) site, or other such data repository. These hard copies and/or digital files are to be used as backup in the event that the original field logbook or records are lost or damaged.

10 CHAIN OF CUSTODY

Chain of custody (CoC) procedures are to be used to track and maintain the integrity of drums (or other such containers) and include the following actions:

1) Maintaining custody of items; and

2) Documentation of the CoC.

A drum is considered in Custody when it is in a secured area where the drums cannot be tampered.

The CoC record is used to ensure integrity of the contents within the drum (or other such container) and to document that the contents of the container were maintained. The CoC Record documents transfer of custody of drums (or other such container) from KEMRON to another person, or another organization (i.e. trucking company, smelter, etc.).

When shipping materials using the CoC process via common carrier (such as a trucking company), the "Relinquished By" box should be signed by the CoC custodian and the person responsible for shipping that is receiving the custody of the items will fill in the "Received By" section of the CoC Record. Once the shipment arrives at its final destination the person responsible for the shipment will sign the “Relinquished By” box and person at the final destination will sign the “Received By” section of the CoC. Once the item(s) have reached their final destination and the CoC process is has been completed, a copy of this CoC is to be sent to the Project Manager. This CoC will then be scanned and the hard copy will be placed in the project files. The scanned digital copy will be maintained in the digital project files located on a data portal, FTP site, or other such data repository.

11 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for Field Documentation can be found in Worksheet #12 of the

MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

FIELD SOP 1 – Field Documentation

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	3.0	Any deviations to this SOP are approved by the KEMRON Program QC Manager and/or client representative (if applicable)				*(P)*
3	3.0	Field documentation includes: time onsite, the names of the crew, subcontractors onsite, names of any visitors, weather conditions, activities performed, significant findings or observations, and references to the site(s) worked.				*(I),(F)*
4	6.0	Personnel have the following required materials: • Bound field logbooks (if digital data recording device is not used) • Black waterproof and/or indelible ink pens (if digital data recording device is not used) • Field forms (if digital data recording device is not used) • Digital data recording device				*(I),(F)*
5	7.1	Logbooks (if used) have the KEMRON home office address and phone number, written on the inside of the front cover.				*(I),(F)*
6	7.1	Bound field logbooks (if used) are assigned to the Team Leader.				*(I),(F)*
7	7.1	The front of each logbook will state "KEMRON", book number, project name, project number, and start/end dates for the logbook. The spine of the logbook will contain the following minimally: project number and start and end dates				*(I),(F)*
8	7.1	All entries in the logbook are legible, written in black waterproof or indelible ink.				*(I),(F)*

9	7.1	Each page of the field logbook is consecutively numbered, signed and dated by the field author(s). Pages are not removed. There are no blank lines on a page. The remainder of a page has a "Z" drawn across it with an initial and date placed in the middle of the "Z".				*(I),(F)*
10	7.2	Field logbook information is recorded in chronological order.				*(I),(F)*
11	7.2	The following information has been recorded: • Team # and Team Leader Initials; • Date; • Site location; • Time / description of meetings (i.e. safety meeting, tailgate meeting, etc.) • Personnel present: • Equipment used (i.e. Schonstedt, White, EM61MK2, etc.) • Results of daily equipment function checks • Field Team location (i.e. Grid ID or other location designation); • Description and time of field operations being conducted (i.e. surface sweep, analog intrusive, DGM operations, target reacquisition, DGM target intrusive, MPPEH management, etc.); • Description of results of field operations (i.e. how many anomalies investigated, amount, type and description of MEC, amount of Munitions Debris (MD), amount of Other Debris (OD)). Note that data recorded for surface sweep and analog intrusive operations will record results of field operations on a per grid basis or on a daily basis per partial grid; and • Field observations and events.				*(I),(F)*
12	7.3	Pages of field data forms are numbered are to be numbered using the following format: "page 1 of 3, page 2 of 3, page 3 of 3"				*(I),(F)*

Three Phase Quality Control Checklist

FIELD SOP 1 – Field Documentation

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

13	8.0	Logbook corrections are made by drawing a single line through the error, entering the correct information, and initialing and dating the change				*(I),(F)*
14	9.0	Field record backup: Photocopies are maintained in the project files. Digital copies are to be kept on a data portal, File Transfer Protocol (FTP) site, or other such data repository.				*(I),(F)*
15	10.0	Chain of custody procedures are used to maintain the integrity of drums (or other such containers) that contain MDAS.				*(I),(F)*
16	10.0	When shipping containers of MDAS the CoC process is used and signatures are correctly affixed to the CoC forms.				*(I),(F)*
17	10.0	Completed CoC forms are sent to the Project Manager				*(I),(F)*
18	10.0	Completed CoC forms are placed in the project files and digital copies are maintained in the digital project files located on a data portal, FTP site, or other such data repository				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

FIELD SOP 2

ENVIRONMENTAL PROTECTION

Technical Procedure: FIELD SOP 2

STANDARD OPERATING PROCEDURE FOR ENVIRONMENTAL PROTECTION

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BO	Biological Opinion
BRAC	Base Realignment and Closure
CFR	Code of Federal Regulations
CQCSM	Contractor Quality Control Systems Manager
CTS	California Tiger Salamander
DGM	Digital Geophysical Mapping
GIS	Geographic Information System
GPS	Global Positioning System
HMP	Habitat Management Plan
MEC	Munitions and Explosives of Concern
MRS	Munitions Response Site
OSHA	Occupational Safety and Health Administration
PM	Project Manager
QAPP	Quality Assurance Project Plan
SOP	Standard Operating Procedure
SSWP	Site Specific Work Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UXOQCS	Unexploded Ordnance Quality Control Specialist

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for environmental protection during all field activities. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the approach, methods, and procedures to be employed to protect the natural environment during performance of the removal action. Specifically, this SOP describes the procedures and methods that will be implemented during site activities to minimize pollution, protect and conserve natural resources, restore disturbed areas, and control noise and dust within reasonable limits. This SOP assumes that experienced personnel that will be using this SOP are familiar with the sensitive biological resources within the former Fort Ord and are competent in their identification.

This SOP is intended to address the protection of special-status biological resources and implement mitigation measures identified in Chapter 3 of the *Installation-Wide Multispecies Habitat Management Plan* (HMP; United States Army Corps of Engineers [USACE], 1997), and the *Programmatic Biological Opinion for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California* (BO) (United States Fish and Wildlife Service [USFWS], 2015) for sites where Munitions and Explosives of Concern (MEC) response actions are planned. The HMP outlines mitigation measures needed to avoid significant impact to HMP target species. The programmatic BO identifies mitigation measures to be implemented during remediation and predisposal activities.

Base closure and reuse activities conducted at the former Fort Ord are required to follow specific protocols approved by the USFWS, as detailed in the programmatic BO (USFWS, 2015) and HMP (USACE, 1997).

3 SCOPE

The information presented in this SOP is generally applicable to all MEC related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 RESPONSIBILITIES

The Project Biologist is responsible for ensuring that activities performed at the former Fort Ord are conducted in accordance with the HMP (USACE, 1997) and BO (USFWS, 2015). The Project Biologist reports to the KEMRON Project Manager (PM).

6 PERSONNEL

The Project Biologist is responsible for preparing a Site Habitat Checklist (MEC Quality Assurance Project Plan (QAPP), Attachment C (Forms), Form E1) for all field activities and ensuring that the precautions are followed. All field personnel are responsible for implementing the environmental protection measures identified in the Site Habitat Checklists (MEC QAPP, Attachment C (Forms), Form E-1).

7 EQUIPMENT

- Global Positioning System (GPS)
- Flagging tape
- Camera
- Dipnet
- Nitrile gloves (or other non-latex gloves)
- Gram scale
- Ruler
- Bucket
- Digital data recording device (if used)

8 TYPES OF DATA

If a California tiger salamander (CTS) is found, it must be recorded and reported to the Base Realignment and Closure (BRAC) Office (MEC QAPP, Attachment C (Forms), Form E-3). Data collected when a CTS is encountered includes weight, length, disposition of individuals, and the encounter and release locations.

If a black legless lizard is found, it must be recorded and reported to the BRAC Office (MEC QAPP, Attachment C (Forms), Form E-2). Data collected when a black legless lizard is encountered includes length, disposition of individuals, and the encounter and release locations.

The location of HMP annual species identified in previously unknown locations prior to or during work activities will be mapped by the Project Biologist using GPS equipment. The data will be provided to the BRAC office. The data collected will include the species encountered.

9 PROCEDURES

9.1 Protection of Natural Resources

Measures to reduce impacts to natural resources will be implemented in accordance with the HMP and BO for base closure and reuse activities (USFWS, 2015) guidelines. In addition, all guidelines that minimize activities that could degrade lands through soil erosion or invasive weed problems will be followed. These considerations will be addressed in this section.

The Project Biologist will conduct a preliminary environmental survey of the sites and research the Geographic Information System (GIS) database to identify locations of sensitive species and will prepare a Site Habitat Checklist (MEC QAPP, Attachment C (Forms), Form E-1) prior to each activity that outlines specific avoidance and minimization measures to be implemented. The Site Habitat Checklist will be provided to the RAC office for approval at least two days before scheduled preparatory meetings. Measures included in the Site Habitat Checklists will be communicated to the project supervisors prior to work initiation. The Contractor will assume a policy of minimizing and avoiding disturbances to areas with sensitive species as much as possible without unreasonably disrupting removal activities. The Project Biologist will be regularly present on work sites to ensure that these environmental directives are being followed and document and address any unforeseen environmental concerns, as they may occur. The Contractor will coordinate with BRAC Office on all environmental issues. It should be noted that this SOP only addresses the measures to be taken under normal circumstances and does not consider special-case areas, which will be reevaluated to determine if additional habitat protection or restoration requirements are required.

9.2 Employee Environmental Training

The Project Biologist will conduct site-specific environmental training for all field personnel prior to the beginning of project work. Topics covered in the training will include a description of HMP plant and wildlife species that could be encountered, environmental laws related to the conservation of these species, guidelines that personnel must follow to reduce or avoid impacts to HMP species, and the appropriate contacts to report HMP species encounters and any unforeseen impacts on HMP species.

9.3 Fire Retardants and Foams

To reduce the likelihood that fire retardants and foams will contaminate wetlands and impact HMP wetland and annual species, fire retardants and foams that may be used on a unit or area will not contain sodium ferrocyanide, and the application shall not be closer than 300 feet from a vernal pool unless application is necessary to prevent a breach. Areas of retardant emergency application will be mapped for future monitoring.

9.4 Vegetation Clearance

Vegetation clearance will be performed such that impacts to sensitive species, particularly within the maritime chaparral, are minimized. Prescribed burning should be performed in maritime chaparral areas to clear as much vegetation as possible in order to reduce the need to cut maritime chaparral. However, maritime chaparral within the primary containment lines will need to be cut, and maritime chaparral within the secondary and tertiary containment lines may also need to be cut. Cutting of the maritime chaparral is to be completed prior to the prescribed burning. Following the prescribed burning there may be some unburned brush and leftover standing burnt stems and branches from the maritime chaparral that will need to be cleared so that DGM operations can be conducted. Specific measures to reduce or avoid impacts to HMP species and habitats will be identified by the Project Biologist, and approved by BRAC, within the Site Habitat Checklists (MEC QAPP, Attachment C (Forms), Form E-1). Additionally, the timing of vegetation clearance will be in accordance with dates specified in the BO.

The 2015 BO lists areas where prescribed burns cannot be conducted safely due to difficult terrain, proximity to urban areas, or potential presence of large MEC, and where vegetation clearance will have to be conducted using mechanical and/or manual mastication methods. If new information results in necessary changes to the planned mastication areas outlined in the BO, KEMRON will communicate these changes to the BRAC office. The BRAC office will determine if these changes require consultation with USFWS.

The leftover dead wood from the burned shrubs may need to be cut using mechanical equipment (e.g., Timber Pro Masticator [or equivalent]) and/or manual equipment (e.g., chainsaws, loppers, and weed whackers), as necessary. Environmental impacts and the safety of personnel will be considered for selecting the cutting method(s) for the unburned maritime chaparral and leftover deadwood in a given area. Depending on the amount of unburned brush in an area, KEMRON may seek guidance from BRAC to determine the appropriate cutting method for that area.

9.5 MEC Removal

During anomaly excavations, the top three (3) inches of soil will be replaced at the surface after backfilling holes, where feasible, to preserve the seed bank of HMP annual plants. The feasibility of replacing soil will be determined by the type of soil and whether HMP plant species are present. All MEC removal activities will be monitored to minimize impacts to HMP-listed species to the greatest extent feasible.

For sifting operations, baseline surveys will be conducted by the Project Biologist, if not already collected, prior to disturbance to characterize the vegetation community and identify locations and population size of any HMP annual species and shrubs present. The data collected during the baseline surveys will be used as a reference for the success criteria that will assess the recovery of protected species and habitats on the sites following restoration (if restoration is required), or to ascertain that natural recovery of the sites is adequate to ensure conservation of HMP species or habitats.

9.6 Vehicle Access

Normal vehicle access will be restricted to the existing roads and fuel breaks as much as possible. If normal vehicle access is necessary within the interior portions of the work area, suitable access routes will be identified by the Project Biologist prior to use. Interior access routes will be located within existing roads and trails, pre-existing paved, graded, or disturbed areas; and areas known to be unoccupied by HMP annual species (based on previous surveys). All interior access routes will be approved by the Project Biologist, BRAC Biologist, and Contractor Quality Control Systems Manager (CQCSM) or Unexploded Ordinance Quality Control Specialist (UXOQCS) and will be identified within the Site Habitat Checklists. During mechanical brush removals and Digital Geophysical Mapping (DGM), tracked vehicles will be used to access interior portions of the work area.

9.7 Avoiding Impacts to Black Legless Lizards

If a black legless lizard is encountered during site activities, the Project Biologist will be responsible for ensuring that the protocol is followed: the encounter will be recorded (MEC QAPP, Attachment C (Forms), Form E-2), the black legless lizard will be re-located to an appropriate location, and a written report of the encounter will be submitted to the BRAC Biologist.

9.8 Avoiding Impacts to California Tiger Salamanders (CTS)

The Project Biologist will include measures in the Site Habitat Checklist to avoid or minimize impacts to CTS and their breeding habitat. Work activities necessary within vernal pools will be scheduled only when the vernal pools are dry in order to avoid impacts to CTS during their breeding season. An effort will be made to reduce impacts to vernal pools during work activities within these sensitive resources, such as use of manual equipment instead of heavy equipment for vegetation removal activities and DGM. Work activities that include dewatering of detention basins will be surveyed with a dipnet by a USFWS-authorized biologist to ensure no CTS are present or breeding within the detention basin prior to dewatering. If CTS are detected within a detention basin, dewatering activities will not commence until the individuals have vacated the detention basin.

If a CTS is encountered during site activities, the established protocol, as stated in the programmatic BO (USFWS, 2015), for avoiding impacts will be followed. Only USFWS-authorized biologists can handle CTS. Procedures are in place to have an USFWS-authorized biologist available should an encounter and subsequent handling (to remove from harm's way) be required. These procedures include wearing nitrile or other non-latex gloves while handling CTS; documenting the weight, length, and disposition of individuals and the encounter and release locations; transporting CTS from the work site to a nearby area of appropriate habitat; and releasing the animal(s) into a vacant small mammal burrow of sufficient size and depth. If a CTS is found, it must be recorded and reported to the BRAC Office (MEC QAPP, Attachment C (Forms), Form E-3).

9.9 Site Restoration and Monitoring for Invasive Weeds

The Project Biologist will assess the need for any site restoration, will inform BRAC of any erosion concerns, and will coordinate the work with the KEMRON PM. Site restoration by KEMRON will likely be limited to basic erosion control measures (e.g., straw application and straw crimping). Prior to work initiation, the Project Biologist will evaluate the Munitions Response Site (MRS) for presence of invasive species. If invasive species are present, the Project Biologist will include measures in the Site Habitat Checklist to avoid or minimize the spread of invasive species, which will be implemented during work operations. The Project Biologist will also perform final inspection and informal follow-up monitoring of the site for erosion or invasive weed problems throughout the surface and subsurface MEC removal. The Project Biologist will inform the BRAC Office of the timing and results of the follow-up monitoring via verbal or electronic mail communication.

9.10 Protection and Conservation of Cultural and Archeological Resources

The Final Environmental Impact Statement (USACE, 1993) and Supplemental Environmental Impact Statement (USACE, 1996) for the disposal and reuse of Fort Ord identified potential historical and cultural resources within Fort Ord. In the event that these resources are encountered during remedial activities, the finds will be reported immediately to USACE and the BRAC Office who will notify the appropriate agencies. All site work will cease and the appropriate resources will be decided upon to address the find. Work will only be resumed upon approval of the USACE and the BRAC Office. Only a qualified archaeologist will be authorized to inventory, move, and preserve human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to Section 3(d) of the Native American Graves Protection and Repatriation Act [43 Code of Federal Regulations (CFR) 10.2 (g)(4)].

10 DOCUMENTATION

The Project Biologist will conduct a preliminary environmental survey of the sites and research the GIS database to identify locations of sensitive species and will prepare a Site Habitat Checklist (MEC QAPP, Attachment C (Forms), Form E-1) prior to each activity that outlines specific avoidance and minimization measures to be implemented. The Project Biologist will prepare an annual monitoring report that documents the work activities and environmental protection measures implemented during each year, the number of staff provided environmental training, and any CTS or black legless lizard encounters (MEC QAPP, Attachment C (Forms), Form E-2 and E-3).

11 QUALITY CONTROL

The Project Biologist will coordinate closely with the BRAC Biologist on all environmental issues. The BRAC Biologist and CQCSM will review and approve all Site Habitat Checklists prior to commencement of work activities. Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for environmental protection operations can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

12 HEALTH AND SAFETY

Health and Safety training requirements for on-site project personnel have been established in accordance with Occupational Safety and Health Administration (OSHA) requirements for hazardous site workers (29 CFR 1910.120) and KEMRON policies and procedures. These training requirements are specified in the Accident Prevention Plan (APP) and in the Site Specific Work Plan (SSWP) and are to be met before project personnel can begin site work.

13 REFERENCES

United States Army Corps of Engineers (USACE), Sacramento District, 1993, *Fort Ord Disposal and Reuse Environmental Impact Statement, Final*, June, Technical assistance from Jones & Stokes Associates, Inc. (JSA 90-214), Sacramento, CA. (AR # BW-1348)

USACE, Sacramento District, 1996, *Fort Ord Disposal and Reuse Supplemental Environmental Impact Statement, Final*, June, Technical assistance from Jones & Stokes Associates, Inc. (JSA 95-130), Sacramento, CA. (AR # BW-1538)

USACE, 1997, *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California* (*HMP*), With technical assistance from Jones and Stokes Associates, Sacramento, California. (AR # BW-1787)

United States Department of the Interior, Fish and Wildlife Service (USFWS), 2015. *Programmatic Biological Opinion for Cleanup and Property Transfer Actions, (8-8-09-F-74), Conducted at the Former Fort Ord, Monterey County, California.* May 28, 2015. [BW-2747]

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

FIELD SOP 2 – Environmental Protection

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	7.0	Personnel have the required equipment • Global Positioning System (GPS) • Flagging tape • Camera • Dipnet • Nitrile gloves (or other non-latex gloves) • Gram scale • Ruler • Bucket • Digital data recording device (if used)				*(I), (F)*
3	8.0	If CTS is found has form E-3 been filled out including all required data.				*(I),(F)*
4	8.0	If black legless lizard is found has form E2 been filled out including all required data.				*(I),(F)*
5	8.0	Have annual species identified in previously unknown locations been mapped by Project Biologist using GPS. Has data been provided to BRAC office. Does it include species encountered?				*(I),(F)*
6	9.1	Have measured to reduce impacts to natural resources been implemented in accordance with the HMP and BO?				*(I),(F)*
7	9.1	Have guidelines that minimize activities that could degrade lands through soil erosion or invasive weed problems been followed?				*(I),(F)*

8	9.1	Has Project Biologist conducted a preliminary environmental survey of the sites and researched the GIS to identify locations of sensitive species, and prepared Form E-1 prior to each activity?				*(I),(F)*
9	9.1	Has a site habitat checklist been completed? And communicated to project supervisors prior to work initiation?				*(I),(F)*
10	9.1	Is the project biologist regularly onsite? Has documentation of any unforeseen environmental concerns been made?				*(I),(F)*
11	9.2	Has the project biologist conducted site-specific environmental training for all field personnel prior to the beginning of project work?				*(I),(F)*
12	9.3	Do any fire retardants and foams contain ferrocyanide? Verify that if used are not closer than 300 ft from vernal pool.				*(I),(F)*
13	9.3	Have areas of retardant emergency application been mapped for future monitoring?				*(I),(F)*
14	9.4	Have specific measures to reduce or avoid impacts to HMP species and habitats been identified by the Project Biologist, and approved by BRAC within the Site Habitat Checklists (Form E-1)				*(I),(F)*
15	9.4	Is timing of vegetation clearance in accordance with dates specified in the BO?				*(I),(F)*
16	9.4	In areas where prescribed burns cannot be conducted safely, has USACE gotten approval from USFWS to masticate those areas?				*(I), (F)*
17	9.5	During anomaly excavations has the top 3 inches of soil been replaced at the surface after backfilling holes?				*(I), (F)*
18	9.5	Have MEC removal activities been monitored?				*(I), (F)*
19	9.5	For sifting operations, has a baseline survey been conducted by the Project Biologist?				*(I), (F)*
20	9.6	Has vehicle access been restricted to the existing roads and fuel breaks?				*(I), (F)*
21	9.6	If necessary, have alternate vehicle routes been identified?				*(I), (F)*

22	9.6	Have interior access routes been approved by the Project Biologist, BRAC Biologist, and CQCSM or UXOQCS – and been identified within the site habitat checklists?				*(I), (F)*
23	9.6	Have tracked vehicles been used to access interior portions of the work area?				*(I), (F)*
24	9.7	If black legless lizard is encountered has the Project Biologist ensured that the protocol is being followed? Has Form E-2 been filled out and lizard relocated to an appropriate location? Has written report of encounter been submitted to BRAC Biologist?				*(I), (F)*
25	9.8	Has Project Biologist included measures in the Site Habitat Checklist to avoid or minimize impacts to CTS and their breeding habitat?				*(I), (F)*
26	9.8	Have work activities necessary within vernal pools been scheduled only when the vernal pools are dry?				*(I), (F)*
27	9.8	Have efforts been made to reduce impacts to vernal pools?				*(I), (F)*
28	9.8	Have work activities that include dewatering of detention basins been surveyed with a dipnet by USFWS authorized biologist to ensure no CTS are present or breeding within the detention basin prior to dewatering?				*(I), (F)*
29	9.8	If CTS are detected in detention basin, have dewatering activities been put on hold until the individuals have vacated the detention basin?				*(I), (F)*
30	9.8	If CTS is encountered during site activities, have established protocols been followed?				*(I), (F)*
31	9.8	Have only USFWS-authorized biologists handled CTS using appropriate PPE? And documented the weight, length and disposition of individuals, including encounter and release locations?				*(I), (F)*
32	9.8	Has CTS been transported from work site to nearby area of appropriate habitat. Has animal been released into vacant small mammal burrow of sufficient size and depth?				*(I), (F)*
33	9.8	If CTS is found has it been recorded on Form E-3?				*(I), (F)*

34	9.9	Has project biologist assess need for site restoration, and inform BRAC of any erosion concerns and coordinate work with KEMRON PM?				*(I), (F)*
35	9.9	Has project biologist evaluated the MRS for presence of invasive species?				*(I), (F)*
36	9.9	If invasive species are present, has project biologist performed final inspection and informal follow-up monitoring of the site for erosion or invasive weed problems??				*(I), (F)*
37	9.9	Has project biologist informed BRAC of the timing and results of the follow-up monitoring via verbal or email?				*(I), (F)*
38	9.10	Have cultural and/or archaeological resources been identified? If so has this been reported immediately to USACE and BRAC? Has work in this area been stopped? Has a qualified archaeologist been authorized to deal with archaeological resources?				*(I), (F)*
39	10	Has project biologist conducted preliminary env survey of sites and researched GIS DB to identify locations of sensitive species. And prepared a site habitat checklist (Form E-1) prior to each activity that outlines specific avoidance and minimization measures to be implemented.				*(I), (F)*
40	10	Has project biologist prepared an annual monitoring report that documents the work activities and environmental protection measures implemented during each year, the number of staff provided env training, and any CTS or black legless lizard encounters (Forms E-2 and E-3).				*(I), (F)*
41	11	Has the BRAC Biologist and CQCSM reviewed and approved all site habitat checklists prior to the commencement of work activities?				*(I), (F)*

Punch list Items	
No.	

Three Phase Quality Control Checklist

FIELD SOP 2 – Environmental Protection

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

FIELD SOP 3

GRID AND BORDER SURVEY

Technical Procedure: FIELD SOP 3

STANDARD OPERATING PROCEDURE FOR GRID AND BORDER SURVEY

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
FCA	Function Check Area
GPS	Global Positioning System
MEC	Munitions and Explosives of Concern
MEC QAPP	Munitions and Explosives of Concern Quality Assurance Project Plan
MQO	Measurement Quality Objective
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
UXO	Unexploded Ordnance

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to a grid and/or border survey. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the survey team when completing a grid and/or border survey. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites. Positional accuracy specifications may vary depending on equipment and contract requirements.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS]
- Wooden stakes (lath)
- Hammer
- 100 foot tape measure (3 each)
- Compass
- Black marker (sharpie)
- Colored flagging tape
- Schonstedt or White DFX 300 hand-held metal detector

6 PERSONNEL

The staff that is responsible for the installation of grids and/or borders are to include a Global Positioning System (GPS) Technician and a minimum Unexploded Ordnance (UXO) Technician II escort performing anomaly avoidance. The two man rule is to always be followed.

7 PROCEDURES

Grids and boundaries are to be delineated in the field to ensure that field personnel know the extent of the investigation/remediation area and perform field activities to the edge of the grid or boundaries. Grids are to be 100 ft x 100 ft in size and will be based on the former Fort Ord Master Grid System. Grid corners and/or grid border points will be pre-generated by the GIS Manager and will be loaded onto the RTK-GPS units by the survey team prior to the commencement of field work. Hand-held metal detectors to be used during the installation of grids/borders are to be checked at the Function Check Area (FCA) to verify that the equipment is functioning properly. Measurement Quality Objectives (MQO)s for hand-held metal detectors are described in Worksheet #12 of the MEC Quality Assurance Project Plan (QAPP).

The grid nodes and/or grid borders will be identified by the placement of wooden stakes. Each grid will be identified by the grid number on its southwest corner stake. In areas that have good GPS coverage (i.e. no canopy cover) RTK-GPS units will be used to locate the predetermined stake locations. In areas that do not have good GPS coverage due to canopy cover the GPS receiver may be raised up using a telescopic pole to get good GPS coverage. If GPS coverage is still not able to be achieved, tape measurements from adjacent grid corner points will be used to establish grid stake locations.

Once a location has been selected for installation of a wooden stake the area surrounding the location is to be inspected by the UXO technician using a hand-held metal detector to ensure that no metallic objects are present. If a metallic object is found to exist in the subsurface the location of the stake will be offset and the offset distance and direction of the offset will be noted on the stake. All stakes will have their Grid Identification number (or other predetermined stake identification number) written legibly on the stake using black indelible ink. .

8 DOCUMENTATION

None.

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the grid and border survey can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

The installation of grids and/or borders in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards.

11 REFERENCES

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

FIELD SOP 3 – Grid and Border Survey

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Is the required equipment available? • Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS] • Wooden stakes (lath) • Hammer • 100 foot tape measure (3 each) • Compass • Black marker (sharpie) • Colored flagging tape • Schonstedt or White DFX 300 hand-held metal detector				*(I), (F)*
3	7.0	Have grid corners and/or grid border points been pre-generated by the GIS Manager and been loaded onto the RTK-GPS units by the survey team prior to the commencement of field work?				*(I),(F)*
4	7.0	Have hand-held metal detectors been checked at the FCA in accordance with MQOs listed in MEC QAPP worksheet #12?				*(I),(F)*
5	7.0	Have wooden stakes been installed? Has each stake been identified by a Grid ID? Is the grid identified by the SW corner stake?				*(I),(F)*
6	7.0	If good GPS coverage has RTK-GPS been used to locate stake placement?				*(I),(F)*
7	7.0	If not good GPS coverage has GPS receiver been raised up? If still not good have tape measurements from adjacent grid corners been used to establish grid stake locations?				*(I),(F)*
8	7.0	Has area around stake location been inspected by a UXO technician using a hand-held metal detector to ensure that no metallic objects are present?				*(I),(F)*

Three Phase Quality Control Checklist

FIELD SOP 3 – Grid and Border Survey

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

9	7.0	If metallic object is found to exist in subsurface has stake been offset and has offset distance and direction of offset been noted on the stake?				*(I),(F)*
10	7.0	Do all stakes have their Grid ID written legible on the stake using black indelible ink?				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

FIELD SOP 4

VEGETATION REMOVAL

Technical Procedure: FIELD SOP 4

STANDARD OPERATING PROCEDURE FOR VEGETATION REMOVAL

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BLM	Bureau of Land Management
BO	Biological Opinion
BRAC	Base Realignment and Closure
CQCSM	Contractor Quality Control System Manager
HFD	Hazard Fragmentation Distance
HMP	Habitat Management Plan
MEC	Munitions and Explosives of Concern
MSD	Minimum Separation Distance
POMFD	Presidio of Monterey Fire Department
QAPP	Quality Assurance Project Plan
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to vegetation removal. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the vegetation removal team(s). This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Manual vegetation removal equipment;
- Mechanical vegetation removal equipment;
- Schonstedt or White DFX 300 hand-held metal detector(s); and
- Appropriate PPE

6 PERSONNEL

The staff that is responsible for vegetation removal includes the vegetation removal team(s), and at a minimum one (1) Unexploded Ordnance (UXO) Technician II escort performing anomaly avoidance for the vegetation removal team.

7 VEGETATION REMOVAL – OPERATIONAL INFORMATION

The Army has historically conducted manual and/or mechanical vegetation removal operations for the following reasons:

- To create containment lines for prescribed burns, including manual tree limbing and brush cutting in areas inaccessible to mechanical masticators;
- When prescribed burns cannot be done safely, due to the potential hazard of large subsurface MEC items very near the surface;
- When the height of vegetation and/or proximity to urban areas pose potential wildfire or smoke impacts;
- When prescribed burns cannot be reasonably be conducted, because the size of the area is too small, or in areas lacking existing fuel breaks and/or access roads;
- When areas have high vegetation moisture content, did not burn, or burned incompletely during a prescribed burn; and

- To complete the vegetation removal process in prescribed burn areas, following a burn, by removing vegetation in partially burned or unburned areas and also removing plant skeletons which often remain in burned areas.

In areas where prescribed burns cannot be conducted safely due to difficult terrain, proximity to urban areas, or where the potential for large MEC items exist, the Army will get approval from the United States Fish and Wildlife Service (USFWS) to remove vegetation in those areas using manual or mechanical methods.

8 PROCEDURES

Vegetation removal will be performed such that impacts to endangered and/or sensitive plant species, including the central maritime chaparral habitat, are minimized. Specific measures to reduce or avoid impacts to species and/or habitats described in the Habitat Management Plan (HMP) will be identified by the Project Biologist using the site habitat checklists (MEC Quality Assurance Project Plan [QAPP], Attachment D, Forms E-1 through E-3) and will be approved by the Base Realignment and Closure (BRAC) Biologist and Contractor Quality Control System Manager (CQCSM). Timing of vegetation removal operations will be conducted in accordance with dates specified in the Biological Opinion (BO) [USFWS 2015]. Vegetation will be removed using manual and/or mechanical removal methods, or by prescribed burn.

8.1 Vegetation removal using manual and/or mechanical methods

Manual vegetation removal operations will occur in oak and grasslands areas and will include the use of chain saws, hand saws, trimmers, loppers, etc. Manual vegetation removal may be used in areas where mechanical removal methods cannot gain access, or to trim low hanging tree branches in containment lines for fire safety. Trees are typically limbed up to 8 feet above ground surface (or another height as designated by the Prescribed Burn Boss) to prevent fire from jumping from the ground into trees, with resulting tree crowning and potential airborne spread of embers beyond containment lines. Grass and oak woodland areas will receive only the minimal amount of vegetation removal that is required to facilitate technology-aided surface MEC removal operations. Following manual vegetation removal, vegetation will be allowed to regrow once MEC removal operations have been completed.

Mechanical vegetation removal operations will be completed in chaparral vegetation or other areas (such as coastal scrub) as required and constitute the preferred mastication method due to cost and production efficiency. Mechanical equipment used for vegetation removal may include the use of brush hogs, tractor accessorized Zerriest, Feller Bunchers (such as a Timber Pro, Timber King, (or equivalent), with drum-type mastication head, etc. Following mechanical mastication, vegetation will be allowed to regrow once MEC removal operations have been completed.

Prior to the commencement of vegetation removal operations, a UXO Technician II or above will provide anomaly avoidance for the vegetation removal team. The UXO Technician will first conduct a visual inspection (to the extent possible) of the area(s) that are to have vegetation removed. Depending on the density of the vegetation, a hand-held metal detector may be used in conjunction with the visual inspection of the ground surface for MEC and potential obstructions that could interfere with the mastication process (e.g., barbed wire, range-related debris, etc.). Once the visual inspection has been completed, the UXO Technician will then move outside of the predetermined minimum separation distance (MSD), prior to the commencement of vegetation removal operations. The MSD for vegetation cutting is the safe distance to avoid flying debris from the mastication equipment (e.g. 450 feet for Feller Bunchers with drum-type mastication heads). If an explosives safety exclusion zone is also applicable to the work area, the MSD is the Hazard Fragmentation Distance (HFD) for the MGFD, or the safe distance to avoid flying debris from the mastication equipment (e.g., 450 feet for Feller Bunchers with drum-type mastication heads), whichever is greater. Masticators are armored as needed, based on ordnance known to exist in the Unit/Area.

For mastication in areas where surface MEC removal has already occurred, the MSD is 450 feet, or is based on the equipment in use. If during vegetation removal operations a MEC or an unknown item is encountered, vegetation removal operations will stop and the UXO Technician will investigate the item. Should a MEC item(s) be encountered, it will be managed in accordance with UXO SOP 5 (MEC and MPPEH Management).

In areas with light to medium vegetation (i.e. where the ground surface can be readily observed), the vegetation will be cut in one stage to a height of no more than six inches above ground. In areas with dense vegetation that obscures the visual inspection of the ground surface, a first cut will be made to a height between 18 and 24 inches above the ground. After a technology-aided visual inspection for MEC has been completed by the UXO Technician, a second cut will be made to a height of no more than six inches above ground surface.

Vegetation will be removed in a manner so as to avoid damage to the plant's root structure. Trees will not be removed without prior authorization. Special status trees, such as Toro Manzanitas, may be flagged by the project Biologist prior to mastication for avoidance. Branches and low-lying limbs of oak trees may be trimmed to increase accessibility. In general, and specifically in chaparral areas, masticated materials will be left on the ground, however, large quantities of cut vegetative matter may require chipping and off-site disposal to avoid impeding plant growth. Chipping will be decided on a case-by-case basis. Quantities of poison oak will also be assessed to determine the feasibility of chipping. Site-specific vegetation removal operations will be described in the SSWPs.

Fencing around or within a site that will undergo manual and/or mechanical vegetation removal will be removed (as needed) prior to the commencement of vegetation removal activities. Site security will be established for the area while the fencing is removed. Following the vegetation removal operation(s), fencing will be re-installed.

8.2 Vegetation removal using prescribed burn

Prescribed burns will be conducted in conjunction with Presidio of Monterey Fire Department (POMFD). POMFD will act as the Incident Commander during prescribed burn operations. The POMFD Chief (or designee) will act as the Incident Commander during prescribed burn operations, working closely with the KEMRON team's Prescribed Burn Boss. KEMRON will provide prescribed burn support activities that include the following tasks:

- Removal and replacement of fencing;
- Burn containment line preparation, including mastication and, where necessary, surface MEC removal; and
- Prescribed burn support (See Section 8.2.3 below):

Once the prescribed burn has been completed the burned shrubs and other remaining burned wood may need to be removed using mechanical or manual equipment as necessary. Safety of personnel and environmental impacts will be considered when selecting the appropriate vegetation removal method(s) to be used. Additionally, depending on the amount of unburned brush in an area, KEMRON may seek guidance from BRAC to determine the appropriate vegetation removal method for that area.

8.2.1 Removal and Replacement of Fencing

Fencing around or within a site that will undergo a prescribed burn will be removed (as needed) prior to the commencement of burn activities. Site security will be established for the area while the fencing is removed. Following the prescribed burn operation(s), fencing will be re-installed.

8.2.2 Planned Burn Area Preparation

Vegetation removal within the primary containment line will be conducted using either manual and/or mechanical methods around the perimeter of the area to be burned. The width of the containment line is to be based on the most-probable munition within the area and the associated HFD (as specified in the ESS). Secondary and tertiary containment lines may also have vegetation removed. Planned burn area preparation will include the removal of combustible materials (e.g. tires, structures, targets, etc.) as necessary and if deemed safe to remove. Structures that are not to be burned will be protected prior to conducting the burn operation. If not previously conducted, UXO-qualified personnel will conduct technology-aided surface MEC removal operations within the containment line to support the prescribed burn.

8.2.3 Prescribed Burn Support

The prescribed burn(s) will be supported by KEMRON through the following efforts:

- Ground setup for dip tanks, intermediate tanks, pumps, and hoses;
- Provision of staff to manage each dip tank location and the water transport and transfer at these sites on burn days;
- Setup of air monitoring equipment at various area locations designated in the Burn Plan;
- Provision of staff to manage the air monitor operations on burn days;
- Provision of helicopters for both the ignition and suppression phases of the prescribed burns;
- Provision of water trucks, operators, and crash rescue vehicles;
- Provision of burn equipment;
- Provision of wildfire fighting ground support team and equipment;
- Provision of Prescribed Burn Boss, Air Ground Support Supervisor, and Burn Safety Officer (for both planning and operations);
- Provision of heavy equipment operators on burn days;
- Provision of UXO supervisory staff for ordnance safety and other ordnance issues on burn days;
- Provision of security staff at Impact Area and/or Bureau of Land Management (BLM) Area B road gates and/or other access points to assure public safety on burn days; and
- Provision of other support staff at the project field office as necessary on burn days.

9 DOCUMENTATION

After burns are conducted, if directed, KEMRON will document areas that did or did not burn.

10 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for vegetation removal can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

11 HEALTH AND SAFETY

Vegetation removal in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards.

12 REFERENCES

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

United States Department of the Interior, Fish and Wildlife Service (USFWS), 2015. *Programmatic Biological Opinion for Cleanup and Property Transfer Actions, (8-8-09-F-74), Conducted at the Former Fort Ord, Monterey County, California.* May 28, 2015. [BW-2747]

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

FIELD SOP 4 – Vegetation Removal

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Is the necessary equipment available? • Manual vegetation removal equipment; • Mechanical vegetation removal equipment; • Schonstedt or White DFX 300 hand-held metal detector(s); and • Appropriate PPE				*(I), (F)*
3	6.0	Is 1 UXO Technician II escort performing anomaly avoidance for each vegetation removal team?				*(I),(F)*
4	8.0	Is veg removal being performed to minimize impacts to endangered and/or sensitive plant species?				*(I),(F)*
5	8.0	Have specific measures been identified by the project biologist using the site habitat checklist to reduce or avoid impacts to species and/or habitats?				*(I),(F)*
6	8.0	Has the project biologist use the site habitat checklists (Forms E-1, E-2 and E-3) and have they been approved by the BEC?				*(I),(F)*
7	8.0	Has timing of veg removal been conducted in accordance with dates specified in the BO?				*(I),(F)*
8	8.1	Have trees been limbed up to 8 ft above ground?				*(I),(F)*
9	8.1	Have grass and oak woodland areas received minimal amount of veg removal to facilitate technology-aided surface MEC removal operations?				*(I),(F)*
10	8.1	Has veg been allowed to regrow once MEC removal operations have been completed?				*(I),(F)*

Three Phase Quality Control Checklist

FIELD SOP 4 – Vegetation Removal

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

11	8.1	Has mechanical veg removal been completed in chaparral veg or other areas?				*(I),(F)*
12	8.1	Has a UXO Tech II or above provided anomaly avoidance for the veg removal team prior to the start of veg removal ops?				*(I),(F)*
13	8.1	Has the UXO Tech moved outside the MSD prior to veg removal ops being conducted?				*(I), (F)*
14	8.1	If a MEC item is located during veg removal ops, have veg removal ops been halted?				*(I), (F)*
15	8.1	If a MEC item is encountered is it managed in accordance with UXO SOP 5?				*(I), (F)*
16	8.1	In areas with light to medium veg has the veg been cut on one stage to a height of no more than 6 inches?				*(I), (F)*
17	8.1	In areas with dense veg, has a first cut been made to a height between 18 and 24 inches? And after a technology-aides surface MEC removal operation has been conducted has a second cut to a height of no more than 6 inches been completed?				*(I), (F)*
18	8.1	Is veg being removed in such a manner as to not damage the root structure?				*(I), (F)*
19	8.1	If trees are to be removed has proper authorization been given?				*(I), (F)*
20	8.1	Are masticated materials being left on the ground? Are large quantities of cut veg been chipped and hauled off-site for disposal to avoid impeding plant growth? (case by case basis)				*(I), (F)*
21	8.1	Are site-specific veg removal operations described in the SSWPs?				*(I), (F)*
22	8.1 and 8.2.1	Has fencing been removed (if applicable) prior to veg removal ops? If so has security been established while fencing is removed? Has fencing been reinstalled following veg removal ops?				*(I), (F)*
23	8.2	Are prescribed burns being conducted in conjunction with the POMFD?				*(I), (F)*
24	8.2	After the burn has remaining wood been removed?				*(I), (F)*
25	8.2	Has KEMRON sought guidance from BRAC to determine the appropriate veg removal method for that area?				*(I), (F)*

Three Phase Quality Control Checklist

FIELD SOP 4 – Vegetation Removal

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

26	8.2.2	Has veg removal within the primary containment line been conducted around the perimeter of the area to be burned? Note that veg removal may also be required in secondary and tertiary containment lines.				*(I), (F)*
27	8.2.2	Is the width of the containment line based on the most-probably munition and the associated HFD (as specified in the ESS)?				*(I), (F)*
28	8.2.2	Has burn area preparation been conducted as necessary? i.e. removal of combustible materials.				*(I), (F)*
29	8.2.2	Have structures not to be burned been protected prior to the burn?				*(I), (F)*
30	8.2.2	If not previously conducted has a technology-aided surface MEC removal operation been conducted within the containment line to support the burn been conducted?				*(I), (F)*
31	8.2.3	Has KEMRON provided burn support activities as listed in Section 8.2.3 of this SOP?				*(I), (F)*
32	9.0	If requested, has KEMRON documented areas that did or did not burn?				*(I), (F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 1

IVS INSTALLATION AND USE

Technical Procedure: GEO SOP 1

STANDARD OPERATING PROCEDURE FOR INSTRUMENT VERIFICATION STRIP INSTALLATION AND USE

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
ASTM	American Society for Testing and Materials
DGM	Digital Geophysical Mapping
ESTCP	Environmental Security Technology Certification Program
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	Industry Standard Object
IVS	Instrument Verification Strip
MEC	Munitions and Explosives of Concern
MEC QAPP	Munitions and Explosives of Concern Quality Assurance Project Plan
MQO	Measurement Quality Objective
MRA	Munitions Response Area
mV	milliVolt
NRL	Naval Research Lab
QC	Quality Control
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
UXO	Unexploded Ordnance

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the installation of an Instrument Verification Strip (IVS) and its use. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the Quality Control (QC) Geophysicist when installing an IVS. Additionally this SOP describes the use of an IVS. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites. Positional accuracy specifications may vary depending on equipment and contract requirements.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS]
- Digital Tablet
- 100 ft tape measure (1 each) [if to be used]
- Shovel (or other similar device for placing the IVS items and/or inert ordnance items in the subsurface)
- Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors
- Industry Standard Object(s) (ISO)s [small size] and/or inert ordnance items.

ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel, manufactured to an American Society for Testing and Materials (ASTM) specification. Although only small ISOs are anticipated to be used on this project, three sizes of ISOs exist and are described in the Table 1 and are shown in Figure 1 below.

TABLE 1: Three sizes of ISOs

Item	Nominal Pipe Size	Outside Diameter	Length	Part Number[1]	ASTM Specification
Small ISO	1"	1.315" (33 mm)	4" (102 mm)	44615K466	A53/A773
Medium ISO	2"	2.375" (60 mm)	8" (204 mm)	44615K529	A53/A773
Large ISO	4"	4.500" (115 mm)	12" (306 mm)	44615K137	A53/A773

[1] Part number from the McMaster-Carr catalog.

FIGURE 1: Three sizes of ISOs

6 PERSONNEL

The QC Geophysicist is responsible for the installation of an IVS. During the installation of IVS items the QC Geophysicist will always be accompanied by a Unexploded Ordnance (UXO) qualified technician / escort and the two man rule is to always be followed.

7 PROCEDURES

As part of the Geophysical System Verification (GSV) process an IVS (or multiple IVSs) will be installed to verify that the geophysical detection system being employed is operating properly. The IVS is an area containing buried ISOs, and possibly inert munitions, that is used to verify that the geophysical instrument(s) [Geonics EM61MK2] is able to detect a known item within a predetermined range of response values and that the items in the IVS are located positionally within acceptable tolerances.

Prior to the installation of the IVS, hand-held metal detectors are to be checked at the function check area (FCA) to verify that the equipment is functioning properly. The EM61MK2 unit that is to be used by the QC Geophysicist during the installation of the IVS is to have standard static QC tests completed in accordance with GEO SOP 3 (Digital Geophysical Mapping [DGM] using a person-portable system). Measurement Quality Objectives (MQO)s for EM61MK2 static tests are located in Worksheet #12 of the MEC QAPP.

Once a location has been selected for IVS installation the area surrounding the location is to be inspected by the QC Geophysicist using an EM61MK2 to ensure that no metallic objects are present. If a metallic object is found to exist in the subsurface another location will be selected, or the subsurface item will be removed in accordance with procedures outlined in the MEC Quality Assurance Project Plan (QAPP). Once the location has been verified to be clear of metallic objects IVS items will then be installed. IVS items will have their depth recorded in inches below ground surface (center of mass), and the horizontal position of the IVS items will be recorded using RTK-GPS.

In accordance with GSV guidelines, predetermined instrument response curves for buried ISOs will be used to initially verify that each EM61MK2 instrument is functioning properly. A “background strip” located adjacent to the IVS will be used to determine the background noise level of the EM61MK2 instruments to verify whether targets of interest can be detected reliable to their depth of interest under the site conditions. The noise strip will contain no discreet anomalies or buried ISOs.

In the Impact area Munitions Response Area (MRA), a total of three (3) IVSs are currently installed. The IVS that is located in Unit 12 is currently being used for advanced classification DGM and will not be used for standard DGM operations. This IVS (located in Unit 12) will remain in place until such time as a decision is made to remove it. The remaining two IVSs that exist are located adjacent to Unit 2/3 and adjacent to Unit 4 and are to be used for standard DGM operations. At the start of this task order, the items in these two IVSs will be excavated and the items reinstalled (if it is decided that these specific FCAs are to be used in the future). The purpose of this exercise is to verify the depth and positioning of the previously installed IVS items and to also standardize the depth at which all IVS items are placed.

All IVSs that are installed will use small ISOs placed at a depth of six (6) inches (center of mass) in a vertical orientation (inert ordnance items may also be used but are not required). All items in the IVS will be spaced a minimum of 5 ft from each other. Following burial, the position of each IVS item will be surveyed using RTK-GPS. Table 2 below describes the types of IVS items to be installed and the depths and orientations that will be used during the reinstallation of IVSs adjacent to Units 2/3 and Unit 4.

TABLE 2: IVS Item Depths and Orientations

ID	Easting	Northing	Type	Depth to Center of Mass (inches)	Depth to Center of Mass (cm)	Orientation
IVS 1	TBD	TBD	Small ISO	6	15.2	Vertical
IVS 2	TBD	TBD	Small ISO	6	15.2	Vertical
IVS 3	TBD	TBD	Small ISO	6	15.2	Vertical
IVS 4	TBD	TBD	Small ISO	6	15.2	Vertical
IVS 5	TBD	TBD	Small ISO	6	15.2	Vertical

IVS 6	TBD	TBD	Small ISO	6	15.2	Vertical
IVS 7	TBD	TBD	40mm Projectile	11	27.9	Vertical
IVS 8	TBD	TBD	40mm Projectile	11	27.9	Vertical
IVS 9	TBD	TBD	40mm Projectile	11	27.9	Vertical
IVS 10	TBD	TBD	40mm Projectile	5	12.7	Horizontal
IVS 11	TBD	TBD	40mm Projectile	5	12.7	Horizontal
IVS 12	TBD	TBD	40mm Projectile	5	12.7	Horizontal

During the first four days of DGM operation, a series of dynamic IVS measurements will be digitally collected over the IVS using the EM61MK2 system(s) [person-portable and towed array]. For the IVS background reading, the expected baseline milliVolt (mV) response is to be based on an average of all DGM readings over the background strip for the first four days of operation. The expected baseline mV response for each individual IVS item is to be based on an average of the EM61MK2 responses for each individual IVS item that were recorded during the first four days of operation.

Each person-portable and/or towed array system that is to be used that day will make a single pass over the IVS and adjacent background strip twice daily (am/pm). The travel path over each strip will be well marked to ensure that the instrument(s) passes directly over the center of each IVS item and that background data is collected in a consistent manner from day to day. MQOs for DGM system IVS tests are described in Worksheet #12 of the MEC QAPP.

After the initial IVS test(s) have been conducted an IVS Report will be generated that details the results of the initial IVS test(s). An IVS Report will be generated every time a new geophysical system or sensor is to be used onsite. The IVS report will describe the measured mV responses for each individual EM61MK2 coil in relation to the ISOs that are located within the IVS and will compare these responses to the predetermined instrument response curves for buried ISOs based on the Naval Research Lab (NRL) program called *EM61MK2 Response*. This IVS report will include geophysical maps and a complete analysis of the results that will verify that the EM61MK2 instrument(s) are functioning as designed.

8 DOCUMENTATION

The following information is to be recorded for each IVS item that is installed:

- IVS unique identification number
- GPS coordinate (X,Y)
- Seed Type (ISO type or inert ordnance type)
- Depth (center of mass (inches and cm))
- Orientation
- Date Installed

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for IVS installation and use can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

The installation of IVS items in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards.

11 REFERENCES

ESTCP (Environmental Security Technology Certification Program), July 2009, Geophysical System Verification (GSV): *A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response*.

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 1 – IVS Installation and Use

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Team:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Verify that RTK-GPS is being used (if employed)				*(I),(F)*
3	5.0	Verify digital tablets are being used				*(I),(F)*
4	5.0	Verify the following equipment is available for use (if to be used): • 100 ft tape measure (3 each) • Shovel (or similar device for installing BSIs) • Schonstedt and White DFX 300 • ISOs (small size)				*(I),(F)*
5	6.0	Verify that the QC Geophysicist is escorted by a UXO technician during IVS installation.				*(I),(F)*
6	7.0	Verify that hand-held metal detectors and RTK-GPS are verified to be functioning properly at an FCA at the beginning of each day.				*(I),(F)*
7	7.0	Verify that the EM61 is functioning properly through the use of standard static QC tests in accordance with Geo SOP 3 and MQOs located in WS #12 of the MEC QAPP.				*(I),(F)*
8	7.0	Verify IVS location is inspected by a UXO Technician using a hand-held metal detector prior to installation				*(I),(F)*
9	7.0	If anomaly is found to exist has item been removed or has new location been chosen?				*(I),(F)*
10	7.0	Have IVS items had their depth and inches bgs (center of mass) been recorded? Has horizontal position been recorded using RTK GPS?				*(I),(F)*
11	7.0	Have instrument response curves for buried ISOs been used to initially verify that EM61 is functioning properly?				*(I),(F)*

12	7.0	Is background strip clear of anomalies? Has background strip data been used to determine background noise level and assess if TOI can be detected under site conditions?				*(I),(F)*
13	7.0	At start of task order were items in the 2 IVSs excavated and items reinstalled?				*(I),(F)*
14	7.0	Have all IVSs that are installed use small ISOs placed at a depth of 6 inches (center of mass) in a vertical orientation? Are all IVS items a minimum of 5 ft from each other? Has position of IVS items been located using RTK-GPS?				*(I),(F)*
15	7.0	Have IVS items been installed in accordance with Table 2 of this SOP?				*(I),(F)*
16	7.0	Have series of IVS measurements been digitally collected over the IVS using the EM61 during the first 4 days of DGM operation? Has series of background readings been collected during first 4 days of DGM operation? Has baseline mV response for each individual IVS item been calculated based on average of first 4 days of DGM operation?				*(I),(F)*
17	7.0	Have all EM61 systems to be used that day made a pass over the IVS and background strip twice daily (am/pm)? Have passes over IVS been completed in a consistent manner from day to day? Are MQOs (WS #12) being met?				*(I),(F)*
18	7.0	Has IVS report been generated? For every time new sensor is used onsite? Does IVS report include geo maps and complete analysis of results to verify that EM61 is functioning as designed?				*(I),(F)*
19	8.0	Has the following information been recorded for each IVS item? • IVS unique identification number • GPS coordinate (X,Y) • Seed Type (ISO type or inert ordnance type) • Depth (center of mass (inches and cm)) • Orientation • Date Installed				*(I),(F)*

Three Phase Quality Control Checklist

GEO SOP 1 – IVS Installation and Use

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 2

BLIND SEED ITEM INSTALLATION

Technical Procedure: GEO SOP 2

STANDARD OPERATING PROCEDURE FOR BLIND SEED ITEM INSTALLATION

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF ACRONYMS

APP	Accident Prevention Plan
ASTM	American Society for Testing and Materials
bgs	below ground surface
BSI	Blind Seed Items
DGM	Digital Geophysical Mapping
ESTCP	Environmental Security Technology Certification Program
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	Industry Standard Object
MEC	Munitions and Explosives of Concern
MEC QAPP	Munitions and Explosives of Concern Quality Assurance Project Plan
QC	Quality Control
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the installation and positioning of Blind Seed Item (BSI)s.. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the UXOQCS and Quality Control (QC) Geophysicist when installing BSIs either on the surface or in the subsurface of an area that is to be investigated / remediated. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites. Positional accuracy specifications may vary depending on equipment and contract requirements.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS] {if to be used}
- Digital Tablet
- 100 ft tape measure (3 each) [if to be used]
- Shovel (or other similar device for placing the BSI in the subsurface)
- Schonstedt GA-52Cx and White DFX 300 hand-held metal detector
- Industry Standard Object(s) (ISO)s [small size] or inert ordnance items.

ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel, manufactured to an American Society for Testing and Materials (ASTM) specification. Three sizes of ISOs exist and are described in the table and are shown in the figure below.

Item	Nominal Pipe Size	Outside Diameter	Length	Part Number[1]	ASTM Specification
Small ISO	1"	1.315" (33 mm)	4" (102 mm)	44615K466	A53/A773
Medium ISO	2"	2.375" (60 mm)	8" (204 mm)	44615K529	A53/A773
Large ISO	4"	4.500" (115 mm)	12" (306 mm)	44615K137	A53/A773

[1] Part number from the McMaster-Carr catalog.

6 PERSONNEL

The QC Staff that is responsible for the installation of BSIs is the Unexploded Ordnance Quality Control Specialist (UXOQCS) and the QC Geophysicist. During the installation of BSIs these persons may work together or separately however the QC Geophysicist will always be accompanied by a UXO qualified technician / escort and the two man rule is to always be followed.

7 PROCEDURES

Hand-held metal detectors are to be checked at the function check area (FCA) at the beginning of each day to verify that the equipment is functioning properly. Once a location has been selected for BSI installation the area surrounding the location is to be inspected by a UXO Technician using a hand-held metal detector to ensure that no metallic objects are present. If a metallic object is found to exist (either on the surface or in the subsurface) the QC staff will select another location. Once the location has been verified to be clear of metallic objects the BSIs will then be installed at depths (or on the surface for Technology-Aided Surface MEC Removal operations) in accordance with the densities detailed in the Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP) [MEC QAPP] and/or Site Specific Work Plan (SSWP) [SSWP taking precedence].

Prior to BSI placement or installation, each BSI is assigned a unique identification number. For BSIs that are to be placed below the ground surface, once the BSI has been installed the vertical depth to the center of mass of the BSI will be recorded in inches below ground surface (bgs). The horizontal position of the BSI will be recorded using either RTK-GPS, GPS on a digital tablet, or tape measurements from the south-west grid corner stake.

Positioning with GPS
BSIs related to Digital Geophysical Mapping (DGM), once emplaced, will be positioned using RTK-GPS. The GPS that is an extension of the digital tablet may be used in lieu of the RTK-GPS to position BSIs that are to be used for the Technology-Aided Surface MEC Removal or for the Intrusive Investigation Using Analog Methodologies.

Positioning with tape measures
If the position of the BSI is to be collected using tape measures, once the BSI has been emplaced, positional measurements for the BSI will be recorded in both the X and Y direction from the corner stake that exists in the south west corner of the grid. These measurements will be to the 10^{th} of a foot. Once all the required data has been recorded, the location of the BSI will be backfilled so as to disguise the location of the BSI.

BSI Integrity
All BSI data related to Technology-Aided Surface MEC Removal and the Intrusive Investigation Using Analog Methodologies will be provided by the UXOQCS (or survey team using RTK-GPS) to the field data manager at the end of the day and will be kept confidential. In accordance with the Blind Seed Firewall Plan (MEC QAPP, Attachment A) BSI data is not to be provided to the Technology-Aided Surface MEC Removal or the Intrusive Investigation Using Analog Methodologies team without expressed written (or email) consent by the client. All BSI data related to DGM operations will be kept confidential by the QC Geophysicist until the DGM data for that area/Unit has been collected, processed, targeted and the BSI locations have been verified by the QC Geophysicist to have been accurately identified and correctly targeted. Once this has been verified, DGM related BSI data will be provided to the field data manager. DGM related BSI data will not be provided to the Target Reacquisition or Intrusive Investigation of DGM Targets teams without expressed written (or email) consent by the client.

8 DOCUMENTATION

The following information is to be recorded for each BSI:

- BSI unique identification number
- Seed Type (Inert ordnance or ISO)
- Nomenclature (if inert ordnance)
- Diameter (if inert ordnance)
- Length (if inert ordnance)
- Max Depth (if inert ordnance)
- Depth of BSI (center of mass) [if buried]
- Date Installed
- GPS coordinate - or X,Y position from the southwest corner stake (if using tape measures)

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for BSI installation can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

The installation of BSIs in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items.

Measures must be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) that mitigate these hazards.

11 REFERENCES

ESTCP (Environmental Security Technology Certification Program), July 2009, Geophysical System Verification (GSV): *A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response*.

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 2 – Blind Seed Item Installation

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Team:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Verify that RTK-GPS is being used (if employed)				*(I),(F)*
3	5.0	Verify digital tablets are being used				*(I),(F)*
4	5.0	Verify the following equipment is available for use (if to be used): • 100 ft tape measure (3 each) • Shovel (or similar device for installing BSIs) • Schonstedt or White DFX 300 • ISOs (small size)				*(I),(F)*
5	6.0	Verify that the QC Geophysicist is escorted by a UXO technician during emplacement of BSIs				*(I),(F)*
6	7.0	Verify that hand-held metal detectors and RTK-GPS (if employed) are verified to be functioning properly at the beginning of each day.				*(I),(F)*
7	7.0	Verify area surrounding the BSI location is inspected by a UXO Technician using a hand-held metal detector prior to installation				*(I),(F)*
8	7.0	Verify that BSIs are installed at depths and densities specified in the MEC QAPP and SSWP.				*(I),(F)*
9	7.0	Verify that BSIs are assigned (marked) with a unique identification number.				*(I),(F)*
10	7.0	Verify vertical depth to BSI center of mass is recorded in inches below ground surface.				*(I),(F)*
11	7.0	Horizontal position for DGM BSIs is recorded using RTK-GPS.				*(I),(F)*
12	7.0	Horizontal position for surface sweep or analog intrusive may use GPS that is an extension of the digital tablet.				*(I),(F)*

Three Phase Quality Control Checklist

GEO SOP 2 – Blind Seed Item Installation

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

13	7.0	Horizontal position using tape measures – x,y to be recorded from SW corner of grid. Measurements to nearest tenth of a foot. Disguise location of BSI.				*(I),(F)*
14	7.0	Verify BSI integrity is in compliance with Blind Seed Firewall Plan (MEC QAPP, Attachment A)				*(I),(F)*
15	8.0	Verify the following documentation has been filled out properly: • BSI unique identification number • Seed Type (Inert ordnance or ISO) • Nomenclature (if inert ordnance) • Diameter (if inert ordnance) • Length (if inert ordnance) • Max Depth (if inert ordnance) • Depth of BSI (center of mass) [if buried] • Date Installed • GPS coordinate - or X,Y position from the southwest corner stake (if using tape measures)				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 3

DGM USING A

PERSON-PORTABLE SYSTEM

STANDARD OPERATING PROCEDURE FOR DGM USING A PERSON-PORTABLE SYSTEM

GEO SOP 3

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

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1 POLICY

NAEVA, Gilbane and KEMRON personnel will follow procedures established in this SOP for all Digital Geophysical Mapping (DGM) operations that are to be conducted using person-portable methods in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 ACRONYMS LIST

cm	Centimeter(s)
DGM	Digital Geophysical Mapping
ft	Feet
GPS	Global Positioning System
in	Inches
m	Meter(s)
MEC	Munitions and Explosives of Concern
QAPP	Quality Assurance Project Plan
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
WERS	Worldwide Environmental Remediation Services

3 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to detail the procedures and operational methodologies associated with the collection of DGM data in areas that are potentially contaminated with Munitions and Explosives of Concern (MEC) using person-portable methods. Equipment to be used includes the Geonics EM61-MK2 system(s) for the detection of metallic objects and the Leica Real-Time Kinematic (RTK) Global Positioning Systems (GPS) for navigational positioning and control. Procedures outlined in this SOP will be conducted in accordance with the MEC Quality Assurance Project Plan (MEC QAPP).

4 EQUIPMENT AND THEORY

This SOP is applicable to the Geonics EM61-MK2 and Leica RTK GPS positional equipment.

The Geonics EM61-MK2 is a high-resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and non-ferrous metallic objects. The Standard EM61-MK2 system consists of two air-cored coils, a digital data recorder, batteries and processing electronics. The EM61-MK2 functions by first having a transmitter that generates a pulsed primary electromagnetic field. This primary electromagnetic field then induces eddy currents in nearby metallic objects. The eddy currents produce a secondary electromagnetic field which then induces a secondary voltage inside the EM61-MK2 receiver coils that is measured at four distinct intervals (time gates) with measurements recorded in milliVolts (mV). The earlier time gates provide enhanced detection of smaller metallic objects while the later time gates provide for the identification of larger, more massive metal objects.

For this project the person-portable system will be operated in two positional modes; RTK-GPS and fiducial mode. The Leica Real-Time Kinematic (RTK) GPS is a 24-channel dual frequency receiver that uses both L1 and L2 satellite frequencies that is capable of maintaining an accuracy of 1.2 inches (in) (3 centimeters (cm)) horizontal and 2 in (5 cm) vertical. This RTK system utilizes a GPS base station (base) that sends positional corrections to the GPS rover(s) via radio link. For configuration with the person-portable system, the rover is set to output a NMEA GGA data string at 1 Hz, which is captured coincident with the EM61-MK2 sensor data in real-time by the Geonics data collection software on an Allegro data recorder. At the end of the day this data is uploaded onto a file sharing site for offsite data processing.

For fiducial mode the fiducial positional data is captured coincident with the EM61-MK2 sensor data in real-time by the Geonics data collection software on an Allegro data recorder. At the end of the day this data is uploaded onto a file sharing site for data processing.

5 PERSON-PORTABLE DATA ACQUISITION

One person operates the EM61-MK2 at a walking pace. Data can be collected on wheels or in tandem mode (the instrument is carried by two operators) with readings being collected at 10Hz when GPS data positioning is used. If GPS positioning is not available due to overhead obstructions fiducial methodologies will be used and readings are triggered every 10 cm (3.9 in) by an integrated odometer wheel. Selection of the appropriate method (wheeled or tandem) is based primarily on local terrain conditions, with the wheeled configuration favored whenever possible.

5.1 Instrument Setup, Wheel Mode

When the instrument is operated in wheel mode, it is set up according to the Geonics EM61-MK2 Manual. The wheels maintain the bottom coil at a consistent height of 40 cm (15.75 in) above the ground surface and allow the instrument to be towed over the survey area by a single operator. System electronics are mounted on a backpack worn by the operator who also carries the instrument's data logger. To the extent possible, all cables are taped to the instrument to keep them from getting tangled and to minimize cable movement and reduce the potential for snagging vegetation.

5.2 Instrument Setup, Tandem Mode

For tandem mode, the EM61-MK2 coils are centered suspended on two 10-ft (3-m) long fiberglass poles. The poles are placed on the top coil and wrapped with webbing that attaches to buckles mounted on the bottom coil. Zip ties are then used to further secure the poles to the outer edges of the top coil. Harnesses made of webbing worn by the operators, as well as flexible plastic rods (typically PVS pin flags) attached to the bottom coil, allow the operators to maintain the same coil height as in the wheeled deployment. System electronics are mounted on a backpack worn by the operator located in the rear of the system who also carries the instrument's data logger. As in the wheel mode configuration, the cables are securely taped prior to the start of data collection to minimize cable movement and to reduce the potential for snagging vegetation.

5.3 Navigation

Navigation of the person-portable system is accomplished through the integration of RTK GPS equipment or the use of fiducial positional measurements. If RTK-GPS is to be used, the base station is setup on a control point and corrections are sent via radio link to the rover receiver. The rover GPS antenna is mounted over the center of the EM61-MK2 coil and provides real time positional tracking capabilities that is streamed into the same software program as the EM61-MK2 data. Fiducial positioning measurements are collected in a local coordinate system referenced to surveyed grid corner stakes. Tape measures are pulled between the corner stakes on opposite sides of the survey area. Marked survey ropes are then placed laterally across the survey area at 25-foot intervals. Alternating colored markers on the ropes facilitate straight-line profiling and identify locations for the placement of fiducial marks within the recorded data. Below is a discussion about across-lane and down-lane positional accuracy. Although their computed accuracies are described below, the across-lane and down-lane positional accuracies for anomalies may also be negatively impacted by sensor tilt. To mitigate this, a search radius of 3 ft is used during target reacquisition.

5.3.1 Across-Lane Positional Accuracy

Using the person-portable EM61-MK2 system in conjunction with RTK-GPS positioning methodologies, and using lanes that have an overlap of approximately 0.5 feet (ft) (15 cm); then based on a 2-ft (0.6-meter) line spacing, this system has an across-lane positional precision of approximately +/- 1.1 ft (13 inches).

Using the person-portable EM61-MK2 system in conjunction with fiducial positioning methodologies, and using lanes that have an overlap of approximately 0.5 ft (15 cm); then based on a 2-ft (0.6 meter) line spacing, and using fiducial locations referenced to surveyed grid corner stakes, this system has an across-lane positional precision of approximately +/- 1.1 ft (13 inches).

5.3.2 Down-Lane Positional Accuracy

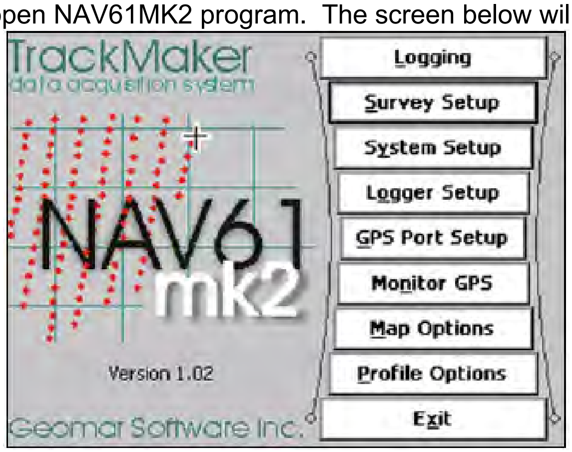
Using the person-portable EM61-MK2 system in conjunction with RTK-GPS positioning methodologies, the RTK-GPS is set to output GPS data at a rate of 1 Hz and the EM61-MK2 is set to output data at a rate of 10 Hz. During data processing positional data is interpolated for the EM61-MK2 data points that exist between each of the 1Hz GPS readings. Using a maximum speed of 4 miles per hour (70 inches per second) [as stated in Worksheet #12 (DFW: DGM Using a Person-Portable System)] this equates to one reading every 7 inches. Thus the down lane positional accuracy for the person-portable system using RTK-GPS is +/- 7 inches.

Using the person-portable EM61-MK2 system in conjunction with fiducial positioning methodologies, the EM61-MK2 readings are triggered every 10 cm (4 in) by an integrated odometer wheel. Thus the down lane positional accuracy for the person-portable system using fiducial methodologies is +/- 4 inches.

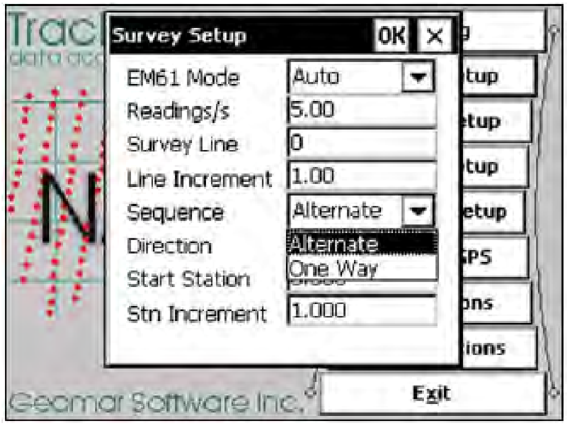
5.4 Data Collection Steps

The following steps are followed to begin surveying with the EM61-MK2 with RTK GPS positioning:

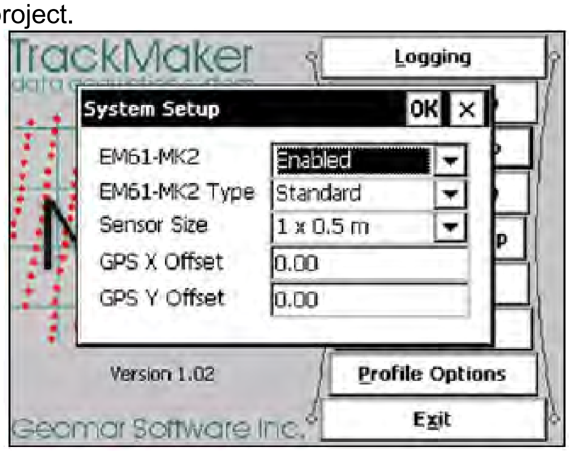
1. Turn on instrument by pushing in the fuse on the top of the console/electronics
2. Allow instrument to warm up for at least 15 minutes
3. Turn on Allegro CX and open NAV61MK2 program. The screen below will be displayed.



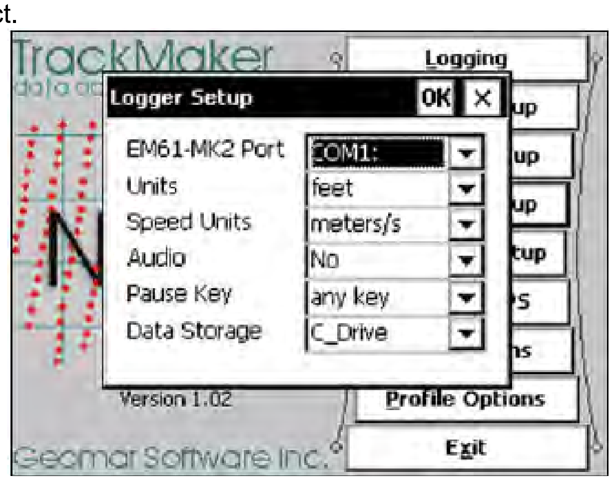
4. Click on "Survey Setup" and specify the below options. For this GPS/RTK Method, the Mode is set to "Auto" and Readings/s is set to "10".



5. Click on "System Setup" and specify the below options. These settings will usually remain the same throughout the project.

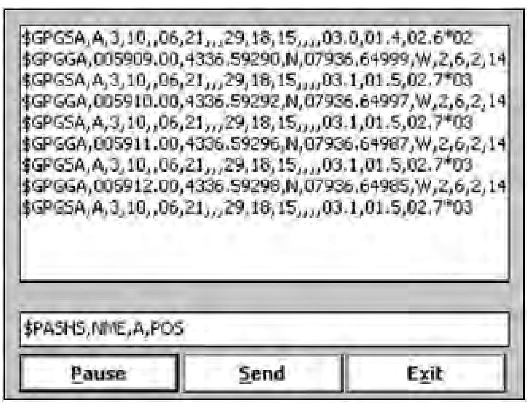


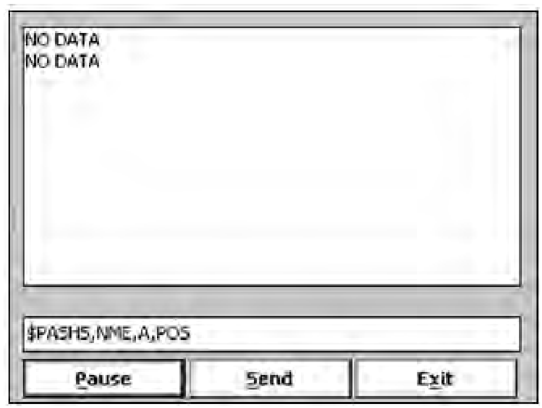
6. Click on "Logger Setup" and specify the below options. These settings will remain the same throughout the project.



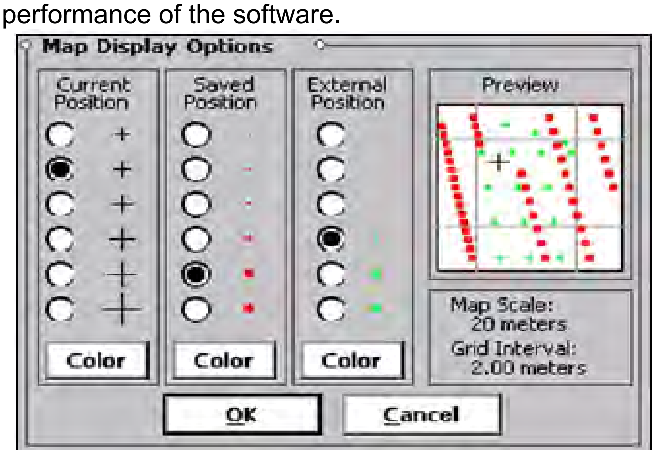
7. Click on "GPS Port Setup" and specify the below options. On the left side of the screen, parameters can be set for alerts to go off if the GPS string is inadequate.

8. Click on "Monitor GPS" and the below window will open. If the NMEA string is coming in correctly, the screen will appear like the one on the left. If there is a problem with the baud rate, "No Data" will appear once a second. If there is nothing coming through "No Data" will flash once every 6 seconds.

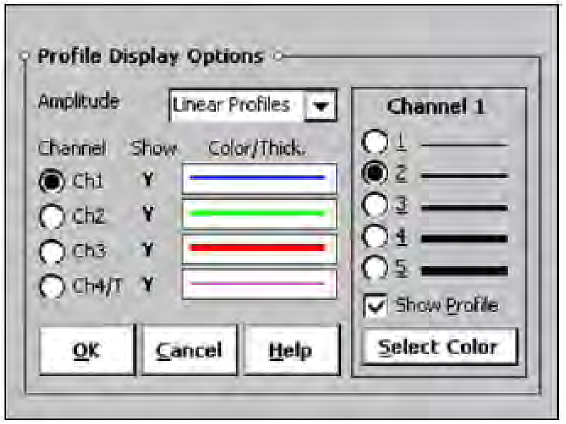




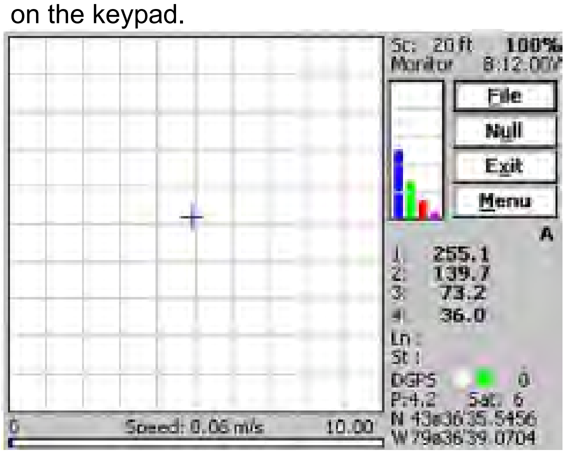
9. Click on "Map Options" and specify the below options. These are more operator preferences for aesthetics than for performance of the software.

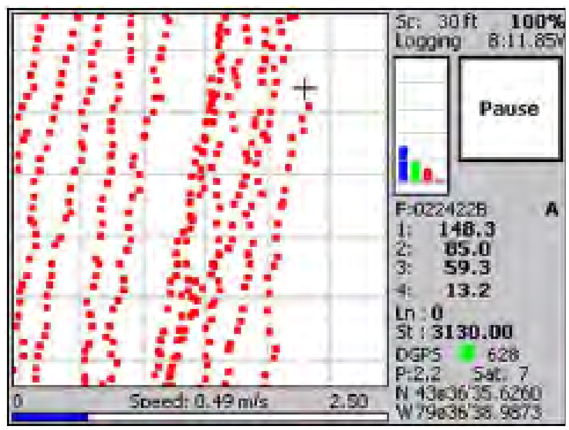


10. Click on "Profile Options" and specify the below options. These are more operator preferences for aesthetics than for performance of the software.



11. Once all the parameters are set click on the logging screen. The screen below on the left will be displayed. Find a quiet spot (low mV reading consistent with local background) and *Null* the instrument, then click on *File* and name your file and save it. Line up on the grid or transect and select *Go*. The software will start logging the readings and a large *Pause* button will appear on the screen (see screen below on right). At the end of the line, tap the *Pause* button or hit enter on the keypad.

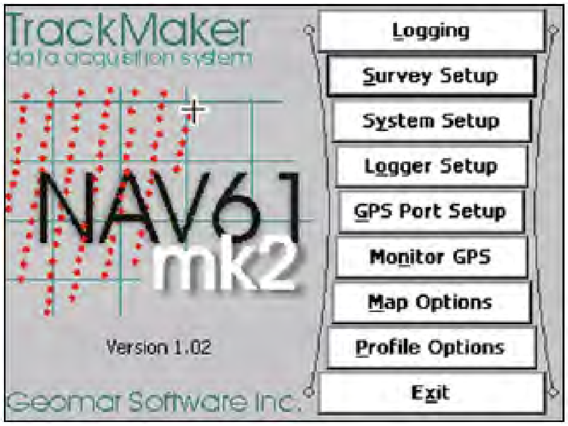




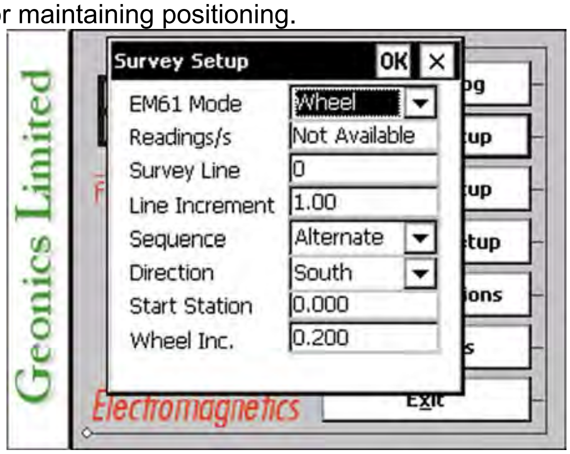
12. On the above screens, both the EM61-MK2 data and the GPS/RTK data are monitored. The data coverage is shown in the form of a “bread crumb trail”.
13. At the end of the file, tap the *Exit* button to save the file and exit logging.

The following steps are followed to begin surveying with the EM61-MK2 in fiducial mode:

1. Turn on instrument by pushing in the fuse on the top of the console/electronics
2. Allow instrument to warm up for at least 15 minutes
3. Turn on Allegro CX and open NAV61MK2 program. The screen below will be displayed.



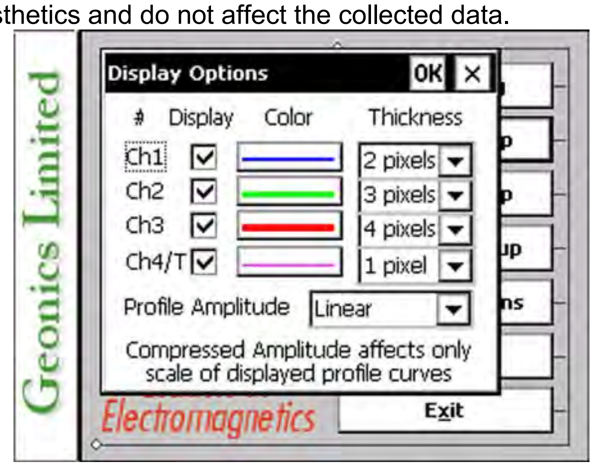
4. Click on “Survey Setup”, and specify the following options. For fiducial data collection the Mode is set to “Wheel”, Readings/s to “Not Available”, and Wheel Inc. to 0.1. The remaining options become important for maintaining positioning.



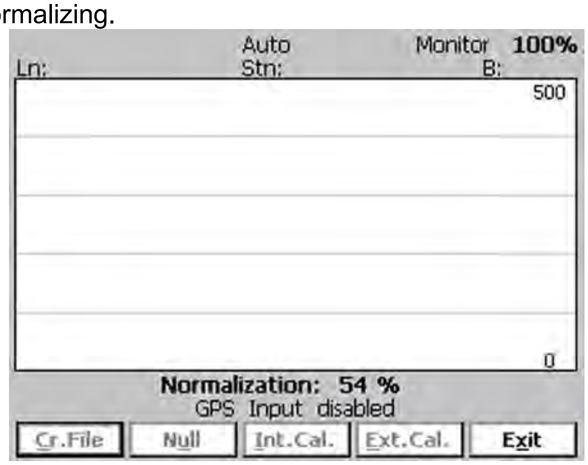
5. Click on “Logger Setup” and specify the below options. These settings will remain the same throughout the project.

6. Click on “GPS Port Setup”, and make sure the GPS Input is set to “Disabled”, and all other options are grayed out.

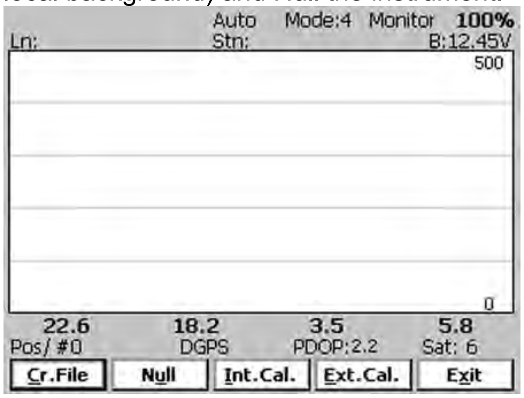
7. Click on “Display Options”, and specify the following options. These options are also operator preferences for aesthetics and do not affect the collected data.

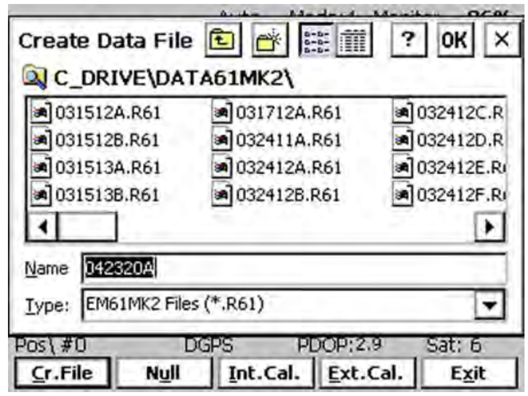


8. Once all parameters are set, click on “Monitor/Log”. The screen shown below is displayed while the instrument is normalizing.

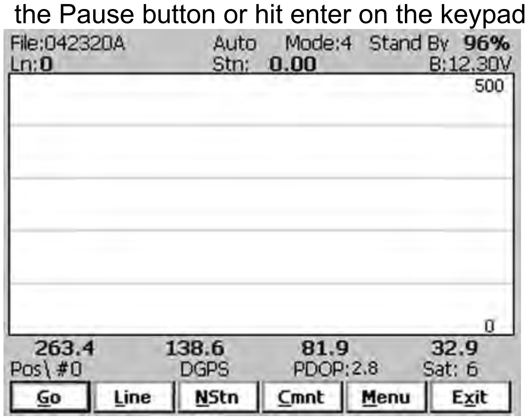


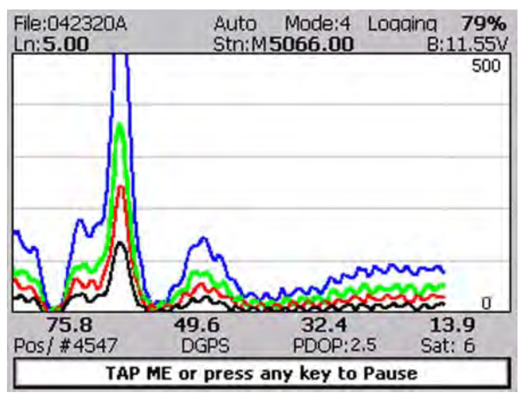
9. Once the Instrument has finished normalizing, find a quiet spot (low mV reading consistent with local background) and Null the instrument. Then click on Cr. File and name and save the file.





10. Line up on the grid or transect and select Go. The software will begin logging the readings, and a Pause button will appear at the bottom of the screen. As the operator crosses over each rope (reference location) the user hits the fiducial button thereby adding a marker in the data which is later used in the editing of the data to accurately position the data. At the end of the line, tap the Pause button or hit enter on the keypad.





11. Click on the Line button to enter the next line number and start station, then select Go to start collecting the next line.
12. At the end of the file, select the Exit button to save the file and exit logging.

5.5 Data Storage and Preliminary Processing

Person-portable EM61-MK2 data for both RTK-GPS and fiducial positional mode are temporarily stored in an Allegro data logger via Geonics' EM61MK2 software and then downloaded into a laptop computer for further on-site processing using DAT61MK2 and Geosoft Oasis Montaj software. Initial data processing is performed by the field team and includes reviewing data for integrity and repeatability. In the case of fiducial mode, positional data are edited based on the known locations of line ends and fiducial marks. Once deemed of acceptable quality the data is then uploaded to a file sharing site for data processing at the end of each day.

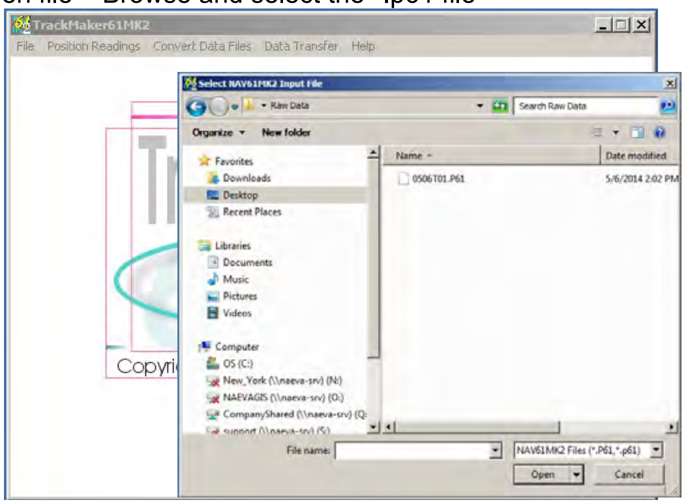
5.6 Data Storage and Editing

Once downloaded from the Allegro data collector, the person-portable data are stored directly into a ruggedized field computer. Below are the steps for using TrackMaker61MK2 to convert the raw p61 file into a Geosoft xyz data file. These steps, along with the downloading of the field data, may be performed in the field trailer.

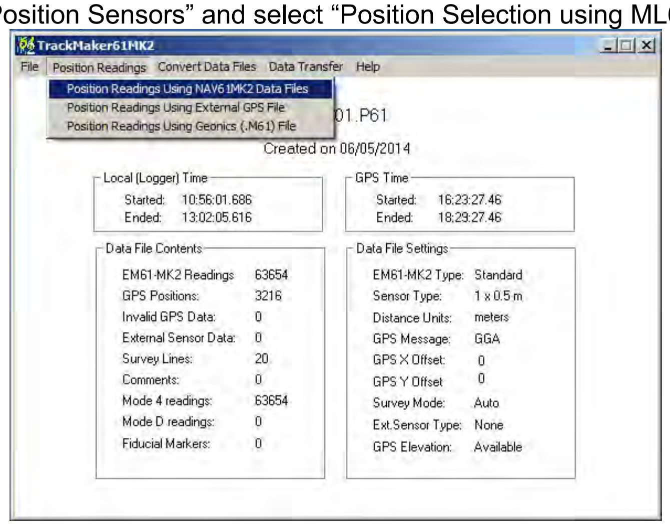
Data processing procedures for person-portable data are described in GEO SOP 5 (DGM Data Processing Using a Person-Portable System).

The following steps are used to convert EM61-MK2 person-portable data with RTK GPS positioning to .xyz files:

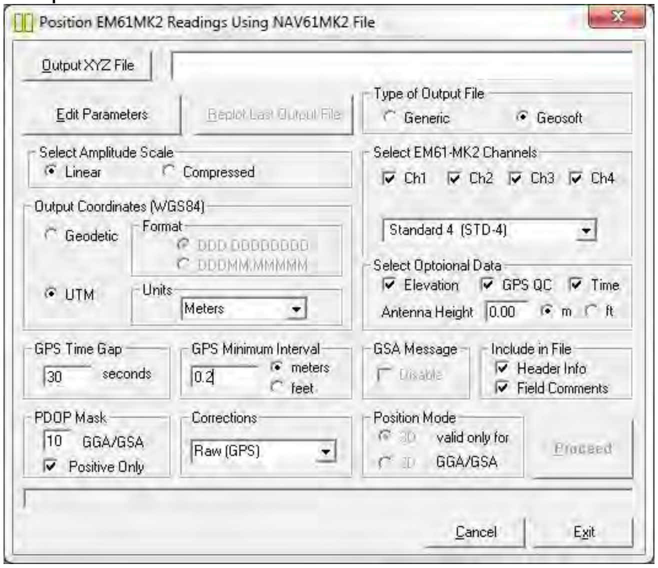
1. Go to "File" – Open file – Browse and select the *.p61 file



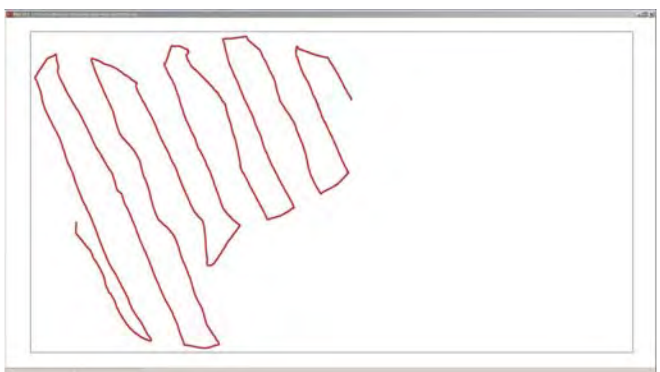
2. To create the Geosoft xyz data file
   - Go to "Position Sensors" and select "Position Selection using ML61MK2 data"



- Click on "Output XYZ File" and Browse for the location to save the Geosoft XYZ file

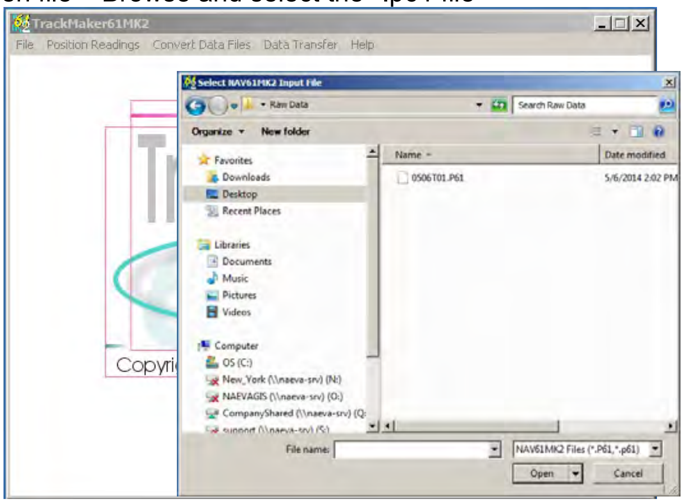


- Set parameters to the same settings in the above screen and Click "Proceed"
- A map like the one below will appear. Close this window and the "Position Sensors" window

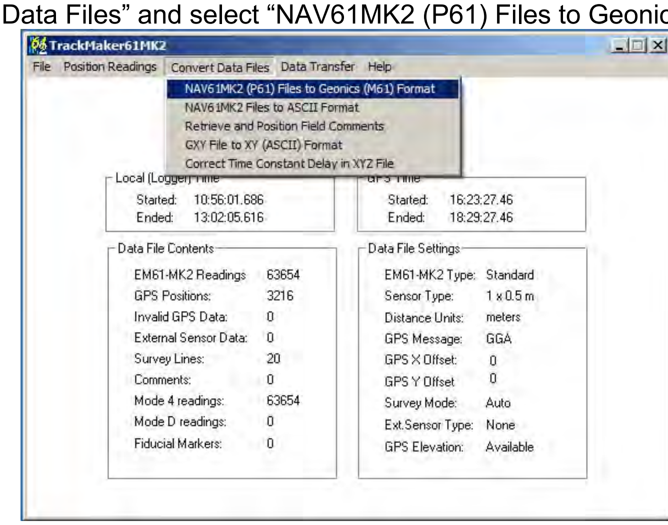


The following steps are used to convert EM61-MK2 person-portable data with fiducial positioning to .xyz files:

1. Go to “File” – Open file – Browse and select the *.p61 file

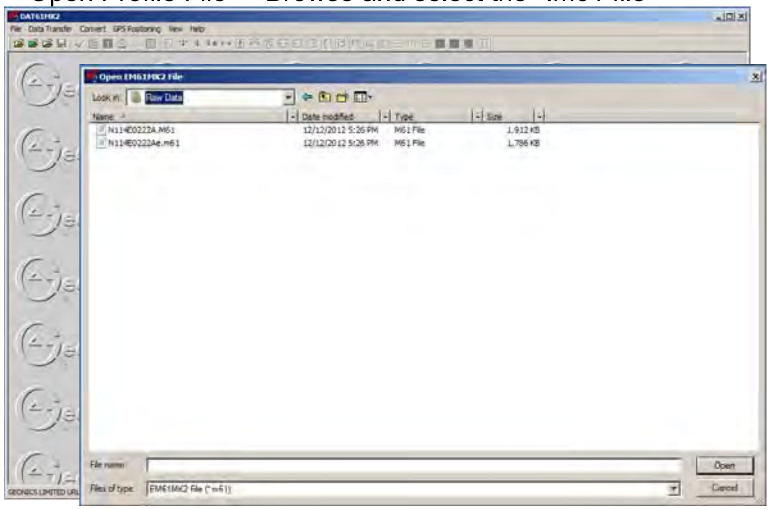


2. Go to “Convert Data Files” and select “NAV61MK2 (P61) Files to Geonics (M61) Format”

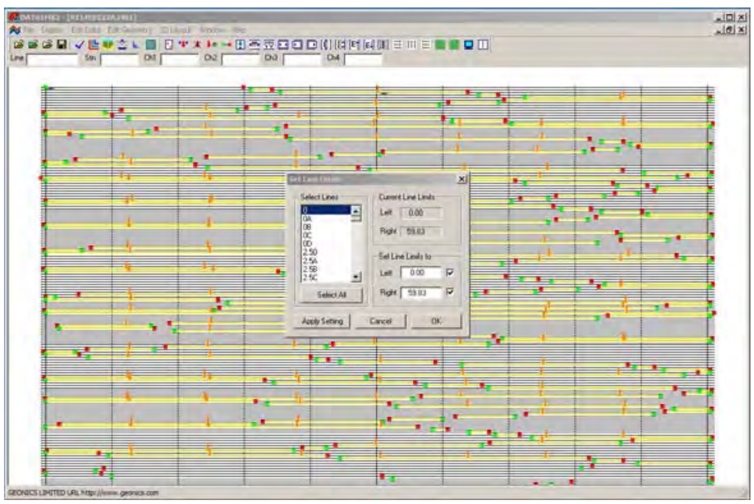


3. Editing of fiducial markers/end points and creation of Geosoft xyz data files is performed in DAT61MK2

4. Got to “File” – “Open Profile File” – Browse and select the *.m61 file

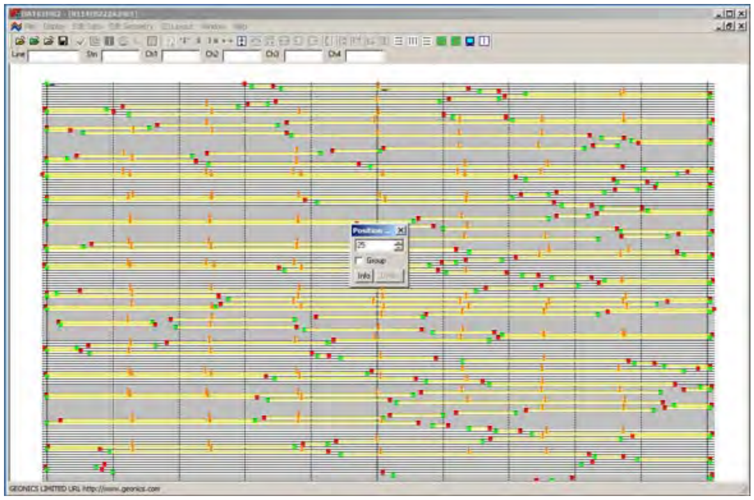


5. To edit the end points, go to “Edit Geometry” – “Set Line Limits” and the following screen will appear



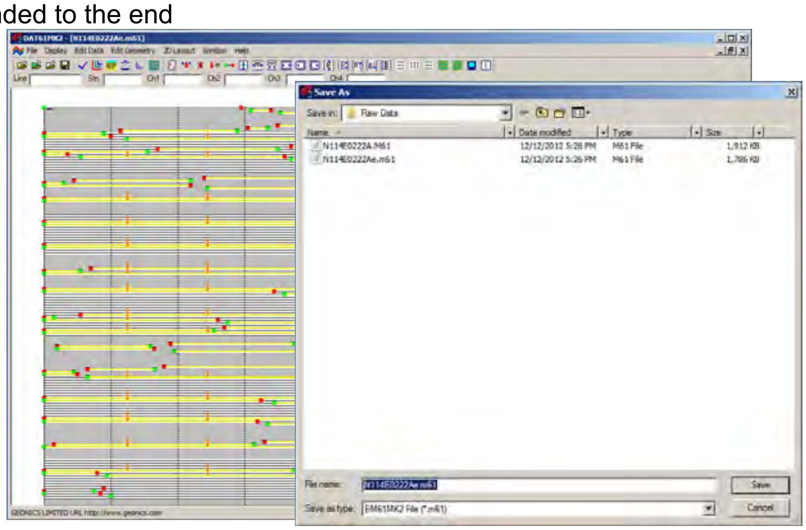
- Select a line of data and edit the appropriate end point in the “Set Line Limits to” box
- Click “Apply Setting” and move to the next line of data until all lines have been edited
- Click “OK”

6. To edit the fiducial marks, go to "Edit Geometry" – "Position Markers" and the following screen will appear

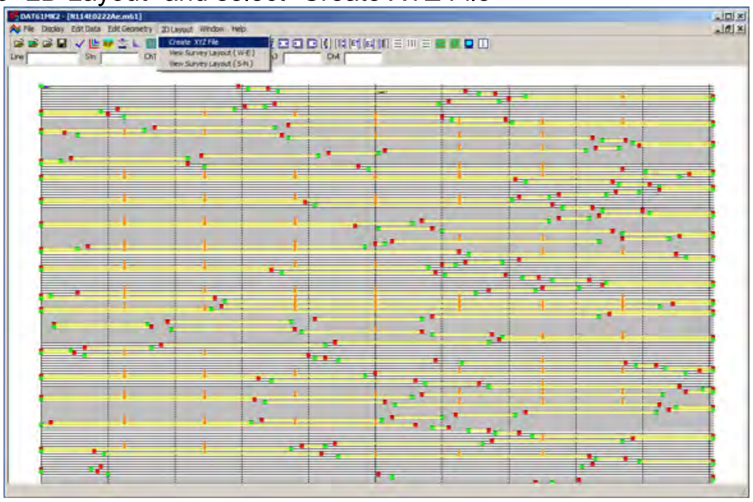


- Enter the value of the first fiducial mark to edit and click on each mark with that position, or:
- Enter the value of the first fiducial mark to edit, click on the "Group" check box, and draw a box around each mark with that position
- Continue until all fiducial marks have been edited, then close the Positioning dialog box

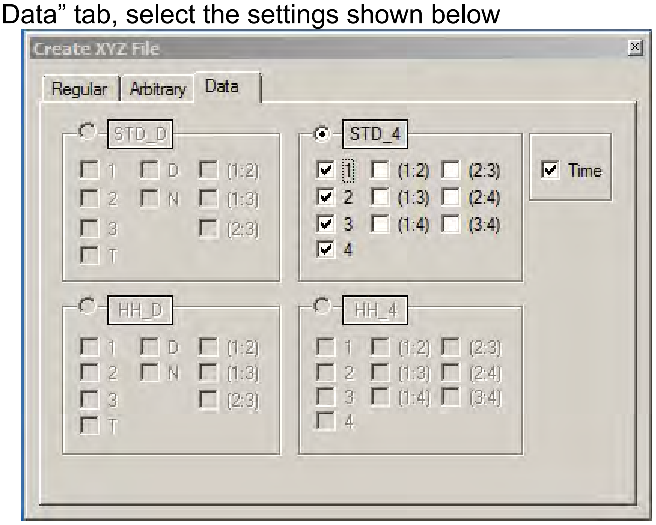
7. Go to "File" – "Save As…" and save the edited file using the same name as the raw file but with an "e" appended to the end



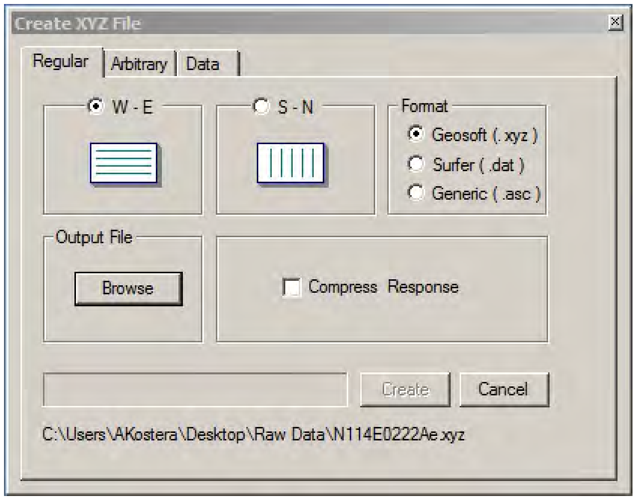
8. To create the Geosoft XYZ file
   - Go to “2D Layout” and select “Create XYZ File”



   - On the “Data” tab, select the settings shown below



   - On the “Regular” tab select either “W – E” or “N – S” as appropriate for the direction of data collection, browse for the Output File name and click “Create”



6 QUALITY CONTROL

The QC checks listed below are to be conducted after the EM61-MK2 instrument has been warmed up for at least 15 minutes. The QC function checks are to be conducted at the beginning and end of each day (unless otherwise noted) for each EM61-MK2 at a location that is known to be free of anomalous responses:

- GPS (if used) Static Positional Test
- Static Repeatability Test
- Dynamic Repeatability Test (IVS)
- Cable Shake Test
- Personnel Test

Below is a description of each of the QC checks listed above. QC check data is to be digitally recorded, stored offsite, and reviewed by the QC Geophysicist on a daily basis. The results of the daily QC checks are to be recorded in both the QC documentation and in the MMRP database.

1. GPS Static Positional Test (AM only): NAEVA will conduct static repeatability tests of their RTK-GPS antennas. This test will be completed at the beginning of each day at the IVS. The data for these GPS Static Positional Tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

2. Static Repeatability Test (AM and PM): NAEVA will conduct static repeatability tests (background and spike) for each person-portable system. These tests are to be completed twice daily at the IVS and will include 1 minute for background, 1 minute for spike, and 1 minute for an additional background reading. The baseline mV value for the static tests will be the average of AM and PM static tests conducted during the first week that the person-portable system(s) is operational. The data for these static repeatability tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

3. Dynamic Repeatability Test (AM and PM): NAEVA will conduct dynamic repeatability tests (background and spike) for each person-portable system. These tests are to be completed twice daily (AM/PM) at the IVS. The baseline mV value for each of the IVS items will be the average of all dynamic IVS tests conducted during the first week that the person-portable

system(s) is operational. The data for these dynamic repeatability tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

4. Cable Shake Test (AM only): On a daily basis the EM61MK2 and GPS instrument cables will be tested to verify that cable vibrations do not have a negative effect on the quality of the data. The cable vibration test will be conducted at the beginning of each work day prior to the commencement of that day's DGM survey operation. The data for these cable shake tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

5. Personnel Test (AM only): On a daily basis DGM personnel will be tested to verify that when in close proximity to the sensor that they do not have a negative effect on the quality of the data. This personnel test will be conducted at the beginning of each work day prior to the commencement of that day's DGM survey operation. The data for these personnel tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

All QC checks will be digitally recorded and analyzed to verify that all data is within acceptable operational parameters as outlined in the MEC QAPP.

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the collection of DGM data using a person-portable system can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

7 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 3 – DGM Using a Person-Portable System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Team:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	4	Verify Geonics EM61-MK2 is being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
3	4	Verify Leica RTK-GPS is being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
4	4	Verify GPS is set to 1Hz output in NMEA GGA format				*(I),(F)*
5	4	Verify PP DGM data is uploaded onto a file sharing site at the end of each day.				*(I),(F)*
6	5.1 & 5.2	Instrument setup according to manufacturer specification and cables have been secured				*(I),(F)*
7	5.1 & 5.2	Instrument coil height has been measured				*(I),(F)*
8	5.3	GPS antenna has been mounted over center of coil and cables secured (GPS collection)				*(I),(F)*
9	5.3	Team has sufficient ropes marked at 2-foot line spacing to cover data collection area at 25-foot intervals				*(I),(F)*
10	5.4	Instrument warmed-up for at least 15 minutes				*(I),(F)*
11	5.4	EM61 data collection rate set to at least 10 Hz (when using RTK GPS)				*(I),(F)*
12	5.4	Wheel increment set to 0.1 (when using fiducial collection)				*(I),(F)*
13	5.4	Instrument nulled in area known to be clear of anomalous response				*(I),(F)*
14	5.4	Local grid system established relative to southwest corner stake (Fiducial mode)				*(I),(F)*

15	6 (1)	GPS Static Positional Test performed showing location within expected parameters (GPS mode)				*(I),(F)*
16	6 (2)	Morning Static Repeatability Test performed showing appropriate response				*(I),(F)*
17	6 (3)	Morning Dynamic Repeatability Test performed showing target locations and response within expected parameters				*(I),(F)*
18	6 (4)	Cable Shake Test performed showing no effect on the data quality				*(I),(F)*
19	6 (5)	Personnel Test performed showing no effect on the data quality				*(I),(F)*
20	6 (2)	Afternoon Static Repeatability Test performed showing appropriate response				*(I),(F)*
21	6 (3)	Afternoon Dynamic Repeatability Test performed showing target locations and response within expected parameters				*(I),(F)*
22	5.4	All DGM data for the day have been transferred to a field computer				*(I),(F)*
23	5.5	Data have been converted to xyz format including georeferenced positional data (GPS)				*(I),(F)*
24	5.5	All line ends and fiducial points have been edited according to the field notes (Fid)				*(I),(F)*
25	5.5	Data have been converted to xyz format including local positional coordinates (Fid)				*(I),(F)*
26	5.4	All raw DGM data for the day have been transferred to the project FTP site for final data processing				*(I),(F)*

Punch list Items	
No.	

Three Phase Quality Control Checklist

GEO SOP 3 – DGM Using a Person-Portable System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

GEO SOP 4

DGM USING A

TOWED ARRAY SYSTEM

STANDARD OPERATING PROCEDURE FOR DGM USING A TOWED ARRAY SYSTEM

GEO SOP 4

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

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LIST OF APPENDICES

1 POLICY

NAEVA, Gilbane and KEMRON personnel will follow procedures established in this SOP for all Digital Geophysical Mapping (DGM) operations that are to be conducted using towed array platforms in support of Munitions and Explosives of Concern (MEC) remediation operations at Fort Ord.

2 ACRONYMS LIST

cm	Centimeter(s)
DGM	Digital Geophysical Mapping
ft	Feet
GPS	Global Positioning System
in	Inch(es)
m	Meter(s)
MEC	Munitions and Explosives of Concern
QAPP	Quality Assurance Project Plan
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
WERS	Worldwide Environmental Remediation Services

3 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to detail the procedures and operational methodologies associated with the collection of DGM data in areas that are potentially contaminated with Munitions and Explosives of Concern (MEC) using towed array platforms. Equipment to be used includes the Geonics EM61-MK2 system(s) for the detection of metallic objects and the Leica Real-Time Kinematic (RTK) Global Positioning Systems (GPS) for navigational positioning and control. Procedures outlined in this SOP will be conducted in accordance with the MEC Quality Assurance Project Plan (MEC QAPP).

4 EQUIPMENT AND THEORY

This SOP is applicable to the Geonics EM61-MK2 and Leica RTK-GPS.

The Geonics EM61-MK2 is a high-resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and non-ferrous metallic objects. The Standard EM61-MK2 system consists of two air-cored coils, a digital data recorder, batteries and processing electronics. The EM61-MK2 functions by first having a transmitter that generates a pulsed primary electromagnetic field. This primary electromagnetic field then induces eddy currents in nearby metallic objects. The eddy currents produce a secondary electromagnetic field which then induces a secondary voltage inside the EM61-MK2 receiver coils that is measured at four distinct intervals (time gates) with measurements recorded in milliVolts (mV). The earlier time gates provide enhanced detection of smaller metallic objects while the later time gates provide for the identification of larger, more massive metal objects.

The Leica RTK-GPS is a 24-channel dual frequency receiver that uses both L1 and L2 satellite frequencies that is capable of maintaining an accuracy of 1.2 inches (in) (3 centimeters (cm)) horizontal and 2 in (5 cm) vertical. This RTK system utilizes a GPS base station (base) that sends positional corrections to the GPS rover(s) via radio link. For configuration with the towed array, the rover is set to output a NMEA GGA data string at 1 Hz, which is captured coincident with the EM61-MK2 sensor data in real-time by the Geonics data collection software. This data is temporarily stored in a ruggedized laptop computer with the data being uploaded to a file sharing site for offsite data processing at the end of each day.

5 DGM DATA ACQUISITION USING THE TOWED ARRAY

The towed array system currently consists of three 1 m x 0.5 m (3.3 ft x 1.6 ft) coils mounted on a durable wheeled platform. The towed array sled design used at Fort Ord fixes the coils at a height of 40 cm (15.75 in) above the ground, equivalent to mounting the coils on their standard wheels. This towed array system is towed by a specially-equipped bulldozer that is designed with a tongue of sufficient length so as to mitigate any potential for electromagnetic interference from the tow vehicle that could negatively impact the quality of the geophysical data. A single RTK-GPS rover unit mounted over the center coil provides real-time positional tracking capabilities. System electronics are securely mounted either within the towed array platform or on the towed vehicle with a laptop computer located in the driver's compartment to allow continuous monitoring of system functions.

5.1 Navigation

Navigation will be accomplished using a Trimble FmX display (that works with the Leica RTK-GPS base-station) or the current SiteMate system consisting of a lightbar and a LCD screen that shows the system's location and the intended path of travel. An RTK GPS antenna mounted on the roof of the tow vehicle is used for navigation. As discussed above, an additional GPS antenna centered over the three coils is used to position the EM61-MK2 array data.

As stated in Worksheet #12 of the MEC QAPP, the velocity of the towed array system(s) is not to exceed 4 MPH (70 inches per second). Below is a discussion about across-lane and down-lane positional accuracy for the towed-array DGM system. Although their computed accuracies are described below, the across-lane and down-lane positional accuracies may also be negatively impacted by sensor tilt. To mitigate this, a search radius of 3 ft is used during target reacquisition.

5.1.1 Across-Lane Positional Accuracy

Using a towed array DGM platform configured with RTK-GPS positional equipment and three overlapping EM61-MK2 coils in a triangular configuration, and using lanes that have an overlap of approximately 1.6 feet (ft) (0.5 m), then based on a 4.9-ft (1.5-m) line spacing this system has an across-lane positional precision of approximately +/- 1.1 ft (0.3 m).

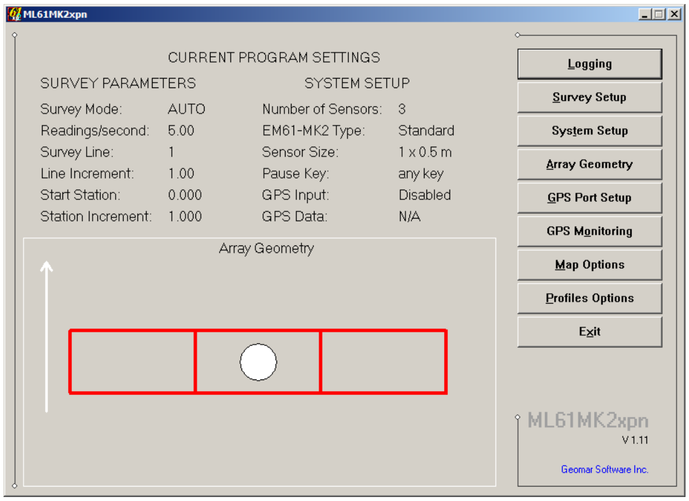
5.1.2 Down-Lane Positional Accuracy

Using a towed array DGM platform configured with RTK-GPS positional equipment and three overlapping EM61-MK2 coils in a triangular configuration, the RTK-GPS is set to output GPS data at a rate of 1 Hz and the EM61-MK2 is set to output data at a rate of 10 Hz. During data processing positional data is interpolated for the EM61-MK2 data points that exist between each of the 1Hz GPS readings. Using a maximum speed of 4 miles per hour (70 inches per second) [as stated in Worksheet #12 (DFW: DGM Using a Towed-Array System)] this equates to one reading every 7 inches. Thus the down lane positional accuracy for the person-portable system using RTK-GPS is +/- 7 inches.

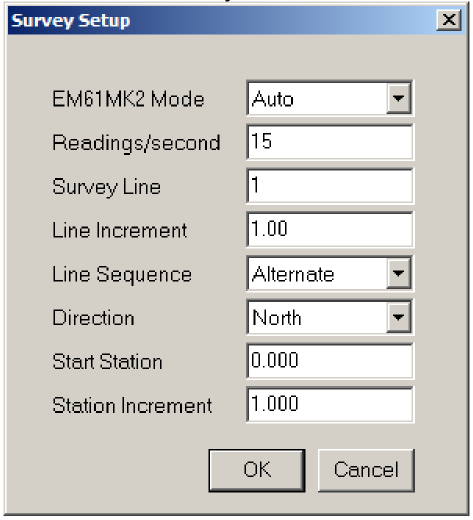
5.2 Data Collection Steps

Below are the steps to begin a towed array survey:

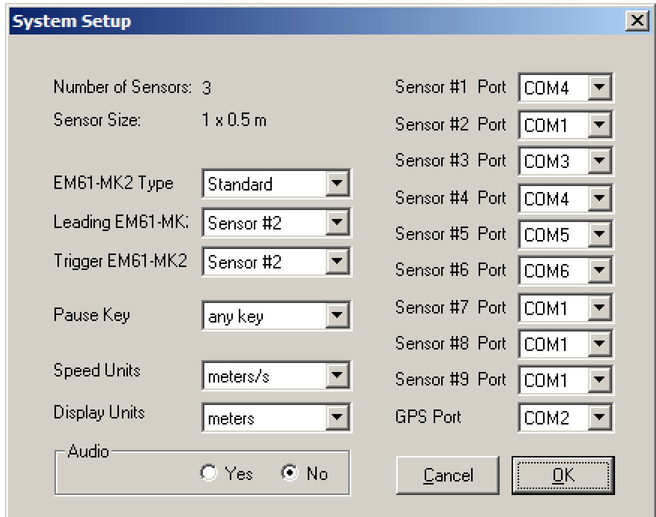
1. Turn on EM61-MK2 instruments by pushing in the fuse on the top of the console/electronics
2. Allow instruments to warm up for at least 15 minutes
3. Turn on Toughbook and open Multi61MK2xpn program. The screen below will be displayed.



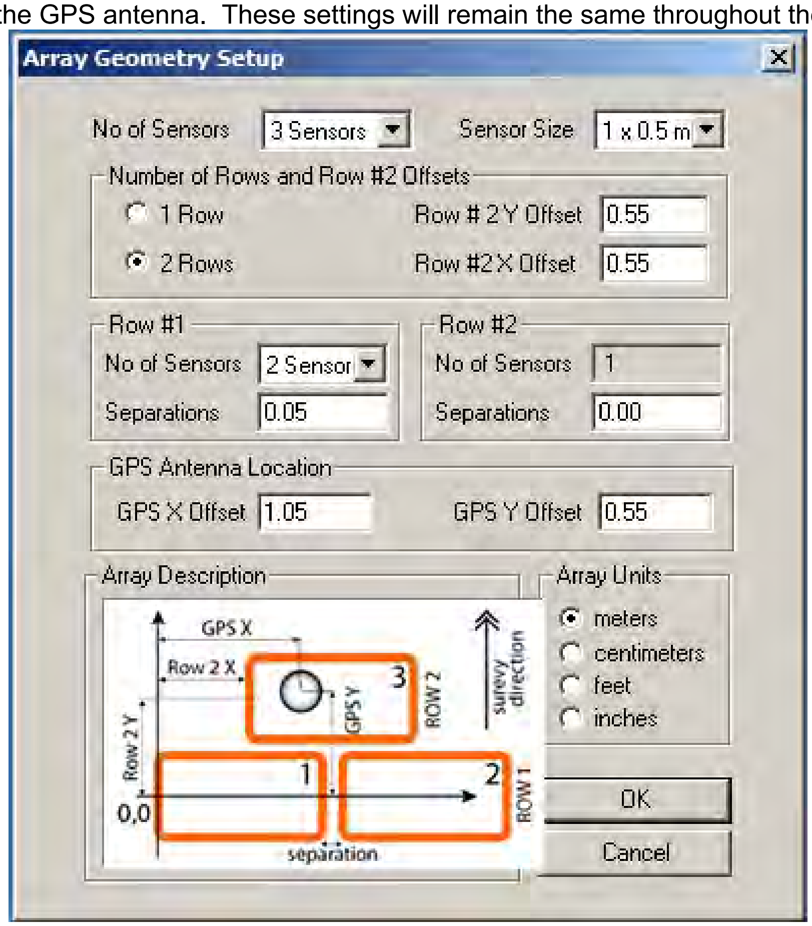
4. Click on “Survey Setup” and specify the below options. Two important options are the mode and reading/s. The Mode is set to “Auto” and Readings/s is set to “15”. *Note that although the readings/second is set to 15, the instrument may only be recording 12 readings per second. This discrepancy is intrinsic to the EM61 system.



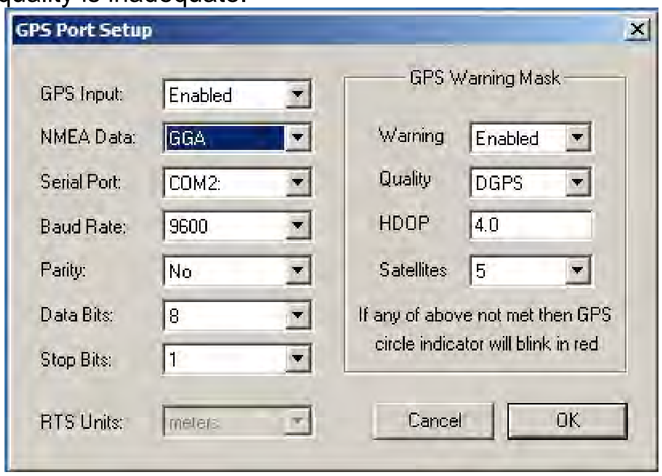
5. Click on “System Setup” and specify the below options. This is where all the ports are set for the three coils and the GPS string. These settings will remain the same throughout the project.



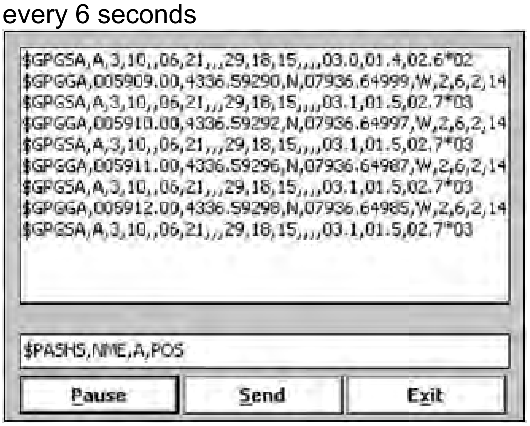
6. Click on “Array Geometry Setup” and specify the below options (<u>double-check Sensor and GPS Offset measurements at start of project).</u> This window is where the EM61 coils are positioned in relation to the GPS antenna. These settings will remain the same throughout the project.

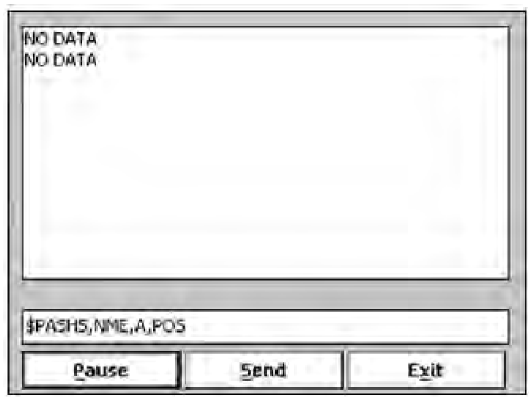


7. Click on “GPS Port Setup” and specify the below options. For the GPS the settings shown below will be used. On the right side of the screen is where parameters can be set for alerts to go off if the GPS quality is inadequate.

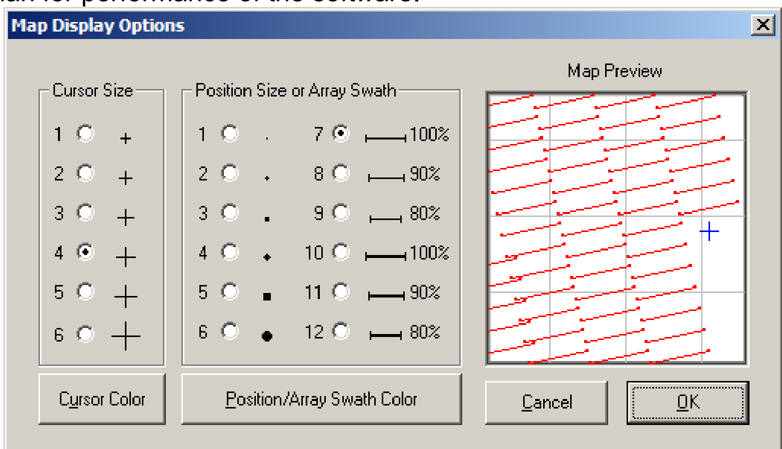


8. Click on “Monitor GPS”. If the NMEA string is coming in correctly, the screen will appear like the one on the left. If there is a problem with the baud rate, “No Data” will appear once a second like the one on the right. If there is nothing coming through “No Data” will flash once every 6 seconds

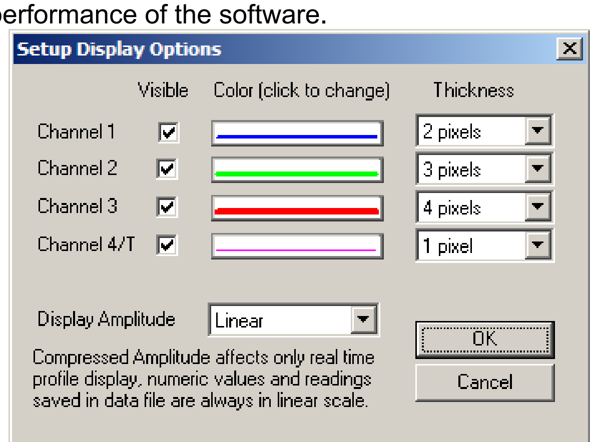




9. Click on "Map Options" and specify the below options. These are more operator preferences for aesthetics than for performance of the software.



10. Click on "Profile Options" and specify the below options. These are more operator preferences for aesthetics than for performance of the software.



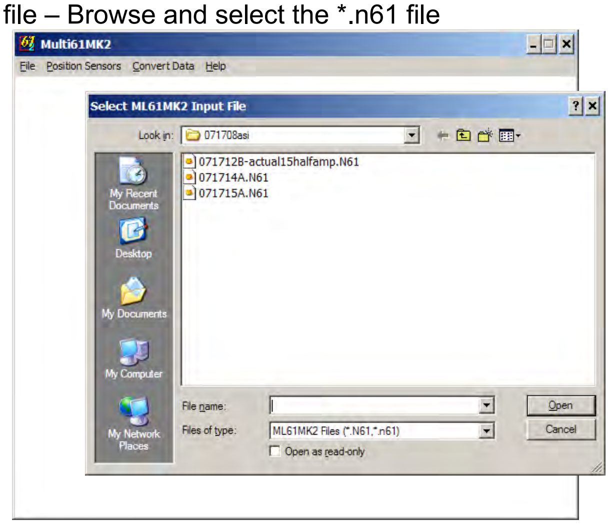
11. Once all the parameters are set, click on the logging screen. The below will be displayed. Find a quiet spot (area of low mV response that is similar to background levels) and *Null* the instrument, then click on *File* and name your file and save it. Line up on the grid or transect and select *Go*. The software will start logging the readings and a large *Pause* button will appear on the screen. At the end of the line, tap the *Pause* button or hit enter on the keypad.

12. On the above screens, both the EM61-MK2 data and the GPS data are monitored, as well as the data coverage.
13. The data collection software automatically saves data at the end each line in order to prevent accidental data loss. When a dataset is complete, or any other time that data collection has to be paused for an extended period of time, select the “Exit” button to end the file.

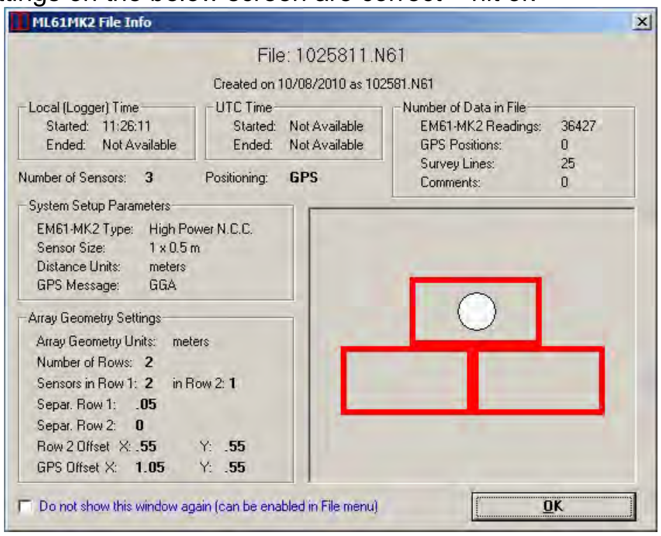
5.3 Data Storage and Editing

The array data are stored directly into a ruggedized field computer. Below are the steps for using Multi61MK2 to convert the raw n61 file into a Geosoft xyz data file and a M61 culture file for processing. These steps may be performed in the field trailer.

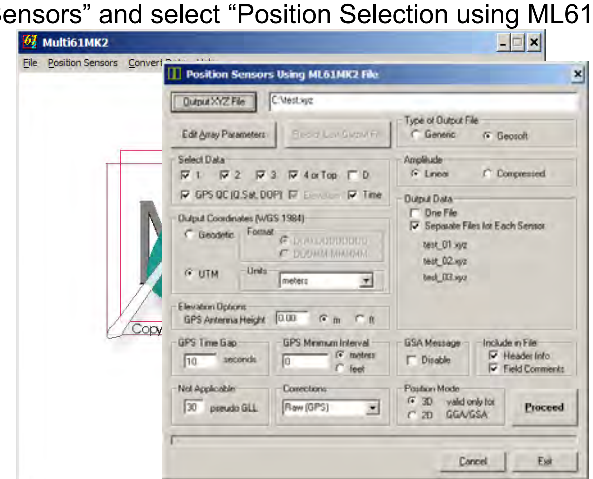
1. Go to “File” – Open file – Browse and select the *.n61 file



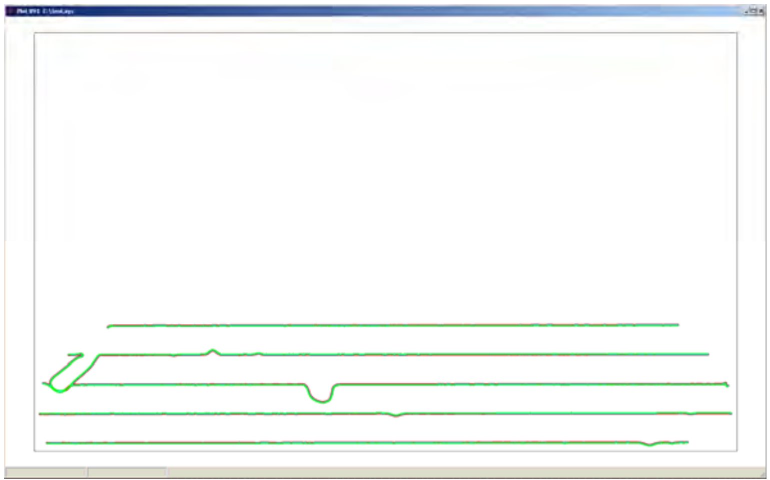
2. Make sure all settings on the below screen are correct – hit ok



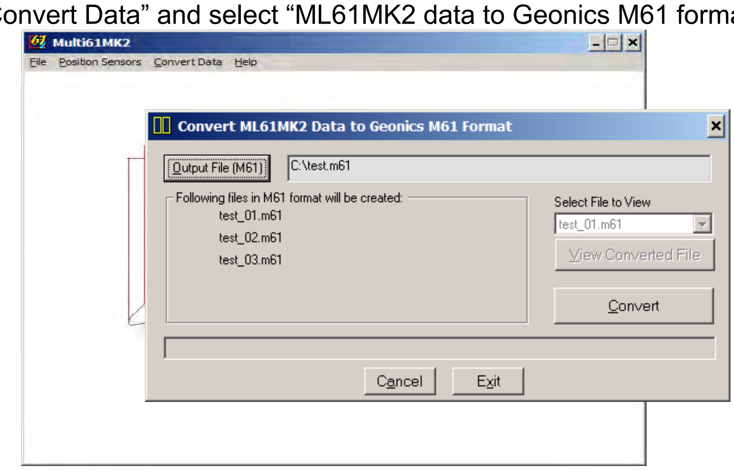
3. To create the Geosoft xyz data file
   - Go to “Position Sensors” and select “Position Selection using ML61MK2 data”



   - Click on “Output File” and Browse for the location to save the Geosoft XYZ file.
   - Set parameters to the same settings in the above screen and browse for location to save Geosoft XYZ file. Click “Proceed”
   - A map like the one below will appear. Close this window and the “Position Sensor Window”



4. To Create the M61 culture file
   - Go to "Convert Data" and select "ML61MK2 data to Geonics M61 format"



   - Click on "Output File" and browse for the location to save the M61 file.
   - Click "Convert"
   - Once the file has converted click "exit"
   - Then go to "File" and select "Exit"
   - Open the M61 file in Notepad and delete all lines **except** the culture lines and resave the file (make sure to have " " around the file name so the file extension remains M61 and not txt

Initial data processing is performed by the field team and includes reviewing data for integrity and repeatability. Once deemed of acceptable quality the data is then uploaded to a file sharing site for data processing at the end of each day. Data processing procedures for towed-array data are described in GEO SOP 6 (DGM Data Processing Using a Towed Array System).

6 QUALITY CONTROL

The QC checks listed below are to be conducted after the instruments have been warmed up for at least 15 minutes. The following QC function checks are to be conducted at the beginning and end of each day (unless otherwise noted) for each of the towed array platforms at a location that is known to be free of anomalous responses:

- GPS Static Positional Test
- Static Repeatability Test
- Dynamic Repeatability Test (IVS)
- Cable Shake Test
- Tow Vehicle Elevated RPM Test

Below is a description of each of the QC checks listed above. QC check data is to be digitally recorded, stored offsite, and reviewed by the QC Geophysicist on a daily basis. The results of the daily QC checks are to be recorded in both the QC documentation and in the MMRP database.

1. GPS Static Positional Test (AM only): NAEVA will conduct static repeatability tests of their RTK-GPS antennas. This test will be completed at the beginning of each day at the IVS. The data for these GPS Static Positional Tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

2. Static Repeatability Test (AM and PM): NAEVA will conduct static repeatability tests (background and spike) over each of the three (3) EM61-MK2 sensors that make up the towed array system(s). These tests are to be conducted over each of the 3 coils separately and is to be completed twice daily at the IVS and will include 1 minute for background, 1 minute for spike, and 1 minute for an additional background reading. The baseline mV value for the static tests will be the average of AM and PM static tests conducted during the first week that the towed array system(s) is operational. The data for these static repeatability tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

3. Dynamic Repeatability Test (AM and PM): NAEVA will conduct dynamic repeatability tests (background and spike) for each towed array system. These tests are to be completed twice daily (AM/PM) at the IVS. The baseline mV value for each of the IVS items will be the average of all dynamic IVS tests conducted during the first week that the towed array EM61MK2 system(s) is operational. The data for these dynamic repeatability tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

4. Cable Shake Test (AM only): On a daily basis the EM61-MK2 and GPS instrument cables will be tested to verify that cable vibrations do not have a negative effect on the quality of the data. The cable vibration test will be conducted at the beginning of each work day prior to the commencement of that day's DGM survey operation. The data for these cable shake tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

5. Tow Vehicle elevated RPM response (AM only). On a daily basis the effect of an elevated RPM will be tested to verify that an elevated tow vehicle RPM does not have a negative effect on the quality of the data. This RPM response test will be conducted at the beginning of each work day prior to the commencement of that day's DGM survey operation. The data for these tow vehicle elevated RPM response tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

All QC checks will be digitally recorded and analyzed to verify that all data is within acceptable operational parameters as outlined in the MEC QAPP.

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the collection of DGM data using a towed array can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

7 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 4 – DGM Using a Towed Array System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Team:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	4	Verify that 3 Geonics EM61-MK2s are being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
3	4	Verify Leica RTK-GPS is being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
4	4	Verify GPS is set to 1Hz output in NMEA GGA format				*(I),(F)*
5	5	Instrument setup according to manufacturer specification and/or as described in this SOP (and cables have been secured)				*(I),(F)*
6	5	Instrument coil height has been measured				*(I),(F)*
7	5	GPS antenna has been mounted over center of middle coil and cables secured				*(I),(F)*
8	5	Tow vehicle is being driven no faster than maximum speed demonstrated in IVS (approximately 3 mph (1.34 m/s)				*(I),(F)*
9	5.1	GPS antenna has been mounted on roof of tow vehicle and cables secured				*(I),(F)*
10	5.2	Instrument warmed-up for at least 15 minutes				*(I),(F)*
11	5.2	EM61 data collection rate set to at least 15 Hz				*(I),(F)*
12	5.2	Correct towed array coil geometry has been set in the data collection software				*(I),(F)*
13	5.2	Instrument nulled in area known to be clear of anomalous response				*(I),(F)*
14	6 (1)	GPS Static Positional Test performed showing location within expected parameters				*(I),(F)*

15	6 (2)	Morning Static Repeatability Test performed showing expected response				*(I),(F)*
16	6 (3)	Morning Dynamic Repeatability Test performed showing target locations and response within expected parameters				*(I),(F)*
17	6 (4)	Cable Shake Test performed showing no effect on the data quality				*(I),(F)*
18	6 (5)	Tow Vehicle Elevated RPM Test performed showing no effect on the data quality				*(I),(F)*
19	6 (2)	Afternoon Static Repeatability Test performed showing expected response				*(I),(F)*
20	6 (3)	Afternoon Dynamic Repeatability Test performed showing target locations and response within expected parameters				*(I),(F)*
21	5.3	All DGM data for the day have been transferred to a field computer				*(I),(F)*
22	5.3	Export settings are correct for the towed array coil geometry				*(I),(F)*
23	5.3	Data have been converted to xyz format including georeferenced positional data				*(I),(F)*
24	5.3	Culture data have been converted to m61 format and all data except the culture lines have been removed				*(I),(F)*
25	5.3	All raw DGM data for the day have been transferred to the project FTP site for final data processing				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 5

DGM DATA PROCESSING FOR A PERSON PORTABLE SYSTEM

STANDARD OPERATING PROCEDURE FOR DGM DATA PROCESSING FOR A PERSON-PORTABLE SYSTEM

GEO SOP 5

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

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LIST OF APPENDICES

1 POLICY

NAEVA, Gilbane and KEMRON personnel will follow procedures established in this SOP for all data processing of Digital Geophysical Mapping (DGM) data collected using person-portable methods in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 ACRONYMS LIST

CADD	Computer Aided Design and Drafting
DGM	Digital Geophysical Mapping
DQO	Data Quality Objective
ID	Identification
GIS	Geographic Information System
GPS	Global Positioning System
MEC	Munitions and Explosives of Concern
QAPP	Quality Assurance Project Plan
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
WERS	Worldwide Environmental Remediation Services

3 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to detail the procedures and operational methodologies associated with the processing of DGM data collected using person-portable methods in areas that are potentially contaminated with Munitions and Explosives of Concern (MEC). All data processing will be performed using Geosoft's Oasis Montaj software package equipped with the UX-Detect module.

4 DATA PROCESSING STEPS

Once the initial editing steps have been performed, as described in GEO SOP 3 (DGM Using a Person-Portable System), the data are turned over to NAEVA's processors for analysis, target selection, and preparation of deliverables. The processor will go through five steps before the final data packages are delivered.

4.1 QC of Field Forms

Inspect the contents of the field forms that have been uploaded into the KEMRON Database to ensure that the forms contain the following information:

- The appropriate dataset ID
- QC test file names (Static/Spike Tests, Personnel Test, Cable Shake Test and Latency Tests)
- Grid ID(s)
- Instrument used (EM61MK2 Wheeled, EM61MK2 Tandem)
- Collection/navigation method (RTK-GPS or FID)
- Daily conditions
- Cultural features
- Field notes

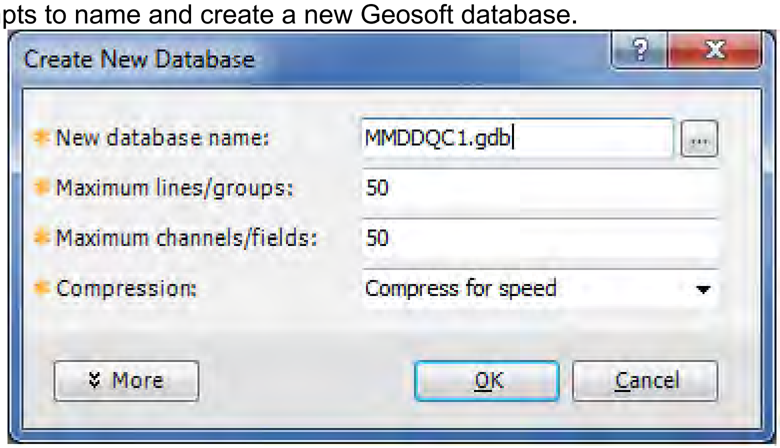
4.2 Daily Function Test Processing

This stage includes processing of the daily function test data. Satisfactory performance of function tests with respect to the project Data Quality Objectives (DQOs) is evaluated.

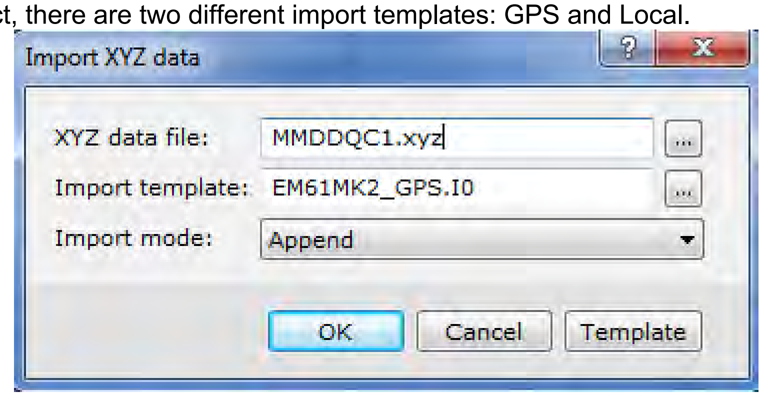
A folder is first created where the Geosoft files are to be saved. Separate Geosoft project files are created for each test.

After the project is created, script files can be used in Geosoft to expedite the processing procedures. They are listed below with a brief description. Alternately, each step may be conducted manually.

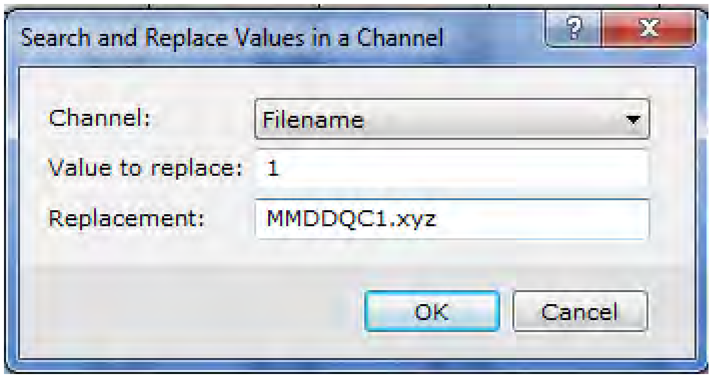
1. **101_QC_AM.gs, 101_QC_AM_Local.gs.** These scripts are partially interactive. The scripts do the following:
    - Prompts to name and create a new Geosoft database.



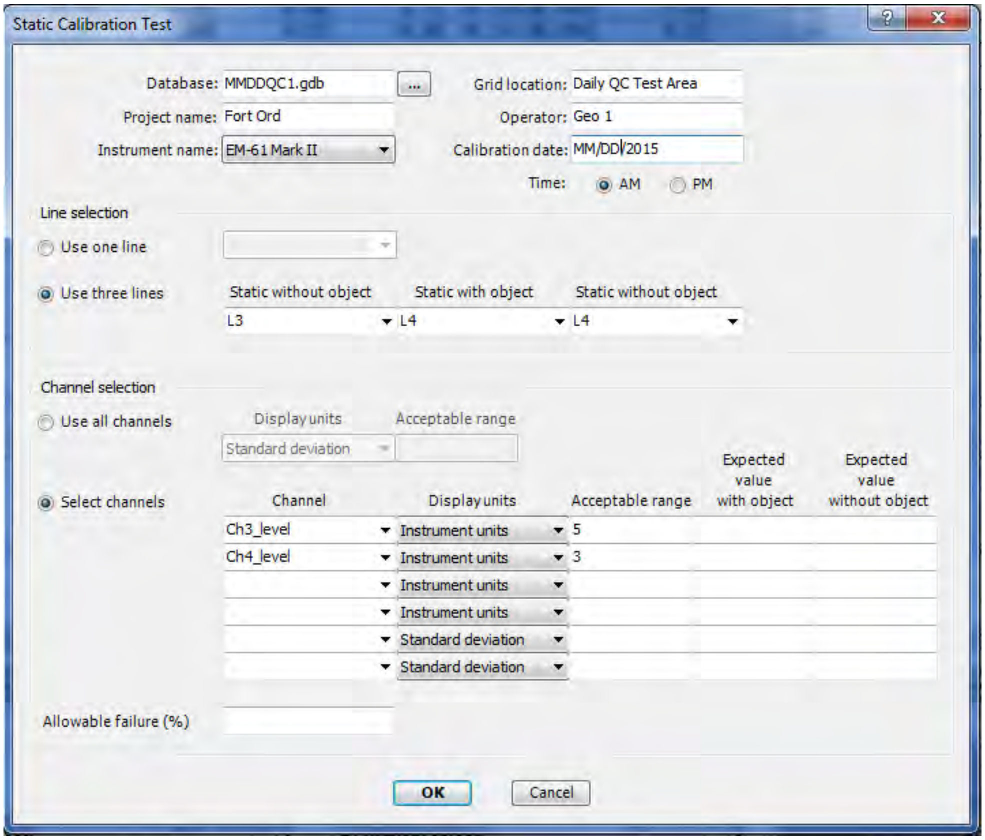
    - Prompts to import a file with the ideal response of the static test item
    - Creates a table lookup file with the static test item response
    - Prompts to locate then import the raw Geosoft xyz file using an import template. For this project, there are two different import templates: GPS and Local.



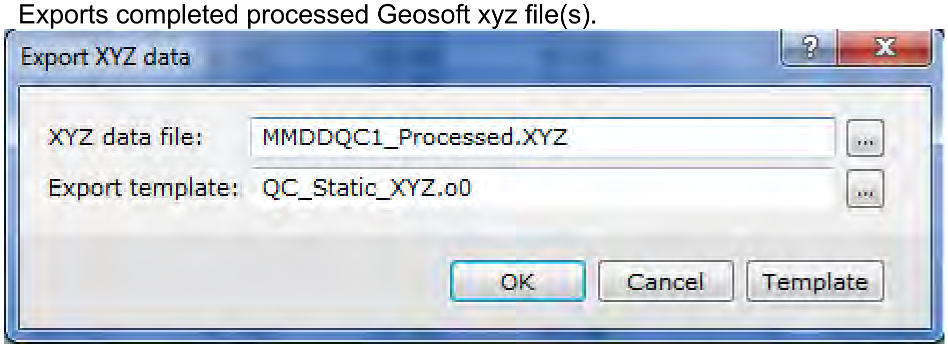
    - Prompt to populate a channel with the file name that was just imported.



- Sets X and Y coordinate channels (either in georeferenced or FID locals).
- Performs preliminary auto leveling corrections to channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft using a windowed median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 2 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 3 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 4 is Low window = 0, High window = 1 and Window length = 25.
- Mean response values for the four data channels are generated using a 10000 reading rolling statistics filter.
- The auto leveling removes the test item response. To add the response back into the drift corrected data the rolling statistics mean value is added to the filtered data.
- Sum channel is created by adding the auto leveled channels.
- Check Measurement Performance Criteria (MPC) [MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP] and export text files with results for the Kemron database.
- Uses Static Test tool to create Geosoft maps for Static, Personnel and Cable Shake tests.

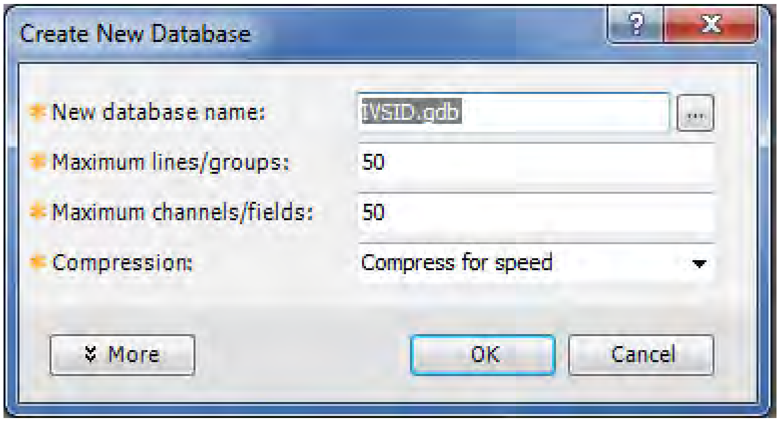


- Exports completed processed Geosoft xyz file(s).

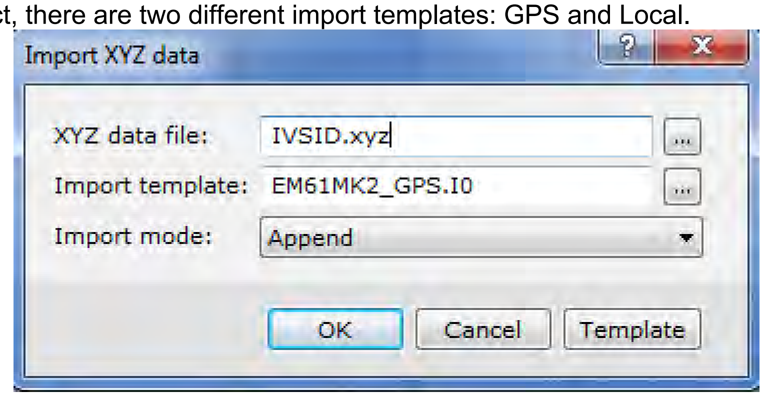


The Geosoft maps are printed as PDFs and the statistics are imported into the KEMRON Database.

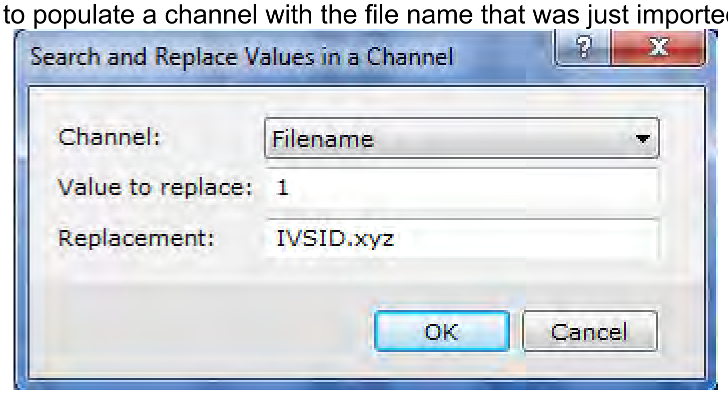
2. **201_IVS_Process.gs.** This script is partially interactive. It processes and evaluates the IVS test lines. The script does the following:
   - Prompts to name and create a new Geosoft database.



- Prompts to import a file with the ideal response of the static test item
- Creates a table lookup file with the static test item response
- Prompts to locate then import the Geosoft xyz file using an import template. For this project, there are two different import templates: GPS and Local.



- Prompt to populate a channel with the file name that was just imported.

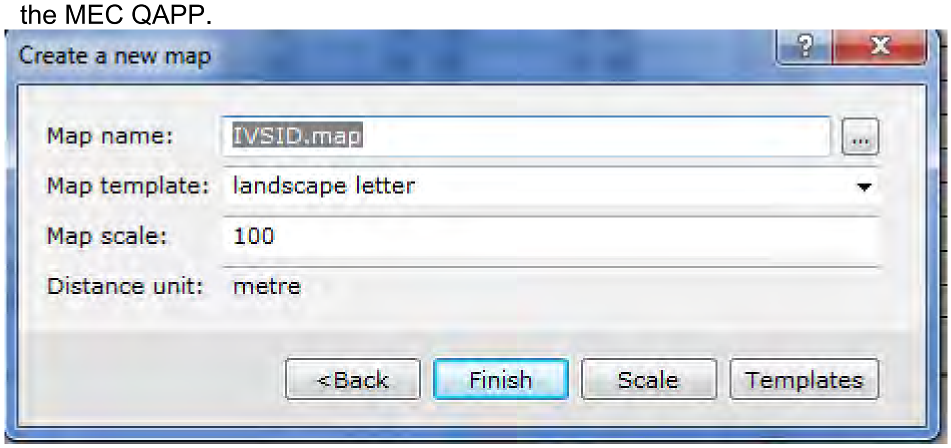


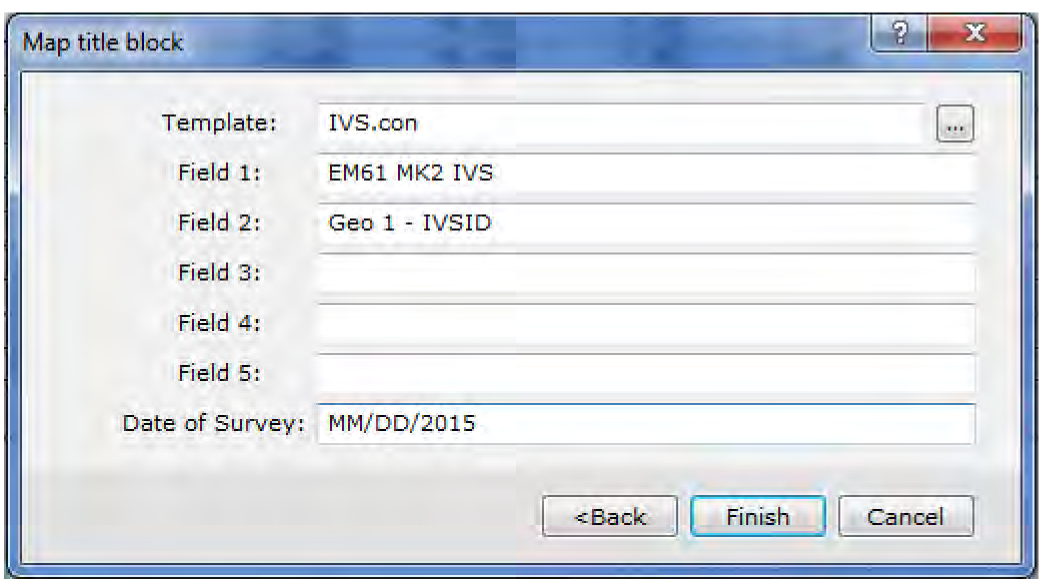
- Sets X and Y coordinate channels (either in georeferenced or FID locals).
- Calculate the along track sampling separation, flag readings outside project MPC (MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP)
- Flag GPS data quality below RTK Fix
- Performs preliminary auto leveling corrections to channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft using a windowed median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 80 and Window length = 250. Preliminary

leveling for channel 2 is Low window = 0, High window = 75 and Window length = 250. Preliminary leveling for channel 3 is Low window = 0, High window = 65 and Window length = 250. Preliminary leveling for channel 4 is Low window = 0, High window = 60 and Window length = 250.

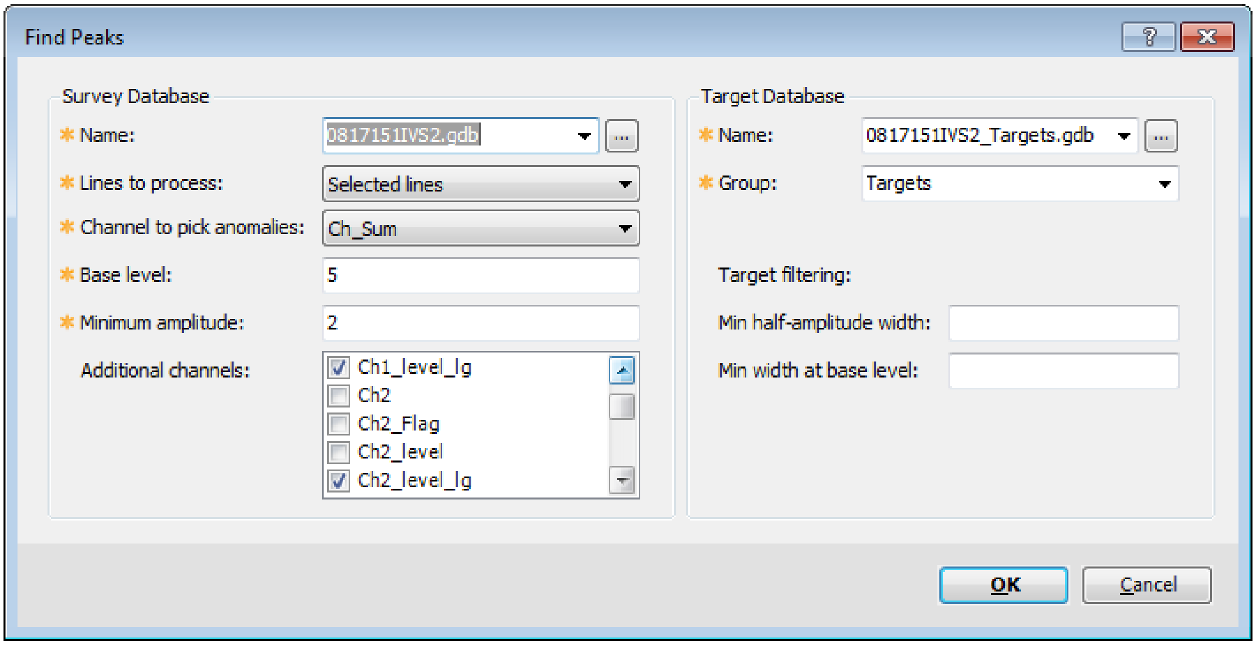
- Performs preliminary lag corrections to channels 1, 2, 3 & 4.
- Sum channel is created by adding the auto leveled lag corrected channels.
- Grids the corrected data for the selected targeting channel.
- Check the background MPC, calculate background baseline (mean) response and flag readings outside MPCs, export a text file with result. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

3. **202_IVS_Check_Targets.gs.** This script evaluates the IVS test item response(s). The script does the following:
   - Creates Geosoft map displaying gridded data and line path and locations where sampling and GPS do not meet MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

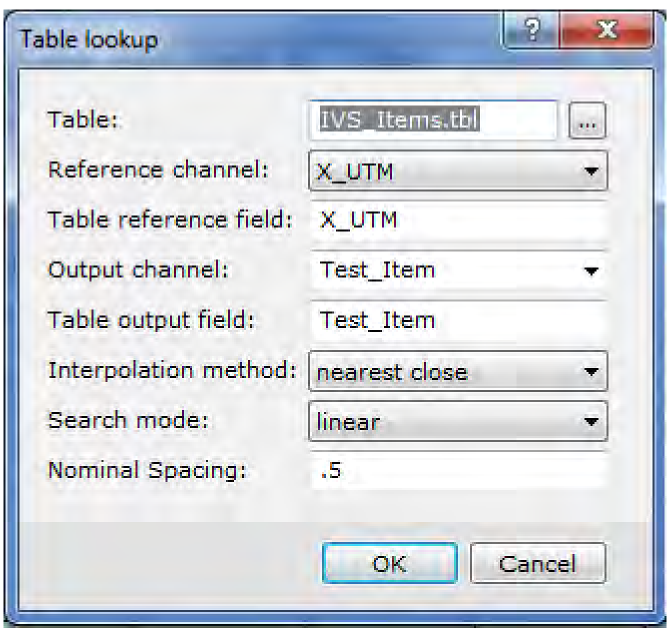




- Selects targets over seed items.

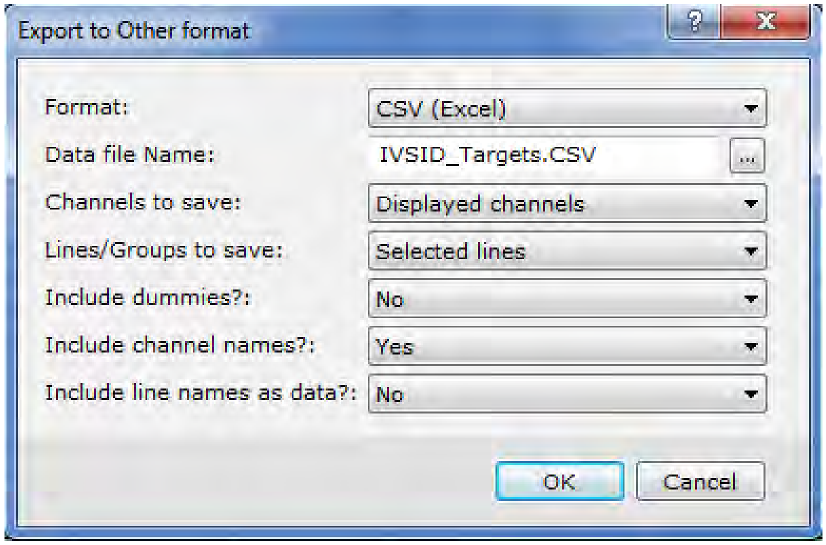


- Check response and location of targets over seed items against MPCs. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

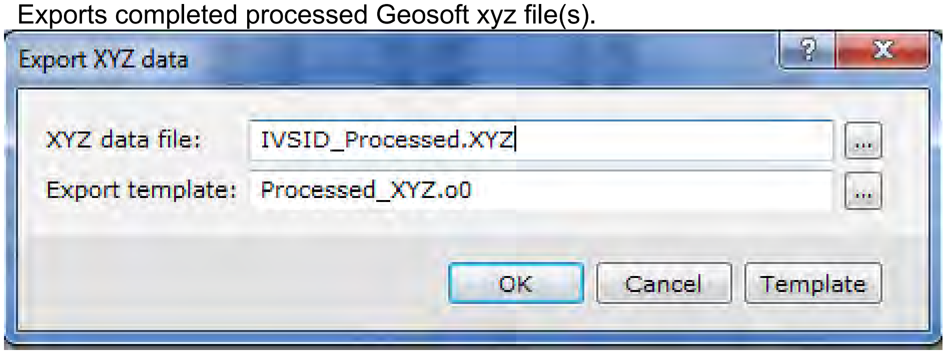


o

4. **203_IVS_Target_Export.gs.** This script exports IVS data and targets. The script does the following:
   - Exports target list a csv file.



- Exports completed processed Geosoft xyz file(s).



If needed, the leveling in the selected targeting channel will be refined by adjusting the window length. For example, a larger window length may be needed over very high response features. If needed, the lag/latency correction is also refined manually. If any of these manual adjustments are made, the data will be re-gridded and the target selections and statistics will be updated
.
The Geosoft maps are printed as PDFs, the target lists and MPC text files are imported into the KEMRON Database. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

4.3 Preprocessing

This stage includes preprocessing of the field data. Data are evaluated for the following:

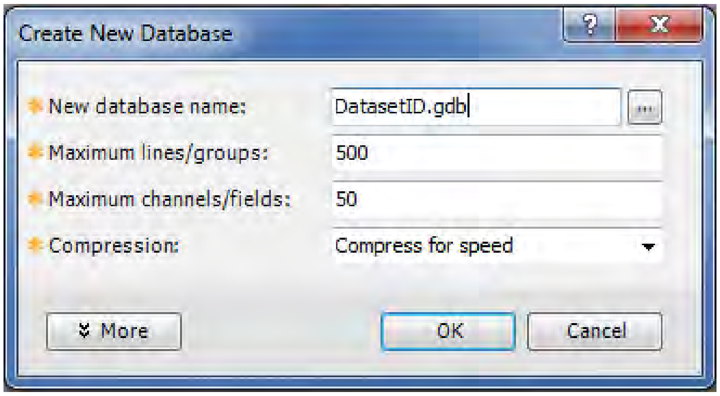
- Data quality
- Location
- Coverage
- Line path positioning
- Down line density

A folder is first created where the Geosoft files are to be saved. Separate Geosoft project files are created for each DGM dataset.

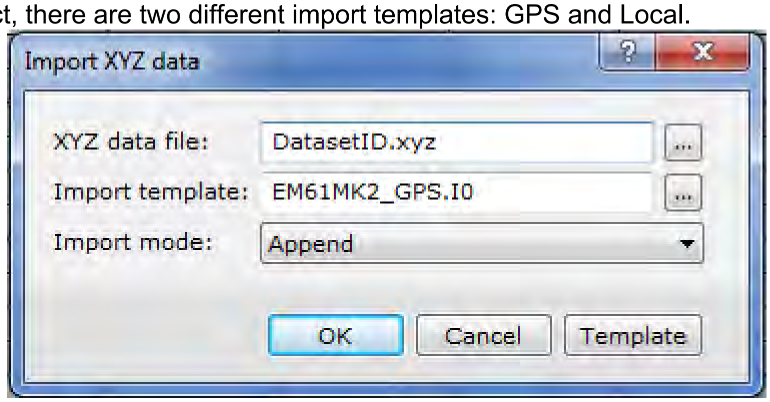
After the project is created, several script files can be used in Geosoft that help expedite the processing procedures. They are listed below with a brief description. Alternately, each step may be conducted manually.

The following scripts apply to the person-portable DGM datasets:

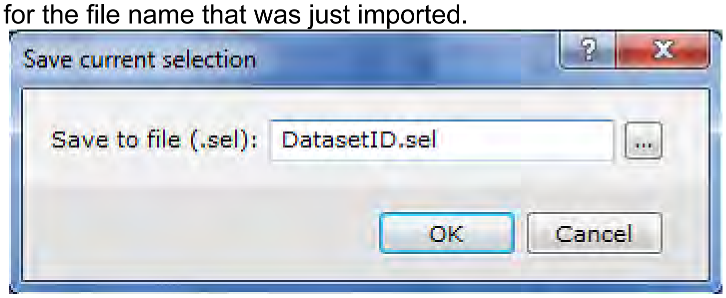
1. **301_Setup.gs, 302_Import.gs and 302a_Import_Repeat.gs.** These scripts are run in order and are partially interactive. They do the following:
   - Prompts to name the new Geosoft database it is about to create.

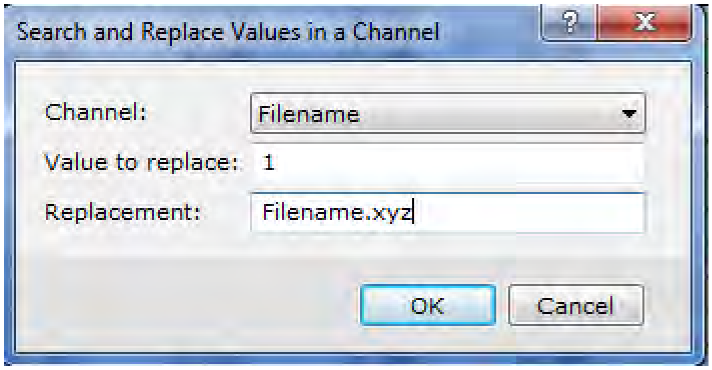


   - Prompts to locate then import the Geosoft xyz file using an import template. For this project, there are two different import templates: GPS and Local.



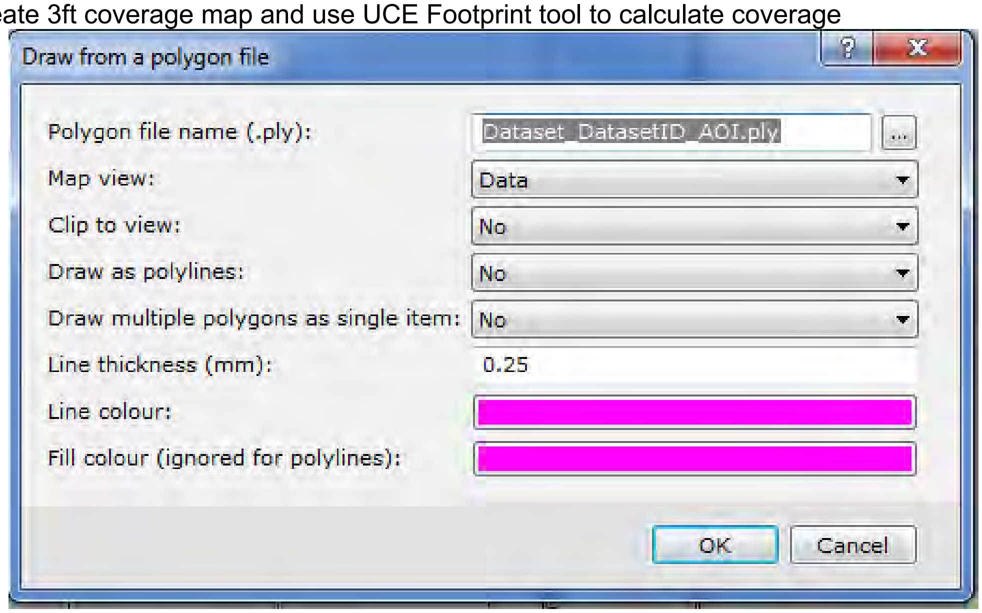
   - Prompt for the file name that was just imported.

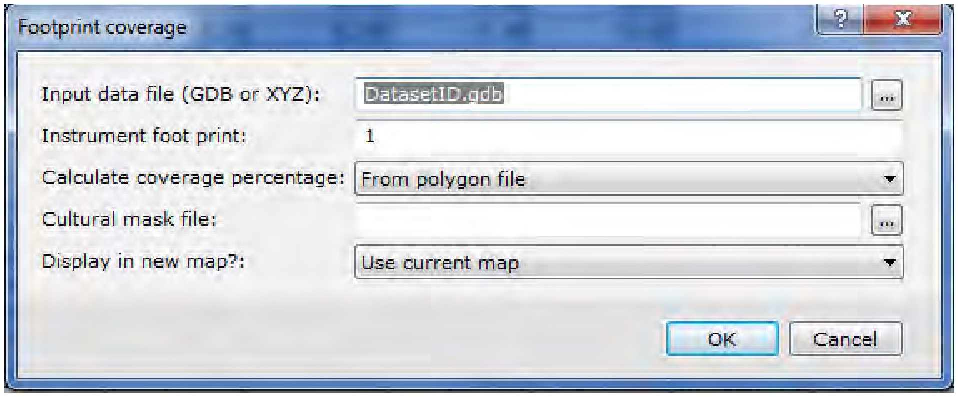


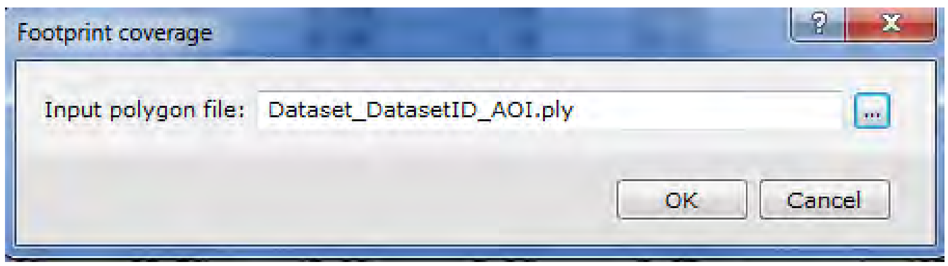


If there is more than one dataset xyz file then **302_Import.gs** is run for each xyz file followed by**302a_Import_Repeat.gs** to import the repeat xyz file. This script goes through the same steps as the 01_Setup script except naming and creating a new database. After all dataset xyz files are imported, move to the following script:

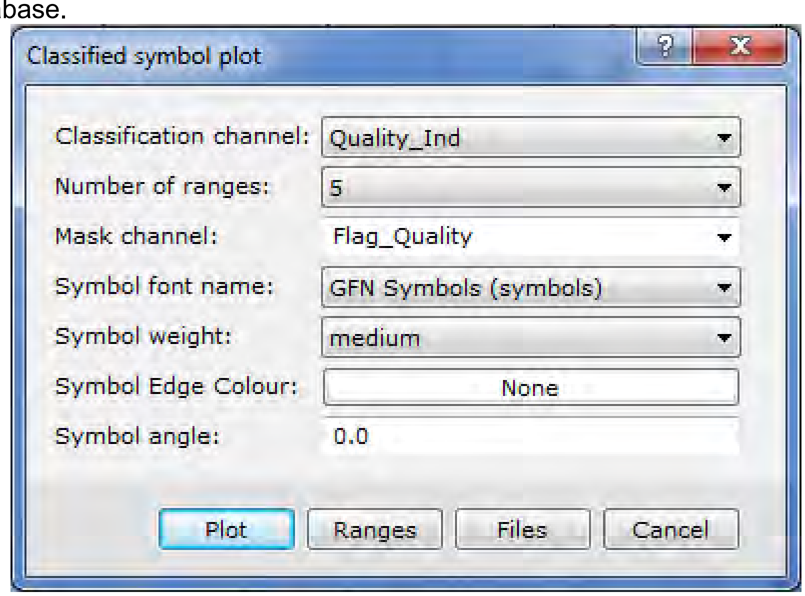
2. **304_Preprocessing.gs**
    - Sets X and Y coordinate channels.
    - Create shapefile with the line path (to be used to generate gap files)
    - Create 2.5ft coverage map and use UCEFootprint tool to calculate coverage. Lane spacing for Category A and Category B areas are described in Worksheet #12 of the MEC QAPP.
    - Create 3ft coverage map and use UCE Footprint tool to calculate coverage







- Creates x_d and y_d channels by using the differences filter by 1.
- Creates a data_density channel then runs the following math expression: “data_density = sqrt((x_d*x_d)+(y_d*y_d)).
- Creates and displays a data density map showing the footprint of possible gaps and flags any readings that do not meet the MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP. Exports file to be imported into the Kemron database.
- Creates and displays a GPS Quality map, and flags any readings without RTK fix will be marked and evaluated for positional validity. Exports file to be imported into the Kemron database.



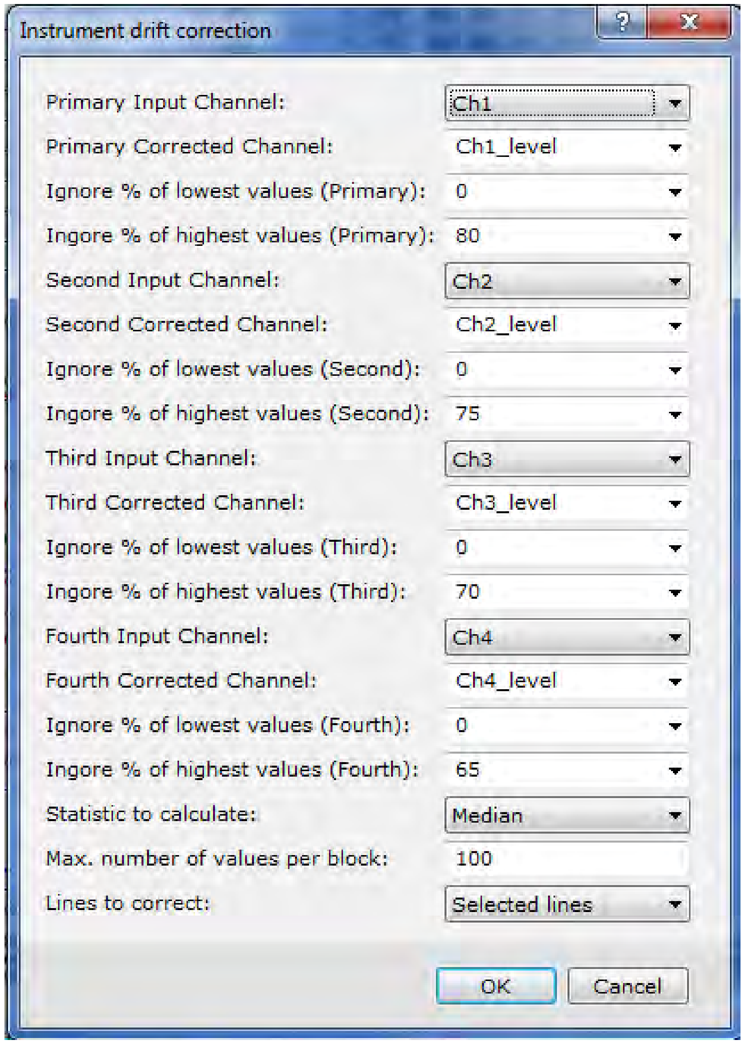
- Performs velocity calculation and flags any data outside of MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.
- Creates Velocity map displaying areas where velocity exceeds MPC and exports file to be imported into Kemron database
- Performs preliminary auto leveling of channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft using a windowed median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 80 and Window length = 100. Preliminary leveling for channel 2 is Low window = 0, High window = 75 and Window length = 100. Preliminary leveling for channel 3 is Low window = 0, High window = 65 and Window length = 100. Preliminary leveling for channel 4 is Low window = 0, High window = 60 and Window length = 100.
- Performs preliminary lag correction of channels 1, 2, 3 & 4.
- Sum channel is created by adding the auto leveled lag corrected channels.
- Grids raw, leveled, and leveled and lagged data using Minimum Curvature or Kriging.
- Creates and displays preliminary contour maps of the selected targeting channel with line paths.

To finish the preprocessing, culture files are plotted on the preliminary maps and any GIS/CADD information is overlaid.

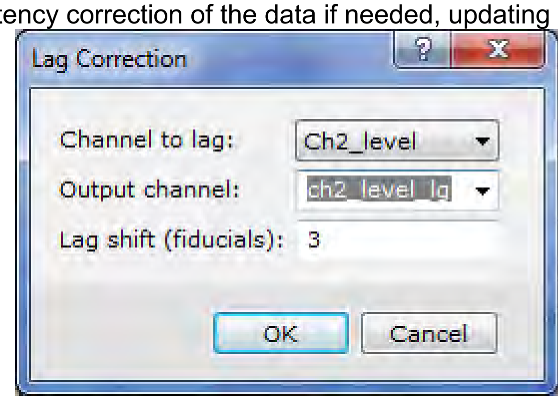
4.4 Final Processing

At this stage, the data processor refines the default parameters that were used during preprocessing and performs the following:

- Refines the leveling of all four time gate channels and the sum channel. A larger or smaller window length will be applied if needed. For example, a larger window length may be needed over very high response features. Manual leveling may also be required.

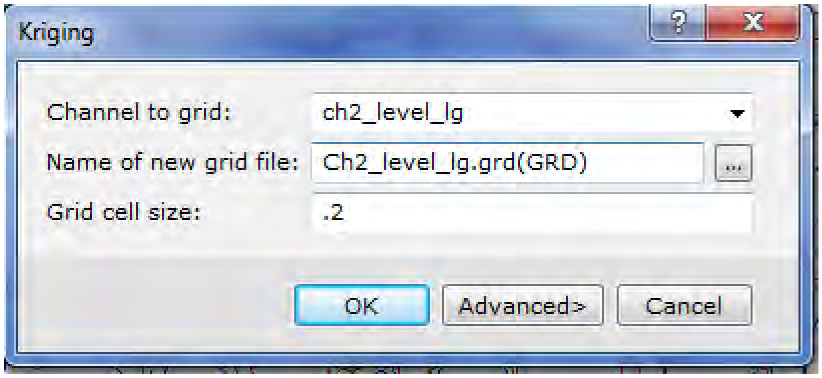


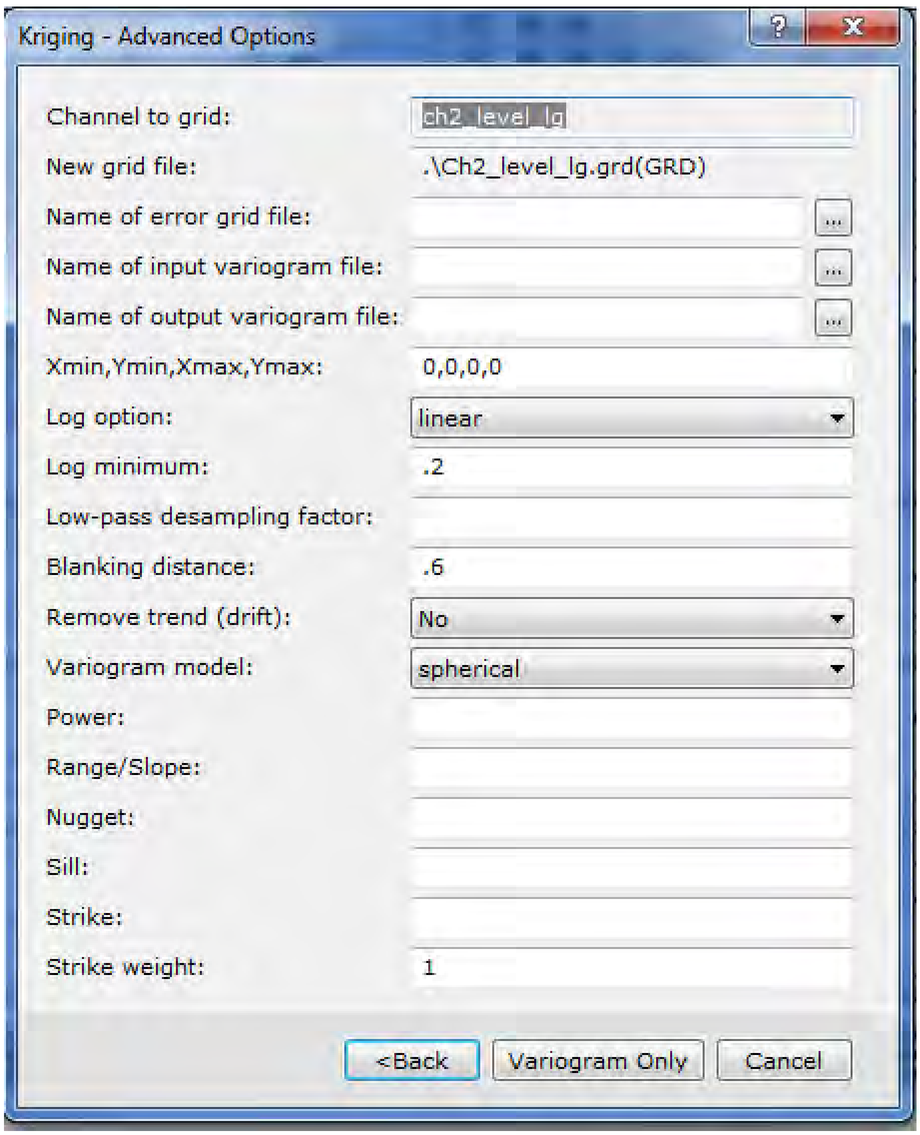
- Refines lag/latency correction of the data if needed, updating all channels



- Adds filters to the data if needed. Some filters that might be expected are non-linear, low pass, and high pass.

- Grids the data with Minimum Curvature or Kriging. Kriging better defines high response anomalies while Minimum Curvature may create false anomalies between lines near high response anomalies.





- Generate individual grid Geosoft database files.
- Generate individual grid Geosoft XYZ files.
- Generate individual grid Geosoft grid files.
- Generate individual grid Geosoft map files.
- Generate individual grid GeoTIFF files.
- Generate individual grid map PDF files.

Prepare grid data delivery package:

- Fill out DGM Data Processing form in the KEMRON Database.
- Create a final delivery package that includes the following:
    - All the Geosoft colored contour grid cell maps that are in the dataset.
    - All the pdfs for the grid cell maps that are in the dataset.
    - Processed Geosoft gdb and xyz files of the dataset.
    - Geosoft grd files for the dataset
    - GeoTIFFs for the dataset
    - Grid boundary and area of investigation Geosoft polygon (.ply) files
    - Gap shapefiles, with gap boundary and description
    - PDF of processed data report from database

4.5 Target Selection

DGM surveys will be categorized as either Category A or Category B. Category A DGM surveys will be conducted in areas where future subsurface removal actions are planned. Subsurface removal requires the most precise level of DGM data, and Category A DGM therefore has the most stringent MQOs. The objective of Category B DGM surveys is to obtain DGM data of sufficient quality to characterize the site for overall anomaly distribution and density. Category B DGM is not intended to support subsurface MEC removal and therefore requires less stringent MQOs.

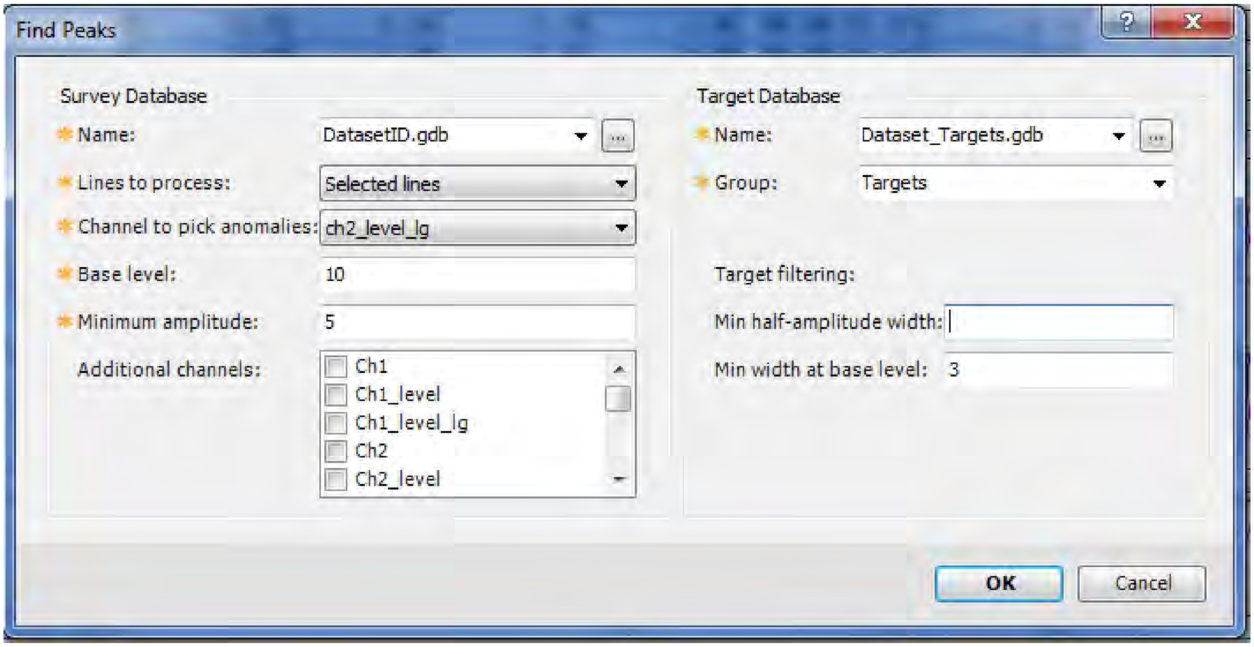
4.5.1 Category A Areas

For Category A areas the following target selection procedures are to be performed.

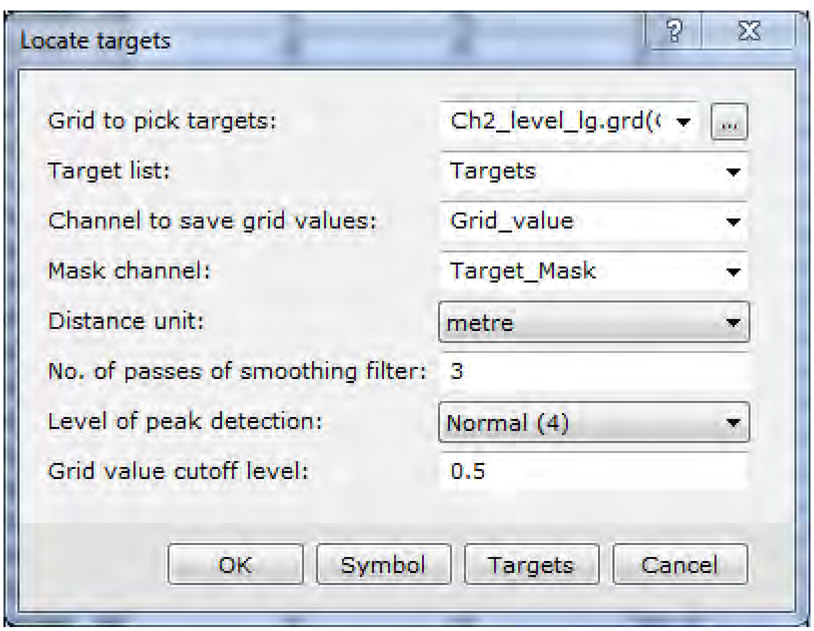
A target selection script is run

- Selects anomalies in Geosoft's UX-Detect Module by using either "Pick Peaks Along Profile" or "Blakely Test". Profile picking is effective in low target density areas where discrete anomalies are present above background noise. Anomalies selected using profile picking, whose footprint crosses several survey lines, will have multiple targets selected that need to be reviewed and removed by the processor. Selecting targets from gridded data with the Blakely method is more efficient in high target density areas and less likely to place additional target selections across large footprint anomalies with only one distinct peak value for an anomaly that crosses several lines. The Blakely method requires that all data channels to be included on the target list must be gridded and sampled.

Pick Peaks Along Profile



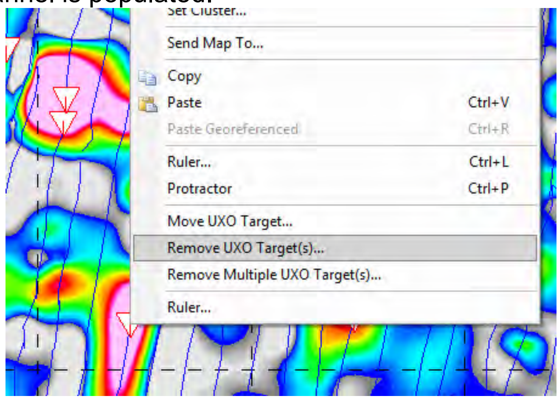
Blakely Test



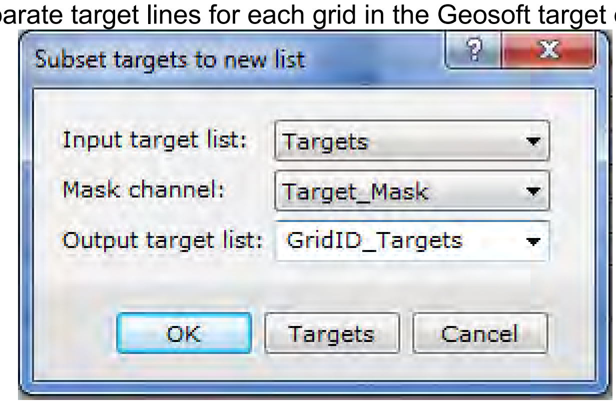
- Populates channel sum, 1, 2, 3 & 4 response values
- Creates a comments channel that is used to add descriptive notes as needed.
- If needed, performs automated target checks, for example if Ch1>Ch2>Ch3>Ch4

To complete target selection:

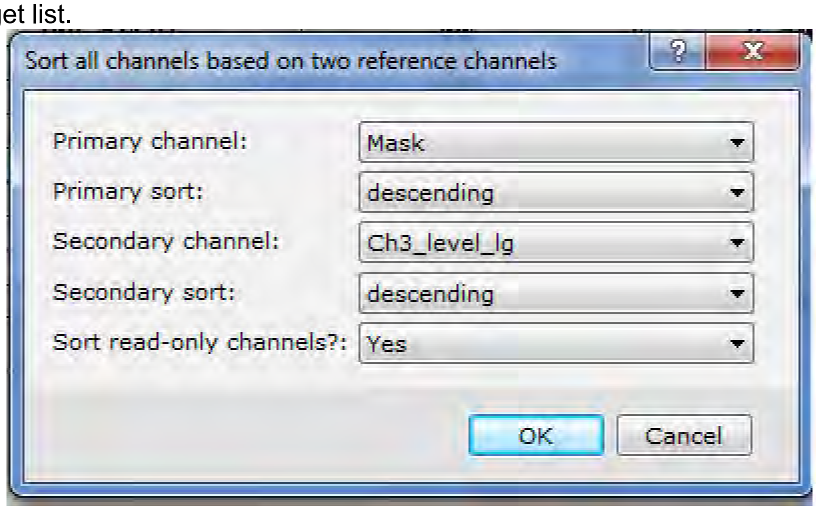
- Target selections are refined by checking their validity and position. Targets found to be invalid or incorrectly located are adjusted or removed. Additionally, anomalies not selected by UX-Detect, yet deemed to represent a potential UXO target, are manually selected. Comments channel is populated.



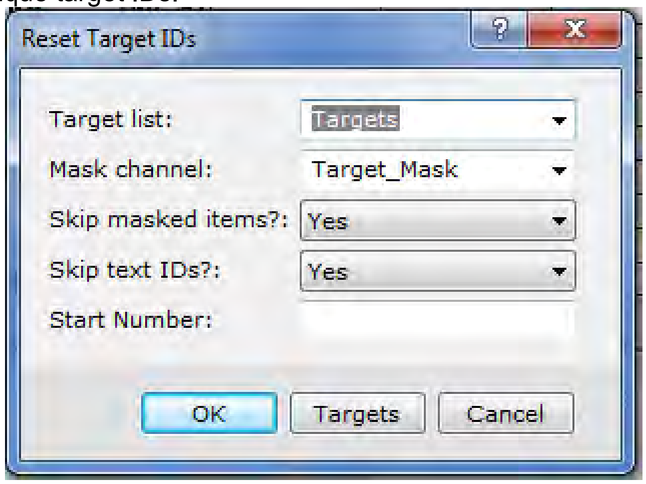
- Creates separate target lines for each grid in the Geosoft target database.



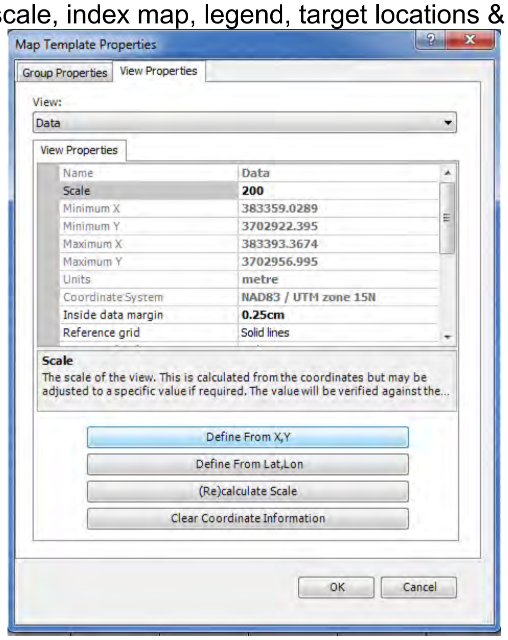
- Re-sorts the target database by amplitude and if needed, adds any additional polygon target points (Data Gap Polygons or Heavily Saturated Area Polygons) to the end of the target list.

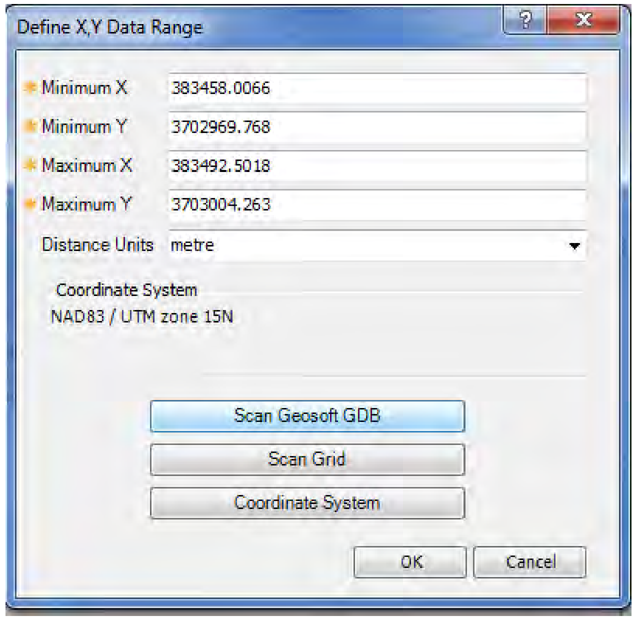


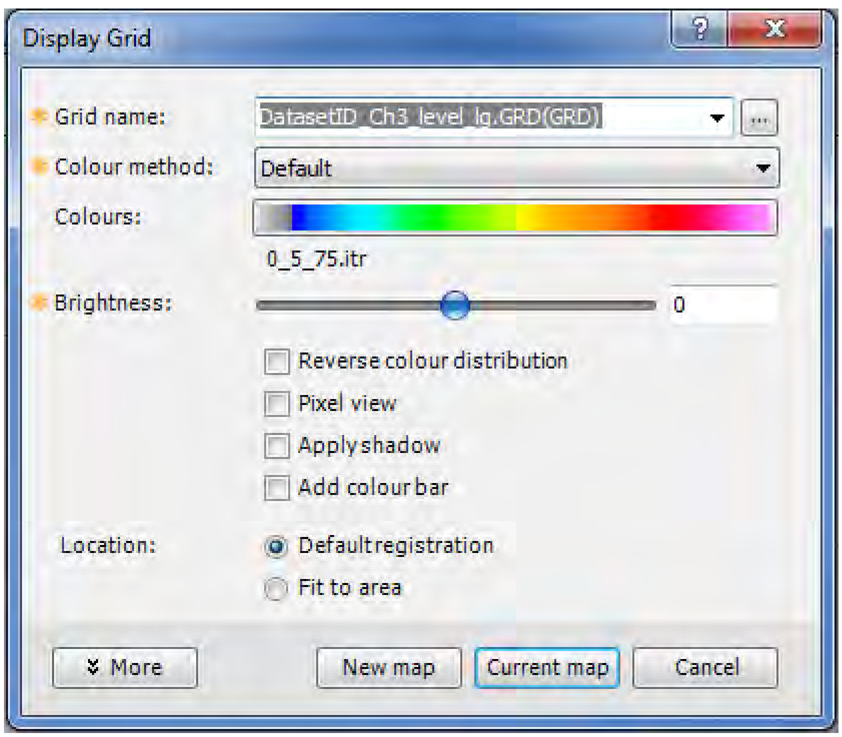
- Assigns unique target IDs.

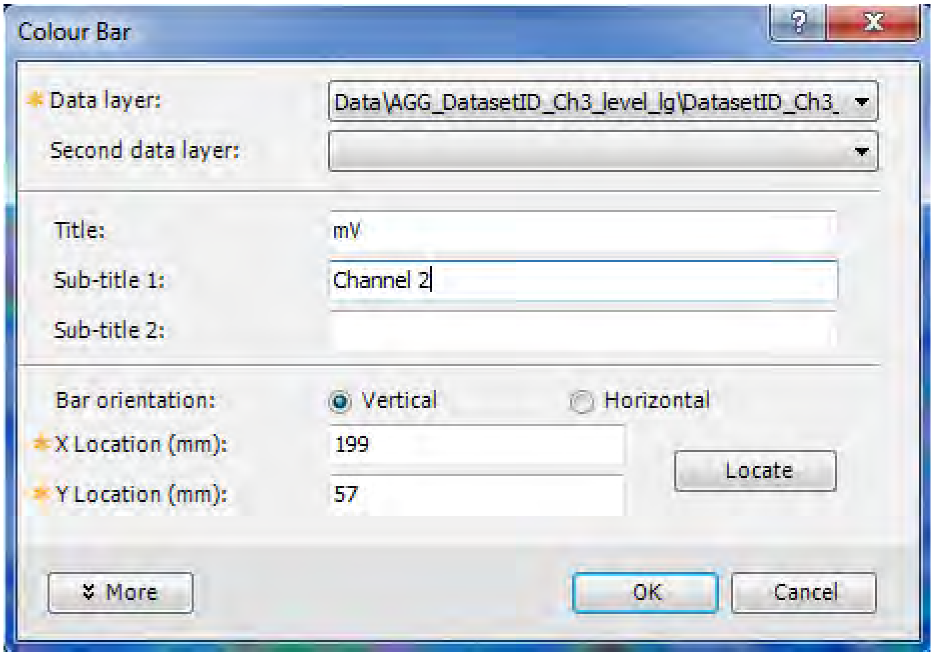


- Creates and displays a colored contour Geosoft map(s) of the grid cell(s) with the following; title block, color scale, index map, legend, target locations & target numbers.

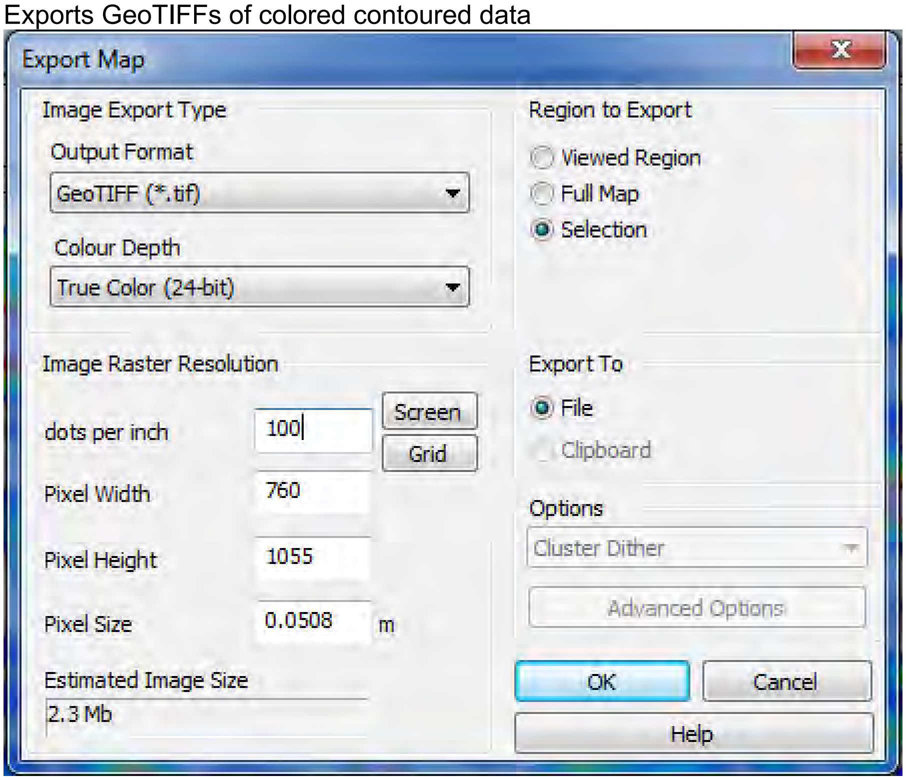



Define X,Y Data Range
Minimum X
383458.0066
Minimum Y
3702969.768
Maximum X
383492.5018
Maximum Y
3703004.263
Distance Units
metre
Coordinate System
NAD83 / UTM zone 15N
Scan Geosoft GDB
Scan Grid
Coordinate System
OK
Cancel

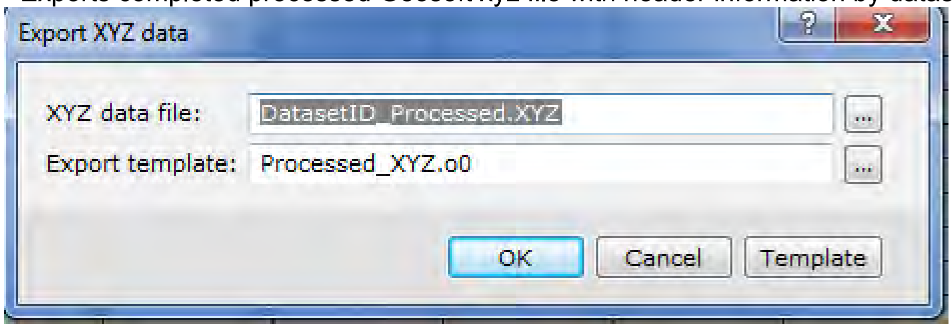

Display Grid
Grid name:
DatasetID_Ch3_level_lg.GRD(GRD)
Colour method:
Default
Colours:
0_5_75.itr
Brightness:
0
Reverse colour distribution
Pixel view
Apply shadow
Add colour bar
Location:
Default registration
Fit to area
More
New map
Current map
Cancel



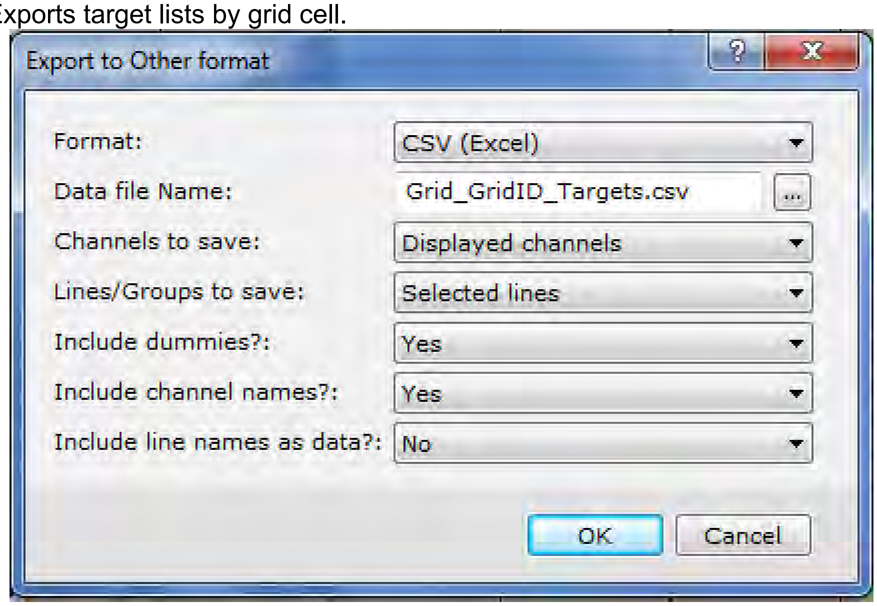
- Creates a pdf of the colored contoured grid cell map(s).
- Exports GeoTIFFs of colored contoured data



- Exports completed processed Geosoft xyz file with header information by dataset.



- Exports target lists by grid cell.



Prepare targeted data deliverables:

- Create a final delivery package that includes the following:
  - All the Geosoft colored contour grid cell maps that are in the dataset.
  - All the pdfs for the grid cell maps that are in the dataset.
  - Processed Geosoft gdb and xyz files of the dataset.
  - Geosoft grd files for the dataset
  - GeoTIFFs for the dataset
  - Target lists in xls format.

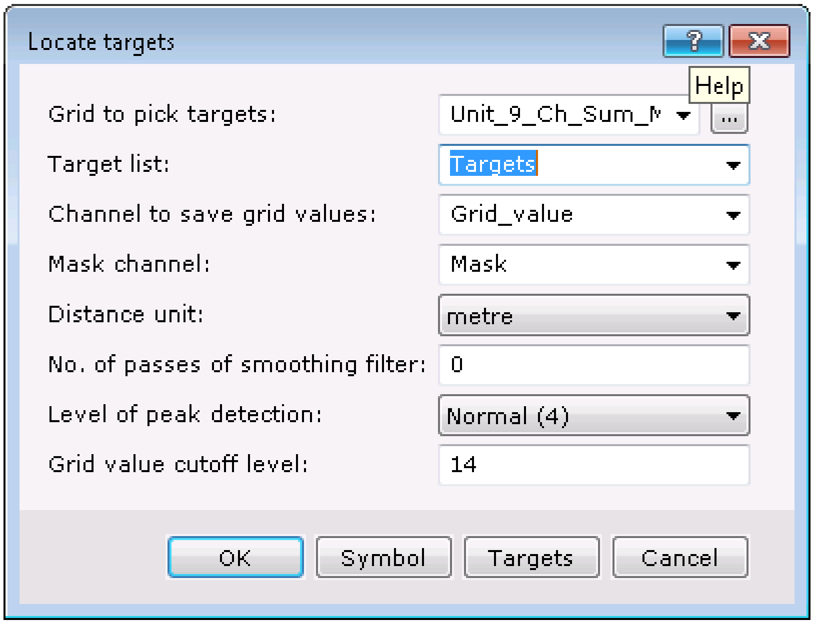
Fill out DGM Target Selection form in the KEMRON Database.

4.5.2 Category B Areas

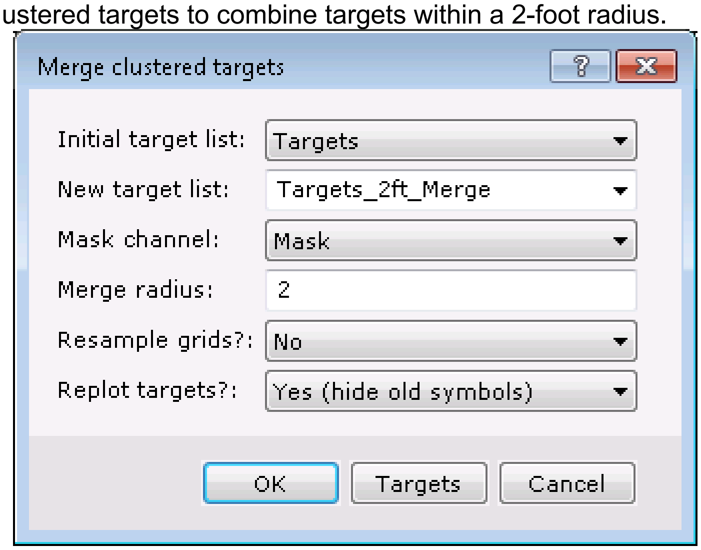
Targets for Category B are to be used for anomaly density evaluation only. These Category B targets are not to be included in the KEMRON Database. The following target selection procedures are to be performed for Category B Areas.

Targets are selected once all the data have been collected in a unit/area.

- Select anomalies in Geosoft's UX-Detect Module from the gridded sum mosaic data by using "Blakely Test".



- Merge clustered targets to combine targets within a 2-foot radius.



Prepare target density per grid for the unit/area:

- Export the merged target list as a shapefile.
- Join the target shapefile to the grid system in ArcGIS
- Calculate the target density per grid.

Provide the density data as the final Category B deliverable.

4.6 QC of the Processed Data

Preliminary QC checks are as follows:

- Check that all deliverables have been prepared and are complete
- Check that DQOs are achieved and documented in the KEMRON Database.
- Check to see if leveling and lag corrections are appropriate.
- Check anomaly selections on the maps and target list files.

- Check maps title block, index map and legend (map & pdf).
- Check entries on the processing form in the KEMRON Database.
- Check that all forms have been filled out in the KEMRON Database, then create a Data Processing Report for submittal with the final deliverable.

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for processing person-portable DGM data can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

5 DATA SUBMITTAL AND ARCHIVING

Final processed data for QC function tests will be submitted by test (static, IVS, etc.) and date. Field data will be submitted by dataset. Each processed data submittal will include, at a minimum, the following:

- Final processed data in *.gdb and *.xyz formats
- Contoured geophysical data in *.map, *.pdf, and GeoTIFF formats
- Target list in *.xls format
- Data Processing Report in *.pdf format

All data submittal files will be compiled in a *.zip file and uploaded daily to the project ftp site. If more than one data processor is working on the project simultaneously, one individual will be designated to send an email to the appropriate parties listing the completed function test and field data for that day. A copy of the KEMRON Database updated with new data processing information will be transferred daily to the Field Data Manager who will merge it with the main copy of the database. Database management procedures are described in DATA SOP 1 (Field Data Management). Original copies of all raw and processed geophysical data will be housed on NAEVA's secure server which is backed-up daily and weekly.

6 QUALITY CONTROL

Measurement Performance Criteria (MPCs) for DGM data processing for a person-portable system can be found in Worksheet #12 of the MEC QAPP. Inspection checklists specific to this SOP are located at the end of this SOP.

7 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 5 – DGM Data Processing Using a Person-Portable System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Data Processor:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	3	Verify Geosoft Oasis Montaj is being used for all final data processing				*(P)*
3	4.1	Field forms are complete and contain all of the specified information				*(I),(F)*
4	4.2	Separate folders and project files have been created for the day’s function tests				*(I),(F)*
5	4.2	Function test xyz files have been imported into a Geosoft database using the appropriate template				*(I),(F)*
6	4.2	Preliminary auto leveling corrections to the function test data have been performed according to specifications				*(I),(F)*
7	4.2	Static background and static spike statistics have been calculated and exported				*(I),(F)*
8	4.2	Preliminary lag correction has been performed for IVS tests				*(I),(F)*
9	4.2	IVS data for targeting channel has been gridded and Geosoft maps have been created				*(I),(F)*
10	4.2	IVS target locations and peak responses have been compared to the expected values				*(I),(F)*
11	4.2	IVS target lists and processed xyz data have been exported				*(I),(F)*
12	4.3	Separate folders and project files have been created for the day’s field data				*(I),(F)*
13	4.3	Field data xyz files have been imported into a Geosoft database using the appropriate template				*(I),(F)*
14	4.3	Data density statistics have been calculated and displayed on a map				*(I),(F)*
15	4.3	GPS Quality map has been created				*(I),(F)*
16	4.3	Preliminary auto leveling corrections to the field data have been performed according to specifications				*(I),(F)*

17	4.3	Preliminary lag correction has been performed for IVS tests				*(I),(F)*
18	4.3	Field data for targeting channel has been gridded and Geosoft maps have been created				*(I),(F)*
19	4.3	Culture files have been plotted on the preliminary contour maps				*(I),(F)*
20	4.5	Targets have been selected over all anomalous features meeting the targeting criteria (Category A or B)				*(I),(F)*
21	4.5	Targets have been sorted according to amplitude from highest to lowest and given unique target IDs				*(I),(F)*
22	4.5	Final contour maps have been created by grid in pdf and GeoTIFF formats				*(I),(F)*
23	4.5	Final processed data files and final target lists have been exported				*(I),(F)*
24	4.5	Deliverables package has been created including all specified files and has been transferred to project FTP site				*(I),(F)*
25	4.5	All processing information has been documented in the KEMRON Database				*(I),(F)*
26	5	Updated processing information has been sent to the field data manager				*(I),(F)*
27	5	Processed data email has been sent to the appropriate parties				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 6

DGM DATA PROCESSING FOR A TOWED ARRAY SYSTEM

STANDARD OPERATING PROCEDURE FOR DGM DATA PROCESSING FOR A TOWED ARRAY SYSTEM

GEO SOP 6

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

TABLE OF CONTENTS

LIST OF APPENDICES

1 POLICY

NAEVA, Gilbane and KEMRON personnel will follow procedures established in this SOP for all data processing of Digital Geophysical Mapping (DGM) data collected using towed array methods in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 ACRONYMS LIST

CADD	Computer Aided Design and Drafting
DGM	Digital Geophysical Mapping
DQO	Data Quality Objective
ID	Identification
GIS	Geographic Information System
GPS	Global Positioning System
MEC	Munitions and Explosives of Concern
QAPP	Quality Assurance Project Plan
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
WERS	Worldwide Environmental Remediation Services

3 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to detail the procedures and operational methodologies associated with the processing of DGM data collected using towed array methods in areas that are potentially contaminated with Munitions and Explosives of Concern (MEC). All data processing will be performed using Geosoft's Oasis Montaj software package equipped with the UX-Detect module.

4 DATA PROCESSING STEPS

Once the initial editing steps have been performed, as described in GEO SOP 4 (DGM Using a Towed Array System), the data are turned over to NAEVA's processors for advanced analysis, target selection, and preparation of deliverables. The processor will go through five steps before the final data packages are delivered.

4.1 QC of Field Forms

Inspect the contents of the field forms that have been uploaded into the KEMRON database to ensure that the forms are filled out correctly with the following information:

- The appropriate dataset ID
- QC test file names (Static/Spike Tests, RPM Test, Cable Shake Test and Latency Tests)
- Grid ID(s)
- Instrument used (EM61MK2 Towed Array)
- Collection/navigation method (RTK-GPS)
- Daily conditions
- Cultural features
- Field notes

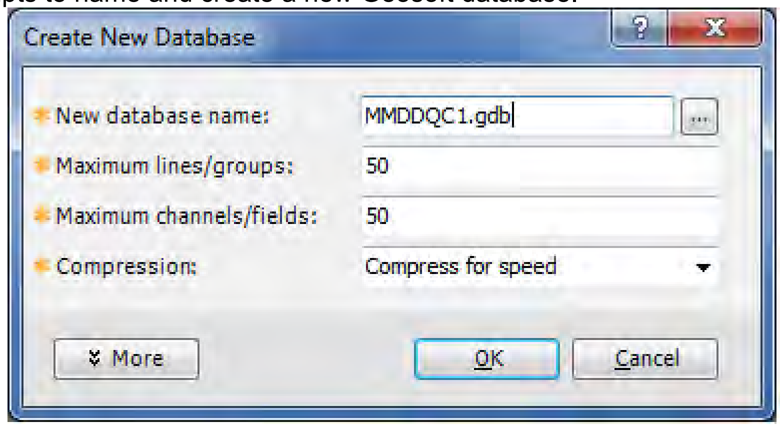
4.2 Daily Function Test Processing

This stage includes processing of the daily function QC test data. Satisfactory performance of QC tests with respect to the project Data Quality Objectives (DQOs) is evaluated.

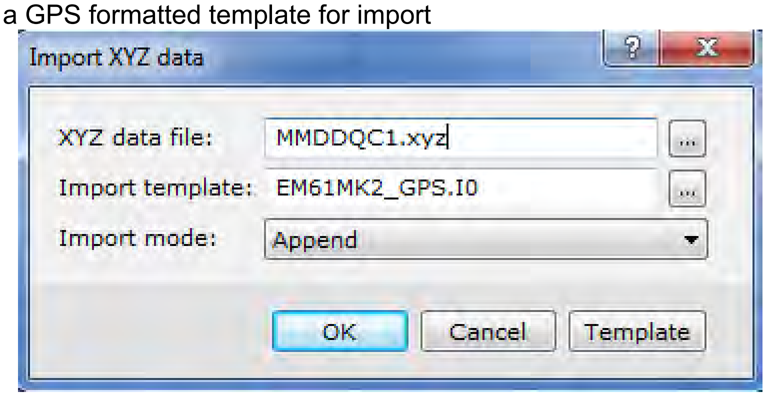
First, a folder needs to be created where the Geosoft files are to be saved. Separate Geosoft project files are created for each test.

After the project is created, script files can be used in Geosoft to expedite the processing procedures. They are listed below with a brief description. Alternately, each step may be conducted manually.

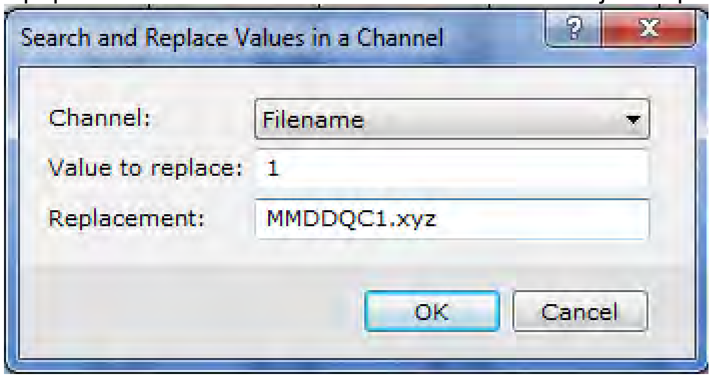
1. **101_QC_AM..** This script is partially interactive. The script does the following:
   - Prompts to name and create a new Geosoft database.



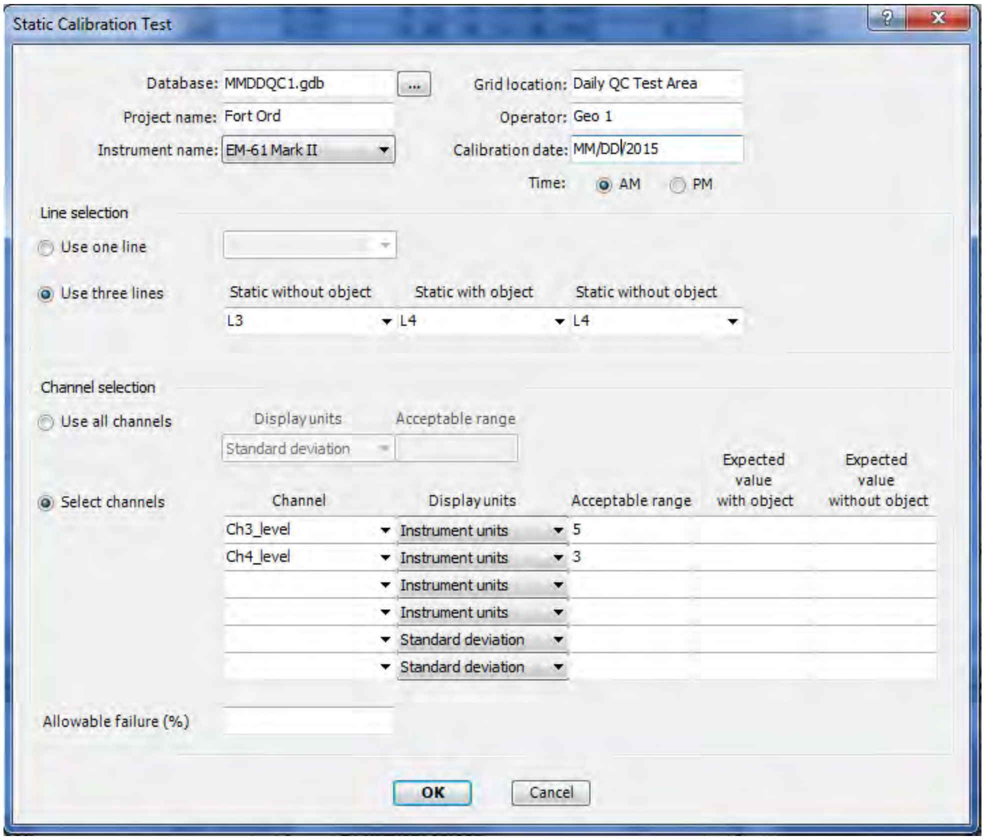
   - Prompts to import a file with the ideal response of the static test item
   - Creates a table lookup file with the static test item response
   - Prompts to locate then import the raw Geosoft xyz file.
   - Uses a GPS formatted template for import



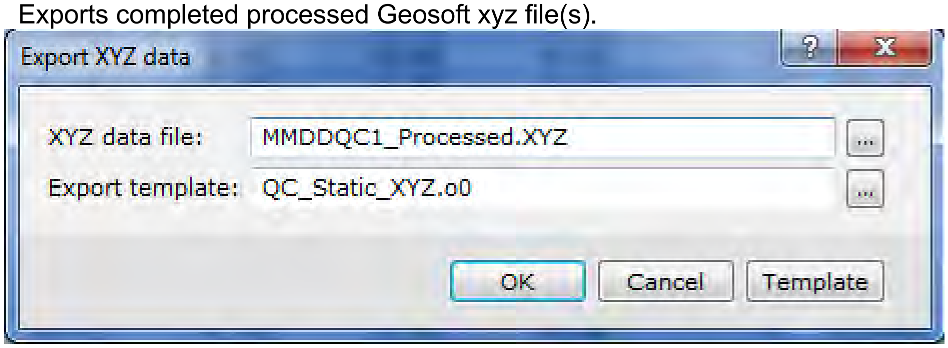
- Prompt to populate the channel with the file name that was just imported.



- Add coil ID numbering to database
- Repeats import process for raw files from additional coils
- Set X and Y coordinates and applies the appropriate coordinate projection definition.
- Preliminary auto levels corrects channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft except we use a median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 2 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 3 is Low window = 0, High window = 1 and Window length = 25. Preliminary leveling for channel 4 is Low window = 0, High window = 1 and Window length = 25.
- Mean response values for the four data channels are generated using a 10000 reading rolling statistics filter.
- The auto leveling removes the test item response. To add the response back into the drift corrected data the rolling statistics mean value is added to the filtered data.
- Sum channel is created by adding the auto leveled channels.
- Check Measurement Performance Criteria (MPC) [MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP] and export text files with results for the Kemron database.
- Use Static Test tool to create Geosoft maps for the Static, Tow Vehicle and Cable Shake tests.

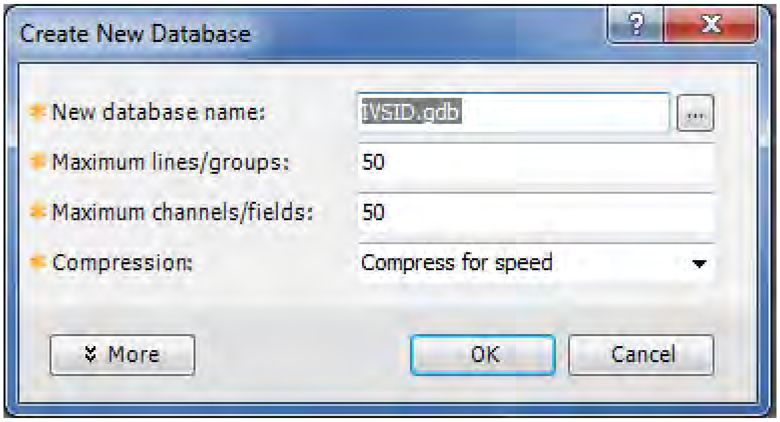


- Exports completed processed Geosoft xyz file(s).

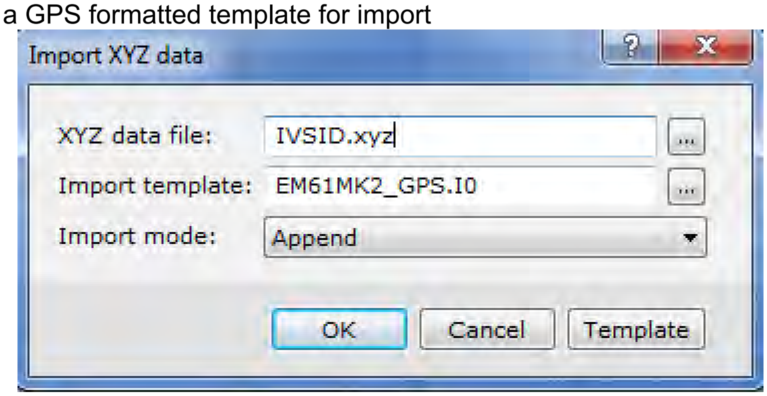


The Geosoft maps are printed as PDFs and the statistics are imported into the KEMRON Database.

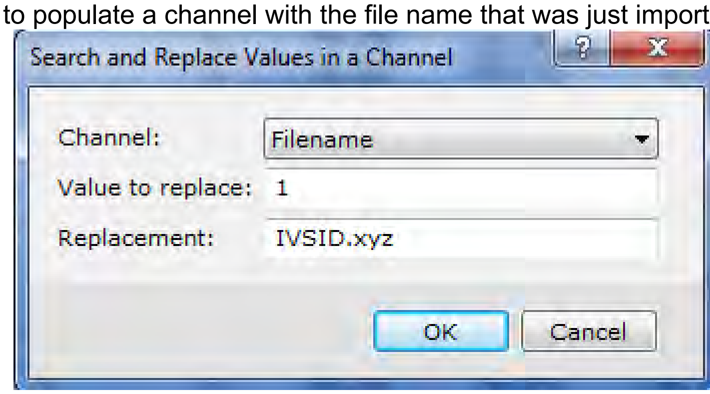
2. **201_IVS_Process.gs.** This script is partially interactive. It processes and evaluates the IVS test lines. The script does the following:
   - Prompts to name and create a new Geosoft database.



- Prompts to import a file with the ideal response of the IVS test items
- Creates a table lookup file with the IVS test items response
- Prompts to locate then import the Geosoft xyz file.
- Uses a GPS formatted template for import



- Prompt to populate a channel with the file name that was just imported.

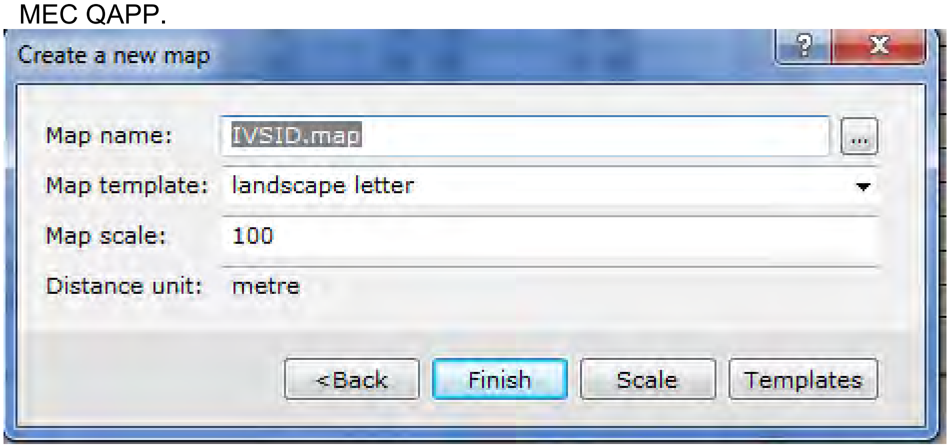


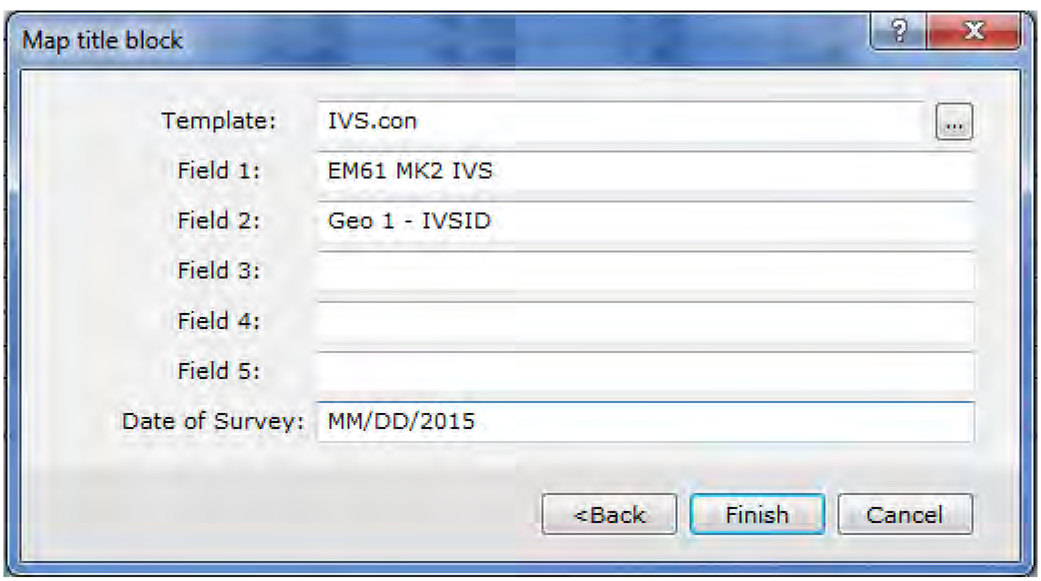
- Adds coil ID numbering to database
- Repeats import process for raw files from additional coils
- Sets X and Y as current and applies the appropriate coordinate projection definition.
- Preliminary auto levels channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft except we use a median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 80 and Window length = 250. Preliminary leveling for channel 2 is Low window = 0, High window = 75 and Window length = 250. Preliminary leveling for channel

3 is Low window = 0, High window = 65 and Window length = 250. Preliminary leveling for channel 4 is Low window = 0, High window = 60 and Window length = 250.

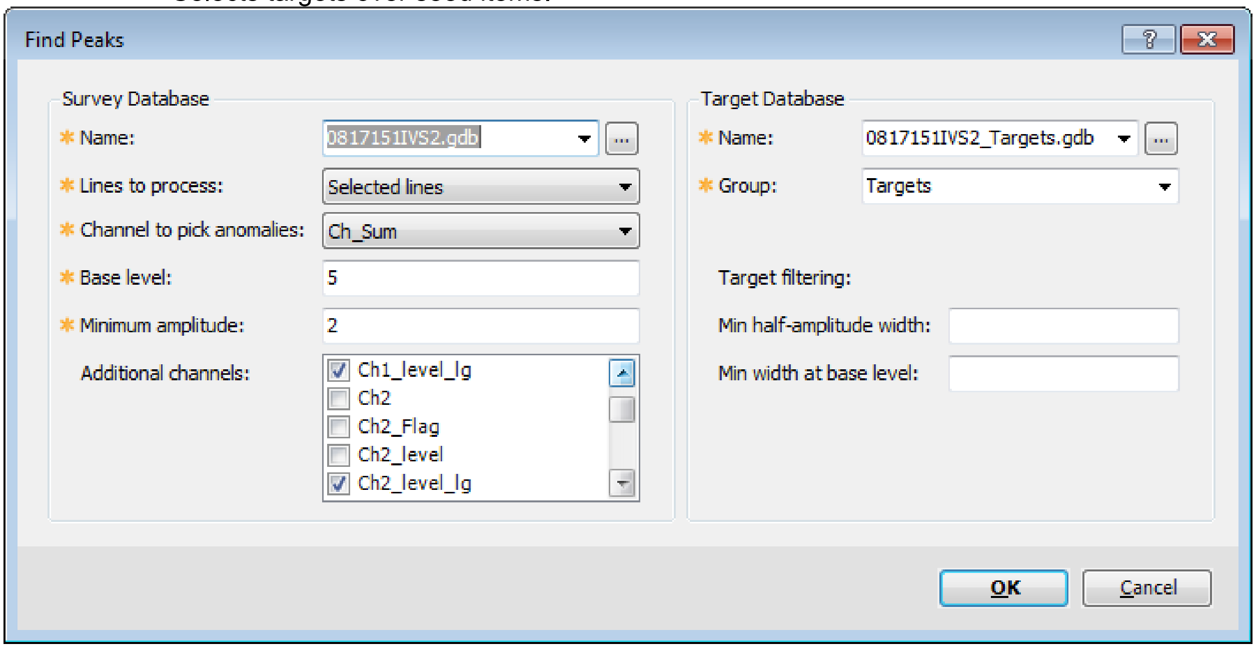
- Preliminary lag corrects channels 1, 2, 3 & 4.
- Sum channel is created by adding the auto leveled lag corrected channels.
- Grids corrected data for the selected targeting channel.
- Check the background MPC, calculate background baseline (mean) response and flag readings outside MPCs, export a text file with result. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

3. **202_IVS_Check_Targets.gs.** This script evaluates the IVS test item response(s). The script does the following:
   - Creates Geosoft map displaying gridded data, line path and locations were sampling and GPS do not meet the MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

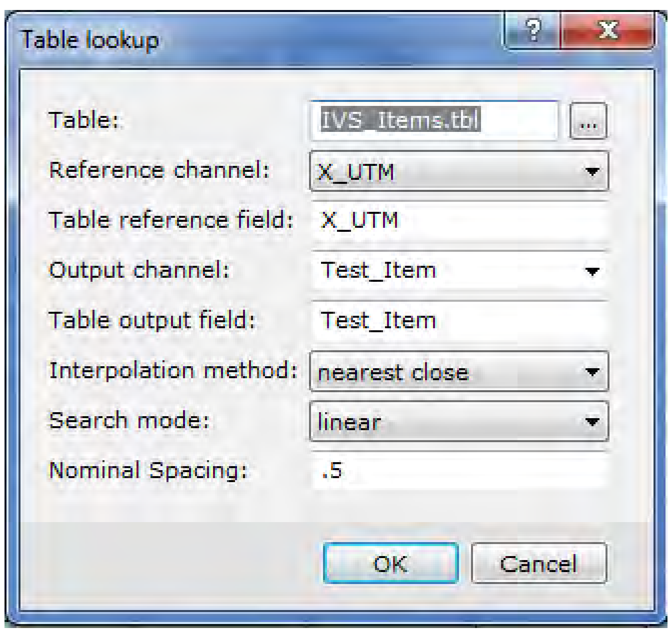




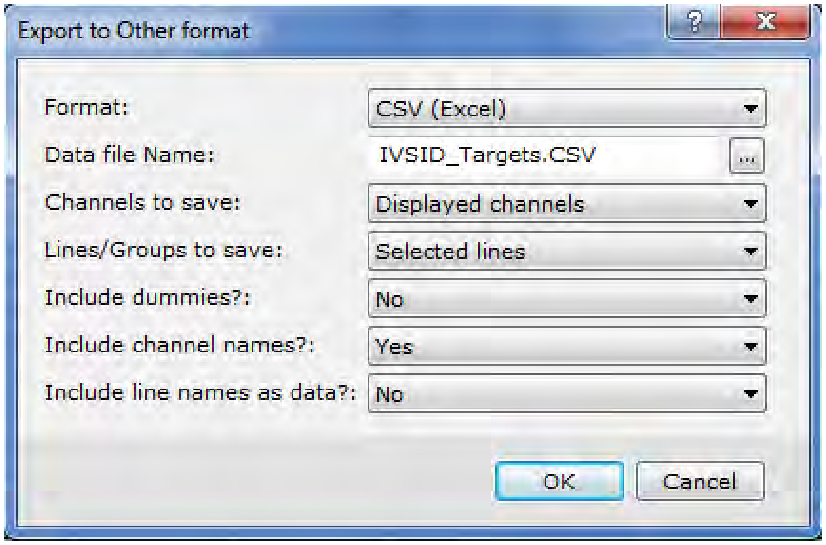
- Selects targets over seed items.



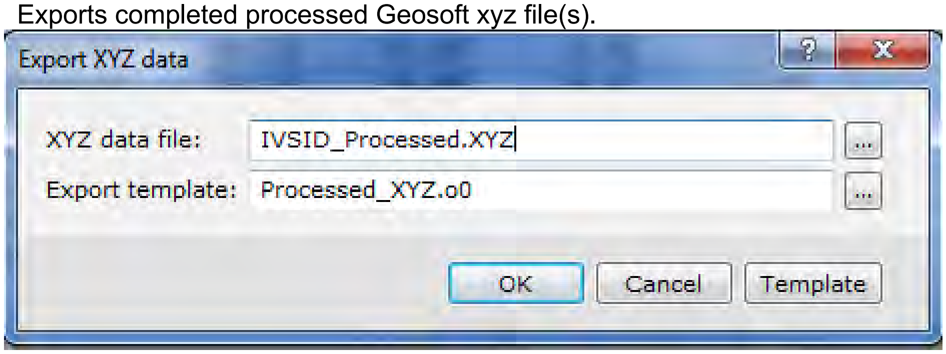
- Check response and location of targets over seed items against MPCs. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.



4. **203_IVS_Target_Export.gs.** This script exports IVS data and targets. The script does the following:
   - Exports target list a csv file.



   - Exports completed processed Geosoft xyz file(s).



If needed, the leveling in the selected targeting channel will be refined by adjusting the window length i.e. a larger window length may be needed over very high response features. If needed, refine lag/latency of the data. Re-grid the data, update target selections and statistics, if needed.

The Geosoft maps are printed as PDFs, the target lists and MPC text files are imported into the KEMRON Database. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.

4.3 Preprocessing

This stage includes preprocessing of the field data. Data are evaluated for the following:

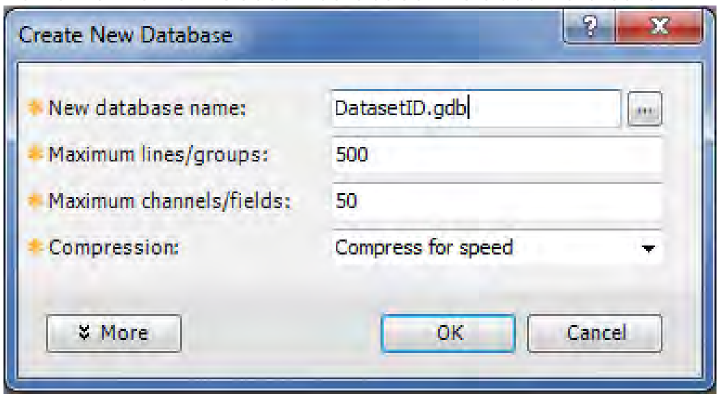
- Data quality
- Location
- Coverage
- Line path positioning
- Down line density

First, a folder needs to be created where the Geosoft files are to be saved. Separate Geosoft project files are created for each DGM dataset.

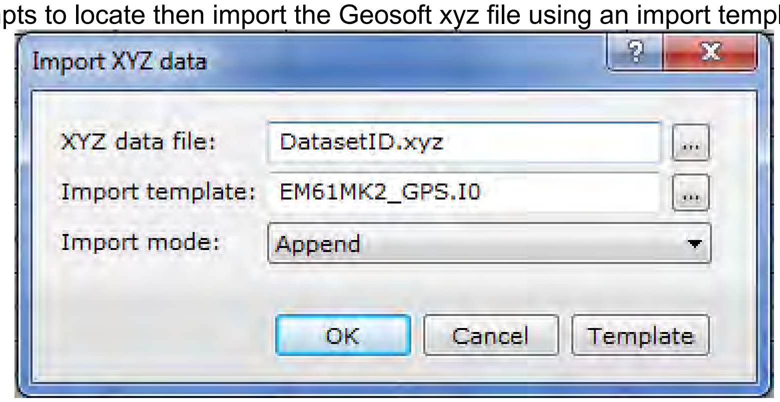
After the project is created, several script files can be used in Geosoft that help expedite the processing procedures. They are listed below with a brief description. Alternately, each step may be conducted manually.

The following scripts apply to the DGM datasets:

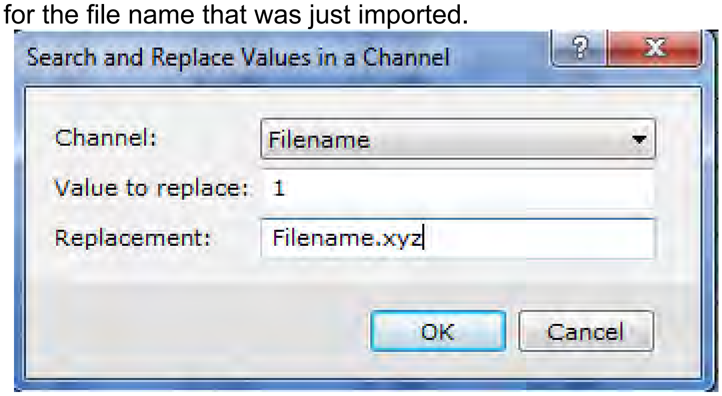
1. **301_Setup.gs, 302_Import.gs and 302a_Import_Repeat.gs.** These scripts are partially interactive. They do the following:
    - Prompts to name the new Geosoft database it is about to create.



    - Prompts to locate then import the Geosoft xyz file using an import template.



    - Prompt for the file name that was just imported.



- Adds coil ID numbering to database
- Repeats import process for raw files from additional coils

If there is more than one dataset xyz file then **302_Import.gs** is run for each xyz file followed by**302a_Import_Repeat.gs** to import the repeat xyz file. . These scripts go through the same steps as the **01_Setup** script except naming and creating a new database. After all dataset xyz files are imported, move to the following script:

2. 304_Preprocessing.gs

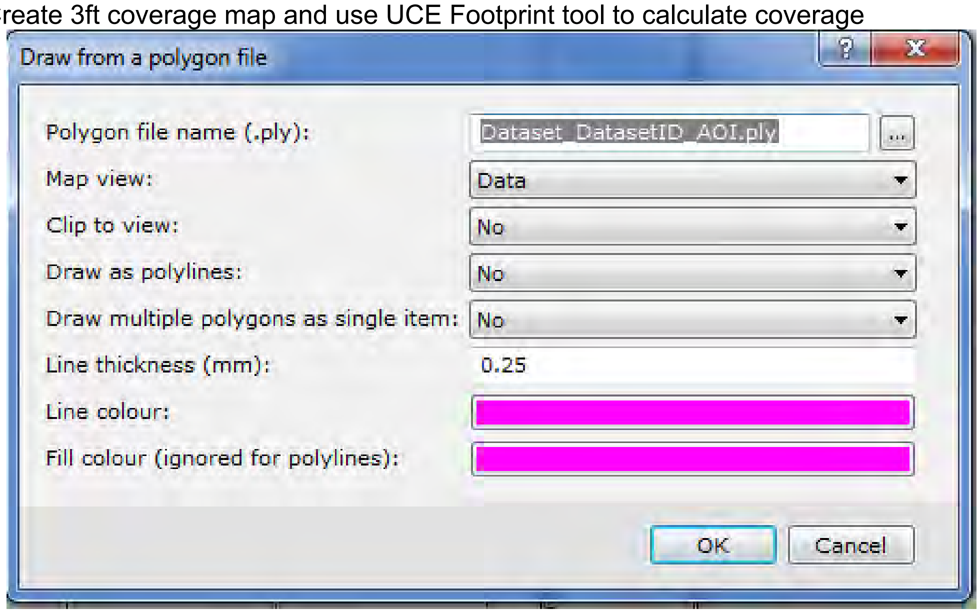
- Sets X and Y as current channels and the appropriate projection definintion.

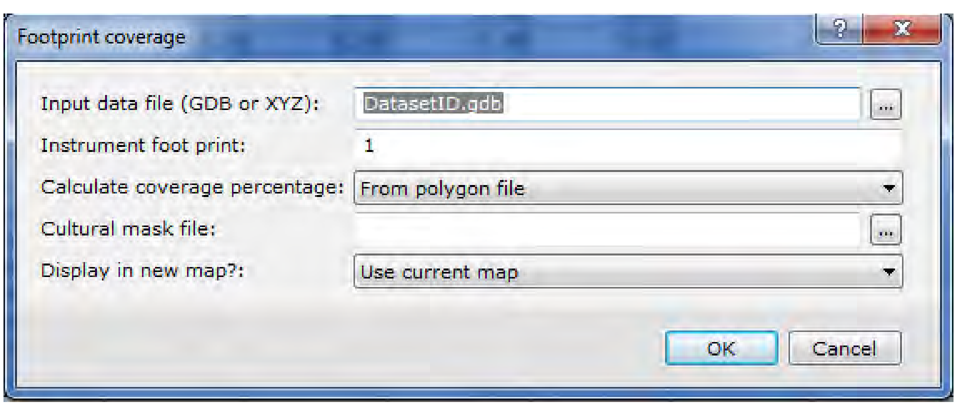
♦ Create shapefile with the line path (to be used to generate gap files)

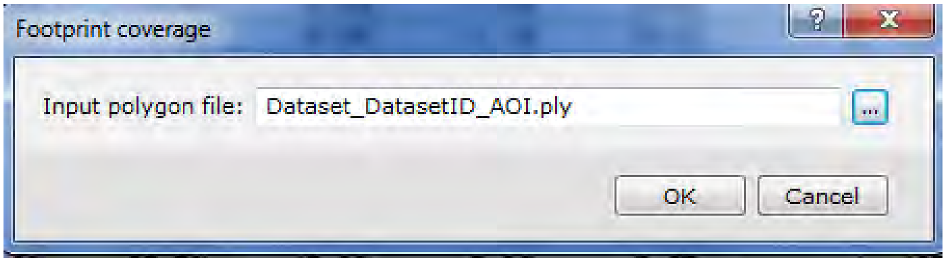
♦ Create 2.5ft coverage map and use UCEFootprint tool to calculate coverage

- Category A (person-portable): A lane spacing of 2 ft (0.61m) is to be used for the person-portable system. 95% (or greater) of the line spacing is to be at the project design line spacing of 2 ft. 100% of the line spacing is to be at 3 ft. No unexplained data gaps
- Category B (person-portable): A lane spacing of 2.5 ft is to be used for the person-portable system. 95% (or greater) of the line spacing is to be at the project design line spacing of 2.5 ft. 98% (or greater) of the line spacing is to be at 3 ft.

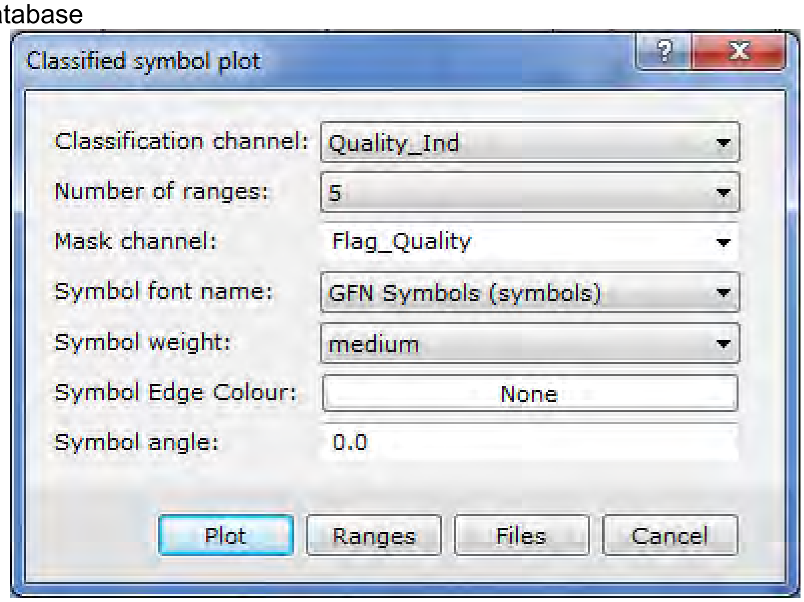
♦ Create 3ft coverage map and use UCE Footprint tool to calculate coverage







- Creates x_d and y_d channels by using the differences filter by 1.
- Creates a data_density channel then runs the following math expression: “data_density = sqrt((x_d*x_d)+(y_d*y_d)).
- Creates and displays a data density map showing the footprint of possible gaps and flags any readings that do not meet the MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP. Exports file to be imported into the Kemron database.
- Creates and displays a GPS Quality map, and flags any readings without RTK fix will be marked and evaluated for positional validity. Exports file to be imported into the Kemron database



- Performs velocity calculation and flags any data outside of MPC. MPCs for DGM operations are located in Worksheet #12 of the MEC QAPP.
- Creates Velocity map displaying areas where velocity exceeds MPC and exports file to be imported into Kemron database.
- Preliminary auto levels channels 1, 2, 3 & 4. The leveling gx is similar to the drift correct in Geosoft using a windowed median filter. Preliminary leveling for channel 1 is Low window = 0, High window = 80 and Window length = 100. Preliminary leveling for channel 2 is Low window = 0, High window = 75 and Window length = 100. Preliminary leveling for channel 3 is Low window = 0, High window = 65 and Window length = 100. Preliminary leveling for channel 4 is Low window = 0, High window = 60 and Window length = 100.
- Preliminary lag corrects channels 1, 2, 3 & 4.
- Sum channel is created by adding the auto leveled lag corrected channels.
- Grids raw, leveled and leveled lagged data using Minimum Curvature or Kriging

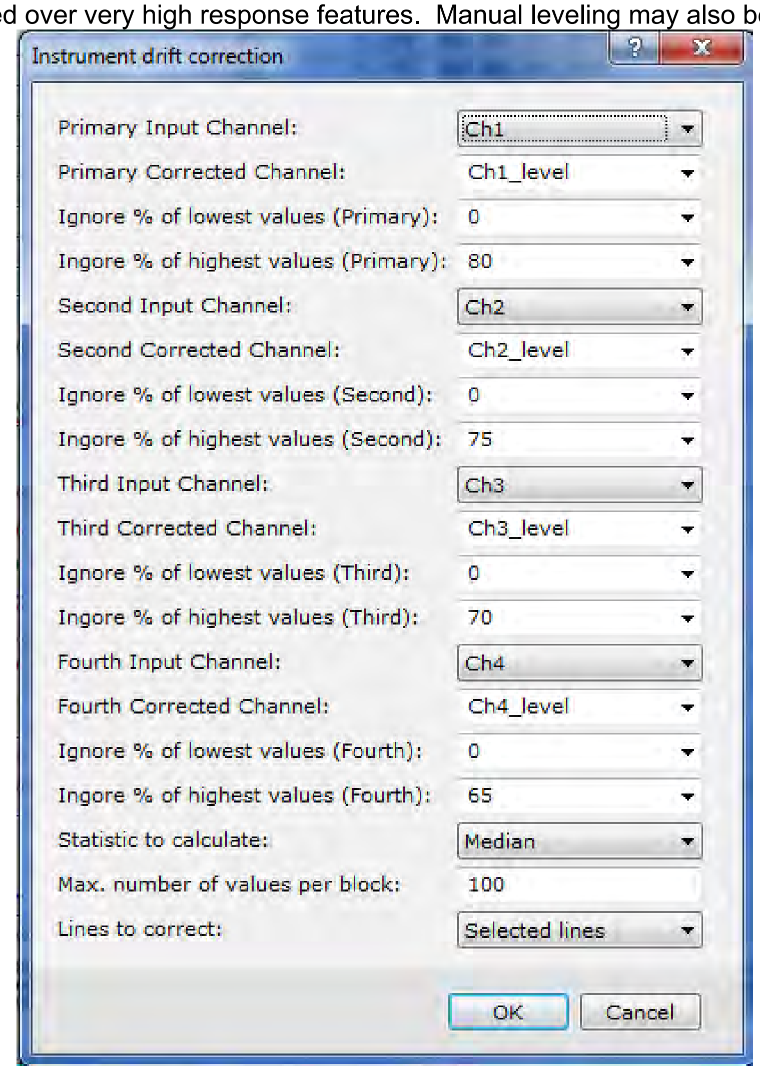
- Creates and displays preliminary contour maps of the selected targeting channel with line paths.

To finish preprocessing culture files are plotted on the preliminary maps and any GIS/CADD information is overlaid.

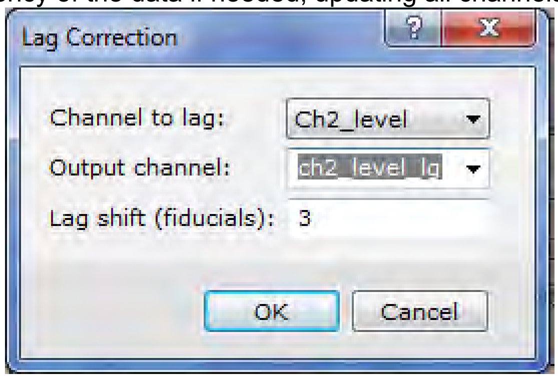
4.4 Final Processing

At this stage, the data processor refines the default parameters that were used during preprocessing and performs the following:

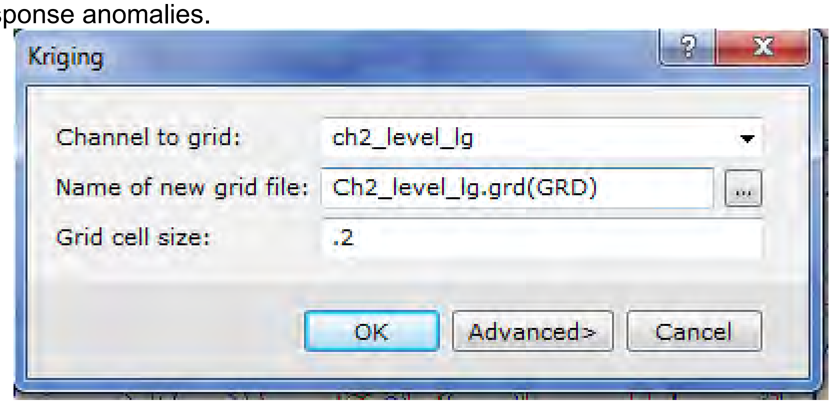
- Refines the leveling of all four time gate channels and the sum channel. A larger or smaller window length will be applied if needed. For example, a larger window length may be needed over very high response features. Manual leveling may also be required.

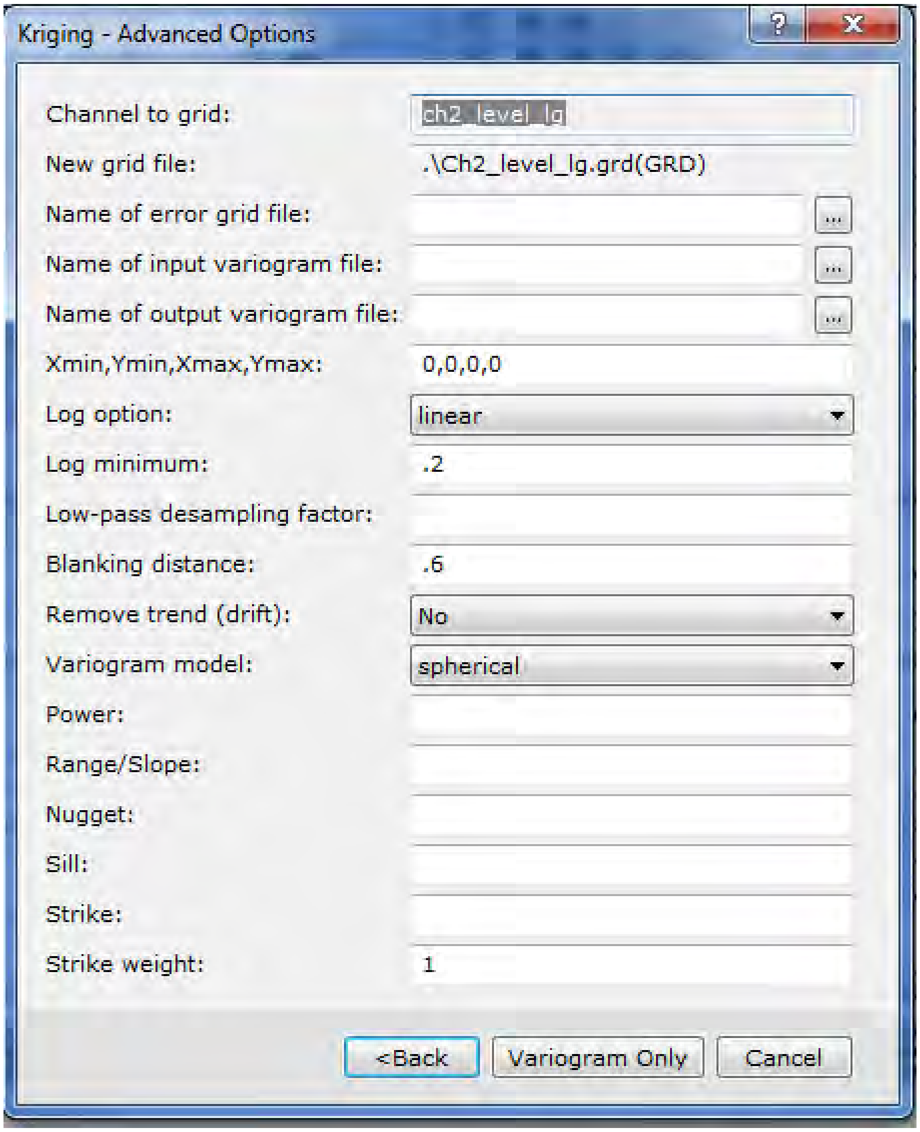


- Refines lag/latency of the data if needed, updating all channels

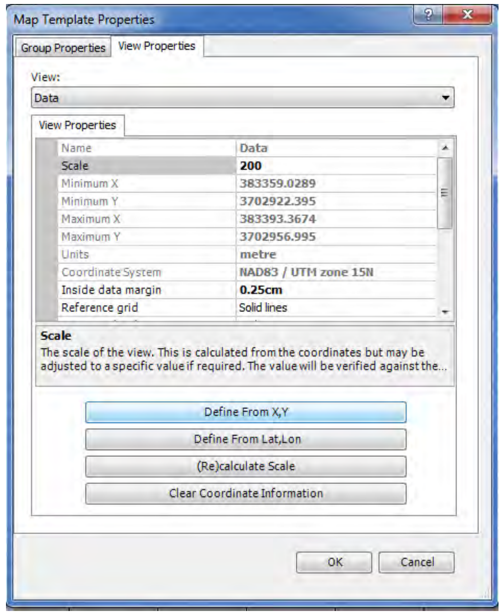


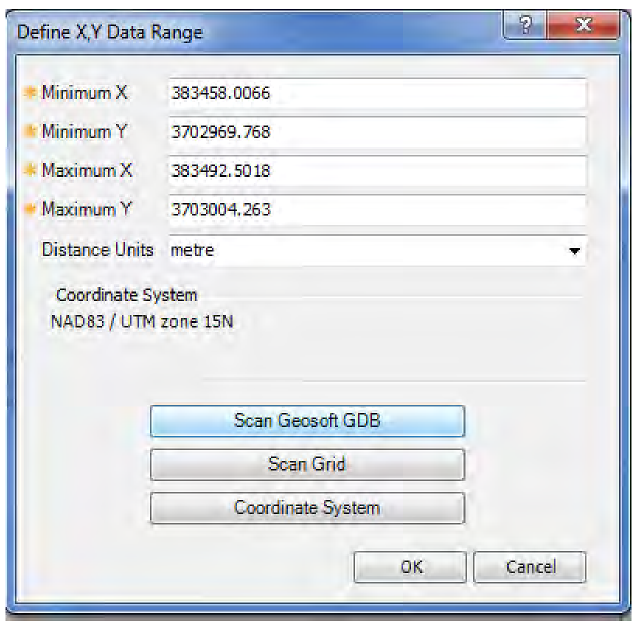
- Adds filters to the data if needed. Some filters that might be expected are non-linear, low pass, and high pass.
- Grids the data with Minimum Curvature or Kriging. Kriging better defines high response anomalies while Minimum Curvature may create false anomalies between lines near high response anomalies.

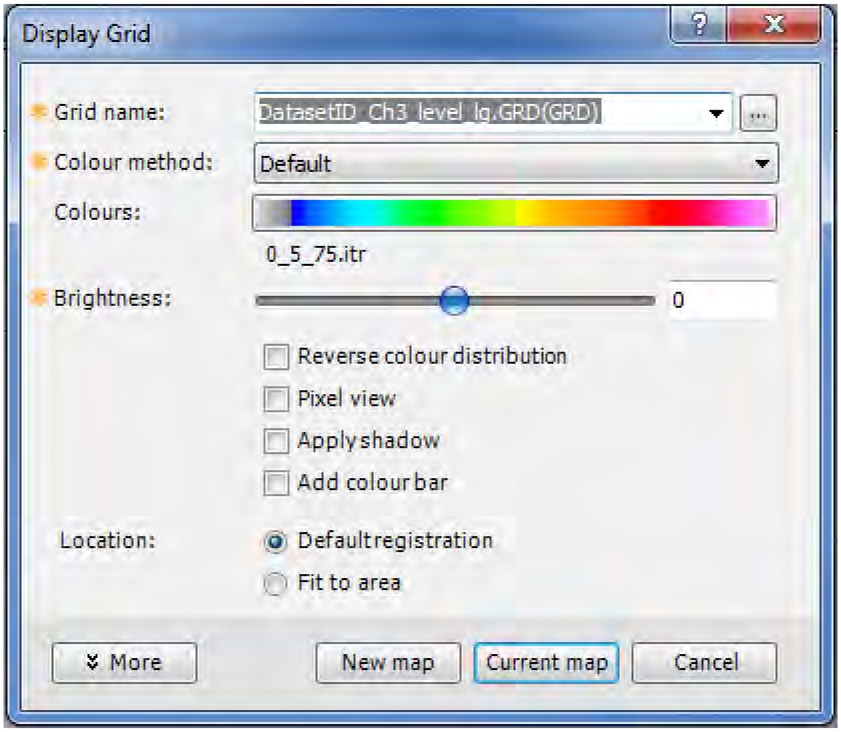


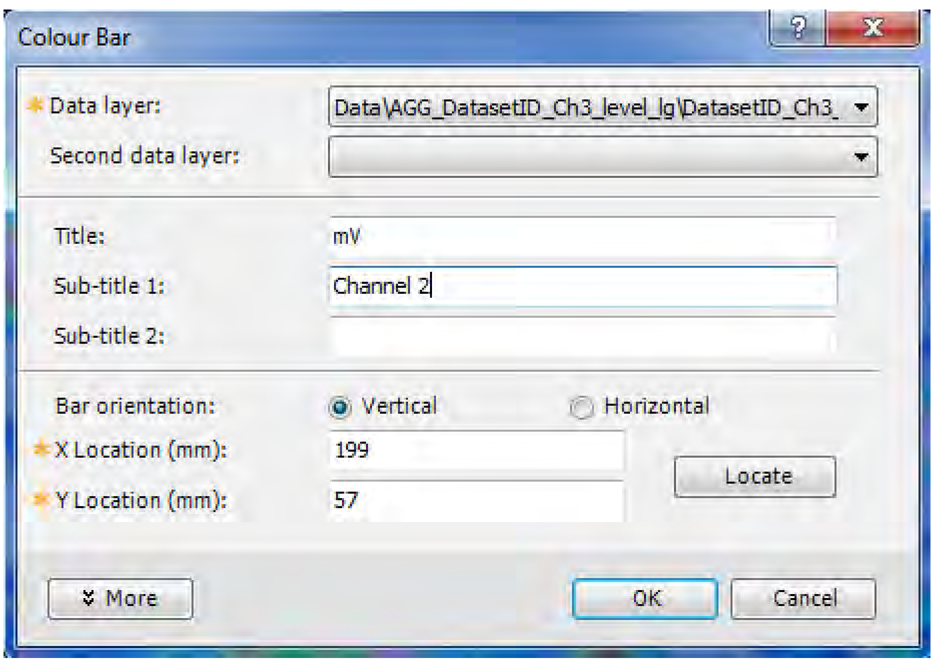


- Creates and displays a colored contour Geosoft map(s) of the grid cell(s) with the following; title block, color scale, index map and legend.


Map Template Properties
Group Properties
View Properties
View:
Data
View Properties
Name
Data
Scale
200
Minimum X
383359.0289
Minimum Y
3702922.395
Maximum X
383393.3674
Maximum Y
3702956.995
Units
metre
Coordinate System
NAD83 / UTM zone 15N
Inside data margin
0.25cm
Reference grid
Solid lines
Scale
The scale of the view. This is calculated from the coordinates but may be adjusted to a specific value if required. The value will be verified against the...
Define From X,Y
Define From Lat,Lon
(Re)calculate Scale
Clear Coordinate Information
OK
Cancel


Define X,Y Data Range
Minimum X
383458.0066
Minimum Y
3702969.768
Maximum X
383492.5018
Maximum Y
3703004.263
Distance Units
metre
Coordinate System
NAD83 / UTM zone 15N
Scan Geosoft GDB
Scan Grid
Coordinate System
OK
Cancel





- Generate individual grid Geosoft database files.
- Generate individual grid Geosoft XYZ files.
- Generate individual grid Geosoft grid files.
- Generate individual grid Geosoft map files.
- Generate individual grid GeoTIFF files.

- Generate individual grid map PDF files.

Prepare grid data delivery package:

- Fill out DGM Data Processing form in the KEMRON Database.
- Create a final delivery package that includes the following:
  - All the Geosoft colored contour grid cell maps that are in the dataset.
  - All the pdfs for the grid cell maps that are in the dataset.
  - Processed Geosoft gdb and xyz files of the dataset.
  - Geosoft grd files for the dataset
  - GeoTIFFs for the dataset
  - Grid boundary and area of investigation Geosoft polygon (.ply) files
  - Gap shapefiles, with gap boundary and description
  - PDF of processed data report from database

4.5 Target Selection

DGM surveys will be categorized as either Category A or Category B. Category A DGM surveys will be conducted in areas where future subsurface removal actions are planned. Subsurface removal requires the most precise level of DGM data, and Category A DGM therefore has the most stringent MQOs. The objective of Category B DGM surveys is to obtain DGM data of sufficient quality to characterize the site for overall anomaly distribution and density. Category B DGM is not intended to support subsurface MEC removal and therefore requires less stringent MQOs.

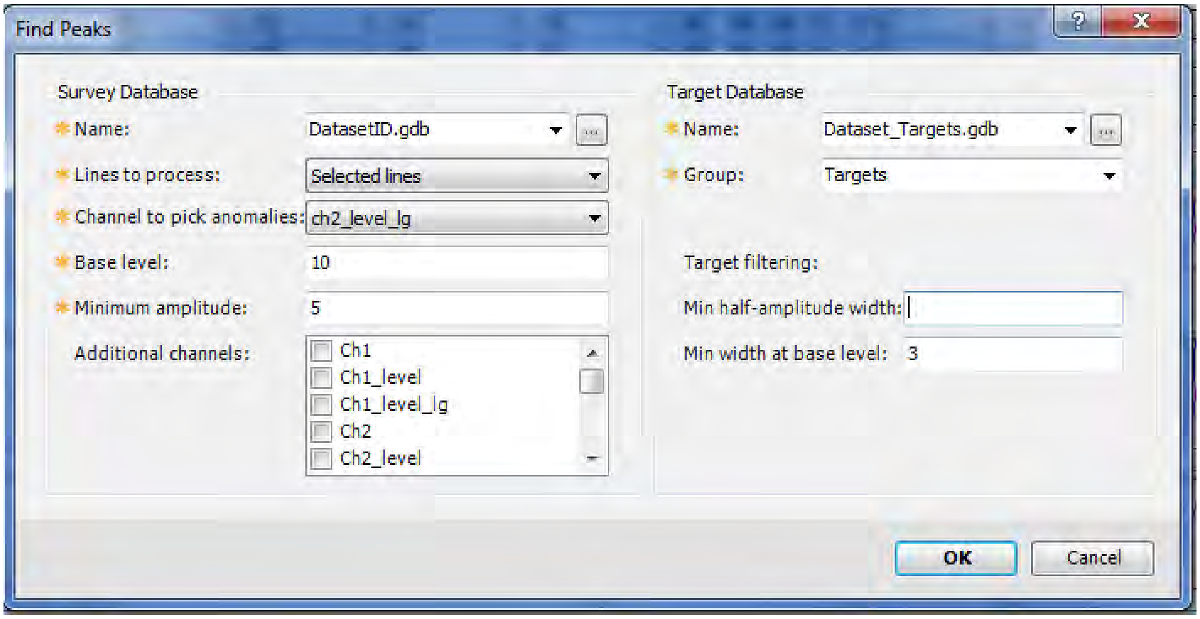
4.5.1 Category A Areas

For Category A areas the following target selection procedures are to be performed.

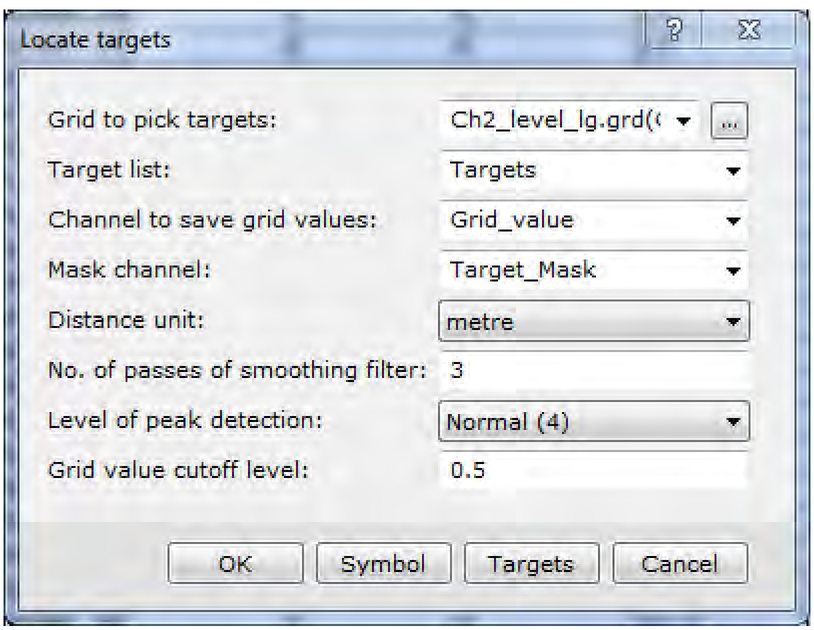
A target selection script is run

- Select anomalies in Geosoft's UX-Detect Module by using either "Pick Peaks Along Profile" or "Blakely Test". Profile picking is effective in low target density areas where discrete anomalies are present above background noise. Anomalies selected using profile picking, whose footprint crosses several survey lines, will have multiple targets selected that need to be reviewed and removed by the processor. Selecting targets from gridded data with the Blakely method is more efficient in high target density areas and less likely to place additional target selections across large footprint anomalies with only one distinct peak value for an anomaly that crosses several lines. The Blakely method requires that all data channels to be included on the target list must be gridded and sampled.

Pick Peaks Along Profile



Blakely Test

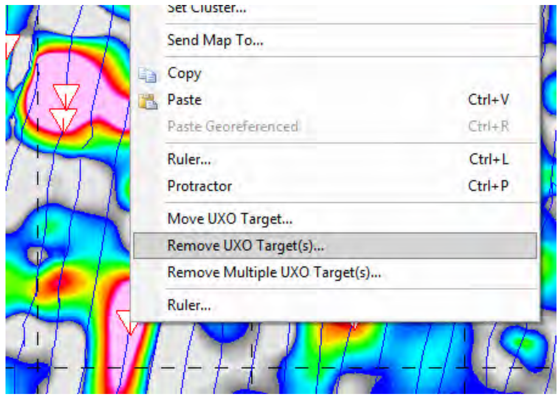


- Populates channel sum, 1, 2, 3 & 4 response values
- Creates a comments channel that is used to add descriptive notes as needed.
- If needed, performs automated target checks, for example if Ch1>Ch2>Ch3>Ch4

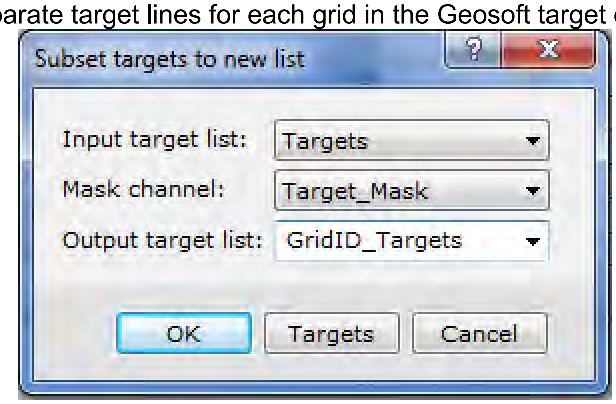
To complete target selection:

- Target selections are refined. Check validity and position. Targets found to be invalid or incorrectly located are adjusted or removed. Additionally, anomalies not selected by UX-

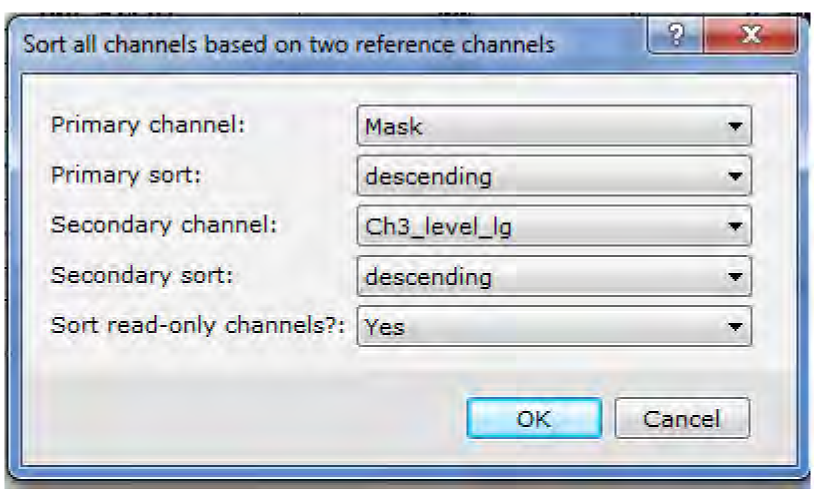
Detect, yet deemed to represent a potential UXO target, are manually selected. Comments channel is populated.



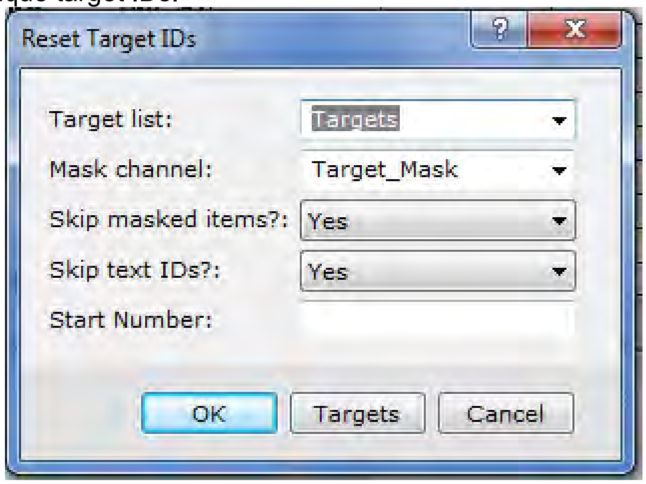
- Creates separate target lines for each grid in the Geosoft target database.



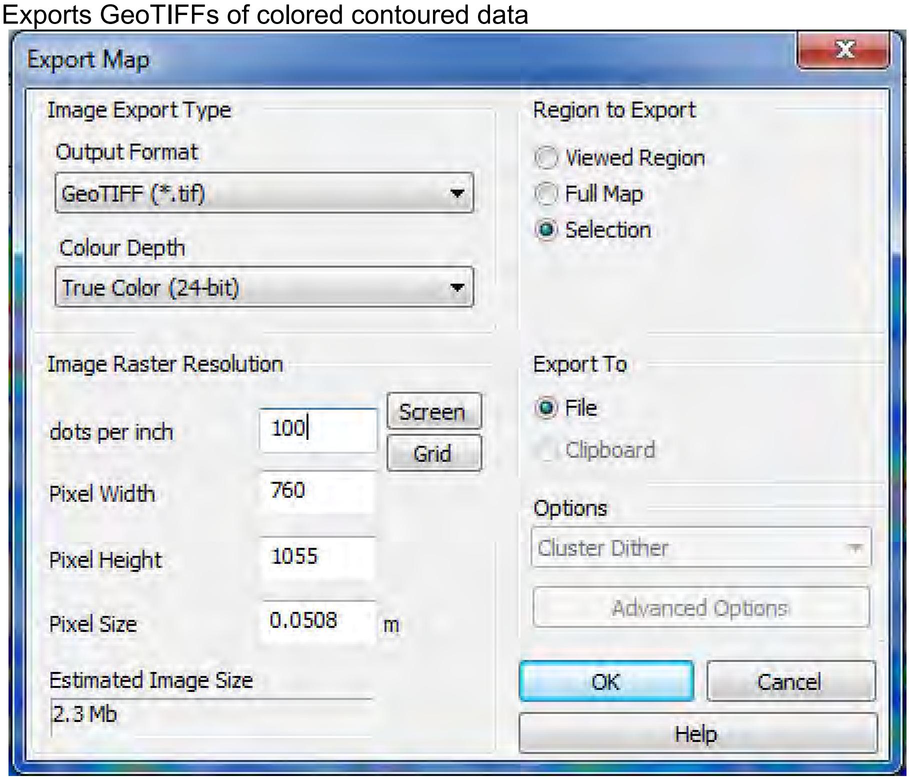
- Re-sorts the target database by amplitude and if needed, add any additional polygon target points (Data Gap Polygons or Heavily Saturated Area Polygons) to the end of the target list.



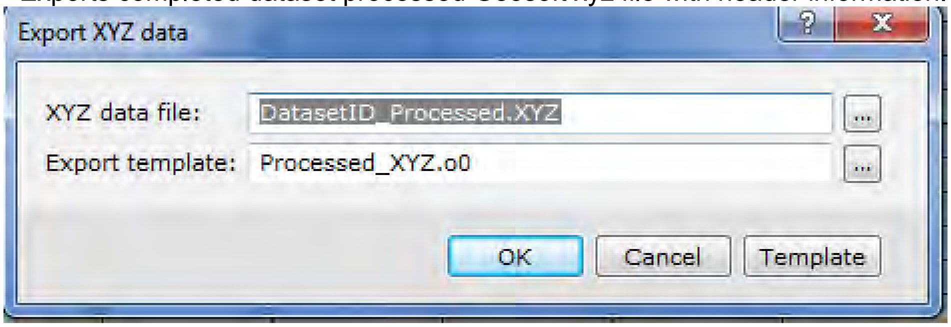
- Assigns unique target IDs.



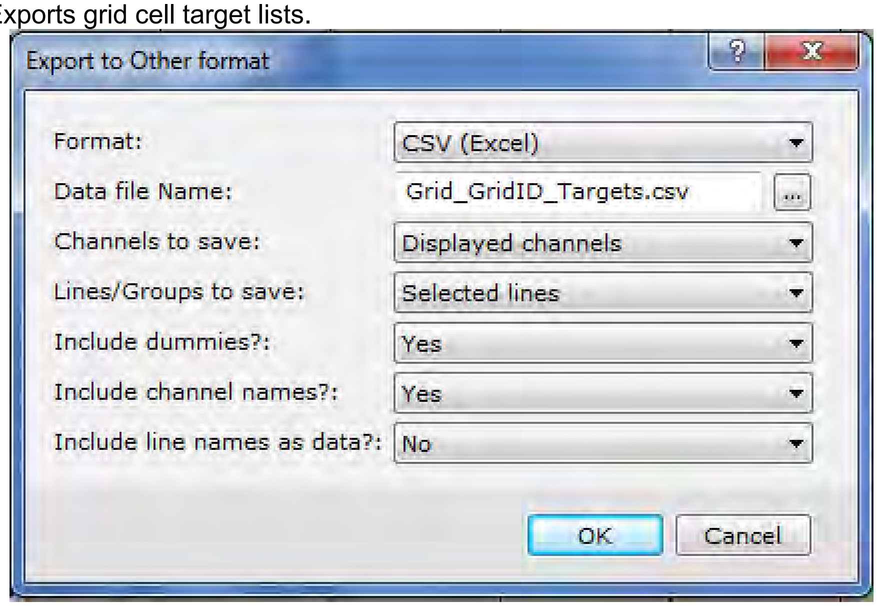
- Creates and display a colored contour Geosoft map(s) of the grid cell(s) with the following; title block, color scale, index map, legend, target locations & target numbers.
- Creates a pdf of the colored contoured grid cell map(s).
- Exports GeoTIFFs of colored contoured data



- Exports completed dataset processed Geosoft xyz file with header information.



- Exports grid cell target lists.



Prepare targeted data deliverables:

- Create a final delivery package that includes the following:
  - All the Geosoft colored contour grid cell maps that are in the dataset.
  - All the pdfs for the grid cell maps that are in the dataset.
  - Processed Geosoft gdb and xyz files of the dataset.
  - Geosoft grd files for the dataset
  - GeoTIFFs for the dataset
  - Target lists in xls format.

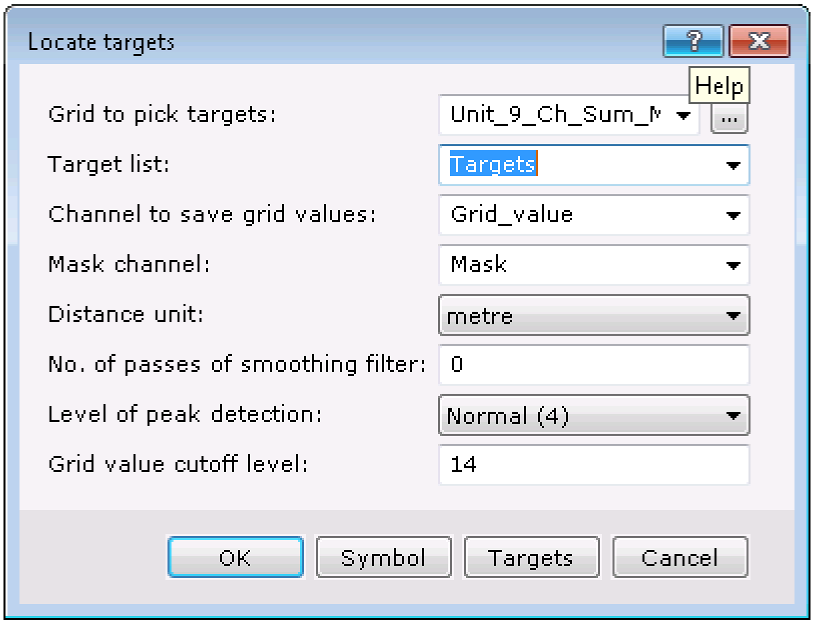
Fill out DGM Target Selection form in the KEMRON Database.

4.5.2 Category B Areas

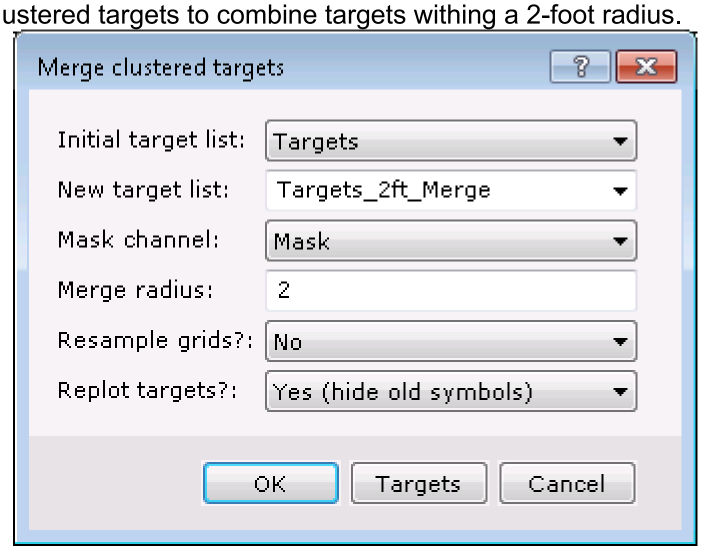
Targets for Category B are to be used for anomaly density evaluation only. These Category B targets are not to be included in the KEMRON Database. The following target selection procedures are to be performed for Category B Areas.

Targets are selected once all the data have been collected in a unit/area.

- Select anomalies in Geosoft's UX-Detect Module from the gridded sum mosaic data by using "Blakely Test".



- Merge clustered targets to combine targets withing a 2-foot radius.



Prepare target density per grid for the unit/area:

- Export the merged target list as a shapefile.
- Join the target shapefile to the grid system in ArcGIS
- Calculate the target density per grid.

Provide the density data as the final Category B deliverable.

4.6 QC of the Processed Data

Preliminary QC checks are as follows:

- Check that all deliverables have been prepared and are complete
- Check that DQO are achieved and documented in the KEMRON Database.
- Check to see if leveling and the lag correction are appropriate.
- Check anomaly selections on the maps and target list files.
- Check maps title block, index map and legend (map & pdf).
- Check entries on the processing form in the KEMRON Database.
- Check that all forms have been filled out in the KEMRON Database, then create a Data Processing Report for submittal with the final deliverable.

5 DATA SUBMITTAL AND ARCHIVING

Final processed data for QC function tests will be submitted by test (static, IVS, etc.) and date. Field data will be submitted by dataset. Each processed data submittal will include, at a minimum, the following:

- Final processed data in *.gdb and *.xyz formats
- Contoured geophysical data in *.map, *.pdf, and GeoTIFF formats
- Target list in *.xls format
- Data Processing Report in *.pdf format

All data submittal files will be compiled in a *.zip file and uploaded daily to the project ftp site. If more than one data processor is working on the project simultaneously, one individual will be designated to send an email to the appropriate parties listing the completed function test and field data for that day. A copy of the KEMRON Database updated with new data processing information will be transferred daily to the Field Data Manager who will merge it with the main copy of the database. Database management procedures are described in DATA SOP 1 (Field Data Management). Original copies of all raw and processed geophysical data will be housed on NAEVA's secure server which is backed-up daily and weekly.

6 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for processing of towed array DGM data can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

7 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 6 – DGM Data Processing Using a Towed Array System

W912DY-10-D-0027 – Task Order No. CM01
Former Fort Ord, California

Team Information		
Data Processor:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	3	Verify Geosoft Oasis Montaj is being used for all final data processing				*(P)*
3	4.1	Field forms are complete and contain all of the specified information				*(I),(F)*
4	4.2	Separate folders and project files have been created for the day's function tests				*(I),(F)*
5	4.2	Function test xyz files have been imported into a Geosoft database using the appropriate template				*(I),(F)*
6	4.2	Raw data from all towed array sensors have been imported				*(I),(F)*
7	4.2	Preliminary auto leveling corrections to the function test data have been performed according to specifications				*(I),(F)*
8	4.2	Static background and static spike statistics have been calculated and exported				*(I),(F)*
9	4.2	Preliminary lag correction has been performed for IVS tests				*(I),(F)*
10	4.2	IVS data for targeting channel has been gridded and Geosoft maps have been created				*(I),(F)*
11	4.2	IVS target locations and peak responses have been compared to the expected values				*(I),(F)*
12	4.2	IVS target lists and processed xyz data have been exported				*(I),(F)*
13	4.3	Separate folders and project files have been created for the day's field data				*(I),(F)*
14	4.3	Field data xyz files have been imported into a Geosoft database using the appropriate template				*(I),(F)*
15	4.3	Raw data from all towed array sensors have been imported				*(I),(F)*
16	4.3	Data density statistics have been calculated and displayed on a map				*(I),(F)*

Three Phase Quality Control Checklist

GEO SOP 6 – DGM Data Processing Using a Towed Array System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

17	4.3	GPS Quality map has been created				*(I),(F)*
18	4.3	Preliminary auto leveling corrections to the field data have been performed according to specifications				*(I),(F)*
19	4.3	Preliminary lag correction has been performed for IVS tests				*(I),(F)*
20	4.3	Field data for targeting channel has been gridded and Geosoft maps have been created				*(I),(F)*
21	4.3	Culture files have been plotted on the preliminary contour maps				*(I),(F)*
22	4.5	Targets have been selected over all anomalous features meeting the targeting criteria				*(I),(F)*
23	4.5	Targets have been sorted according to amplitude from highest to lowest and given unique target IDs				*(I),(F)*
24	4.5	Final contour maps have been created by grid in pdf and GeoTIFF formats				*(I),(F)*
25	4.5	Final processed data files and final target lists have been exported				*(I),(F)*
26	4.5	Deliverables package has been created including all specified files and has been transferred to project FTP site				*(I),(F)*
27	4.5	All processing information has been documented in the KEMRON Database				*(I),(F)*
28	5	Updated processing information has been sent to the Field Data Manager				*(I),(F)*
29	5	Processed data email has been sent to the appropriate parties				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

GEO SOP 7

DGM TARGET REACQUISITION USING A PERSON PORTABLE SYSTEM

STANDARD OPERATING PROCEDURE FOR DGM TARGET REACQUISITION USING A PERSON-PORTABLE SYSTEM

GEO SOP 7

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

TABLE OF CONTENTS

LIST OF APPENDICES

1 POLICY

NAEVA, Gilbane and KEMRON personnel will follow procedures established in this SOP for all target reacquisition operations that are to be conducted using the EM61-MK2 in support of Munitions and Explosives of Concern (MEC) remediation projects.

2 ACRONYMS LIST

cm	Centimeter(s)
DGM	Digital Geophysical Mapping
ft	Feet
GPS	Global Positioning System
in	Inch(es)
m	Meter(s)
MEC	Munitions and Explosives of Concern
QAPP	Quality Assurance Project Plan
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
WERS	Worldwide Environmental Remediation Services

3 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to detail the procedures and operational methodologies associated with the marking and reacquisition of targets resulting from Digital Geophysical Mapping (DGM) in areas that are potentially contaminated with Munitions and Explosives of Concern (MEC). Equipment to be used includes the Geonics EM61-MK2 system(s) for the detection of metallic objects and the Leica Real-Time Kinematic (RTK) Global Positioning Systems (GPS) for navigational positioning. Procedures outlined in this SOP will be conducted in accordance with the MEC Quality Assurance Project Plan (MEC QAPP) and the MEC Procedures Supplement.

4 EQUIPMENT AND THEORY

This SOP is applicable to the Geonics EM61-MK2 and Leica RTK-GPS.

The Geonics EM61-MK2 is a high-resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and non-ferrous metallic objects. The Standard EM61-MK2 system consists of two air-cored coils, a digital data recorder, batteries and processing electronics. The EM61-MK2 functions by first having a transmitter that generates a pulsed primary electromagnetic field. This primary electromagnetic field then induces eddy currents in nearby metallic objects. The eddy currents produce a secondary electromagnetic field which then induces a secondary voltage inside the EM61-MK2 receiver coils that is measured at four distinct intervals (time gates) with measurements recorded in milliVolts (mV). The earlier time gates provide enhanced detection of smaller metallic objects while the later time gates provide for the identification of larger, more massive metal objects.

For this project the EM61-MK2 system will be operated in one of two positional modes; RTK-GPS and fiducial mode. The Leica Real-Time Kinematic (RTK) GPS is a 24-channel dual frequency receiver that uses both L1 and L2 satellite frequencies that is capable of maintaining an accuracy of 1.2 inches (in) (3 centimeters (cm)) horizontal and 2 in (5 cm) vertical. This RTK system utilizes a GPS base station (base) that sends positional corrections to the GPS rover(s) via radio link.

5 TARGET REACQUISITION PROCEDURES

Target reacquisition will be performed using the same equipment (Geonics EM61-MK2) and positioning method (RTK-GPS or fiducial positioning) as was used during geophysical data collection. The instrument will be mounted on manufacturer-supplied wheels and operated by one person. The second team member will operate the RTK-GPS or assist the EM61-MK2 operator when GPS positioning is not used.

5.1 Instrument Setup

The instrument is set up according to the Geonics EM61-MK2 Manual. All cables are taped to the instrument to keep them from getting tangled and to minimize cable movement and reduce the potential for snagging vegetation. If the DGM data were collected using RTK-GPS positioning, the target locations are loaded onto the GPS controller in advance. In areas with fiducial DGM data positioning, target lists are printed out that list the local coordinates for each selected target.

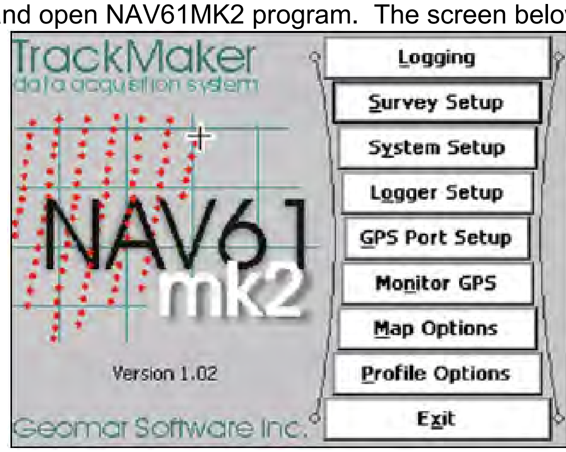
5.2 Navigation

Navigation to each selected target is accomplished through the use of RTK-GPS equipment or by using tape measures referenced to surveyed grid corners. If RTK-GPS is used, the base station is setup on a control point and corrections are sent via radio link to the rover receiver. The rover GPS antenna is mounted on a range pole and provides a visual reference of the distance and direction to the next selected target. Targets from DGM data with fiducial positioning are presented in a local coordinate system referenced to surveyed grid corner stakes. Tape measures are pulled between the corner stakes on opposite sides of the survey area. A third tape measure is then pulled between corresponding marks on the first two tapes. The field team then marks all target locations within approximately 5 feet (ft) (1.5 meters (m)) of either side of the tape. The tape measure is then moved to the next location and the procedure is repeated until all targets in a grid have been marked. Regardless of the positioning method, all targeted anomalies will be marked in the field using a non-metallic pin flag labeled with the target ID.

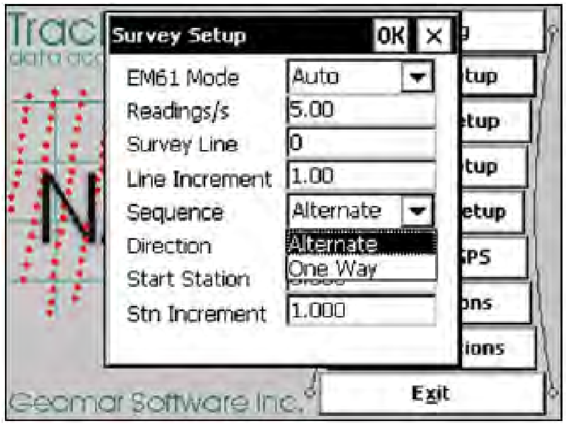
5.3 Reacquisition Steps

The following steps are followed to begin target reacquisition with the EM61-MK2:

1. Turn on instrument by pushing in the fuse on the top of the console/electronics
2. Allow instrument to warm up for at least 15 minutes
3. Turn on Allegro CX and open NAV61MK2 program. The screen below will be displayed.



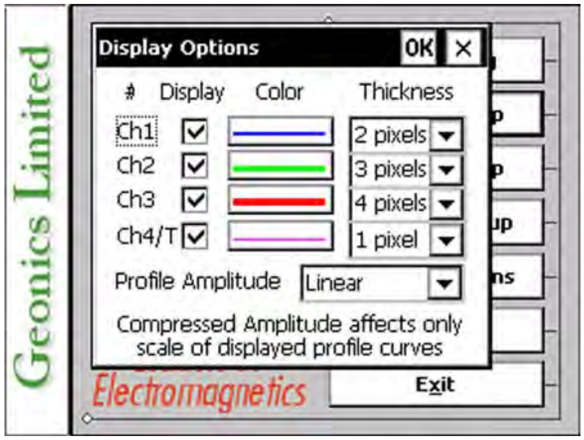
4. Click on “Survey Setup” and specify the below options. For target reacquisition, the Mode is set to “Auto” and Readings/s is set to “5”.



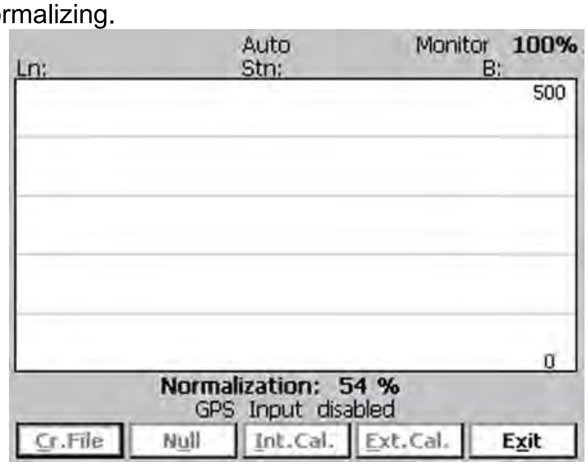
5. Click on “Logger Setup” and specify the below options. These settings will remain the same throughout the project.

6. Click on “GPS Port Setup”, and make sure the GPS Input is set to “Disabled”, and all other options are grayed out.

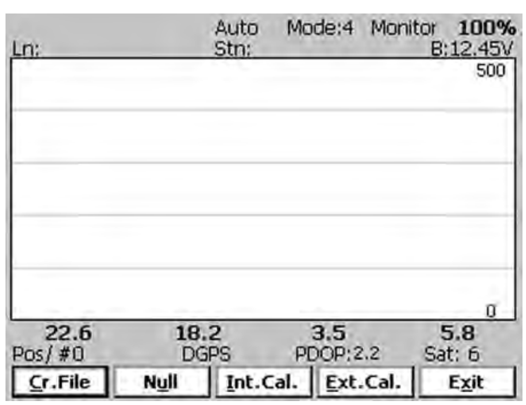
7. Click on "Display Options", and specify the following options. These options are also operator preferences for aesthetics and do not affect the collected data.



8. Once all parameters are set, click on "Monitor/Log". The screens shown below are displayed while the instrument is normalizing.



9. Once the Instrument has finished normalizing, find a quiet spot (area with low mV reading that is similar to that of the background) and Null the instrument. Then click on Cr. File and name and save the file.



10. Go to the first flagged location and search a three foot radius for the peak response by monitoring the values in the targeted channel on the Monitor/Log screen
11. Once the peak has been located, turn the instrument 90 degrees and look for the peak again. Each target will be checked in at least two perpendicular directions, but more orientations may be used at the operator's discretion.
12. Once the absolute peak has been identified, record the response from the targeted channel along with any offset from the original targeted location.
13. Move the pin flag to the new location and repeat this procedure at the next target.

6 FALSE POSITIVES AND FALSE NEGATIVES

6.1 False Positives

A false positive is a reacquired DGM anomaly that results in no identifiable anomaly source being able to be located during target reacquisition or during the intrusive investigation. During target reacquisition, if an anomaly is found to have no response above the target selection threshold, the reacquisition team will record that anomaly location as a "no-find". All targets classified as no-finds by the reacquisition team will not have a pin-flag placed at their location, and will not be investigated by the intrusive investigation team. False positives will be minimized to the extent possible through use of the best available geophysical practices executed by qualified staff. All false positives (no-finds) will be documented in the project database. A false positive rate higher than 15% (calculated as a running average for the unit) will result in a root-cause analysis (RCA) and reevaluation of the data, detection methods, and overall project QC. The RCA will document the causes of the excessive false positive rate, and a Corrective Action Request (CAR) and Corrective Action Plan (CAP) (if appropriate) will be submitted to USACE within 10 days.

6.2 False Negatives

A false negative is an item of interest that is not detected or identified as a DGM target anomaly. False negatives are missed items that fall within the detection limits of the deployed geophysical sensor systems and, therefore, should be detected, identified, and targeted for intrusive investigation. False negatives can be caused by equipment operator error, instrument malfunction, navigation issues, or procedural errors during the data processing and analysis phase of the project. The potential for false negatives will be assessed via the use of blind seeds placed by the QC Geophysicist within the survey area. It is anticipated that the USACE QA Geophysicist will also place blind seed items within the project area that will also be used to assess the potential for false negatives. Additionally, false negatives are also assessed through a comparison of the independently collected QA geophysical data with project DGM data. Anomalies that are detected in the QA DGM data that do not appear in the project DGM data would be considered false negatives in the project DGM data

False negatives may be identified during other site activities such as MEC removals and other excavation activities. In any of these cases, the following procedures will be performed:

- A False Negative Report that includes the results of the RCA will be completed by the Field Geophysicist and submitted to the KEMRON PM, the QC Geophysicist and the UXOQCS.
- The QC Geophysicist and UXOQCS will investigate and prepare a memo report for delivery to USACE describing the activities associated with the discovery. This report will also provide recommendations for further or corrective action (if necessary). Technical information/data related this memo will be provided by the Project Geophysicist and UXOQCS upon request.

7 QUALITY CONTROL

The QC checks listed below are to be conducted after the instrument has been warmed up for at least 15 minutes. The QC function checks are to be conducted at the beginning and end of each day (unless otherwise noted) for each EM61-MK2 at a location that is known to be free of anomalous responses:

- GPS (if used) Static Positional Test
- Static Repeatability Test
- Cable Shake Test
- Personnel Test

Below is a description of each of the QC checks listed above. QC check data is to be digitally recorded, stored offsite, and reviewed by the QC Geophysicist on a daily basis. The results of the daily QC checks are to be recorded in both the QC documentation and in the MMRP database.

1. GPS Static Positional Test (AM only): NAEVA will conduct static repeatability tests of their RTK-GPS antennas. This test will be completed at the beginning of each day at the IVS. The data for these GPS Static Positional Tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

2. Static Repeatability Test (AM and PM): NAEVA will conduct static repeatability tests (background and spike) for each person-portable system. These tests are to be completed twice daily at the IVS and will include 1 minute for background, 1 minute for spike, and 1 minute for an additional background reading. The baseline mV value for the static tests will be the average of AM and PM static tests conducted during the first week that the person-portable system(s) is operational. The data for these static repeatability tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

3. Cable Shake Test (AM only): On a daily basis the EM61MK2 and GPS instrument cables will be tested to verify that cable vibrations do not have a negative effect on the quality of the data. The cable vibration test will be conducted at the beginning of each work day prior to the commencement of that day's operation. The data for these cable shake tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

4. Personnel Test (AM only): On a daily basis personnel operating the EM61-MK2 will be tested to verify that when in close proximity to the sensor that they do not have a negative effect on the quality of the data. This personnel test will be conducted at the beginning of each work day prior to the commencement of that day's operation. The data for these personnel tests will be digitally recorded, observed in the field and results of these tests are to be documented on the geophysical contractor's daily internal Geophysical QC test form (GEO SOP Attachment 1).

All QC checks will be digitally recorded and analyzed to verify that all data is within acceptable operational parameters as outlined in the MEC QAPP.

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for DGM target reacquisition using a person-portable system can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

8 REFERENCES

Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP)

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

GEO SOP 7 – DGM Target Reacquisition Using a Person-Portable System

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
Team:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	4	Verify Geonics EM61-MK2 is being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
3	4	Verify Leica RTK-GPS is being used and that all necessary equipment listed is present and serial numbers recorded as being specific to a team				*(P)*
4	5.1	Instrument setup according to manufacturer specification and cables have been secured				*(I),(F)*
5	5.1	Instrument coil height has been measured				*(I),(F)*
6	5.1	Target list have been loaded onto GPS survey controller (GPS collection)				*(I),(F)*
7	5.1	Hard copies of target lists have been printed (fiducial collection)				*(I),(F)*
8	5.2	GPS antenna has been mounted on range pole (GPS)				*(I),(F)*
9	5.2	Tape measures have been laid out on opposite sides of the grid referenced to surveyed corner marks (Fid)				*(I),(F)*
10	5.3	Instrument warmed-up for at least 15 minutes				*(I),(F)*
11	5.3	EM61 data collection rate set to at least 5 Hz				*(I),(F)*
12	5.3	Instrument nulled in area known to be clear of anomalous response				*(I),(F)*
13	5.3	Peak response searched for in at least 2 perpendicular directions				*(I),(F)*
14	5.3	Peak response and offset from targeted location have been recorded				*(I),(F)*
15	6 (1)	GPS Static Positional Test performed showing location within expected parameters (GPS)				*(I),(F)*

16	6 (2)	Morning Static Repeatability Test performed showing expected response				*(I),(F)*
17	6 (3)	Cable Shake Test performed showing no effect on the data quality				*(I),(F)*
18	6 (4)	Personnel Test performed showing no effect on the data quality				*(I),(F)*
19	6 (2)	Afternoon Static Repeatability Test performed showing expected response				*(I),(F)*
20	6	All function test data for the day have been transferred to a field computer				*(I),(F)*
21	6	Function test data have been converted to xyz format				*(I),(F)*
22	6	All raw function test data for the day have been transferred to the project FTP site for final data processing				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

GEO SOP 8

GEOPHYSICAL QUALITY CONTROL

Technical Procedure: GEO SOP 8

STANDARD OPERATING PROCEDURE FOR GEOPHYSICAL QUALITY CONTROL

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BSI	blind seed item
CAP	Corrective Action Plan
CAR	Corrective Action Request
COR	Contracting Officer’s Representative
CQCSM	Contractor Quality Control System Manager
DDESB	Department of Defense Explosives Safety Board
DFW	definable feature of work
DGM	digital geophysical mapping
EM	Engineering Manual
EZ	exclusion zone
ESTCP	Environmental Security Technology Certification Program
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	industry standard object
IVS	Instrument Verification Strip
MEC	Munitions and Explosives of Concern
MQO	Measurement Quality Objective
OESS	Ordnance and Explosives Safety Specialist
PM	Project Manager
PQCM	Program Quality Control Manager
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control

RCA	root-cause analysis
RTK	real-time kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site-Specific Work Plan
TP	Technical Paper
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for the Quality Control (QC) of geophysical operations. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used; and details the general policies, operational procedures and guidance to be employed during the performance of QC tasks related geophysical operations. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use. Where applicable, this SOP was developed in accordance with Engineering Manual (EM) 200-1-15, *Environmental Quality – Technical Guidance in Military Munitions Response Actions* (United States Army Corps of Engineers [USACE], 2013), ER 1180-1-6, Construction Quality Management (USACE, 1995) and ER 1110-1-12, Quality Management (USACE, 2006).

3 SCOPE

This SOP provides technical guidance on the performance of QC activities related to geophysical operations, including, but not limited to, the following:

- Instrument Verification Strip (IVS) installation;
- Blind Seed Item (BSI) installation and assessment (for Digital Geophysical Mapping [DGM] areas);
- Instrument daily function tests;
- DGM using a person-portable system
- DGM using a towed array system
- DGM data processing
- DGM target reacquisition

This document is not intended to contain all requirements and procedures necessary for QC activities. This document should be used in conjunction with the documents listed in Section 10.0 (Associated SOPs) and Section 11 (Documentation) below, and with QC metrics described in Worksheet #12 of the Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP). The information presented in this SOP is generally applicable to all MEC related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Logbook;
- Digital tablet with Global Positioning System (GPS) capability (if used);
- QC inspection forms; and

- Real-time Kinematic (RTK) GPS rover unit (if used).

6 QC PERSONNEL ORGANIZATION, QUALIFICATIONS AND RESPONSIBILITIES

The overall project organization and reporting structure is presented in Worksheet #3 and 5 of the MEC QAPP. The QC personnel, organization, qualifications, and responsibilities are addressed in more detail in this SOP.

6.1 Project QC Personnel

The Contractor Quality Control System Manager (CQCSM) will assist the QC Geophysicist and Unexploded Ordnance Quality Control Specialist (UXOQCS) with QC related documentation and compliance with the MEC QAPP. The QC Geophysicist is responsible for the QC of field activities and data related to geophysical operations. The UXOQCS is responsible for the QC of field activities related to MEC and explosives operations. The Geophysical QC team will include the following personnel:

- CQCSM
- QC Geophysicist
- UXOQCS
- Unexploded Ordnance (UXO) Technician Escort (if required)

6.1.1 CQCSM

The CQCSM is responsible for the implementation of this SOP and the operation of the standard quality management program (Section 6.5 below). The qualifications of the CQCSM will be submitted to the Contracting Officer's Representative (COR) for approval. Replacement of this person can only be made with the prior written consent of the USACE COR. The CQCSM will work with the Project Manager to implement this SOP. The CQCSM will verify and document that contract requirements and specifications are accomplished, whether work is performed by the prime contractor or subcontractors. The CQCSM will ensure development of plans that provide clear guidance and objectives of the work to be performed. The CQCSM will work closely with the QC Geophysicist, UXOQCS and Quality Assurance (QA) personnel to establish quality standards and control procedures to verify that the objectives are achieved. The CQCSM will manage the three-phase control process and request additional staff when the workload warrants. The CQCSM will oversee project record keeping and electronic file sharing of field documents with USACE. If workmanship, materials, equipment or safety procedures are deficient the CQCSM will have the authority to stop work and require resolution before work may resume. The CQCSM will work independently from the operations/construction staff and will report directly to the KEMRON Project Manager (PM).

6.1.2 QC Geophysicist

The QC Geophysicist is responsible for the implementation and the operation of the field quality management program for geophysics related operations (Section 6.6 below). This includes the planning and execution of QC activities over geophysical operations and ensuring compliance with geophysical requirements as detailed in the MEC QAPP. Specifically, the QC Geophysicist is responsible for the following:

- Perform QC oversight of project plans as they relate to DGM operations.
- Reviewing and approving the qualifications of proposed geophysical staff and subcontractors.
- Assisting the CQCSM in planning and ensuring the performance of preparatory, initial, follow-up, and completion inspections for the geophysical definable features of work (DFW)s.
- Planning and ensuring the acceptable performance and completion of all geophysical QC activities as specified in the MEC QAPP and Site Specific Work Plans (SSWP)s.
- Review of the DGM data, target lists, and dig results in concert with the Project Geophysicist.

- Establishing and maintaining the location of DGM related BSIs for the project.
- Identifying non-conformance and verifying that appropriate root cause analysis (RCA) have been completed and corrective actions are implemented for geophysical activities.
- Performing periodic visual monitoring of data acquisition operations and review of data processing and interpretation activities to ensure conformance with the MEC QAPP and SSWPs.
- QC reprocessing of a percentage of the DGM data in accordance with Worksheet #12 of the MEC QAPP.
- Ensuring that the requisite documentation, including submittals, is generated and retained as prescribed.

The QC Geophysicist will have access to all geophysical QC and DGM related data. It is expected that the QC Geophysicist will provide detailed review at the onset of the project, especially with regard to visual observations of the DGM data collection process. Once the project performance levels are acceptable, the level of effort for QC may be reduced; however, should deficiencies in the DGM operations occur, the frequency of QC checks will be increased until the performance level is back to acceptable levels. The QC Geophysicist reports to the Program Quality Control Manager and will liaison with the Project Geophysicist. The QC Geophysicist will also assist the CQCSM and UXOQCS with the generation of any Corrective Action Requests (CAR)s, CAPs, RCAs that relate to DGM operations.

6.1.3 UXOQCS

The UXOQCS is responsible for the implementation and operation of the field quality management program for MEC and explosives related operations (Section 6.7 below, and also UXO SOP 10 [QC of MEC and Explosives Related Operations]).

6.2 Letters of Authority

A letter of authority will be signed by the KEMRON Program QC Manager and included in the project file that will describe the responsibilities of, and delegate authority to the CQCSM.

6.3 Personnel Qualifications and Training

In accordance with EM 200-1-15, project staff will possess the necessary qualifications in order to perform their assigned jobs and tasks. Geophysical personnel will meet the qualifications listed in Section 6.2.2.1 of EM 200-1-15 (USACE 2013). UXO personnel will meet the qualifications described in Technical Paper (TP) 18 (Department of Defense Explosives Safety Board [DDESB], 2015).

6.4 Documentation of Qualifications and Training

The review and verification of personnel qualifications are to be documented in the Personnel Qualification Certification Letter. Verified personnel qualification verification forms will be included in the project files. The Unexploded Ordnance Safety Officer (UXOSO) will maintain records documenting that each worker (including subcontractor personnel) has the required qualifications and training; including site-specific and routine training for personnel and visitors. The UXOSO will monitor certification expiration dates so as to provide advance warning to the PM of when employees will require refresher training or other requirements. These records will be maintained on-site for audit purposes.

6.5 Standard Quality Management Program (CQCSM Responsibilities)

The CQCSM reports directly to the PM. The CQCSM has the authority to stop work if operations are found to be out of compliance with the MEC QAPP, SOPs, and/or SSWPs; or if any operations are deemed unsafe. The CQCSM is onsite full-time and is responsible for the following:

The project will be conducted following these standard quality management procedures:

- Any revisions or changes to this SOP must be approved by the COR prior to being implemented.
- Site specific QC testing and inspection requirements, data objectives and control measures will be detailed in the MEC QAPP, SOPs and SSWPs.

- The CQCSM or designee will establish and maintain an on-site project file in accordance with contract requirements and Contractor policies for document control.
- The CQCSM or designee is responsible for verifying compliance with this SOP through implementation of the three-phase QC control process on all field related DFWs. SOPs have been generated for each DFW that include SOP specific QC checklists at the end of each SOP (Attachment B of the MEC QAPP).
- The CQCSM or designee will review and approve the qualifications of proposed technical staff and subcontractors.
- Prior to client delivery or use, project submittals are to be reviewed and approved by KEMRON. Prior to submittal, technical documents (e.g., reports, plans, and engineering drawings) are to be reviewed by qualified staff.
- The CQCSM or designee will notify the USACE Ordnance and Explosives Safety Specialist (OESS) two business days prior to the commencement of any preparatory or initial phase QC inspection.
- The CQCSM or designee will perform a Preparatory Phase Inspection prior to beginning each field related DFW. SOPs have been generated for each DFW that include SOP specific QC checklists (Attachment B of the MEC QAPP). The purposes of this inspection is to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. To conduct and document the inspection, the CQCSM or designee is to use the Preparatory Phase Inspection Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic forms of the Preparatory Phase Inspection checklist can be found in Attachment C of the MEC QAPP (Form QC-1). During the Preparatory Phase QC inspection, the CQCSM or designee is responsible for reviewing the specifications and requesting clarification from USACE, where necessary.
- The CQCSM or designee is to perform an Initial Phase inspection the first time a field related DFW is performed. To conduct and document the inspection, the CQCSM or designee is to use Initial Phase Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic forms of the Initial Phase Inspection Checklist can be found in Attachment C of the MEC QAPP (Form QC-2).
- The CQCSM or designee may perform periodic Follow-up Phase inspections for work in progress, or each time a DFW has a significant change in location, equipment and/or personnel. If the change is substantial, the CQCSM or UXOQCS or designee may conduct an additional preparatory meeting. The purpose of this additional preparatory meeting is to ensure continuous compliance and that an acceptable level of workmanship is being achieved. To conduct and document Follow-up Phase Inspections, the CQCSM or designee is to use the Follow-up Phase Inspection Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic forms of the Follow-up Phase Inspection checklist can be found in Attachment C of the MEC QAPP (Form QC-3).
- The final inspection is performed upon conclusion of the DFW and/or prior to closeout to verify that project requirements relevant to the particular feature of work have been met. Outstanding and nonconforming items are to be identified and documented on the Final Inspection Outline (Attachment C of the MEC QAPP (Form QC-4).
- The CQCSM or designee is responsible tracking all inspections (Attachment C of the MEC QAPP - Form QC-5) and QC surveillance on project activities performed by subcontractors. (Attachment C of the MEC QAPP - Form QC-6).
- Tasks which require specific training, calibration, maintenance and certifications will be documented by the task leader performing the activity with copies of applicable documentation provided to the CQCSM or designee for retention in the project QC file.
- The CQCSM will encourage project staff at all levels to provide recommendations for improvements in established work processes and techniques.
- The CQCSM will respond to any member of the project staff, including KEMRON and subcontractor employees, that submit a CAR (Attachment C of the MEC QAPP - Form QC-7).

- The CQCSM or designee will determine whether a written Corrective Action Plan (CAP) [Attachment C of the MEC QAPP - Form QC-8] is necessary, based on whether any of the following criteria are met:
  - o the CAR priority is high;
  - o deficiency requires a rigorous corrective action planning process to identify similar work product or activities affected by the deficiency; or
  - o deficiency requires extensive resources and planning to correct the deficiency and to prevent recurrence.
- The CQCSM or designee is responsible for preparing and submitting the Daily QC Report (Attachment C of the MEC QAPP - Form QC-9) to the USACE OESS, the project file, and providing concurrent courtesy copies to the COR as requested.

6.6 Standard Field Quality Management Program (QC Geophysicist Responsibilities)

For the investigation and management of MEC, and other explosives related operations the QC Geophysicist is responsible for the installation of BSIs in areas that are to have DGM operations conducted over them. The QC Geophysicist is also responsible for assisting the UXOQCS and CQCSM in verifying that all DGM related BSIs have been excavated and have been properly identified and reported by the intrusive investigation team. The QC Geophysicist will work with the CQCSM and UXOQCS with the generation of any CARs, RCAs and CAPs that relate to DGM operations. The QC Geophysicist is not required to be onsite full-time.

The geophysical related operations for this project will be conducted following these standard field quality management procedures:

- Ensure equipment used by the DGM and Reacquisition teams are in good working condition and that team members are familiar with their use.
- Verify that DGM equipment is tested daily at the IVS and/or daily function checks are completed.
- Verify unit/area grid stakes are correctly placed (visual inspection).
- Place BSIs at the rate/density specified in the QAPP and SSWP. If production rates change modify BSI rate/density accordingly. Document BSI resolution.
- Work with the CQCSM to complete the Preparatory, Initial and Follow-up QC Inspections.
- Conduct periodic surveillance of DGM and Reacquisition teams to ensure compliance with SOPs, MEC QAPP, and SSWP requirements.
- Using QC metrics described in Worksheet #12 of the MEC QAPP, conduct inspections to verify that all Measurement Quality Objectives (MQO)s are being achieved.
- Using QC metrics described in Worksheet #12 of the MEC QAPP, reprocess a percentage of the DGM data to verify that the DGM “system” is functioning properly. The DGM “system” includes field data collection, data processing, data storage, and DGM related deliverables.
- Ensure that any areas that are not able to be DGM surveyed are recorded and include an explanation.
- Conduct periodic inspections of DGM and Reacquisition team documentation.
- Conduct periodic inspections of DGM and Reacquisition team data submissions.
- Conduct periodic inspections of the KEMRON database.
- Assist CQCSM and UXOQCS with corrective actions that relate to DGM, target reacquisition or the KEMRON database.

Additionally, the QC Geophysicist will also be responsible for reprocessing a percentage of the DGM data. MQOs for DGM data are described in Worksheet #12 of the MEC QAPP. Using the geophysical data collected by the field teams, the QC Geophysicist will initially reprocess the first data set collected by each geophysical field team (up to eight full 100 foot x 100 foot grids [1.84 acres]). These QC maps (and target lists when appropriate) will then be compared with the DGM map (and target list when appropriate) generated by the geophysical data processor(s). If significant discrepancies between the two data sets exist, the QC Geophysicist and the geophysical data processor will compare processing techniques. This initial duplicative process will ensure that geophysical interpretation techniques are correct and consistent among the data processors working on the project. Throughout the remainder of the project, the QC Geophysicist will continue to randomly select and reprocess individual grids at the rate specified in Worksheet #12 of the MEC QAPP. If the QC Geophysicist finds processing techniques that have been applied incorrectly, then the corrective action process will be initiated as described in Section 9 (Deficiency Identification and Resolution) below.

6.7 Standard Field Quality Management Program (UXOQCS Responsibilities)

The UXOQCS reports directly to the Program Quality Control Manager (PQCM). Although the UXOQCS communicates directly with the PM the UXOQCS has the authority to act independently of the PM in all MEC and explosives related QC matters. The UXOQCS has the authority to stop work if operations are found to be out of compliance with the MEC QAPP or if any operations are deemed unsafe. The UXOQCS is onsite full-time. Standard field quality management procedures for MEC and explosives related operations are detailed in UXO SOP 10 (QC of MEC and Explosives Related Operations).

7 BLIND SEEDING

In accordance with the Geophysical System Verification (GSV) process (Environmental Security Technology Certification Program [ESTCP], 2009), the QC Geophysicist will be responsible for emplacing BSIs in areas where DGM is to be conducted. BSI Installation is discussed in GEO SOP 2 (Blind Seed Item Installation).

Once an area has been investigated the QC Geophysicist will verify that all BSIs have been located and have been accurately identified. Once it has been verified that the BSIs have been successfully detected, its location and other associated information will be supplied to the Field Data Manager for inclusion in the KEMRON Database. Upon finding a failure (i.e. missed BSI), the QC Geophysicist (and UXOQCS if the BSI was not located and/or identified by the intrusive team) will use procedures described in Section 9 below (Deficiency Identification and Resolution) to determine the extent of the failure, why it occurred, and if corrective actions are warranted.

8 THREE PHASE INSPECTION PROCESS

KEMRON is responsible for verifying compliance with approved project documents through the implementation of a three-phase control process, which ensures that project activities comply with the approved plans and procedures. The QC monitoring requirements for each field DFW related to geophysical operations are discussed in general below. A list of project specific DFWs can be found in Worksheet #12 of the MEC QAPP. The CQCSM or designee will ensure that the three-phase QC process is implemented for each field related DFW. SOPs have been generated for each DFW that include SOP specific QC checklists. This section specifies the minimum inspection requirements that must be met and to what extent QC monitoring must be conducted and documented by the CQCSM or designee.

Each QC inspection phase is considered relevant for obtaining necessary product quality. However, the preparatory and initial inspections are particularly invaluable in preventing problems. Work will not be performed on a DFW until the preparatory phase inspections have been completed and any non-conformance issues have been resolved.

8.1 Preparatory Phase QC Inspection

Prior to performing the preparatory phase inspection, the CQCSM or designee will review the appropriate sections of the MEC QAPP, SOPs and SSWP. The Preparatory Phase QC inspection is completed by the CQCSM or designee through the verification that the following has been completed prior to the commencement of field activities associated with a field DFW (related to the investigation and management of MEC, and other explosives related operations):

- Authorization to proceed has been obtained;
- Required permits and notifications have been obtained or given;
- Required submittals have been approved;
- Plans, procedures, specifications and required documentation have been approved and are available to the workers;
- Required materials and equipment are on site;
- Field equipment is appropriate, available, functional, and properly tested for its intended/stated use;
- Workers needed to perform the work have been designated and are available;
- Staff responsibilities have been assigned and communicated;
- Staff members have the necessary knowledge, expertise, and information to perform their jobs;
- Arrangements for support services have been made (if required);
- All necessary procurements are in place; and
- Training in accordance with the requirements of the MEC QAPP and SOPs has occurred.

The CQCSM or designee will coordinate and perform a Preparatory Phase meeting before beginning each field related DFW. The purpose of this meeting is to ensure that all critical staff involved in the work are familiar with applicable specifications and plans; and to verify that the necessary resources, conditions, and controls are in place and compliant before work activities start. Upon completion of the inspection, the CQCSM or designee will complete a Preparatory Phase Inspection Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic Preparatory Phase inspection checklists can be found in Attachment C of the MEC QAPP (Form QC-1).

Project personnel must correct or resolve discrepancies between existing conditions and the approved MEC QAPP that are identified by the CQCSM or designee during the Preparatory Phase inspection. The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. The CQCSM or designee will verify that unsatisfactory and/or nonconforming conditions have been corrected prior to the commencement of the operation being inspected.

8.2 Initial Phase QC Inspection

The Initial Phase QC inspection occurs at the startup of field activities associated with a field DFW. The Initial Phase QC inspection is completed by the CQCSM or designee through the verification and inspection of the following:

- Check preliminary work for compliance with procedures, specifications, and requirements detailed in the MEC QAPP, SOPs and SSWP;
- Establish an acceptable level of workmanship; and
- Check for omissions, and resolve differences of interpretation.

At the onset of a particular DFW, the CQCSM or designee will perform an Initial Phase inspection and complete an Initial Phase Inspection Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic Initial Phase inspection checklists can be found in Attachment C of the MEC QAPP (Form QC-2).

During the Initial Phase inspection, the CQCSM or designee will ensure that discrepancies between site practices and approved plans or specifications are identified and resolved. The resolution of discrepancies is a critical step in the Initial Phase inspection. The Initial Phase inspection will also verify that the APP adequately identifies all hazards associated with actual field conditions and verifies that appropriate safe work practices are being followed.

The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. Furthermore, an additional Initial Phase Inspection may be rescheduled and more frequent Follow-up Inspections may be conducted to verify the quality of work.

8.3 Follow-up Phase QC Inspection

The Follow-up Phase QC inspection occurs as field activities associated with a specific DFW (related to the investigation and management of MEC, and other explosives related operations) are ongoing. The Follow-up Phase QC inspection is completed by the CQCSM or designee through the verification and inspection of the following:

- Check ongoing work for compliance with procedures, specifications, and requirements detailed in the MEC QAPP, SOPs and SSWP;
- Verify that the current level of workmanship is acceptable; and
- Check for omissions, and resolve differences of interpretation.

As a particular field DFW is in operation, the CQCSM or designee will perform a Follow-up Phase inspection and complete a Follow-up Phase Inspection Checklist that is specific to each SOP (Attachment B of the MEC QAPP). Generic Follow-up Phase inspection checklists can be found in Attachment C of the MEC QAPP (Form QC-3).

During the Follow-up Phase inspection, the CQCSM or designee will ensure that discrepancies between site practices and approved plans or specifications are identified and resolved. The Follow-up Phase inspection will continue to verify that the APP adequately identifies all hazards associated with actual field conditions and verifies that appropriate safe work practices are being followed.

The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. Furthermore, an additional Initial Phase Inspection may be scheduled and more frequent Follow-up Inspections may be conducted to verify the quality of work.

8.4 Final Inspection

The final inspection is performed upon conclusion of a DFW and prior to closeout to verify that project requirements relevant to the particular DFW have been satisfied. Outstanding and nonconforming items are to be identified and documented on the Final Inspection Outline (Attachment C of the MEC QAPP - Form QC-4).

9 Deficiency Identification and Resolution

While deficiency identification and resolution occurs primarily at the operational level, QC audits provide a backup mechanism to address problems that either are not identified or cannot be resolved at the operational level. Deficiencies identified by the CQCSM or designee are to be corrected by operational staff and documented either in the field activity daily log or CAR as determined by the CQCSM or designee.

9.1 Corrective Action

A CAR (Attachment C of the MEC QAPP – Form QC-7) can be issued by any member of the Team, including subcontractor employees. The CAR will be forwarded to the CQCSM or designee who is then responsible for evaluating the validity of the request. If the CAR is valid the CQCSM or designee will address the corrective action with the appropriate individuals to resolve the deficiency.

The CQCSM or designee will determine if an RCA and/or CAP (Attachment C of the MEC QAPP – Form QC-8) are necessary. The CAP will include assigning personnel and resources, and will specify and enforce a schedule for corrective actions. Once a corrective action has been resolved, the CAR, CAP and supporting information will be forwarded to the KEMRON PQCM for closure.

The recommendations provided in the CAPs that are to be implemented will be reviewed during Follow-Up QC inspections. The purpose of this CAP review is as follows:

- Ensure that established protocols are implemented properly;
- Verify that corrective actions have been implemented;
- Ensure that corrective actions are effective in resolving problems;
- Identify trends within and among similar work units; and
- Facilitate system RCA of potential larger systemic problems.

9.2 CAR and CAP Tracking

Each CAR and subsequent CAP, if needed, will be given a unique identification number and tracked until corrective actions have been implemented and verified by the CQCSM or designee prior to closure of the CAR and CAP.

10 ASSOCIATED SOPS

- DATA SOP 1 – Field Data Management
- GEO SOP 1 – IVS Installation and Use
- GEO SOP 2 – BSI Installation
- GEO SOP 3 – DGM Using a Person-Portable System
- GEO SOP 4 – DGM Using a Towed Array System
- GEO SOP 5 – DGM Data Processing using a Person-Portable System
- GEO SOP 6 – DGM Data Processing using a Towed Array System
- GEO SOP 7 – DGM Target Reacquisition using a Person-Portable System

11 DOCUMENTATION

The following information is to be recorded during QC of geophysical operations:

- QC Checklists (specific to each SOP)
- QC Surveillances
- BSI information (installation and DGM results)
- CAR (if required)
- RCA (if required)
- CAP (if required)
- Logbook entries

12 HEALTH AND SAFETY

Conducting QC of geophysical operations in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones (EZ)s are described in UXO SOP 9 (Exclusion Zones).

13 REFERENCES

DDESB, 2015, *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, Technical Paper 18, 2015.

ESTCP, 2009. *Geophysical System Verification (GSV): A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response,* July.

USACE, 1995, *Construction Quality Management,* ER 1180-1-6, Washington, D.C.

USACE, 2006, *Engineering and Design - Quality Management*, ER 1110-1-12, Washington, D.C.

USACE, 2013, *Environmental Quality – Technical Guidance Military Munitions Response Actions,* EM 200-1-15, Washington, D.C.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

GEO SOP - ATTACHMENT 1

STANDARD OPERATING PROCEDURE

GEO SOP - ATTACHMENT 1

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

NAEVA Geophysics, Inc.

PO Box 7325, Charlottesville, VA 22906

DAILY INTERNAL GEOPHYSICAL QC TEST FORMS

GPS Static Positional Test

Static Repeatability Test – Person-Portable

Static Repeatability Test – Towed Array


31° 15:33
DroidDB

Static Test-Array

Project ID: N14AEC001

New | < | >

Static ID:

Location:

Team ID: Geo1

Date:

AM/PM: AM

Geo System: Array1

Coil1

Test Item: Item1

Item Height (cm):

	Pre Bkg	Spike	Post
Ch1	0.00	0.00	0.00
Ch2	0.00	0.00	0.00
Ch3	0.00	0.00	0.00
Ch4	0.00	0.00	0.00

Coil2

Test Item: Item2

Item Height (cm):

	Pre Bkg	Spike	Post
Ch1	0.00	0.00	0.00
Ch2	0.00	0.00	0.00
Ch3	0.00	0.00	0.00
Ch4	0.00	0.00	0.00

Coil3

Test Item

	Pre Bkg	Spike	Post
Ch1	0.00	0.00	0.00

Static Repeatability Test – Towed Array (Continued)

Dynamic Repeatability Test – IVS

UXO SOP 1

FCA INSTALLATION AND USE

Technical Procedure: UXO SOP 1

STANDARD OPERATING PROCEDURE FOR FUNCTION CHECK AREA INSTALLATION AND USE

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
ASTM	American Society for Testing and Materials
FCA	Function Check Area
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	Industry Standard Object
MEC	Munitions and Explosives of Concern
mm	millimeter
QC	Quality Control
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the installation of a Function Check Area (FCA) and its use. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the Unexploded Ordnance Quality Control Specialist (UXOQCS) when installing an FCA. Additionally this SOP describes the use of an FCA. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Schonstedt GA-52Cx and White DFX 300 hand-held metal detector;
- Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS];
- Field Logbook (or digital tablet);
- 100 ft tape measure (1 each);
- Shovel or other similar device for placing the FCA items and/or inert ordnance items in the subsurface; and
- Industry Standard Object(s) (ISO)s [small size] and/or inert ordnance items (if used).

ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel, manufactured to an American Society for Testing and Materials (ASTM) specification. Although only small ISOs are anticipated to be used on this project, three sizes of ISOs exist and are described in the Table 5-1 and are shown in Figure 5-1 below.

TABLE 5-1: Three sizes of ISOs

Item	Nominal Pipe Size	Outside Diameter	Length	Part Number[1]	ASTM Specification
Small ISO	1"	1.315" (33 mm)	4" (102 mm)	44615K466	A53/A773
Medium ISO	2"	2.375" (60 mm)	8" (204 mm)	44615K529	A53/A773
Large ISO	4"	4.500" (115 mm)	12" (306 mm)	44615K137	A53/A773

[1] Part number from the McMaster-Carr catalog.

FIGURE 5-1: Three sizes of ISOs

6 PERSONNEL

The UXOQCS is responsible for the installation of an FCA. During the installation of an FCA one of the FCA installation team is to be a UXO-qualified technician, with the two man rule is to always be followed.

7 PROCEDURES

The purpose of the FCA is to verify that hand-held metal detection units being employed are operating properly. FCA tests are not considered part of the Geophysical System Verification (GSV) process because they lack a recorded response and lack the rigorous evaluations used for digital systems. An FCA may be constructed for the purpose of performing additional function tests on analog hand-held metal detector instruments while in the field. If installed, additional FCA(s) will include a minimum of two small ISOs buried vertically with their center of mass being 6 inches below ground surface (bgs); inert ordnance items may also be used. All ISOs used in FCAs will be of the small size as described in Table 5-1 of this SOP.

Prior to the installation of an FCA, hand-held metal detectors are to be verified to be functioning properly at the pre-existing FCA that is located adjacent to the KEMRON field office. This pre-existing FCA is seeded with fifteen (15) inert ordnance items (Table 7-1).

TABLE 7-1: FCA LOCATED ADJACENT TO KEMRON FIELD OFFICE

ID	Description	Easting (X)	Northing (Y)	Orientation 0 = horizontal 90 = nose down	Depth (inches) [to top of item]
1	81mm Mortar Illumination Body	5745543.833	2130830.407	0	13
2	3.5-inch Rocket Practice	5745544.140	2130835.135	45	15
3	81mm Mortar Tail Boom Assembly	5745544.839	2130839.972	30	9
4	37mm Projectile Armor Piercing	5745545.308	2130845.030	0	5
5	75mm Projectile Shrapnel Body	5745545.638	2130850.451	0	22
6	2.36-inch Rocket Warhead Practice	5745546.637	2130854.933	20	10
7	60mm Mortar Practice	5745546.653	2130860.019	90	12
8	2.36-inch Rocket Practice	5745547.956	2130864.565	0	19
9	90mm Projectile Armor Piercing	5745548.631	2130869.298	45	36
10	37mm Projectile Armor Piercing	5745548.974	2130874.148	90	5
11	3.5-inch Rocket Practice	5745549.529	2130878.663	0	25
12	75mm Projectile Shrapnel	5745550.227	2130883.993	90	14
13	81mm Mortar Practice	5745550.970	2130889.263	90	18
14	105mm Projectile Illumination Body	5745551.429	2130893.257	0	40
15	20mm Projectile	5745551.929	2130898.926	45	2
Corner	NE Corner	5745555.009	2130900.729		
Corner	NW Corner	5745549.776	2130901.488		
Corner	SE Corner	5745545.765	2130826.957		

ID	Description	Easting (X)	Northing (Y)	Orientation 0 = horizontal 90 = nose down	Depth (inches) [to top of item]
Corner	SW Corner	5745540.927	2130827.426		
Coordinates: NAD83 / California State Plane - Zone 4 (US Survey Feet)					

The following steps are to be followed during FCA installation operations:

- Procure ISOs (and inert ordnance items if used);
- Verify that the FCA location is clear of anomalies prior to installation;
- Install FCA items; and
- Record GPS coordinates and required information for all FCA items installed as described in Section 8.0 below (Documentation).

Hand-held metal detectors are to be tested by team members prior to the start of each day at the FCA. If the hand-held metal detector is able to detect all of the items in the FCA, then the instrument will be considered to be functioning properly. The team leader is to record the results of each team member's FCA test in their log book (or digitally) on a daily basis. FCA installation data is to be provided to the Field Data Manager once the operation has been completed.

8 DOCUMENTATION

The following information is to be recorded for each FCA item that is installed:

- FCA unique identification number;
- GPS coordinate (X,Y);
- Seed Type (ISO type or inert ordnance type);
- Depth (center of mass (inches and cm));
- Orientation (0 = horizontal, 90 = nose down);
- Date Installed; and
- Record results of each team member's FCA test on a daily basis.

Upon completion of FCA installation, FCA data is to be provided to the Field Data Manager at the end of the day.

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for FCA installation can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

The installation of FCA items in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards.

11 REFERENCES

ESTCP (Environmental Security Technology Certification Program), July 2009, Geophysical System Verification (GSV): *A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response*.

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 1 – FCA Installation and Use

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Is the required equipment available • Schonstedt GA-52Cx and White DFX 300 hand-held metal detector; • Real-Time Kinematic (RTK) Global Positioning System (GPS) [RTK-GPS]; • Field Logbook (or digital tablet); • 100 ft tape measure (1 each); • Shovel or other similar device for placing the FCA items and/or inert ordnance items in the subsurface; and • Industry Standard Object(s) (ISO)s [small size] and/or inert ordnance items (if used).				*(I), (F)*
3	5.0	Small ISOs are being used				*(I),(F)*
4	7.0	Minimum of two ISOs are being installed vertically with center of mass being 6 inches bgs.				*(I),(F)*
5	7.0	Hand-held metal detectors are verified to be functioning properly at the pre-existing FCA located adjacent to the KEMRON field office. Results of FCA tests are recorded digitally or in the team leader's logbook.				*(I),(F)*
6	7.0	Verify FCA location is clear of anomalies prior to installation				*(I),(F)*
7	7.0 and 8.0	Position of items and required information are recorded and provided to the Field Data Manager at the end of the day				*(I),(F)*

Three Phase Quality Control Checklist

UXO SOP 1 – FCA Installation and Use

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 2

TECHNOLOGY-AIDED SURFACE MEC REMOVAL

Technical Procedure: UXO SOP 2

STANDARD OPERATING PROCEDURE FOR TECHNOLOGY-AIDED SURFACE MEC REMOVAL

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BRA	Basewide Range Assessment
EZ	Exclusion Zone
FCA	Function Check Area
GPS	Global Positioning System
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Possessing an Explosive Hazard
QAPP	Quality Assurance Project Plan
QC	Quality Control
RRD	Range Related Debris
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
UXO	Unexploded Ordnance

1 Policy

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to Technology-Aided Surface Munitions and Explosives of Concern (MEC) Removal operations. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 Purpose

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the Technology-Aided Surface MEC Removal team. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 Scope

The information presented in this SOP is generally applicable to all MEC related project sites.

4 Maintenance

KEMRON personnel are responsible for the maintenance of this SOP.

5 Equipment

- Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors;
- Field Logbook;
- Digital tablet;
- Rope (for lane delineation);
- 100 ft tape measure (3 each); and
- Shovels or other similar devices for removing items that protrude from the ground surface that are to be removed.

6 Personnel

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and UXO team is responsible for the Technology-Aided Surface MEC Removal operation. The Technology-Aided Surface MEC Removal Team will include the following personnel:

- 1 UXO Technician III Team Leader
- 2 (minimum) UXO Technician II
- 4 (maximum) UXO Technician I

The two man rule is to always be followed.

7 Procedures

Following vegetation removal a Technology-Aided Surface MEC Removal operation will be conducted over the entire surface of the area to be investigated. The Technology-Aided Surface MEC Removal team will be equipped with both the Schonstedt GA-52Cx magnetometers and the Whites DFX 300 hand-held metal detectors. Should non-ferrous ordnance items be anticipated the White DFX 300 hand-held instrument is to be defined in the SSWP as the instrument of choice. Prior to conducting Technology-

Aided Surface MEC Removal operations, hand-held metal detectors are to be verified to be functioning properly at the Function Check Area (FCA) that is located adjacent to the KEMRON field office. Additional verification of hand-held metal detector functionality may also be conducted at FCAs that have been previously installed in the field. Results of these FCA test are to be recorded digitally or in the Team Leader's log book.

During Technology-Aided Surface MEC Removal operations the Team Leader will use 100-foot lines (rope) to mark out search lanes within the grid to be investigated. Each search lane will be approximately 5 feet wide, with the Team Leader ensuring that each lane is swept in a manner that will cover the entire lane width. The Technology-Aided Surface MEC Removal Team will investigate all anomalies identified by the hand-held metal detector that exist on the soil surface. If masticated vegetation is covering the soil surface, the UXO technician will remove the vegetation at the location of the anomaly identified by the hand-held metal detector to expose the soil surface. Target vehicles and other Range Related Debris (RRD) will be inspected for MEC, Material Potentially Possessing an Explosive Hazard (MPPEH), and the potential for radium-containing paints. Target vehicles and large RRD may be removed using mechanical equipment as necessary.

The positional location of all MEC items will be recorded using tape measurements from the south-west corner grid stake (local coordinates) or through the use of RTK-GPS. MEC, MPPEH and Munitions Debris (MD) that is located will be managed in accordance with the procedures described UXO SOP 5 (MEC and MPPEH Management).

8 DOCUMENTATION

The following information is to be digitally recorded by the Team Leader for each grid that is to have Technology-Aided Surface MEC Removal operations. This data is to be provided to the Field Data Manager at the end of each day.

- Date
- Contractor
- Team ID
- Team Leader
- MRS ID
- Unit ID
- Operation Type
- Grid Type
- Instrument Type
- Grid ID
- Grid 100% Done (Yes or No)
- MD Weight (lbs)
- RRD (lbs)
- # of MPPEH Items
- Type(s) of Items with Sensitive Fuzes
- Weight (lbs) of Items with Sensitive Fuzes
- Field Comments

The following information is to be recorded for each MEC/MPPEH item that is located:

- Date
- Contractor

- Team ID
- Team Leader
- MRS ID
- Unit ID
- Operation Type
- Grid Type
- Instrument Type
- Grid ID
- Item ID
- Is Demo Required? Yes or No
- Is the item located within a burial pit? Yes or No
- Item Type
- Initial disposition
- Item Easting
- Item Northing
- Item Description
- Quantity
- Depth
- Comments

To assist in the Basewide Range Assessment (BRA) evaluation, the Team Leader will document the following items that are found during Technology-Aided Surface MEC Removal operations:

- Asphalt
- Berm
- Broken Window Glass
- Bullet Accumulation
- Crater
- Discolored Soil
- Disturbed Area (not Mastication)
- Electrical Conduit
- Firing Point
- Hard Target
- Impact Hole
- Junction Box
- Mound
- Non-MD Debris (i.e. individual RRD items or other items of interest for the BRA)
- Other
- Pipelines
- Pipes
- Pit
- Pop-Up Target Pull Cable
- Range Fan Marker
- Road
- Shell Casing Accumulation
- Slabs
- Structure
- Suspicious Bare Area
- Swale
- Target
- Target Line

- Trail
- Trench
- Utility Pole
- Wash
- Wood Debris

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for technology-aided surface MEC removal operations can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting Technology-Aided Surface MEC Removal operations in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones (EZ)s are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 2 – Technology-Aided Surface MEC Removal

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	6.0	Verify personnel have the required equipment • Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors; • Field Logbook; • Digital tablet; • Rope (for lane delineation); • 100 ft tape measure (3 each); and • Shovels or other similar devices for removing items that protrude from the ground surface that are to be removed.				*(I), (F)*
3	7.0	Verify Schonstedt GA-52Cx and White DFX 300 is being used.				*(I),(F)*
4	7.0	Verify hand-held metal detectors were checked for functionality at the FCA prior to use.				*(I),(F)*
5	7.0	100 ft lanes (rope) were used to mark out search lanes within the grid to be investigated.				*(I),(F)*
6	7.0	Each search lane is ~ 5 ft wide				*(I),(F)*
7	7.0	Team members investigate all anomalies identified by the hand-held metal detector that exist on the surface				*(I),(F)*
8	7.0	If veg is on the surface, is it being moved by the UXO technician to expose the soil surface?				*(I),(F)*
9	7.0	Are target vehicles and RRD being inspected for MEC, MPPEH and radium-containing parts?				*(I),(F)*
10	7.0	Is location of MEC items being recorded (tape measurements or GPS)?				*(I),(F)*
11	7.0	Are MEC, MPPEH and MD being managed in accordance with UXO SOP 5 (MEC and MPPEH management).				*(I),(F)*

12	8.0	Is the required data/documentation being recorded?				*(I),(F)*
13	8.0	Is data being recorded for BRA evaluation?				*(I),(F)*
14	8.0	Is the data being provided to the Field Data Manager at the end of each day?				*(I),(F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

UXO SOP 3

INTRUSIVE INVESTIGATION USING ANALOG METHODS

Technical Procedure: UXO SOP 3

STANDARD OPERATING PROCEDURE FOR INTRUSIVE INVESTIGATION USING ANALOG METHODS

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BLM	Bureau of Land Management
DGM	Digital Geophysical Mapping
EZ	Exclusion Zone
FCA	Function Check Area
GPS	Global Positioning System
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Possessing an Explosive Hazard
mV	milliVolt
OESS	Ordnance and Explosives Safety Specialist
PDT	Project Delivery Team
PM	Project Manager
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TM	Technical Memorandum
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance

UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY
KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to intrusive investigations using analog methods (also known as mag, flag and dig). This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE
The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the analog intrusive investigation team. This SOP does not detail the use of all equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE
The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE
KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT
- Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors;
- Geonics EM61MK2 metal detector;
- Allegro data collector for EM61MK2 (if used);
- Geonics batteries (2 each) [if used];
- Field Logbook;
- Digital tablet;
- Rope (for lane delineation);
- 100 ft tape measure (3 each);
- Pin flags; and
- Shovels or other similar devices for removing items that are underground.

6 PERSONNEL
The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and UXO team is responsible for analog intrusive investigation operations. The analog intrusive investigation team will include the following personnel:
- 1 UXO Technician III Team Leader
- 3 (minimum) UXO Technician II
- 3 (maximum) UXO Technician I

The two man rule is to always be followed.

7 PROCEDURES

An analog intrusive investigation may be conducted by utilizing analog detection instruments (“mag, flag, dig”), or excavation and sifting. The procedures in this SOP relate only to an intrusive investigation based on the use of analog instruments.

Following vegetation removal the SUXOS and UXOQC (with input from the Project Manager) may select an analog intrusive investigation as the selected remedy for a specific area based on a variety of factors such as topography (i.e. slope), anomaly density, munitions with sensitive fuzes that may exist, etc. The SUXOS and UXOQC (with input from the Project Manager) will then also make the decision as to whether hand-held metal detectors or the EM61MK2 in analog mode (or both) are to be used based on the terrain and depth of clearance (as specified in the SSWP). The SUXOS and UXOQC (with input from the Project Manager) will also decide if the EM61MK2 is to be used first.

The analog intrusive investigation team will use hand-held metal detection instruments including the Schonstedt GA-52Cx magnetometer and the Whites DFX 300 hand-held metal detector. The Schonstedt is the default instrument for the analog intrusive teams because the vast majority of anomalies on MMRP sites are ferrous in nature; and because the Schonstedt easily pinpoints the anomaly location. If terrain allows, and if the Geonics EM61MK2 is not chosen as the primary metal detection instrument, the EM61MK2 is then to be used in analog mode to verify that all anomalies within a grid/area have been located and removed after the hand-held analog intrusive investigation has been completed.

7.1 Intrusive Investigation

Prior to conducting analog intrusive investigation operations, all hand-held metal detectors are to be verified to be functioning properly at the Function Check Area (FCA) that is located adjacent to the KEMRON field office. Additional verification of hand-held metal detector functionality may also be conducted at FCAs that have been previously installed in the field. If an EM61MK2 is to be used, it is to be function checked prior to use in accordance with procedures described in Section 7.2 below.

The following basic techniques will be used during the analog intrusive investigation:

- The Team Leader will use 100-foot lines (rope) to mark out search lanes within each grid to be investigated. Each search lane will be approximately 5 ft wide, with the Team Leader ensuring that each lane is swept in a manner that will cover the entire lane width. If the EM61MK2 is to be used, the operator is to use the rope as the center of the lane for one pass, and is to then go down the center of the lane for the next pass, and is to repeat this procedure until the entire grid/area has been inspected.

- The UXO technician will then locate anomalies along each lane with a hand-held metal detector and/or the Geonics EM61MK2. If an anomaly is located with the EM61MK2 but is not able to be “found” with the Schonstedt, then the White DFX 300 is to be used because the anomaly may be of a material that is non-ferrous (aluminum, brass, etc.) and as such can be detected with the White. Pin flags may be placed by the UXO Technician at each anomaly location (but are not required).

- Until an anomaly is identified it will be assumed that the anomaly is MEC and the excavation will be initiated adjacent to the anomaly. The excavation will continue until the excavated area has reached a depth below the top of the anomaly as determined by frequent inspection with a hand-held metal detector, or until the maximum depth (as described in the Site Specific Work Plan [SSWP] has been reached.

- Using progressively smaller and more delicate tools to carefully remove the soil, the excavation team will expand the sidewall to expose the metallic item in the wall of the excavation for inspection and identification without moving or disturbing the item.

- Once the item is exposed for inspection, the excavation team will determine if it is MEC. If the anomaly is found to be MEC the item will be managed in accordance with procedures described in UXO SOP 5 (MEC and Material Potentially Presenting an Explosives Hazard [MPPEH] Management). If the anomaly is found to not be a MEC item, it will be removed and the anomaly location will be rechecked with the hand-held metal detector to ensure that a hazardous item does not still exist at that location. Once the anomaly location has been cleared the UXO Technician will then continue their investigation of the lane and the process will be repeated until the entire grid has been cleared. If the terrain allows, the Geonics EM61MK2 will be used to verify that the grid/area is clear of anomalies (see bullet #1 above). All items located in the field will be managed in accordance with UXO SOP 5 (MEC and MPPEH Management).

- The positional location of all MEC items will be recorded using tape measurements from the south-west corner grid stake (local coordinates) or through the use of Real-time Kinematic (RTK) - Global Positioning System (GPS). The depth of all MEC items will be measured using tape measurements from the ground surface to the center of mass of the item. MEC, MPPEH, Munitions Debris (MD) and non-munitions related items that are located will be managed in accordance with the procedures described in UXO SOP 5 (MEC and MPPEH Management).

A commercial backhoe or other mechanical equipment may be used to excavate anomalies that are believed to be at a greater depth than can be efficiently excavated by hand. If used, the backhoe will be used no closer than 1 foot from adjacent anomalies that have been located during the investigation. The Team Leader may assign additional workers to assist with the excavation. The excavation will be conducted similarly to the hand excavation methodologies described above. Backhoe excavation procedures are described below:

- Upon arrival at the site, the analog intrusive investigation team will reacquire the anomaly using a hand-held metal detector or the Geonics EM61MK2. The equipment operator will begin the excavation under the direction of the UXO Technician serving as a spotter. The equipment operator will not excavate directly on the anomaly location, but rather will excavate adjacent to the anomaly location.

- To prevent contacting the anomaly with the backhoe, the UXO Technician serving as a spotter will frequently monitor the excavation to ensure that the equipment operator does not dig directly over the anomaly. The objective of the direction by the UXO Technician is to remove the soil from a selected area adjacent to the anomaly, while ensuring that the backhoe bucket does not disturb the anomaly.

- The UXO Technician will direct the equipment operator to stop excavation when the soil has been removed to within 1 foot of the anomaly as estimated by the response from the hand-held metal detector or Geonics EM61MK2 instrument.

Once the excavation has reached within 1 foot of the anomaly location the backhoe will then be shut down, and the excavation will be completed using hand tools as previously described above. Once the anomaly has been exposed it will be inspected by a UXO-qualified technician. The positional location of all MEC items located with a backhoe or other mechanical equipment will be recorded using tape measurements from the south-west corner grid stake (local coordinates) or through the use of RTK-GPS. The depth of all MEC items will be measured using tape measurements from the ground surface to the center of mass of the item. MEC, MPPEH, MD, and other non-munitions related items that are located will be managed in accordance with the procedures described in UXO SOP 5 (MEC and MPPEH Management).

If the maximum excavation depth (as described in the SSWP) is reached during excavation operations however the anomaly still exists, the USACE Ordnance and Explosives Safety Specialist (OESS) will be consulted by the Unexploded Ordnance Safety Officer (UXOSO) to determine if further excavation is warranted. If for any reason an anomaly is abandoned prior to resolution, the anomaly location will be surveyed using tape measurements from the south-west grid corner stake or GPS. KEMRON will inform the USACE Project Manager (PM) and USACE OESS of anomalies that are not fully investigated.

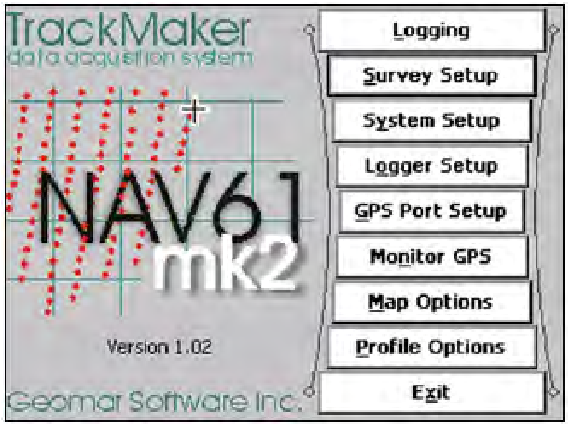
7.2 Intrusive Anomaly Verification (hole clearance using the EM61MK2 in Analog Mode)

After completion of analog subsurface removal activities, the resolution of every excavated target anomaly will be verified by the intrusive team using a person portable EM61MK2 in analog mode using methodologies described in this Section. If the EM61MK2 sensor response is demonstrated to be below the target threshold (as described in the SSWP) the anomaly resolution verification is considered complete, and the excavation can be backfilled. If the sensor response remains above the target threshold (as described in the SSWP), excavation activities will continue until the anomaly is removed and the sensor response is below the target threshold, or excavation will continue until the anomaly is located and is able to be inspected, or the excavation will continue to the depth designated by the SSWP.

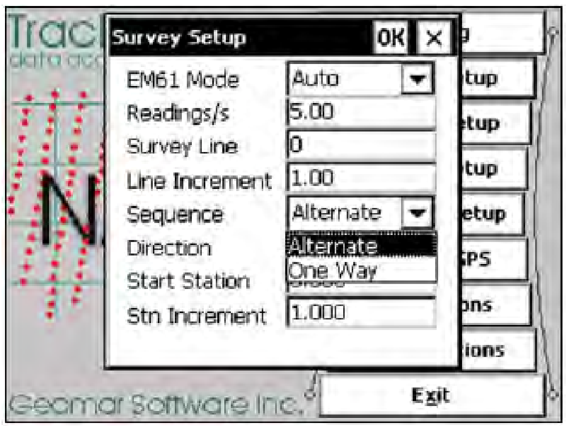
For the analog intrusive investigation the Geonics EM61MK2 may be used to verify that all anomalies that have been intrusively investigated (or the entire grid) are below the target threshold (as described in the SSWP). The EM61MK2 (if employed in analog mode) is to be set up according to the Geonics EM61MK2 Manual. Function checks of the EM61MK2 are to be conducted after the instrument has been warmed up for at least 15 minutes. This function check is to be conducted in the AM and mid-day for each EM61MK2 used for analog intrusive investigations at a location that is known to be free of anomalous responses. This function check will consist of a static spike check that will employ the use of a "jig" that will be placed over the EM61MK2. The EM61MK2 static spike reading must be within the Measurement Performance Criteria (MPCs) detailed in Worksheet #12 of the MEC Quality Assurance Project Plan (QAPP) or as detailed in the SSWP. EM61MK2 static spike data will not be recorded in the EM61MK2 Allegro. Static spike test milliVolt (mV) readings (EM61MK2 channel to be described in the SSWP) will be recorded in the Team Leader's digital tablet and/or logbook.

The following steps are to be followed by the analog intrusive investigation team when using the Geonics EM61MK2:

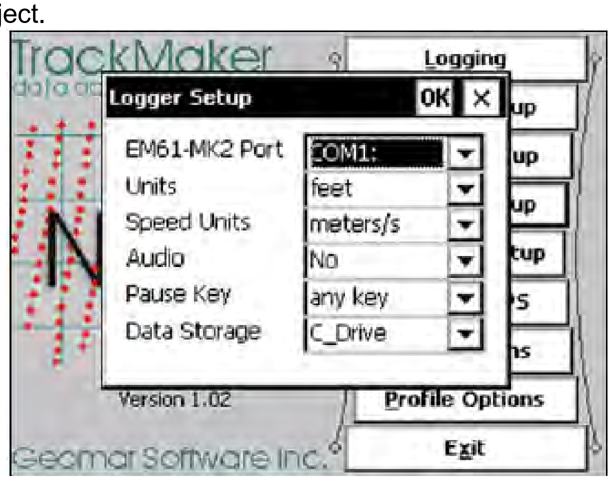
1. Turn on instrument by pushing in the fuse on the top of the console/electronics
2. Allow instrument to warm up for at least 15 minutes
3. Turn on Allegro CX and open NAV61MK2 program. The screen below will be displayed.



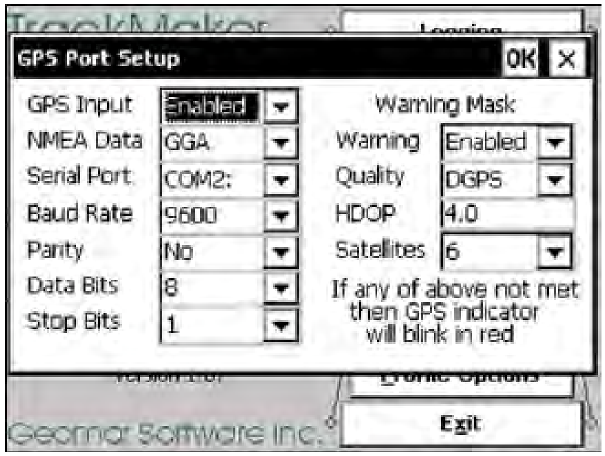
4. Click on “Survey Setup” and specify the below options. For analog operation, the Mode is set to “Auto” and Readings/s is set to “5”.



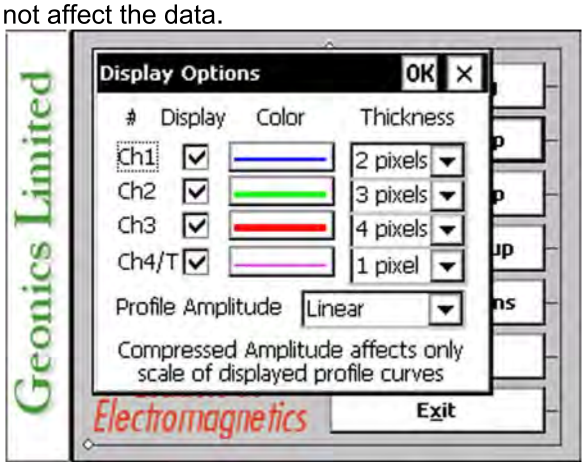
5. Click on “Logger Setup” and specify the options shown below. These setting will remain the same throughout the project.



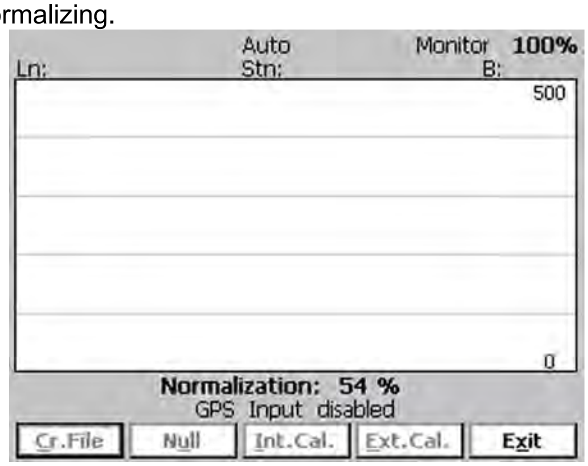
6. Click on “GPS Port Setup”, and make sure the GPS Input is set to “Disabled”, and all other options will then be grayed out.



7. Click on "Display Options", and specify the following options. These options are operator preferences and do not affect the data.

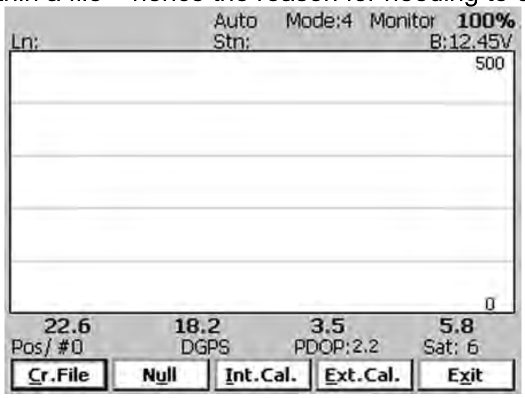


8. Once all parameters are set, click on "Monitor/Log". The screens shown below are displayed while the instrument is normalizing.



9. Once the Instrument has finished normalizing, find a quiet spot (area with low mV reading that is similar to that of the background) and Null the instrument. Then click on Cr. File, create a file

name, then save the file. Although this recorded data will not be used, the Geonics EM61MK2 needs to store data within a file – hence the reason for needing to create a file.



10. The UXO technician then uses the Geonics EM61MK2 in analog mode by monitoring the values in the targeted channel on the Monitor/Log screen as the anomaly is investigated.
11. If a peak response above the targeting threshold is identified, the EM61MK2 is to be turned 90 degrees and look for the peak again. Once the anomaly location has been pinpointed the UXO technician is to then place a pin-flag at this location. EM61MK2 target thresholds (and EM61 channel to use) will be described in the SSWPs.
12. Once an anomaly has been identified that is above the target threshold then excavation procedures (described in Section 7.1 above) will be used until the instrument response is below the targeting threshold.
13. Once the anomaly has been removed (if safe to do so) and the anomaly location has been found to be below the targeting threshold, the process will then be repeated until the entire grid has been cleared. Analog intrusive investigation data that is to be recorded by the Team Leader is described in Section 8.0 below (Documentation).

If the maximum excavation depth is reached (as described in the SSWP) before the anomaly is able to be exposed/identified, the USACE OESS will be consulted by the UXOSO and Unexploded Ordnance Quality Control Specialist (UXOQCS) to determine if further excavation is warranted. If for any reason a known anomaly is abandoned prior to resolution, the anomaly location will be surveyed using RTK-GPS. KEMRON will inform the USACE PM and USACE OESS of anomalies that are not fully investigated.

All data collected by the UXO Team Leader is to be provided to the Field Data Manager at the end of each day.

8 DOCUMENTATION

The following information is to be recorded for each grid that is to have analog intrusive investigation operations conducted over it:

- Date
- Contractor
- Team ID
- Team Leader
- MRS ID
- Unit ID
- Operation Type
- Grid Type
- Instrument Type

- Depth of Survey
- Backhoe Required (Yes or No)
- Backhoe Completed (Yes or No)
- Number of Backhoe excavations
- Grid ID
- Grid 100% Done: (Yes or No)
- Number of Investigations
- MD Weight (lbs)
- RRD Weight (lbs)
- # of MPPEH Items
- Type(s) of Items with Sensitive Fuzes
- Weight (lbs) of Items with Sensitive Fuzes
- Field Comments

The following information is to be recorded for each MEC/MPPEH item that is located:
- Date
- Contractor
- Team ID
- Team Leader
- MRS ID
- Unit ID
- Operation Type
- Grid Type
- Instrument Type
- Grid ID
- Item ID
- Is Demo Required? (Yes or No)
- Is the item located within a burial pit? (Yes or No)
- Item Type
- Initial disposition
- Item Easting
- Item Northing
- Item Description
- Quantity
- Depth
- Comments

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for analog intrusive operations can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting analog intrusive investigation operations in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site

Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones (EZ)s are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Record of Decision, Impact Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California (Track 3 ROD; Army, 2008).

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 3 – Intrusive Investigation Using Analog Methods

W912DY-10-D-0027 – Task Order No. CM01
Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Verify required equipment is available • Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors; • Geonics EM61MK2 metal detector; • Allegro data collector for EM61MK2; • Geonics batteries (2 each); • Field Logbook; • Digital tablet; • Rope (for lane delineation); • 100 ft tape measure (3 each); • Pin flags; and • Shovels or other similar devices for removing items that are underground.				*(I), (F)*
4	7.0	Has veg been removed prior to the analog intrusive investigation				*(I),(F)*
5	7.0	Verify GA-52Cx schonstedts and White DFX 300 instruments are available for use. If terrain allows verify that the EM61MK2 is available for use.				*(I),(F)*
6	7.0	Have all hand-held metal detectors been verified to be functioning properly at the FCA prior to use?				*(I),(F)*
7	7.1	100 ft lanes – 5 ft wide been installed?				*(I),(F)*
8	7.1	Did SUXOS, UXOQC and PM make decision as to whether the EM61 (or both) is to be used?				*(I),(F)*
9	7.1	Is the White used if the schonstedt cannot locate the anomaly that was found with the EM61?				*(I),(F)*
10	7.1	Is excavation being initiated adjacent to the anomaly location?				*(I),(F)*
11	7.1	If item is MEC are procedures described in UXO SOP 5 being used?				*(I),(F)*

Three Phase Quality Control Checklist

UXO SOP 3 – Intrusive Investigation Using Analog Methods

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

12	7.1	If anomaly is able to be removed, is the hole rechecked to ensure anomaly location is clear?				*(I),(F)*
13	7.1	If found, are the position of MEC items being recorded (tape measurements or GPS).				*(I),(F)*
14	7.1	Verify if backhoe used, it is not located within 1 ft of adjacent anomaly.				*(I),(F)*
15	7.1	Are proper backhoe investigation procedures being used?				*(I), (F)*
16	7.1	If maximum depth is reached (per the SSWP) – yet the anomaly still exists, has the OESS been consulted by the UXOSO to determine if further excavation is warranted?				*(I), (F)*
17	7.1	If an anomaly location is abandoned has the location been surveyed?				*(I), (F)*
18	7.1	If anomaly location is abandoned has USACE PM and OESS been informed?				*(I), (F)*
19	7.2	If an EM61MK2 is to be used, have all anomalies identified during the analog intrusive investigation been checked with the EM61? If anomaly still exists have intrusive operations continued until anomaly has been removed?				*(I), (F)*
20	7.2	Has EM61 been set up according to Geonics manual?				*(I), (F)*
21	7.2	Has EM61 function check been completed in accordance with procedures listed? Are readings within MPCs?				*(I), (F)*
22	7.2	Are EM61 function check (spike) readings recorded in the Team Leader's logbook?				*(I), (F)*
23	7.2	Is EM61 operator using procedures described in this SOP?				*(I), (F)*
24	7.2	If maximum depth is reached (per the SSWP) – yet the anomaly still exists, has the OESS been consulted by the UXOSO to determine if further excavation is warranted?				*(I), (F)*
25	7.2	If an anomaly location is abandoned has the location been surveyed?				*(I), (F)*
26	7.2	If anomaly location is abandoned has USACE PM and OESS been informed?				*(I), (F)*
27	8.0	Has all required data been collected by the Team Leader?				*(I), (F)*
28	7.2	Has data been provided to the Field Data Manager at the end of each day?				*(I), (F)*

Three Phase Quality Control Checklist

UXO SOP 3 – Intrusive Investigation Using Analog Methods

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 4

INTRUSIVE INVESTIGATION

OF DGM TARGETS

Technical Procedure: UXO SOP 4

STANDARD OPERATING PROCEDURE FOR INTRUSIVE INVESTIGATION OF DGM TARGETS

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BLM	Bureau of Land Management
CAP	Corrective Action Plan
DGM	Digital Geophysical Mapping
EZ	Exclusion Zone
FCA	Function Check Area
GPS	Global Positioning System
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Possessing an Explosive Hazard
mV	milliVolt
OESS	Ordnance and Explosives Safety Specialist
PM	Project Manager
QAPP	Quality Assurance Project Plan
RCA	root-cause analysis
ROD	Record of Decision
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TM	Technical Memorandum
USACE	United States Army Corps of Engineers

UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the intrusive investigation of Digital Geophysical Mapping (DGM) targets. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used by the intrusive investigation team when excavating DGM targets. This SOP does not detail the use of all equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors;
- Geonics EM61MK2 metal detector;
- Allegro data collector for EM61MK2;
- Geonics batteries (2 each);
- Field Logbook;
- Digital tablet;
- 100 ft tape measure (3 each);
- Pin flags; and
- Shovels or other similar devices for removing items that are underground.

6 PERSONNEL

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and UXO team is responsible for the intrusive investigation of DGM targets. The intrusive investigation team will include the following personnel:

- 1 UXO Technician III Team Leader
- 3 (minimum) UXO Technician II
- 3 (maximum) UXO Technician I

The two man rule is to always be followed.

7 PROCEDURES

An intrusive investigation may be conducted by utilizing analog detection instruments (“mag, flag, dig”), use of DGM data, or excavation and sifting. The procedures in this SOP relate only to the intrusive investigation of DGM targets.

The intrusive investigation team will use hand-held metal detection instruments including the Schonstedt GA-52Cx magnetometer and the Whites DFX 300 hand-held metal detector. The Schonstedt is the default instrument for the analog intrusive teams because the vast majority of anomalies on MMRP sites are ferrous in nature; and because the Schonstedt easily pinpoints the anomaly location. If terrain allows, upon completion of each target investigation, the intrusive team will verify that 100% of the targets investigate have no remaining anomaly in the excavation that is equal to or above the target milliVolt (mV) threshold as specified in the SSWP.

7.1 Intrusive Investigation

Prior to conducting intrusive investigation operations, all hand-held metal detectors are to be verified to be functioning properly at the Function Check Area (FCA) that is located adjacent to the KEMRON field office. Additional verification of hand-held metal detector functionality may also be conducted at FCAs that have been previously installed in the field. Procedures for conducting function checks for the EM61MK2 are described in Section 7.2 below.

The following basic techniques will be used during the intrusive investigation of DGM targets:

- All DGM anomalies will have been previously flagged by the Reacquisition Team. Until an anomaly is identified it will be assumed that the anomaly is MEC and the excavation will be initiated adjacent to the anomaly. The excavation will continue until the excavated area has reached a depth below the top of the anomaly as determined by frequent inspection with a hand-held metal detector, or until the maximum depth (as described in the Site Specific Work Plan [SSWP]) has been reached.

- Using progressively smaller and more delicate tools to carefully remove the soil, the excavation team will expand the sidewall to expose the metallic item in the wall of the excavation for inspection and identification without moving or disturbing the item.

- Once the item is exposed for inspection, the excavation team will determine if it is MEC. If the anomaly is found to be MEC the item will be managed in accordance with UXO SOP 5 (MEC and Material Potentially Possessing an Explosive Hazard [MPPEH] Management). If the anomaly is found to not be a MEC item, it will be removed and the anomaly location will be rechecked with the hand-held metal detector and Geonics EM61MK2 to ensure that a hazardous item does not still exist at that location. Once the anomaly location has been cleared the UXO Technician will then continue their investigation of the DGM anomalies and the process will be repeated until the grid has been cleared. All items located in the field will be managed in accordance with UXO SOP 5 (MEC and MPPEH Management).

- The positional location of all MEC items will be recorded using tape measurements from the south-west corner grid stake (local coordinates) or through the use of Real-Time Kinematic (RTK) - Global Positioning System (GPS). The depth of all MEC items will be measured using tape measurements from the ground surface to the center of mass of the item. MEC, MPPEH, Munitions Debris (MD) and non-munitions related items that are located will be managed in accordance with the procedures described in UXO SOP 5 (MEC and MPPEH Management).

A commercial backhoe or other mechanical equipment may be used to excavate anomalies that are believed to be at a greater depth than can be efficiently excavated by hand. If used, the backhoe will be used no closer than 1 foot from adjacent anomalies that have been located during the investigation. The Team Leader may assign additional workers to assist with the excavation. The excavation will be conducted similarly to the hand excavation methodologies described above. Backhoe excavation procedures are described below:

- Upon arrival at the site, the intrusive investigation team will reacquire the anomaly using a hand-held metal detector and/or the Geonics EM61MK2. The equipment operator will begin the excavation under the direction of the UXO Technician serving as a spotter. The equipment operator will not excavate directly on the anomaly location, but rather will excavate adjacent to the anomaly location.

- To prevent contacting the anomaly with the backhoe, the UXO Technician serving as a spotter will frequently monitor the excavation to ensure that the equipment operator does not dig directly over the anomaly. The objective of the direction by the UXO Technician is to remove the soil from a selected area adjacent to the anomaly, while ensuring that the backhoe bucket does not disturb the anomaly.

- The UXO Technician will direct the equipment operator to stop excavation when the soil has been removed to within 1 foot of the anomaly as estimated by the response from the hand-held metal detector or Geonics EM61MK2 instrument.

Once the excavation has reached within 1 foot of the anomaly location the backhoe will then be shut down, and the excavation will be completed using hand tools as previously described above. Once the anomaly has been exposed it will be inspected by a UXO-qualified technician. The positional location of all MEC items will be recorded using tape measurements from the south-west corner grid stake (local coordinates) or through the use of RTK-GPS. The anomaly location will then be checked with the EM61MK2 to ensure that a hazardous item does not still exist at that location. The depth of all MEC items will be measured using tape measurements from the ground surface to the center of mass of the item. MEC, MPPEH, MD, and other non-munitions related items that are located will be managed in accordance with the procedures described in UXO SOP 5 (MEC and MPPEH management).

If the maximum excavation depth (as described in the SSWP) is reached during excavation operations, the USACE Ordnance and Explosives Safety Specialist (OESS) will be consulted by the Unexploded Ordnance Safety Officer (UXOSO) to determine if further excavation is warranted. If for any reason an anomaly is abandoned prior to resolution, the anomaly location will be surveyed using GPS. KEMRON will inform the USACE Project Manager (PM) and USACE OESS of anomalies that are not fully investigated.

7.2 Intrusive Anomaly Verification (hole clearance using the EM61MK2 in Analog Mode)

After completion of subsurface removal activities, the resolution of every excavated DGM target anomaly will be verified by the intrusive team using a person portable EM61MK2 in analog mode using the methodologies described in this Section. If the EM61MK2 sensor response is demonstrated to be below the target threshold (as described in the SSWP) the anomaly resolution verification is considered complete, and the excavation can be backfilled. If the sensor response remains above the target selection threshold, excavation activities will continue until the anomaly is located and is able to be inspected, or the excavation will continue to the depth designated by the SSWP.

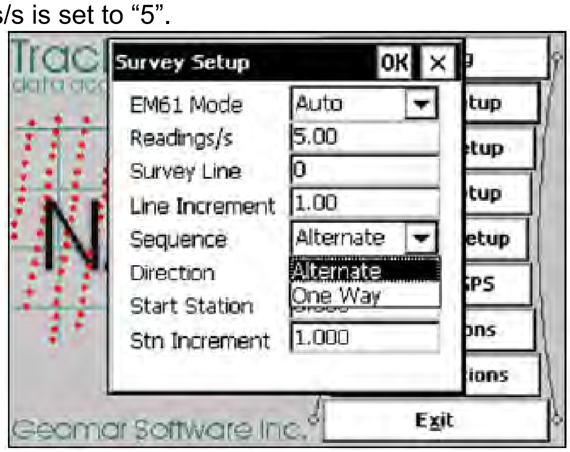
The Geonics EM61MK2 is to be set up according to the Geonics EM61MK2 Manual. Function checks of the EM61MK2 are to be conducted after the instrument has been warmed up for at least 15 minutes. This function check is to be conducted in the AM and mid-day for each EM61MK2 used for intrusive investigations at a location that is known to be free of anomalous responses. This function check will consist of a static spike check that will employ the use of a “jig” that will be placed over the EM61MK2. The EM61MK2 static spike reading must be within the Measurement Performance Criteria (MPCs) detailed in Worksheet #12 of the MEC Quality Assurance Project Plan (QAPP) or as detailed in the Site Specific Work Plan (SSWP). EM61MK2 static spike data will not be recorded in the EM61MK2 Allegro.

Static spike test mV readings (EM61MK2 channel to be described in the SSWP) will be recorded in the Team Leader's digital tablet and/or logbook.

The following steps are to be followed by the intrusive investigation team when using the Geonics EM61MK2 to verify that DGM anomalies have been cleared:

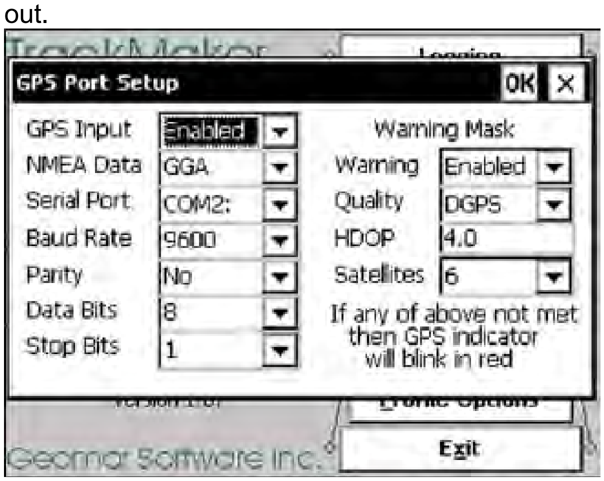
1. Turn on instrument by pushing in the fuse on the top of the console/electronics
2. Allow instrument to warm up for at least 15 minutes
3. Turn on Allegro CX and open NAV61MK2 program. The screen below will be displayed.

4. Click on "Survey Setup" and specify the below options. For analog operation, the Mode is set to "Auto" and Readings/s is set to "5".

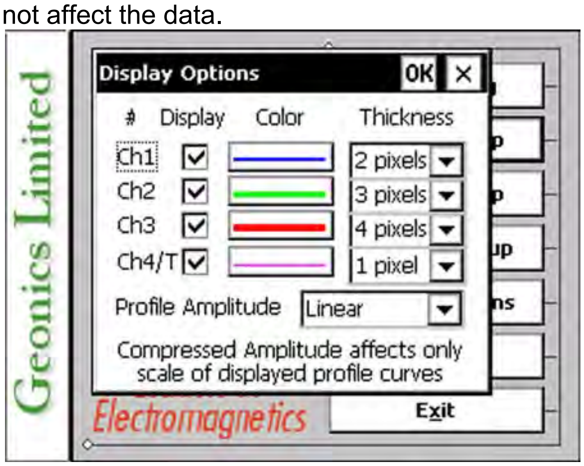


5. Click on "Logger Setup" and specify the options shown below. These setting will remain the same throughout the project.

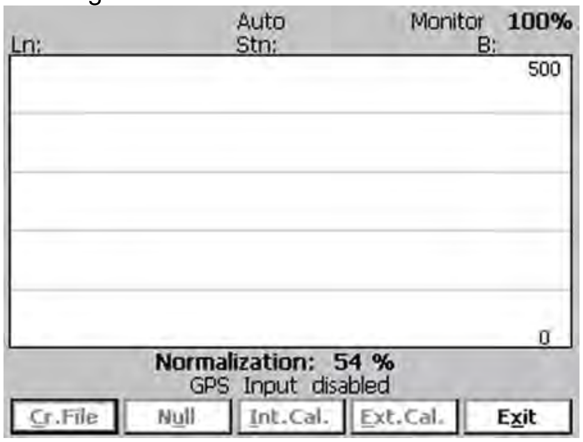
6. Click on "GPS Port Setup", and make sure the GPS Input is set to "<u>Disabled</u>", and all other options will then be grayed out.



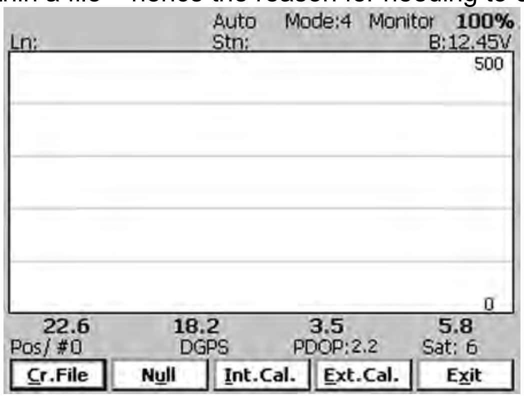
7. Click on "Display Options", and specify the following options. These options are operator preferences and do not affect the data.



8. Once all parameters are set, click on “Monitor/Log”. The screens shown below are displayed while the instrument is normalizing.



9. Once the Instrument has finished normalizing, find a quiet spot (area with low mV reading that is similar to that of the background) and Null the instrument. Then click on Cr. File, create a file name, then save the file. Although this recorded data will not be used, the Geonics EM61MK2 needs to store data within a file – hence the reason for needing to create a file.



10. The UXO technician then uses the Geonics EM61MK2 in analog mode by monitoring the values in the targeted channel on the Monitor/Log screen as the anomaly is investigated.
11. DGM anomaly locations will have been previously marked with pin-flags by the reacquisition team. When a signal peak above the targeting threshold is identified, the EM61MK2 is to be turned 90 degrees and look for the peak again to refine the location of the anomaly. Each excavation will be checked in at least two perpendicular directions, but more orientations may be used at the operator’s discretion. EM61MK2 target thresholds (and EM61 channel to use) will be described in the SSWPs
12. Once an anomaly has been selected for excavation the EM61MK2 operator will record the initial mV reading for that anomaly. Excavation procedures (described in Section 7.1 above) will be used until the instrument response is below the targeting threshold.
13. Once the anomaly has been removed (if safe to do so) and the anomaly location has been found to be below the targeting threshold, the UXO Team Leader will record the final mV reading in their digital tablet (channel to be recorded to be detailed in the SSWP) and process will then be repeated until all DGM anomalies have been cleared. Intrusive investigation data that is to be

recorded by the Team Leader for each DGM anomaly is described in Section 8.0 below (Documentation).

If the maximum excavation depth is reached (as described in the SSWP) before the anomaly is able to be exposed/identified, the USACE OESS will be consulted by the UXOSO and Unexploded Ordnance Quality Control Specialist (UXOQCS) to determine if further excavation is warranted. If for any reason a known anomaly is abandoned prior to resolution, the anomaly location will be surveyed using RTK-GPS. KEMRON will inform the USACE PM and USACE OESS of anomalies that are not fully investigated.

All data collected by the UXO Team Leader is to be provided to the Field Data Manager at the end of each day.

7.3 False Positives and False Negatives

7.3.1 False Positives

A false positive is a reacquired DGM anomaly that results in no identifiable anomaly source being able to be located during target reacquisition or during the intrusive investigation. During target reacquisition, if an anomaly is found to have no response above the target selection threshold, the reacquisition team will record that anomaly location as a "no-find". All targets classified as no-finds by the reacquisition team will not have a pin-flag placed at their location, and will not be investigated by the intrusive investigation team. False positives will be minimized to the extent possible through use of the best available geophysical practices executed by qualified staff. All false positives (no-finds) will be documented in the project database. A false positive rate higher than 15% (calculated as a running average for the unit) will result in a root-cause analysis (RCA) and reevaluation of the data, detection methods, and overall project QC. The RCA will document the causes of the excessive false positive rate, and a Corrective Action Request (CAR) and Corrective Action Plan (CAP) (if appropriate) will be submitted to USACE within 10 days.

7.3.2 False Negatives

A false negative is an item of interest that is not detected or identified as a DGM target anomaly. False negatives are missed items that fall within the detection limits of the deployed geophysical sensor systems and, therefore, should be detected, identified, and targeted for intrusive investigation. False negatives can be caused by equipment operator error, instrument malfunction, navigation issues, or procedural errors during the data processing and analysis phase of the project. The potential for false negatives will be assessed via the use of blind seeds placed by the QC Geophysicist within the survey area. It is anticipated that the USACE QA Geophysicist will also place blind seed items within the project area that will also be used to assess the potential for false negatives. Additionally, false negatives are also assessed through a comparison of the independently collected QA geophysical data with project DGM data. Anomalies that are detected in the QA DGM data that do not appear in the project DGM data would be considered false negatives in the project DGM data.

False negatives may be identified during other site activities such as MEC removals and other excavation activities. In any of these cases, the following procedures will be performed:

- A False Negative Report that includes the results of the RCA will be completed by the Field Geophysicist and submitted to the KEMRON PM, the QC Geophysicist and the UXOQCS.
- The QC Geophysicist and UXOQCS will investigate and prepare a memo report for delivery to USACE describing the activities associated with the discovery. This report will also provide recommendations for further or corrective action (if necessary). Technical information/data related this memo will be provided by the Project Geophysicist and UXOQCS upon request.

8 DOCUMENTATION

The following information is to be recorded for each DGM target that is investigated:

- Date

- Contractor
- Team ID
- Team Leader
- MRS ID
- Unit ID
- Operation Type
- Grid Type
- Instrument Type
- Grid ID
- Unique Anomaly ID
- Local Anomaly ID
- Target Easting
- Target Northing
- MD (lbs)
- MPPEH Item(s) Found
- MD Item(s) Found
- RRD (lbs)
- RRD Item(s) Found
- Depth to center of item(s)
- # of MPPEH Items
- OE Type
- Type(s) of Items with Sensitive Fuzes
- Weight (lbs) of Items with Sensitive Fuzes
- EM-61 Operator Comment
- Final mV reading
- Demo Easting
- Demo Northing
- Target is Complete and is Ready for Upload? (Y or N)

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the intrusive investigation of DGM targets can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting intrusive investigation operations in areas that potentially contain MEC items may involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones (EZ)s are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

EM 200-1-15 – Technical Guidance for Military Munitions Response Actions

Record of Decision, Impact Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California (Track 3 ROD; Army, 2008).

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 4 – Intrusive Investigation of DGM Targets

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Is all required equipment available? • Schonstedt GA-52Cx and White DFX 300 hand-held metal detectors; • Geonics EM61MK2 metal detector; • Allegro data collector for EM61MK2; • Geonics batteries (2 each); • Field Logbook; • Digital tablet; • 100 ft tape measure (3 each); • Shovels or other similar devices for removing items that are underground.				*(I), (F)*
3	7.0	Has a Technical Memorandum been generated (if warranted)?				*(I),(F)*
4	7.0	Has veg been removed prior to the analog intrusive investigation				*(I),(F)*
5	7.0	Verify GA-52Cx schonstedts and White DFX 300 instruments are being used.				*(I),(F)*
6	7.0	Have all hand-held metal detectors been verified to be functioning properly at the FCA prior to use?				*(I),(F)*
7	7.1	Have all DGM anomalies been previously flagged by the Reac team?				*(I),(F)*
8	7.1	Is excavation being initiated adjacent to the anomaly location?				*(I),(F)*
9	7.1	If item is MEC are procedures described in UXO SOP 5 being used?				*(I),(F)*
10	7.1	If anomaly is able to be removed, is the hole rechecked to ensure anomaly location is clear?				*(I),(F)*
11	7.1	If found, are the position of MEC items being recorded (tape measurements or GPS).				*(I),(F)*

12	7.1	Verify if backhoe used, it is not located within 1 ft of adjacent anomaly.				*(I),(F)*
13	7.1	Are proper backhoe investigation procedures being used?				*(I),(F)*
14	7.1	If maximum depth is reached (per the SSWP) – yet the anomaly still exists, has the OESS been consulted by the UXOSO to determine if further excavation is warranted?				*(I),(F)*
15	7.1	If an anomaly location is abandoned has the location been surveyed?				*(I), (F)*
16	7.1	If anomaly location is abandoned has USACE PM and OESS been informed?				*(I), (F)*
17	7.2	Have all DGM anomalies been checked with the EM61? If anomaly still exists have intrusive operations continued until anomaly has been removed?				*(I), (F)*
18	7.2	Has EM61 been set up according to Geonics manual?				*(I), (F)*
19	7.2	Has EM61 function check been completed in accordance with procedures listed? Are readings within MPCs?				*(I), (F)*
20	7.2	Are EM61 function check (spike) readings recorded in the Team Leader's logbook?				*(I), (F)*
21	7.2	Is EM61 operator using procedures described in this SOP? Has the initial mV reading been recorded				*(I), (F)*
22	7.2	If maximum depth is reached (per the SSWP) – yet the anomaly still exists, has the OESS been consulted by the UXOSO to determine if further excavation is warranted?				*(I), (F)*
23	7.2	If an anomaly location is abandoned has the location been surveyed?				*(I), (F)*
24	7.2	If anomaly location is abandoned has USACE PM and OESS been informed?				*(I), (F)*
25	8.0	Has all required data been collected by the Team Leader?				*(I), (F)*
26	7.2	Has data been provided to the Field Data Manager at the end of each day?				*(I), (F)*
27	7.2.1.1	Is the overall false positive rate greater than 15%? If so has an RCA,CAR, CAP been generated and submitted to USACE within 10 days?				*(I), (F)*

28	7.2.1.2	Have false negatives been found to exist? If so has a False Negative Report and RCA been generated by the field geophysicist and submitted to the KEMRON PM, the QC Geophysicist and the UXOQCS? Have the QC Geophysicist and UXOQC then prepared a memo report for delivery to USACE?				*(I), (F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

UXO SOP 5

MEC AND MPPEH MANAGEMENT

Technical Procedure: UXO SOP 5

STANDARD OPERATING PROCEDURE FOR MEC AND MPPEH MANAGEMENT

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BRAC	Base Realignment and Closure
COR	Contracting Officer's Representative
EOD	Explosive Ordnance Disposal
ESQD	Explosive Safety Quantity Distance
EZ	Exclusion Zone
MD	Munitions Debris
MDAS	Material Documented as Safe
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
mm	millimeter
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Possessing an Explosive Hazard
MR	Munitions Response
MRA	Munitions Response Area
OESS	Ordnance and Explosives Safety Specialist
PM	Project Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TM	Technical Memorandum

USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to Munitions and Explosives of Concern (MEC) and Material Potentially Possessing an Explosive Hazard (MPPEH) management. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used during MEC and MPPEH management operations. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all MEC related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Lockable containers;
- Locks;
- Field Logbook and/or Digital Tablet;
- Shovels or other similar devices for excavation (should it be required);
- First aid kit;
- 10 lb BC fire extinguishers (2 each); and
- Appropriate PPE

6 PERSONNEL

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and UXO team are responsible for MEC and MPPEH management operations, however, MEC and MPPEH management is the responsibility of all UXO site personnel. Teams responsible for MEC and MPPEH management will include the following personnel (however, the size of the MPPEH management team may be reduced depending on the size of the operation).

- 1 UXO Technician III Team Leader
- 3 (minimum) UXO Technician II
- 3 (maximum) UXO Technician I

The two man rule is to always be followed.

7 PROCEDURES

It is essential that the discovery of all MEC items be immediately reported to the appropriate on-site personnel, accurately documented, and communicated to the United States Army Corps of Engineers

(USACE). Daily production information will be provided to the USACE and the Base Realignment and Closure (BRAC) Office to include the model, location, depth, and status of all MEC items located.

7.1 Regulatory Guidance

The following references provide the regulatory framework for processing and disposal of MPPEH, including Munitions Debris (MD) recovered from active or former military ranges:

- DoD 4160.28-M, Volume 1, *Defense Demilitarization: Program Administration*, (DoD, June 2011)
- DoD 4160.21-M, *Defense Materiel Disposition Manual*, (DoD, October 2015a)
- DoD Instruction 4140.62, *Material Potentially Presenting Explosive Hazard*, (DoD, August 2015)
- DoD 6055.9-M, *Ammunition and Explosives Safety Standards*, (DoD, August 2010, Incorporating change 1, April 2012)
- EM 200-1-15, *Technical Guidance for Military Munitions Response Actions*, (USACE, 2013a)
- EM 385-1-97, *Explosives – Safety and Health Requirements Manual*, (USACE, 2008, change 1, April 2013 and six errata sheets, June 2009 through May 2013)

7.2 MEC Identification

UXO Technicians will make every effort to identify MEC through visual examination of the item for markings and other identifying features such as shape, size, and external fittings. Items will not be moved during the inspection/identification process until the fuze condition has been ascertained. If the condition is questionable, the UXO Technicians will consider the fuze to be armed. The fuze is considered the most hazardous component of MEC item, regardless of type or condition. The SUXOS and the Unexploded Ordnance Safety Officer (UXOSO) (with input from the USACE Ordnance and Explosives Safety Specialist [OESS] if available) will agree on the positive identification of the item and the disposition of the item prior to implementing demolition operations. MEC identification will be completed using the following general ordnance safety guidelines:

- In general, a projectile containing a base-detonating fuze is to be considered armed if the projectile has been fired.
- Arming wires and pop-out pins on unarmed fuzes will be secured by taping in place prior to movement.
- UXO technicians are not to rely on the color-coding of MEC for positive identification of contents. Munitions having incomplete or improper color-coding have been encountered. (This is especially true with regard to the 40-millimeter [mm] family of ordnance.)
- Avoid the area forward of the nose of a munition until it can be ascertained whether the item contains a shaped charge or not. The explosive jet from a shaped charge can be fatal at great distances forward of the longitudinal axis of the item. Until the fuzing system is positively identified, UXO technicians are to assume any shaped charge munitions to contain a piezoelectric fuzing system. A piezoelectric fuze is extremely sensitive, can function at the slightest physical change, and may remain hazardous for an indefinite period of time.
- Examine a projectile for the presence or absence of an unfired tracer. Also examine the item for the presence or absence of a rotating band and its condition.
- Assume a practice MEC contains a live charge until it can be determined otherwise. Expended pyrotechnic/practice devices may contain red/white phosphorus residue. Due to incomplete combustion, phosphorus may be present and re-ignite spontaneously if subjected to friction or the crust is broken and the contents exposed to air.

- Do not approach smoking white phosphorus MEC. Burning white phosphorus may detonate the burster or dispersal explosive charge at any time.
- Use procedures in Chapter 13, Technical Memorandum (TM) 9-1300-214, Military Explosives (DA, 1990), fragmentation data review forms or the munition-specific publication to identify the explosives.
- MEC items deemed acceptable to move by the SUXOS and UXOSO, and after consultation with the USACE OESS (if available), will be transported to a MEC Consolidation Point and secured. Depending on location, accessibility by the public and existing security, a security guard may be required on site to guard MEC items during hours that UXO personnel are not present.
- Demolition of MEC and MDEH items will be managed in accordance with procedures described in UXO SOP 6 (Demolition of MEC and MDEH) of this MEC Quality Assurance Project Plan (QAPP).

In the event that an item with an unknown filler is encountered, procedures described in Section 7.6 will be followed. In the unlikely event of encountering Chemical Agent Identification Set kits, they will be handled in accordance with the procedures included in *Policy Guidance – Chemical Agent Identification Sets Containing Dilute Agent (Except Dilute Nerve) and Industrial Chemicals* (Army, 2008).

7.3 MEC Transportation

This section presents the vehicle requirements and on-site transportation procedures for MEC at the Munitions Response (MR) project area.

It is not anticipated that there will be any transportation off-site of any MEC found on the former Fort Ord property. All vehicles transporting explosives outside of the Munitions Response Area (MRA) will be properly inspected, equipped, and placarded prior to the loading of MEC and/or explosives onto the vehicle, and DD Form 626 (Motor Vehicle Inspection) will be completed (MEC QAPP, Attachment C, Form M-5). If MEC is transported, all transportation will be conducted in accordance with EM 385-1-97 (USACE, 2008). Transportation of MEC items is only anticipated to occur when MEC items are being relocated to the MEC consolidation point.

Recovered MEC will not be moved unless acceptable to do so and only with the specific concurrence of the SUXOS and UXOSO (and USACE OESS if available). The USACE OESS may require additional measures and inspection before movement and preparation for transportation.

7.3.1 Vehicle Requirements

Vehicles transporting MEC on the project site will comply with the following requirements:

- Vehicles transporting MEC or explosives outside of the MRA will be placarded when carrying any Class 1 explosives.
- All vehicles transporting explosives will be equipped with reliable communications, a first aid kit, and two 10-pound BC fire extinguishers. One extinguisher will be located in the driver's compartment and the other located in the cargo compartment.
- Vehicles transporting explosives will be inspected daily when in use, and the inspections will be documented on a Motor Vehicle Inspection Form (MEC QAPP, Attachment C, Form M-5).
- The vehicle used to transport the explosives will have a non-sparking bed liner, and all explosive loads will be covered and secure prior to departure.

7.3.2 MEC Transportation Procedures

Persons transporting MEC on the project site will comply with the following requirements:

- A UXO Tech II or above will operate the vehicle with one other passenger which can be a UXO tech I or above. No more than two persons may be in the vehicle.
- The driver of any vehicle carrying explosives or MEC will ensure that the load is properly braced and secured for transport (i.e., tie-downs).
- The driver and any passengers transporting explosives or MEC will not carry any smoking products or flame-producing devices. Smoking will be strictly forbidden among all personnel involved in the handling or transportation of explosives and MEC.
- If loose pyrotechnic, tracer, flare, or similar mixtures are to be transported, they will be placed in Number 10 mineral oil or equivalent to minimize fire and explosion hazards.
- If an unfired rocket motor must be transported, it shall be positioned in such a manner as to offer the maximum protection to personnel in the event of an accident.
- If base-ejection type projectiles must be transported to a demolition area or collection point, the base will be oriented to the rear of the vehicle and the projectile secured, in the event the ejection charge detonates in route.
- All MEC items will be positively identified, as to the type of munition, filler, and condition of the fuzing prior to any movement (specific models of items that are subjected to detonation will be confirmed after detonation procedures).
- If MEC with exposed hazardous filler has to be moved to a demolition area, the item will be placed in an appropriate container with packing materials to prevent migration of the hazardous filler. Padding will also be added to protect the exposed filler from heat, shock, and friction.
- Offsite transportation of small arms ammunition will incorporate applicable manifestation and placarding requirements.

7.4 MPPEH Management

MPPEH is defined as material that, prior to determination of its explosives safety status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or potentially contains a high enough concentration of explosives such that the material presents an explosive hazard.

This section is intended to guide UXO Technicians in the safe and efficient handling, inspection, and proper disposal of MPPEH through the description of procedures and guidance for management, inspection, demilitarization, and disposal or recycling of MPPEH items. Because the metal scrap recovered will ultimately be disposed of or recycled off-site, it is imperative that explosive hazard items do not become intermingled with other nonhazardous metal scrap. The establishment of a chain-of-custody and audit trail is mandatory. KEMRON will use an approved, state and/or Resource Conservation and Recovery Act (RCRA) authorized facility for off-site disposal and/or recycling of small arms.

All items recovered in the field are considered MPPEH prior to inspection. Upon initial inspection by the UXO Team Leader (UXO Tech III) a determination is made and the item is segregated into one of the following three categories:

- Non-munitions related material
- Small arms ammunition
- MPPEH

7.4.1 Non-Munitions Related Material

Non-munitions related material includes Other Debris (OD). When discovered, OD are initially inspected in the field by the UXO Team Leader to verify that the item does not contain energetic material or potentially contains explosive items located within. Once deemed free of explosive hazards these items are transported to HA-37 where the items then undergo a second inspection by a UXOIII and UXOIII/II. Once these items have been inspected a second time and have been found to be MDAS the items are then placed in a metal roll-off bin where these items await being shipped offsite for disposal and/or recycling.

7.4.2 Small Arms Ammunition

Small arms will be stored at the Explosive Storage Location and subsequently transported to an approved, state and/or Resource Conservation and Recovery Act (RCRA) authorized off-site facility for treatment and/or recycling.

7.4.3 MPPEH Processing

The UXOSO and UXOQCS will ensure procedures for processing MPPEH are adhered to in a safe manner consistent with applicable regulations. All MPPEH items recovered in the field are initially inspected by the UXO Team to evaluate if the item is a potential MEC or MDEH item. MEC and MDEH that require detonation procedures will be managed in accordance with UXO SOP 6 (Demolition of MEC and MDEH). All other MPPEH recovered in the field are inspected in the field by the UXO team and are then segregated in the field into MD and RRD. The total weight of MD and RRD recovered are then recorded by the team leader on a pre-grid basis with this data being provided to the Field Data Manager on a daily basis. The MD is then transported to the previously established MPPEH processing area where the MD is placed in lockable storage bins or other lockable containers awaiting further inspection. RRD is then transported to HA-37 where the items then undergo a second inspection by a UXOIII and UXOIII/II. Once these items have been inspected a second time and have been found to be MDAS the items are then placed in a metal roll-off bin where these items await being shipped offsite for disposal and/or recycling.

MD that is contained in the lockable storage bins at the MPPEH processing area will then be inspected a second time by a UXO Tech III and a UXO Tech III/II with oversight being conducted by the SUXOS. This method includes two distinct inspections, which are performed by persons of increasing levels of responsibility. The UXO Team Leader responsible for the field operation performs the initial inspection, with the final inspection being overseen by the SUXOS at the MPPEH processing area, who is vested with overall responsibility. During this second inspection, MPPEH will then be reclassified as either Material Documented as an Explosive Hazard (MDEH) or Material Documented as Safe (MDAS). MDEH items will be managed in accordance with UXO SOP 6 (Demolition of MEC and MDEH).

MPPEH items that do not allow for the visual inspection of all cavities and surfaces to be visually inspected, and where verification that an item does not contain an explosive hazard cannot be made will be reclassified as MDEH and the item will be vented. This will be accomplished using a jet perforator in an area sufficient to accommodate the Explosive Safety Quantity Distance (ESQD) arc for the item if it were high-explosive filled. Procedures for venting are described in UXO SOP 6 (Demolition of MEC and MDEH). After detonation/venting MDEH items will then be inspected again to confirm that all cavities are visually free of explosive residue and the final determination can then be made as to whether the MDEH item was MEC or MD. This information is then provided to the Field Data Manager at the end of the day. Debris from the detonation will be collected, classified as MPPEH, and is to undergo the entire MPPEH processing and inspection process again. If all cavities are still not able to be visually inspected the item will be reclassified again as MDEH and the item will be vented again until all cavities can be inspected and the item can be classified as MDAS.

MPPEH items that are inspected a second time and are classified as MDAS will be processed accordingly as MD or RRD. The UXOQCS will conduct random sampling of items classified as MDAS to ensure no items with explosive hazards are identified as MD or RRD. The SUXOS will certify that 100% of the MDAS items are free of explosive hazards prior to placing the items in secure lockable MDAS storage containers awaiting shipping to a USACE approved facility for smelting and recycling.

7.4.4 Certification of MDAS

All MPPEH will be inspected using a systematic approach that is designed to ensure that 100% of all items classified as MDAS have been inspected by the UXO technician in the field, with 100% of all MDAS items being re-inspected at the MPPEH processing area as part of the verification and certification process. All MDAS that has been re-inspected and has been confirmed to be MDAS will be placed in containers with serialized seals. A DD Form 1348-1A (MEC QAPP, Attachment C, Form M-12) will be affixed to the side of each container. The form will include the serial of the seal and the signatures of the SUXOS as the "certifier" and a qualified government official as the "verifier." The form will also contain the following statement:

> "This certifies that the material listed has been 100% properly inspected and to the best of our knowledge and belief, are free of explosives hazards, engine fluids, illuminating dials, and other visible liquid hazardous, toxic, and radioactive waste materials."

7.4.5 Disposal of MDAS

Sealed containers of MDAS certified items will be released to a suitable facility for smelting and recycling. The facility will then close the chain-of-custody loop by returning a signed copy of the chain-of-custody stating that the MDAS material has been destroyed by smelting, thus ensuring that the proper chain of custody has been maintained

7.5 Demolition of MEC and MDEH

Procedures for the demolition of MEC and MDEH are located in UXO SOP 6 (Demolition of MEC and MDEH).

7.6 MPPEH Items with Unknown Fillers

Based on historical research and previous investigations, chemical warfare materiel (CWM) is not likely to be encountered on the former Fort Ord. However, in the event that an item with an unknown filler is encountered, the following standard procedures will be followed:

- The discoverer will evacuate upwind of the item and immediately notify the UXOSO and SUXOS.
- The initial exclusion zone (EZ) for an item with unknown filler is 450 meters upwind if the unknown filled item is suspected to be leaking.
- The SUXOS will note the location of the unknown filled item to help with its identification and potential relocation.
- The SUXOS will designate a minimum of two individuals to position themselves upwind as far as possible to prevent unauthorized personnel from accidental exposure.
- The SUXOS will immediately notify the on-site USACE OESS. The USACE OESS will notify the USACE Project Manager (PM), the BRAC Office, and the Contracting Officer's Representative (COR). If the USACE OESS is not present, the SUXOS will make the notifications. The Army will contact Vandenberg Air Force Base Explosive Ordnance Disposal (EOD) or other local EOD unit for response.
- The SUXOS will account for all field personnel and notify the KEMRON PM.

- The SUXOS will ensure that the area is secured until properly relieved by active duty EOD personnel, the Chemical, Biological, Radiological, Nuclear and Explosive Command, or local authority. The SUXOS will direct KEMRON personnel to support such personnel as appropriate.

- After securing the site, the SUXOS will submit a report to the BRAC representative and USACE OESS that contains the following information:
    - Date and time of event.
    - Location.
    - Preliminary identification of suspect item including quantity and type of munition(s) or container(s).
    - Description of events.
    - Description of any property damage, personnel casualties and/or injuries.
    - Description of whether medical services or facilities were required.
    - List of immediate notification and support requirements identified during initial emergency response assessment.
    - Any other pertinent information.
- Before work resumes, the site plans will be reviewed for adequacy in consideration of this newly discovered hazard.

7.6.1 Discovery of Chemical Warfare Material (CWM)

Details regarding procedures to be followed in the event of the discovery of an unknown filled item can be found in *Recovered Chemical Warfare Materiel (RCWM) Response Process*, EP 75-1-3 (USACE, 2004). In the unlikely event of encountering Chemical Agent Identification Set kits, they will be handled in accordance with the procedures included in *Policy Guidance – Chemical Agent Identification Sets Containing Dilute Agent (Except Dilute Nerve) and Industrial Chemicals* (Army, 2008).

7.7 Addition of MEC Model Information to MMRP Database

Occasionally, a MEC item with a model type that is not included in the MEC model table in the MMRP database may be encountered and recovered in the field. The MEC item will be researched by senior UXO staff and identified using standard UXO references. The USACE OESS will complete a final review and approval of the identification. Once the item is identified, the new model type, associated fields, and a copy of the reference document will be provided to the KEMRON Overall Project Data Manager and entered into the model table in the Fort Ord MMRP database.

8 DOCUMENTATION

The following information is to be recorded during MEC and MPPEH management operations:

- DD Form 626 (Motor Vehicle Inspection Form)
- DD Form 1348-1A (Issue Release/Receipt Document)
- Items that were originally classified as MPPEH that are found to be explosive after detonation are then reclassified as MEC in the KEMRON DB by the Field Data Manager. Items that were originally classified as MPPEH that are found to be inert after detonation are then reclassified as MD in the KEMRON DB by the Field Data Manager.
- Information on new model types.

9 QUALITY CONTROL

Quality Control (QC) procedures for MEC and MPPEH management are intrinsic to the operation. Redundant checks and multiple inspections are completed during the MEC and MPPEH management operations. Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for MEC and MPPEH management can be found in Worksheet #12 of the

MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting MEC and MPPEH management operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones EZs are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

Army, 2008, *Policy Guidance – Chemical Agent Identification Sets Containing Dilute Agent (Except Dilute Nerve) and Industrial Chemicals*, December.

DA, 1990, TM 9-1300-214, *Military Explosives,* (September 1984, Incorporating changes 1-4, September 1990).

DoD, 2011, 4160.28-M, Volume 1, *Defense Demilitarization: Program Administration*, June.

DoD, 2012, 6055.9-M, *Ammunition and Explosives Safety Standards*, (August 2010, Incorporating change 1, April 2012).

DoD, 2015, Instruction 4140.62, *Material Potentially Presenting Explosive Hazard*, August.

DoD, 2015a, 4160.21-M, *Defense Materiel Disposition Manual*, October.

USACE, 2004, EP 75-1-3, *Recovered Chemical Warfare Materiel (RCWM) Response Process,* November.

USACE, 2013, EM 385-1-97, *Explosives – Safety and Health Requirements Manual*, (USACE, 2008, change 1, April 2013 and six errata sheets, June 2009 through May 2013).

USACE, 2013a, EM 200-1-15, *Technical Guidance for Military Munitions Response Actions*, December.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 5 – MEC and MPPEH Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Is required equipment available? • Lockable containers; • Locks; • Field Logbook and/or Digital Tablet; • Shovels or other similar devices for excavation (should it be required); • First aid kit; • 10 lb BC fire extinguishers (2 each); and • Appropriate PPE				*(I), (F)*
3	7.2	Verify potential MEC items are not moved during inspection.				*(I),(F)*
4	7.2	Have SUXOS and UXOSO (and OESS if available) agreed on positive identification of item, and disposition prior to implementing demo operations?				*(I),(F)*
5	7.2	If arming wires or pop-out pins exist, have they been secured with taping prior to movement?				*(I),(F)*
6	7.2	Has item been identified for a tracer. Have rotating bands been inspected?				*(I),(F)*
7	7.2	Have SUXOS and UXOSO determined if the item is safe to move (with OESS input if available).				*(I),(F)*
8	7.2	If safe to move, has item been relocated to MEC consolidation point?				*(I),(F)*
9	7.2	If required is a guard stationed over the item?				*(I),(F)*
10	7.2	Are demolition procedures managed in accordance with UXO SOP 6?				*(I),(F)*

11	7.3	If MEC is transported outside the MRA, is vehicle inspected, equipped and placarded prior to loading MEC and/or explosives onto the vehicle? Has DD Form 626 been completed?				*(I),(F)*
12	7.3	Is transportation of MEC and/or explosives being conducted in accordance with EM 385-1-97?				*(I),(F)*
13	7.3	Have SUXOS and UXOSO (and OESS if available) agreed that the MEC item is safe to move?				*(I),(F)*
14	7.3.1	Is vehicle transporting explosives outside the MRA placarded when carrying any Class 1 explosives?				*(I),(F)*
15	7.3.1	Does vehicle contain two 10-pound BC fire extinguishers?				*(I), (F)*
16	7.3.1	Has vehicle used to transport MEC/Explosives been inspected and has Form M-5 been filled out?				*(I), (F)*
17	7.3.1	Does vehicle used to transport MEC/Explosives have a non-sparking bed liner? Are all explosive loads covered and secure prior to departure?				*(I), (F)*
18	7.3.2	Verify no more than 2 persons are in the vehicle when transporting MEC or explosives.				*(I), (F)*
19	7.3.2	Verify items are properly secured / braced.				*(I), (F)*
20	7.3.2	Verify personnel do not have any smoking products or flame-producing devices.				*(I), (F)*
21	7.3.2	Verify that if loose pyrotechnic, tracer, flare or similar mixtures are transported that they are placed in #10 mineral oil or equivalent.				*(I), (F)*
22	7.3.2	Verify rocket motors are placed in such a manner as to offer maximum protection to personnel.				*(I), (F)*
23	7.3.2	Base-ejection type projectiles are to be oriented with their base towards the rear of the vehicle.				*(I), (F)*
24	7.3.2	Verify all MEC items are positively identified as to type of munition, filler and condition of fuzing prior to any movement.				*(I), (F)*
25	7.3.2	If hazardous filler is exposed, verify item is placed in appropriate container (with padding) to prevent migration of filler and protect filler from heat, shock, friction.				*(I), (F)*

26	7.3.2	Verify that offsite transportation of small arms will incorporate applicable manifestation and placarding requirements.				*(I), (F)*
27	7.4	Verify items are segregated into one of these 3 categories: • Non-munitions related material • Small arms ammunition • MPPEH				*(I), (F)*
28	7.4.1	Verify that OD is initially inspected in the field by the team leader				*(I), (F)*
29	7.4.1	Verify OD is transported to HA37 and is then inspected a second time by a UXOIII and UXO III/II.				*(I), (F)*
30	7.4.2	Verify that small arms are stored at the Explosive Storage Location				*(I), (F)*
31	7.4.3	Verify that all MPPEH items recovered in the field are initially inspected by the UXO team to evaluate if item is MEC or MDEH.				*(I), (F)*
32	7.4.3	Verify all MPPEH recovered in the field (excluding MEC and MDEH) are inspected and segregated into MD and RRD.				*(I), (F)*
33	7.4.3	Verify total weight of MD and RRD per grid are recorded by the team leader and reported to the field data manager daily.				*(I), (F)*
34	7.4.3	Verify MD is transported to the MPPEH processing area where MD is stored in lockable containers.				*(I), (F)*
35	7.4.3	Verify RRD is transported to HA-37 – is inspected a 2nd time, and are placed in the roll-off bin.				*(I), (F)*
36	7.4.3	Verify MD in the lockable bins at the MPPEH processing center are inspected a 2nd time with oversight by the SUXOS.				*(I), (F)*
37	7.4.3	Verify that MD inspected at MPPEH processing area is reclassified as either MDEH or MDAS.				*(I), (F)*
38	7.4.3	Verify that MPPEH that cannot be adequately inspected are reclassified as MDEH and item is vented using jet perforators in sufficient area to accommodate the ESQD arc.				*(I), (F)*

39	7.4.3	Verify that after venting MDEH items that they are inspected again and determination was made if item was MEC or MD and this information is then provided to the Field Data Manager on a daily basis.				*(I), (F)*
40	7.4.3	Verify that all debris from detonations are classified as MPPEH and are then inspected again, and that if all cavities cannot be inspected that the item is then reclassified as MDEH and is to undergo venting again until all cavities can be inspected and the item can be classified as MDAS.				*(I), (F)*
41	7.4.3	Verify that UXOQCS conducts random sampling of items classified as MDAS to ensure no items with explosive hazards are identified as MD or RRD.				*(I), (F)*
42	7.4.3	Verify that SUXOS has certified that 100% of MDAS items are free of explosive hazards prior to placing items in secure lockable MDAS storage containers.				*(I), (F)*
43	7.4.4	Verify that all MDAS that is being shipped has a DD Form 1348-1A affixed to the side of each container that includes the serial of the seal and signature of the SUXOS.				*(I), (F)*
44	7.4.4	Verify DD Form 1348-1A contains the following statement: "This certifies that the material listed has been 100% properly inspected and to the best of our knowledge and belief, are free of explosives hazards, engine fluids, illuminating dials, and other visible liquid hazardous, toxic, and radioactive waste materials."				*(I), (F)*
45	7.4.5	Verify facility has closed the chain-of-custody loop by returning a signed copy of chain-of-custody stating that MDAS has been destroyed.				*(I), (F)*
46	7.6	If an MPPEH item is found that contains unknown fillers – verify that items listed in Section 7.6 of this SOP (UXO SOP 5) have been followed.				*(I), (F)*
47	7.7	Verify that new model types are researched with data being provided to Overall Project Data Manager for inclusion in the MMRP DB.				*(I), (F)*

Three Phase Quality Control Checklist

UXO SOP 5 – MEC and MPPEH Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 6

DEMOLITION OF MEC AND MDEH

Technical Procedure: UXO SOP 6

STANDARD OPERATING PROCEDURE FOR DEMOLITION OF MEC AND MDEH

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BEC	Base Realignment and Closure Environmental Coordinator
DDESB	Department of Defense Explosives Safety Board
EOD	Explosive Ordnance Disposal
EZ	Exclusion Zone
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MFD	Maximum Fragmentation Distance
MGFD	Munition with the Greatest Fragmentation Distance
MSD	Minimum Separation Distance
OE	Ordnance and Explosives
OESS	Ordnance and Explosives Safety Specialist
POMFD	Presidio of Monterey Fire Department
PPE	Personal Protective Equipment
QC	Quality Control
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TM	Technical Memorandum
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to the demolition of Munitions and Explosives of Concern (MEC) and Material Documented as an Explosive Hazard (MDEH). This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used during the demolition of MEC and MDEH. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all MEC related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- First aid kit;
- 10 lb BC fire extinguishers (2 each);
- Field Logbook and/or Digital Tablet;
- Shovels or other similar devices for excavation or filling of sandbags (should it be required);
- Sand bags (if required);
- Demolition material;
- Detonation device; and
- Appropriate Personnel Protective Equipment (PPE)

Depending on the demolition operation being conducted, additional equipment may be required that is not listed above such as heavy machinery or items related to blast reduction/mitigation.

6 PERSONNEL

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and UXO demolition team is responsible for MEC and MDEH demolition operations. The demolition team will include the following personnel but may be reduced depending on the size/type of demolition operation being conducted:

- 1 UXO Technician III Team Leader
- 3 (minimum) UXO Technician II
- 3 (maximum) UXO Technician I

The two man rule is to always be followed.

7 PROCEDURES

The safest and most expeditious methods of detonation will be used in every case to include blow-in-place and consolidated demolition. Technical procedures will follow Technical Manual (TM) 60A-1-1-31 *General information on EOD Disposal Procedures, Revision 7* dated 28 Mar 2014. Verification of the UXO filler shall be required prior to detonation to determine detonation procedures. Whenever possible, demolition procedures require a minimum of five days advance notification before operations can be conducted. Demolition procedures will be coordinated with the Base Realignment and Closure Environmental Coordinator (BEC), United States Army Corps of Engineers (USACE) Ordnance and Explosives Safety Specialist (OESS) and Presidio of Monterey Fire Department (POMFD).

If an item cannot be moved to a secure consolidation point, it may be left in place, covered, and the location marked via GPS for later demolition. Security will be provided, as required. The UXO Technician III will present a proposed demolition plan to the SUXOS. If the SUXOS, Unexploded Ordnance Safety Officer (UXOSO), and the USACE OESS approve the plan, the UXO Technician III will then implement the demolition plan. The preferred method of MEC demolition will be detonation. If movement of the MEC item(s) is not an option, then design and implementation of engineering controls to mitigate the effects of a high-order detonation must be implemented. Coordination with and approval by the USACE OESS is required prior to detonating a MEC item under such circumstances. If the area cannot withstand a high-order detonation, engineering controls cannot be implemented; and the MEC item is not acceptable to be moved, the SUXOS will contact the USACE OESS to request military EOD assistance.

7.1 Former Fort Ord Detonation Notification Procedure

Prior to any detonation, the appropriate notification and approval procedure will be initiated. The approval procedure includes notification to, and approval from the BEC. See MEC QAPP, Attachment C, Form M-2 (Detonation Approval Checklist / Risk Assessment). See also MEC QAPP, Attachment C, Form M-3 (POMFD Munitions Response and Ordnance Removal Fire Risk Assessment).

As soon as it is determined that a detonation will be required, the SUXOS will initiate this procedure. The SUXOS will schedule the demolition to allow sufficient time to complete all notifications and approvals.

7.2 Consolidated Shots

Consolidated shots will only be performed with authorization from the on-site USACE OESS and will be the method of preferred detonation, if safe to do so. Movement of MEC items cannot be performed without the combined approval of the SUXOS and UXOSO, and with input from the USACE OESS. Consolidated shots may be performed in the Impact Area at a location designated by the USACE OESS in accordance with USACE *Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites* (USACE, 1998a).

7.3 Demolition Procedures

During demolition activities, the SUXOS will have overall control of the site. An EZ will be established around the demolition site in accordance with UXO SOP 9 (Exclusion Zones). Only the SUXOS, UXOSO, the UXO Team, and UXO qualified personnel will be allowed within the EZ once the demolition operations have begun. The UXOSO will ensure that safe work practices are observed, and that the UXO Technician III is performing the necessary steps described below to safely dispose of the MEC. Road guards will be placed around the work site area outside the EZ to ensure that unauthorized personnel do not enter the EZ.

Notification procedures will be conducted as follows:

- The appropriate MEC Demolition Checklists and notifications (MEC QAPP, Attachment C, Forms M-1 through M-3) will be completed for each demolition operation.
- Request the POMFD to come to the site and perform a fire risk assessment (MEC QAPP, Attachment C, Form M-3 [POMFD Munitions Response and Ordnance Removal Fire Risk Assessment]).
- Whenever possible, all requests for risk assessment will require a 3-day notification and all demolition shots will require a 5-day notification.
- Complete a Detonation Approval Checklist/Risk Assessment (MEC QAPP, Attachment C, Form M-2) for approval by the BEC.
- Mass detonations require coordination with the Federal Aviation Administration. If necessary, the UXOSO will contact the Federal Aviation Administration at the Monterey Airport Control Tower for air clearance and will hold on line until the shot is fired.

The following technical procedures will be followed for all detonation operations:

- The UXO Team comprised of the UXO Technician III and a UXO Technician II will inspect the location, condition, and net explosive weight of the MEC to be detonated.
- The UXO Technician III will ensure that permission to detonate explosives has been obtained from the SUXOS and coordinated with the USACE OESS.
- It is the responsibility of the SUXOS to schedule demolition operations and to ensure that all project personnel are accounted for before demolition operations begin.
- The UXO Team will be issued enough explosive charges and shock tube initiators to perform the planned detonations. The transportation vehicle will then be loaded with the explosives, shock tubing initiating systems, and other equipment required.
- Initiators will always be transported in a separate container from the main-charge explosives.
- A minimum separation distance (MSD) of 50 feet will be observed for initiators and main-charge explosives while at the demolition site.
- If several MEC items are located in close proximity to each other, a mainline/branchline shot may be used to destroy these MEC simultaneously to increase the efficiency of the operation.
- The UXO Technician III will observe as the UXO Technician II positions the explosive charge against the MEC item. The demolition shot may be tamped, except for 40-mm grenades, to minimize the effects of the detonation. However, the initiators (caps) will never be buried.
- The UXO Technician III will then inspect the demolition shot and return to the safe firing point.

- Prior to initiation, the UXO Technician III will ensure that guards are stationed at the roadblocks, scan the EZ for personnel, and initiate the demolition charge if all is clear.
- In the event of a misfire, there will be a 60-minute wait time for Shock Tube Initiating Systems and a 60-minute wait time for electric misfires (MEC QAPP, Attachment C, Form M-4 [Misfire Checklist]).

7.4 Post-Detonation Operations

After successful initiation of the explosive charge, the UXO Team will conduct an inspection of the shot to ensure complete destruction of the MEC. After verification that no more detonations will be required, a "demolition operations are completed" notification will be broadcast to all personnel across the project radio frequency.

The UXO Team will collect for disposal all sandbag fragments, large munition fragments, and other debris, and generally clean and restore the site.

7.5 Engineering Control

Engineering controls may be required to mitigate the effects of an intentional detonation. The goals of using engineering controls are to improve personnel safety and/or to reduce the minimum separation distance (MSD). The most common engineering controls are either soil cover or sand bags. Reducing the EZ with engineering controls is based on tests that follow the guidelines described in the items identified below:

- HNC-ED-CS-S-98-7 (USACE, 2014) provides guidelines for use of sandbags to mitigate blast and fragmentation effects during intentional detonations.
- HNC-ED-CS-S-96-8 (USACE, 1997a) provides guidelines for use of soil, water tamping, or other forms of barricading during demolition operations to reduce fragmentation and/or blast range.
- HNC-ED-CS-S-00-3 (USACE, 2000) provides guidelines for use of Water for Mitigation of Fragmentation and Blast Effects due to Intentional Detonation of Munitions.

TP 15 (Department of Defense Explosives Safety Board [DDESB], 2010) authorizes use of these forms of barricading when appropriately used in accordance with established guidelines.

8 DOCUMENTATION

The following information is to be recorded during MEC and MDEH demolition operations:

- Date of Discovery
- Date of Demolition
- Operation Type
- Team ID
- Team Leader
- Found within a Burial Pit? Yes or No
- Demolition Required? Yes or No
- Demolition Performed? Yes or No
- Unit ID
- Grid ID

- Unique Demolition ID
- Discovery Easting
- Discovery Northing
- Demolition Easting
- Demolition Northing
- Quantity
- Weight
- Demolition Type
- Initial Description
- Final Description
- Model ID
- Initial Condition
- Final Condition
- Initial Disposition
- Final Disposition
- Final Category

All demolition related data is to be provided to the Field Data Manager at the end of each demolition operation.

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for the demolition of MEC and MDEH can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting MEC and MDEH demolition operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing EZs are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

DA, 1990, TM 9-1300-214, *Military Explosives*, (September 1984, Incorporating changes 1-4, September.

DA, 2014. TM 60A-1-1-31, *General information on EOD Disposal Procedures*, Revision 7, 28 March.

DDESB, 2010, Technical Paper 15, Approved Protective Construction, May.

USACE, 1997, HNC-ED-CS-S-96-8, *Guide for Selection and Siting of Barricades for Selected Unexploded Ordnance*, Revision 1, Huntsville Division.

USACE, 1998, *Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites*, Huntsville Division.

USACE, 2013. Engineering Manual 200-1-15, *Technical Guidance for Military Munitions Response Actions*, Environmental and Munitions Center of Expertise Interim Guidance Document (IGD) 14-01. October.

USACE, 2013a, EM 385-1-97, *Explosives – Safety and Health Requirements Manual*, (USACE, 2008, change 1, April 2013 and six errata sheets, June 2009 through May 2013).

USACE, 2014, HNC-ED-CS-S-98-7, Amendment 1, *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions*, Huntsville Division.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	**Date:**

Three Phase Quality Control Checklist

UXO SOP 6 – Demolition of MEC and MDEH

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Verify that the required equipment is available • First aid kit; • 10 lb BC fire extinguishers (2 each); • Field Logbook and/or Digital Tablet; • Shovels or other similar devices for excavation or filling of sandbags (should it be required); • Sand bags (if required); • Demolition material; • Detonation device; and • Appropriate Personnel Protective Equipment (PPE)				*(I), (F)*
3	7.0	Verify that demolition procedures follow TM 60A-1-1-31				*(I),(F)*
4	7.0	Verify UXO filler has been determined prior to demolition.				*(I),(F)*
5	7.0	Verify demolition procedures are coordinated with BEC, USACE, OESS and POMFD, and that a 5 day notification has been given prior to demo operations.				*(I),(F)*
6	7.0	Verify demolition plan has been has been approved by SUXOS, UXOSO and OESS.				*(I),(F)*
7	7.0	If required, have engineering controls been implemented? Has approval from OESS been given for engineering controls?				*(I),(F)*
8	7.1	Have approval procedures been initiated by the SUXOS. Have forms M-2 and M-3 been filled out.				*(I),(F)*
9	7.2	Has OESS authorized consolidated shots? Has OESS designated consolidation shot location?				*(I),(F)*

Three Phase Quality Control Checklist

UXO SOP 6 – Demolition of MEC and MDEH

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

10	7.3	During demolition operations has an EZ been established in accordance with UXO SOP 9?				*(I),(F)*
11	7.3	Verify only SUXOS, UXOSO , UXO team and UXO qualified personnel are allowed in the EZ once demo ops have begun.				*(I),(F)*
12	7.3	Verify road guards are placed around the work site area outside the EZ to ensure unauthorized personnel do not enter the EZ.				*(I),(F)*
13	7.3	Verify appropriate MEC demo checklists and notifications have been completed (Form M-1, M-2 and M-3).				*(I),(F)*
14	7.3	Verify POMFD have performed a fire risk assessment (Form M-3).				*(I),(F)*
15	7.3	Have appropriate notifications been given.				*(I), (F)*
16	7.3	Has Form M-2 been filled out for approval by BEC?				*(I), (F)*
17	7.3	If necessary, has UXOSO contacted the FAA at the Monterey airport for air clearance – and hold on the line until the shot is fired.				*(I), (F)*
18	7.3	Has location, condition and NEW of MEC been determined for the MEC item(s)?				*(I), (F)*
19	7.3	Has demo team received permission from SUXOS (and coordinated with OESS) prior to detonation.				*(I), (F)*
20	7.3	Are all personnel accounted for prior to demolition operation?				*(I), (F)*
21	7.3	Has Demo team been issued sufficient charges and shock tube initiators to perform the detonation?				*(I), (F)*
22	7.3	Verify initiators are transported in a separate container from the main-charge explosives.				*(I), (F)*
23	7.3	Verify MSD of 50 ft is observed for initiators and main-charge explosives while at the demo site.				*(I), (F)*
24	7.3	Verify 40mm grenades are not tamped. Verify initiators (caps) are not buried.				*(I), (F)*
25	7.3	Prior to detonation verify road guards are stationed, EZ is scanned for personnel prior to initiating demolition operations.				*(I), (F)*
26	7.3	In event of misfire, verify 60 minute wait time and Form M-4 is filled out.				*(I), (F)*
27	7.4	After demo shot, UXO team inspect shot to ensure complete destruction.				*(I), (F)*

28	7.4	After verification that no more shots are required, verify that "demolition operations are completed" notification has been broadcast to all personnel across the project radio frequency.				*(I), (F)*
29	7.4	After demo ops have been completed, verify UXO team collect all sandbag fragments, large munition fragments and other debris and generally clean and restore the site.				*(I), (F)*
30	7.5	Verify engineering controls that are used (if required) follow HNC-ED-CS-S-98-7 and HNC-ED-CS-S-96-8				*(I), (F)*
31	8.0	Post demolition operations verify that the required documentation/data has been recorded and provided to the Field Data Manager at the end of each demolition operation.				*(I), (F)*

Punch list Items	
No.	

Conducted by: ______________________________ DATE: ______________________________

Approved by: ______________________________ DATE: ______________________________

UXO SOP 7

EXPLOSIVES MANAGEMENT

Technical Procedure: UXO SOP 7

STANDARD OPERATING PROCEDURE FOR EXPLOSIVES MANAGEMENT

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
ba	blasting agents
BATFE	Bureau of Alcohol, Tobacco, Firearms and Explosives
CFR	Code of Federal Regulations
COR	Contracting Officer's Representative
det	detonators
DoD	Department of Defense
dyn	dynamite
EZ	Exclusion Zone
FAR	Federal Acquisition Regulation
MEC	Munitions and Explosives of Concern
MPC	Measurement Performance Criteria
MPPEH	Material Potentially Possessing an Explosive Hazard
MR	Munitions Response
MRS	Munitions Response Site
OESS	Ordnance and Explosives Safety Specialist
PM	Project Manager
PPE	Personal Protective Equipment
QC	Quality Control
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance

UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to explosives management. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used during explosives management operations. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- First aid kit;
- 10 lb BC fire extinguishers (2 each);
- Field Logbook and/or Digital Tablet;
- Appropriate Personnel Protective Equipment (PPE)

6 PERSONNEL

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance (UXO) Team Leader and a UXO team is responsible for explosives management. The explosives management team will include the following personnel (but may be reduced depending on the operation being performed):

- 1 UXO Technician III Team Leader
- 3 (minimum) UXO Technician II
- 3 (maximum) UXO Technician I

The two man rule is to always be followed.

7 PROCEDURES

This section provides details for management of explosives to be employed if necessary at the Munitions Response Site (MRS) within the Habitat Areas. These procedures were developed in accordance with DA PAM 385-64 (DA, 2013c), Federal Acquisition Regulation (FAR) 45.5, local and state laws and regulations, Bureau of Alcohol, Tobacco, Firearms and Explosives (BATFE) P 5400.7 (BATFE, 2012), Department of Defense (DoD) 6055.09-M (DoD, 2010), United States Department of Transportation regulations, and AR 190-11 (DA, 2013d).

7.1 Acquisition

KEMRON will order explosives from a BATFE-licensed explosives vendor. The Contractor must maintain a valid BATFE Explosive User permit. A copy of the BATFE dealer license and the Contractor's Explosive User permit will be maintained at the project site, and upon request, will be made available to any local, state, or federal authority.

The SUXOS is designated as the primary individual authorized to receive explosives. The Unexploded Ordnance Safety Officer (UXOSO) will be designated as the alternate in the event that the SUXOS is not on site. In the event that both the SUXOS and the UXOSO are absent, approval for an alternate must be obtained from the Contracting Officer's Representative (COR) and BATFE. All explosives received will be stored onsite at the onsite explosives storage location.

KEMRON personnel will transport explosives from the explosives storage location to the work site. Types of explosives and their intended use are specified below. Typically, the following explosives will be used for disposal of MEC or venting of inert munitions:

- Perforators will be used to detonate MEC and vent Material Potentially Possessing an Explosive Hazard (MPPEH) items.
- Detonating cord will be used to construct mainline-branch line shots, to link multiple shots together, or to transmit the explosive train to the main charge explosive when the main charge is buried (tamped), or otherwise inaccessible.
- Nonelectric initiators will be used to initiate the explosive train. Nonelectric tubing will be used to transmit the explosive train from the igniter to the demolition devices. Shock tube priming of explosives offer the instantaneous action of electric detonation without risk of accidental initiation of the blasting cap (and the charge) by radio transmitters in the area, or by static electricity discharge. The explosion of the shock tube is entirely contained within the plastic tubing.

7.2 Initial Receipt

Explosives will be transported to the project site on an as-required basis. An initial explosives receipt inventory will be conducted by the SUXOS before the explosives are transferred from the previous contractor.

The quantities received by the SUXOS will be stored at the explosives storage location. During storage the SUXOS is to be accompanied by one or more UXO Team Member(s). Copies of the receipt documentation will be filed at the on-site KEMRON office and placed in the project's permanent archive.

7.3 Storage

Explosives will only be stored in the approved explosives storage containers which are inspected weekly and will be stored in accordance with the requirements contained in:

- §555.201 - §555.224, 27 Code of Federal Regulations (CFR) Commerce in Explosives;
- DoD Standard 6055.9-M Ammunition and Explosives Safety (DoD, 2010); and
- Local laws and regulations.

7.4 Transportation

This section presents the vehicle requirements and on-site transportation procedures for explosives at the Munitions Response (MR) project area.

7.4.1 On-Site Transportation Procedures

Explosives will be received from the vendor and transported to the project site by KEMRON personnel. Explosives will be transported in an appropriately placarded vehicle following the procedures stated in this section to the designated area when demolition activities are planned.

Recovered MEC will not be moved unless acceptable to do so and only with the specific concurrence of the SUXOS, UXOSO and United States Army Corps of Engineers (USACE) Ordnance and Explosives Safety Specialist (OESS) on site. The USACE OESS may require additional measures and inspection before movement and preparation of MEC items for transportation.

On-site transportation procedures will include the following safeguards:

- The driver of any vehicle carrying explosives or MEC will ensure that the load is properly braced and secured for transport (i.e., tie-downs).
- Initiators will be carried separately from main charge explosives.
- The driver and any passengers transporting explosives or MEC will not carry any smoking products or flame-producing devices. Smoking will be strictly forbidden among all personnel involved in the handling or transportation of explosives and MEC.
- If loose pyrotechnic, tracer, flare, or similar mixtures are to be transported, they will be placed in Number 10 mineral oil or equivalent to minimize fire and explosion hazards.
- If an unfired rocket motor must be transported, it shall be positioned in such a manner as to offer the maximum protection to personnel in the event of an accident.
- If base-ejection type projectiles must be transported to a demolition area or collection point, the base will be oriented to the rear of the vehicle and the projectile secured, in the event the ejection charge detonates in route.
- All MEC items will be positively identified, as to the type of munition, filler, and condition of the fuzing prior to any movement.
- If MEC with exposed hazardous filler has to be moved to a demolition area, the item will be placed in an appropriate container with packing materials to prevent migration of the hazardous filler. Padding will also be added to protect the exposed filler from heat, shock, and friction.

7.4.2 Vehicle Requirements

Vehicles transporting explosives on the project site will comply with the following requirements:

- Vehicles transporting explosives will be placarded when carrying any Class 1 explosives.
- All vehicles transporting explosives will be equipped with reliable communications, a first aid kit, and two 10-pound BC fire extinguishers. One extinguisher will be located in the driver's compartment and the other located in the cargo compartment.

    - Vehicles transporting explosives will be inspected daily when in use, and the inspections will be documented on a Motor Vehicle Inspection form (MEC QAPP, Attachment C, Form M-5).

- The vehicle used to transport the explosives will have a non-sparking bed liner, and all explosive loads will be covered and secure prior to departure.

7.5 Receipt Procedures

This section describes the procedures that will be used to maintain records of explosives inventories and usage.

Upon the receipt of the explosives delivery at the project site, the SUXOS in conjunction with another individual (UXOSO or Unexploded Ordnance Quality Control Specialist [UXOQCS]) shall:

- Escort the vendor to the magazine area.
- Unload the shipment and physically verify quantities and types of materials received against the bill of lading and the order.
- Document any discrepancies and materials not yet shipped (i.e. not received). Attempt to resolve with the vendor. If discrepancies remain notify the KEMRON Project Manager (PM), who shall work with procurement and the vendors to resolve the issues.
- Sign the vendor's receipt documentation and annotate discrepancies (if unable to resolve).
- Place the explosives materials into the magazines (paying attention to storage compatibility and magazine quantities).
- Update the magazine data cards.
- Update project explosives inventory (explosives received, used, and/or returned)

7.5.1 Inventory Control and Records Management

An accurate running inventory of all explosives received, used, and/or returned will be maintained. Copies of all paperwork pertaining to explosives received, used, and/or returned, will be maintained by the SUXOS in the field office.

7.5.2 Authorized Individuals

The SUXOS and/or the UXOQCS/UXOSO will be responsible for the proper receipt and use of explosives for detonation purposes, and cannot delegate the responsibility for ensuring that the inventory, receipt, usage returns, and handling of the explosives is performed in accordance with the requirements of this plan.

7.5.3 End User Certification

The SUXOS, as the end user of explosives, will certify in writing that the explosives were used for their intended purpose. This information is tracked on the Explosives Usage Record (MEC QAPP, Attachment C, Form M-6) and is included with daily reporting.

7.5.4 Reconciling Discrepancies

In the event that there is a discrepancy with any aspect of the management of explosives, the SUXOS will be immediately notified. The SUXOS, together with the UXOSO and UXOQCS, will review documentation to determine whether the discrepancy is a paperwork error or whether explosives have been lost or stolen. If it is concluded that explosives have been lost or stolen, the USACE OESS will be notified and the procedures specified in Section 7.7 of this SOP will be implemented.

7.6 Inventory

At a minimum, the following inventories will be maintained.

7.6.1 Special Inventories

The SUXOS will take a true and accurate physical inventory that will include all explosive materials on hand required to be accounted for in the records kept. The SUXOS must take a special inventory:

- At the time of commencing business (project start up);
- At the time of changing the location of his premises (change in project location);
- At the time of discontinuing business (project completion); and
- At any other time the BATFE may require. Each special inventory is to be prepared in duplicate, the original of which is submitted to the BATFE and the duplicate retained by the permittee.

7.6.2 Minimum Inventory Requirement

The SUXOS will take a true and accurate physical inventory, at least monthly, that will include all explosive materials on hand required to be accounted for in the records kept.

7.6.3 Receipt Inventory

The SUXOS will, not later than the close of the next business day following the date of acquisition of explosive materials, enter the following information in a separate memorandum retained in the SUXOS field office:

- Date of acquisition;
- Name or brand name of manufacturer;
- Manufacturer's marks of identification;
- Quantity (applicable quantity units, such as pounds of explosives, number of detonators, etc.);
- Description (dynamite (dyn), blasting agents (ba), detonators (det), etc.; and
- Name, address, and license number of the persons from whom the explosive materials are received.

7.6.4 Magazine Data Cards

Each magazine will have a magazine data card (MEC QAPP, Attachment C, Form M-11) attached to the door of the magazine with a true and accurate inventory of the materials contained in the magazine. The magazine data card shall be updated each time materials are added or subtracted from the magazine. One data card shall be kept for each type of material stored in the magazine. Duplicate records shall be maintained at the project trailer in case the magazine data card is rendered unusable due to weather or other unforeseen issue.

7.7 Lost, Stolen, or Unauthorized Use of Explosives

If explosives are discovered to be lost, stolen, or used without authorization, the incident will be immediately reported to the SUXOS, who in turn, will inform the USACE OESS and KEMRON PM.

As the federal licensee, KEMRON is required by law [27 CFR 55.30] to report the theft or loss of explosives to the BATFE within 24 hours. In the event of such an occurrence, the following procedures will be followed:

- Make the appropriate notifications in accordance with 27 CFR 55.30. These include calling BATFE (866-927-4570) and the local law enforcement authorities.
- Complete and forward BATFE Form 5400.5 (MEC QAPP, Attachment C, Form M-7). This form will be completed by the SUXOS, and a copy will be provided to the USACE OESS.

8 DOCUMENTATION

The following information is to be recorded during MEC and MDEH demolition operations:

- Explosives Receipt Inventory
- Document any discrepancies and materials not yet shipped (i.e. not received)
- Explosives inventory (explosives received, used, and/or returned)
- Magazine Data Card(s)
- Explosives Usage Record (MEC QAPP, Attachment C, Form M-6)
- Motor Vehicle Inspection (MEC QAPP, Attachment C, Form M-5).
- ATF Form 5400.5 (MEC QAPP, Attachment C, Form M-7) [if explosives are lost, stolen or unauthorized use]

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for explosives management operations can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting explosives management operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing Exclusion Zones (EZ)s are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

§555.201 - §555.224, 27 CFR - Commerce in Explosives.

27 CFR 55.30 – Reporting Theft or Loss of Explosive Materials.

AR 190-11 (DA, 2013d), Physical Security of Arms, Ammunition, and Explosives.

BATFE P 5400.7 (BATFE, 2012), Federal Explosives Laws and Regulations.

DA PAM 385-64 (DA, 2013c), Ammunition and Explosives Safety Standards.

DoD 6055.09-M (DoD, 2010), Ammunition and Explosives Safety Standards: General Quantity-Distance Criteria for Accidental Detonations

FAR 45.5 - Management of Government Property in the Possession of Contractors.

United States Department of Transportation regulations.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 7 – Explosives Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	5.0	Verify required equipment is available • First aid kit; • 10 lb BC fire extinguishers (2 each); • Field Logbook and/or Digital Tablet; • Appropriate Personnel Protective Equipment (PPE)				*(I), (F)*
3	7.1	Verify explosives are ordered through a BATFE licensed explosives vendor with a valid BATFE explosives user permit. Verify the contractor's explosives user permit is maintained at the project site.				*(I),(F)*
4	7.1	Verify SUXOS receives explosives, with UXOSO as alternate.				*(I),(F)*
5	7.1	Verify all explosives received are stored onsite at the onsite explosives storage location.				*(I),(F)*
6	7.1	Verify perfs are used to detonate MEC and vent MPPEN				*(I),(F)*
7	7.1	Verify det cord is used to construct mainline-branch shots.				*(I),(F)*
8	7.1	Verify nonelectric initiators are used to initiate the explosive train.				*(I),(F)*
9	7.2	Verify an initial explosives receipt inventory has been conducted before explosives are transferred from the previous contractor.				*(I),(F)*

10	7.2	Verify explosives are received by SUXOS and are stored at the explosives storage location. Verify that during storage the SUXOS is accompanied by one or more UXO team members. Verify copies of receipt documentation are filed at the on-site KEMRON office and placed in the project's permanent archive.				*(I),(F)*
11	7.3	Verify explosives are stored in the approved explosives storage containers which are inspected weekly and are stored in accordance with: • §555.201 - §555.224, 27 Code of Federal Regulations (CFR) Commerce in Explosives; • DoD Standard 6055.9-M Ammunition and Explosives Safety (DoD, 2010); and • Local laws and regulations.				*(I),(F)*
12	7.4.1	Verify items are properly secured / braced.				*(I),(F)*
13	7.4.1	Verify initiators are carried separate from main chare explosives				*(I),(F)*
14	7.4.1	Verify personnel do not have any smoking products or flame-producing devices.				*(I),(F)*
15	7.4.1	Verify that if loose pyrotechnic, tracer, flare or similar mixtures are transported that they are placed in #10 mineral oil or equivalent.				*(I),(F)*
16	7.4.1	Verify rocket motors are placed in such a manner as to offer maximum protection to personnel.				*(I), (F)*
17	7.4.1	Base-ejection type projectiles are to be oriented with their base towards the rear of the vehicle.				*(I), (F)*
18	7.4.1	Verify all MEC items are positively identified as to type of munition, filler and condition of fuzing prior to any movement.				*(I), (F)*
19	7.4.1	If hazardous filler is exposed, verify item is placed in appropriate container (with padding) to prevent migration of filler and protect filler from heat, shock, friction.				*(I), (F)*
20	7.4.2	Verify vehicles transporting explosives are placarded when carrying any Class 1 explosives.				*(I), (F)*

21	7.4.2	Verify vehicles transporting explosives have reliable communication, first aid kit, and two 10 lb BC fire extinguishers.				*(I), (F)*
22	7.4.2	Verify vehicles transporting explosives are inspected daily and Form M-5 is filled out.				*(I), (F)*
23	7.4.2	Verify vehicle used to transport explosives have a non-sparking bed liner and all explosive loads are covered and secure prior to departure.				*(I), (F)*
24	7.5	Verify SUXOS (with UXOSO or UXOQCS) compete the following: 1. escort vendor to the magazine area 2. physically verify quantities and types of materials received against the bill of lading and the order 3. Document discrepancies. Notify KEMRON PM of discrepancies 4. Sign vendor's receipt documentation and annotate discrepancies 5. Place explosives materials into magazines – paying attention to storage compatibility and magazine quantities 6. Update magazine data cards 7. Update project explosives inventory (explosives received, used, and/or returned)				*(I), (F)*
25	7.5.1	Verify an accurate running inventory of all explosives received, used, and/or returned is maintained with copies of all paperwork being maintained by the SUXOS.				*(I), (F)*
26	7.5.2	Verify the SUXOS and/or the UXOQCS/UXOSO are responsible for the proper receipt and use of explosives and that this responsibility has not been delegated.				*(I), (F)*
27	7.5.3	Verify that the SUXOS has certified in writing that explosives were used for their intended purpose using Form M-6 and is included with daily reporting.				*(I), (F)*
28	7.5.4	If discrepancies exist verify that SUXOS has been notified immediately and that SUXOS, UXOSO and UXOQCS and ascertain if is paperwork error or if explosives have been lost or stolen. If explosives have been lost or stolen has OESS been notified?				*(I), (F)*

29	7.6.1	Verify SUXOS has taken special inventory if the following occur: • At the time of commencing business (project start up); • At the time of changing the location of his premises (change in project location); • At the time of discontinuing business (project completion); and • At any other time the BATFE may require. Each special inventory is to be prepared in duplicate, the original of which is submitted to the BATFE and the duplicate retained by the permittee.				*(I), (F)*
30	7.6.2	Verify SUXOS takes a true and accurate physical inventory at least monthly.				*(I), (F)*
31	7.6.3	Verify that the SUXOS has (not later than the close of the next business day following the date of acquisition of explosive materials) entered the following information in a separate memorandum retained in the SUXOS office: • Date of acquisition; • Name or brand name of manufacturer; • Manufacturer's marks of identification; • Quantity (applicable quantity units, such as pounds of explosives, number of detonators, etc.); • Description (dynamite (dyn), blasting agents (ba), detonators (det), etc.; and • Name, address, and license number of the persons from whom the explosive materials are received.				*(I), (F)*
32	7.6.4	Verify that each magazine has a magazine data card (Form M-11) attached to the door of the magazine that has a true and accurate inventory of the materials contained in the magazine.				*(I), (F)*
33	7.6.4	Verify magazine data cards are updated each time materials are added or subtracted from the magazine. Verify one data card is kept for each type of material stored in the magazine and that duplicate records are maintained at the project trailer.				*(I), (F)*

34	7.7	Verify that lost, stolen or unauthorized use of explosives are reported immediately to the SUXOS – who in turn notifies the OESS and KEMRON PM.				*(I), (F)*
35	7.7	Verify that loss, stolen or unauthorized use of explosives are reported to BATFE within 24 hours in accordance with 27 CFR 55.30 – including calling BATFE and local law enforcement authorities				*(I), (F)*
36	7.7	Verify if explosives are lost, stolen or unauthorized use occurs, SUXOS to complete and forward BATFE Form 5400.5 (Form M-7) with copy provided to OESS.				*(I), (F)*
37	8.0	Verify that the following documentation has been filled out: • Explosives Receipt Inventory • Document any discrepancies and materials not yet shipped (i.e. not received) • Explosives inventory (explosives received, used, and/or returned) • Magazine Data Card(s) • Explosives Usage Record (MEC QAPP, Attachment C, Form M-6) • Motor Vehicle Inspection (MEC QAPP, Attachment C, Form M-5). • ATF Form 5400.5 (MEC QAPP, Attachment C, Form M-7) [if explosives are lost, stolen or unauthorized use]				*(I), (F)*

Punch list Items	
No.	

Three Phase Quality Control Checklist

UXO SOP 7 – Explosives Management

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 8

EXPLOSIVES SITING

Technical Procedure: UXO SOP 8

STANDARD OPERATING PROCEDURE FOR EXPLOSIVES SITING

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
CEHNC	Huntsville Support Center, USACE
DDESB	Department of Defense Explosives Safety Board
DoD	Department of Defense
ESS	Explosive Safety Submission
EZ	Exclusion Zone
LDSP	Land Disposal Site Plan
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MFD	Maximum Fragmentation Distance
MGFD	Munition with the Greatest Fragmentation Distance
MPC	Measurement Performance Criteria
MR	Munitions Response
MSD	minimum separation distance
OESS	Ordnance and Explosives Safety Specialist
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOSO	Unexploded Ordnance Safety Officer

1 Policy

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related to explosives siting. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 Purpose

The purpose of this SOP is to describe the equipment and general methodologies that are to be used during explosives siting. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 Scope

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 Maintenance

KEMRON personnel are responsible for the maintenance of this SOP.

5 Equipment

- None

6 Personnel

The Senior Unexploded Ordnance Supervisor (SUXOS), Unexploded Ordnance Safety Officer (UXOSO), and MEC Remediation Manager are responsible for explosives siting. The explosives siting team will include the following personnel:

- SUXOS
- UXOSO
- MEC Remediation Manager
- GIS Manager (for map generation)

7 Procedures

The procedures described below for siting explosives is intended to ensure the safety and security of explosive related operations during removal activities. If an Explosive Safety Submission (ESS) or Land Disposal Site Plan (LDSP) is required for a specific site, the ESS/LDSP will be approved prior to the commencement of work at the site.

7.1 Exclusion Zones and Minimum Separation Distances

The munition with the greatest fragmentation distance (MGFD) will be computed for each unit and is to be discussed in the Site Specific Work Plan (SSWP). The Exclusion Zone (EZ) will be established based on the minimum separation distance (MSD) for the MGFD, which will be determined for each unit. This distance will be computed in accordance with Technical Paper (TP) 16 (Department of Defense

Explosives Safety Board [DDESB], 2012) and the Fragmentation Data Forms. Engineering controls can be used to reduce the MSD when evacuation perimeters around the work site(s) do not permit establishment of the needed 360 degree EZ. Use of engineering controls can serve as an alternative to evacuation to the full MSD for the MGFD, but decrease work production rates, require additional equipment and materials, and require site approval for use. Reducing the EZ with engineering controls is based on tests that follow the guidelines described in the items identified below:

- HNC-ED-CS-S-98-8 provides guidelines for use of the Miniature Open Front Barricade (MOFB) [commonly referred to as the "Bud-Lite"] for use during intrusive operations such as MEC investigation and anomaly excavations (USACE, 2013). This equipment authorized for use by TP 15 (DDESB, 2010) mitigates fragmentation range in three directions (sides and front) in the event of unintentional detonations, but offers no blast mitigation capability.
- HNC-ED-CS-S-98-7 provides guidelines for use of sandbags to mitigate blast and fragmentation effects during intentional detonations (USACE, 2014). TP 15 authorizes use of this equipment during removal actions when appropriately used in accordance with established guidelines.
- HNC-ED-CS-S-96-8 provides guidelines for use of soil, water tamping or other forms of barricading during demolition operations to reduce fragmentation and/or blast range (USACE, 1997). TP 15 authorizes use of these forms of barricading when appropriately used in accordance with established guidelines.
- HNC-ED-CS-S-00-3, *Use of Water for Mitigation of Fragmentation and Blast Effects due to Intentional Detonation of Munitions* (USACE, 2000).
- *DDESB Buried Explosion Module*, Version 6.3.2.

Only personnel essential to the project and authorized visitors will be permitted access into the EZ. Essential Personnel are defined as USACE and contractor project personnel necessary for the safe and efficient completion of field operations conducted in an EZ. This is limited to: the USACE OESS along with contractor work team members including the UXOSO, UXOQCS, and SUXOS and may include others designated by the SUXOS. All nonessential personnel (authorized visitors) who require entry into the EZ will require an unexploded ordnance (UXO) technician escort and all MEC operations will cease until nonessential personnel leave the EZ. Regulatory agency representatives may be deemed essential personnel on a case-by-case basis following coordination between the SUXOS and USACE Ordnance and Explosives Safety Specialist (OESS).

If MEC with a larger Maximum Fragmentation Distance (MFD) than that of the MGFD are discovered, or if warranted by the quantity of MEC discovered, all work will be halted and a new MGFD and associated EZ will be designated based on the item(s) found. The applicable ESS will then be amended to address the larger MGFD. If demolition operations are to be performed, the SUXOS will calculate an EZ based on the type of MEC involved and the quantity of explosives required to destroy the MEC item(s). The USACE OESS will approve this computation before demolition activities are to be performed.

The EZ will be established based on the larger of the MGFD and K328 distances for the quantity of the explosives used, obtained from either the fragment data review form or Department of Defense (DoD) 6055.09-M (Volume 7) (DoD, 2010).

7.2 Explosive Storage and Planned Demolition

Explosives will be stored at the explosives storage location. The SUXOS will issue the explosives needed for demolition operations to the demolition crew which they will transport to the required location. All explosives will be managed in accordance with UXO SOP 7 (Explosives Management).

The SUXOS will direct the demolition crew to commence with the demolition operations which will be directly supervised by a UXO Technician III and will be conducted in accordance with UXO SOP 6 (Demolition of MEC and Material Documented as an Explosive Hazard [MDEH]). An EZ will be established for all personnel which will be the greater of the overpressure distance or the appropriate fragment range as determined by the maximum fragment range or the mitigated fragment range used during the demolition activities. This distance will be computed as the greater of the MFD or the K328 distance for the maximum quantity of explosives to be used.

8 DOCUMENTATION

The following information is to be recorded for Explosive Siting operations:

- Map of the EZ (to include MGFD and/or K328 distances)

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for explosives siting can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting explosives siting operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing EZs are described in UXO SOP 9 (Exclusion Zones).

11 REFERENCES

DDESB Buried Explosion Module, Version 6.3.2.

DDESB, 2010, *Approved Protective Construction*, Technical Paper 15, Version 2.0.

DDESB, 2012, *Methodologies for Calculating Primary Fragment Characteristics Technical Paper 16, Revision 4*.

DoD, 2010, *DoD Ammunition and Explosives Safety Standards Manual*, 6055.09-M, Administratively Reissued August 4.

Fragmentation Data Review Form (Database Revision Date 3/7/16).

USACE, 1997, HNC-ED-CS-S-96-8, *Guide for Selection and Siting of Barricades for Selected Unexploded Ordnance, Revision 1*, Huntsville Division.

USACE, 2000. HNC-ED-CS-S-00-3, *Use of Water for Mitigation of Fragmentation and Blast Effects due to Intentional Detonation of Munitions*, Huntsville Division.

USACE, 2013, HNC-ED-CS-S-98-8, Revision 2, *Miniature Open Front Barricade*, Huntsville Division.

USACE, 2014, HNC-ED-CS-S-98-7, Amendment 1, *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions*, Huntsville Division.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 8 – Explosives Siting

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	7.1	Verify that the MGFD has been computed for the unit and is discussed in the SSWP.				*(I), (F)*
3	7.1	Verify the EZ has been established based on the MSD for the MGFD that has been computed in accordance with TP16.				*(I),(F)*
4	7.1	If engineering controls are to be used verify that they are in compliance with the 5 bullets listed in Section 7.1 of this SOP.				*(I),(F)*
5	7.1	Verify that only essential personnel and authorized visitors are permitted access into the EZ when MR operations are being conducted.				*(I),(F)*
6	7.1	Verify that all nonessential personnel who require entry into the EZ have a UXO escort and that all MEC operations cease until nonessential personnel leave the EZ.				*(I),(F)*
7	7.1	If MEC with larger MFD than the MGFD are discovered, or if warranted by the quantity of MEC discovered, verify that all work is halted and a new EZ is then designated based on the item(s) found and that the ESS is amended to address the larger MGFD.				*(I),(F)*
8	7.1	For demolition operations the SUXOS will calculate an EZ based on the type and quantity of MEC involved and quantity of explosives required to destroy the MEC item(s).				*(I),(F)*
9	7.1	Verify that the OESS has approved this computation before demo activities are performed.				*(I),(F)*

Three Phase Quality Control Checklist

UXO SOP 8 – Explosives Siting

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

10	7.1	Verify that the EZ is based on the larger of the MGFD and K328 distances for the quantity of the explosives used.				*(I),(F)*
11	7.2	Verify explosives are stored at the explosives storage location.				*(I),(F)*
12	7.2	Verify SUXOS issues the explosives needed for demo ops to the demo crew.				*(I),(F)*
13	7.2	Verify all explosives are managed in accordance with UXO SOP 7 (Explosives Management).				*(I),(F)*
14	7.2	Verify an EZ has been established for all personnel which will be the greater of the overpressure distance or the appropriate frag range as determined by the maximum frag range or the mitigated frag range used during demo operations – computed as the greater of the MFD or the K328 distance for the maximum quantity of explosives used.				*(I),(F)*
15	8.0	Verify that a map of the EZ has been generated by the GIS manager.				*(I), (F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 9

EXCLUSION ZONES

Technical Procedure: UXO SOP 9

STANDARD OPERATING PROCEDURE FOR EXCLUSION ZONES

Original Issue Date: August 2016

Last Review/Implementation Date: December 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
CEHNC	Huntsville Support Center, USACE
DDESB	Department of Defense Explosives Safety Board
DoD	Department of Defense
ESS	Explosive Safety Submission
EZ	Exclusion Zone
LDSP	Land Disposal Site Plan
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MFD	Maximum Fragmentation Distance
MGFD	Munition with the Greatest Fragmentation Distance
MPC	Measurement Performance Criteria
MR	Munitions Response
MSD	minimum separation distance
OESS	Ordnance and Explosives Safety Specialist
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site Specific Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for all work related the generation and use of Exclusion Zones (EZ)s. This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used during the generation and use of EZs. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use.

3 SCOPE

The information presented in this SOP is generally applicable to all Munitions and Explosives of Concern (MEC) related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- None

6 PERSONNEL

The Senior Unexploded Ordnance Supervisor (SUXOS) and Unexploded Ordnance Safety Officer (UXOSO) are responsible for the generation and use of EZs. The following personnel will be involved with the generation and use of EZs:

- SUXOS
- UXOSO
- GIS Manager (for map generation)

7 PROCEDURES

The procedures described below are for the generation and use of EZs that is intended to ensure the safety of project personnel and the public. EZs also ensure the security of explosive related operations during removal activities. If an Explosive Safety Submission (ESS) or Land Disposal Site Plan (LDSP) is required for a specific site, the ESS/LDSP will be approved prior to the commencement of work at the site.

The munition with the greatest fragmentation distance (MGFD) will be computed for each unit and is to be discussed in the SSWP. The EZ will be established based on the minimum separation distance (MSD) for the MGFD, which will be determined for each unit. This distance will be computed in accordance with Technical Paper (TP) 16 (Department of Defense Explosives Safety Board [DDESB], 2012) and the Fragmentation Data Forms. Engineering controls can be used to reduce the MSD when exclusion perimeters around the work site(s) do not permit establishment of the needed 360-degree EZ. Use of engineering controls can serve as an alternative to the full MSD for the MGFD, but decrease work production rates, require additional equipment and materials, and require site approval for use. Reducing the EZ with engineering controls is based on tests that follow the guidelines described in the items identified below:

- HNC-ED-CS-S-98-8 provides guidelines for the use of the *Miniature Open Front Barricade, Revision 2* (USACE, 2013b) (commonly referred to as the "Bud-Lite") for use during intrusive operations such as MEC investigation and anomaly excavations. This equipment authorized for use by TP 15, *Approved Protective Construction* (DDESB, 2010), mitigates fragmentation range in three directions (sides and front) in the event of unintentional detonations, but offers no blast mitigation capability.

- HNC-ED-CS-S-98-7, Amendment 2 provides guidelines for the *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions* (USACE, 2014). TP 15 authorizes use of this equipment during removal actions when appropriately used in accordance with established guidelines.

- HNC-ED-CS-S-96-8, *Guide for Selection and Siting of Barricades for Selected Unexploded Ordnance* (USACE, 1997a) provides guidelines for the use of soil, water tamping, or other forms of barricading during demolition operations to reduce fragmentation and/or blast range. TP 15 authorizes the use of these forms of barricading when appropriately used in accordance with established guidelines.

- HNC-ED-CS-S-00-3, Use of Water for Mitigation of Fragmentation and Blast Effects due to Intentional Detonation of Munitions (USACE, 2000)

- DDESB Buried Explosion Module, Version 6.3.2.

Only personnel essential to the project and authorized visitors will be permitted access into the EZ. Essential Personnel are defined as USACE and contractor project personnel necessary for the safe and efficient completion of field operations conducted in an EZ. This is limited to: the USACE OESS along with contractor work team members including the UXOSO, UXOQCS, and SUXOS and may include others designated by the SUXOS. All nonessential personnel (authorized visitors) who require entry into the EZ will require an unexploded ordnance (UXO) technician escort and all MEC operations will cease until nonessential personnel leave the EZ. Regulatory agency representatives may be deemed essential personnel on a case-by-case basis following coordination between the SUXOS and USACE Ordnance and Explosives Safety Specialist (OESS).

If MEC with a larger Maximum Fragmentation Distance (MFD) than that of the MGFD are discovered, or if warranted by the quantity of MEC discovered, all work will be halted and a new MGFD and associated EZ will be designated based on the item(s) found. The applicable ESS will then be amended to address the larger MGFD. If demolition operations are to be performed, the SUXOS will calculate an EZ based on the type of MEC involved and the quantity of explosives required to destroy the MEC item(s). The USACE OESS will approve this computation before demolition activities can be performed.

The EZ will be established based on the larger of the MGFD and K328 distances for the quantity of the explosives used, obtained from either the fragment data review form or DoD 6055.09-M (Volume 7) (DoD, 2010).

8 DOCUMENTATION

The following information is to be recorded for Explosive Siting operations:

- Map of the EZ (to include MGFD and/or K328 distances)

9 QUALITY CONTROL

Inspection checklists specific to this SOP are located at the end of this SOP. Measurement Performance Criteria (MPCs) for establishing EZs can be found in Worksheet #12 of the MEC QAPP. See Worksheet #31, 32, 33 for a description of who will conduct the QC inspection for this DFW and the frequency of the Follow-up Phase QC inspections.

10 HEALTH AND SAFETY

Conducting explosives siting operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards.

11 REFERENCES

DDESB Buried Explosion Module, Version 6.3.2.

DDESB, 2010, *Approved Protective Construction*, Technical Paper 15, Version 2.0.

DDESB, 2012, *Methodologies for Calculating Primary Fragment Characteristics Technical Paper 16, Revision 4*.

DoD, 2010, *DoD Ammunition and Explosives Safety Standards Manual*, 6055.09-M, Administratively Reissued August 4.

Fragmentation Data Review Form (Database Revision Date 3/7/16).

USACE, 1997, HNC-ED-CS-S-96-8, *Guide for Selection and Siting of Barricades for Selected Unexploded Ordnance, Revision 1*, Huntsville Division.

USACE, 2000. HNC-ED-CS-S-00-3, *Use of Water for Mitigation of Fragmentation and Blast Effects due to Intentional Detonation of Munitions*, Huntsville Division.

USACE, 2013, HNC-ED-CS-S-98-8, Revision 2, *Miniature Open Front Barricade*, Huntsville Division.

USACE, 2014, HNC-ED-CS-S-98-7, Amendment 1, *Use of Sandbags for Mitigation of Fragmentation and Blast Due to Intentional Detonation of Munitions*, Huntsville Division.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

Three Phase Quality Control Checklist

UXO SOP 9 – Exclusion Zones

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

Team Information		
TEAM:	Location:	Date:
Personnel Present:		
Phase of Inspection (Circle): *PREPARATORY (P); INITIAL (I); FOLLOW-UP (F)*		

Checklist						
Item	Section Reference	Inspection Point	Yes	No	N/A	Comments
1	Signature Page	Verify that all personnel have signed the SOP Signature Page				*(P)*
2	7.0	Verify that the MGFD has been computed for the unit and is discussed in the SSWP.				*(I), (F)*
3	7.0	Verify the EZ has been established based on the MSD for the MGFD that has been computed in accordance with TP16.				*(I),(F)*
4	7.0	If engineering controls are to be used verify that they are in compliance with the 5 bullets listed in Section 7.1 of this SOP.				*(I),(F)*
5	7.0	Verify that only essential personnel and authorized visitors are permitted access into the EZ when MR operations are being conducted.				*(I),(F)*
6	7.0	Verify that all nonessential personnel who require entry into the EZ have a UXO escort and that all MEC operations cease until nonessential personnel leave the EZ.				*(I),(F)*
7	7.0	If MEC with larger MFD than the MGFD are discovered, or if warranted by the quantity of MEC discovered, verify that all work is halted and a new EZ is then designated based on the item(s) found and that the ESS is amended to address the larger MGFD.				*(I),(F)*
8	7.0	For demolition operations the SUXOS will calculate an EZ based on the type and quantity of MEC involved and quantity of explosives required to destroy the MEC item(s).				*(I),(F)*
9	7.0	Verify that the OESS has approved this computation before demo activities are performed.				*(I),(F)*

Three Phase Quality Control Checklist

UXO SOP 9 – Exclusion Zones

W912DY-10-D-0027 – Task Order No. CM01

Former Fort Ord, California

10	7.0	Verify that the EZ is based on the larger of the MGFD and K328 distances for the quantity of the explosives used.				*(I),(F)*
11	8.0	Verify that a map of the EZ has been generated by the GIS manager.				*(I), (F)*

Punch list Items	
No.	

Conducted by: ______________________ DATE: ______________________

Approved by: ______________________ DATE: ______________________

UXO SOP 10

QC OF TASKS RELATED TO THE INVESTIGATION AND MANAGEMENT OF MEC, AND OTHER EXPLOSIVES RELATED OPERATIONS

Technical Procedure: UXO SOP 10

STANDARD OPERATING PROCEDURE FOR QUALITY CONTROL OF TASKS RELATED TO THE INVESTIGATION AND MANAGEMENT OF MEC, AND OTHER EXPLOSIVES RELATED OPERATIONS

Original Issue Date: August 2016

Last Review/Implementation Date: August 2016

KEMRON Environmental Services, Inc.

1359-A Ellsworth Industrial Boulevard, Atlanta, GA 30318

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LIST OF APPENDICES

LIST OF ACRONYMS

APP	Accident Prevention Plan
BSI	blind seed item
CAP	Corrective Action Plan
CAR	Corrective Action Request
CQCSM	Contractor Quality Control System Manager
DDESB	Department of Defense Explosives Safety Board
DFW	definable feature of work
DGM	digital geophysical mapping
EM	Engineering Manual
ESTCP	Environmental Security Technology Certification Program
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	industry standard object
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Possessing an Explosive Hazard
OESS	Ordnance and Explosives Safety Specialist
PM	Project Manager
PQCM	Program Quality Control Manager
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCA	root-cause analysis
RTK	real-time kinematic

SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan
SSWP	Site-Specific Work Plan
TP	Technical Paper
SUXOS	Senior Unexploded Ordnance Supervisor
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 POLICY

KEMRON and subcontractor personnel will follow procedures established in this Standard Operating Procedure (SOP) for the Quality Control (QC) of operations related to the investigation and management of Munitions and Explosives of Concern (MEC), and other explosives related operations. Although this SOP does discuss some geophysically related topics, QC procedures for geophysical operations are discussed in detail in GEO SOP 8 (Geophysical QC). This SOP must be distributed to, and signed by all personnel performing activities related to this SOP, and must be adhered to as field activities are performed.

2 PURPOSE

The purpose of this SOP is to describe the equipment and general methodologies that are to be used; and details the general policies, operational procedures and guidance to be employed during the performance of QC tasks related to the investigation and management of MEC, and other explosives related operations. This SOP does not detail the use of the equipment that is described herein. This SOP assumes that experienced personnel that will be using this SOP are familiar with the equipment and are competent in their use. Where applicable, this SOP was developed in accordance with Engineering Manual (EM) 200-1-15, *Environmental Quality – Technical Guidance in Military Munitions Response Actions* (United States Army Corps of Engineers [USACE], 2013), ER 1180-1-6, Construction Quality Management (USACE, 1995) and ER 1110-1-12, Quality Management (USACE, 2006).

3 SCOPE

This SOP provides technical guidance on the performance of QC activities related to the investigation and management of MEC, and other explosives related operations, including, but not limited to, the following:

- BSIs (installation and recovery);
- Instrument daily function tests;
- Technology-aided surface MEC removal;
- Intrusive investigation (analog methodology);
- Intrusive investigation of Digital Geophysical Mapping (DGM) targets;
- Hole clearance using an EM61MK2;
- Sifting Operations;
- MEC and Material Potentially Possessing an Explosive Hazard (MPPEH) Management;
- Demolition of MEC and Material Documented as an Explosive Hazard (MDEH)
- Explosives management;
- Explosives siting; and
- Exclusion Zones.

This document is not intended to contain all requirements and procedures necessary for QC activities. This document should be used in conjunction with the documents listed in Section 10 (Associated SOPs) and Section 11 (Documentation) below, and with QC metrics described in Worksheet #12 of the MEC Quality Assurance Project Plan (QAPP). The information presented in this SOP is generally applicable to all MEC related project sites.

4 MAINTENANCE

KEMRON personnel are responsible for the maintenance of this SOP.

5 EQUIPMENT

- Logbook;
- Digital tablet with Global Positioning System (GPS) capability (if used);
- QC inspection forms; and
- RTK-GPS rover unit (if used).

6 QC PERSONNEL ORGANIZATION, QUALIFICATIONS AND RESPONSIBILITIES

The overall project organization and reporting structure is presented in Worksheet #3 of the MEC QAPP. The QC personnel, organization, qualifications, and responsibilities are addressed in more detail in this SOP.

6.1 Project QC Personnel

The Contractor Quality Control System Manager (CQCSM) will assist the Unexploded Ordnance Quality Control Specialist (UXOQCS) with QC related documentation and compliance with the MEC QAPP. The UXOQCS is responsible for the QC of field activities related to MEC and explosives operations. The UXOQCS will verify that all blind seed items (BSI)s have been located by the surface removal and intrusive investigation teams. The MEC and explosives QC team will include the following personnel:

- CQCSM
- UXOQCS
- QC Geophysicist (for DGM related BSIs)

6.1.1 CQCSM

The CQCSM is responsible for the implementation of this SOP and the operation of the standard quality management program. The qualifications of the CQCSM will be submitted to the COR for approval. Replacement of this person can only be made with the prior written consent of the USACE COR. The CQCSM will work with the Project Manager to implement this SOP. The CQCSM will verify and document that contract requirements and specifications are accomplished, whether work is performed by the prime contractor or subcontractors. The CQCSM will ensure development of plans that provide clear guidance and objectives of the work to be performed. The CQCSM will work closely with the UXOQCS and Quality Assurance (QA) personnel to establish quality standards and control procedures to verify that the objectives are achieved. The CQCSM will manage the three-phase control process and request additional staff when the workload warrants. The CQCSM will oversee project record keeping and electronic file sharing of field documents with USACE. If workmanship, materials, equipment or safety procedures are deficient the CQCSM will have the authority to stop work and require resolution before work may resume. The CQCSM will work independently from the operations/construction staff and will report directly to the KEMRON PM.

6.1.2 UXOQCS

The UXOQCS is responsible for the implementation and operation of the field quality management program for MEC and explosives related operations. The qualifications of the UXOQCS will be submitted to the COR for approval. Replacement of this person can only be made with the prior written consent of the USACE COR. The UXOQCS will communicate with the Senior Unexploded Ordnance Supervisor (SUXOS) and field teams, and will report to the KEMRON Program QC Manager. The UXOQCS has authority to enforce the procedures defined in this SOP. The UXOQCS has the authority to stop work in order to ensure that project activities comply with specifications of this SOP, the MEC QAPP, the Site-

Specific Work Plan (SSWP), the contract, and the task order. This authority applies equally to all project activities, whether performed by the Contractor or its subcontractors and suppliers.

The UXOQCS is responsible for planning and executing QC oversight of field project operations and ensuring compliance with specified field QC requirements. Specifically, the UXOQCS is responsible for:

- Developing, assessing the effectiveness of, and maintaining this SOP and related procedures.
- Ensuring QC activities are performed in accordance with the MEC QAPP and SSWP.
- Verifying that all BSIs have been located by the surface removal and analog intrusive investigation teams.
- Identifying quality problems and verifying that appropriate corrective actions are implemented.

The UXOQCS is to be physically on site whenever project-related fieldwork is in progress. If the UXOQCS is to be absent from the site, with COR approval, a qualified alternative UXOQCS will be designated and will be given equivalent responsibilities and authority.

6.1.3 QC Geophysicist

The QC Geophysicist is responsible for the implementation and the operation of the field quality management program for geophysics related operations. The QC Geophysicist conducts QC operations on the geophysical data to document that MQOs are met and that the data is of high quality. The QC Geophysicist is responsible for placement of BSIs for DGM operations. The project QC Geophysicist ensures that field procedures, system calibration and daily testing, DGM data collection, data processing and other DGM related activities that potentially impact DGM data quality follow the approved plans. This is to be completed through regularly scheduled (and unscheduled) QC inspections which include the use of QC inspection checklists (provided in Attachment B of the MEC QAPP after each SOP) and surveillances to verify that the DGM operation is functioning in accordance with the approved plans. For MEC and explosives related operations, the QC Geophysicist reviews excavation data to verify that BSI items were located and accurately recorded. The QC Geophysicist also reviews excavation data to assure that items found are representative of the DGM anomaly that was targeted. The QC Geophysicist is required to regularly report QC inspection results to the USACE Geophysicist. The QC Geophysicist reports to the KEMRON Program QC Manager.

6.2 Letters of Authority

A letter of authority will be signed by the KEMRON Program QC Manager and included in the project file that will describe the responsibilities of, and delegate authority to the CQCSM.

6.3 Personnel Qualifications and Training

In accordance with EM 200-1-15, project staff will possess the necessary qualifications in order to perform their assigned jobs and tasks. The UXOQCS will validate that each UXO Technician conforms to Technical Paper (TP) 18 (Department of Defense Explosives Safety Board [DDESB], 2015).

6.4 Documentation of Qualifications and Training

The review and verification of personnel qualifications are to be documented in the Personnel Qualification Certification Letter. Verified personnel qualification verification forms will be included in the project files. The Unexploded Ordnance Safety Officer (UXOSO) will maintain records documenting that each worker (including subcontractor personnel) has the required qualifications and training; including site-specific and routine training for personnel and visitors. The UXOSO will monitor certification expiration dates so as to provide advance warning to the Project Manager (PM) of when employees will require refresher training or other requirements. These records will be maintained on-site for audit purposes.

6.5 Standard Quality Management Program (CQCSM Responsibilities)

The CQCSM reports directly to the PM. The CQCSM has the authority to stop work if operations are found to be out of compliance with the MEC QAPP, SOPs, and/or SSWPs; or if any operations are deemed unsafe. The CQCSM is onsite full-time and is responsible for the following:

The project will be conducted following these standard quality management procedures:

- Any revisions or changes to this SOP must be approved by the COR prior to being implemented.
- Site specific QC testing and inspection requirements, data objectives and control measures will be detailed in the MEC QAPP and SSWPs.
- The CQCSM or designee will establish and maintain an on-site project file in accordance with contract requirements and Contractor policies for document control.
- The CQCSM or designee is responsible for verifying compliance with this SOP through implementation of the three-phase QC control process on all field related Definable Feature of Work (DFW)s. SOPs have been generated for each DFW that include SOP specific QC checklists at the end of each SOP (MEC QAPP, Attachment B).
- The CQCSM or designee will review and approve the qualifications of proposed technical staff and subcontractors.
- Prior to client delivery or use, project submittals are to be reviewed and approved by KEMRON. Prior to submittal, technical documents (e.g., reports, plans, and engineering drawings) are to be reviewed by qualified staff.
- The CQCSM or designee will notify the USACE Ordnance and Explosives Safety Specialist (OESS) two business days prior to the commencement of any preparatory or initial phase QC inspection.
- The CQCSM or designee will perform a preparatory phase inspection prior to beginning each field related DFW. SOPs have been generated for each DFW that include SOP specific QC checklists. These checklists are located at the end of each SOP (MEC QAPP, Attachment B). The purposes of this inspection is to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. To conduct and document the preparatory phase inspection, the CQCSM or designee is to use the Preparatory Phase Inspection Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic forms of the Preparatory Phase Inspection Checklist are located in the MEC QAPP, Attachment C, Form QC-1. Preparatory Phase Inspections for demolition operations use Form M-8 (MEC QAPP, Attachment C). During the preparatory phase QC inspection, the CQCSM or designee is responsible for reviewing the specifications and requesting clarification from USACE, where necessary.
- The CQCSM or designee is to perform an initial phase inspection the first time a field related DFW is performed. To conduct and document the initial inspection, the CQCSM or designee is to use the Initial Phase Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic forms of the Initial Phase Inspection are located in the MEC QAPP, Attachment C, Form QC-2. Initial Phase Inspections for demolition operations use Form M-9 (MEC QAPP, Attachment C).
- The CQCSM or designee may perform periodic follow-up phase inspections for work in progress, or each time a DFW has a significant change in location, equipment and/or personnel. If the change is substantial, the CQCSM or UXOQCS or designee may conduct an additional preparatory meeting. The purpose of this additional preparatory meeting is to ensure continuous compliance and that an acceptable level of workmanship is being achieved. To conduct and document the Follow-up phase inspections, the CQCSM or designee is to use the Follow-up Phase Inspection Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic forms of the Follow-up Phase Inspection are located in the MEC QAPP, Attachment C, Form QC-3). Follow-up Phase Inspections for demolition operations use Form M-10 (MEC QAPP, Attachment C).

- The final inspection is performed upon conclusion of the DFW and/or prior to closeout to verify that project requirements relevant to the particular feature of work have been met. Outstanding and nonconforming items are to be identified and documented on the Final Inspection Outline (MEC QAPP, Attachment C, Form QC-4).
- The CQCSM or designee is responsible tracking all inspections (MEC QAPP, Attachment C, Form QC-5) and QC surveillance on project activities performed by subcontractors. (MEC QAPP, Attachment C, Form QC-6).
- Tasks which require specific training, calibration, maintenance and certifications will be documented by the task leader performing the activity with copies of applicable documentation provided to the CQCSM or designee for retention in the project QC file.
- The CQCSM will encourage project staff at all levels to provide recommendations for improvements in established work processes and techniques.
- The CQCSM will respond to any member of the project staff, including KEMRON and subcontractor employees, that submit a Corrective Action Request (CAR) (MEC QAPP, Attachment C, Form QC-7).
- The CQCSM or designee will determine whether a written Corrective Action Plan (CAP) [MEC QAPP, Attachment C, Form QC-8] is necessary, based on whether any of the following criteria are met:
    - the CAR priority is high;
    - deficiency requires a rigorous corrective action planning process to identify similar work product or activities affected by the deficiency; or
    - deficiency requires extensive resources and planning to correct the deficiency and to prevent recurrence.
- The CQCSM or designee is responsible for preparing and submitting the Daily QC Report (MEC QAPP, Attachment C, Form QC-9) to the USACE OESS, the project file, and providing concurrent courtesy copies to the COR as requested.

6.6 Field Quality Management Program for MEC and Explosives related operations (UXOQCS Responsibilities)

The UXOQCS reports directly to the Program QC Manager (PQCM). Although the UXOQCS communicates directly with the PM the UXOQCS has the authority to act independently of the PM in all MEC and explosives related QC matters. The UXOQCS has the authority to stop work if operations are found to be out of compliance with the MEC QAPP or if any operations are deemed unsafe. The UXOQCS is onsite full-time and is responsible for the following:

The project will be conducted following these standard field quality management procedures:

6.6.1 Technology-aided Surface MEC Removal

- Ensure equipment used by UXO teams is in good working condition and that team members are familiar and comfortable with equipment.
- Verify that an equipment checkout for each new team member has been performed at the equipment test strip located adjacent to the field office.
- Verify unit/area grid stakes are correctly placed and grid lanes are installed correctly.
- Place BSIs at the rate/density specified in the QAPP and SSWP. If production rates change modify BSI rate/density accordingly. Document BSI resolution.
- Conduct periodic surveillance of UXO team members to ensure environmental protections are followed during field work.
- Conduct periodic surveillance of UXO team members to ensure compliance with SOPs, MEC QAPP, and SSWP requirements.
- Using QC Metrics described in Worksheet #12 of the MEC QAPP, conduct a technology-aided QC inspection where Technology-Aided surface MEC Removal operations have been completed.

- Ensure that the entire surface has been addressed by the Technology-Aided Surface MEC Removal team; or appropriate action has been taken to record that a specific area could not be addressed.
- Conduct periodic inspections of UXO team documentation.
- Conduct periodic inspections of UXO team MEC data submissions.

6.6.2 Subsurface MEC Removal (analog and DGM related)

- Ensure equipment used by UXO teams is in good working condition and that team members are familiar and comfortable with equipment.
- Verify that an equipment checkout for each new team member has been performed at the equipment test strip located adjacent to the field office. If an EM61MK2 is to be used, verify that the daily EM61MK2 QC function tests have been completed, and are at the frequency identified in the MEC QAPP.
- Verify unit/area grid stakes are correctly placed and grid lanes are installed correctly.
- Place BSIs at the rate/density specified in the QAPP and SSWP. If production rates change modify BSI rate/density accordingly. Document BSI resolution.
- Conduct periodic surveillance of UXO team members to ensure environmental protections are followed during field work.
- Conduct periodic surveillance of UXO team members to ensure compliance with SOPs, MEC QAPP, and SSWP requirements.
- Using QC Metrics described in Worksheet #12 of the MEC QAPP, conduct a QC inspection of each grid where analog intrusive MEC removal has been completed.
- Using QC Metrics described in Worksheet #12 of the MEC QAPP, conduct a QC inspection of the DGM target locations that have been intrusively investigated.
- Ensure that the entire subsurface has been addressed by the DGM and intrusive investigation team, or appropriate action has been taken to record that a specific area could not be addressed.
- Conduct periodic inspections of UXO team documentation.
- Conduct periodic inspections of UXO team MEC data submissions.

6.6.3 UXOQCM Inspection of the KEMRON DB

The UXOQCS will inspect the KEMRON DB a minimum of once a week. This inspection is to review the ordnance related data for that week that has been uploaded to the KEMRON DB. Any required changes are done in real time, or, discrepancies are relayed to the appropriate UXO Team Leader, clarification is then gained, and the required changes (if necessary) are then made.

6.7 Standard Field Quality Management Program for Geophysics related operations (QC Geophysicist Responsibilities)

For the investigation and management of MEC, and other explosives related operations the QC Geophysicist is responsible for the installation of BSIs in areas that are to have DGM operations conducted over them. The QC Geophysicist is also responsible for assisting the UXOQCM and CQCSM in verifying that all DGM related BSIs have been excavated and have been properly identified and reported by the intrusive investigation team. The QC Geophysicist will work with the CQCSM and UXOQCS with the generation of any CARs, root-cause analysis (RCA)s and CAPs that relate to DGM operations. The QC Geophysicist is not required to be onsite full-time. A complete list of the QC Geophysicist's duties as they relate to DGM operations are described in GEO SOP 8 (Geophysical QC).

7 BLIND SEEDING

In accordance with the Geophysical System Verification (GSV) process (Environmental Security Technology Certification Program [ESTCP], 2009), the UXOQCS will be responsible for emplacing BSIs in areas where Technology-Aided Surface MEC Removal and analog intrusive operations are to be conducted. The QC Geophysicist will be responsible for emplacing BSIs in areas where DGM is to be conducted (see GEO SOP 8 [Geophysical QC]). BSI Installation is discussed in GEO SOP 2 (Blind Seed Item Installation). The integrity of the blind seeds will be maintained in accordance with the Blind Seed Firewall Plan (MEC QAPP – Attachment A).

Once an area has been investigated the UXOQCS will verify that all BSIs have been located and have been accurately identified. Once it has been verified that the BSIs have been successfully detected, its location and other associated information will be supplied to the Field Data Manager for inclusion in the KEMRON Database. Upon finding a failure (i.e. missed BSI), the UXOQCS (and QC Geophysicist if the BSI is related to DGM operations) will use procedures described in Section 9 below (Deficiency Identification and Resolution) to determine the extent of the failure, why it occurred, and if corrective actions are warranted.

8 THREE PHASE INSPECTION PROCESS

KEMRON is responsible for verifying compliance with approved project documents through the implementation of a three-phase control process, which ensures that project activities comply with the approved plans and procedures. The QC monitoring requirements for each field DFW related to the investigation and management of MEC, and other explosives related operations are discussed in general below. A list of project specific DFWs can be found in Worksheet #12 of the MEC QAPP. The CQCSM or designee will ensure that the three-phase QC process is implemented for each field related DFW. SOPs have been generated for each DFW that include SOP specific QC checklists. This section specifies the minimum inspection requirements that must be met and to what extent QC monitoring must be conducted and documented by the CQCSM or designee.

Each QC inspection phase is considered relevant for obtaining necessary product quality. However, the preparatory and initial inspections are particularly invaluable in preventing problems. Work will not be performed on a DFW until the preparatory phase inspections have been completed and any non-conformance issues have been resolved.

8.1 Preparatory Phase QC Inspection

Prior to performing the preparatory phase inspection, the CQCSM or designee will review the appropriate sections of the MEC QAPP, SOPs and SSWP. The Preparatory Phase QC inspection is completed by the CQCSM or designee through the verification that the following has been completed prior to the commencement of field activities associated with a field DFW (related to the investigation and management of MEC, and other explosives related operations):

- Authorization to proceed has been obtained;
- Required permits and notifications have been obtained or given;
- Required submittals have been approved;
- Plans, procedures, specifications and required documentation have been approved and are available to the workers;
- Required materials and equipment are on site;
- Field equipment is appropriate, available, functional, and properly tested for its intended/stated use;
- Workers needed to perform the work have been designated and are available;
- Staff responsibilities have been assigned and communicated;
- Staff members have the necessary knowledge, expertise, and information to perform their jobs;
- Arrangements for support services have been made (if required);
- All necessary procurements are in place; and
- Training in accordance with the requirements of the MEC QAPP and SOPs has occurred.

The CQCSM or designee will coordinate and perform a Preparatory Phase meeting before beginning each field related DFW. The purpose of this meeting is to ensure that all critical staff involved in the work are familiar with applicable specifications and plans; and to verify that the necessary resources, conditions, and controls are in place and compliant before work activities start. Upon completion of the inspection, the CQCSM or designee will complete a Preparatory Phase Inspection Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic Preparatory Phase inspection checklists can be found in the MEC QAPP, Attachment C (Form QC-1).

Project personnel must correct or resolve discrepancies between existing conditions and the approved MEC QAPP that are identified by the CQCSM or designee during the Preparatory Phase inspection. The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. The CQCSM or designee will verify that unsatisfactory and/or nonconforming conditions have been corrected prior to the commencement of the operation being inspected.

8.2 Initial Phase QC Inspection

The Initial Phase QC inspection occurs at the startup of field activities associated with a field DFW (related to the investigation and management of MEC, and other explosives related operations). The Initial Phase QC inspection is completed by the CQCSM or designee through the verification and inspection of the following:

- Check preliminary work for compliance with procedures, specifications, and requirements detailed in the MEC QAPP, SOPs and SSWP;
- Establish an acceptable level of workmanship; and
- Check for omissions, and resolve differences of interpretation.

At the onset of a particular DFW, the CQCSM or designee will perform an Initial Phase inspection and complete an Initial Phase Inspection Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic Initial Phase inspection checklists can be found in the MEC QAPP, Attachment C (Form QC-2).

During the Initial Phase inspection, the CQCSM or designee will ensure that discrepancies between site practices and approved plans or specifications are identified and resolved. The resolution of discrepancies is a critical step in the Initial Phase inspection. The Initial Phase inspection will also verify that the APP adequately identifies all hazards associated with actual field conditions and verifies that appropriate safe work practices are being followed.

The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. Furthermore, an additional Initial Phase Inspection will be rescheduled and more frequent Follow-up Inspections will be conducted to verify the quality of work.

8.3 Follow-up Phase QC Inspection

The Follow-up Phase QC inspection occurs as field activities associated with a specific DFW (related to the investigation and management of MEC, and other explosives related operations) are ongoing. The Follow-up Phase QC inspection is completed by the CQCSM or designee through the verification and inspection of the following:

- Check ongoing work for compliance with procedures, specifications, and requirements detailed in the MEC QAPP, SOPs and SSWP;
- Verify that the current level of workmanship is acceptable; and
- Check for omissions, and resolve differences of interpretation.

As a particular field DFW is in operation, the CQCSM or designee will perform a Follow-up Phase inspection and complete a Follow-up Phase Inspection Checklist that is specific to each SOP (MEC QAPP, Attachment B). Generic Follow-up Phase inspection checklists can be found in MEC QAPP Attachment C (Form QC-3).

During the Follow-up Phase inspection, the CQCSM or designee will ensure that discrepancies between site practices and approved plans or specifications are identified and resolved. The Follow-up Phase inspection will continue to verify that the APP adequately identifies all hazards associated with actual field conditions and verifies that appropriate safe work practices are being followed.

The inspection results will be documented by the CQCSM or designee in the form of QC checklists and daily reports. Should results of the inspection be unsatisfactory, work will be stopped, corrective actions will be initiated and deficiencies corrected. Furthermore, an additional Initial Phase Inspection will be rescheduled and more frequent Follow-up Inspections will be conducted to verify the quality of work. work.

8.4 Final Inspection

The final inspection is performed upon conclusion of a DFW and prior to closeout to verify that project requirements relevant to the particular DFW have been satisfied. Outstanding and nonconforming items are to be identified and documented on the Final Inspection Outline (MEC QAPP, Attachment C, Form QC-4).

9 DEFICIENCY IDENTIFICATION AND RESOLUTION

While deficiency identification and resolution occurs primarily at the operational level, QC audits provide a backup mechanism to address problems that either are not identified or cannot be resolved at the operational level. Deficiencies identified by the CQCSM or designee are to be corrected by operational staff and documented either in the field activity daily log or CAR as determined by the CQCSM or designee.

9.1 Corrective Action

A CAR (MEC QAPP, Attachment C, Form QC-7) can be issued by any member of the Team, including subcontractor employees. The CAR will be forwarded to the CQCSM or designee who is then responsible for evaluating the validity of the request. If the CAR is valid the CQCSM or designee will address the corrective action with the appropriate individuals to resolve the deficiency.

The CQCSM or designee will determine if an RCA and/or CAP (MEC QAPP, Attachment C, Form QC-8) are necessary. The CAP will include assigning personnel and resources, and will specify and enforce a schedule for corrective actions. Once a corrective action has been resolved, the CAR, CAP and supporting information will be forwarded to the KEMRON PQCM for closure.

The recommendations provided in the CAPs that are to be implemented will be reviewed during Follow-Up QC inspections. The purpose of this CAP review is as follows:

- Ensure that established protocols are implemented properly;
- Verify that corrective actions have been implemented;
- Ensure that corrective actions are effective in resolving problems;
- Identify trends within and among similar work units; and
- Facilitate system RCA of potential larger systemic problems.

9.2 CAR and CAP Tracking

Each CAR and subsequent CAP, if needed, will be given a unique identification number and tracked until corrective actions have been implemented and verified by the CQCSM or designee prior to closure of the CAR and CAP.

10 ASSOCIATED SOPS

- GEO SOP 2 - Blind Seed Item Installation
- UXO SOP 1 – FCA Installation and Use
- UXO SOP 2 – Technology-aided Surface MEC Removal
- UXO SOP 3 – Intrusive Investigation Using Analog Methods
- UXO SOP 4 – Intrusive Investigation of DGM Targets
- UXO SOP 5 – MEC and MPPEH Management
- UXO SOP 6 – Demolition of MEC and MDEH
- UXO SOP 7 – Explosives Management
- UXO SOP 8 – Explosives Siting
- UXO SOP 9 – Exclusion Zones

11 DOCUMENTATION

The following information is to be recorded during QC of MEC and explosives operations:

- QC Checklists (specific to each SOP)
- QC Surveillances
- BSI information (installation and investigation results)
- CAR (if required)
- RCA (if required)
- CAP (if required)
- Logbook entries

12 HEALTH AND SAFETY

Conducting QC of MEC and explosives operations in areas that potentially contain MEC items will involve hazards typically associated with military munitions. Adequate health and safety measures must be taken to protect project personnel from potential exposure to explosives, explosive components, and munitions items. Safety measures are to be addressed in the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) to mitigate these hazards. Procedures for establishing EZs are described in UXO SOP 9 (Exclusion Zones).

13 REFERENCES

DDESB, 2015, *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, Technical Paper 18, 2015.

Environmental Security Technology Certification Program (ESTCP), 2009. *Geophysical System Verification (GSV): A Physics-Based Alternative to Geophysical Prove-Outs for Munitions Response,* July.

USACE, 1995, *Construction Quality Management,* ER 1180-1-6, Washington, D.C.

USACE, 2006, *Engineering and Design - Quality Management*, ER 1110-1-12, Washington, D.C.

USACE, 2013, *Environmental Quality – Technical Guidance Military Munitions Response Actions,* EM 200-1-15, Washington, D.C.

Appendix A: SOP Signature Page

The following persons have read and understand this SOP:

Signature:	Date:

ATTACHMENT C

FORMS

LIST OF FORMS

Kemron ENVIRONMENTAL SERVICES

Form D-1

FIELD ACTIVITY DAILY LOG

Daily Log	Date:			
	No.			
	Sheet	Of		

PROJECT NAME: FORMER FORT ORD, CA	Project Number: SH4914
FIELD ACTIVITY SUBJECT:	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS	
VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
PERSONNEL ON SITE:	
SIGNITURE:	DATE:

Form E-1

SITE HABITAT CHECKLIST

The following are requirements to minimize biological disturbances to protected species and habitat.

Please notify Jami Davis, KEMRON Biologist (831-824-2317), *before* proceeding if work tasks or work boundaries change, additional vegetation removal is necessary, vegetation cutting methods change, or any other conditions change. Field Supervisors must receive a copy of this checklist.

SITE:		**DATE:**	
WORK TO BE CONDUCTED:			

1. LAND USE:	☐ **Habitat Reserve**	☐ **Development Area**	☐ **Other (specify):**
2. LAND OWNER:	☐ **Army**	**Location:**	
	☐ **BLM**	**Location:**	
	☐ **Other:**	**Location:**	

3. ENDANGERED, THREATENED, RARE, OR HMP-LISTED SPECIES	☐ **Yes**	☐ **No**	☐ **Flagged/Marked**
Species:			
Location:			
Grid Numbers:			
Restrictions:			

4. VERNAL POOLS/PONDS PRESENT	☐ **Yes**	☐ **No**	☐ **Flagged/Marked**
Location:			
Grid Numbers:			
Work Can Proceed in Pools/Ponds:	☐ **Yes**	☐ **No**	
Restrictions:			

5. VEGETATION REMOVAL	
☐ **No Removal Needed**	**Location:**
☐ **Manual Removal Needed**	**Location:**
☐ **Mechanical Removal Needed**	**Location:**
Vegetation Removal Restrictions:	

6. EROSION CONCERNS/SITE RESTORATION:

7. SITE ACCESS:

8. INVASIVE SPECIES:

9. ADDITIONAL SITE CONCERNS:

This checklist has been read, approved, and signed by the following:

KEMRON Biologist: ____ **Date:** _________

KEMRON QC Manager: ____ **Date:** _________

BRAC Biologist: ____ **Date:** _________

ENVIRONMENTAL SERVICES

Form E-2

FIELD REPORT FORM
BLACK LEGLESS LIZARD

If a black legless lizard is found (live, injured, or dead), please call Jami Davis (KEMRON at 831-824-2317) out to the site to identify and record. If not available, please fill out this form and return to Jami Davis the same day.

Location (Burn Unit, Range # etc.): ____

Date/Time: ___________________

Grid #: ________________

Northing/Easting or Approx. Grid Coordinates (in ft): ___________________________

Type of Activity (check one or write in):

- ˜ Surface clearance (non-intrusive activity)
- ˜ MEC removal (intrusive, excavation)
- ˜ Geophysical work
- ˜ Other ____

Weather: Air Temp.___________ Wind ____________ Sunny/Cloudy ________________

Depth found (if known): ___________________

Habitat Description (e.g. maritime chaparral, oak woodland, grassland; vegetation height; presence of surface litter/debris; soil type; plant species where specimen found; etc.):

____

____

Description of lizard (live/injured/dead, color [black or silvery], condition, behavior etc.):

____

____

Total Length (inches): _____________

Other Notes: ____

____

Disposition: **Found by (Team #):** ____

- ˜ Released to same location or adjacent habitat
- ˜ Report Form completed By:______________________________________
- ˜ Injured (left on site) or killed (saved in plastic bag or container) and Report Form submitted
- ˜ Other ____

Attachments: ˜ Location map ˜ Photographs (lizard and surrounding habitat where found)

Form E-3

FIELD REPORT FORM
CALIFORNIA TIGER SALAMANDER

If a California Tiger Salamander is found, please call Jami Davis (KEMRON Biologist) out to the site at: 831-824-2317. If not available, call Bill Collins, BRAC Environmental Coordinator, at: 831- 242-7920.

Location (Site, Range):

Date/Time:

Found by (Person, Team #):

Grid #:

Northing/Easting or Approx. Grid Coordinates (in feet): __°__'__"__; __°__'__"__

Type of Activity (check one or write in):

Surface clearance or other non-intrusive activity
MEC removal or other type of excavation
Geophysical work
Other:

Depth found (if known):

Weather: *Air Temp:* __° *Wind:*__ *Sunny/Cloudy:*__

Habitat Description (e.g. maritime chaparral, oak woodland, grassland; vegetation height; presence of surface litter/debris; soil type; plant species where specimen found; etc.):

Description of salamander (live/injured/dead, color, condition, behavior, etc.):

Size: *Total Length:* ___ *Snout to Vent Length:* ___ *Weight:* ___

Other Notes:

Disposition:

Released to same location or adjacent habitat:
Report Form completed by:
Injured or killed (left on site) and Report Form submitted
Other:

Attachments:

Location map
Photographs

EXPLOSIVE DEMOLITION OPERATIONS

HOW MANY SHOTS: ______________________________

SIZE AND WEIGHT: ______________________________

TIME OF SHOT: ______________________________

LOCATION: ______________________________

DATE: ______________________________

HOW MANY SHOTS: ______________________________

SIZE AND WEIGHT: ______________________________

TIME OF SHOT: ______________________________

LOCATION: ______________________________

DATE: ______________________________

AT LEAST 30 MINUTES PRIOR TO PLANNED DETONATION:

LOCATION FOR FIRE TRUCK: ______________________________

CALLED:		**TIME:**
Presidio of Monterey Fire Department	Emergency (831) 242-7700	
Former Fort Ord (Police)	Emergency (831) 242-7851	
CSU Police (Non-Emergency)	(831) 655-0268	

KEMRON ENVIRONMENTAL SERVICES

Detonation Approval Checklist/ Risk Assessment

Date of Shot: ____________________ Window for Shot: ____________________

Location of Shot: ____________________ Types of MEC: ____________________

Net Explosive Weight (NEW) [Estimated]: ____________________ Number of Detonations: ____________________

Type of Engineering Control(s):		**Site Preparation Measures:**	
Sand Bagging		Site Wet Down	
Soil Tamping		Vegetation Removal	
Barricades		Other	
Comments:			

A qualitative measure of the worst credible event resulting from personnel exposure to the unexploded ordnance:

LOW		MEDIUM		HIGH
1	2	3	4	5+

Distance to nearest inhabited location/structure likely to be at risk from the OE hazard:

LOW		MEDIUM		HIGH
1	2	3	4	5+

Weather Conditions:

LOW		MEDIUM		HIGH
1	2	3	4	5+

Wind Conditions:

LOW		MEDIUM		HIGH
1	2	3	4	5+

KEMRON ENVIRONMENTAL SERVICES

Detonation Approval Checklist/
Risk Assessment

Assessment Total:	Low Risk	Caution	High Risk
	1-7	8-14	15-20

- No individual detonation will exceed 15lbs NEW without prior approval
- All notifications will be sent two hours prior to detonation.
- COE Ordnance and Explosives Safety Specialist will be on site during detonation operations.
- Engineering Controls will be in place prior to detonation.
- Fire Department will be on site during detonation operations.

Approved
Date:______________

William K. Collins
BRAC Environmental Coordinator

KEMRON ENVIRONMENTAL SERVICES

Form M-3

PRESIDIO OF MONTEREY FIRE DEPARTMENT
MUNITIONS RESPONSE & ORDNANCE REMOVAL FIRE RISK ASSESSMENT

OPERATIONAL AREA: ______________________________
DATE OF ASSESSMENT: ______________________________
OPERATIONAL PERIOD: ______________________________

RISK VALUES

NUMBER VALUE

(1) LOWEST RISK – (5) HIGHEST RISK

SITE ACCESS: (Fire Suppression, Road Conditions, Obstructions, Etc.)
Value:

PRE-SUPPRESSION (Fuels, Site Access, Clearance Zone)
All shots will be pre-suppressed
Value:

DEMOLITION SHOT: (Surface, Subsurface, Type of OE, Removal Method)
Value:

TOPOGRAPHY: (Slopes, Ridges, Barriers, Canyons, Chimneys)
Value:

WEATHER: (Wind, Temperature, Relative Humidity)
Value:

FIRE SUPPRESSION: (Accessibility, Weather, Fuels, Suppression Factors)
Value:

TOTAL NUMBER VALUE:

TOTAL ASSESSMENT VALUES

0-12 LOW RISK **12-23 CAUTION** **24-35 HIGH RISK**

ASSESSED BY: ______________________________

FORM UPDATED 13 January 2006

ENVIRONMENTAL SERVICES

Form M-3

PRESIDIO OF MONTEREY FIRE DEPARTMENT
MUNITIONS RESPONSE & ORDNANCE REMOVAL FIRE RISK ASSESSMENT

SPECIAL NOTATIONS

OPERATION:

DATE:

RED FLAGS

____
FIRE DEPARTMENT REPRESENTATIVE

KEMRON ENVIRONMENTAL SERVICES

Form M-4

Misfire Checklist

NON-ELECTRIC MISFIRES

Working on a non-electric misfire is the most hazardous of all operations. Investigation and corrective action should be undertaken by the technician that placed the charge using the following procedure:

1. If a charge fails to detonate at the determined time, initiate a 60-minute wait period plus the time of the safety fuse (i.e., 5-minute safety fuse plus 60 minutes, for a total of 65-minute wait period).

2. After the wait period has expired, the designated technician will proceed to the site to inspect the firing system. A safety observer must watch from a protected area.

3. Prime the shot with a new non electric firing system and install a new fuse igniter.

4. Follow normal procedures for initiation of the charge.

NONEL MISFIRE

The use of a shock tube for blast initiation can present misfires which require the following actions:

1. If charge fails to detonate, it could be the result of the shock tube not firing. Visually inspect the shock tube, if it is not discolored (i.e., slightly black), it has not fired.

2. If it has not fired, cut a 1-foot piece off the end of the tube, re-insert the tube into the firing device, and attempt to fire again. (Try this at least twice)

3. If the device still does not fire, wait 30 minutes and proceed to the site to replace the shock tube with a new tube.

NOTE: If the tube is slightly black, then a "Black Tube" misfire has occurred, and the shock tube will have to be replaced. When replacing the shock tube, be sure to remove the tube with the detonator attached. Without removing the detonator from the end of the tube, place the defective tube on the shot for disposal.

ENVIRONMENTAL SERVICES

Form M-4

Misfire Checklist

DETONATING CORD MISFIRE

Detonation cord will be used to tie in multiple demolition shots. Since detonation cord initiation will be non-electrical, these procedures will be used to clear a detonation cord misfire.

1. If there is no problem with the initiating system, wait the prescribed amount of time and inspect the initiator to the cord connection to ensure it is properly connected. If it was a bad connection simply attach a new initiator and follow the appropriate procedures

2. If the initiator detonated and the cord did not, inspect the cord to ensure it is the detonation cord and not time fuse. Also, check to ensure there is PETN in the cord at the connection to the initiator.

3. At this point, it may be necessary replace the detonating cord. If this is required, it must be accomplished carefully to ensure that the demolition charge and the OE item(s) are not disturbed.

PERFORATOR MISFIRE

The use of perforators is both cost-effective and considerably safer than the use of C-4 and many other demolition materials. If everything went but the perforator, one of four things has occurred:

1. The detonation cord grain size was insufficient to initiate the perforator
2. The detonation cord was dislodged from the perforator when placing tamping materials
3. The perforator was defective
4. The perforator was moved during the placement of tamping materials.

Check to ensure the grain size of the detonation cord is sufficient, with 80 grain size or greater being the recommended size.

If the detonation cord connection to the perforator was the problem, ensure that the next connection is secure (use duct tape if necessary).

If it is evident that the perforator was moved, then ensure it is properly secured for the next shot.

If the detonating cord size and connection are sufficient, replace the perforator. Leaving the defective one on the demolition shot.-

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIALS)

(Read Instructions before completing this form.)

This form applies to all vehicles which must be marked or placarded in accordance with Title 49 CFR.	1. BILL OF LADING/TRANSPORTATION CONTROL NUMBER

SECTION 1 - DOCUMENTATION	ORIGIN a.	DESTINATION b.
2. CARRIER/GOVERNMENT ORGANIZATION		
3. DATE/TIME OF INSPECTION		
4. LOCATION OF INSPECTION		
5. OPERATOR(S) NAME(S)		
6. OPERATOR(S) LICENSE NUMBER(S)		
7. MEDICAL EXAMINER'S CERTIFICATE*		

8. *(X if satisfactory at origin)*						9. CVSA DECAL DISPLAYED ON COMMERCIAL EQUIPMENT*	YES	NO
a. HAZMAT ENDORSEMENT		d. ERG OR EQUIVALENT COMMERCIAL:	YES	NO				
b. VALID LEASE*		e. DRIVER'S VEHICLE INSPECTION REPORT*				a. TRUCK/TRACTOR		
c. ROUTE PLAN		f. COPY OF 49 CFR PART 397				b. TRAILER		

SECTION II - MECHANICAL INSPECTION

All items shall be checked on empty equipment prior to loading. Items with an asterisk shall be checked on all incoming loaded equipment.

10. TYPE OF VEHICLE(S)	11. VEHICLE NUMBER(S)

12. PART INSPECTED *(X as applicable)*	ORIGIN (1)		DESTINATION (2)			ORIGIN (1)		DESTINATION (2)		COMMENTS (3)
	SAT	UNSAT	SAT	UNSAT		SAT	UNSAT	SAT	UNSAT	
a. SPARE ELECTRICAL FUSES					k. EXHAUST SYSTEM					
b. HORN OPERATIVE					l. BRAKE SYSTEM*					
c. STEERING SYSTEM					m. SUSPENSION					
d. WINDSHIELD/WIPERS					n. COUPLING DEVICES					
e. MIRRORS					o. CARGO SPACE					
f. WARNING EQUIPMENT					p. LANDING GEAR*					
g. FIRE EXTINGUISHER*					q. TIRES, WHEELS, RIMS					
h. ELECTRICAL WIRING					r. TAILGATE/DOORS*					
i. LIGHTS AND REFLECTORS					s. TARPAULIN*					
j. FUEL SYSTEM*					t. OTHER *(Specify)*					

13. INSPECTION RESULTS *(X one)* ACCEPTED ☐ REJECTED ☐

(If rejected give reason under "Remarks". Equipment will be approved if deficiencies are corrected prior to loading.)

14. SATELLITE MOTOR SURVEILLANCE SYSTEM: *(X one)* ACCEPTED ☐ REJECTED ☐

15. REMARKS

16. INSPECTOR SIGNATURE *(Origin)*	17. INSPECTOR SIGNATURE *(Destination)*

SECTION III - POST LOADING INSPECTION

This section applies to Commercial and Government/Military vehicles. All items will be checked prior to release of loaded equipment and shall be checked on all incoming loaded equipment.	ORIGIN (1)		DESTINATION (2)		COMMENTS (3)
	SAT	UNSAT	SAT	UNSAT	
18. LOADED IAW APPLICABLE SEGREGATION/COMPATIBILITY TABLE OF 49 CFR					
19. LOAD PROPERLY SECURED TO PREVENT MOVEMENT					
20. SEALS APPLIED TO CLOSED VEHICLE; TARPAULIN APPLIED ON OPEN EQUIPMENT					
21. PROPER PLACARDS APPLIED					
22. SHIPPING PAPERS/DD FORM 2890 FOR GOVERNMENT VEHICLE SHIPMENTS					
23. COPY OF DD FORM 626 FOR DRIVER					
24. SHIPPED UNDER DOT SPECIAL PERMIT 868					

25. INSPECTOR SIGNATURE *(Origin)*	26. DRIVER(S) SIGNATURE *(Origin)*
27. INSPECTOR SIGNATURE *(Destination)*	28. DRIVER(S) SIGNATURE *(Destination)*

KEMRON ENVIRONMENTAL SERVICES

Form M-6

EXPLOSIVES USAGE RECORD

Team Number:__________Date: _________________

Team Leader:_________ Project: _______________

EXPLOSIVES ISSUED Signature of Team Leader:______________________			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
EXPLOSIVES EXPENDED Signature of Team Leader:______________________			
Item	**Quantity**	**Lot Number**	**Checker's Initials**
EXPLOSIVES RETURNED Signature of SUXOS: ______________________			
Item	**Quantity**	**Lot Number**	**Checker's Initials**

I certify the explosives listed above were used for their intended purpose.

________________________________ Date: ______________________

Senior UXO Supervisor

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

OMB No. 1140-0026 (04/30/2012)

Report of Theft or Loss - Explosive Materials

For ATF Use Only

Date Received	Date Faxed to JSOC & Field Division	Unique Identifier
		Case Number

To Be Completed By Person Making Report

Upon discovery of any theft or loss of any of your explosive materials:
- First, contact ATF toll free at 1-800-461-8841 between 8:00 a.m. - 5:00 p.m. EST or after hours and weekends contact ATF at 1-800-800-3855 to report the theft or loss;
- Second, contact your local law enforcement office to report the theft or loss to obtain a police report; and
- Third, complete this form and attach any additional reports, sheets or invoices necessary to provide the required information, and fax the form with additional material(s) to the ATF U.S. Bomb Data Center (USBDC) at 866-927-4570.

1. Date

2. Type of Report *(Check one)*: **Theft** ☐ **Loss** ☐ **Supplement** ☐

3. Full Name of Person Making the Report *(Last, First, Middle)*

4. Corporate or Business Name *(If applicable)*

5a. Office Address *(Street Address, City, State, and Zip Code)*

5b. Telephone Number

6. Actual Location of Theft or Loss *(if different from item 5a)*

7. Theft or Loss	Date	Time
a. Discovered		
b. Occurred *(Show approximate if exact not known)*		
c. Reported to ATF by Telephone		
d. Reported to Local Authorities		

8. Name of Local Law Enforcement Officer to Whom Reported

9. Agency Name and Address of Local Authority to Whom Reported

10. Telephone Number:

11. Police Report Number:

12. Explosive Materials Lost or Stolen *(Attach invoices or additional sheets, if necessary)*

a. Manufacturer	**b. Brand Name**	**c. Date Shift Code**	**d. Size**	**e. Quantity** *(Pounds of Explosives, Number of Dets)*	**f. Type and Description** *(Dynamite, Blasting Agents, Detonators, etc. Include for each type, size, MS delay or length of legwire, as applicable)*

13. Theft or Loss Occurred From *(Check applicable box)*

Permanent Magazine ☐ Portable Magazine ☐ Truck ☐ Work Site ☐ Other *(Explain)* ☐ ______

14. Method of Entry *(Complete if applicable)*				15. Hood Defeated *(If yes, check the applicable box below)* Yes ☐ No ☐	
Locks Cut	☐	Inside Help	☐	Broken	☐
Locks Picked	☐	Wall Entry	☐	Cut	☐
Door Unlocked	☐	Key Stolen/ Used	☐	Removed	☐
Door Blown Open	☐			Inadequate for Lock Used	☐

16. Other Information Pertinent to the Theft or Loss

17. Signature and Title of Person Making Report	Date	18. Federal Explosives License or Permit Number

Reporting Instructions

Fax this completed form to the ATF address listed below or call if no fax is available:

Bureau of Alcohol, Tobacco, Firearms and Explosives
U.S. Bomb Data Center
99 New york Ave., N.E. 8S 295
Washington, DC 20226
Toll Free Fax: 1-866-927-4570

Questions regarding the completion of this form should be referred to the U.S. Bomb Data Center toll free at 1-800-461-8841.

Privacy Act Information

The following information is provided pursuant to section 3 of the Privacy Act of 1974 (5 U.S.C. § 522a(e)(3))

1. **Authority.** Solicitation of this information is made pursuant to Title XI of the Organized Crime Control Act of 1970 (18 U.S.C. Chapter 40). Disclosure of a theft or loss of explosive materials is mandatory pursuant to 18 U.S.C. § 842(k) for any person who has knowledge of such theft or loss from his stock.

2. **Purpose.** The purpose for the collection of this information is to give ATF notice of the theft or loss of explosive materials, and to furnish ATF with the pertinent facts surrounding such theft or loss. In addition, the information is used to confirm and verify prior notification of this theft or loss of explosive materials.

3. **Routine Uses.** The information will be used by ATF to aid in the administration of laws within its jurisdiction concerning the regulation of explosive materials and other related areas. In addition, the information may be disclosed to other Federal, State, foreign, and local law enforcement of laws within their jurisdiction.

4. **Effects of not supplying information requested.** 18 U.S.C. § 842(k) makes it unlawful for any person, who has knowledge of the theft or loss of explosive materials from his stock, to fail to report such theft or loss within twenty-four hours of discovery thereof, to the Secretary and to appropriate local authorities. The penalty for violation of this section is a fine of not more than $1,000 or imprisonment for not more than one year, or both. 18 U.S.C. § 844(b)

Paperwork Reduction Act Notice

This request in accordance with the Paperwork Reduction Act of 1995. The purpose of this information collection is to report the theft or loss of explosive materials. The information is used for investigative purposes by ATF officials. This information is mandatory by statute. (18 U.S.C. § 842)

The estimated average burden associated with this collection of information is 1 hour and 48 minutes per respondent or recordkeeper, depending on individual circumstances. Comments concerning the accuracy of this burden estimate and suggestions for reducing this burden should be addressed to Reports Management Officer, Document Services Branch, Bureau of Alcohol, Tobacco, Firearms and Explosives, Washington, DC 20226.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

KEMRON ENVIRONMENTAL SERVICES

Form M-8

PREPARATORY PHASE DEMOLITION INSPECTION CHECKLIST FORM

Contract No:	**Project Number:**
Work Order:	**Date:**
Project Name:	**Location:**
Definable Feature(s) of Work:	**Specification Reference:**

I. Key Personnel (Present):

Name	*Position*	*Sign*

II. Checklists, Submittals and Notifications:

Checklist Question:	**Yes**	**No**	**NA**
Are all equipment and procedural checklists SUXOS approved?			
Is Form M-1, Explosive Demolition Operations used?			
Is Form M-3, Presidio of Monterey Fire department Munitions Response & Ordnance Removal Fire Risk Assessment used?			

III. Event Planning:

Checklist Question:	**Yes**	**No**	**NA**
Are items to be “Explosively Treated” identified and documented?			
Is the planned DEMO site Exclusion Zone mapped?			
Are DEMO Team members identified and team assignments made? (Assigned by the DEMO Supervisor)			
Is there a clear plan for the operation? (Briefed by the DEMO Supervisor)			
Is an alternate radio channel required (situational)?			

IV. Materials and Equipment:

Checklist Question:	**Yes**	**No**	**NA**
Are planned DEMO materials to be used, on site (magazine) and available?			
Is the vehicle to be used to transport the explosive materials designated, and capable of meeting the requirements of Section 3.0 of the MPS.			

Form M-8

PREPARATORY PHASE DEMOLITION INSPECTION CHECKLIST FORM

Checklist Question:	Yes	No	NA
Is a water truck available for pre and post shot fire suppression? (P.O.M. Fire Department Fire Risk Assessment dependant)			

V. Safety:

Checklist Question:	Yes	No	NA
Are Activity Hazard Analysis's approved?			
Is the site Health and Safety Plan signed by each worker?			

VI. Organization:

Checklist Question	Yes	No	NA
Are responsibilities clearly outlined for all members?			

VII. QC Comments:

VIII. Client/USACE Representative Comments:

QC Representative Signature / Date:

____
Name

____________________________________ ____________________
Sign Date

Client/USACE Representative Signature / Date

____
Name

____________________________________ ____________________
Sign Date

Form M-9

INITIAL PHASE DEMOLITION INSPECTION CHECKLIST

Contract Number:	**Project Number:**
Work Order:	**Date:**
Project Name::	**Location:**
Definable Feature of Work:	**Specification Reference:**

I. Key Personnel Present:

Name	*Position*	*Sign*

II. Preparatory Procedures:

Checklist Question	**Yes**	**No**	**NA**
Does the vehicle used to transport the explosive materials meet the requirements of Section 3 of the MPS?			
Is positive magazine key control being adhered to?			
Are equipment checklists completed and verified by the DEMO Supervisor?			
Is the DEMO Operations Brief checklist used, and the DEMO Supervisor Brief comprehensive?			

III. Materials:

Checklist Question	**Yes**	**No**	**NA**
Is/are equipment and materials used, in accordance with the DEMO Plan?			

IV. Workmanship:

Checklist Question	**Yes**	**No**	**NA**
Is the operation being performed/conducted in accordance with the DEMO Plan?			

V. Discrepancies:

Checklist Question	**Yes**	**No**	**NA**
Are there any discrepancies between planned events and actual events?			

If so, are discrepancies noted? What actions were taken?			
Are further corrective actions required?			

VI. Safety:

Checklist Question	Yes	No	NA
Is a JSA issued and signed by all attendees?			
Is proper Personal Protective Equipment (PPE) worn?			
Are explosive operations performed/conducted in accordance with the work plan and EM 385-1-97?			

VI. QC Comments

VII. Client/USACE Representative Comments:

QC Representative Signature / Date:

Name

Sign

Date

QA Representative Signature / Date:

Name

Date

KEMRON ENVIRONMENTAL SERVICES

Form M-10

FINAL PHASE DEMOLITION INSPECTION CHECKLIST

Contract Number:	**Project Number:**
Task Order:	**Date/Time:**
Project Name::	**Location:**
Definable Features of Work:	**Specification Reference:**

I. Key Personnel Present:

Name	*Position*	*Sign*

II. Workmanship:

Checklist Question	Yes	No	NA
Were DEMO Plan goals met for this event?			

III. Discrepancies:

Checklist Question	Yes	No	NA
Are there any discrepancies between planned events and actual events?			
Are there any Safety Concerns that need to be addressed?			
If so, are discrepancies noted? What actions were taken?			
Are further corrective actions required?			

IV. QC Comments

ENVIRONMENTAL SERVICES

Form M-10

FINAL PHASE DEMOLITION INSPECTION CHECKLIST

V. Client/USACE Representative Comments:

QC Representative Signature / Date:

____

Name

__________________________________ _______________

Sign Date

Client/USACE Representative Signature / Date

____

Name

__________________________________ _______________

Sign Date

1. DODIC	2. NSN	3. LOT NO.	4. LOCATION	B.	D.
5. DESCRIPTION			A.	C.	E.

6. DATE	7. DOCUMENT NO.	8. ACTION/PURPOSE	9. QUANTITY A. GAIN	9. QUANTITY B. LOSS	10. BALANCE	11. PRINTED NAME

DA FORM 3020-R, AUG 1989 **MAGAZINE DATA CARD**

For use of this form, see DA PAM 710-2-1; the proponent agency is DCSLOG

Continued on Reverse

PREVIOUS EDITION IS OBSOLETE

APD LC v1.01

1. DODIC	2. NSN	3. LOT NO.	4. LOCATION	B.	D.
5. DESCRIPTION			A.	C.	E.

6. DATE	7. DOCUMENT NO.	8. ACTION/PURPOSE	9. QUANTITY A. GAIN	9. QUANTITY B. LOSS	10. BALANCE	11. PRINTED NAME

REVERSE, DA FORM 3020-R, AUG 1989 **MAGAZINE DATA CARD**

Use Other Side First

APD LC v1.01

Kemron Environmental Services

Form M-12

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 DOC IDENT	4 5 6 RI FROM	7 M&S	23 24 UNIT ISS	25 26 27 28 29 QUANTITY	45 SER	46 47 48 49 50 SUPPLEMENTARY ADDRESS	51 SIG	52 53 FUND	54 55 56 DISTRIBUTION	57 58 59 PROJECT	60 61 PRI	62 63 64 REQD DEL DATE	65 66 ADV	67 68 69 RI	70 O/P	71 COND	72 73 MGT	74 75 76 77 78 79 80 UNIT PRICE DOLLARS / CTS	1. TOTAL PRICE DOLLARS / CTS	2. SHIP FROM	3. SHIP TO

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY	23. DATE RECEIVED

24. DOCUMENT NUMBER & SUFFIX (30-44)

25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6)
UI (23-24)
QTY (25-29)
CON CODE (71)
DIST (55-56)
UP (74-80)

27. ADDITIONAL DATA

Adobe Designer 7.0

KEMRON ENVIRONMENTAL SERVICES

FORM QC-1

PREPARATORY INSPECTION OUTLINE

Contract No.: W912DY-10-D-0027
Work Order No. 01 Date:
(Former) Fort Ord, California

Title and No. of Technical Section:	

Reference Contract Drawings: None

A. Planned Attendants:

	Name	Position	Company
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			
16)			

B. Submittals required to begin work:

	Item	Submittal No.	Action Code
1)			
2)			
3)			

I hereby certify, that to the best of my knowledge and belief, that the above required materials delivered to the job site are the same as those submitted and approved.

Contractor Quality Control Systems Manager Date

FORM QC-1

PREPARATORY INSPECTION OUTLINE

Contract No.: W912DY-10-D-0027
Work Order No. 01 Date:
(Former) Fort Ord, California

C. Equipment to be used in executing work:

1) ____________________
2) ____________________
3) ____________________
4) ____________________
5) ____________________
6) ____________________
7) ____________________

D. Work areas examined to ascertain that all preliminary work has been completed:

____
____

E. Methods and procedures for performing Quality Control, including specific testing requirements:

The above methods and procedures have been identified from the project plans and will be performed as specified for the Definable Feature of Work.

____________________ ____________________
Contractor Quality Control Systems Manager Date

FORM QC-1

PREPARATORY INSPECTION OUTLINE

A. Persons in attendance: See Meeting Attendance Sheet (attached)

B. Because of mutual understanding developed during review of preparatory outline and Contract Requirements: (Contract items not specifically covered during the preparatory inspection conference are assumed to be in strict conformance with the contract requirements.)

The items noted above constitute a memorandum of mutual understanding and will be performed as planned and specified.

CQCSM

USACE Technical Representative

Date

Date

KEMRON ENVIRONMENTAL SERVICES

FORM QC-2

INITIAL PHASE CHECK LIST

Contract No.: W912DY-10-D-0027
Work Order No. 01
(Former) Fort Ord, California

Date:
Time:

Title and No. of Technical Section: ______________________________

____

Description and Location of Work Inspected: ______________________________

Reference Contract Drawings: ______________________________

A. Key Personnel Present:

	Name	Position	Company
1)			
2)			
3)			
4)			
5)			

B. Materials being used are in strict compliance with the contract plans and specifications: Yes _ No _

If not, explain: ______________________________

____

____

____

C. Procedures and/or work methods witnessed are in strict compliance with the contract specifications: Yes __ No _____

If not, explain: ______________________________

____

____

____

____

____

____

____

____

____

____

____

____

D. Workmanship is acceptable: Yes ___ No _____

State where improvement is needed: ______________________________

____

E. Workmanship is free of safety violations: Yes __ No ______

If no, corrective action taken: ______

______

Contractor Quality Control Representative

Form QC-3

FOLLOW UP PHASE INSPECTION CHECKLIST

CONTRACTOR QUALITY CONTROL DAILY REPORT CONTINUATION SHEET (ATTACH ADDITIONAL SHEETS IF NECESSARY)

Date:
Contractor:

Y=YES; N=NO; SEE REMARKS BLANK=NOT APPLICABLE	
WORK COMPLIES WITH CONTRACT AS APPROVED IN INITIAL PHASE	

IDENTIFY DEFINABLE FEATURE OF WORK, LOCATION, AND LIST PERSONNEL PRESENT

TESTING PERFORMED & WHO PERFORMED TEST (Include number of samples and/or tests taken)

USACE QA Representative ____________________________________ **Date** _______________

Contractor Quality Control Systems Manager __________________________ **Date** ______________

KEMRON ENVIRONMENTAL SERVICES

FORM QC-4

FINAL INSPECTION OUTLINE

Date:

Contract No.: W912DY-10-D-0027
Work Order Number 01
(Former) Fort Ord, California

Project / Area of Inspection: ______________________________

A. Definable Features of Work: Status of Inspection:

I hereby certify, that to the best of my knowledge and belief, that the work inspected is complete and all materials and equipment used and work performed were completed in accordance with plans submitted and approved.

____
Contractor Quality Control Systems Manager

B. Final Acceptance is Approved, Subject to the Correction of the Punch list Items Below:

ENVIRONMENTAL SERVICES

FORM QC-4

FINAL INSPECTION OUTLINE

Date:

Contract No.: W912DY-10-D-0027
Work Order Number 01
(Former) Fort Ord, California

A. Persons in Attendance: See Meeting Attendance Sheet (attached)

B. Resolution of Punch list Items:

The items noted above constitute a memorandum of mutual understanding and work has been performed as planned and specified.

CQCSM

USACE Technical Representative

ENVIRONMENTAL SERVICES

Form QC-5

INSPECTION SCHEDULE AND TRACKING FORM

Project:	Project Manager:	CQC System Manager:

Reference Number	Definable Feature of Work	Preparatory		Initial		Follow-Up		Completion		
		Date Planned	Actual Date	Date Planned	Actual Date	Planned Begin/End	Actual Dates	Planned Begin/End	Actual Dates	Status

QUALITY CONTROL SURVEILLANCE REPORT

	Report Number:
Project Name:	Date:
Client:	Project Manager:

1 - Activity

☐ Project Management ☐ Field Mobilization ☐ Data Management ☐ Brush Cutting/Clearing/Reduction

☐ Intrusive Investigation ☐ ITP Location Selection ☐ Demolition ☐ UXO Avoidance

☐ MPPEH Management ☐ ITP Construction ☐ Mag and Dig Survey ☐ Detector Aided Visual Survey

☐ Boundary Survey ☐ Stump/Root Processing ☐ Soil Sifting ☐ Other:

2 - Phase

☐ Preparatory ☐ Initial ☐ Follow up ☐ Not Applicable

3 - References

4 - Observed Condition/Activities and Comments:

5 - Results of Surveillance

☐ Acceptable	☐ Unacceptable	Deficiency #: NCR #:
Conducted By:	Signature:	Date:

6 - SUXOS Review

☐ Concur ☐ Non-Concur	Signature:	Date:

7 - Distribution

☐ PM ☐ Site Manager ☐ SUXOS ☐ QA Oversight ☐ Safety ☐ Other: ________ _______________

KEMRON ENVIRONMENTAL SERVICES

Form QC-7

CORRECTIVE ACTION REQUEST

(2)CAR #:	(3)PRIORITY: ☐HIGH ☐NORMAL	(4)DATE PREPARED:

PART A: NOTICE OF DEFICIENCY

(5)PROJECT: WAD#:	
(6)PROJECT MANAGER: Steve Crane	(7)CQC SYSTEM MANAGER:
(8)WORK UNIT:	(9)WORK UNIT MANAGER:
(10)ISSUED TO (INDIVIDUAL & ORGANIZATION):	
(11)REQUIREMENT & REFERENCE:	
(12)PROBLEM DESCRIPTION & LOCATION: (13)CAP REQUIRED? ☐YES ☐NO (14)RESPONSE DUE:	
(15)ISSUED BY (PRINTED NAME & TITLE): SIGNATURE: DATE:	(16)MANAGEMENT CONCURRENCE:

PART B: CORRECTIVE ACTION

(17)PROPOSED CORRECTIVE ACTION/ACTION TAKEN: NOTE: SUPPORTING DOCUMENTATION MUST BE LISTED ON THE BACK OF THIS FORM AND ATTACHED.	
(18)PART B COMPLETED BY (NAME & TITLE): SIGNATURE: DATE:	(19)QC CONCURRENCE:

PART C: CORRECTIVE ACTION VERIFICATION

(20)CAR VERIFICATION AND CLOSE-OUT: (CHECK ONLY ONE & EXPLAIN STIPULATIONS, IF ANY)
☐APPROVED FOR CLOSURE WITHOUT STIPULATIONS
☐APPROVED FOR CLOSURE WITH FOLLOWING STIPULATIONS

COMMENTS/STIPULATIONS:

(21)CLOSED BY (PRINTED NAME & TITLE):

SIGNATURE: DATE:

KEMRON ENVIRONMENTAL SERVICES

Form QC-7

CORRECTIVE ACTION REQUEST (CAR) INSTRUCTION SHEET

(1) **CQC System Manager**: Verify that the total number of pages includes all attachments.

(2) **CQC System Manager**: Fill in CAR number from CAR log.

(3) **CQC System Manager**: Fill in appropriate priority category. **High** priority indicates resolution of deficiency requires expediting corrective action plan and correction of deficient conditions noted in the CAR and extraordinary resources may be required due to the deficiency's impact on continuing operations. **Normal** priority indicates that the deficiency resolution process may be accomplished without further impacting continuing operations.

(4) **CAR Requestor**: Fill in date CAR is initiated.

(5) **CAR Requestor**: Identify project name, number, CTO, and WAD.

(6) **CAR Requestor**: Identify Project Manager.

(7) **CAR Requestor**: Identify CQC System Manager.

(8) **CAR Requestor**: Identify project organization, group, or discrete work environment where deficiency was first discovered.

(9) **CAR Requestor**: Identify line manager responsible for work unit where deficiency was discovered.

(10) **CQC System Manager**: Identify responsible manager designated to resolve deficiency (this may not be work unit manager).

(11) **CAR Requestor**: Identify source of requirement violated in contract, work planning document, procedure, instruction, etc; use exact reference to page and, when applicable, paragraph.

(12) **CAR Requestor**: Identify problem as it relates to requirement previously stated. Identify location of work activities impacted by deficiency.

(13) **CQC System Manager**: Identify if Corrective Action Plan (CAP) is required. CAP is typically required where one or more of the following conditions apply: CAR priority is **High**; deficiency requires a rigorous corrective action planning process to identify similar work product or activities affected by the deficiency; or deficiency requires extensive resources and planning to correct the deficiency and to prevent future recurrence.

(14) **CQC System Manager**: Identify date by which proposed corrective action is due to QC for concurrence.

(15) **CQC System Manager**: Sign and date CAR and forward to responsible manager identified in (10) above.

(16) **Responsible Manager**: Initial to acknowledge receipt of CAR.

(17) **Responsible Manager**: Complete corrective action plan and identify date of correction. Typical corrective action response will include statement regarding how the condition occurred, what the extent of the problem is (if not readily apparent by the problem description statement in [12]), methods to be used to correct the condition, and actions to be taken to prevent the condition from recurring. If a CAP is required, refer to CAP only in this section.

(18) **Responsible Manager**: Sign and date corrective action response.

(19) **CQC System Manager**: Initial to identify concurrence with corrective action response from responsible manager.

(20) **CQC System Manager**: Check appropriate block to identify if corrective action process is complete so that CAR may be closed. Add close-out comments relevant to block checked.

(21) **CQC System Manager**: Indicate document closeout by signing and dating.

Form QC-8

CORRECTIVE ACTION PLAN

Attach clarifications and additional information as needed. Identify attached material in appropriate section of this form.

PART A: TO BE COMPLETED BY PROJECT MANAGER OR DESIGNEE

(1)PROJECT:		
(2)PROJECT MANAGER:	(3)CQC SYSTEM MANAGER:	
(4)CAR NO(S) AND DATE(S) ISSUED:		
(5)DEFICIENCY DESCRIPTION AND LOCATION:		
(6)PLANNED ACTIONS	(7)ASSIGNED RESPONSIBILITY	(8) COMPLETION DUE DATE
(9)PROJECT MANAGER SIGNATURE: DATE:		

PART B: TO BE COMPLETED BY CQC SYSTEM MANAGER OR DESIGNEE

(10)CAP REVIEWED BY: DATE:
(11)REVIEWER COMMENTS:
(12)CAP DISPOSITION: (CHECK ONLY ONE AND EXPLAIN STIPULATIONS, IF ANY) ☐ APPROVED WITHOUT STIPULATIONS ☐ APPROVED WITH STIPULATIONS ☐ APPROVAL DELAYED, FURTHER REQUIRED PLANNING COMMENTS:
(13)CQC SYSTEM MANAGER SIGNATURE: DATE:

KEMRON ENVIRONMENTAL SERVICES

Form QC-9

Page ___ of ___________
Date: _______________
REPORT NO:__________

CONTRACTOR QUALITY CONTROL DAILY REPORT

LOCATION OF WORK: ____________________

DESCRIPTION: ____________________

WEATHER: (CLEAR) (FOG) (P.CLOUDY) (RAIN) (WINDY)

TEMPERATURE: MIN____EF MAX____EF

1. Work performed today:

2. Work performed today by subcontractor(s):

3. Preparatory Phase Inspections performed today (include personnel present, specification section, drawings, plans, and submittals required for definable feature of work):

4. Initial phase Inspections performed today (include personnel present, workmanship standard established, material certifications/test are completed, plans and drawings are reviewed):

5. Follow-up Phase Inspections performed today (include locations, feature of work and level of compliance with plans and procedures):

6. List tests performed, samples collected, and results received:

Form QC-9

Page ___ of ________
Date: ________________
REPORT NO:___________

7. Verbal instructions received (instructions given by Government representative and actions taken):

8. Non-conformances/deficiencies reported:

9. Site safety monitoring activities performed today:

10. Remarks:

CERTIFICATION: I certify that the above report is complete and correct and that I, or my representative, have inspected all work identified on this report performed by KEMRON and our subcontractor(s) and have determined to the best of my knowledge and belief that noted work activities are in compliance with the plans and specifications, except as may be noted above.

Contractor Quality Control Systems Manager	Date

ATTACHMENT D

POINTS OF CONTACT

ATTACHMENT D

Points of Contact

Emergency Services/Agency	Point of Contact	Telephone Number
Santa Clara Valley Medical Center Trauma/ Burn Facilities San Jose, CA	24hr Contact	(408) 885-5000
Community Hospital of the Monterey Peninsula Monterey, CA	Emergency Room	(831) 625-4900
Doctors on Duty, Salinas	N/A	(831) 422-7777
Cal-Star Air MedEvac (Emergency MedEvac)	Dispatch	(800) 252-5050
Presidio of Monterey Fire Department	Chief: Tom Joyce	Emergency (831) 242-7700 Station Chief (831) 242-7545
Federal Guard Service Ord Military Community (Police)	Chief: Chris Norlund	Non-Emergency (831) 242-7738 Emergency (831) 242-7851
Other Agencies		
Fort Ord BRAC Environmental Coordinator	William K. Collins	(831) 242-7920
Fort Ord BRAC MMRP PM	Natalie Gordon (Chenega)	(831) 242-7919
Fort Ord BRAC Biologist	Bart Kowalski (Chenega)	(831) 242-7918
Fort Ord BRAC Community Relations Office	Melissa Broadston (Chenega)	(831) 393-1284
BLM - Fort Ord National Monument	Eric Morgan	(831) 582-2200
FAA	N/A	(831) 375-3419
USACE OE Safety Specialist	Shawn Meek	(831) 824-2324 (916) 213-9563 (cell)
CESPK Fort Ord Program Manager	James Specht	(916) 557-7906
CESPK Fort Ord Project Manager	David Eisen	(831) 393-9692
Vandenberg Air Force Base EOD	Command Post	(805) 606-9961
20th Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Command	24/7 Emergency Operations Center	(410) 436-6200

ATTACHMENT E

MMRP DATABASE FIELDS TABLE

SCHEMAS
A schema is an organizing structure within an SQL database. Schemas can be used as mechanisms to control access to certain data as a security component, or schemas may be used to organizationally group database objects (tables, views, Stored Procedures, User Defined Functions, and User Types). We implement various schemas in MMRP as organizational components.

NAMING CONVENTIONS:
A naming convention is a pattern for naming objects in a systematic and meaningful manner.

DBO, Import, Update, Delete:
This page contains a set of tables that are common across all four schemas. (dbo, Import, Update, Delete)

EXCEPTION LOG:
Lists tables in the ExceptionLog schema.

BATCH PROCESSING:
Lists tables in the BatchProcessing schema.

FULL DETAIL:
A complete list of all tables and table columns in the MMRP database, along with definition details such as default values, data types, length, and Primary and Foreign Keys.

SCHEMAs (FORT ORD MMRP DB)

Schema Name	Description	Notes
dbo	Primary data store	This is where active data that is accessed by applications and reports is stored.
Import	Import buffer	Data (particularly from SSIS) is cued into this schema before actual loading into dbo. Rows are deleted after processing.
Update	Update buffer	Similar to the Import buffer, holds data to be updated in dbo. Rows are deleted after processing.
Delete	Delete cue	Rows identified via an SSIS process as candidates for deletion are cued here. Rows are deleted after processing.
mmrp	Legacy - May be in use by some legacy applications.	No tables
ExceptionLog	Supports logging of processing errors.	Errors that occur during SSIS Stored Procedure processing are recorded in this schema.
MissingIncidental	Legacy - May be in use by some legacy applications.	No tables
BatchProcessing	Supports SSIS batch processing tasks.	

Naming Conventions (FORT ORD MMRP DB)	
Pattern	**Description**
lkp%	Lookup (header) tables.
tblAnomaly%	Anomaly data.
tblGeo%	Geophysical data.
tblGrid%	Grid operations tables.
tblSite%	Site tables.

DBO, Import, Update, Delete (FORT ORD MMRP DB)
Table Name
lkpCondition
lkpDemo_Action
lkpDisposition
lkpGrid_Op_Type
lkpGrid_Type
lkpMeasure_Type
lkpOE_models
lkpOE_Purpose
lkpOE_Type
lkpOpTypeXRef
lkpRIA
lkpSite_type
lkpSurveyInstr
lkpTeam
lkpTeam_Member
lkpTeam_Type
lkpTerrain
lkpUOM
tblAnomaly
tblAnomaly_Undug
tblAnomDIDEM61MKII
tblAnomDIDG858
tblDemo_Ops
tblField_Teamleader_Logbook
tblGeo_Defaults
tblGeo_FileData
tblGeo_FileProcessing
tblGeo_GPSControlPoint
tblGeo_GridBlock
tblGeo_GridBlock_Lnk
tblGeo_QCCableShake
tblGeo_QCGPSCheck
tblGeo_QCIVSBackground
tblGeo_QCIVSResponse
tblGeo_QCPersonnel
tblGeo_QCSeedItems
tblGeo_QCStatic
tblGeo_QCSurvey_FileData
tblGeo_QCSurvey_ops
tblGeo_QCTowVehicle
tblGeo_Survey_Ops
tblGrid
tblGrid_Alias
tblGrid_AnalogRemoval_Ops

DBO, Import, Update, Delete (FORT ORD MMRP DB)
tblGrid_AnalogSurface_Ops
tblGrid_DgmData_QC
tblGrid_DgmDig_Ops
tblGrid_GeoPick_Ops
tblGrid_Odds_Ops
tblGrid_Ops_Lnk
tblGrid_Other_Ops
tblGrid_QA_Ops
tblGrid_QC_Ops
tblGrid_Reac_Ops
tblGrid_Scrape_Ops
tblGrid_Sift_Ops
tblGrid_SiteSurvey_Ops
tblOE_Encountered
tblOE_Seeded
tblSite
tblSite_Feature_Data
tblSite_Walk_ops
tblSites_Grid_Lnk
tblveg_removal_ops
tmpAnomalyUpdate
UpdateFields

Exception Log (FORT ORD MMRP DB)
Table Name
lkpSSIS_ExceptionCodes
Procedure_Exception
SSIS_Exception
WestonValidationErrors

Batch Processing (FORT ORD MMRP DB)
Table Name
tblProcessingGroup
tblProcessingLog
tblSSIS_Package
tblVendorRowCountQueries

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	lkpCondition	vchCondition	1		NO	nvarchar	25	50					PK_lkpCondition	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpCondition	vchConditionDesc	2		YES	nvarchar	50	100							
dbo	lkpDemo_Action	vchDemoAction	1		NO	nvarchar	50	100					PK_lkpDemo_Action	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpDemo_Action	vchDemoActionDesc	2		YES	nvarchar	250	500							
dbo	lkpDisposition	vchDisposition	1		NO	nvarchar	30	60					PK_lkpDisposition	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpDisposition	vchDispositionDesc	2		YES	nvarchar	255	510							
dbo	lkpGrid_Op_Type	vchGridOpType	1		NO	nvarchar	50	100					PK_lkpGrid_Op_Type	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpGrid_Type	vchGridType	1		NO	nvarchar	10	20					PK_lkpGrid_Type	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpMeasure_Type	vchMeasureType	1		NO	nvarchar	25	50					PK_lkpMeasure_Type	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpOE_models	iOEModelID	1		NO	int			10	10	0		PK_lkpOE_models	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpOE_models	vchOEModel	2		NO	nvarchar	255	510							
dbo	lkpOE_models	vchOEModelDesc	3		YES	nvarchar	255	510							
dbo	lkpOE_models	iRIACode	4		YES	int			10	10	0		FK_lkpOE_Models_lkpRIA		
dbo	lkpOE_models	vchOEFiller	5		YES	nvarchar	25	50							
dbo	lkpOE_models	vchOECasing	6		YES	nvarchar	25	50							
dbo	lkpOE_models	vchOEPurpose	7		YES	nvarchar	25	50							
dbo	lkpOE_models	vchSource	8		YES	nvarchar	50	100							
dbo	lkpOE_models	vchComments	9		YES	nvarchar	500	1000							
dbo	lkpOE_models	ftNEW	10		YES	float			53	2					
dbo	lkpOE_models	ftFillerWeight	11		YES	float			53	2					
dbo	lkpOE_models	biCurrentlyInUse	12	((1))	YES	bit									
dbo	lkpOE_models	biMasterPickList	13	((0))	YES	bit									
dbo	lkpOE_models	biSensitiveFuze	14		YES	bit									
dbo	lkpOE_models	DocFileName	15		YES	nvarchar	255	510							
dbo	lkpOE_models	vchSize	16		YES	varchar	20	20							
dbo	lkpOE_models	vchCategory	17		YES	varchar	20	20							
dbo	lkpOE_Purpose	vchOEPurpose	1		NO	nvarchar	25	50					PK_lkpOE_Purpose	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpOE_Type	vchOEType	1		NO	nvarchar	10	20					PK_lkpOE_Type	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpOE_Type	vchOETypeDesc	2		YES	nvarchar	50	100							
dbo	lkpOpTypeXRef	vchOpType	1		NO	nvarchar	50	100					PK_lkpOpTypeXRef	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpOpTypeXRef	SurveyType	2	('Analog')	YES	varchar	25	25							
dbo	lkpOpTypeXRef	UseGridBlockID	3	((0))	YES	bit									
dbo	lkpRIA	iRIACode	1		NO	int			10	10	0		PK_lkpRIA	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpRIA	vchRIADesc	2		NO	nvarchar	255	510							
dbo	lkpSite_type	ioeencounteredid	1		YES	bigint			19	10	0				
dbo	lkpSite_type	vchSitetype	2		YES	varchar	50	50							
dbo	lkpSite_type	vchSiteName	3		YES	varchar	50	50							
dbo	lkpSurveyInstr	vchSurveyInstr	1		NO	nvarchar	25	50					PK_lkpSurveyInstr	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpSurveyInstr	vchSurveyInstrDesc	2		YES	nvarchar	255	510							
dbo	lkpSurveyInstr	vchComments	3		YES	nvarchar	255	510							
dbo	lkpTeam	vchTeam	1		NO	nvarchar	25	50					PK_lkpTeam	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpTeam	vchTeamType	2		YES	nvarchar	5	10							
dbo	lkpTeam_Member	iMemberID	1		NO	int			10	10	0		PK_lkpTeam_Member	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpTeam_Member	vchOrgEmployeeID	2		YES	nvarchar	50	100							
dbo	lkpTeam_Member	vchLastName	3		YES	nvarchar	50	100							
dbo	lkpTeam_Member	vchFirstName	4		YES	nvarchar	50	100							
dbo	lkpTeam_Member	vchMiddleName	5		YES	nvarchar	50	100							
dbo	lkpTeam_Member	vchTeamType	6		YES	nvarchar	5	10							
dbo	lkpTeam_Member	vchOrganization	7		YES	nvarchar	50	100							
dbo	lkpTeam_Member	vchPosition	8		YES	nvarchar	50	100							
dbo	lkpTeam_Type	vchTeamType	1		NO	nvarchar	5	10					PK_lkpTeam_Type	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpTeam_Type	vchTeamTypeDesc	2		YES	nvarchar	50	100							
dbo	lkpTerrain	vchTerrainCode	1		NO	nvarchar	20	40					PK_lkpTerrain	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpTerrain	vchTerrainDescLong	2		YES	nvarchar	255	510							
dbo	lkpTerrain	vchTerrainDescShort	3		YES	nvarchar	50	100							
dbo	lkpUOM	vchUOM	1		NO	nvarchar	5	10					PK_lkpUOM	PK	PRIMARY_KEY_CONSTRAINT
dbo	lkpUOM	vchUOMDesc	2		YES	nvarchar	25	50							
dbo	lkpUOM	vchMeasureType	3		YES	nvarchar	25	50							
dbo	tblGrid	guidGrid	1	(newid())	NO	uniqueidentifier							PK_tblGrid	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid	vchGridID	2		NO	nvarchar	50	100							
dbo	tblGrid	vchGridIDShort	3		YES	nvarchar	10	20							
dbo	tblGrid	vchGridDesc	4		YES	nvarchar	255	510							
dbo	tblGrid	vchGridType	5		YES	varchar	50	50							
dbo	tblGrid	ftArea	6		YES	float			53	2					
dbo	tblGrid	vchComments	7		YES	nvarchar	255	510							
dbo	tblGrid	Acreage	8		YES	numeric			10	10	2				
dbo	tblGrid	Large_ID	9		YES	varchar	50	50							
dbo	tblGrid	Medium_ID	10		YES	varchar	50	50							
dbo	tblGrid	SW_X	11		YES	float			53	2					
dbo	tblGrid	SW_Y	12		YES	float			53	2					
dbo	tblGrid	UniqueGridID	13		YES	varchar	50	50							
dbo	tblGrid	UnitID	14		YES	varchar	50	50							
dbo	tblGrid	AnalSurfOpTeamID	15		YES	varchar	50	50							
dbo	tblGrid	AnalSurfOpComp	16		YES	bit									
dbo	tblGrid	DtAnalSurfOpComp	17		YES	datetime						3			
dbo	tblGrid	AnalSurfOpCom	18		YES	varchar	255	255							
dbo	tblGrid	AnalSurfOpQCTeamID	19		YES	varchar	255	255							
dbo	tblGrid	AnalSurfOpQCComp	20		YES	bit									
dbo	tblGrid	DtAnalSurfOpQCComp	21		YES	datetime						3			
dbo	tblGrid	AnalSurfOpQCCom	22		YES	varchar	255	255							
dbo	tblGrid	AnalSurfOpQATeamID	23		YES	varchar	255	255							
dbo	tblGrid	AnalSurfOpQAComp	24		YES	bit									
dbo	tblGrid	DtAnalSurfOpQAComp	25		YES	datetime						3			
dbo	tblGrid	AnalSurfOpQACom	26		YES	varchar	255	255							
dbo	tblGrid	AnalIntOpTeamID	27		YES	varchar	50	50							
dbo	tblGrid	AnalIntOpComp	28		YES	bit									
dbo	tblGrid	DtAnalIntOpComp	29		YES	datetime						3			
dbo	tblGrid	AnalIntOpCom	30		YES	varchar	255	255							
dbo	tblGrid	AnalIntOpQCTeamID	31		YES	varchar	255	255							
dbo	tblGrid	AnalIntOpQCComp	32		YES	bit									
dbo	tblGrid	DtAnalIntOpQCComp	33		YES	datetime						3			
dbo	tblGrid	AnalIntOpQCCom	34		YES	varchar	255	255							
dbo	tblGrid	AnalIntOpQATeamID	35		YES	varchar	255	255							
dbo	tblGrid	AnalIntOpQAComp	36		YES	bit									
dbo	tblGrid	DtAnalIntOpQAComp	37		YES	datetime						3			
dbo	tblGrid	AnalIntOpQACom	38		YES	varchar	255	255							
dbo	tblGrid	DGMArrayOpTeamID	39		YES	varchar	50	50							
dbo	tblGrid	DGMArrayOpComp	40		YES	bit									
dbo	tblGrid	DtDGMArrayOpComp	41		YES	datetime						3			
dbo	tblGrid	DGMArrayOpCom	42		YES	varchar	255	255							
dbo	tblGrid	DGMArrayDataProcComp	43		YES	bit									
dbo	tblGrid	DtDGMArrayDataProcComp	44		YES	datetime						3			
dbo	tblGrid	DGMArrayDataProcCom	45		YES	varchar	255	255							
dbo	tblGrid	DGMArrayDataQCTeamID	46		YES	varchar	50	50							
dbo	tblGrid	DGMArrayDataQCComp	47		YES	bit									
dbo	tblGrid	DtDGMArrayDataQCComp	48		YES	datetime						3			
dbo	tblGrid	DGMArrayDataQCCom	49		YES	varchar	255	255							
dbo	tblGrid	DGMArrayDataQATeamID	50		YES	varchar	50	50							
dbo	tblGrid	DGMArrayDataQAComp	51		YES	bit									
dbo	tblGrid	DtDGMArrayDataQAComp	52		YES	datetime						3			
dbo	tblGrid	DGMArrayDataQACom	53		YES	varchar	255	255							
dbo	tblGrid	DGMPortOPTeamID	54		YES	varchar	50	50							
dbo	tblGrid	DGMPortOpComp	55		YES	bit									
dbo	tblGrid	DtDGMPortOpComp	56		YES	datetime						3			
dbo	tblGrid	DGMPortOpCom	57		YES	varchar	255	255							
dbo	tblGrid	DGMPortDataProcComp	58		YES	bit									
dbo	tblGrid	DtDGMPortDataProcComp	59		YES	datetime						3			
dbo	tblGrid	DGMPortDataProcCom	60		YES	varchar	255	255							
dbo	tblGrid	DGMPortDataQCTeamID	61		YES	varchar	50	50							
dbo	tblGrid	DGMPortDataQCComp	62		YES	bit									
dbo	tblGrid	DtDGMPortDataQCComp	63		YES	datetime						3			
dbo	tblGrid	DGMPortDataQCCom	64		YES	varchar	255	255							
dbo	tblGrid	DGMPortDataQATeamID	65		YES	varchar	50	50							
dbo	tblGrid	DGMPortDataQAComp	66		YES	bit									
dbo	tblGrid	DtDGMPortDataQAComp	67		YES	datetime						3			
dbo	tblGrid	DGMPortDataQACom	68		YES	varchar	255	255							
dbo	tblGrid	DGMReacOpTeamID	69		YES	varchar	50	50							
dbo	tblGrid	DGMReacOpComp	70		YES	bit									
dbo	tblGrid	DtDGMReacOpComp	71		YES	datetime						3			
dbo	tblGrid	DGMReacOpCom	72		YES	varchar	255	255							
dbo	tblGrid	DGMDigOpTeamID	73		YES	varchar	50	50							
dbo	tblGrid	DGMDigOpComp	74		YES	bit									
dbo	tblGrid	DtDGMDigOpComp	75		YES	datetime						3			
dbo	tblGrid	DGMDigOpCom	76		YES	varchar	255	255							
dbo	tblGrid	DGMDigOpQCTeamID	77		YES	varchar	50	50							
dbo	tblGrid	DGMDigOpQCComp	78		YES	bit									
dbo	tblGrid	DtDGMDigOpQCComp	79		YES	datetime						3			
dbo	tblGrid	DGMDigOpQCCom	80		YES	varchar	255	255							
dbo	tblGrid	DGMDigOpQATeamID	81		YES	varchar	50	50							
dbo	tblGrid	DGMDigOpQAComp	82		YES	bit									
dbo	tblGrid	DtDGMDigOpQAComp	83		YES	datetime						3			
dbo	tblGrid	DGMDigOpQACom	84		YES	varchar	255	255							
dbo	tblGrid	vchGridBlockID	85		YES	varchar	50	50							
dbo	tblGrid	Status	86		YES	varchar	255	255							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGrid	OverwriteStatus	87		YES	varchar	255	255							
dbo	tblGrid	CoverageCategory	88		YES	varchar	10	10							
dbo	tblGrid	SurveyType	89		YES	varchar	255	255							
dbo	tblGrid	dtRecMod	90	(getdate())	YES	datetime						3			
dbo	tblGrid	s_Generation	91		YES	float			53	2					
dbo	tblGrid	s_GUID	92		YES	uniqueidentifier									
dbo	tblGrid_Ops_Lnk	guidGOL	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Ops_Lnk	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Ops_Lnk	dtWorkDate	2		YES	smalldatetime						0			
dbo	tblGrid_Ops_Lnk	dtStartTime	3		YES	datetime						3			
dbo	tblGrid_Ops_Lnk	dtEndTime	4		YES	datetime						3			
dbo	tblGrid_Ops_Lnk	vchGridID	5		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	guidGrid	6		YES	uniqueidentifier							FK_GOL_Grid		
dbo	tblGrid_Ops_Lnk	vchGridAlias	7		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	iSpecialCaseAreaID	8		YES	int			10	10	0				
dbo	tblGrid_Ops_Lnk	vchOpClass	9		YES	nvarchar	6	12							
dbo	tblGrid_Ops_Lnk	vchoptype	10		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchSite	11		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchSiteAlias	12		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchSiteMRA	13		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchSiteMRS	14		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchSiteAR	15		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	iGridConditionID	16		YES	int			10	10	0				
dbo	tblGrid_Ops_Lnk	biDiscrepancy	17		YES	int			10	10	0				
dbo	tblGrid_Ops_Lnk	vchAARID	18		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchTeam	19		YES	nchar	25	50							
dbo	tblGrid_Ops_Lnk	iTeamleaderID	20		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchContractor	21		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	txOpNotes	22		YES	nvarchar	-1	-1							
dbo	tblGrid_Ops_Lnk	chOpCompleted	23		YES	char	1	1							
dbo	tblGrid_Ops_Lnk	txModNotes	24		YES	nvarchar	-1	-1							
dbo	tblGrid_Ops_Lnk	dtDataEntered	25		YES	date						0			
dbo	tblGrid_Ops_Lnk	vchDataEntry	26		YES	nvarchar	50	100							
dbo	tblGrid_Ops_Lnk	vchDataSource	27		YES	nvarchar	255	510							
dbo	tblGrid_Ops_Lnk	RecordId	28		YES	float			53	2					
dbo	tblGrid_Ops_Lnk	UnitID	29		YES	float			53	2					
dbo	tblGrid_Ops_Lnk	UserName	30		YES	varchar	255	255							
dbo	tblGrid_Ops_Lnk	TimeStamp	31		YES	datetime						3			
dbo	tblGrid_Ops_Lnk	vchGridBlockID	32		YES	varchar	50	50							
dbo	tblGrid_Ops_Lnk	vchGridType	33		YES	varchar	255	255							
dbo	tblGrid_Ops_Lnk	dtRecMod	34	(getdate())	YES	datetime						3			
dbo	tblGrid_Ops_Lnk	UploadtoDB	35		YES	varchar	255	255							
dbo	tblGrid_Ops_Lnk	s_Generation	36		YES	float			53	2					
dbo	tblGrid_Ops_Lnk	s_GUID	37		YES	uniqueidentifier									
dbo	tblGrid_Ops_Lnk	iIncidentalID	38		YES	bigint			19	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iAnalogRemovalOpsID	1		YES	bigint			19	10	0				
dbo	tblGrid_AnalogRemoval_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblAnalogRemoval_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_AnalogRemoval_Ops	guidGOL	2		NO	uniqueidentifier							FK_tblAnalogRemoval_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_AnalogRemoval_Ops	biBackhoeRequired	3		YES	bit									
dbo	tblGrid_AnalogRemoval_Ops	biBackhoeCompleted	4		YES	bit									
dbo	tblGrid_AnalogRemoval_Ops	iDepthofSurvey	5		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iAnomaliesDetected	6		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iExcavationsTotal	7		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iBackhoeExcavations	8		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	ftNonOEScrapLBs	9		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	iMDItems	10		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	ftOEScrapLBs	11		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	iMECItems	12		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iSurface	13		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iDepth0to12	14		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iDepth12to24	15		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iDepth24to36	16		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	iDepth36to48	17		YES	int			10	10	0				
dbo	tblGrid_AnalogRemoval_Ops	biDemoRequired	18		YES	bit									
dbo	tblGrid_AnalogRemoval_Ops	chQCPassed	19		YES	nvarchar	4	8							
dbo	tblGrid_AnalogRemoval_Ops	dtQC	20		YES	datetime						3			
dbo	tblGrid_AnalogRemoval_Ops	RecordId	21		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	UnitID	22		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	UserName	23		YES	varchar	255	255							
dbo	tblGrid_AnalogRemoval_Ops	TimeStamp	24		YES	datetime						3			
dbo	tblGrid_AnalogRemoval_Ops	ftMEClbs	25		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	txModNotes	26		YES	varchar	255	255							
dbo	tblGrid_AnalogRemoval_Ops	vchQCInitials	27		YES	varchar	5	5							
dbo	tblGrid_AnalogRemoval_Ops	vchGridID	28		YES	varchar	50	50							
dbo	tblGrid_AnalogRemoval_Ops	vchTeam	29		YES	varchar	25	25							
dbo	tblGrid_AnalogRemoval_Ops	iTeamleaderID	30		YES	varchar	50	50							
dbo	tblGrid_AnalogRemoval_Ops	dtWorkDate	31		YES	datetime						3			
dbo	tblGrid_AnalogRemoval_Ops	vchSensiFuzeItems	32		YES	varchar	-1	-1							
dbo	tblGrid_AnalogRemoval_Ops	iSensiFuzeWt	33		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	dtRecMod	34	(getdate())	YES	datetime						3			
dbo	tblGrid_AnalogRemoval_Ops	UploadtoDB	35		YES	varchar	1	1							
dbo	tblGrid_AnalogRemoval_Ops	Gen_vchSensiFuzeItems	36		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	s_Generation	37		YES	float			53	2					
dbo	tblGrid_AnalogRemoval_Ops	s_GUID	38		YES	uniqueidentifier									
dbo	tblGrid_AnalogRemoval_Ops	vchSurveyInstr	39		YES	nvarchar	25	50					FK_tblGrid_AnalogRemoval_Ops_lkpSurveyInstr		
dbo	tblGrid_AnalogRemoval_Ops	txOpNotes	40		YES	nvarchar	-1	-1							
dbo	tblGrid_AnalogSurface_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblAnalogSurface_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_AnalogSurface_Ops	guidGOL	1		NO	uniqueidentifier							FK_AnalogSurface_GOL		
dbo	tblGrid_AnalogSurface_Ops	txOpNotes	2		YES	ntext	1073741823	2147483646							
dbo	tblGrid_AnalogSurface_Ops	vchSurveyInstr	3		YES	nvarchar	25	50					FK_tblGrid_AnalogSurface_Ops_lkpSurveyInstr		
dbo	tblGrid_AnalogSurface_Ops	iQCPattern	4		YES	int			10	10	0				
dbo	tblGrid_AnalogSurface_Ops	iQCPercent	5		YES	int			10	10	0				
dbo	tblGrid_AnalogSurface_Ops	chQCPassed	6		YES	nvarchar	4	8							
dbo	tblGrid_AnalogSurface_Ops	txReviewComments	7		YES	nvarchar	-1	-1							
dbo	tblGrid_AnalogSurface_Ops	vchQCInitials	8		YES	nvarchar	5	10							
dbo	tblGrid_AnalogSurface_Ops	dtQC	9		YES	datetime						3			
dbo	tblGrid_AnalogSurface_Ops	vchDEQCInitials	10		YES	nvarchar	5	10							
dbo	tblGrid_AnalogSurface_Ops	txModNotes	11		YES	nvarchar	-1	-1							
dbo	tblGrid_AnalogSurface_Ops	biDiscrepancy	12		YES	bit									
dbo	tblGrid_AnalogSurface_Ops	ftNonOEScrapLbs	13		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	ftOEScrapLBs	14		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	ioeitems	15		YES	int			10	10	0				
dbo	tblGrid_AnalogSurface_Ops	isurface	16		YES	int			10	10	0				
dbo	tblGrid_AnalogSurface_Ops	RecordId	17		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	UnitID	18		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	UserName	19		YES	varchar	255	255							
dbo	tblGrid_AnalogSurface_Ops	TimeStamp	20		YES	datetime						3			
dbo	tblGrid_AnalogSurface_Ops	vchGridID	21		YES	varchar	50	50							
dbo	tblGrid_AnalogSurface_Ops	vchTeam	22		YES	varchar	25	25							
dbo	tblGrid_AnalogSurface_Ops	iTeamleaderID	23		YES	varchar	50	50							
dbo	tblGrid_AnalogSurface_Ops	dtWorkDate	24		YES	datetime						3			
dbo	tblGrid_AnalogSurface_Ops	vchSensiFuzeItems	25		YES	nvarchar	-1	-1							
dbo	tblGrid_AnalogSurface_Ops	iSensiFuzeWt	26		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	dtRecMod	27	(getdate())	YES	datetime						3			
dbo	tblGrid_AnalogSurface_Ops	UploadtoDB	28		YES	varchar	1	1							
dbo	tblGrid_AnalogSurface_Ops	Gen_txOpNotes	29		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	Gen_vchSensiFuzeItems	30		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	s_Generation	31		YES	float			53	2					
dbo	tblGrid_AnalogSurface_Ops	s_GUID	32		YES	uniqueidentifier									
dbo	tblGrid_AnalogSurface_Ops	iExcavationsTotal	33		YES	bigint			19	10	0				
dbo	tblGrid_DgmDig_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblDGMDig_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_DgmDig_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblDgmDig_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_DgmDig_Ops	vchDigInstruments	2		YES	nvarchar	255	510							
dbo	tblGrid_DgmDig_Ops	iExcavationsTotal	3		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	ftNonOEScrapLbs	4		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	ftOEScrapLBs	5		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	iOEItems	6		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iSurface	7		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iDepth0to12	8		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iDepth12to24	9		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iDepth24to36	10		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iDepth36to48	11		YES	int			10	10	0				
dbo	tblGrid_DgmDig_Ops	iBIPRequired	12		YES	bit									
dbo	tblGrid_DgmDig_Ops	vchSurveyNotes	13		YES	nvarchar	-1	-1							
dbo	tblGrid_DgmDig_Ops	chQCPassed	14		YES	nchar	4	8							
dbo	tblGrid_DgmDig_Ops	vchQCInitials	15		YES	nvarchar	5	10							
dbo	tblGrid_DgmDig_Ops	dtQC	16		YES	datetime						3			
dbo	tblGrid_DgmDig_Ops	biDEQCChecked	17		YES	bit									
dbo	tblGrid_DgmDig_Ops	dtDigDate	18		YES	datetime						3			
dbo	tblGrid_DgmDig_Ops	vchDigTeam	19		YES	nvarchar	50	100							
dbo	tblGrid_DgmDig_Ops	RecordId	20		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	UnitID	21		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	UserName	22		YES	varchar	255	255							
dbo	tblGrid_DgmDig_Ops	TimeStamp	23		YES	datetime						3			
dbo	tblGrid_DgmDig_Ops	vchGridID	24		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGrid_DgmDig_Ops	iTeamleaderID	25		YES	varchar	50	50							
dbo	tblGrid_DgmDig_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
dbo	tblGrid_DgmDig_Ops	UploadtoDB	27		YES	varchar	1	1							
dbo	tblGrid_DgmDig_Ops	Gen_vchSurveyNotes	28		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	s_Generation	29		YES	float			53	2					
dbo	tblGrid_DgmDig_Ops	s_GUID	30		YES	uniqueidentifier									
dbo	tblGrid_GeoPick_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGeoPickOps	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_GeoPick_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblGeo_PickOps_tblGrid_Ops_Lnk		
dbo	tblGrid_GeoPick_Ops	dtProcessDate	2		YES	datetime						3			
dbo	tblGrid_GeoPick_Ops	biDigSheetMade	3		YES	bit									
dbo	tblGrid_GeoPick_Ops	biHeaderanomFile	4		YES	bit									
dbo	tblGrid_GeoPick_Ops	vchAnomSelectFile	5		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchAnomPickChannel	6		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	ftAnomPickThreshold	7		YES	numeric			18	10	3				
dbo	tblGrid_GeoPick_Ops	biSpecialCase	8		YES	bit									
dbo	tblGrid_GeoPick_Ops	biFileHeaderCheck	9		YES	bit									
dbo	tblGrid_GeoPick_Ops	txOpNotes	10		YES	nvarchar	4000	8000							
dbo	tblGrid_GeoPick_Ops	dtQC	11		YES	datetime						3			
dbo	tblGrid_GeoPick_Ops	vchQCInitials	12		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	txQCComments	13		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	txInterpComments	14		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchInterpGWS	15		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchInterpSet	16		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchExprtFileName	17		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	txDeliveryComments	18		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	dtDeliver	19		YES	datetime						3			
dbo	tblGrid_GeoPick_Ops	vchCorrAction	20		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	txModNotes	21		YES	nvarchar	4000	8000							
dbo	tblGrid_GeoPick_Ops	vchGeosoftSurveyDatabase	22		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchGeosoftSurveyTargetDatabase	23		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	vchSubmittedXYZFileName	24		YES	nvarchar	255	510							
dbo	tblGrid_GeoPick_Ops	iAnomsSelected	25		YES	int			10	10	0				
dbo	tblGrid_GeoPick_Ops	iAnomsToBeInvestigated	26		YES	int			10	10	0				
dbo	tblGrid_GeoPick_Ops	vchGridID	27		YES	varchar	255	255							
dbo	tblGrid_GeoPick_Ops	UniqueGridID	28		YES	varchar	255	255							
dbo	tblGrid_GeoPick_Ops	biDeliver	29		YES	varchar	1	1							
dbo	tblGrid_GeoPick_Ops	dtRecMod	30	(getdate())	YES	datetime						3			
dbo	tblGrid_GeoPick_Ops	RecordID	31		YES	float			53	2					
dbo	tblGrid_GeoPick_Ops	Gen_txModNotes	32		YES	float			53	2					
dbo	tblGrid_GeoPick_Ops	Gen_txOpNotes	33		YES	float			53	2					
dbo	tblGrid_GeoPick_Ops	s_Generation	34		YES	float			53	2					
dbo	tblGrid_GeoPick_Ops	s_GUID	35		YES	uniqueidentifier									
dbo	tblGrid_Odds_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblOdds_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Odds_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblGrid_Odds_Ops_GOL		
dbo	tblGrid_Odds_Ops	dtWorkDate	2		YES	smalldatetime						0			
dbo	tblGrid_Odds_Ops	vchSurveyInstr	3		YES	nvarchar	25	50					FK_tblOdds_Ops_SurveyInstr		
dbo	tblGrid_Odds_Ops	vchContractor	4		YES	nvarchar	50	100							
dbo	tblGrid_Odds_Ops	dtDataEntered	5		YES	smalldatetime						0			
dbo	tblGrid_Odds_Ops	vchDataEntry	6		YES	nvarchar	50	100							
dbo	tblGrid_Odds_Ops	vchDataSource	7		YES	nvarchar	50	100							
dbo	tblGrid_Odds_Ops	vchReviewComments	8		YES	nvarchar	4000	8000							
dbo	tblGrid_Odds_Ops	vchQCInitials	9		YES	nvarchar	50	100							
dbo	tblGrid_Odds_Ops	vchDEQCInitials	10		YES	nvarchar	50	100							
dbo	tblGrid_Odds_Ops	txModNotes	11		YES	nvarchar	4000	8000							
dbo	tblGrid_Odds_Ops	biDiscrepancy	12		YES	bit									
dbo	tblGrid_Other_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGrid_Other_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Other_Ops	guidGOL	1		NO	uniqueidentifier							fk_tblGrid_other_ops_GOL		
dbo	tblGrid_Other_Ops	dtFound	2		YES	datetime						3			
dbo	tblGrid_Other_Ops	dtCollected	3		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchLocation	4		YES	nvarchar	255	510							
dbo	tblGrid_Other_Ops	vchEventDesc	5		YES	nvarchar	512	1024							
dbo	tblGrid_Other_Ops	biIncidental	6		YES	bit									
dbo	tblGrid_Other_Ops	iIncidentalFormID	7		YES	int			10	10	0				
dbo	tblGrid_Other_Ops	vchPhotoFileName	8		YES	nvarchar	255	510							
dbo	tblGrid_Other_Ops	vchPdfFileName	9		YES	nvarchar	255	510							
dbo	tblGrid_Other_Ops	imgPdfFile	10		YES	image	2147483647	2147483647							
dbo	tblGrid_Other_Ops	vchContractor	11		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	iMemberID	12		YES	int			10	10	0				
dbo	tblGrid_Other_Ops	vchLastName	13		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	vchFirstName	14		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	vchAddress1	15		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	vchAddress2	16		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	vchCity	17		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	vchState	18		YES	nvarchar	2	4							
dbo	tblGrid_Other_Ops	vchZipCode	19		YES	nvarchar	12	24							
dbo	tblGrid_Other_Ops	vchPhone	20		YES	nvarchar	20	40							
dbo	tblGrid_Other_Ops	vchFax	21		YES	nvarchar	15	30							
dbo	tblGrid_Other_Ops	vchCountry	22		YES	nvarchar	25	50							
dbo	tblGrid_Other_Ops	vchEmail	23		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	txOpNotes	24		YES	nvarchar	4000	8000							
dbo	tblGrid_Other_Ops	USACEFormReceivedBY	25		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	dtUSACEDateReceived	26		YES	datetime						3			
dbo	tblGrid_Other_Ops	dtUSACEDateCompleted	27		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchDENRFormReceivedBY	28		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	dtDENRDateReceived	29		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchDENRRegAgencyNotified	30		YES	nvarchar	50	100							
dbo	tblGrid_Other_Ops	dtDENRDATERegAgencyNotified	31		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchDataSource	32		YES	nvarchar	150	300							
dbo	tblGrid_Other_Ops	dtDataEntered	33		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchDataEntry	34		YES	nvarchar	10	20							
dbo	tblGrid_Other_Ops	txReviewComments	35		YES	nvarchar	4000	8000							
dbo	tblGrid_Other_Ops	vchQCInitials	36		YES	nvarchar	5	10							
dbo	tblGrid_Other_Ops	vchDEQCInitials	37		YES	nvarchar	5	10							
dbo	tblGrid_Other_Ops	txModNotes	38		YES	nvarchar	4000	8000							
dbo	tblGrid_Other_Ops	biDiscrepancy	39		YES	bit									
dbo	tblGrid_Other_Ops	vchOpClass	40		YES	nvarchar	6	12							
dbo	tblGrid_Other_Ops	RecordId	41		YES	float			53	2					
dbo	tblGrid_Other_Ops	UnitID	42		YES	float			53	2					
dbo	tblGrid_Other_Ops	UserName	43		YES	varchar	255	255							
dbo	tblGrid_Other_Ops	TimeStamp	44		YES	datetime						3			
dbo	tblGrid_Other_Ops	dtWorkDate	45		YES	datetime						3			
dbo	tblGrid_Other_Ops	vchTeam	46		YES	varchar	25	25							
dbo	tblGrid_Other_Ops	iTeamleaderID	47		YES	varchar	50	50							
dbo	tblGrid_Other_Ops	vchGridID	48		YES	varchar	50	50							
dbo	tblGrid_Other_Ops	dtRecMod	49	(getdate())	YES	datetime						3			
dbo	tblGrid_Other_Ops	UploadtoDB	50		YES	varchar	1	1							
dbo	tblGrid_Other_Ops	Gen_imgPdfFile	51		YES	float			53	2					
dbo	tblGrid_Other_Ops	Gen_txModNotes	52		YES	float			53	2					
dbo	tblGrid_Other_Ops	Gen_txOpNotes	53		YES	float			53	2					
dbo	tblGrid_Other_Ops	Gen_txReviewComments	54		YES	float			53	2					
dbo	tblGrid_Other_Ops	Gen_vchEventDesc	55		YES	float			53	2					
dbo	tblGrid_Other_Ops	s_Generation	56		YES	float			53	2					
dbo	tblGrid_Other_Ops	s_GUID	57		YES	uniqueidentifier									
dbo	tblGrid_QA_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblQA_ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_QA_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblQA_ops_tblGrid_Ops_Lnk		
dbo	tblGrid_QA_Ops	vchSurveyInstr	2		YES	nvarchar	25	50					FK_tblGrid_QA_Ops_lkpSurveyInstr		
dbo	tblGrid_QA_Ops	iMECItems	3		YES	smallint			5	10	0				
dbo	tblGrid_QA_Ops	iQAPattern	4		YES	int			10	10	0				
dbo	tblGrid_QA_Ops	iQAPercent	5		YES	int			10	10	0				
dbo	tblGrid_QA_Ops	chQAPassed	6		YES	nvarchar	4	8							
dbo	tblGrid_QA_Ops	txModNotes	7		YES	ntext	1073741823	2147483646							
dbo	tblGrid_QA_Ops	QA_Type	8		YES	nvarchar	50	100							
dbo	tblGrid_QA_Ops	dtWorkDate	9		YES	datetime						3			
dbo	tblGrid_QA_Ops	vchGridID	10		YES	varchar	50	50							
dbo	tblGrid_QA_Ops	QATeamID	11		YES	varchar	25	25							
dbo	tblGrid_QA_Ops	QATeamLeader	12		YES	varchar	25	25							
dbo	tblGrid_QA_Ops	dtRecMod	13	(getdate())	YES	datetime						3			
dbo	tblGrid_QA_Ops	RecordID	14		YES	float			53	2					
dbo	tblGrid_QA_Ops	Gen_txModNotes	15		YES	float			53	2					
dbo	tblGrid_QA_Ops	s_Generation	16		YES	float			53	2					
dbo	tblGrid_QA_Ops	s_GUID	17		YES	uniqueidentifier									
dbo	tblGrid_QA_Ops	txOpNotes	18		YES	nvarchar	-1	-1							
dbo	tblGrid_QC_Ops	IQC1OpsID	1		NO	bigint			19	10	0				
dbo	tblGrid_QC_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblQC1_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_QC_Ops	guidGOL	2		NO	uniqueidentifier							FK_tblQC1_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_QC_Ops	IDemoOpsID	3		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iAnomaliesChecked	4		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iAnomaliesPassed	5		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iAnomaliesFailed	6		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	ftNonOEScrapLBs	7		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	ftOEScrapLBs	8		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iOEItems	9		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iSurface	10		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iDepth0to12	11		YES	int			10	10	0				

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGrid_QC_Ops	iDepth12to24	12		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iDepth24to36	13		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	iDepth36to48	14		YES	int			10	10	0				
dbo	tblGrid_QC_Ops	vchSurveyNotes	15		YES	nvarchar	255	510							
dbo	tblGrid_QC_Ops	chQCPassed	16		YES	nvarchar	4	8							
dbo	tblGrid_QC_Ops	vchQC_Type	17		YES	nvarchar	50	100							
dbo	tblGrid_QC_Ops	RecordId	18		YES	float			53	2					
dbo	tblGrid_QC_Ops	UnitID	19		YES	float			53	2					
dbo	tblGrid_QC_Ops	UserName	20		YES	varchar	255	255							
dbo	tblGrid_QC_Ops	TimeStamp	21		YES	datetime						3			
dbo	tblGrid_QC_Ops	dtWorkDate	22		YES	datetime						3			
dbo	tblGrid_QC_Ops	vchGridID	23		YES	varchar	10	10							
dbo	tblGrid_QC_Ops	QCTeamID	24		YES	varchar	25	25							
dbo	tblGrid_QC_Ops	QCTeamLeader	25		YES	varchar	25	25							
dbo	tblGrid_QC_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
dbo	tblGrid_QC_Ops	UploadtoDB	27		YES	varchar	1	1							
dbo	tblGrid_QC_Ops	s_Generation	28		YES	float			53	2					
dbo	tblGrid_QC_Ops	s_GUID	29		YES	uniqueidentifier									
dbo	tblGrid_QC_Ops	vchSurveyInstr	30		YES	nvarchar	25	50					FK_tblGrid_QC_Ops_lkpSurveyInstr		
dbo	tblGrid_Reac_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblReac_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Reac_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblReac_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_Reac_Ops	guidAnomaly	2		YES	uniqueidentifier									
dbo	tblGrid_Reac_Ops	iNumberOfFlags	3		YES	int			10	10	0				
dbo	tblGrid_Reac_Ops	vchReaqInstr	4		YES	nvarchar	50	100							
dbo	tblGrid_Reac_Ops	biInvestigated	5		YES	bit									
dbo	tblGrid_Reac_Ops	Reac_CH	6		YES	float			53	2					
dbo	tblGrid_Reac_Ops	txReaqComments	7		YES	nvarchar	-1	-1							
dbo	tblGrid_Reac_Ops	txReaqQCComments	8		YES	nvarchar	-1	-1							
dbo	tblGrid_Reac_Ops	RecordId	9		YES	float			53	2					
dbo	tblGrid_Reac_Ops	UnitID	10		YES	float			53	2					
dbo	tblGrid_Reac_Ops	UserName	11		YES	varchar	255	255							
dbo	tblGrid_Reac_Ops	TimeStamp	12		YES	datetime						3			
dbo	tblGrid_Reac_Ops	dtWorkDate	13		YES	datetime						3			
dbo	tblGrid_Reac_Ops	vchGridID	14		YES	varchar	10	10							
dbo	tblGrid_Reac_Ops	ReacTeamID	15		YES	varchar	25	25							
dbo	tblGrid_Reac_Ops	ReacTeamLeader	16		YES	varchar	25	25							
dbo	tblGrid_Reac_Ops	dtRecMod	17	(getdate())	YES	datetime						3			
dbo	tblGrid_Reac_Ops	UploadtoDB	18		YES	varchar	1	1							
dbo	tblGrid_Reac_Ops	Gen_txReaqComments	19		YES	float			53	2					
dbo	tblGrid_Reac_Ops	Gen_txReaqQCComments	20		YES	float			53	2					
dbo	tblGrid_Reac_Ops	s_Generation	21		YES	float			53	2					
dbo	tblGrid_Reac_Ops	s_GUID	22		YES	uniqueidentifier									
dbo	tblGrid_Scrape_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblScrape_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Scrape_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblScrape_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_Scrape_Ops	iRRDLBs	2		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	iMDLBs	3		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	iMECItems	4		YES	smallint			5	10	0				
dbo	tblGrid_Scrape_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
dbo	tblGrid_Scrape_Ops	vchQCInitials	6		YES	nvarchar	5	10							
dbo	tblGrid_Scrape_Ops	dtQC	7		YES	datetime						3			
dbo	tblGrid_Scrape_Ops	biDEQCChecked	8		YES	bit									
dbo	tblGrid_Scrape_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
dbo	tblGrid_Scrape_Ops	biDiscrepancy	10		YES	bit									
dbo	tblGrid_Scrape_Ops	iCubicYards	11		YES	int			10	10	0				
dbo	tblGrid_Scrape_Ops	iInLift	12		YES	int			10	10	0				
dbo	tblGrid_Scrape_Ops	iFtDistanceToStockpile	13		YES	int			10	10	0				
dbo	tblGrid_Scrape_Ops	vchEquipmentUsed	14		YES	nvarchar	50	100							
dbo	tblGrid_Scrape_Ops	RecordId	15		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	UnitID	16		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	UserName	17		YES	varchar	255	255							
dbo	tblGrid_Scrape_Ops	TimeStamp	18		YES	datetime						3			
dbo	tblGrid_Scrape_Ops	iScrapeOpID	19		YES	varchar	255	255							
dbo	tblGrid_Scrape_Ops	dtWorkDate	20		YES	datetime						3			
dbo	tblGrid_Scrape_Ops	vchGridID	21		YES	varchar	50	50							
dbo	tblGrid_Scrape_Ops	vchTeam	22		YES	varchar	25	25							
dbo	tblGrid_Scrape_Ops	iTeamleaderID	23		YES	varchar	50	50							
dbo	tblGrid_Scrape_Ops	dtRecMod	24	(getdate())	YES	datetime						3			
dbo	tblGrid_Scrape_Ops	UploadtoDB	25		YES	varchar	1	1							
dbo	tblGrid_Scrape_Ops	Gen_txReviewComments	26		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	s_Generation	27		YES	float			53	2					
dbo	tblGrid_Scrape_Ops	s_GUID	28		YES	uniqueidentifier									
dbo	tblGrid_Sift_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblSift_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Sift_Ops	guidGOL	1		NO	uniqueidentifier							FK_tblSift_Ops_tblGrid_Ops_Lnk		
dbo	tblGrid_Sift_Ops	iRRDLBs	2		YES	int			10	10	0				
dbo	tblGrid_Sift_Ops	iMDLBs	3		YES	int			10	10	0				
dbo	tblGrid_Sift_Ops	chQCPassed	4		YES	nvarchar	4	8							
dbo	tblGrid_Sift_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
dbo	tblGrid_Sift_Ops	vchQCInitials	6		YES	nvarchar	5	10							
dbo	tblGrid_Sift_Ops	dtQC	7		YES	datetime						3			
dbo	tblGrid_Sift_Ops	biDEQCChecked	8		YES	bit									
dbo	tblGrid_Sift_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
dbo	tblGrid_Sift_Ops	biDiscrepancy	10		YES	bit									
dbo	tblGrid_Sift_Ops	QtyTons	11		YES	int			10	10	0				
dbo	tblGrid_Sift_Ops	iMECItems	12		YES	int			10	10	0				
dbo	tblGrid_Sift_Ops	RecordId	13		YES	float			53	2					
dbo	tblGrid_Sift_Ops	UnitID	14		YES	float			53	2					
dbo	tblGrid_Sift_Ops	UserName	15		YES	varchar	255	255							
dbo	tblGrid_Sift_Ops	TimeStamp	16		YES	datetime						3			
dbo	tblGrid_Sift_Ops	iSiftOpID	17		YES	varchar	255	255							
dbo	tblGrid_Sift_Ops	dtWorkDate	18		YES	datetime						3			
dbo	tblGrid_Sift_Ops	vchGridID	19		YES	varchar	50	50							
dbo	tblGrid_Sift_Ops	vchTeam	20		YES	varchar	25	25							
dbo	tblGrid_Sift_Ops	iTeamleaderID	21		YES	varchar	50	50							
dbo	tblGrid_Sift_Ops	dtRecMod	22	(getdate())	YES	datetime						3			
dbo	tblGrid_Sift_Ops	UploadtoDB	23		YES	varchar	1	1							
dbo	tblGrid_Sift_Ops	Gen_txReviewComments	24		YES	float			53	2					
dbo	tblGrid_Sift_Ops	s_Generation	25		YES	float			53	2					
dbo	tblGrid_Sift_Ops	s_GUID	26		YES	uniqueidentifier									
dbo	tblGrid_Sift_Ops	vchEquipmentUsed	27		YES	nvarchar	50	100							
dbo	tblGrid_SiteSurvey_Ops	iSiteSurveyOpID	1		YES	bigint			19	10	0				
dbo	tblGrid_SiteSurvey_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblSite_Survey_ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_SiteSurvey_Ops	guidGOL	2		NO	uniqueidentifier							FK_tblSite_Survey_ops_tblGrid_Ops_Lnk		
dbo	tblGrid_SiteSurvey_Ops	vchSurveyName	3		YES	nvarchar	50	100							
dbo	tblGrid_SiteSurvey_Ops	txReviewComments	4		YES	nvarchar	4000	8000							
dbo	tblGrid_SiteSurvey_Ops	vchQCInitials	5		YES	nvarchar	5	10							
dbo	tblGrid_SiteSurvey_Ops	biDEQCChecked	6		YES	bit									
dbo	tblGrid_SiteSurvey_Ops	vchDEQCInitials	7		YES	nvarchar	5	10							
dbo	tblGrid_SiteSurvey_Ops	ftGridPercent	8		YES	real			24	2					
dbo	tblOE_Encountered	iOEEncounteredID	1		NO	int			10	10	0				
dbo	tblOE_Encountered	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tblOE_Encountered	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblOE_Encountered	dtWorkDate	3		YES	datetime						3			
dbo	tblOE_Encountered	iOpID	4		YES	bigint			19	10	0				
dbo	tblOE_Encountered	guidGOL	5		YES	uniqueidentifier							FK_tblOE_Encountered_tblGrid_Ops_Lnk		
dbo	tblOE_Encountered	vchGridID	6		YES	nvarchar	50	100							
dbo	tblOE_Encountered	vchSurveyInstr	7		YES	nvarchar	100	200							
dbo	tblOE_Encountered	iLocalNorthing	8		YES	smallint			5	10	0				
dbo	tblOE_Encountered	iLocalEasting	9		YES	smallint			5	10	0				
dbo	tblOE_Encountered	ftNorthing	10		YES	float			53	2					
dbo	tblOE_Encountered	ftEasting	11		YES	float			53	2					
dbo	tblOE_Encountered	iQTY	12		YES	smallint			5	10	0				
dbo	tblOE_Encountered	ftLength	13		YES	real			24	2					
dbo	tblOE_Encountered	ftWidth	14		YES	real			24	2					
dbo	tblOE_Encountered	iOffsetDist	15		YES	int			10	10	0				
dbo	tblOE_Encountered	vchOffsetDir	16		YES	nvarchar	50	100							
dbo	tblOE_Encountered	ftInclination	17		YES	float			53	2					
dbo	tblOE_Encountered	vchOrientation	18		YES	nvarchar	2	4							
dbo	tblOE_Encountered	iDepth	19		YES	smallint			5	10	0				
dbo	tblOE_Encountered	ftWeight	20		YES	float			53	2					
dbo	tblOE_Encountered	vchOriginalOENomenclature	21		YES	nvarchar	255	510							
dbo	tblOE_Encountered	iOEModelIDFinal	22		YES	int			10	10	0				
dbo	tblOE_Encountered	vchNonOEDesc	23		YES	nvarchar	255	510							
dbo	tblOE_Encountered	vchOEType	24		YES	nvarchar	10	20							
dbo	tblOE_Encountered	vchConditionInit	25		YES	nvarchar	25	50							
dbo	tblOE_Encountered	vchConditionFinal	26		YES	nvarchar	25	50							
dbo	tblOE_Encountered	vchDispositionInit	27		YES	nvarchar	120	240							
dbo	tblOE_Encountered	vchDispositionInterm	28		YES	nvarchar	120	240							
dbo	tblOE_Encountered	vchDispositionFinal	29		YES	nvarchar	120	240							
dbo	tblOE_Encountered	biFragment	30		YES	tinyint			3	10	0				
dbo	tblOE_Encountered	chBurialPit	31		YES	char	1	1							
dbo	tblOE_Encountered	biDemoRequired	32		YES	tinyint			3	10	0				
dbo	tblOE_Encountered	biDemoPerformed	33		YES	tinyint			3	10	0				
dbo	tblOE_Encountered	dtDemo	34		YES	datetime						3			
dbo	tblOE_Encountered	vchDemoAction	35		YES	nvarchar	4000	8000							
dbo	tblOE_Encountered	guidDemoOp	36		YES	uniqueidentifier							FK_OEEncountered_tblDemoOps		

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblOE_Encountered	dtQA	37		YES	datetime						3			
dbo	tblOE_Encountered	vchQAInitials	38		YES	nvarchar	5	10							
dbo	tblOE_Encountered	dtQC	39		YES	datetime						3			
dbo	tblOE_Encountered	vchQCInitials	40		YES	nvarchar	100	200							
dbo	tblOE_Encountered	iLocationProxCode	41		YES	smallint			5	10	0				
dbo	tblOE_Encountered	vchContractor	42		YES	nvarchar	50	100							
dbo	tblOE_Encountered	dtDataEntered	43		YES	datetime						3			
dbo	tblOE_Encountered	vchDataEntry	44		YES	nvarchar	10	20							
dbo	tblOE_Encountered	txOEItemNotes	45		YES	nvarchar	500	1000							
dbo	tblOE_Encountered	vchDataSource	46		YES	nvarchar	150	300							
dbo	tblOE_Encountered	txReviewComments	47		YES	nvarchar	4000	8000							
dbo	tblOE_Encountered	biDEQCChecked	48		YES	tinyint			3	10	0				
dbo	tblOE_Encountered	vchDEQCInitials	49		YES	nvarchar	100	200							
dbo	tblOE_Encountered	txModNotes	50		YES	nvarchar	4000	8000							
dbo	tblOE_Encountered	biDiscrepancy	51		YES	tinyint			3	10	0				
dbo	tblOE_Encountered	guidAnomaly	52		YES	uniqueidentifier							FK_tblOE_Encountered_tblAnomaly		
dbo	tblOE_Encountered	ftDemoNorthing	53		YES	float			53	2					
dbo	tblOE_Encountered	ftDemoEasting	54		YES	float			53	2					
dbo	tblOE_Encountered	RecordId	55		YES	float			53	2					
dbo	tblOE_Encountered	UnitID	56		YES	float			53	2					
dbo	tblOE_Encountered	UserName	57		YES	varchar	255	255							
dbo	tblOE_Encountered	TimeStamp	58		YES	datetime						3			
dbo	tblOE_Encountered	vchFinalOENomenclature	59		YES	varchar	255	255							
dbo	tblOE_Encountered	UniqAnomalyID	60		YES	varchar	50	50							
dbo	tblOE_Encountered	AnomalyType	61		YES	varchar	255	255							
dbo	tblOE_Encountered	vchTeam	62		YES	varchar	25	25							
dbo	tblOE_Encountered	iTeamleaderID	63		YES	varchar	50	50							
dbo	tblOE_Encountered	dtRecMod	64	(getdate())	YES	datetime						3			
dbo	tblOE_Encountered	UploadtoDB	65		YES	varchar	1	1							
dbo	tblOE_Encountered	Gen_txModNotes	66		YES	float			53	2					
dbo	tblOE_Encountered	Gen_txOEItemNotes	67		YES	float			53	2					
dbo	tblOE_Encountered	Gen_vchDemoAction	68		YES	float			53	2					
dbo	tblOE_Encountered	s_Generation	69		YES	float			53	2					
dbo	tblOE_Encountered	s_GUID	70		YES	uniqueidentifier									
dbo	tblOE_Encountered	LocalAnomalyID	71		YES	nvarchar	50	100							
dbo	tblOE_Encountered	DigUploadtoDB	72		YES	bit									
dbo	tblOE_Encountered	ftReaqResponseValue	73		YES	float			53	2					
dbo	tblOE_Encountered	ftNonOEScrapLBs	74		YES	float			53	2					
dbo	tblOE_Encountered	ftOEScrapLBs	75		YES	float			53	2					
dbo	tblOE_Encountered	ftDigResponseValue	76		YES	float			53	2					
dbo	tblOE_Seeded	guidSeeded	1	(newid())	NO	uniqueidentifier							PK_tblOE_Seeded	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblOE_Seeded	dtWorkDate	2		YES	smalldatetime						0			
dbo	tblOE_Seeded	guidGOL	3		YES	uniqueidentifier							FK_tblOE_Seeded_tblGrid_Ops_Lnk		
dbo	tblOE_Seeded	vchGridID	4		YES	nvarchar	50	100							
dbo	tblOE_Seeded	vchSurveyInstr	5		YES	nvarchar	25	50							
dbo	tblOE_Seeded	iLocalNorthing	6		YES	smallint			5	10	0				
dbo	tblOE_Seeded	iLocalEasting	7		YES	smallint			5	10	0				
dbo	tblOE_Seeded	ftNorthing	8		YES	float			53	2					
dbo	tblOE_Seeded	ftEasting	9		YES	float			53	2					
dbo	tblOE_Seeded	vchProxCode	10		YES	nvarchar	50	100							
dbo	tblOE_Seeded	iQTY	11		YES	smallint			5	10	0				
dbo	tblOE_Seeded	ftLength	12		YES	float			53	2					
dbo	tblOE_Seeded	ftWidth	13		YES	float			53	2					
dbo	tblOE_Seeded	ftInclination	14		YES	float			53	2					
dbo	tblOE_Seeded	vchOrientation	15		YES	nvarchar	2	4							
dbo	tblOE_Seeded	iDepth	16		YES	smallint			5	10	0				
dbo	tblOE_Seeded	ftWeight	17		YES	float			53	2					
dbo	tblOE_Seeded	vchOriginalOENomenclature	18		YES	nvarchar	255	510							
dbo	tblOE_Seeded	iOEModelID	19		YES	int			10	10	0				
dbo	tblOE_Seeded	chBurialPit	20		YES	char	1	1							
dbo	tblOE_Seeded	vchAnomalyID	21		YES	nvarchar	50	100							
dbo	tblOE_Seeded	guidAnomaly	22		YES	uniqueidentifier							FK_tblOE_Seeded_tblAnomaly		
dbo	tblOE_Seeded	txOEItemNotes	23		YES	nvarchar	4000	8000							
dbo	tblOE_Seeded	vchContractor	24		YES	nvarchar	20	40							
dbo	tblOE_Seeded	dtDataEntered	25		YES	datetime						3			
dbo	tblOE_Seeded	vchDataEntry	26		YES	nvarchar	10	20							
dbo	tblOE_Seeded	txReviewComments	27		YES	nvarchar	4000	8000							
dbo	tblOE_Seeded	biDEQCChecked	28		YES	tinyint			3	10	0				
dbo	tblOE_Seeded	vchDEQCInitials	29		YES	nvarchar	5	10							
dbo	tblOE_Seeded	txModNotes	30		YES	nvarchar	4000	8000							
dbo	tblOE_Seeded	guidGrid	31		YES	uniqueidentifier							FK_tblOE_Seeded_Grid		
dbo	tblOE_Seeded	RecordId	32		YES	float			53	2					
dbo	tblOE_Seeded	UnitID	33		YES	float			53	2					
dbo	tblOE_Seeded	UserName	34		YES	varchar	255	255							
dbo	tblOE_Seeded	TimeStamp	35		YES	datetime						3			
dbo	tblOE_Seeded	SeedCategory	36		YES	varchar	255	255							
dbo	tblOE_Seeded	SeedOpType	37		YES	varchar	255	255							
dbo	tblOE_Seeded	vchTeam	38		YES	varchar	25	25							
dbo	tblOE_Seeded	iTeamleaderID	39		YES	varchar	50	50							
dbo	tblOE_Seeded	vchQCInitials	40		YES	varchar	5	5							
dbo	tblOE_Seeded	dtQC	41		YES	datetime						3			
dbo	tblOE_Seeded	dtRecMod	42	(getdate())	YES	datetime						3			
dbo	tblOE_Seeded	UploadtoDB	43		YES	varchar	1	1							
dbo	tblOE_Seeded	Gen_txReviewComments	44		YES	float			53	2					
dbo	tblOE_Seeded	s_Generation	45		YES	float			53	2					
dbo	tblOE_Seeded	s_GUID	46		YES	uniqueidentifier									
dbo	tblAnomaly	guidAnomaly	1	(newid())	NO	uniqueidentifier							PK_tblAnomaly	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblAnomaly	guidReacOp	2		YES	uniqueidentifier							FK_tblAnomaly_tbGrid_ReacOps		
dbo	tblAnomaly	guidDGMDigOp	3		YES	uniqueidentifier							FK_tblAnomaly_tblGrid_DGMDig		
dbo	tblAnomaly	guidQC1Op	4		YES	uniqueidentifier							FK_tblAnomaly_tblGrid_QC		
dbo	tblAnomaly	guidGeoPickOp	5		YES	uniqueidentifier							FK_tblAnomaly_tblGeoPick		
dbo	tblAnomaly	vchGridID	6		YES	nvarchar	50	100							
dbo	tblAnomaly	ftEasting	7		YES	float			53	2					
dbo	tblAnomaly	ftNorthing	8		YES	float			53	2					
dbo	tblAnomaly	vchResponseType	9		YES	varchar	50	50							
dbo	tblAnomaly	ftResponseValue	10		YES	float			53	2					
dbo	tblAnomaly	biInvestigated	11		YES	bit									
dbo	tblAnomaly	iPriority	12		YES	int			10	10	0				
dbo	tblAnomaly	vchReaqInstr	13		YES	varchar	50	50							
dbo	tblAnomaly	vchReaqResponseType	14		YES	varchar	50	50							
dbo	tblAnomaly	ftReaqResponseValue	15		YES	float			53	2					
dbo	tblAnomaly	biReaqSuccessful	16		YES	bit									
dbo	tblAnomaly	iReaqDistanceFromFlag	17		YES	int			10	10	0				
dbo	tblAnomaly	iReaqAzimuthFromFlag	18		YES	int			10	10	0				
dbo	tblAnomaly	txReaqComments	19		YES	nvarchar	-1	-1							
dbo	tblAnomaly	ftDigWeight	20		YES	float			53	2					
dbo	tblAnomaly	biBurialPit	21		YES	bit									
dbo	tblAnomaly	biFragHole	22		YES	bit									
dbo	tblAnomaly	biMassExcavation	23		YES	bit									
dbo	tblAnomaly	biQC1Selected	24		YES	bit									
dbo	tblAnomaly	biQC1Passed	25		YES	bit									
dbo	tblAnomaly	guidQC1Fail	26		YES	uniqueidentifier									
dbo	tblAnomaly	txQC1Notes	27		YES	nvarchar	-1	-1							
dbo	tblAnomaly	biGeoQCSelected	28		YES	bit									
dbo	tblAnomaly	biGeoQCPassed	29		YES	bit									
dbo	tblAnomaly	guidGeoQCFail	30		YES	uniqueidentifier									
dbo	tblAnomaly	guidGeoQCDigOp	31		YES	uniqueidentifier									
dbo	tblAnomaly	txGeoQCNotes	32		YES	nvarchar	4000	8000							
dbo	tblAnomaly	chQCPassed	33		YES	char	4	4							
dbo	tblAnomaly	txDigComments	34		YES	nvarchar	-1	-1							
dbo	tblAnomaly	biAnomalyStillPresent	35		YES	bit									
dbo	tblAnomaly	txReviewComments	36		YES	nvarchar	-1	-1							
dbo	tblAnomaly	txModNotes	37		YES	nvarchar	-1	-1							
dbo	tblAnomaly	guidGrid	38		YES	uniqueidentifier							FK_tblAnomaly_tblGrid		
dbo	tblAnomaly	ftReaqOffsetEasting	39		YES	float			53	2					
dbo	tblAnomaly	ftReaqOffsetNorthing	40		YES	float			53	2					
dbo	tblAnomaly	RecordId	41		YES	float			53	2					
dbo	tblAnomaly	UnitID	42		YES	float			53	2					
dbo	tblAnomaly	UserName	43		YES	varchar	255	255							
dbo	tblAnomaly	TimeStamp	44		YES	datetime						3			
dbo	tblAnomaly	vchAnomalyID	45		YES	varchar	50	50							
dbo	tblAnomaly	LocalAnomalyID	46		YES	varchar	50	50							
dbo	tblAnomaly	LocalEasting	47		YES	real			24	2					
dbo	tblAnomaly	LocalNorthing	48		YES	real			24	2					
dbo	tblAnomaly	ProcessingComm	49		YES	varchar	-1	-1							
dbo	tblAnomaly	vchTeam	50		YES	varchar	25	25							
dbo	tblAnomaly	iTeamleaderID	51		YES	varchar	50	50							
dbo	tblAnomaly	dtWorkDate	52		YES	datetime						3			
dbo	tblAnomaly	dtRecMod	53	(getdate())	YES	datetime						3			
dbo	tblAnomaly	UploadtoDB	54		YES	varchar	1	1							
dbo	tblAnomaly	Gen_ProcessingComm	55		YES	float			53	2					
dbo	tblAnomaly	Gen_txDigComments	56		YES	float			53	2					
dbo	tblAnomaly	Gen_txModNotes	57		YES	float			53	2					
dbo	tblAnomaly	Gen_txQC1Notes	58		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblAnomaly	Gen_txReaqComments	59		YES	float			53	2					
dbo	tblAnomaly	Gen_txReviewComments	60		YES	float			53	2					
dbo	tblAnomaly	s_Generation	61		YES	float			53	2					
dbo	tblAnomaly	s_GUID	62		YES	uniqueidentifier									
dbo	tblAnomaly	ftResponsemV	63		YES	float			53	2					
dbo	tblAnomaly	QCUploadtoDB	64		YES	nchar	1	2							
dbo	tblAnomaly	ftQCResponseValue	65		YES	float			53	2					
dbo	tblAnomaly	vchQCTeam	66		YES	nvarchar	25	50							
dbo	tblAnomaly	iQCTeamLeaderID	67		YES	nvarchar	50	100							
dbo	tblAnomaly	dtQCWorkDate	68		YES	datetime						3			
dbo	tblAnomaly_Undug	iAnomalyUndugID	1		NO	int			10	10	0		PK_tblAnomalyUndug	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblAnomaly_Undug	vchSite	2		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	guidGrid	3		YES	uniqueidentifier									
dbo	tblAnomaly_Undug	vchGrid	4		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	vchGridAlias	5		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	vchTeam	6		YES	nvarchar	25	50							
dbo	tblAnomaly_Undug	dtWorkdate	7		YES	smalldatetime						0			
dbo	tblAnomaly_Undug	ftNorthing	8		YES	float			53	2					
dbo	tblAnomaly_Undug	ftEasting	9		YES	float			53	2					
dbo	tblAnomaly_Undug	iQty	10		YES	int			10	10	0				
dbo	tblAnomaly_Undug	vchDepth	11		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	vchType	12		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	vchDisposition	13		YES	nvarchar	50	100							
dbo	tblAnomaly_Undug	vchContractor	14		YES	nvarchar	50	100							
dbo	tblAnomDIDEM61MKII	guidAnomDIDEM61MKII	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDEM61MKII	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblAnomDIDEM61MKII	guidAnomaly	2		YES	uniqueidentifier							FK_tblAnomDIDEM61MKII_tblAnomaly		
dbo	tblAnomDIDEM61MKII	vchAnomalyID	3		NO	nvarchar	-1	-1							
dbo	tblAnomDIDEM61MKII	CH1_final	4		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	CH2_final	5		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	CH3_final	6		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	CH4_final	7		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	CH_SUM	8		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	CH_AVG	9		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Width	10		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Size	11		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	SignalStrength	12		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	SNR	13		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Fit_Coh	14		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Fit_dec	15		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Fit_inc	16		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Fit_size	17		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Fit_solidAngle	18		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Comments	19		YES	nvarchar	-1	-1							
dbo	tblAnomDIDEM61MKII	Tau_1_2	20		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Tau_1_3	21		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Tau_1_4	22		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Tau_2_3	23		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Tau_2_4	24		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	Tau_3_4	25		YES	decimal			18	10	3				
dbo	tblAnomDIDEM61MKII	vchGridID	26		YES	varchar	255	255							
dbo	tblAnomDIDEM61MKII	UniqueGridID	27		YES	varchar	255	255							
dbo	tblAnomDIDEM61MKII	dtRecMod	28	(getdate())	YES	datetime						3			
dbo	tblAnomDIDEM61MKII	Gen_Comments	29		YES	float			53	2					
dbo	tblAnomDIDEM61MKII	s_Generation	30		YES	float			53	2					
dbo	tblAnomDIDEM61MKII	s_GUID	31		YES	uniqueidentifier									
dbo	tblAnomDIDEM61MKII	ftEasting	32		YES	float			53	2					
dbo	tblAnomDIDEM61MKII	ftNorthing	33		YES	float			53	2					
dbo	tblAnomDIDG858	guidAnomDIDG858	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDG858	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblAnomDIDG858	guidAnomaly	2		YES	uniqueidentifier							FK_tblAnomDIDG858_tblAnomaly		
dbo	tblAnomDIDG858	vchAnomalyID	3		NO	nvarchar	-1	-1							
dbo	tblAnomDIDG858	TF_Peak	4		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	TF_Trough	5		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	VG_Peak	6		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	VG_Trough	7		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Mag_Peak_offset	8		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	AS	9		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	H_Final	10		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	M_final	11		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Width	12		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Halfwidth_alongLine	13		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Halfwidth_acrossLine	14		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Size	15		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	SignalStrength	16		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	SNR	17		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_Coh	18		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_Depth	19		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_MagneticMoment	20		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_bl	21		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_b2	22		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_b3	23		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_dec	24		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_inc	25		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_size	26		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Fit_solidAngle	27		YES	decimal			18	10	3				
dbo	tblAnomDIDG858	Comments	28		YES	nvarchar	-1	-1							
dbo	tblSite_Walk_ops	guidSiteWalkopsID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Walk_ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblSite_Walk_ops	guidGOL	2		YES	uniqueidentifier							FK_tblSite_Walk_ops_tblGrid_Ops_Lnk		
dbo	tblSite_Walk_ops	RecordId	3		YES	float			53	2					
dbo	tblSite_Walk_ops	UnitID	4		YES	float			53	2					
dbo	tblSite_Walk_ops	UserName	5		YES	varchar	255	255							
dbo	tblSite_Walk_ops	TimeStamp	6		YES	datetime						3			
dbo	tblSite_Walk_ops	ISiteWalkID	7		YES	float			53	2					
dbo	tblSite_Walk_ops	dtWorkDate	8		YES	datetime						3			
dbo	tblSite_Walk_ops	vchTeam	9		YES	nvarchar	255	510							
dbo	tblSite_Walk_ops	vchSurveyInstr	10		YES	varchar	25	25							
dbo	tblSite_Walk_ops	txReviewComments	11		YES	varchar	-1	-1							
dbo	tblSite_Walk_ops	txOpnotes	12		YES	varchar	-1	-1							
dbo	tblSite_Walk_ops	vchContractor	13		YES	varchar	20	20							
dbo	tblSite_Walk_ops	vchGridID	14		YES	varchar	50	50							
dbo	tblSite_Walk_ops	iTeamleaderID	15		YES	varchar	50	50							
dbo	tblSite_Walk_ops	dtRecMod	16	(getdate())	YES	datetime						3			
dbo	tblSite_Walk_ops	UploadtoDB	17		YES	varchar	1	1							
dbo	tblSite_Walk_ops	Gen_txOpnotes	18		YES	float			53	2					
dbo	tblSite_Walk_ops	Gen_txReviewComments	19		YES	float			53	2					
dbo	tblSite_Walk_ops	s_Generation	20		YES	float			53	2					
dbo	tblSite_Walk_ops	s_GUID	21		YES	uniqueidentifier									
dbo	tblGeo_Survey_Ops	guidGeoSurvey	1		NO	uniqueidentifier							PK_tblGeo_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_Survey_Ops	guidGeoSurvey	1		NO	uniqueidentifier							FK_tblGeo_Survey_Ops_tblGrid_Ops_Lnk		
dbo	tblGeo_Survey_Ops	dtStartTime	2		YES	datetime						3			
dbo	tblGeo_Survey_Ops	dtEndTime	3		YES	datetime						3			
dbo	tblGeo_Survey_Ops	txOpNotes	4		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	vchSurveyInstr	5		YES	nvarchar	25	50					FK_GEOSurvey_SurveyInstruments		
dbo	tblGeo_Survey_Ops	vchDataCollectRate	6		YES	nvarchar	50	100							
dbo	tblGeo_Survey_Ops	biReSurvey	7		YES	bit									
dbo	tblGeo_Survey_Ops	biQCSurvey	8		YES	bit									
dbo	tblGeo_Survey_Ops	ftQCPercent	9		YES	nvarchar	50	100							
dbo	tblGeo_Survey_Ops	dtCheckTime	10		YES	datetime						3			
dbo	tblGeo_Survey_Ops	vchRAW61FileNames	11		YES	nvarchar	255	510							
dbo	tblGeo_Survey_Ops	vchXYZFileNames	12		YES	nvarchar	255	510							
dbo	tblGeo_Survey_Ops	vchMagRawStn	13		YES	nvarchar	255	510							
dbo	tblGeo_Survey_Ops	vchMagRawCorStn	14		YES	nvarchar	50	100							
dbo	tblGeo_Survey_Ops	vchMagBaseStnFile	15		YES	nvarchar	250	500							
dbo	tblGeo_Survey_Ops	vchMagRawXyz	16		YES	nvarchar	250	500							
dbo	tblGeo_Survey_Ops	iInstWarmupTime	17		YES	decimal			18	10	0				
dbo	tblGeo_Survey_Ops	biZeroInstrument	18		YES	bit									
dbo	tblGeo_Survey_Ops	vchStaticQCFile	19		YES	nvarchar	50	100							
dbo	tblGeo_Survey_Ops	iStaticQCET	20		YES	int			10	10	0				
dbo	tblGeo_Survey_Ops	biStaticQCConsistent	21		YES	bit									
dbo	tblGeo_Survey_Ops	biSpikeTestConsistent	22		YES	bit									
dbo	tblGeo_Survey_Ops	vchWeather	23		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	vchCulturalEffect	24		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	vchTerrain	25		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	vchNoteKeeper1	26		YES	nvarchar	255	510							
dbo	tblGeo_Survey_Ops	vchNoteKeeper2	27		YES	nvarchar	255	510							
dbo	tblGeo_Survey_Ops	vchGridCondition	28		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	ftLnSpacing	29		YES	float			53	2					
dbo	tblGeo_Survey_Ops	ftBgnBatVoltage	30		YES	real			24	2					
dbo	tblGeo_Survey_Ops	ftEndBatVoltage	31		YES	real			24	2					
dbo	tblGeo_Survey_Ops	biQCReview	32		YES	bit									
dbo	tblGeo_Survey_Ops	txReviewComments	33		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	vchQCInitials	34		YES	nvarchar	5	10							
dbo	tblGeo_Survey_Ops	txModNotes	35		YES	nvarchar	-1	-1							
dbo	tblGeo_Survey_Ops	biDiscrepancy	36		YES	bit									
dbo	tblGeo_Survey_Ops	dtDataEntered	37		YES	datetime						3			

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGeo_Survey_Ops	vchDataEntry	38		YES	nvarchar	50	100							
dbo	tblGeo_Survey_Ops	RecordId	39		YES	float			53	2					
dbo	tblGeo_Survey_Ops	UnitID	40		YES	float			53	2					
dbo	tblGeo_Survey_Ops	UserName	41		YES	varchar	255	255							
dbo	tblGeo_Survey_Ops	TimeStamp	42		YES	datetime						3			
dbo	tblGeo_Survey_Ops	vchGridBlockID	43		YES	varchar	50	50							
dbo	tblGeo_Survey_Ops	GridsCollected	44		YES	varchar	255	255							
dbo	tblGeo_Survey_Ops	vchTeam	45		YES	varchar	255	255							
dbo	tblGeo_Survey_Ops	vchCollDir	46		YES	varchar	50	50							
dbo	tblGeo_Survey_Ops	DateofSurvey	47		YES	datetime						3			
dbo	tblGeo_Survey_Ops	dtRecMod	48	(getdate())	YES	datetime						3			
dbo	tblGeo_Survey_Ops	UploadtoDB	49		YES	varchar	1	1							
dbo	tblGeo_Survey_Ops	Gen_txOpNotes	50		YES	float			53	2					
dbo	tblGeo_Survey_Ops	Gen_txReviewComments	51		YES	float			53	2					
dbo	tblGeo_Survey_Ops	Gen_vchCulturalEffect	52		YES	float			53	2					
dbo	tblGeo_Survey_Ops	Gen_vchGridCondition	53		YES	float			53	2					
dbo	tblGeo_Survey_Ops	Gen_vchTerrain	54		YES	float			53	2					
dbo	tblGeo_Survey_Ops	Gen_vchWeather	55		YES	float			53	2					
dbo	tblGeo_Survey_Ops	s_Generation	56		YES	float			53	2					
dbo	tblGeo_Survey_Ops	s_GUID	57		YES	uniqueidentifier									
dbo	tblGeo_Survey_Ops	vchContractor	58		YES	nvarchar	50	100							
dbo	tblGeo_GridBlock_Lnk	guidGridBlockLnk	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block_Lnk	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_GridBlock_Lnk	guidGeoSurvey	2		YES	uniqueidentifier							FK_GBL_GeoSurvey		
dbo	tblGeo_GridBlock_Lnk	guidGridBlock	3		YES	uniqueidentifier							FK_GBL_GridBlock		
dbo	tblGeo_GridBlock_Lnk	vchGridBlockID	4		YES	nvarchar	50	100							
dbo	tblGeo_GridBlock_Lnk	vchGridID	5		YES	nvarchar	50	100							
dbo	tblGeo_GridBlock_Lnk	guidGrid	6		YES	uniqueidentifier							FK_GBL_Grid		
dbo	tblGeo_GridBlock	guidGridBlock	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_GridBlock	vchGridBlockDesc	2		YES	nvarchar	255	510							
dbo	tblGeo_FileData	guidGeoFileData	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileData	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_FileData	guidGeoSurvey	2		YES	uniqueidentifier							FK_GeofileData_GeoSurvey		
dbo	tblGeo_FileData	vchGeoFileDataName	3		YES	nvarchar	255	510							
dbo	tblGeo_FileData	vchGeoFileDataType	4		YES	nvarchar	255	510							
dbo	tblGeo_FileData	vchGeoFileDataNotes	5		YES	nvarchar	255	510							
dbo	tblGeo_FileData	RecordId	6		YES	float			53	2					
dbo	tblGeo_FileData	UnitID	7		YES	float			53	2					
dbo	tblGeo_FileData	UserName	8		YES	varchar	255	255							
dbo	tblGeo_FileData	TimeStamp	9		YES	datetime						3			
dbo	tblGeo_FileData	vchGridBlockID	10		YES	varchar	50	50							
dbo	tblGeo_FileData	vchPreparer	11		YES	varchar	50	50							
dbo	tblGeo_FileData	vchQCInitials	12		YES	varchar	5	5							
dbo	tblGeo_FileData	dtQC	13		YES	datetime						3			
dbo	tblGeo_FileData	vchProblemDesc	14		YES	varchar	255	255							
dbo	tblGeo_FileData	biOKToDeliver	15		YES	varchar	1	1							
dbo	tblGeo_FileData	dtDelivery	16		YES	datetime						3			
dbo	tblGeo_FileData	dtRecMod	17	(getdate())	YES	datetime						3			
dbo	tblGeo_FileData	UploadtoDB	18		YES	varchar	1	1							
dbo	tblGeo_FileData	s_Generation	19		YES	float			53	2					
dbo	tblGeo_FileData	s_GUID	20		YES	uniqueidentifier									
dbo	tblGeo_FileData	vchContractor	21		YES	nvarchar	50	100							
dbo	tblGeo_FileProcessing	guidGeoFileProcessing	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileProcessing	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_FileProcessing	guidGeoFileData	2		YES	uniqueidentifier							FK_GFP_GeoFileData		
dbo	tblGeo_FileProcessing	vchGeosoftDatabaseName	3		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	dtProcessingDate	4		YES	datetime						3			
dbo	tblGeo_FileProcessing	vchProcessingOperator	5		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biGPSSmoothingPerformed	6		YES	bit									
dbo	tblGeo_FileProcessing	iGPSSmoothingWindow	7		YES	int			10	10	0				
dbo	tblGeo_FileProcessing	biDriftCorrectionPerformed	8		YES	bit									
dbo	tblGeo_FileProcessing	vchDriftCorrectMethod	9		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biDirurnalCorrection	10		YES	bit									
dbo	tblGeo_FileProcessing	vchDirunalCorrectionBSFile	11		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	dLatency	12		YES	numeric			18	10	3				
dbo	tblGeo_FileProcessing	dSampleSeparation	13		YES	numeric			18	10	3				
dbo	tblGeo_FileProcessing	dNoiseMean	14		YES	numeric			18	10	3				
dbo	tblGeo_FileProcessing	dNoiseStdDev	15		YES	numeric			18	10	3				
dbo	tblGeo_FileProcessing	vchProcessingQCOperator	16		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	dtProcessingQCDate	17		YES	datetime						3			
dbo	tblGeo_FileProcessing	vchDataProjection	18		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	vchDeSpikingPerformed	19		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	vchDeSpikingInfo	20		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biMagMap2000	21		YES	bit									
dbo	tblGeo_FileProcessing	biGeosoftOasisMontaj	22		YES	bit									
dbo	tblGeo_FileProcessing	biHeadingCorrection	23		YES	bit									
dbo	tblGeo_FileProcessing	vchHeadInfo	24		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biNormalize	25		YES	bit									
dbo	tblGeo_FileProcessing	vchNormInfo	26		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biHeaderProcFile	27		YES	bit									
dbo	tblGeo_FileProcessing	biLineBreak	28		YES	bit									
dbo	tblGeo_FileProcessing	vchLineBreakInfo	29		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	biTranslateData	30		YES	bit									
dbo	tblGeo_FileProcessing	biLagCorrection	31		YES	bit									
dbo	tblGeo_FileProcessing	vchLagCrValue	32		YES	nvarchar	255	510							
dbo	tblGeo_FileProcessing	vchGridBlockID	33		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dSampleSeparationPercent	34		YES	float			53	2					
dbo	tblGeo_FileProcessing	dSampleSeparationStatus	35		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dCoverageType	36		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dCoverageDesignPercent	37		YES	float			53	2					
dbo	tblGeo_FileProcessing	dCoveragePercent	38		YES	float			53	2					
dbo	tblGeo_FileProcessing	dCoverageDesignStatus	39		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dCoverageStatus	40		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dVelocityPercent	41		YES	float			53	2					
dbo	tblGeo_FileProcessing	dVelocityMean	42		YES	float			53	2					
dbo	tblGeo_FileProcessing	dVelocityStatus	43		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	vchDataPackageFiles	44		YES	varchar	-1	-1							
dbo	tblGeo_FileProcessing	vchProcessingComments	45		YES	varchar	-1	-1							
dbo	tblGeo_FileProcessing	vchRepeatLineNumbers	46		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	biRepeatLinesStatus	47		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dGPSQualityPercentFix	48		YES	float			53	2					
dbo	tblGeo_FileProcessing	vchGPSQualityStatus	49		YES	varchar	255	255							
dbo	tblGeo_FileProcessing	dtRecMod	50	(getdate())	YES	datetime						3			
dbo	tblGeo_FileProcessing	Gen_vchDataPackageFiles	51		YES	float			53	2					
dbo	tblGeo_FileProcessing	Gen_vchProcessingComments	52		YES	float			53	2					
dbo	tblGeo_FileProcessing	s_Generation	53		YES	float			53	2					
dbo	tblGeo_FileProcessing	s_GUID	54		YES	uniqueidentifier									
dbo	tblGeo_FileProcessing	vchContractor	55		YES	nvarchar	50	100							
dbo	tblGeo_QCSurvey_FileData	iGeoFileFieldQCID	1		YES	bigint			19	10	0				
dbo	tblGeo_QCSurvey_FileData	guidGeoFileFieldQC	2	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSurvey_FileData	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCSurvey_FileData	guidGeoFileData	3		YES	uniqueidentifier									
dbo	tblGeo_QCSurvey_FileData	guidGeoQCSurveyOp	4		YES	uniqueidentifier							FK_tblGeo_QCSurvey_FileData_tblGeo_QCSurvey_ops		
dbo	tblGeo_QCSurvey_FileData	vchPreGeoFileQCName	5		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	vchPreGeoFileQCType	6		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	iPreStaticLineNum	7		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPreDynamicLineNum	8		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPreCableLineNum	9		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPreLatencyLineNum	10		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	vchPreQCSurveyNotes	11		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	vchPostGeoFileQCName	12		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	vchPostGeoFileQCType	13		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	iPostStaticLineNum	14		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPostDynamicLineNum	15		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPostCableLineNum	16		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	iPostLatencyLineNum	17		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_FileData	vchPostQCSurveyNotes	18		YES	nvarchar	255	510							
dbo	tblGeo_QCSurvey_FileData	vchContractor	19		YES	nvarchar	50	100							
dbo	tblGeo_QCSurvey_ops	guidGeoQCSurveyOp	1	(newid())	NO	uniqueidentifier							PK_tblGeoQCSurvey_ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCSurvey_ops	vchFldFrmID	2		YES	nvarchar	50	100							
dbo	tblGeo_QCSurvey_ops	vchWeather	3		YES	nvarchar	50	100							
dbo	tblGeo_QCSurvey_ops	iSurveytype	4		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	iInstWarmupTime	5		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	vchSurveyInstr	6		YES	nvarchar	25	50					FK_tblGeoQCSurvey_ops_lkpSurveyInstr		
dbo	tblGeo_QCSurvey_ops	vchGeoQCSurveyNotes	7		YES	varchar	-1	-1							
dbo	tblGeo_QCSurvey_ops	ftStaticSpikeAM	8		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftStaticSpikePM	9		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftStaticBackgroundAM	10		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftStaticBackgroundPM	11		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	vchPointLocationID	12		YES	varchar	50	50							
dbo	tblGeo_QCSurvey_ops	vchPointLocationName	13		YES	varchar	50	50							
dbo	tblGeo_QCSurvey_ops	ftRecordedNorthing	14		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftRecordedEasting	15		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftKnownNorthing	16		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftKnownEasting	17		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftDistanceOffset	18		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNameAM	19		YES	varchar	50	50							
dbo	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNamePM	20		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGeo_QCSurvey_ops	iStaticLineNum	21		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	iDynamicLineNum	22		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	iCableLineNum	23		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	iIVSLineNum	24		YES	int			10	10	0				
dbo	tblGeo_QCSurvey_ops	vchIVSFileName	25		YES	varchar	50	50							
dbo	tblGeo_QCSurvey_ops	vchQCFileName	26		YES	varchar	50	50							
dbo	tblGeo_QCSurvey_ops	guidGeoSurvey	27		YES	uniqueidentifier									
dbo	tblGeo_QCSurvey_ops	RecordId	28		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	UnitID	29		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	UserName	30		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	TimeStamp	31		YES	datetime						3			
dbo	tblGeo_QCSurvey_ops	vchTeam	32		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	vchGPSFileName	33		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	Static_Test_Item_Height	34		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	Test_Item	35		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	iStaticPreLineNum	36		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	iStaticSpikeLineNum	37		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	iStaticPostLineNum	38		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	iPersonnelLineNum	39		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	iTowVehicleLineNum	40		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	ftStaticSpike	41		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	ftStaticBackground	42		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	IVSLocation_ID	43		YES	varchar	255	255							
dbo	tblGeo_QCSurvey_ops	iIVSBkgLineNum	44		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	vchDateCollected	45		YES	datetime						3			
dbo	tblGeo_QCSurvey_ops	dtRecMod	46	(getdate())	YES	datetime						3			
dbo	tblGeo_QCSurvey_ops	UploadtoDB	47		YES	varchar	1	1							
dbo	tblGeo_QCSurvey_ops	Gen_vchGeoQCSurveyNotes	48		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	Gen_vchWeather	49		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	s_Generation	50		YES	float			53	2					
dbo	tblGeo_QCSurvey_ops	s_GUID	51		YES	uniqueidentifier									
dbo	tblGeo_QCSurvey_ops	vchContractor	52		YES	nvarchar	50	100							
dbo	tblGeo_Defaults	guidGeoDefaultsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_Defaults	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_Defaults	CableShakeTol	2		YES	float			53	2					
dbo	tblGeo_Defaults	CableShakePercent	3		YES	float			53	2					
dbo	tblGeo_Defaults	PersonnelTol	4		YES	float			53	2					
dbo	tblGeo_Defaults	PersonnelPercent	5		YES	float			53	2					
dbo	tblGeo_Defaults	TowVehicleTol	6		YES	float			53	2					
dbo	tblGeo_Defaults	TowVehiclePercent	7		YES	float			53	2					
dbo	tblGeo_Defaults	StaticBkgTol	8		YES	float			53	2					
dbo	tblGeo_Defaults	StaticBkgPercent	9		YES	float			53	2					
dbo	tblGeo_Defaults	StaticSpikeTol	10		YES	float			53	2					
dbo	tblGeo_Defaults	StaticSpikePercent	11		YES	float			53	2					
dbo	tblGeo_Defaults	IVSBkgTol	12		YES	float			53	2					
dbo	tblGeo_Defaults	IVSBkgPercent	13		YES	float			53	2					
dbo	tblGeo_Defaults	IVSResponseTol	14		YES	float			53	2					
dbo	tblGeo_Defaults	IVSPositionTol	15		YES	float			53	2					
dbo	tblGeo_Defaults	GPSPostionTol	16		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageTolAPP	17		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageTolATA	18		YES	float			53	2					
dbo	tblGeo_Defaults	CoveragePercentAPP	19		YES	float			53	2					
dbo	tblGeo_Defaults	CoveragePercentATA	20		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageTolBPP	21		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageTolBTA	22		YES	float			53	2					
dbo	tblGeo_Defaults	CoveragePercentBPP	23		YES	float			53	2					
dbo	tblGeo_Defaults	CoveragePercentBTA	24		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignTolAPP	25		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignTolATA	26		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignPercentAPP	27		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignPercentATA	28		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignTolBPP	29		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignTolBTA	30		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignPercentBPP	31		YES	float			53	2					
dbo	tblGeo_Defaults	CoverageDesignPercentBTA	32		YES	float			53	2					
dbo	tblGeo_Defaults	ProjectCoordinateSystem	33		YES	varchar	255	255							
dbo	tblGeo_Defaults	VelocityTol	34		YES	float			53	2					
dbo	tblGeo_Defaults	VelocityPercent	35		YES	float			53	2					
dbo	tblGeo_Defaults	AlongLineDensityPercent	36		YES	float			53	2					
dbo	tblGeo_Defaults	AlongLineDensityTol	37		YES	float			53	2					
dbo	tblGeo_Defaults	ProcFormDriftCorrMethod	38		YES	varchar	255	255							
dbo	tblGeo_Defaults	ProcFormLagValue	39		YES	varchar	255	255							
dbo	tblGeo_Defaults	ProcFormDeSpikingInfo	40		YES	varchar	255	255							
dbo	tblGeo_Defaults	ProcFormLineBreakInfo	41		YES	varchar	255	255							
dbo	tblGeo_Defaults	ProcFormProcessingComments	42		YES	varchar	-1	-1							
dbo	tblGeo_Defaults	dtRecMod	43	(getdate())	YES	datetime						3			
dbo	tblGeo_Defaults	RecordID	44		YES	float			53	2					
dbo	tblGeo_Defaults	Gen_ProcFormProcessingComments	45		YES	float			53	2					
dbo	tblGeo_Defaults	s_Generation	46		YES	float			53	2					
dbo	tblGeo_Defaults	s_GUID	47		YES	uniqueidentifier									
dbo	tblGeo_Defaults	vchContractor	48		YES	nvarchar	50	100							
dbo	tblGeo_GPSControlPoint	guidGeoGPSControlPointID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_GPSControlPoint	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_GPSControlPoint	vchPointLocationID	2		YES	varchar	50	50							
dbo	tblGeo_GPSControlPoint	ftKnownEasting	3		YES	float			53	2					
dbo	tblGeo_GPSControlPoint	ftKnownNorthing	4		YES	float			53	2					
dbo	tblGeo_GPSControlPoint	vchPointLocationName	5		YES	varchar	255	255							
dbo	tblGeo_GPSControlPoint	Comments	6		YES	varchar	-1	-1							
dbo	tblGeo_GPSControlPoint	dtRecMod	7	(getdate())	YES	datetime						3			
dbo	tblGeo_GPSControlPoint	Gen_Comments	8		YES	float			53	2					
dbo	tblGeo_GPSControlPoint	s_Generation	9		YES	float			53	2					
dbo	tblGeo_GPSControlPoint	s_GUID	10		YES	uniqueidentifier									
dbo	tblGeo_GPSControlPoint	vchContractor	11		YES	nvarchar	50	100							
dbo	tblGeo_QCCableShake	guidGeoQCCableShakeID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCCableShake	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCCableShake	vchQCFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	Sensor_ID	3		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	iCableShakeLineID	4		YES	float			53	2					
dbo	tblGeo_QCCableShake	Response_Ch1	5		YES	float			53	2					
dbo	tblGeo_QCCableShake	Response_Ch2	6		YES	float			53	2					
dbo	tblGeo_QCCableShake	Response_Ch3	7		YES	float			53	2					
dbo	tblGeo_QCCableShake	Response_Ch4	8		YES	float			53	2					
dbo	tblGeo_QCCableShake	PercentInTol_Ch1	9		YES	float			53	2					
dbo	tblGeo_QCCableShake	PercentInTol_Ch2	10		YES	float			53	2					
dbo	tblGeo_QCCableShake	PercentInTol_Ch3	11		YES	float			53	2					
dbo	tblGeo_QCCableShake	PercentInTol_Ch4	12		YES	float			53	2					
dbo	tblGeo_QCCableShake	QCStatus_Ch1	13		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	QCStatus_Ch2	14		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	QCStatus_Ch3	15		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	QCStatus_Ch4	16		YES	varchar	50	50							
dbo	tblGeo_QCCableShake	Comments	17		YES	varchar	-1	-1							
dbo	tblGeo_QCCableShake	dtRecMod	18	(getdate())	YES	datetime						3			
dbo	tblGeo_QCCableShake	RecordID	19		YES	float			53	2					
dbo	tblGeo_QCCableShake	Gen_Comments	20		YES	float			53	2					
dbo	tblGeo_QCCableShake	s_Generation	21		YES	float			53	2					
dbo	tblGeo_QCCableShake	s_GUID	22		YES	uniqueidentifier									
dbo	tblGeo_QCCableShake	vchContractor	23		YES	nvarchar	50	100							
dbo	tblGeo_QCGPSCheck	guidGeoQCGPSCheckID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCGPSCheck	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCGPSCheck	ID	2		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	vchGPSFileName	3		YES	varchar	255	255							
dbo	tblGeo_QCGPSCheck	vchPointLocationID	4		YES	varchar	50	50							
dbo	tblGeo_QCGPSCheck	ftRecordedNorthing	5		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	ftRecordedEasting	6		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	ftKnownNorthing	7		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	ftKnownEasting	8		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	ftDistanceOffset	9		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	QCStatus	10		YES	varchar	50	50							
dbo	tblGeo_QCGPSCheck	Comments	11		YES	varchar	-1	-1							
dbo	tblGeo_QCGPSCheck	dtRecMod	12	(getdate())	YES	datetime						3			
dbo	tblGeo_QCGPSCheck	Gen_Comments	13		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	s_Generation	14		YES	float			53	2					
dbo	tblGeo_QCGPSCheck	s_GUID	15		YES	uniqueidentifier									
dbo	tblGeo_QCGPSCheck	vchContractor	16		YES	nvarchar	50	100							
dbo	tblGeo_QCIVSBackground	guidGeoQCIVSBackgroundID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSBackground	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCIVSBackground	vchIVSFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCIVSBackground	iIVSBkgLineID	3		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Sensor_ID	4		YES	varchar	50	50							
dbo	tblGeo_QCIVSBackground	Bkg_Response_Ch1	5		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_Response_Ch2	6		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_Response_Ch3	7		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_Response_Ch4	8		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch1	9		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch2	10		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch3	11		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch4	12		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	QCStatus_Ch1	13		YES	varchar	50	50							
dbo	tblGeo_QCIVSBackground	QCStatus_Ch2	14		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGeo_QCIVSBackground	QCStatus_Ch3	15		YES	varchar	50	50							
dbo	tblGeo_QCIVSBackground	QCStatus_Ch4	16		YES	varchar	50	50							
dbo	tblGeo_QCIVSBackground	Comments	17		YES	varchar	-1	-1							
dbo	tblGeo_QCIVSBackground	RecordID	18		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	dtRecMod	19	(getdate())	YES	datetime						3			
dbo	tblGeo_QCIVSBackground	Gen_Comments	20		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	s_Generation	21		YES	float			53	2					
dbo	tblGeo_QCIVSBackground	s_GUID	22		YES	uniqueidentifier									
dbo	tblGeo_QCIVSBackground	vchContractor	23		YES	nvarchar	50	100							
dbo	tblGeo_QCIVSResponse	guidGeoQCIVSResponseID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSResponse	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCIVSResponse	vchIVSFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	iIVSLineNum	3		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Sensor_ID	4		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	Test_Item	5		YES	varchar	255	255							
dbo	tblGeo_QCIVSResponse	Spike_Response_Ch1	6		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Spike_Response_Ch2	7		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Spike_Response_Ch3	8		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Spike_Response_Ch4	9		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Delta_Response_Ch1	10		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Delta_Response_Ch2	11		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Delta_Response_Ch3	12		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Delta_Response_Ch4	13		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	ftRecordedNorthing	14		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	ftRecordedEasting	15		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	X_Offset	16		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Y_Offset	17		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	Offset	18		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	QCStatus_Ch1	19		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	QCStatus_Ch2	20		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	QCStatus_Ch3	21		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	QCStatus_Ch4	22		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	QCStatus_Offset	23		YES	varchar	50	50							
dbo	tblGeo_QCIVSResponse	Comments	24		YES	varchar	-1	-1							
dbo	tblGeo_QCIVSResponse	RecordID	25		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	dtRecMod	26	(getdate())	YES	datetime						3			
dbo	tblGeo_QCIVSResponse	Gen_Comments	27		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	s_Generation	28		YES	float			53	2					
dbo	tblGeo_QCIVSResponse	s_GUID	29		YES	uniqueidentifier									
dbo	tblGeo_QCIVSResponse	vchContractor	30		YES	nvarchar	50	100							
dbo	tblGeo_QCPersonnel	guidGeoQCPersonnelID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCPersonnel	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCPersonnel	vchQCFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	Sensor_ID	3		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	iPersonnelLineID	4		YES	float			53	2					
dbo	tblGeo_QCPersonnel	Response_Ch1	5		YES	float			53	2					
dbo	tblGeo_QCPersonnel	Response_Ch2	6		YES	float			53	2					
dbo	tblGeo_QCPersonnel	Response_Ch3	7		YES	float			53	2					
dbo	tblGeo_QCPersonnel	Response_Ch4	8		YES	float			53	2					
dbo	tblGeo_QCPersonnel	PercentInTol_Ch1	9		YES	float			53	2					
dbo	tblGeo_QCPersonnel	PercentInTol_Ch2	10		YES	float			53	2					
dbo	tblGeo_QCPersonnel	PercentInTol_Ch3	11		YES	float			53	2					
dbo	tblGeo_QCPersonnel	PercentInTol_Ch4	12		YES	float			53	2					
dbo	tblGeo_QCPersonnel	QCStatus_Ch1	13		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	QCStatus_Ch2	14		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	QCStatus_Ch3	15		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	QCStatus_Ch4	16		YES	varchar	50	50							
dbo	tblGeo_QCPersonnel	Comments	17		YES	varchar	-1	-1							
dbo	tblGeo_QCPersonnel	RecordID	18		YES	float			53	2					
dbo	tblGeo_QCPersonnel	dtRecMod	19	(getdate())	YES	datetime						3			
dbo	tblGeo_QCPersonnel	Gen_Comments	20		YES	float			53	2					
dbo	tblGeo_QCPersonnel	s_Generation	21		YES	float			53	2					
dbo	tblGeo_QCPersonnel	s_GUID	22		YES	uniqueidentifier									
dbo	tblGeo_QCPersonnel	vchContractor	23		YES	nvarchar	50	100							
dbo	tblGeo_QCSeedItems	guidGeoQCSeedItemsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSeedItems	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCSeedItems	QCSeedType	2		YES	varchar	255	255							
dbo	tblGeo_QCSeedItems	Sensor_ID	3		YES	varchar	50	50							
dbo	tblGeo_QCSeedItems	vchSurveyInstr	4		YES	varchar	25	25							
dbo	tblGeo_QCSeedItems	Response_Value_CH1	5		YES	numeric			10	10	2				
dbo	tblGeo_QCSeedItems	Response_Value_CH2	6		YES	numeric			10	10	2				
dbo	tblGeo_QCSeedItems	Response_Value_CH3	7		YES	numeric			10	10	2				
dbo	tblGeo_QCSeedItems	Response_Value_CH4	8		YES	numeric			10	10	2				
dbo	tblGeo_QCSeedItems	ftKnownEasting	9		YES	float			53	2					
dbo	tblGeo_QCSeedItems	ftKnownNorthing	10		YES	float			53	2					
dbo	tblGeo_QCSeedItems	Test_Item	11		YES	varchar	255	255							
dbo	tblGeo_QCSeedItems	IVSLocation_ID	12		YES	varchar	255	255							
dbo	tblGeo_QCSeedItems	Static_Test_Item_Height	13		YES	decimal			18	10	2				
dbo	tblGeo_QCSeedItems	dtRecMod	14	(getdate())	YES	datetime						3			
dbo	tblGeo_QCSeedItems	RecordID	15		YES	float			53	2					
dbo	tblGeo_QCSeedItems	s_Generation	16		YES	float			53	2					
dbo	tblGeo_QCSeedItems	s_GUID	17		YES	uniqueidentifier									
dbo	tblGeo_QCSeedItems	vchContractor	18		YES	nvarchar	50	100							
dbo	tblGeo_QCStatic	guidGeoQCStaticID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCStatic	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCStatic	vchQCFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCStatic	iStaticPreLineID	3		YES	float			53	2					
dbo	tblGeo_QCStatic	iStaticSpikeLineID	4		YES	float			53	2					
dbo	tblGeo_QCStatic	iStaticPostLineID	5		YES	float			53	2					
dbo	tblGeo_QCStatic	Test_Item	6		YES	varchar	255	255							
dbo	tblGeo_QCStatic	Sensor_ID	7		YES	varchar	50	50							
dbo	tblGeo_QCStatic	PreBkg_Response_Ch1	8		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_Response_Ch2	9		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_Response_Ch3	10		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_Response_Ch4	11		YES	float			53	2					
dbo	tblGeo_QCStatic	Spike_Response_CH1	12		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Spike_Response_CH2	13		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Spike_Response_CH3	14		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Spike_Response_CH4	15		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	PostBkg_Response_Ch1	16		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_Response_Ch2	17		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_Response_Ch3	18		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_Response_Ch4	19		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_PercentInTol_Ch1	20		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_PercentInTol_Ch2	21		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_PercentInTol_Ch3	22		YES	float			53	2					
dbo	tblGeo_QCStatic	PreBkg_PercentInTol_Ch4	23		YES	float			53	2					
dbo	tblGeo_QCStatic	Spike_PercentInTol_Ch1	24		YES	float			53	2					
dbo	tblGeo_QCStatic	Spike_PercentInTol_Ch2	25		YES	float			53	2					
dbo	tblGeo_QCStatic	Spike_PercentInTol_Ch3	26		YES	float			53	2					
dbo	tblGeo_QCStatic	Spike_PercentInTol_Ch4	27		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_PercentInTol_Ch1	28		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_PercentInTol_Ch2	29		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_PercentInTol_Ch3	30		YES	float			53	2					
dbo	tblGeo_QCStatic	PostBkg_PercentInTol_Ch4	31		YES	float			53	2					
dbo	tblGeo_QCStatic	Static_Test_Item_Height	32		YES	numeric			10	10	2				
dbo	tblGeo_QCStatic	Static_Response_CH1	33		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Static_Response_CH2	34		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Static_Response_CH3	35		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	Static_Response_CH4	36		YES	decimal			18	10	2				
dbo	tblGeo_QCStatic	QCStatus_Ch1	37		YES	varchar	50	50							
dbo	tblGeo_QCStatic	QCStatus_Ch2	38		YES	varchar	50	50							
dbo	tblGeo_QCStatic	QCStatus_Ch3	39		YES	varchar	50	50							
dbo	tblGeo_QCStatic	QCStatus_Ch4	40		YES	varchar	50	50							
dbo	tblGeo_QCStatic	Comments	41		YES	varchar	-1	-1							
dbo	tblGeo_QCStatic	RecordID	42		YES	float			53	2					
dbo	tblGeo_QCStatic	dtRecMod	43	(getdate())	YES	datetime						3			
dbo	tblGeo_QCStatic	Gen_Comments	44		YES	float			53	2					
dbo	tblGeo_QCStatic	s_Generation	45		YES	float			53	2					
dbo	tblGeo_QCStatic	s_GUID	46		YES	uniqueidentifier									
dbo	tblGeo_QCStatic	vchContractor	47		YES	nvarchar	50	100							
dbo	tblGeo_QCTowVehicle	guidGeoQCTowVehicleID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCTowVehicle	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGeo_QCTowVehicle	vchQCFileName	2		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	Sensor_ID	3		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	iTowVehicleLineID	4		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	Response_Ch1	5		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	Response_Ch2	6		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	Response_Ch3	7		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	Response_Ch4	8		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	PercentInTol_Ch1	9		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	PercentInTol_Ch2	10		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	PercentInTol_Ch3	11		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	PercentInTol_Ch4	12		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	QCStatus_Ch1	13		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	QCStatus_Ch2	14		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	QCStatus_Ch3	15		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	QCStatus_Ch4	16		YES	varchar	50	50							
dbo	tblGeo_QCTowVehicle	Comments	17		YES	varchar	-1	-1							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGeo_QCTowVehicle	RecordID	18		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	dtRecMod	19	(getdate())	YES	datetime						3			
dbo	tblGeo_QCTowVehicle	Gen_Comments	20		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	s_Generation	21		YES	float			53	2					
dbo	tblGeo_QCTowVehicle	s_GUID	22		YES	uniqueidentifier									
dbo	tblGeo_QCTowVehicle	vchContractor	23		YES	nvarchar	50	100							
dbo	tblDemo_Ops	guidDemoOp	1	(newid())	NO	uniqueidentifier							PK_tblDemo_Ops	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblDemo_Ops	dtDemo	2		YES	smalldatetime						0			
dbo	tblDemo_Ops	iQtyOEDemoed	3		YES	int			10	10	0				
dbo	tblDemo_Ops	vchCondition	4		YES	nvarchar	25	50							
dbo	tblDemo_Ops	txReviewComments	5		YES	nvarchar	-1	-1							
dbo	tblDemo_Ops	vchQCInitials	6		YES	nvarchar	5	10							
dbo	tblDemo_Ops	dtQC	7		YES	datetime						3			
dbo	tblDemo_Ops	biDEQCChecked	8		YES	bit									
dbo	tblDemo_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
dbo	tblDemo_Ops	biDiscrepancy	10		YES	bit									
dbo	tblDemo_Ops	vchFinalDisposition	11		YES	varchar	50	50							
dbo	tblDemo_Ops	dtRecMod	12	(getdate())	YES	datetime						3			
dbo	tblDemo_Ops	Gen_txReviewComments	13		YES	float			53	2					
dbo	tblDemo_Ops	s_Generation	14		YES	float			53	2					
dbo	tblDemo_Ops	s_GUID	15		YES	uniqueidentifier									
dbo	tblField_Teamleader_Logbook	vchUserName	1		NO	nvarchar	50	100							
dbo	tblField_Teamleader_Logbook	dtTimeStamp	2		YES	datetime						3			
dbo	tblField_Teamleader_Logbook	dtWorkDate	3		YES	smalldatetime						0			
dbo	tblField_Teamleader_Logbook	dtWorkTime	4		YES	datetime						3			
dbo	tblField_Teamleader_Logbook	vchTeam	5		YES	nvarchar	10	20							
dbo	tblField_Teamleader_Logbook	vchTeamLeader	6		YES	nvarchar	50	100							
dbo	tblField_Teamleader_Logbook	vchTeamMember	7		YES	nvarchar	-1	-1							
dbo	tblField_Teamleader_Logbook	vchSite	8		YES	nvarchar	50	100							
dbo	tblField_Teamleader_Logbook	txLogEntry	9		YES	nvarchar	1000	2000							
dbo	tblField_Teamleader_Logbook	biQCReviewPassed	10		YES	bit									
dbo	tblField_Teamleader_Logbook	txQCReviewComments	11		YES	nvarchar	1000	2000							
dbo	tblField_Teamleader_Logbook	RecordId	12		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	UnitID	13		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	UserName	14		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	TimeStamp	15		YES	datetime						3			
dbo	tblField_Teamleader_Logbook	vchEMOp	16		YES	varchar	50	50							
dbo	tblField_Teamleader_Logbook	vchTestItemmV	17		YES	varchar	50	50							
dbo	tblField_Teamleader_Logbook	vchAnalogInstChk	18		YES	varchar	50	50							
dbo	tblField_Teamleader_Logbook	dtWorkTimeEnd	19		YES	datetime						3			
dbo	tblField_Teamleader_Logbook	Remarks	20		YES	varchar	-1	-1							
dbo	tblField_Teamleader_Logbook	WorkCategory	21		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	vchQCInitials	22		YES	varchar	5	5							
dbo	tblField_Teamleader_Logbook	dtQC	23		YES	datetime						3			
dbo	tblField_Teamleader_Logbook	txModNotes	24		YES	varchar	-1	-1							
dbo	tblField_Teamleader_Logbook	Completed_Datasets	25		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	Partial_Datasets	26		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	Datasets_Comp_frm_Partial	27		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	Grids_Reacquired	28		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	Number_Targets_Reacquired	29		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	Standby_Time	30		YES	varchar	255	255							
dbo	tblField_Teamleader_Logbook	dtRecMod	31	(getdate())	YES	datetime						3			
dbo	tblField_Teamleader_Logbook	UploadtoDB	32		YES	varchar	50	50							
dbo	tblField_Teamleader_Logbook	Gen_Remarks	33		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	Gen_txLogEntry	34		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	Gen_txModNotes	35		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	Gen_vchTeamLeader	36		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	Gen_vchTeamMember	37		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	s_Generation	38		YES	float			53	2					
dbo	tblField_Teamleader_Logbook	s_GUID	39		YES	uniqueidentifier									
dbo	tblField_Teamleader_Logbook	guidFieldTeamleaderLogbook	40		NO	uniqueidentifier							PK_tblField_Teamleader_Logbook	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblField_Teamleader_Logbook	vchContractor	41		YES	nvarchar	50	100							
dbo	tblGrid_Alias	vchGridAlias	1		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Alias	vchSite	2		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Alias	vchGridID	3		NO	nvarchar	50	100							
dbo	tblGrid_Alias	guidGrid	4	(newid())	NO	uniqueidentifier							PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_Alias	vchContractor	5		YES	nvarchar	50	100							
dbo	tblGrid_DgmData_QC	guidGridDgmDataQCID	1	(newid())	NO	uniqueidentifier							PK_tblGrid_DgmData_QC	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblGrid_DgmData_QC	GridID	2		YES	varchar	10	10							
dbo	tblGrid_DgmData_QC	vchGridBlockID	3		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DateDataQC	4		YES	datetime						3			
dbo	tblGrid_DgmData_QC	QCPerfBy	5		YES	varchar	20	20							
dbo	tblGrid_DgmData_QC	RawDataDeliv	6		YES	bit									
dbo	tblGrid_DgmData_QC	RawDataDelivComm	7		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	RawDataDelivRes	8		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	FinDataPkgSub	9		YES	bit									
dbo	tblGrid_DgmData_QC	LineDataEdit	10		YES	bit									
dbo	tblGrid_DgmData_QC	LineDataEditComm	11		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	LineDataEditRes	12		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	FieldLogComp	13		YES	bit									
dbo	tblGrid_DgmData_QC	FieldLogCompComm	14		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	FieldLogCompRes	15		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	StatCheckTol	16		YES	bit									
dbo	tblGrid_DgmData_QC	StatCheckTolComm	17		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	StatCheckTolRes	18		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DynDetRepTol	19		YES	bit									
dbo	tblGrid_DgmData_QC	DynDetRepTolComm	20		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DynDetRepTolRes	21		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DynPosRep	22		YES	bit									
dbo	tblGrid_DgmData_QC	DynPosRepComm	23		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DynPosRepRes	24		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	VelTolAcc	25		YES	bit									
dbo	tblGrid_DgmData_QC	VelTolComm	26		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	VelTolRes	27		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcNoiseAcc	28		YES	bit									
dbo	tblGrid_DgmData_QC	ProcNoiseComm	29		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcNoiseRes	30		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TrackSampAcc	31		YES	bit									
dbo	tblGrid_DgmData_QC	TrackSampComm	32		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TrackSampRes	33		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DataLev	34		YES	bit									
dbo	tblGrid_DgmData_QC	DataLevComm	35		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DataLevRes	36		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	LagCorrPerf	37		YES	bit									
dbo	tblGrid_DgmData_QC	LagCorrPerfComm	38		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	LagCorrPerfRes	39		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TrackCovComp	40		YES	bit									
dbo	tblGrid_DgmData_QC	TrackCovComm	41		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	CoverCompQCRes	42		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	XYZCorr	43		YES	bit									
dbo	tblGrid_DgmData_QC	XYZCorrComm	44		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	XYZCorrRes	45		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcDataOther	46		YES	bit									
dbo	tblGrid_DgmData_QC	ProcDataOtherComm	47		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcDataOtherRes	48		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	SeedDetTarg	49		YES	bit									
dbo	tblGrid_DgmData_QC	SeedDetTargComm	50		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	SeedDetTargRes	51		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	MapPlot	52		YES	bit									
dbo	tblGrid_DgmData_QC	MapPlotComm	53		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	MapPlotRes	54		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargListMatch	55		YES	bit									
dbo	tblGrid_DgmData_QC	LegFormat	56		YES	bit									
dbo	tblGrid_DgmData_QC	TargListMatchComm	57		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	LegFormatComm	58		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargListMatchRes	59		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	LegFormatRes	60		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargOutBoundRem	61		YES	bit									
dbo	tblGrid_DgmData_QC	ColorBar	62		YES	bit									
dbo	tblGrid_DgmData_QC	TargOutBoundRemComm	63		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ColorBarComm	64		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargOutBoundRemRes	65		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ColorBarRes	66		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcNoteTargSel	67		YES	bit									
dbo	tblGrid_DgmData_QC	CultLabel	68		YES	bit									
dbo	tblGrid_DgmData_QC	ProcNoteTargSelComm	69		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	CultLabelComm	70		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	ProcNoteTargSelRes	71		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	CultLabelRes	72		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargLabel	73		YES	bit									
dbo	tblGrid_DgmData_QC	StatePlane	74		YES	bit									
dbo	tblGrid_DgmData_QC	TargLabelComm	75		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	StatePlaneComm	76		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargLabelRes	77		YES	varchar	255	255							

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TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblGrid_DgmData_QC	StatePlaneRes	78		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargSortAmp	79		YES	bit									
dbo	tblGrid_DgmData_QC	OtherMap	80		YES	bit									
dbo	tblGrid_DgmData_QC	TargSortAmpComm	81		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	OtherMapComm	82		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargSortAmpRes	83		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	OtherMapRes	84		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargSelecOther	85		YES	bit									
dbo	tblGrid_DgmData_QC	DataReas	86		YES	bit									
dbo	tblGrid_DgmData_QC	TargSelecOtherComm	87		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DataReasComm	88		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	TargSelecOtherRes	89		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	DataReasRes	90		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	QCRevRepComp	91		YES	bit									
dbo	tblGrid_DgmData_QC	QCRevRepCompComm	92		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	QCRevRepCompRes	93		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	QCActionReq	94		YES	bit									
dbo	tblGrid_DgmData_QC	QCActionReqComm	95		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	QCActionReqRes	96		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	AddQCComm	97		YES	varchar	-1	-1							
dbo	tblGrid_DgmData_QC	AnomLabCorr	98		YES	bit									
dbo	tblGrid_DgmData_QC	AnomLabCorrComm	99		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	AnomLabCorrRes	100		YES	varchar	255	255							
dbo	tblGrid_DgmData_QC	dtRecMod	101	(getdate())	YES	datetime						3			
dbo	tblGrid_DgmData_QC	Gen_AddQCComm	102		YES	float			53	2					
dbo	tblGrid_DgmData_QC	s_Generation	103		YES	float			53	2					
dbo	tblGrid_DgmData_QC	s_GUID	104		YES	uniqueidentifier									
dbo	tblGrid_DgmData_QC	vchContractor	105		YES	nvarchar	50	100							
dbo	tblSite	vchSite	1		NO	nvarchar	50	100					PK_tblSites	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblSite	vchSiteDesc	2		YES	nvarchar	255	510							
dbo	tblSite	ftPerimeter	3		YES	float			53	2					
dbo	tblSite	ftArea	4		YES	float			53	2					
dbo	tblSite	vchComments	5		YES	nvarchar	255	510							
dbo	tblSite	vchContractor	6		YES	nvarchar	50	100							
dbo	tblSite_Feature_Data	guidSiteFeatureDataID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Feature_Data	PK	PRIMARY_KEY_CONSTRAINT
dbo	tblSite_Feature_Data	RecordId	2		YES	float			53	2					
dbo	tblSite_Feature_Data	UnitID	3		YES	float			53	2					
dbo	tblSite_Feature_Data	UserName	4		YES	varchar	255	255							
dbo	tblSite_Feature_Data	TimeStamp	5		YES	datetime						3			
dbo	tblSite_Feature_Data	dtWorkDate	6		YES	datetime						3			
dbo	tblSite_Feature_Data	vchTeam	7		YES	nvarchar	255	510							
dbo	tblSite_Feature_Data	CultDesc	8		YES	varchar	64	64							
dbo	tblSite_Feature_Data	GetGPS	9		YES	varchar	255	255							
dbo	tblSite_Feature_Data	Latitude	10		YES	varchar	255	255							
dbo	tblSite_Feature_Data	Longitude	11		YES	varchar	255	255							
dbo	tblSite_Feature_Data	Altitude	12		YES	varchar	255	255							
dbo	tblSite_Feature_Data	dtRecMod	13	(getdate())	YES	datetime						3			
dbo	tblSite_Feature_Data	UploadtoDB	14		YES	varchar	1	1							
dbo	tblSite_Feature_Data	s_Generation	15		YES	float			53	2					
dbo	tblSite_Feature_Data	s_GUID	16		YES	uniqueidentifier									
dbo	tblSite_Feature_Data	vchContractor	17		YES	nvarchar	50	100							
dbo	tblSites_Grid_Lnk	vchSite	1		NO	nvarchar	50	100							
dbo	tblSites_Grid_Lnk	vchGridID	2		NO	nvarchar	50	100							
dbo	tblSites_Grid_Lnk	ftArea	3		YES	float			53	2					
dbo	tblSites_Grid_Lnk	dtVegetationRemoval	4		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtGridSurvey	5		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtSurfaceRemoval	6		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtGeoSurvey	7		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtRawDataDelivered	8		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtProcessedDataDelivered	9		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtReacquisition	10		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtExcavation	11		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtSubsurfaceRemoval	12		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtAnalogRemoval	13		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC1PostXCheck	14		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC1Excavation	15		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC2DigitalQCSurvey	16		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC2RawDataDelivered	17		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC2ProcessedDataDelivered	18		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC2Reacquisition	19		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC2DigitalExcavation	20		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQC3AnalogInspection	21		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQCDigital	22		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQAAnalog	23		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtQADigital	24		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	dtModified	25		YES	smalldatetime						0			
dbo	tblSites_Grid_Lnk	vchComments	26		YES	nvarchar	255	510							
dbo	tblSites_Grid_Lnk	vchContractor	27		YES	nvarchar	50	100							
dbo	tblTableDictionary	iColumnID	1		NO	int			10	10	0				
dbo	tblTableDictionary	vchColumnName	2		YES	nvarchar	50	100							
dbo	tblTableDictionary	iTableID	3		NO	int			10	10	0				
dbo	tblTableDictionary	vchTableName	4		YES	nvarchar	50	100							
dbo	tblTableDictionary	iFieldType	5		YES	int			10	10	0				
dbo	tblTableDictionary	vchFieldType	6		YES	nvarchar	50	100							
dbo	tblTableDictionary	iFieldLength	7		YES	int			10	10	0				
dbo	tblTableDictionary	biPrimaryKey	8		YES	bit									
dbo	tblTableDictionary	vchRKeyTable	9		YES	nvarchar	50	100							
dbo	tblTableDictionary	vchRKeyCol	10		YES	nvarchar	50	100							
dbo	tblTableDictionary	vchColumnDescShort	11		YES	nvarchar	50	100							
dbo	tblTableDictionary	vchColumnDescLong	12		YES	nvarchar	500	1000							
dbo	tblTableDictionary	vchContractor	13		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	iColumnID	1		NO	int			10	10	0				
dbo	tblTableDictionary_BAK	vchColumnName	2		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	iTableID	3		NO	int			10	10	0				
dbo	tblTableDictionary_BAK	vchTableName	4		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	iFieldType	5		YES	int			10	10	0				
dbo	tblTableDictionary_BAK	vchFieldType	6		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	iFieldLength	7		YES	int			10	10	0				
dbo	tblTableDictionary_BAK	biPrimaryKey	8		YES	bit									
dbo	tblTableDictionary_BAK	vchRKeyTable	9		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	vchRKeyCol	10		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	vchColumnDescShort	11		YES	nvarchar	50	100							
dbo	tblTableDictionary_BAK	vchColumnDescLong	12		YES	nvarchar	500	1000							
dbo	tblTableDictionary_BAK	vchContractor	13		YES	nvarchar	50	100							
dbo	tblTableDictionary_Updated	iColumnID	1		YES	float			53	2					
dbo	tblTableDictionary_Updated	vchColumnName	2		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	iTableID	3		YES	float			53	2					
dbo	tblTableDictionary_Updated	vchTableName	4		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	iFieldType	5		YES	float			53	2					
dbo	tblTableDictionary_Updated	vchFieldType	6		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	iFieldLength	7		YES	float			53	2					
dbo	tblTableDictionary_Updated	biPrimaryKey	8		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	vchRKeyTable	9		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	vchRKeyCol	10		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	vchColumnDescShort	11		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	vchColumnDescLong	12		YES	nvarchar	255	510							
dbo	tblTableDictionary_Updated	vchContractor	13		YES	nvarchar	50	100							
dbo	tblveg_removal_ops	iVegRemovalOpID	1		NO	int			10	10	0				
dbo	tblveg_removal_ops	dtWorkDate	2		YES	smalldatetime						0			
dbo	tblveg_removal_ops	dtStartTime	3		YES	datetime						3			
dbo	tblveg_removal_ops	dtEndTime	4		YES	datetime						3			
dbo	tblveg_removal_ops	vchTeam	5		YES	nvarchar	25	50							
dbo	tblveg_removal_ops	chOpCompleted	6		YES	char	1	1							
dbo	tblveg_removal_ops	iTeamLeader	7		YES	int			10	10	0				
dbo	tblveg_removal_ops	vchContractor	8		YES	nvarchar	20	40							
dbo	tblveg_removal_ops	vchCostCode	9		YES	nvarchar	15	30							
dbo	tblveg_removal_ops	iExcavationsTotal	10		YES	int			10	10	0				
dbo	tblveg_removal_ops	ftNonOEScrapLBs	11		YES	float			53	2					
dbo	tblveg_removal_ops	ftOEScrapLBs	12		YES	float			53	2					
dbo	tblveg_removal_ops	iSlope	13		YES	int			10	10	0				
dbo	tblveg_removal_ops	vchVegRemovalName	14		YES	nvarchar	50	100							
dbo	tblveg_removal_ops	vchVegRemovalCode	15		YES	nvarchar	10	20							
dbo	tblveg_removal_ops	vchSurveyInstr	16		YES	nvarchar	25	50							
dbo	tblveg_removal_ops	vchVegSourceType	17		YES	nvarchar	50	100							
dbo	tblveg_removal_ops	txOpNotes	18		YES	nvarchar	4000	8000							
dbo	tblveg_removal_ops	dtDataEntered	19		YES	datetime						3			
dbo	tblveg_removal_ops	vchDataEntry	20		YES	nvarchar	10	20							
dbo	tblveg_removal_ops	vchDataSource	21		YES	nvarchar	150	300							
dbo	tblveg_removal_ops	txReviewComments	22		YES	nvarchar	4000	8000							
dbo	tblveg_removal_ops	vchQCInitials	23		YES	nvarchar	5	10							
dbo	tblveg_removal_ops	dtQC	24		YES	datetime						3			
dbo	tblveg_removal_ops	biDEQCChecked	25		YES	bit									
dbo	tblveg_removal_ops	vchDEQCInitials	26		YES	nvarchar	5	10							
dbo	tblveg_removal_ops	txModNotes	27		YES	nvarchar	4000	8000							

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TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
dbo	tblveg_removal_ops	biDiscrepancy	28		YES	bit									
dbo	tmpAnomalyUpdate	iOeEncounteredId	1		NO	int			10	10	0				
dbo	tmpAnomalyUpdate	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
dbo	tmpAnomalyUpdate	iOpId	3		YES	bigint			19	10	0				
dbo	tmpAnomalyUpdate	guidGOL	4		NO	uniqueidentifier									
dbo	tmpAnomalyUpdate	DgmDig	5		NO	int			10	10	0				
dbo	tmpAnomalyUpdate	QC	6		NO	int			10	10	0				
dbo	tmpAnomalyUpdate	GeoPic	7		NO	int			10	10	0				
dbo	tmpAnomalyUpdate	vchAnomalyId	8		YES	nvarchar	50	100							
dbo	tmpAnomalyUpdate	guidAnomaly	9	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
dbo	UpdateFields	vchTable	1		YES	nvarchar	50	100							
dbo	UpdateFields	ID	2		YES	int			10	10	0				
dbo	UpdateFields	vchField	3		YES	nvarchar	50	100							
dbo	UpdateFields	vchDesc	4		YES	nvarchar	300	600							
dbo	UpdateFields	maxNotes	5		YES	nvarchar	255	510							
Import	lkpCondition	vchCondition	1		NO	nvarchar	25	50					PK_lkpCondition	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpCondition	vchConditionDesc	2		YES	nvarchar	50	100							
Import	lkpDemo_Action	vchDemoAction	1		NO	nvarchar	50	100					PK_lkpDemo_Action	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpDemo_Action	vchDemoActionDesc	2		YES	nvarchar	250	500							
Import	lkpDisposition	vchDisposition	1		NO	nvarchar	30	60					PK_lkpDisposition	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpDisposition	vchDispositionDesc	2		YES	nvarchar	255	510							
Import	lkpGrid_Op_Type	vchGridOpType	1		NO	nvarchar	50	100					PK_lkpGrid_Op_Type	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpGrid_Type	vchGridType	1		NO	nvarchar	10	20					PK_lkpGrid_Type	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpMeasure_Type	vchMeasureType	1		NO	nvarchar	25	50					PK_lkpMeasure_Type	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpOE_models	iOEModelID	1		NO	int			10	10	0		PK_lkpOE_models	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpOE_models	vchOEModel	2		NO	nvarchar	255	510							
Import	lkpOE_models	vchOEModelDesc	3		YES	nvarchar	255	510							
Import	lkpOE_models	iRIACode	4		YES	int			10	10	0				
Import	lkpOE_models	vchOEFiller	5		YES	nvarchar	25	50							
Import	lkpOE_models	vchOECasing	6		YES	nvarchar	25	50							
Import	lkpOE_models	vchOEPurpose	7		YES	nvarchar	25	50							
Import	lkpOE_models	vchSource	8		YES	nvarchar	50	100							
Import	lkpOE_models	vchComments	9		YES	nvarchar	500	1000							
Import	lkpOE_models	ftNEW	10		YES	float			53	2					
Import	lkpOE_models	ftFillerWeight	11		YES	float			53	2					
Import	lkpOE_models	biCurrentlyInUse	12	((1))	YES	bit									
Import	lkpOE_models	biMasterPickList	13	((0))	YES	bit									
Import	lkpOE_models	biSensitiveFuze	14		YES	bit									
Import	lkpOE_models	DocFileName	15		YES	nvarchar	255	510							
Import	lkpOE_models	vchSize	16		YES	varchar	20	20							
Import	lkpOE_models	vchCategory	17		YES	varchar	20	20							
Import	lkpOE_Purpose	vchOEPurpose	1		NO	nvarchar	25	50					PK_lkpOE_Purpose	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpOE_Type	vchOEType	1		NO	nvarchar	10	20					PK_lkpOE_Type	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpOE_Type	vchOETypeDesc	2		YES	nvarchar	50	100							
Import	lkpOpTypeXRef	vchOpType	1		NO	nvarchar	50	100					PK_lkpOpTypeXRef	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpOpTypeXRef	SurveyType	2	('Analog')	YES	varchar	25	25							
Import	lkpOpTypeXRef	UseGridBlockID	3	((0))	YES	bit									
Import	lkpRIA	iRIACode	1		NO	int			10	10	0		PK_lkpRIA	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpRIA	vchRIADesc	2		NO	nvarchar	255	510							
Import	lkpSite_type	ioeencounteredid	1		YES	bigint			19	10	0				
Import	lkpSite_type	vchSitetype	2		YES	varchar	50	50							
Import	lkpSite_type	vchSiteName	3		YES	varchar	50	50							
Import	lkpSurveyInstr	vchSurveyInstr	1		NO	nvarchar	25	50					PK_lkpSurveyInstr	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpSurveyInstr	vchSurveyInstrDesc	2		YES	nvarchar	255	510							
Import	lkpSurveyInstr	vchComments	3		YES	nvarchar	255	510							
Import	lkpTeam	vchTeam	1		NO	nvarchar	25	50					PK_lkpTeam	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpTeam	vchTeamType	2		YES	nvarchar	5	10							
Import	lkpTeam_Member	iMemberID	1		NO	int			10	10	0		PK_lkpTeam_Member	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpTeam_Member	vchOrgEmployeeID	2		YES	nvarchar	50	100							
Import	lkpTeam_Member	vchLastName	3		YES	nvarchar	50	100							
Import	lkpTeam_Member	vchFirstName	4		YES	nvarchar	50	100							
Import	lkpTeam_Member	vchMiddleName	5		YES	nvarchar	50	100							
Import	lkpTeam_Member	vchTeamType	6		YES	nvarchar	5	10							
Import	lkpTeam_Member	vchOrganization	7		YES	nvarchar	50	100							
Import	lkpTeam_Member	vchPosition	8		YES	nvarchar	50	100							
Import	lkpTeam_Type	vchTeamType	1		NO	nvarchar	5	10					PK_lkpTeam_Type	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpTeam_Type	vchTeamTypeDesc	2		YES	nvarchar	50	100							
Import	lkpTerrain	vchTerrainCode	1		NO	nvarchar	20	40					PK_lkpTerrain	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpTerrain	vchTerrainDescLong	2		YES	nvarchar	255	510							
Import	lkpTerrain	vchTerrainDescShort	3		YES	nvarchar	50	100							
Import	lkpUOM	vchUOM	1		NO	nvarchar	5	10					PK_lkpUOM	PK	PRIMARY_KEY_CONSTRAINT
Import	lkpUOM	vchUOMDesc	2		YES	nvarchar	25	50							
Import	lkpUOM	vchMeasureType	3		YES	nvarchar	25	50							
Import	tblGrid	guidGrid	1	(newid())	YES	uniqueidentifier									
Import	tblGrid	vchGridID	2		NO	nvarchar	50	100							
Import	tblGrid	vchGridIDShort	3		YES	nvarchar	10	20							
Import	tblGrid	vchGridDesc	4		YES	nvarchar	255	510							
Import	tblGrid	vchGridType	5		YES	varchar	50	50							
Import	tblGrid	ftArea	6		YES	float			53	2					
Import	tblGrid	vchComments	7		YES	nvarchar	255	510							
Import	tblGrid	Acreage	8		YES	numeric			10	10	2				
Import	tblGrid	Large_ID	9		YES	varchar	50	50							
Import	tblGrid	Medium_ID	10		YES	varchar	50	50							
Import	tblGrid	SW_X	11		YES	float			53	2					
Import	tblGrid	SW_Y	12		YES	float			53	2					
Import	tblGrid	UniqueGridID	13		YES	varchar	50	50							
Import	tblGrid	UnitID	14		YES	varchar	50	50							
Import	tblGrid	AnalSurfOpTeamID	15		YES	varchar	50	50							
Import	tblGrid	AnalSurfOpComp	16		YES	bit									
Import	tblGrid	DtAnalSurfOpComp	17		YES	datetime						3			
Import	tblGrid	AnalSurfOpCom	18		YES	varchar	255	255							
Import	tblGrid	AnalSurfOpQCTeamID	19		YES	varchar	255	255							
Import	tblGrid	AnalSurfOpQCComp	20		YES	bit									
Import	tblGrid	DtAnalSurfOpQCComp	21		YES	datetime						3			
Import	tblGrid	AnalSurfOpQCCom	22		YES	varchar	255	255							
Import	tblGrid	AnalSurfOpQATeamID	23		YES	varchar	255	255							
Import	tblGrid	AnalSurfOpQAComp	24		YES	bit									
Import	tblGrid	DtAnalSurfOpQAComp	25		YES	datetime						3			
Import	tblGrid	AnalSurfOpQACom	26		YES	varchar	255	255							
Import	tblGrid	AnalIntOpTeamID	27		YES	varchar	50	50							
Import	tblGrid	AnalIntOpComp	28		YES	bit									
Import	tblGrid	DtAnalIntOpComp	29		YES	datetime						3			
Import	tblGrid	AnalIntOpCom	30		YES	varchar	255	255							
Import	tblGrid	AnalIntOpQCTeamID	31		YES	varchar	255	255							
Import	tblGrid	AnalIntOpQCComp	32		YES	bit									
Import	tblGrid	DtAnalIntOpQCComp	33		YES	datetime						3			
Import	tblGrid	AnalIntOpQCCom	34		YES	varchar	255	255							
Import	tblGrid	AnalIntOpQATeamID	35		YES	varchar	255	255							
Import	tblGrid	AnalIntOpQAComp	36		YES	bit									
Import	tblGrid	DtAnalIntOpQAComp	37		YES	datetime						3			
Import	tblGrid	AnalIntOpQACom	38		YES	varchar	255	255							
Import	tblGrid	DGMArrayOpTeamID	39		YES	varchar	50	50							
Import	tblGrid	DGMArrayOpComp	40		YES	bit									
Import	tblGrid	DtDGMArrayOpComp	41		YES	datetime						3			
Import	tblGrid	DGMArrayOpCom	42		YES	varchar	255	255							
Import	tblGrid	DGMArrayDataProcComp	43		YES	bit									
Import	tblGrid	DtDGMArrayDataProcComp	44		YES	datetime						3			
Import	tblGrid	DGMArrayDataProcCom	45		YES	varchar	255	255							
Import	tblGrid	DGMArrayDataQCTeamID	46		YES	varchar	50	50							
Import	tblGrid	DGMArrayDataQCComp	47		YES	bit									
Import	tblGrid	DtDGMArrayDataQCComp	48		YES	datetime						3			
Import	tblGrid	DGMArrayDataQCCom	49		YES	varchar	255	255							
Import	tblGrid	DGMArrayDataQATeamID	50		YES	varchar	50	50							
Import	tblGrid	DGMArrayDataQAComp	51		YES	bit									
Import	tblGrid	DtDGMArrayDataQAComp	52		YES	datetime						3			
Import	tblGrid	DGMArrayDataQACom	53		YES	varchar	255	255							
Import	tblGrid	DGMPortOPTeamID	54		YES	varchar	50	50							
Import	tblGrid	DGMPortOpComp	55		YES	bit									
Import	tblGrid	DtDGMPortOpComp	56		YES	datetime						3			
Import	tblGrid	DGMPortOpCom	57		YES	varchar	255	255							
Import	tblGrid	DGMPortDataProcComp	58		YES	bit									
Import	tblGrid	DtDGMPortDataProcComp	59		YES	datetime						3			
Import	tblGrid	DGMPortDataProcCom	60		YES	varchar	255	255							
Import	tblGrid	DGMPortDataQCTeamID	61		YES	varchar	50	50							
Import	tblGrid	DGMPortDataQCComp	62		YES	bit									
Import	tblGrid	DtDGMPortDataQCComp	63		YES	datetime						3			
Import	tblGrid	DGMPortDataQCCom	64		YES	varchar	255	255							
Import	tblGrid	DGMPortDataQATeamID	65		YES	varchar	50	50							
Import	tblGrid	DGMPortDataQAComp	66		YES	bit									
Import	tblGrid	DtDGMPortDataQAComp	67		YES	datetime						3			
Import	tblGrid	DGMPortDataQACom	68		YES	varchar	255	255							
Import	tblGrid	DGMReacOpTeamID	69		YES	varchar	50	50							
Import	tblGrid	DGMReacOpComp	70		YES	bit									
Import	tblGrid	DtDGMReacOpComp	71		YES	datetime						3			

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGrid	DGMReacOpCom	72		YES	varchar	255	255							
Import	tblGrid	DGMDigOpTeamID	73		YES	varchar	50	50							
Import	tblGrid	DGMDigOpComp	74		YES	bit									
Import	tblGrid	DtDGMDigOpComp	75		YES	datetime						3			
Import	tblGrid	DGMDigOpCom	76		YES	varchar	255	255							
Import	tblGrid	DGMDigOpQCTeamID	77		YES	varchar	50	50							
Import	tblGrid	DGMDigOpQCComp	78		YES	bit									
Import	tblGrid	DtDGMDigOpQCComp	79		YES	datetime						3			
Import	tblGrid	DGMDigOpQCCom	80		YES	varchar	255	255							
Import	tblGrid	DGMDigOpQATeamID	81		YES	varchar	50	50							
Import	tblGrid	DGMDigOpQAComp	82		YES	bit									
Import	tblGrid	DtDGMDigOpQAComp	83		YES	datetime						3			
Import	tblGrid	DGMDigOpQACom	84		YES	varchar	255	255							
Import	tblGrid	vchGridBlockID	85		YES	varchar	50	50							
Import	tblGrid	Status	86		YES	varchar	255	255							
Import	tblGrid	OverwriteStatus	87		YES	varchar	255	255							
Import	tblGrid	CoverageCategory	88		YES	varchar	10	10							
Import	tblGrid	SurveyType	89		YES	varchar	255	255							
Import	tblGrid	dtRecMod	90	(getdate())	YES	datetime						3			
Import	tblGrid	s_Generation	91		YES	float			53	2					
Import	tblGrid	s_GUID	92		NO	uniqueidentifier							PK_tblGrid	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Ops_Lnk	guidGOL	1	(newid())	YES	uniqueidentifier									
Import	tblGrid_Ops_Lnk	dtWorkDate	2		YES	smalldatetime						0			
Import	tblGrid_Ops_Lnk	dtStartTime	3		YES	datetime						3			
Import	tblGrid_Ops_Lnk	dtEndTime	4		YES	datetime						3			
Import	tblGrid_Ops_Lnk	vchGridID	5		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	guidGrid	6		YES	uniqueidentifier									
Import	tblGrid_Ops_Lnk	vchGridAlias	7		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	iSpecialCaseAreaID	8		YES	int			10	10	0				
Import	tblGrid_Ops_Lnk	vchOpClass	9		YES	nvarchar	6	12							
Import	tblGrid_Ops_Lnk	vchoptype	10		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchSite	11		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchSiteAlias	12		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchSiteMRA	13		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchSiteMRS	14		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchSiteAR	15		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	iGridConditionID	16		YES	int			10	10	0				
Import	tblGrid_Ops_Lnk	biDiscrepancy	17		YES	int			10	10	0				
Import	tblGrid_Ops_Lnk	vchAARID	18		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchTeam	19		YES	nchar	25	50							
Import	tblGrid_Ops_Lnk	iTeamleaderID	20		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchContractor	21		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	txOpNotes	22		YES	nvarchar	-1	-1							
Import	tblGrid_Ops_Lnk	chOpCompleted	23		YES	char	1	1							
Import	tblGrid_Ops_Lnk	txModNotes	24		YES	nvarchar	-1	-1							
Import	tblGrid_Ops_Lnk	dtDataEntered	25		YES	date						0			
Import	tblGrid_Ops_Lnk	vchDataEntry	26		YES	nvarchar	50	100							
Import	tblGrid_Ops_Lnk	vchDataSource	27		YES	nvarchar	255	510							
Import	tblGrid_Ops_Lnk	RecordId	28		YES	float			53	2					
Import	tblGrid_Ops_Lnk	UnitID	29		YES	float			53	2					
Import	tblGrid_Ops_Lnk	UserName	30		YES	varchar	255	255							
Import	tblGrid_Ops_Lnk	TimeStamp	31		YES	datetime						3			
Import	tblGrid_Ops_Lnk	vchGridBlockID	32		YES	varchar	50	50							
Import	tblGrid_Ops_Lnk	vchGridType	33		YES	varchar	255	255							
Import	tblGrid_Ops_Lnk	dtRecMod	34	(getdate())	YES	datetime						3			
Import	tblGrid_Ops_Lnk	UploadtoDB	35		YES	varchar	255	255							
Import	tblGrid_Ops_Lnk	s_Generation	36		YES	float			53	2					
Import	tblGrid_Ops_Lnk	s_GUID	37		NO	uniqueidentifier							PK_tblGrid_Ops_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Ops_Lnk	iIncidentalID	38		YES	bigint			19	10	0				
Import	tblGrid_AnalogRemoval_Ops	iAnalogRemovalOpsID	1		YES	bigint			19	10	0				
Import	tblGrid_AnalogRemoval_Ops	guidGOL	2		YES	uniqueidentifier									
Import	tblGrid_AnalogRemoval_Ops	biBackhoeRequired	3		YES	bit									
Import	tblGrid_AnalogRemoval_Ops	biBackhoeCompleted	4		YES	bit									
Import	tblGrid_AnalogRemoval_Ops	iDepthofSurvey	5		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iAnomaliesDetected	6		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iExcavationsTotal	7		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iBackhoeExcavations	8		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	ftNonOEScrapLBs	9		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	iMDItems	10		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	ftOEScrapLBs	11		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	iMECItems	12		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iSurface	13		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iDepth0to12	14		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iDepth12to24	15		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iDepth24to36	16		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	iDepth36to48	17		YES	int			10	10	0				
Import	tblGrid_AnalogRemoval_Ops	biDemoRequired	18		YES	bit									
Import	tblGrid_AnalogRemoval_Ops	chQCPassed	19		YES	nvarchar	4	8							
Import	tblGrid_AnalogRemoval_Ops	dtQC	20		YES	datetime						3			
Import	tblGrid_AnalogRemoval_Ops	RecordId	21		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	UnitID	22		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	UserName	23		YES	varchar	255	255							
Import	tblGrid_AnalogRemoval_Ops	TimeStamp	24		YES	datetime						3			
Import	tblGrid_AnalogRemoval_Ops	ftMEClbs	25		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	txModNotes	26		YES	varchar	255	255							
Import	tblGrid_AnalogRemoval_Ops	vchQCInitials	27		YES	varchar	5	5							
Import	tblGrid_AnalogRemoval_Ops	vchGridID	28		YES	varchar	50	50							
Import	tblGrid_AnalogRemoval_Ops	vchTeam	29		YES	varchar	25	25							
Import	tblGrid_AnalogRemoval_Ops	iTeamleaderID	30		YES	varchar	50	50							
Import	tblGrid_AnalogRemoval_Ops	dtWorkDate	31		YES	datetime						3			
Import	tblGrid_AnalogRemoval_Ops	vchSensiFuzeItems	32		YES	varchar	-1	-1							
Import	tblGrid_AnalogRemoval_Ops	iSensiFuzeWt	33		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	dtRecMod	34	(getdate())	YES	datetime						3			
Import	tblGrid_AnalogRemoval_Ops	UploadtoDB	35		YES	varchar	1	1							
Import	tblGrid_AnalogRemoval_Ops	Gen_vchSensiFuzeItems	36		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	s_Generation	37		YES	float			53	2					
Import	tblGrid_AnalogRemoval_Ops	s_GUID	38		NO	uniqueidentifier							PK_tblAnalogRemoval_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_AnalogRemoval_Ops	vchSurveyInstr	39		YES	nvarchar	25	50							
Import	tblGrid_AnalogRemoval_Ops	txOpNotes	40		YES	nvarchar	-1	-1							
Import	tblGrid_AnalogSurface_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_AnalogSurface_Ops	txOpNotes	2		YES	ntext	1073741823	2147483646							
Import	tblGrid_AnalogSurface_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Import	tblGrid_AnalogSurface_Ops	iQCPattern	4		YES	int			10	10	0				
Import	tblGrid_AnalogSurface_Ops	iQCPercent	5		YES	int			10	10	0				
Import	tblGrid_AnalogSurface_Ops	chQCPassed	6		YES	nvarchar	4	8							
Import	tblGrid_AnalogSurface_Ops	txReviewComments	7		YES	nvarchar	-1	-1							
Import	tblGrid_AnalogSurface_Ops	vchQCInitials	8		YES	nvarchar	5	10							
Import	tblGrid_AnalogSurface_Ops	dtQC	9		YES	datetime						3			
Import	tblGrid_AnalogSurface_Ops	vchDEQCInitials	10		YES	nvarchar	5	10							
Import	tblGrid_AnalogSurface_Ops	txModNotes	11		YES	nvarchar	-1	-1							
Import	tblGrid_AnalogSurface_Ops	biDiscrepancy	12		YES	bit									
Import	tblGrid_AnalogSurface_Ops	ftNonOEScrapLbs	13		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	ftOEScrapLBs	14		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	ioeitems	15		YES	int			10	10	0				
Import	tblGrid_AnalogSurface_Ops	isurface	16		YES	int			10	10	0				
Import	tblGrid_AnalogSurface_Ops	RecordId	17		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	UnitID	18		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	UserName	19		YES	varchar	255	255							
Import	tblGrid_AnalogSurface_Ops	TimeStamp	20		YES	datetime						3			
Import	tblGrid_AnalogSurface_Ops	vchGridID	21		YES	varchar	50	50							
Import	tblGrid_AnalogSurface_Ops	vchTeam	22		YES	varchar	25	25							
Import	tblGrid_AnalogSurface_Ops	iTeamleaderID	23		YES	varchar	50	50							
Import	tblGrid_AnalogSurface_Ops	dtWorkDate	24		YES	datetime						3			
Import	tblGrid_AnalogSurface_Ops	vchSensiFuzeItems	25		YES	nvarchar	-1	-1							
Import	tblGrid_AnalogSurface_Ops	iSensiFuzeWt	26		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	dtRecMod	27	(getdate())	YES	datetime						3			
Import	tblGrid_AnalogSurface_Ops	UploadtoDB	28		YES	varchar	1	1							
Import	tblGrid_AnalogSurface_Ops	Gen_txOpNotes	29		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	Gen_vchSensiFuzeItems	30		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	s_Generation	31		YES	float			53	2					
Import	tblGrid_AnalogSurface_Ops	s_GUID	32		NO	uniqueidentifier							PK_tblAnalogSurface_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_AnalogSurface_Ops	iExcavationsTotal	33		YES	bigint			19	10	0				
Import	tblGrid_DgmDig_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_DgmDig_Ops	vchDigInstruments	2		YES	nvarchar	255	510							
Import	tblGrid_DgmDig_Ops	iExcavationsTotal	3		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	ftNonOEScrapLbs	4		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	ftOEScrapLBs	5		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	iOEItems	6		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iSurface	7		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iDepth0to12	8		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iDepth12to24	9		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iDepth24to36	10		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iDepth36to48	11		YES	int			10	10	0				
Import	tblGrid_DgmDig_Ops	iBIPRequired	12		YES	bit									

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TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGrid_DgmDig_Ops	vchSurveyNotes	13		YES	nvarchar	-1	-1							
Import	tblGrid_DgmDig_Ops	chQCPassed	14		YES	nchar	4	8							
Import	tblGrid_DgmDig_Ops	vchQCInitials	15		YES	nvarchar	5	10							
Import	tblGrid_DgmDig_Ops	dtQC	16		YES	datetime						3			
Import	tblGrid_DgmDig_Ops	biDEQCChecked	17		YES	bit									
Import	tblGrid_DgmDig_Ops	dtDigDate	18		YES	datetime						3			
Import	tblGrid_DgmDig_Ops	vchDigTeam	19		YES	nvarchar	50	100							
Import	tblGrid_DgmDig_Ops	RecordId	20		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	UnitID	21		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	UserName	22		YES	varchar	255	255							
Import	tblGrid_DgmDig_Ops	TimeStamp	23		YES	datetime						3			
Import	tblGrid_DgmDig_Ops	vchGridID	24		YES	varchar	50	50							
Import	tblGrid_DgmDig_Ops	iTeamleaderID	25		YES	varchar	50	50							
Import	tblGrid_DgmDig_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Import	tblGrid_DgmDig_Ops	UploadtoDB	27		YES	varchar	1	1							
Import	tblGrid_DgmDig_Ops	Gen_vchSurveyNotes	28		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	s_Generation	29		YES	float			53	2					
Import	tblGrid_DgmDig_Ops	s_GUID	30		NO	uniqueidentifier							PK_tblDGMDig_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_GeoPick_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_GeoPick_Ops	dtProcessDate	2		YES	datetime						3			
Import	tblGrid_GeoPick_Ops	biDigSheetMade	3		YES	bit									
Import	tblGrid_GeoPick_Ops	biHeaderanomFile	4		YES	bit									
Import	tblGrid_GeoPick_Ops	vchAnomSelectFile	5		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchAnomPickChannel	6		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	ftAnomPickThreshold	7		YES	numeric			18	10	3				
Import	tblGrid_GeoPick_Ops	biSpecialCase	8		YES	bit									
Import	tblGrid_GeoPick_Ops	biFileHeaderCheck	9		YES	bit									
Import	tblGrid_GeoPick_Ops	txOpNotes	10		YES	nvarchar	4000	8000							
Import	tblGrid_GeoPick_Ops	dtQC	11		YES	datetime						3			
Import	tblGrid_GeoPick_Ops	vchQCInitials	12		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	txQCComments	13		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	txInterpComments	14		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchInterpGWS	15		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchInterpSet	16		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchExprtFileName	17		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	txDeliveryComments	18		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	dtDeliver	19		YES	datetime						3			
Import	tblGrid_GeoPick_Ops	vchCorrAction	20		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	txModNotes	21		YES	nvarchar	4000	8000							
Import	tblGrid_GeoPick_Ops	vchGeosoftSurveyDatabase	22		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchGeosoftSurveyTargetDatabase	23		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	vchSubmittedXYZFileName	24		YES	nvarchar	255	510							
Import	tblGrid_GeoPick_Ops	iAnomsSelected	25		YES	int			10	10	0				
Import	tblGrid_GeoPick_Ops	iAnomsToBeInvestigated	26		YES	int			10	10	0				
Import	tblGrid_GeoPick_Ops	vchGridID	27		YES	varchar	255	255							
Import	tblGrid_GeoPick_Ops	UniqueGridID	28		YES	varchar	255	255							
Import	tblGrid_GeoPick_Ops	biDeliver	29		YES	varchar	1	1							
Import	tblGrid_GeoPick_Ops	dtRecMod	30	(getdate())	YES	datetime						3			
Import	tblGrid_GeoPick_Ops	RecordID	31		YES	float			53	2					
Import	tblGrid_GeoPick_Ops	Gen_txModNotes	32		YES	float			53	2					
Import	tblGrid_GeoPick_Ops	Gen_txOpNotes	33		YES	float			53	2					
Import	tblGrid_GeoPick_Ops	s_Generation	34		YES	float			53	2					
Import	tblGrid_GeoPick_Ops	s_GUID	35		NO	uniqueidentifier							PK_tblGeoPickOps	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Odds_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblOdds_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Odds_Ops	dtWorkDate	2		YES	smalldatetime						0			
Import	tblGrid_Odds_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Import	tblGrid_Odds_Ops	vchContractor	4		YES	nvarchar	50	100							
Import	tblGrid_Odds_Ops	dtDataEntered	5		YES	smalldatetime						0			
Import	tblGrid_Odds_Ops	vchDataEntry	6		YES	nvarchar	50	100							
Import	tblGrid_Odds_Ops	vchDataSource	7		YES	nvarchar	50	100							
Import	tblGrid_Odds_Ops	vchReviewComments	8		YES	nvarchar	4000	8000							
Import	tblGrid_Odds_Ops	vchQCInitials	9		YES	nvarchar	50	100							
Import	tblGrid_Odds_Ops	vchDEQCInitials	10		YES	nvarchar	50	100							
Import	tblGrid_Odds_Ops	txModNotes	11		YES	nvarchar	4000	8000							
Import	tblGrid_Odds_Ops	biDiscrepancy	12		YES	bit									
Import	tblGrid_Other_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_Other_Ops	dtFound	2		YES	datetime						3			
Import	tblGrid_Other_Ops	dtCollected	3		YES	datetime						3			
Import	tblGrid_Other_Ops	vchLocation	4		YES	nvarchar	255	510							
Import	tblGrid_Other_Ops	vchEventDesc	5		YES	nvarchar	512	1024							
Import	tblGrid_Other_Ops	biIncidental	6		YES	bit									
Import	tblGrid_Other_Ops	iIncidentalFormID	7		YES	int			10	10	0				
Import	tblGrid_Other_Ops	vchPhotoFileName	8		YES	nvarchar	255	510							
Import	tblGrid_Other_Ops	vchPdfFileName	9		YES	nvarchar	255	510							
Import	tblGrid_Other_Ops	imgPdfFile	10		YES	image	2147483647	2147483647							
Import	tblGrid_Other_Ops	vchContractor	11		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	iMemberID	12		YES	int			10	10	0				
Import	tblGrid_Other_Ops	vchLastName	13		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	vchFirstName	14		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	vchAddress1	15		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	vchAddress2	16		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	vchCity	17		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	vchState	18		YES	nvarchar	2	4							
Import	tblGrid_Other_Ops	vchZipCode	19		YES	nvarchar	12	24							
Import	tblGrid_Other_Ops	vchPhone	20		YES	nvarchar	20	40							
Import	tblGrid_Other_Ops	vchFax	21		YES	nvarchar	15	30							
Import	tblGrid_Other_Ops	vchCountry	22		YES	nvarchar	25	50							
Import	tblGrid_Other_Ops	vchEmail	23		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	txOpNotes	24		YES	nvarchar	4000	8000							
Import	tblGrid_Other_Ops	USACEFormReceivedBY	25		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	dtUSACEDateReceived	26		YES	datetime						3			
Import	tblGrid_Other_Ops	dtUSACEDateCompleted	27		YES	datetime						3			
Import	tblGrid_Other_Ops	vchDENRFormReceivedBY	28		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	dtDENRDateReceived	29		YES	datetime						3			
Import	tblGrid_Other_Ops	vchDENRRegAgencyNotified	30		YES	nvarchar	50	100							
Import	tblGrid_Other_Ops	dtDENRDATERegAgencyNotified	31		YES	datetime						3			
Import	tblGrid_Other_Ops	vchDataSource	32		YES	nvarchar	150	300							
Import	tblGrid_Other_Ops	dtDataEntered	33		YES	datetime						3			
Import	tblGrid_Other_Ops	vchDataEntry	34		YES	nvarchar	10	20							
Import	tblGrid_Other_Ops	txReviewComments	35		YES	nvarchar	4000	8000							
Import	tblGrid_Other_Ops	vchQCInitials	36		YES	nvarchar	5	10							
Import	tblGrid_Other_Ops	vchDEQCInitials	37		YES	nvarchar	5	10							
Import	tblGrid_Other_Ops	txModNotes	38		YES	nvarchar	4000	8000							
Import	tblGrid_Other_Ops	biDiscrepancy	39		YES	bit									
Import	tblGrid_Other_Ops	vchOpClass	40		YES	nvarchar	6	12							
Import	tblGrid_Other_Ops	RecordId	41		YES	float			53	2					
Import	tblGrid_Other_Ops	UnitID	42		YES	float			53	2					
Import	tblGrid_Other_Ops	UserName	43		YES	varchar	255	255							
Import	tblGrid_Other_Ops	TimeStamp	44		YES	datetime						3			
Import	tblGrid_Other_Ops	dtWorkDate	45		YES	datetime						3			
Import	tblGrid_Other_Ops	vchTeam	46		YES	varchar	25	25							
Import	tblGrid_Other_Ops	iTeamleaderID	47		YES	varchar	50	50							
Import	tblGrid_Other_Ops	vchGridID	48		YES	varchar	50	50							
Import	tblGrid_Other_Ops	dtRecMod	49	(getdate())	YES	datetime						3			
Import	tblGrid_Other_Ops	UploadtoDB	50		YES	varchar	1	1							
Import	tblGrid_Other_Ops	Gen_imgPdfFile	51		YES	float			53	2					
Import	tblGrid_Other_Ops	Gen_txModNotes	52		YES	float			53	2					
Import	tblGrid_Other_Ops	Gen_txOpNotes	53		YES	float			53	2					
Import	tblGrid_Other_Ops	Gen_txReviewComments	54		YES	float			53	2					
Import	tblGrid_Other_Ops	Gen_vchEventDesc	55		YES	float			53	2					
Import	tblGrid_Other_Ops	s_Generation	56		YES	float			53	2					
Import	tblGrid_Other_Ops	s_GUID	57		NO	uniqueidentifier							PK_tblGrid_Other_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_QA_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_QA_Ops	vchSurveyInstr	2		YES	nvarchar	25	50							
Import	tblGrid_QA_Ops	iMECItems	3		YES	smallint			5	10	0				
Import	tblGrid_QA_Ops	iQAPattern	4		YES	int			10	10	0				
Import	tblGrid_QA_Ops	iQAPercent	5		YES	int			10	10	0				
Import	tblGrid_QA_Ops	chQAPassed	6		YES	nvarchar	4	8							
Import	tblGrid_QA_Ops	txModNotes	7		YES	ntext	1073741823	2147483646							
Import	tblGrid_QA_Ops	QA_Type	8		YES	nvarchar	50	100							
Import	tblGrid_QA_Ops	dtWorkDate	9		YES	datetime						3			
Import	tblGrid_QA_Ops	vchGridID	10		YES	varchar	50	50							
Import	tblGrid_QA_Ops	QATeamID	11		YES	varchar	25	25							
Import	tblGrid_QA_Ops	QATeamLeader	12		YES	varchar	25	25							
Import	tblGrid_QA_Ops	dtRecMod	13	(getdate())	YES	datetime						3			
Import	tblGrid_QA_Ops	RecordID	14		YES	float			53	2					
Import	tblGrid_QA_Ops	Gen_txModNotes	15		YES	float			53	2					
Import	tblGrid_QA_Ops	s_Generation	16		YES	float			53	2					
Import	tblGrid_QA_Ops	s_GUID	17		NO	uniqueidentifier							PK_tblQA_ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_QA_Ops	txOpNotes	18		YES	nvarchar	-1	-1							
Import	tblGrid_QC_Ops	IQC1OpsID	1		NO	bigint			19	10	0				
Import	tblGrid_QC_Ops	guidGOL	2		YES	uniqueidentifier									
Import	tblGrid_QC_Ops	IDemoOpsID	3		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iAnomaliesChecked	4		YES	int			10	10	0				

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGrid_QC_Ops	iAnomaliesPassed	5		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iAnomaliesFailed	6		YES	int			10	10	0				
Import	tblGrid_QC_Ops	ftNonOEScrapLBs	7		YES	int			10	10	0				
Import	tblGrid_QC_Ops	ftOEScrapLBs	8		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iOEItems	9		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iSurface	10		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iDepth0to12	11		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iDepth12to24	12		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iDepth24to36	13		YES	int			10	10	0				
Import	tblGrid_QC_Ops	iDepth36to48	14		YES	int			10	10	0				
Import	tblGrid_QC_Ops	vchSurveyNotes	15		YES	nvarchar	255	510							
Import	tblGrid_QC_Ops	chQCPassed	16		YES	nvarchar	4	8							
Import	tblGrid_QC_Ops	vchQC_Type	17		YES	nvarchar	50	100							
Import	tblGrid_QC_Ops	RecordId	18		YES	float			53	2					
Import	tblGrid_QC_Ops	UnitID	19		YES	float			53	2					
Import	tblGrid_QC_Ops	UserName	20		YES	varchar	255	255							
Import	tblGrid_QC_Ops	TimeStamp	21		YES	datetime						3			
Import	tblGrid_QC_Ops	dtWorkDate	22		YES	datetime						3			
Import	tblGrid_QC_Ops	vchGridID	23		YES	varchar	10	10							
Import	tblGrid_QC_Ops	QCTeamID	24		YES	varchar	25	25							
Import	tblGrid_QC_Ops	QCTeamLeader	25		YES	varchar	25	25							
Import	tblGrid_QC_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Import	tblGrid_QC_Ops	UploadtoDB	27		YES	varchar	1	1							
Import	tblGrid_QC_Ops	s_Generation	28		YES	float			53	2					
Import	tblGrid_QC_Ops	s_GUID	29		NO	uniqueidentifier							PK_tblQC1_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_QC_Ops	vchSurveyInstr	30		YES	nvarchar	25	50							
Import	tblGrid_Reac_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_Reac_Ops	guidAnomaly	2		YES	uniqueidentifier									
Import	tblGrid_Reac_Ops	iNumberOfFlags	3		YES	int			10	10	0				
Import	tblGrid_Reac_Ops	vchReaqInstr	4		YES	nvarchar	50	100							
Import	tblGrid_Reac_Ops	biInvestigated	5		YES	bit									
Import	tblGrid_Reac_Ops	Reac_CH	6		YES	float			53	2					
Import	tblGrid_Reac_Ops	txReaqComments	7		YES	nvarchar	-1	-1							
Import	tblGrid_Reac_Ops	txReaqQCComments	8		YES	nvarchar	-1	-1							
Import	tblGrid_Reac_Ops	RecordId	9		YES	float			53	2					
Import	tblGrid_Reac_Ops	UnitID	10		YES	float			53	2					
Import	tblGrid_Reac_Ops	UserName	11		YES	varchar	255	255							
Import	tblGrid_Reac_Ops	TimeStamp	12		YES	datetime						3			
Import	tblGrid_Reac_Ops	dtWorkDate	13		YES	datetime						3			
Import	tblGrid_Reac_Ops	vchGridID	14		YES	varchar	10	10							
Import	tblGrid_Reac_Ops	ReacTeamID	15		YES	varchar	25	25							
Import	tblGrid_Reac_Ops	ReacTeamLeader	16		YES	varchar	25	25							
Import	tblGrid_Reac_Ops	dtRecMod	17	(getdate())	YES	datetime						3			
Import	tblGrid_Reac_Ops	UploadtoDB	18		YES	varchar	1	1							
Import	tblGrid_Reac_Ops	Gen_txReaqComments	19		YES	float			53	2					
Import	tblGrid_Reac_Ops	Gen_txReaqQCComments	20		YES	float			53	2					
Import	tblGrid_Reac_Ops	s_Generation	21		YES	float			53	2					
Import	tblGrid_Reac_Ops	s_GUID	22		NO	uniqueidentifier							PK_tblReac_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Scrape_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_Scrape_Ops	iRRDLBs	2		YES	float			53	2					
Import	tblGrid_Scrape_Ops	iMDLBs	3		YES	float			53	2					
Import	tblGrid_Scrape_Ops	iMECItems	4		YES	smallint			5	10	0				
Import	tblGrid_Scrape_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Import	tblGrid_Scrape_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Import	tblGrid_Scrape_Ops	dtQC	7		YES	datetime						3			
Import	tblGrid_Scrape_Ops	biDEQCChecked	8		YES	bit									
Import	tblGrid_Scrape_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Import	tblGrid_Scrape_Ops	biDiscrepancy	10		YES	bit									
Import	tblGrid_Scrape_Ops	iCubicYards	11		YES	int			10	10	0				
Import	tblGrid_Scrape_Ops	iInLift	12		YES	int			10	10	0				
Import	tblGrid_Scrape_Ops	iFtDistanceToStockpile	13		YES	int			10	10	0				
Import	tblGrid_Scrape_Ops	vchEquipmentUsed	14		YES	nvarchar	50	100							
Import	tblGrid_Scrape_Ops	RecordId	15		YES	float			53	2					
Import	tblGrid_Scrape_Ops	UnitID	16		YES	float			53	2					
Import	tblGrid_Scrape_Ops	UserName	17		YES	varchar	255	255							
Import	tblGrid_Scrape_Ops	TimeStamp	18		YES	datetime						3			
Import	tblGrid_Scrape_Ops	iScrapeOpID	19		YES	varchar	255	255							
Import	tblGrid_Scrape_Ops	dtWorkDate	20		YES	datetime						3			
Import	tblGrid_Scrape_Ops	vchGridID	21		YES	varchar	50	50							
Import	tblGrid_Scrape_Ops	vchTeam	22		YES	varchar	25	25							
Import	tblGrid_Scrape_Ops	iTeamleaderID	23		YES	varchar	50	50							
Import	tblGrid_Scrape_Ops	dtRecMod	24	(getdate())	YES	datetime						3			
Import	tblGrid_Scrape_Ops	UploadtoDB	25		YES	varchar	1	1							
Import	tblGrid_Scrape_Ops	Gen_txReviewComments	26		YES	float			53	2					
Import	tblGrid_Scrape_Ops	s_Generation	27		YES	float			53	2					
Import	tblGrid_Scrape_Ops	s_GUID	28		NO	uniqueidentifier							PK_tblScrape_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Sift_Ops	guidGOL	1		YES	uniqueidentifier									
Import	tblGrid_Sift_Ops	iRRDLBs	2		YES	int			10	10	0				
Import	tblGrid_Sift_Ops	iMDLBs	3		YES	int			10	10	0				
Import	tblGrid_Sift_Ops	chQCPassed	4		YES	nvarchar	4	8							
Import	tblGrid_Sift_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Import	tblGrid_Sift_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Import	tblGrid_Sift_Ops	dtQC	7		YES	datetime						3			
Import	tblGrid_Sift_Ops	biDEQCChecked	8		YES	bit									
Import	tblGrid_Sift_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Import	tblGrid_Sift_Ops	biDiscrepancy	10		YES	bit									
Import	tblGrid_Sift_Ops	QtyTons	11		YES	int			10	10	0				
Import	tblGrid_Sift_Ops	iMECItems	12		YES	int			10	10	0				
Import	tblGrid_Sift_Ops	RecordId	13		YES	float			53	2					
Import	tblGrid_Sift_Ops	UnitID	14		YES	float			53	2					
Import	tblGrid_Sift_Ops	UserName	15		YES	varchar	255	255							
Import	tblGrid_Sift_Ops	TimeStamp	16		YES	datetime						3			
Import	tblGrid_Sift_Ops	iSiftOpID	17		YES	varchar	255	255							
Import	tblGrid_Sift_Ops	dtWorkDate	18		YES	datetime						3			
Import	tblGrid_Sift_Ops	vchGridID	19		YES	varchar	50	50							
Import	tblGrid_Sift_Ops	vchTeam	20		YES	varchar	25	25							
Import	tblGrid_Sift_Ops	iTeamleaderID	21		YES	varchar	50	50							
Import	tblGrid_Sift_Ops	dtRecMod	22	(getdate())	YES	datetime						3			
Import	tblGrid_Sift_Ops	UploadtoDB	23		YES	varchar	1	1							
Import	tblGrid_Sift_Ops	Gen_txReviewComments	24		YES	float			53	2					
Import	tblGrid_Sift_Ops	s_Generation	25		YES	float			53	2					
Import	tblGrid_Sift_Ops	s_GUID	26		NO	uniqueidentifier							PK_tblSift_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Sift_Ops	vchEquipmentUsed	27		YES	nvarchar	50	100							
Import	tblGrid_SiteSurvey_Ops	iSiteSurveyOpID	1		YES	bigint			19	10	0				
Import	tblGrid_SiteSurvey_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblSite_Survey_ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_SiteSurvey_Ops	vchSurveyName	3		YES	nvarchar	50	100							
Import	tblGrid_SiteSurvey_Ops	txReviewComments	4		YES	nvarchar	4000	8000							
Import	tblGrid_SiteSurvey_Ops	vchQCInitials	5		YES	nvarchar	5	10							
Import	tblGrid_SiteSurvey_Ops	biDEQCChecked	6		YES	bit									
Import	tblGrid_SiteSurvey_Ops	vchDEQCInitials	7		YES	nvarchar	5	10							
Import	tblGrid_SiteSurvey_Ops	ftGridPercent	8		YES	real			24	2					
Import	tblOE_Encountered	iOEEncounteredID	1		YES	int			10	10	0				
Import	tblOE_Encountered	guidOEE	2	(newid())	YES	uniqueidentifier									
Import	tblOE_Encountered	dtWorkDate	3		YES	datetime						3			
Import	tblOE_Encountered	iOpID	4		YES	bigint			19	10	0				
Import	tblOE_Encountered	guidGOL	5		YES	uniqueidentifier									
Import	tblOE_Encountered	vchGridID	6		YES	nvarchar	50	100							
Import	tblOE_Encountered	vchSurveyInstr	7		YES	nvarchar	100	200							
Import	tblOE_Encountered	iLocalNorthing	8		YES	smallint			5	10	0				
Import	tblOE_Encountered	iLocalEasting	9		YES	smallint			5	10	0				
Import	tblOE_Encountered	ftNorthing	10		YES	float			53	2					
Import	tblOE_Encountered	ftEasting	11		YES	float			53	2					
Import	tblOE_Encountered	iQTY	12		YES	smallint			5	10	0				
Import	tblOE_Encountered	ftLength	13		YES	real			24	2					
Import	tblOE_Encountered	ftWidth	14		YES	real			24	2					
Import	tblOE_Encountered	iOffsetDist	15		YES	int			10	10	0				
Import	tblOE_Encountered	vchOffsetDir	16		YES	nvarchar	50	100							
Import	tblOE_Encountered	ftInclination	17		YES	float			53	2					
Import	tblOE_Encountered	vchOrientation	18		YES	nvarchar	2	4							
Import	tblOE_Encountered	iDepth	19		YES	smallint			5	10	0				
Import	tblOE_Encountered	ftWeight	20		YES	float			53	2					
Import	tblOE_Encountered	vchOriginalOENomenclature	21		YES	nvarchar	255	510							
Import	tblOE_Encountered	iOEModelIDFinal	22		YES	int			10	10	0				
Import	tblOE_Encountered	vchNonOEDesc	23		YES	nvarchar	255	510							
Import	tblOE_Encountered	vchOEType	24		YES	nvarchar	10	20							
Import	tblOE_Encountered	vchConditionInit	25		YES	nvarchar	25	50							
Import	tblOE_Encountered	vchConditionFinal	26		YES	nvarchar	25	50							
Import	tblOE_Encountered	vchDispositionInit	27		YES	nvarchar	120	240							
Import	tblOE_Encountered	vchDispositionInterm	28		YES	nvarchar	120	240							
Import	tblOE_Encountered	vchDispositionFinal	29		YES	nvarchar	120	240							
Import	tblOE_Encountered	biFragment	30		YES	tinyint			3	10	0				
Import	tblOE_Encountered	chBurialPit	31		YES	char	1	1							
Import	tblOE_Encountered	biDemoRequired	32		YES	tinyint			3	10	0				
Import	tblOE_Encountered	biDemoPerformed	33		YES	tinyint			3	10	0				

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblOE_Encountered	dtDemo	34		YES	datetime						3			
Import	tblOE_Encountered	vchDemoAction	35		YES	nvarchar	4000	8000							
Import	tblOE_Encountered	guidDemoOp	36		YES	uniqueidentifier									
Import	tblOE_Encountered	dtQA	37		YES	datetime						3			
Import	tblOE_Encountered	vchQAInitials	38		YES	nvarchar	5	10							
Import	tblOE_Encountered	dtQC	39		YES	datetime						3			
Import	tblOE_Encountered	vchQCInitials	40		YES	nvarchar	100	200							
Import	tblOE_Encountered	iLocationProxCode	41		YES	smallint			5	10	0				
Import	tblOE_Encountered	vchContractor	42		YES	nvarchar	50	100							
Import	tblOE_Encountered	dtDataEntered	43		YES	datetime						3			
Import	tblOE_Encountered	vchDataEntry	44		YES	nvarchar	10	20							
Import	tblOE_Encountered	txOEItemNotes	45		YES	nvarchar	500	1000							
Import	tblOE_Encountered	vchDataSource	46		YES	nvarchar	150	300							
Import	tblOE_Encountered	txReviewComments	47		YES	nvarchar	4000	8000							
Import	tblOE_Encountered	biDEQCChecked	48		YES	tinyint			3	10	0				
Import	tblOE_Encountered	vchDEQCInitials	49		YES	nvarchar	100	200							
Import	tblOE_Encountered	txModNotes	50		YES	nvarchar	4000	8000							
Import	tblOE_Encountered	biDiscrepancy	51		YES	tinyint			3	10	0				
Import	tblOE_Encountered	guidAnomaly	52		YES	uniqueidentifier									
Import	tblOE_Encountered	ftDemoNorthing	53		YES	float			53	2					
Import	tblOE_Encountered	ftDemoEasting	54		YES	float			53	2					
Import	tblOE_Encountered	RecordId	55		YES	float			53	2					
Import	tblOE_Encountered	UnitID	56		YES	float			53	2					
Import	tblOE_Encountered	UserName	57		YES	varchar	255	255							
Import	tblOE_Encountered	TimeStamp	58		YES	datetime						3			
Import	tblOE_Encountered	vchFinalOENomenclature	59		YES	varchar	255	255							
Import	tblOE_Encountered	UniqAnomalyID	60		YES	varchar	50	50							
Import	tblOE_Encountered	AnomalyType	61		YES	varchar	255	255							
Import	tblOE_Encountered	vchTeam	62		YES	varchar	25	25							
Import	tblOE_Encountered	iTeamleaderID	63		YES	varchar	50	50							
Import	tblOE_Encountered	dtRecMod	64	(getdate())	YES	datetime						3			
Import	tblOE_Encountered	UploadtoDB	65		YES	varchar	1	1							
Import	tblOE_Encountered	Gen_txModNotes	66		YES	float			53	2					
Import	tblOE_Encountered	Gen_txOEItemNotes	67		YES	float			53	2					
Import	tblOE_Encountered	Gen_vchDemoAction	68		YES	float			53	2					
Import	tblOE_Encountered	s_Generation	69		YES	float			53	2					
Import	tblOE_Encountered	s_GUID	70		NO	uniqueidentifier							PK_tblOE_Encountered	PK	PRIMARY_KEY_CONSTRAINT
Import	tblOE_Encountered	LocalAnomalyID	71		YES	nvarchar	50	100							
Import	tblOE_Encountered	DigUploadtoDB	72		YES	bit									
Import	tblOE_Encountered	ftReaqResponseValue	73		YES	float			53	2					
Import	tblOE_Encountered	ftNonOEScrapLBs	74		YES	float			53	2					
Import	tblOE_Encountered	ftOEScrapLBs	75		YES	float			53	2					
Import	tblOE_Encountered	ftDigResponseValue	76		YES	float			53	2					
Import	tblOE_Seeded	guidSeeded	1	(newid())	YES	uniqueidentifier									
Import	tblOE_Seeded	dtWorkDate	2		YES	smalldatetime						0			
Import	tblOE_Seeded	guidGOL	3		YES	uniqueidentifier									
Import	tblOE_Seeded	vchGridID	4		YES	nvarchar	50	100							
Import	tblOE_Seeded	vchSurveyInstr	5		YES	nvarchar	25	50							
Import	tblOE_Seeded	iLocalNorthing	6		YES	smallint			5	10	0				
Import	tblOE_Seeded	iLocalEasting	7		YES	smallint			5	10	0				
Import	tblOE_Seeded	ftNorthing	8		YES	float			53	2					
Import	tblOE_Seeded	ftEasting	9		YES	float			53	2					
Import	tblOE_Seeded	vchProxCode	10		YES	nvarchar	50	100							
Import	tblOE_Seeded	iQTY	11		YES	smallint			5	10	0				
Import	tblOE_Seeded	ftLength	12		YES	float			53	2					
Import	tblOE_Seeded	ftWidth	13		YES	float			53	2					
Import	tblOE_Seeded	ftInclination	14		YES	float			53	2					
Import	tblOE_Seeded	vchOrientation	15		YES	nvarchar	2	4							
Import	tblOE_Seeded	iDepth	16		YES	smallint			5	10	0				
Import	tblOE_Seeded	ftWeight	17		YES	float			53	2					
Import	tblOE_Seeded	vchOriginalOENomenclature	18		YES	nvarchar	255	510							
Import	tblOE_Seeded	iOEModelID	19		YES	int			10	10	0				
Import	tblOE_Seeded	chBurialPit	20		YES	char	1	1							
Import	tblOE_Seeded	vchAnomalyID	21		YES	nvarchar	50	100							
Import	tblOE_Seeded	guidAnomaly	22		YES	uniqueidentifier									
Import	tblOE_Seeded	txOEItemNotes	23		YES	nvarchar	4000	8000							
Import	tblOE_Seeded	vchContractor	24		YES	nvarchar	20	40							
Import	tblOE_Seeded	dtDataEntered	25		YES	datetime						3			
Import	tblOE_Seeded	vchDataEntry	26		YES	nvarchar	10	20							
Import	tblOE_Seeded	txReviewComments	27		YES	nvarchar	4000	8000							
Import	tblOE_Seeded	biDEQCChecked	28		YES	tinyint			3	10	0				
Import	tblOE_Seeded	vchDEQCInitials	29		YES	nvarchar	5	10							
Import	tblOE_Seeded	txModNotes	30		YES	nvarchar	4000	8000							
Import	tblOE_Seeded	guidGrid	31		YES	uniqueidentifier									
Import	tblOE_Seeded	RecordId	32		YES	float			53	2					
Import	tblOE_Seeded	UnitID	33		YES	float			53	2					
Import	tblOE_Seeded	UserName	34		YES	varchar	255	255							
Import	tblOE_Seeded	TimeStamp	35		YES	datetime						3			
Import	tblOE_Seeded	SeedCategory	36		YES	varchar	255	255							
Import	tblOE_Seeded	SeedOpType	37		YES	varchar	255	255							
Import	tblOE_Seeded	vchTeam	38		YES	varchar	25	25							
Import	tblOE_Seeded	iTeamleaderID	39		YES	varchar	50	50							
Import	tblOE_Seeded	vchQCInitials	40		YES	varchar	5	5							
Import	tblOE_Seeded	dtQC	41		YES	datetime						3			
Import	tblOE_Seeded	dtRecMod	42	(getdate())	YES	datetime						3			
Import	tblOE_Seeded	UploadtoDB	43		YES	varchar	1	1							
Import	tblOE_Seeded	Gen_txReviewComments	44		YES	float			53	2					
Import	tblOE_Seeded	s_Generation	45		YES	float			53	2					
Import	tblOE_Seeded	s_GUID	46		NO	uniqueidentifier							PK_tblOE_Seeded	PK	PRIMARY_KEY_CONSTRAINT
Import	tblAnomaly	guidAnomaly	1	(newid())	YES	uniqueidentifier									
Import	tblAnomaly	guidReacOp	2		YES	uniqueidentifier									
Import	tblAnomaly	guidDGMDigOp	3		YES	uniqueidentifier									
Import	tblAnomaly	guidQC1Op	4		YES	uniqueidentifier									
Import	tblAnomaly	guidGeoPickOp	5		YES	uniqueidentifier									
Import	tblAnomaly	vchGridID	6		YES	nvarchar	50	100							
Import	tblAnomaly	ftEasting	7		YES	float			53	2					
Import	tblAnomaly	ftNorthing	8		YES	float			53	2					
Import	tblAnomaly	vchResponseType	9		YES	varchar	50	50							
Import	tblAnomaly	ftResponseValue	10		YES	float			53	2					
Import	tblAnomaly	biInvestigated	11		YES	bit									
Import	tblAnomaly	iPriority	12		YES	int			10	10	0				
Import	tblAnomaly	vchReaqInstr	13		YES	varchar	50	50							
Import	tblAnomaly	vchReaqResponseType	14		YES	varchar	50	50							
Import	tblAnomaly	ftReaqResponseValue	15		YES	float			53	2					
Import	tblAnomaly	biReaqSuccessful	16		YES	bit									
Import	tblAnomaly	iReaqDistanceFromFlag	17		YES	int			10	10	0				
Import	tblAnomaly	iReaqAzimuthFromFlag	18		YES	int			10	10	0				
Import	tblAnomaly	txReaqComments	19		YES	nvarchar	-1	-1							
Import	tblAnomaly	ftDigWeight	20		YES	float			53	2					
Import	tblAnomaly	biBurialPit	21		YES	bit									
Import	tblAnomaly	biFragHole	22		YES	bit									
Import	tblAnomaly	biMassExcavation	23		YES	bit									
Import	tblAnomaly	biQC1Selected	24		YES	bit									
Import	tblAnomaly	biQC1Passed	25		YES	bit									
Import	tblAnomaly	guidQC1Fail	26		YES	uniqueidentifier									
Import	tblAnomaly	txQC1Notes	27		YES	nvarchar	-1	-1							
Import	tblAnomaly	biGeoQCSelected	28		YES	bit									
Import	tblAnomaly	biGeoQCPassed	29		YES	bit									
Import	tblAnomaly	guidGeoQCFail	30		YES	uniqueidentifier									
Import	tblAnomaly	guidGeoQCDigOp	31		YES	uniqueidentifier									
Import	tblAnomaly	txGeoQCNotes	32		YES	nvarchar	4000	8000							
Import	tblAnomaly	chQCPassed	33		YES	char	4	4							
Import	tblAnomaly	txDigComments	34		YES	nvarchar	-1	-1							
Import	tblAnomaly	biAnomalyStillPresent	35		YES	bit									
Import	tblAnomaly	txReviewComments	36		YES	nvarchar	-1	-1							
Import	tblAnomaly	txModNotes	37		YES	nvarchar	-1	-1							
Import	tblAnomaly	guidGrid	38		YES	uniqueidentifier									
Import	tblAnomaly	ftReaqOffsetEasting	39		YES	float			53	2					
Import	tblAnomaly	ftReaqOffsetNorthing	40		YES	float			53	2					
Import	tblAnomaly	RecordId	41		YES	float			53	2					
Import	tblAnomaly	UnitID	42		YES	float			53	2					
Import	tblAnomaly	UserName	43		YES	varchar	255	255							
Import	tblAnomaly	TimeStamp	44		YES	datetime						3			
Import	tblAnomaly	vchAnomalyID	45		YES	varchar	50	50							
Import	tblAnomaly	LocalAnomalyID	46		YES	varchar	50	50							
Import	tblAnomaly	LocalEasting	47		YES	real			24	2					
Import	tblAnomaly	LocalNorthing	48		YES	real			24	2					
Import	tblAnomaly	ProcessingComm	49		YES	varchar	-1	-1							
Import	tblAnomaly	vchTeam	50		YES	varchar	25	25							
Import	tblAnomaly	iTeamleaderID	51		YES	varchar	50	50							
Import	tblAnomaly	dtWorkDate	52		YES	datetime						3			
Import	tblAnomaly	dtRecMod	53	(getdate())	YES	datetime						3			
Import	tblAnomaly	UploadtoDB	54		YES	varchar	1	1							
Import	tblAnomaly	Gen_ProcessingComm	55		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblAnomaly	Gen_txDigComments	56		YES	float			53	2					
Import	tblAnomaly	Gen_txModNotes	57		YES	float			53	2					
Import	tblAnomaly	Gen_txQC1Notes	58		YES	float			53	2					
Import	tblAnomaly	Gen_txReaqComments	59		YES	float			53	2					
Import	tblAnomaly	Gen_txReviewComments	60		YES	float			53	2					
Import	tblAnomaly	s_Generation	61		YES	float			53	2					
Import	tblAnomaly	s_GUID	62		NO	uniqueidentifier							PK_tblAnomaly	PK	PRIMARY_KEY_CONSTRAINT
Import	tblAnomaly	ftResponsemV	63		YES	float			53	2					
Import	tblAnomaly	QCUploadtoDB	64		YES	nchar	1	2							
Import	tblAnomaly	ftQCResponseValue	65		YES	float			53	2					
Import	tblAnomaly	vchQCTeam	66		YES	nvarchar	25	50							
Import	tblAnomaly	iQCTeamLeaderID	67		YES	nvarchar	50	100							
Import	tblAnomaly	dtQCWorkDate	68		YES	datetime						3			
Import	tblAnomaly_Undug	iAnomalyUndugID	1		NO	int			10	10	0		PK_tblAnomalyUndug	PK	PRIMARY_KEY_CONSTRAINT
Import	tblAnomaly_Undug	vchSite	2		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	guidGrid	3		YES	uniqueidentifier									
Import	tblAnomaly_Undug	vchGrid	4		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	vchGridAlias	5		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	vchTeam	6		YES	nvarchar	25	50							
Import	tblAnomaly_Undug	dtWorkdate	7		YES	smalldatetime						0			
Import	tblAnomaly_Undug	ftNorthing	8		YES	float			53	2					
Import	tblAnomaly_Undug	ftEasting	9		YES	float			53	2					
Import	tblAnomaly_Undug	iQty	10		YES	int			10	10	0				
Import	tblAnomaly_Undug	vchDepth	11		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	vchType	12		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	vchDisposition	13		YES	nvarchar	50	100							
Import	tblAnomaly_Undug	vchContractor	14		YES	nvarchar	50	100							
Import	tblAnomDIDEM61MKII	guidAnomDIDEM61MKII	1	(newid())	YES	uniqueidentifier									
Import	tblAnomDIDEM61MKII	guidAnomaly	2		YES	uniqueidentifier									
Import	tblAnomDIDEM61MKII	vchAnomalyID	3		NO	nvarchar	-1	-1							
Import	tblAnomDIDEM61MKII	CH1_final	4		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	CH2_final	5		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	CH3_final	6		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	CH4_final	7		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	CH_SUM	8		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	CH_AVG	9		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Width	10		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Size	11		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	SignalStrength	12		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	SNR	13		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Fit_Coh	14		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Fit_dec	15		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Fit_inc	16		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Fit_size	17		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Fit_solidAngle	18		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Comments	19		YES	nvarchar	-1	-1							
Import	tblAnomDIDEM61MKII	Tau_1_2	20		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Tau_1_3	21		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Tau_1_4	22		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Tau_2_3	23		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Tau_2_4	24		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	Tau_3_4	25		YES	decimal			18	10	3				
Import	tblAnomDIDEM61MKII	vchGridID	26		YES	varchar	255	255							
Import	tblAnomDIDEM61MKII	UniqueGridID	27		YES	varchar	255	255							
Import	tblAnomDIDEM61MKII	dtRecMod	28	(getdate())	YES	datetime						3			
Import	tblAnomDIDEM61MKII	Gen_Comments	29		YES	float			53	2					
Import	tblAnomDIDEM61MKII	s_Generation	30		YES	float			53	2					
Import	tblAnomDIDEM61MKII	s_GUID	31		NO	uniqueidentifier							PK_tblAnomDIDEM61MKII	PK	PRIMARY_KEY_CONSTRAINT
Import	tblAnomDIDEM61MKII	ftEasting	32		YES	float			53	2					
Import	tblAnomDIDEM61MKII	ftNorthing	33		YES	float			53	2					
Import	tblAnomDIDG858	guidAnomDIDG858	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDG858	PK	PRIMARY_KEY_CONSTRAINT
Import	tblAnomDIDG858	guidAnomaly	2		YES	uniqueidentifier									
Import	tblAnomDIDG858	vchAnomalyID	3		NO	nvarchar	-1	-1							
Import	tblAnomDIDG858	TF_Peak	4		YES	decimal			18	10	3				
Import	tblAnomDIDG858	TF_Trough	5		YES	decimal			18	10	3				
Import	tblAnomDIDG858	VG_Peak	6		YES	decimal			18	10	3				
Import	tblAnomDIDG858	VG_Trough	7		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Mag_Peak_offset	8		YES	decimal			18	10	3				
Import	tblAnomDIDG858	AS	9		YES	decimal			18	10	3				
Import	tblAnomDIDG858	H_Final	10		YES	decimal			18	10	3				
Import	tblAnomDIDG858	M_final	11		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Width	12		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Halfwidth_alongLine	13		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Halfwidth_acrossLine	14		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Size	15		YES	decimal			18	10	3				
Import	tblAnomDIDG858	SignalStrength	16		YES	decimal			18	10	3				
Import	tblAnomDIDG858	SNR	17		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_Coh	18		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_Depth	19		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_MagneticMoment	20		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_bl	21		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_b2	22		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_b3	23		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_dec	24		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_inc	25		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_size	26		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Fit_solidAngle	27		YES	decimal			18	10	3				
Import	tblAnomDIDG858	Comments	28		YES	nvarchar	-1	-1							
Import	tblSite_Walk_ops	guidSiteWalkopsID	1	(newid())	YES	uniqueidentifier									
Import	tblSite_Walk_ops	guidGOL	2		YES	uniqueidentifier									
Import	tblSite_Walk_ops	RecordId	3		YES	float			53	2					
Import	tblSite_Walk_ops	UnitID	4		YES	float			53	2					
Import	tblSite_Walk_ops	UserName	5		YES	varchar	255	255							
Import	tblSite_Walk_ops	TimeStamp	6		YES	datetime						3			
Import	tblSite_Walk_ops	lSiteWalkID	7		YES	float			53	2					
Import	tblSite_Walk_ops	dtWorkDate	8		YES	datetime						3			
Import	tblSite_Walk_ops	vchTeam	9		YES	nvarchar	255	510							
Import	tblSite_Walk_ops	vchSurveyInstr	10		YES	varchar	25	25							
Import	tblSite_Walk_ops	txReviewComments	11		YES	varchar	-1	-1							
Import	tblSite_Walk_ops	txOpnotes	12		YES	varchar	-1	-1							
Import	tblSite_Walk_ops	vchContractor	13		YES	varchar	20	20							
Import	tblSite_Walk_ops	vchGridID	14		YES	varchar	50	50							
Import	tblSite_Walk_ops	iTeamleaderID	15		YES	varchar	50	50							
Import	tblSite_Walk_ops	dtRecMod	16	(getdate())	YES	datetime						3			
Import	tblSite_Walk_ops	UploadtoDB	17		YES	varchar	1	1							
Import	tblSite_Walk_ops	Gen_txOpnotes	18		YES	float			53	2					
Import	tblSite_Walk_ops	Gen_txReviewComments	19		YES	float			53	2					
Import	tblSite_Walk_ops	s_Generation	20		YES	float			53	2					
Import	tblSite_Walk_ops	s_GUID	21		NO	uniqueidentifier							PK_tblSite_Walk_ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_Survey_Ops	guidGeoSurvey	1		YES	uniqueidentifier									
Import	tblGeo_Survey_Ops	dtStartTime	2		YES	datetime						3			
Import	tblGeo_Survey_Ops	dtEndTime	3		YES	datetime						3			
Import	tblGeo_Survey_Ops	txOpNotes	4		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	vchSurveyInstr	5		YES	nvarchar	25	50							
Import	tblGeo_Survey_Ops	vchDataCollectRate	6		YES	nvarchar	50	100							
Import	tblGeo_Survey_Ops	biReSurvey	7		YES	bit									
Import	tblGeo_Survey_Ops	biQCSurvey	8		YES	bit									
Import	tblGeo_Survey_Ops	ftQCPercent	9		YES	nvarchar	50	100							
Import	tblGeo_Survey_Ops	dtCheckTime	10		YES	datetime						3			
Import	tblGeo_Survey_Ops	vchRAW61FileNames	11		YES	nvarchar	255	510							
Import	tblGeo_Survey_Ops	vchXYZFileNames	12		YES	nvarchar	255	510							
Import	tblGeo_Survey_Ops	vchMagRawStn	13		YES	nvarchar	255	510							
Import	tblGeo_Survey_Ops	vchMagRawCorStn	14		YES	nvarchar	50	100							
Import	tblGeo_Survey_Ops	vchMagBaseStnFile	15		YES	nvarchar	250	500							
Import	tblGeo_Survey_Ops	vchMagRawXyz	16		YES	nvarchar	250	500							
Import	tblGeo_Survey_Ops	iInstWarmupTime	17		YES	decimal			18	10	0				
Import	tblGeo_Survey_Ops	biZeroInstrument	18		YES	bit									
Import	tblGeo_Survey_Ops	vchStaticQCFile	19		YES	nvarchar	50	100							
Import	tblGeo_Survey_Ops	iStaticQCET	20		YES	int			10	10	0				
Import	tblGeo_Survey_Ops	biStaticQCConsistent	21		YES	bit									
Import	tblGeo_Survey_Ops	biSpikeTestConsistent	22		YES	bit									
Import	tblGeo_Survey_Ops	vchWeather	23		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	vchCulturalEffect	24		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	vchTerrain	25		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	vchNoteKeeper1	26		YES	nvarchar	255	510							
Import	tblGeo_Survey_Ops	vchNoteKeeper2	27		YES	nvarchar	255	510							
Import	tblGeo_Survey_Ops	vchGridCondition	28		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	ftLnSpacing	29		YES	float			53	2					
Import	tblGeo_Survey_Ops	ftBgnBatVoltage	30		YES	real			24	2					
Import	tblGeo_Survey_Ops	ftEndBatVoltage	31		YES	real			24	2					
Import	tblGeo_Survey_Ops	biQCReview	32		YES	bit									
Import	tblGeo_Survey_Ops	txReviewComments	33		YES	nvarchar	-1	-1							
Import	tblGeo_Survey_Ops	vchQCInitials	34		YES	nvarchar	5	10							
Import	tblGeo_Survey_Ops	txModNotes	35		YES	nvarchar	-1	-1							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGeo_Survey_Ops	biDiscrepancy	36		YES	bit									
Import	tblGeo_Survey_Ops	dtDataEntered	37		YES	datetime						3			
Import	tblGeo_Survey_Ops	vchDataEntry	38		YES	nvarchar	50	100							
Import	tblGeo_Survey_Ops	RecordId	39		YES	float			53	2					
Import	tblGeo_Survey_Ops	UnitID	40		YES	float			53	2					
Import	tblGeo_Survey_Ops	UserName	41		YES	varchar	255	255							
Import	tblGeo_Survey_Ops	TimeStamp	42		YES	datetime						3			
Import	tblGeo_Survey_Ops	vchGridBlockID	43		YES	varchar	50	50							
Import	tblGeo_Survey_Ops	GridsCollected	44		YES	varchar	255	255							
Import	tblGeo_Survey_Ops	vchTeam	45		YES	varchar	255	255							
Import	tblGeo_Survey_Ops	vchCollDir	46		YES	varchar	50	50							
Import	tblGeo_Survey_Ops	DateofSurvey	47		YES	datetime						3			
Import	tblGeo_Survey_Ops	dtRecMod	48	(getdate())	YES	datetime						3			
Import	tblGeo_Survey_Ops	UploadtoDB	49		YES	varchar	1	1							
Import	tblGeo_Survey_Ops	Gen_txOpNotes	50		YES	float			53	2					
Import	tblGeo_Survey_Ops	Gen_txReviewComments	51		YES	float			53	2					
Import	tblGeo_Survey_Ops	Gen_vchCulturalEffect	52		YES	float			53	2					
Import	tblGeo_Survey_Ops	Gen_vchGridCondition	53		YES	float			53	2					
Import	tblGeo_Survey_Ops	Gen_vchTerrain	54		YES	float			53	2					
Import	tblGeo_Survey_Ops	Gen_vchWeather	55		YES	float			53	2					
Import	tblGeo_Survey_Ops	s_Generation	56		YES	float			53	2					
Import	tblGeo_Survey_Ops	s_GUID	57		NO	uniqueidentifier							PK_tblGeo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_Survey_Ops	vchContractor	58		YES	nvarchar	50	100							
Import	tblGeo_GridBlock_Lnk	guidGridBlockLnk	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_GridBlock_Lnk	guidGeoSurvey	2		YES	uniqueidentifier									
Import	tblGeo_GridBlock_Lnk	guidGridBlock	3		YES	uniqueidentifier									
Import	tblGeo_GridBlock_Lnk	vchGridBlockID	4		YES	nvarchar	50	100							
Import	tblGeo_GridBlock_Lnk	vchGridID	5		YES	nvarchar	50	100							
Import	tblGeo_GridBlock_Lnk	guidGrid	6		YES	uniqueidentifier									
Import	tblGeo_GridBlock	guidGridBlock	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_GridBlock	vchGridBlockDesc	2		YES	nvarchar	255	510							
Import	tblGeo_FileData	guidGeoFileData	1	(newid())	YES	uniqueidentifier									
Import	tblGeo_FileData	guidGeoSurvey	2		YES	uniqueidentifier									
Import	tblGeo_FileData	vchGeoFileDataName	3		YES	nvarchar	255	510							
Import	tblGeo_FileData	vchGeoFileDataType	4		YES	nvarchar	255	510							
Import	tblGeo_FileData	vchGeoFileDataNotes	5		YES	nvarchar	255	510							
Import	tblGeo_FileData	RecordId	6		YES	float			53	2					
Import	tblGeo_FileData	UnitID	7		YES	float			53	2					
Import	tblGeo_FileData	UserName	8		YES	varchar	255	255							
Import	tblGeo_FileData	TimeStamp	9		YES	datetime						3			
Import	tblGeo_FileData	vchGridBlockID	10		YES	varchar	50	50							
Import	tblGeo_FileData	vchPreparer	11		YES	varchar	50	50							
Import	tblGeo_FileData	vchQCInitials	12		YES	varchar	5	5							
Import	tblGeo_FileData	dtQC	13		YES	datetime						3			
Import	tblGeo_FileData	vchProblemDesc	14		YES	varchar	255	255							
Import	tblGeo_FileData	biOKToDeliver	15		YES	varchar	1	1							
Import	tblGeo_FileData	dtDelivery	16		YES	datetime						3			
Import	tblGeo_FileData	dtRecMod	17	(getdate())	YES	datetime						3			
Import	tblGeo_FileData	UploadtoDB	18		YES	varchar	1	1							
Import	tblGeo_FileData	s_Generation	19		YES	float			53	2					
Import	tblGeo_FileData	s_GUID	20		NO	uniqueidentifier							PK_tblGeoFileData	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_FileData	vchContractor	21		YES	nvarchar	50	100							
Import	tblGeo_FileProcessing	guidGeoFileProcessing	1	(newid())	YES	uniqueidentifier									
Import	tblGeo_FileProcessing	guidGeoFileData	2		YES	uniqueidentifier									
Import	tblGeo_FileProcessing	vchGeosoftDatabaseName	3		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	dtProcessingDate	4		YES	datetime						3			
Import	tblGeo_FileProcessing	vchProcessingOperator	5		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biGPSSmoothingPerformed	6		YES	bit									
Import	tblGeo_FileProcessing	iGPSSmoothingWindow	7		YES	int			10	10	0				
Import	tblGeo_FileProcessing	biDriftCorrectionPerformed	8		YES	bit									
Import	tblGeo_FileProcessing	vchDriftCorrectMethod	9		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biDirurnalCorrection	10		YES	bit									
Import	tblGeo_FileProcessing	vchDirurnalCorrectionBSFile	11		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	dLatency	12		YES	numeric			18	10	3				
Import	tblGeo_FileProcessing	dSampleSeparation	13		YES	numeric			18	10	3				
Import	tblGeo_FileProcessing	dNoiseMean	14		YES	numeric			18	10	3				
Import	tblGeo_FileProcessing	dNoiseStdDev	15		YES	numeric			18	10	3				
Import	tblGeo_FileProcessing	vchProcessingQCOperator	16		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	dtProcessingQCDate	17		YES	datetime						3			
Import	tblGeo_FileProcessing	vchDataProjection	18		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	vchDeSpikingPerformed	19		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	vchDeSpikingInfo	20		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biMagMap2000	21		YES	bit									
Import	tblGeo_FileProcessing	biGeosoftOasisMontaj	22		YES	bit									
Import	tblGeo_FileProcessing	biHeadingCorrection	23		YES	bit									
Import	tblGeo_FileProcessing	vchHeadInfo	24		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biNormalize	25		YES	bit									
Import	tblGeo_FileProcessing	vchNormInfo	26		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biHeaderProcFile	27		YES	bit									
Import	tblGeo_FileProcessing	biLineBreak	28		YES	bit									
Import	tblGeo_FileProcessing	vchLineBreakInfo	29		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	biTranslateData	30		YES	bit									
Import	tblGeo_FileProcessing	biLagCorrection	31		YES	bit									
Import	tblGeo_FileProcessing	vchLagCrValue	32		YES	nvarchar	255	510							
Import	tblGeo_FileProcessing	vchGridBlockID	33		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dSampleSeparationPercent	34		YES	float			53	2					
Import	tblGeo_FileProcessing	dSampleSeparationStatus	35		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dCoverageType	36		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dCoverageDesignPercent	37		YES	float			53	2					
Import	tblGeo_FileProcessing	dCoveragePercent	38		YES	float			53	2					
Import	tblGeo_FileProcessing	dCoverageDesignStatus	39		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dCoverageStatus	40		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dVelocityPercent	41		YES	float			53	2					
Import	tblGeo_FileProcessing	dVelocityMean	42		YES	float			53	2					
Import	tblGeo_FileProcessing	dVelocityStatus	43		YES	varchar	255	255							
Import	tblGeo_FileProcessing	vchDataPackageFiles	44		YES	varchar	-1	-1							
Import	tblGeo_FileProcessing	vchProcessingComments	45		YES	varchar	-1	-1							
Import	tblGeo_FileProcessing	vchRepeatLineNumbers	46		YES	varchar	255	255							
Import	tblGeo_FileProcessing	biRepeatLinesStatus	47		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dGPSQualityPercentFix	48		YES	float			53	2					
Import	tblGeo_FileProcessing	vchGPSQualityStatus	49		YES	varchar	255	255							
Import	tblGeo_FileProcessing	dtRecMod	50	(getdate())	YES	datetime						3			
Import	tblGeo_FileProcessing	Gen_vchDataPackageFiles	51		YES	float			53	2					
Import	tblGeo_FileProcessing	Gen_vchProcessingComments	52		YES	float			53	2					
Import	tblGeo_FileProcessing	s_Generation	53		YES	float			53	2					
Import	tblGeo_FileProcessing	s_GUID	54		NO	uniqueidentifier							PK_tblGeoFileProcessing	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_FileProcessing	vchContractor	55		YES	nvarchar	50	100							
Import	tblGeo_QCSurvey_FileData	iGeoFileFieldQCID	1		YES	bigint			19	10	0				
Import	tblGeo_QCSurvey_FileData	guidGeoFileFieldQC	2	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSurvey_FileData	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCSurvey_FileData	guidGeoFileData	3		YES	uniqueidentifier									
Import	tblGeo_QCSurvey_FileData	guidGeoQCSurveyOp	4		YES	uniqueidentifier									
Import	tblGeo_QCSurvey_FileData	vchPreGeoFileQCName	5		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	vchPreGeoFileQCType	6		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	iPreStaticLineNum	7		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPreDynamicLineNum	8		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPreCableLineNum	9		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPreLatencyLineNum	10		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	vchPreQCSurveyNotes	11		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	vchPostGeoFileQCName	12		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	vchPostGeoFileQCType	13		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	iPostStaticLineNum	14		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPostDynamicLineNum	15		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPostCableLineNum	16		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	iPostLatencyLineNum	17		YES	int			10	10	0				
Import	tblGeo_QCSurvey_FileData	vchPostQCSurveyNotes	18		YES	nvarchar	255	510							
Import	tblGeo_QCSurvey_FileData	vchContractor	19		YES	nvarchar	50	100							
Import	tblGeo_QCSurvey_ops	guidGeoQCSurveyOp	1	(newid())	YES	uniqueidentifier									
Import	tblGeo_QCSurvey_ops	vchFldFrmID	2		YES	nvarchar	50	100							
Import	tblGeo_QCSurvey_ops	vchWeather	3		YES	nvarchar	50	100							
Import	tblGeo_QCSurvey_ops	iSurveytype	4		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	iInstWarmupTime	5		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	vchSurveyInstr	6		YES	nvarchar	25	50							
Import	tblGeo_QCSurvey_ops	vchGeoQCSurveyNotes	7		YES	varchar	-1	-1							
Import	tblGeo_QCSurvey_ops	ftStaticSpikeAM	8		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftStaticSpikePM	9		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftStaticBackgroundAM	10		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftStaticBackgroundPM	11		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	vchPointLocationID	12		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	vchPointLocationName	13		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	ftRecordedNorthing	14		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftRecordedEasting	15		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftKnownNorthing	16		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftKnownEasting	17		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftDistanceOffset	18		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNameAM	19		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNamePM	20		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	iStaticLineNum	21		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	iDynamicLineNum	22		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	iCableLineNum	23		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	iIVSLineNum	24		YES	int			10	10	0				
Import	tblGeo_QCSurvey_ops	vchIVSFileName	25		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	vchQCFileName	26		YES	varchar	50	50							
Import	tblGeo_QCSurvey_ops	guidGeoSurvey	27		YES	uniqueidentifier									
Import	tblGeo_QCSurvey_ops	RecordId	28		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	UnitID	29		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	UserName	30		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	TimeStamp	31		YES	datetime						3			
Import	tblGeo_QCSurvey_ops	vchTeam	32		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	vchGPSFileName	33		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	Static_Test_Item_Height	34		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	Test_Item	35		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	iStaticPreLineNum	36		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	iStaticSpikeLineNum	37		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	iStaticPostLineNum	38		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	iPersonnelLineNum	39		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	iTowVehicleLineNum	40		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	ftStaticSpike	41		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	ftStaticBackground	42		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	IVSLocation_ID	43		YES	varchar	255	255							
Import	tblGeo_QCSurvey_ops	iIVSBkgLineNum	44		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	vchDateCollected	45		YES	datetime						3			
Import	tblGeo_QCSurvey_ops	dtRecMod	46	(getdate())	YES	datetime						3			
Import	tblGeo_QCSurvey_ops	UploadtoDB	47		YES	varchar	1	1							
Import	tblGeo_QCSurvey_ops	Gen_vchGeoQCSurveyNotes	48		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	Gen_vchWeather	49		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	s_Generation	50		YES	float			53	2					
Import	tblGeo_QCSurvey_ops	s_GUID	51		NO	uniqueidentifier							PK_tblGeoQCSurvey_ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCSurvey_ops	vchContractor	52		YES	nvarchar	50	100							
Import	tblGeo_Defaults	guidGeoDefaultsID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_Defaults	CableShakeTol	2		YES	float			53	2					
Import	tblGeo_Defaults	CableShakePercent	3		YES	float			53	2					
Import	tblGeo_Defaults	PersonnelTol	4		YES	float			53	2					
Import	tblGeo_Defaults	PersonnelPercent	5		YES	float			53	2					
Import	tblGeo_Defaults	TowVehicleTol	6		YES	float			53	2					
Import	tblGeo_Defaults	TowVehiclePercent	7		YES	float			53	2					
Import	tblGeo_Defaults	StaticBkgTol	8		YES	float			53	2					
Import	tblGeo_Defaults	StaticBkgPercent	9		YES	float			53	2					
Import	tblGeo_Defaults	StaticSpikeTol	10		YES	float			53	2					
Import	tblGeo_Defaults	StaticSpikePercent	11		YES	float			53	2					
Import	tblGeo_Defaults	IVSBkgTol	12		YES	float			53	2					
Import	tblGeo_Defaults	IVSBkgPercent	13		YES	float			53	2					
Import	tblGeo_Defaults	IVSResponseTol	14		YES	float			53	2					
Import	tblGeo_Defaults	IVSPositionTol	15		YES	float			53	2					
Import	tblGeo_Defaults	GPSPostionTol	16		YES	float			53	2					
Import	tblGeo_Defaults	CoverageTolAPP	17		YES	float			53	2					
Import	tblGeo_Defaults	CoverageTolATA	18		YES	float			53	2					
Import	tblGeo_Defaults	CoveragePercentAPP	19		YES	float			53	2					
Import	tblGeo_Defaults	CoveragePercentATA	20		YES	float			53	2					
Import	tblGeo_Defaults	CoverageTolBPP	21		YES	float			53	2					
Import	tblGeo_Defaults	CoverageTolBTA	22		YES	float			53	2					
Import	tblGeo_Defaults	CoveragePercentBPP	23		YES	float			53	2					
Import	tblGeo_Defaults	CoveragePercentBTA	24		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignTolAPP	25		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignTolATA	26		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignPercentAPP	27		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignPercentATA	28		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignTolBPP	29		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignTolBTA	30		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignPercentBPP	31		YES	float			53	2					
Import	tblGeo_Defaults	CoverageDesignPercentBTA	32		YES	float			53	2					
Import	tblGeo_Defaults	ProjectCoordinateSystem	33		YES	varchar	255	255							
Import	tblGeo_Defaults	VelocityTol	34		YES	float			53	2					
Import	tblGeo_Defaults	VelocityPercent	35		YES	float			53	2					
Import	tblGeo_Defaults	AlongLineDensityPercent	36		YES	float			53	2					
Import	tblGeo_Defaults	AlongLineDensityTol	37		YES	float			53	2					
Import	tblGeo_Defaults	ProcFormDriftCorrMethod	38		YES	varchar	255	255							
Import	tblGeo_Defaults	ProcFormLagValue	39		YES	varchar	255	255							
Import	tblGeo_Defaults	ProcFormDeSpikingInfo	40		YES	varchar	255	255							
Import	tblGeo_Defaults	ProcFormLineBreakInfo	41		YES	varchar	255	255							
Import	tblGeo_Defaults	ProcFormProcessingComments	42		YES	varchar	-1	-1							
Import	tblGeo_Defaults	dtRecMod	43	(getdate())	YES	datetime						3			
Import	tblGeo_Defaults	RecordID	44		YES	float			53	2					
Import	tblGeo_Defaults	Gen_ProcFormProcessingComments	45		YES	float			53	2					
Import	tblGeo_Defaults	s_Generation	46		YES	float			53	2					
Import	tblGeo_Defaults	s_GUID	47		NO	uniqueidentifier							PK_tblGeo_Defaults	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_Defaults	vchContractor	48		YES	nvarchar	50	100							
Import	tblGeo_GPSControlPoint	guidGeoGPSControlPointID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_GPSControlPoint	vchPointLocationID	2		YES	varchar	50	50							
Import	tblGeo_GPSControlPoint	ftKnownEasting	3		YES	float			53	2					
Import	tblGeo_GPSControlPoint	ftKnownNorthing	4		YES	float			53	2					
Import	tblGeo_GPSControlPoint	vchPointLocationName	5		YES	varchar	255	255							
Import	tblGeo_GPSControlPoint	Comments	6		YES	varchar	-1	-1							
Import	tblGeo_GPSControlPoint	dtRecMod	7	(getdate())	YES	datetime						3			
Import	tblGeo_GPSControlPoint	Gen_Comments	8		YES	float			53	2					
Import	tblGeo_GPSControlPoint	s_Generation	9		YES	float			53	2					
Import	tblGeo_GPSControlPoint	s_GUID	10		NO	uniqueidentifier							PK_tblGeo_GPSControlPoint	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_GPSControlPoint	vchContractor	11		YES	nvarchar	50	100							
Import	tblGeo_QCCableShake	guidGeoQCCableShakeID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCCableShake	vchQCFileName	2		YES	varchar	50	50							
Import	tblGeo_QCCableShake	Sensor_ID	3		YES	varchar	50	50							
Import	tblGeo_QCCableShake	iCableShakeLineID	4		YES	float			53	2					
Import	tblGeo_QCCableShake	Response_Ch1	5		YES	float			53	2					
Import	tblGeo_QCCableShake	Response_Ch2	6		YES	float			53	2					
Import	tblGeo_QCCableShake	Response_Ch3	7		YES	float			53	2					
Import	tblGeo_QCCableShake	Response_Ch4	8		YES	float			53	2					
Import	tblGeo_QCCableShake	PercentInTol_Ch1	9		YES	float			53	2					
Import	tblGeo_QCCableShake	PercentInTol_Ch2	10		YES	float			53	2					
Import	tblGeo_QCCableShake	PercentInTol_Ch3	11		YES	float			53	2					
Import	tblGeo_QCCableShake	PercentInTol_Ch4	12		YES	float			53	2					
Import	tblGeo_QCCableShake	QCStatus_Ch1	13		YES	varchar	50	50							
Import	tblGeo_QCCableShake	QCStatus_Ch2	14		YES	varchar	50	50							
Import	tblGeo_QCCableShake	QCStatus_Ch3	15		YES	varchar	50	50							
Import	tblGeo_QCCableShake	QCStatus_Ch4	16		YES	varchar	50	50							
Import	tblGeo_QCCableShake	Comments	17		YES	varchar	-1	-1							
Import	tblGeo_QCCableShake	dtRecMod	18	(getdate())	YES	datetime						3			
Import	tblGeo_QCCableShake	RecordID	19		YES	float			53	2					
Import	tblGeo_QCCableShake	Gen_Comments	20		YES	float			53	2					
Import	tblGeo_QCCableShake	s_Generation	21		YES	float			53	2					
Import	tblGeo_QCCableShake	s_GUID	22		NO	uniqueidentifier							PK_tblGeo_QCCableShake	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCCableShake	vchContractor	23		YES	nvarchar	50	100							
Import	tblGeo_QCGPSCheck	guidGeoQCGPSCheckID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCGPSCheck	ID	2		YES	float			53	2					
Import	tblGeo_QCGPSCheck	vchGPSFileName	3		YES	varchar	255	255							
Import	tblGeo_QCGPSCheck	vchPointLocationID	4		YES	varchar	50	50							
Import	tblGeo_QCGPSCheck	ftRecordedNorthing	5		YES	float			53	2					
Import	tblGeo_QCGPSCheck	ftRecordedEasting	6		YES	float			53	2					
Import	tblGeo_QCGPSCheck	ftKnownNorthing	7		YES	float			53	2					
Import	tblGeo_QCGPSCheck	ftKnownEasting	8		YES	float			53	2					
Import	tblGeo_QCGPSCheck	ftDistanceOffset	9		YES	float			53	2					
Import	tblGeo_QCGPSCheck	QCStatus	10		YES	varchar	50	50							
Import	tblGeo_QCGPSCheck	Comments	11		YES	varchar	-1	-1							
Import	tblGeo_QCGPSCheck	dtRecMod	12	(getdate())	YES	datetime						3			
Import	tblGeo_QCGPSCheck	Gen_Comments	13		YES	float			53	2					
Import	tblGeo_QCGPSCheck	s_Generation	14		YES	float			53	2					
Import	tblGeo_QCGPSCheck	s_GUID	15		NO	uniqueidentifier							PK_tblGeo_QCGPSCheck	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCGPSCheck	vchContractor	16		YES	nvarchar	50	100							
Import	tblGeo_QCIVSBackground	guidGeoQCIVSBackgroundID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCIVSBackground	vchIVSFileName	2		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	iIVSBkgLineID	3		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Sensor_ID	4		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	Bkg_Response_Ch1	5		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_Response_Ch2	6		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_Response_Ch3	7		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_Response_Ch4	8		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch1	9		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch2	10		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch3	11		YES	float			53	2					
Import	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch4	12		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGeo_QCIVSBackground	QCStatus_Ch1	13		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	QCStatus_Ch2	14		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	QCStatus_Ch3	15		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	QCStatus_Ch4	16		YES	varchar	50	50							
Import	tblGeo_QCIVSBackground	Comments	17		YES	varchar	-1	-1							
Import	tblGeo_QCIVSBackground	RecordID	18		YES	float			53	2					
Import	tblGeo_QCIVSBackground	dtRecMod	19	(getdate())	YES	datetime						3			
Import	tblGeo_QCIVSBackground	Gen_Comments	20		YES	float			53	2					
Import	tblGeo_QCIVSBackground	s_Generation	21		YES	float			53	2					
Import	tblGeo_QCIVSBackground	s_GUID	22		NO	uniqueidentifier							PK_tblGeo_QCIVSBackground	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCIVSBackground	vchContractor	23		YES	nvarchar	50	100							
Import	tblGeo_QCIVSResponse	guidGeoQCIVSResponseID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCIVSResponse	vchIVSFileName	2		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	iIVSLineNum	3		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Sensor_ID	4		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	Test_Item	5		YES	varchar	255	255							
Import	tblGeo_QCIVSResponse	Spike_Response_Ch1	6		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Spike_Response_Ch2	7		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Spike_Response_Ch3	8		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Spike_Response_Ch4	9		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Delta_Response_Ch1	10		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Delta_Response_Ch2	11		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Delta_Response_Ch3	12		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Delta_Response_Ch4	13		YES	float			53	2					
Import	tblGeo_QCIVSResponse	ftRecordedNorthing	14		YES	float			53	2					
Import	tblGeo_QCIVSResponse	ftRecordedEasting	15		YES	float			53	2					
Import	tblGeo_QCIVSResponse	X_Offset	16		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Y_Offset	17		YES	float			53	2					
Import	tblGeo_QCIVSResponse	Offset	18		YES	float			53	2					
Import	tblGeo_QCIVSResponse	QCStatus_Ch1	19		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	QCStatus_Ch2	20		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	QCStatus_Ch3	21		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	QCStatus_Ch4	22		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	QCStatus_Offset	23		YES	varchar	50	50							
Import	tblGeo_QCIVSResponse	Comments	24		YES	varchar	-1	-1							
Import	tblGeo_QCIVSResponse	RecordID	25		YES	float			53	2					
Import	tblGeo_QCIVSResponse	dtRecMod	26	(getdate())	YES	datetime						3			
Import	tblGeo_QCIVSResponse	Gen_Comments	27		YES	float			53	2					
Import	tblGeo_QCIVSResponse	s_Generation	28		YES	float			53	2					
Import	tblGeo_QCIVSResponse	s_GUID	29		NO	uniqueidentifier							PK_tblGeo_QCIVSResponse	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCIVSResponse	vchContractor	30		YES	nvarchar	50	100							
Import	tblGeo_QCPersonnel	guidGeoQCPersonnelID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCPersonnel	vchQCFileName	2		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	Sensor_ID	3		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	iPersonnelLineID	4		YES	float			53	2					
Import	tblGeo_QCPersonnel	Response_Ch1	5		YES	float			53	2					
Import	tblGeo_QCPersonnel	Response_Ch2	6		YES	float			53	2					
Import	tblGeo_QCPersonnel	Response_Ch3	7		YES	float			53	2					
Import	tblGeo_QCPersonnel	Response_Ch4	8		YES	float			53	2					
Import	tblGeo_QCPersonnel	PercentInTol_Ch1	9		YES	float			53	2					
Import	tblGeo_QCPersonnel	PercentInTol_Ch2	10		YES	float			53	2					
Import	tblGeo_QCPersonnel	PercentInTol_Ch3	11		YES	float			53	2					
Import	tblGeo_QCPersonnel	PercentInTol_Ch4	12		YES	float			53	2					
Import	tblGeo_QCPersonnel	QCStatus_Ch1	13		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	QCStatus_Ch2	14		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	QCStatus_Ch3	15		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	QCStatus_Ch4	16		YES	varchar	50	50							
Import	tblGeo_QCPersonnel	Comments	17		YES	varchar	-1	-1							
Import	tblGeo_QCPersonnel	RecordID	18		YES	float			53	2					
Import	tblGeo_QCPersonnel	dtRecMod	19	(getdate())	YES	datetime						3			
Import	tblGeo_QCPersonnel	Gen_Comments	20		YES	float			53	2					
Import	tblGeo_QCPersonnel	s_Generation	21		YES	float			53	2					
Import	tblGeo_QCPersonnel	s_GUID	22		NO	uniqueidentifier							PK_tblGeo_QCPersonnel	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCPersonnel	vchContractor	23		YES	nvarchar	50	100							
Import	tblGeo_QCSeedItems	guidGeoQCSeedItemsID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCSeedItems	QCSeedType	2		YES	varchar	255	255							
Import	tblGeo_QCSeedItems	Sensor_ID	3		YES	varchar	50	50							
Import	tblGeo_QCSeedItems	vchSurveyInstr	4		YES	varchar	25	25							
Import	tblGeo_QCSeedItems	Response_Value_CH1	5		YES	numeric			10	10	2				
Import	tblGeo_QCSeedItems	Response_Value_CH2	6		YES	numeric			10	10	2				
Import	tblGeo_QCSeedItems	Response_Value_CH3	7		YES	numeric			10	10	2				
Import	tblGeo_QCSeedItems	Response_Value_CH4	8		YES	numeric			10	10	2				
Import	tblGeo_QCSeedItems	ftKnownEasting	9		YES	float			53	2					
Import	tblGeo_QCSeedItems	ftKnownNorthing	10		YES	float			53	2					
Import	tblGeo_QCSeedItems	Test_Item	11		YES	varchar	255	255							
Import	tblGeo_QCSeedItems	IVSLocation_ID	12		YES	varchar	255	255							
Import	tblGeo_QCSeedItems	Static_Test_Item_Height	13		YES	decimal			18	10	2				
Import	tblGeo_QCSeedItems	dtRecMod	14	(getdate())	YES	datetime						3			
Import	tblGeo_QCSeedItems	RecordID	15		YES	float			53	2					
Import	tblGeo_QCSeedItems	s_Generation	16		YES	float			53	2					
Import	tblGeo_QCSeedItems	s_GUID	17		NO	uniqueidentifier							PK_tblGeo_QCSeedItems	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCSeedItems	vchContractor	18		YES	nvarchar	50	100							
Import	tblGeo_QCStatic	guidGeoQCStaticID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCStatic	vchQCFileName	2		YES	varchar	50	50							
Import	tblGeo_QCStatic	iStaticPreLineID	3		YES	float			53	2					
Import	tblGeo_QCStatic	iStaticSpikeLineID	4		YES	float			53	2					
Import	tblGeo_QCStatic	iStaticPostLineID	5		YES	float			53	2					
Import	tblGeo_QCStatic	Test_Item	6		YES	varchar	255	255							
Import	tblGeo_QCStatic	Sensor_ID	7		YES	varchar	50	50							
Import	tblGeo_QCStatic	PreBkg_Response_Ch1	8		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_Response_Ch2	9		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_Response_Ch3	10		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_Response_Ch4	11		YES	float			53	2					
Import	tblGeo_QCStatic	Spike_Response_CH1	12		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Spike_Response_CH2	13		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Spike_Response_CH3	14		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Spike_Response_CH4	15		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	PostBkg_Response_Ch1	16		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_Response_Ch2	17		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_Response_Ch3	18		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_Response_Ch4	19		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_PercentInTol_Ch1	20		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_PercentInTol_Ch2	21		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_PercentInTol_Ch3	22		YES	float			53	2					
Import	tblGeo_QCStatic	PreBkg_PercentInTol_Ch4	23		YES	float			53	2					
Import	tblGeo_QCStatic	Spike_PercentInTol_Ch1	24		YES	float			53	2					
Import	tblGeo_QCStatic	Spike_PercentInTol_Ch2	25		YES	float			53	2					
Import	tblGeo_QCStatic	Spike_PercentInTol_Ch3	26		YES	float			53	2					
Import	tblGeo_QCStatic	Spike_PercentInTol_Ch4	27		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_PercentInTol_Ch1	28		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_PercentInTol_Ch2	29		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_PercentInTol_Ch3	30		YES	float			53	2					
Import	tblGeo_QCStatic	PostBkg_PercentInTol_Ch4	31		YES	float			53	2					
Import	tblGeo_QCStatic	Static_Test_Item_Height	32		YES	numeric			10	10	2				
Import	tblGeo_QCStatic	Static_Response_CH1	33		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Static_Response_CH2	34		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Static_Response_CH3	35		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	Static_Response_CH4	36		YES	decimal			18	10	2				
Import	tblGeo_QCStatic	QCStatus_Ch1	37		YES	varchar	50	50							
Import	tblGeo_QCStatic	QCStatus_Ch2	38		YES	varchar	50	50							
Import	tblGeo_QCStatic	QCStatus_Ch3	39		YES	varchar	50	50							
Import	tblGeo_QCStatic	QCStatus_Ch4	40		YES	varchar	50	50							
Import	tblGeo_QCStatic	Comments	41		YES	varchar	-1	-1							
Import	tblGeo_QCStatic	RecordID	42		YES	float			53	2					
Import	tblGeo_QCStatic	dtRecMod	43	(getdate())	YES	datetime						3			
Import	tblGeo_QCStatic	Gen_Comments	44		YES	float			53	2					
Import	tblGeo_QCStatic	s_Generation	45		YES	float			53	2					
Import	tblGeo_QCStatic	s_GUID	46		NO	uniqueidentifier							PK_tblGeo_QCStatic	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCStatic	vchContractor	47		YES	nvarchar	50	100							
Import	tblGeo_QCTowVehicle	guidGeoQCTowVehicleID	1	(newid())	NO	uniqueidentifier									
Import	tblGeo_QCTowVehicle	vchQCFileName	2		YES	varchar	50	50							
Import	tblGeo_QCTowVehicle	Sensor_ID	3		YES	varchar	50	50							
Import	tblGeo_QCTowVehicle	iTowVehicleLineID	4		YES	float			53	2					
Import	tblGeo_QCTowVehicle	Response_Ch1	5		YES	float			53	2					
Import	tblGeo_QCTowVehicle	Response_Ch2	6		YES	float			53	2					
Import	tblGeo_QCTowVehicle	Response_Ch3	7		YES	float			53	2					
Import	tblGeo_QCTowVehicle	Response_Ch4	8		YES	float			53	2					
Import	tblGeo_QCTowVehicle	PercentInTol_Ch1	9		YES	float			53	2					
Import	tblGeo_QCTowVehicle	PercentInTol_Ch2	10		YES	float			53	2					
Import	tblGeo_QCTowVehicle	PercentInTol_Ch3	11		YES	float			53	2					
Import	tblGeo_QCTowVehicle	PercentInTol_Ch4	12		YES	float			53	2					
Import	tblGeo_QCTowVehicle	QCStatus_Ch1	13		YES	varchar	50	50							
Import	tblGeo_QCTowVehicle	QCStatus_Ch2	14		YES	varchar	50	50							
Import	tblGeo_QCTowVehicle	QCStatus_Ch3	15		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGeo_QCTowVehicle	QCStatus_Ch4	16		YES	varchar	50	50							
Import	tblGeo_QCTowVehicle	Comments	17		YES	varchar	-1	-1							
Import	tblGeo_QCTowVehicle	RecordID	18		YES	float			53	2					
Import	tblGeo_QCTowVehicle	dtRecMod	19	(getdate())	YES	datetime						3			
Import	tblGeo_QCTowVehicle	Gen_Comments	20		YES	float			53	2					
Import	tblGeo_QCTowVehicle	s_Generation	21		YES	float			53	2					
Import	tblGeo_QCTowVehicle	s_GUID	22		NO	uniqueidentifier							PK_tblGeo_QCTowVehicle	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGeo_QCTowVehicle	vchContractor	23		YES	nvarchar	50	100							
Import	tblDemo_Ops	guidDemoOp	1	(newid())	YES	uniqueidentifier									
Import	tblDemo_Ops	dtDemo	2		YES	smalldatetime						0			
Import	tblDemo_Ops	iQtyOEDemoed	3		YES	int			10	10	0				
Import	tblDemo_Ops	vchCondition	4		YES	nvarchar	25	50							
Import	tblDemo_Ops	txReviewComments	5		YES	nvarchar	-1	-1							
Import	tblDemo_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Import	tblDemo_Ops	dtQC	7		YES	datetime						3			
Import	tblDemo_Ops	biDEQCChecked	8		YES	bit									
Import	tblDemo_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Import	tblDemo_Ops	biDiscrepancy	10		YES	bit									
Import	tblDemo_Ops	vchFinalDisposition	11		YES	varchar	50	50							
Import	tblDemo_Ops	dtRecMod	12	(getdate())	YES	datetime						3			
Import	tblDemo_Ops	Gen_txReviewComments	13		YES	float			53	2					
Import	tblDemo_Ops	s_Generation	14		YES	float			53	2					
Import	tblDemo_Ops	s_GUID	15		NO	uniqueidentifier							PK_tblDemo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Import	tblField_Teamleader_Logbook	vchUserName	1		NO	nvarchar	50	100							
Import	tblField_Teamleader_Logbook	dtTimeStamp	2		YES	datetime						3			
Import	tblField_Teamleader_Logbook	dtWorkDate	3		YES	smalldatetime						0			
Import	tblField_Teamleader_Logbook	dtWorkTime	4		YES	datetime						3			
Import	tblField_Teamleader_Logbook	vchTeam	5		YES	nvarchar	10	20							
Import	tblField_Teamleader_Logbook	vchTeamLeader	6		YES	nvarchar	50	100							
Import	tblField_Teamleader_Logbook	vchTeamMember	7		YES	nvarchar	-1	-1							
Import	tblField_Teamleader_Logbook	vchSite	8		YES	nvarchar	50	100							
Import	tblField_Teamleader_Logbook	txLogEntry	9		YES	nvarchar	1000	2000							
Import	tblField_Teamleader_Logbook	biQCReviewPassed	10		YES	bit									
Import	tblField_Teamleader_Logbook	txQCReviewComments	11		YES	nvarchar	1000	2000							
Import	tblField_Teamleader_Logbook	RecordId	12		YES	float			53	2					
Import	tblField_Teamleader_Logbook	UnitID	13		YES	float			53	2					
Import	tblField_Teamleader_Logbook	UserName	14		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	TimeStamp	15		YES	datetime						3			
Import	tblField_Teamleader_Logbook	vchEMOp	16		YES	varchar	50	50							
Import	tblField_Teamleader_Logbook	vchTestItemmV	17		YES	varchar	50	50							
Import	tblField_Teamleader_Logbook	vchAnalogInstChk	18		YES	varchar	50	50							
Import	tblField_Teamleader_Logbook	dtWorkTimeEnd	19		YES	datetime						3			
Import	tblField_Teamleader_Logbook	Remarks	20		YES	varchar	-1	-1							
Import	tblField_Teamleader_Logbook	WorkCategory	21		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	vchQCInitials	22		YES	varchar	5	5							
Import	tblField_Teamleader_Logbook	dtQC	23		YES	datetime						3			
Import	tblField_Teamleader_Logbook	txModNotes	24		YES	varchar	-1	-1							
Import	tblField_Teamleader_Logbook	Completed_Datasets	25		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	Partial_Datasets	26		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	Datasets_Comp_frm_Partial	27		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	Grids_Reacquired	28		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	Number_Targets_Reacquired	29		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	Standby_Time	30		YES	varchar	255	255							
Import	tblField_Teamleader_Logbook	dtRecMod	31	(getdate())	YES	datetime						3			
Import	tblField_Teamleader_Logbook	UploadtoDB	32		YES	varchar	50	50							
Import	tblField_Teamleader_Logbook	Gen_Remarks	33		YES	float			53	2					
Import	tblField_Teamleader_Logbook	Gen_txLogEntry	34		YES	float			53	2					
Import	tblField_Teamleader_Logbook	Gen_txModNotes	35		YES	float			53	2					
Import	tblField_Teamleader_Logbook	Gen_vchTeamLeader	36		YES	float			53	2					
Import	tblField_Teamleader_Logbook	Gen_vchTeamMember	37		YES	float			53	2					
Import	tblField_Teamleader_Logbook	s_Generation	38		YES	float			53	2					
Import	tblField_Teamleader_Logbook	s_GUID	39		NO	uniqueidentifier							PK_tblField_Teamleader_Logbook	PK	PRIMARY_KEY_CONSTRAINT
Import	tblField_Teamleader_Logbook	guidFieldTeamleaderLogbook	40		YES	uniqueidentifier									
Import	tblField_Teamleader_Logbook	vchContractor	41		YES	nvarchar	50	100							
Import	tblGrid_Alias	vchGridAlias	1		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Alias	vchSite	2		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Alias	vchGridID	3		NO	nvarchar	50	100							
Import	tblGrid_Alias	guidGrid	4	(newid())	NO	uniqueidentifier							PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_Alias	vchContractor	5		YES	nvarchar	50	100							
Import	tblGrid_DgmData_QC	guidGridDgmDataQCID	1	(newid())	NO	uniqueidentifier									
Import	tblGrid_DgmData_QC	GridID	2		YES	varchar	10	10							
Import	tblGrid_DgmData_QC	vchGridBlockID	3		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DateDataQC	4		YES	datetime						3			
Import	tblGrid_DgmData_QC	QCPerfBy	5		YES	varchar	20	20							
Import	tblGrid_DgmData_QC	RawDataDeliv	6		YES	bit									
Import	tblGrid_DgmData_QC	RawDataDelivComm	7		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	RawDataDelivRes	8		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	FinDataPkgSub	9		YES	bit									
Import	tblGrid_DgmData_QC	LineDataEdit	10		YES	bit									
Import	tblGrid_DgmData_QC	LineDataEditComm	11		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	LineDataEditRes	12		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	FieldLogComp	13		YES	bit									
Import	tblGrid_DgmData_QC	FieldLogCompComm	14		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	FieldLogCompRes	15		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	StatCheckTol	16		YES	bit									
Import	tblGrid_DgmData_QC	StatCheckTolComm	17		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	StatCheckTolRes	18		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DynDetRepTol	19		YES	bit									
Import	tblGrid_DgmData_QC	DynDetRepTolComm	20		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DynDetRepTolRes	21		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DynPosRep	22		YES	bit									
Import	tblGrid_DgmData_QC	DynPosRepComm	23		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DynPosRepRes	24		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	VelTolAcc	25		YES	bit									
Import	tblGrid_DgmData_QC	VelTolComm	26		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	VelTolRes	27		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcNoiseAcc	28		YES	bit									
Import	tblGrid_DgmData_QC	ProcNoiseComm	29		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcNoiseRes	30		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TrackSampAcc	31		YES	bit									
Import	tblGrid_DgmData_QC	TrackSampComm	32		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TrackSampRes	33		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DataLev	34		YES	bit									
Import	tblGrid_DgmData_QC	DataLevComm	35		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DataLevRes	36		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	LagCorrPerf	37		YES	bit									
Import	tblGrid_DgmData_QC	LagCorrPerfComm	38		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	LagCorrPerfRes	39		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TrackCovComp	40		YES	bit									
Import	tblGrid_DgmData_QC	TrackCovComm	41		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	CoverCompQCRes	42		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	XYZCorr	43		YES	bit									
Import	tblGrid_DgmData_QC	XYZCorrComm	44		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	XYZCorrRes	45		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcDataOther	46		YES	bit									
Import	tblGrid_DgmData_QC	ProcDataOtherComm	47		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcDataOtherRes	48		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	SeedDetTarg	49		YES	bit									
Import	tblGrid_DgmData_QC	SeedDetTargComm	50		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	SeedDetTargRes	51		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	MapPlot	52		YES	bit									
Import	tblGrid_DgmData_QC	MapPlotComm	53		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	MapPlotRes	54		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargListMatch	55		YES	bit									
Import	tblGrid_DgmData_QC	LegFormat	56		YES	bit									
Import	tblGrid_DgmData_QC	TargListMatchComm	57		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	LegFormatComm	58		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargListMatchRes	59		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	LegFormatRes	60		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargOutBoundRem	61		YES	bit									
Import	tblGrid_DgmData_QC	ColorBar	62		YES	bit									
Import	tblGrid_DgmData_QC	TargOutBoundRemComm	63		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ColorBarComm	64		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargOutBoundRemRes	65		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ColorBarRes	66		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcNoteTargSel	67		YES	bit									
Import	tblGrid_DgmData_QC	CultLabel	68		YES	bit									
Import	tblGrid_DgmData_QC	ProcNoteTargSelComm	69		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	CultLabelComm	70		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	ProcNoteTargSelRes	71		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	CultLabelRes	72		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargLabel	73		YES	bit									
Import	tblGrid_DgmData_QC	StatePlane	74		YES	bit									
Import	tblGrid_DgmData_QC	TargLabelComm	75		YES	varchar	255	255							

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TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblGrid_DgmData_QC	StatePlaneComm	76		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargLabelRes	77		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	StatePlaneRes	78		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargSortAmp	79		YES	bit									
Import	tblGrid_DgmData_QC	OtherMap	80		YES	bit									
Import	tblGrid_DgmData_QC	TargSortAmpComm	81		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	OtherMapComm	82		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargSortAmpRes	83		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	OtherMapRes	84		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargSelecOther	85		YES	bit									
Import	tblGrid_DgmData_QC	DataReas	86		YES	bit									
Import	tblGrid_DgmData_QC	TargSelecOtherComm	87		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DataReasComm	88		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	TargSelecOtherRes	89		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	DataReasRes	90		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	QCRevRepComp	91		YES	bit									
Import	tblGrid_DgmData_QC	QCRevRepCompComm	92		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	QCRevRepCompRes	93		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	QCActionReq	94		YES	bit									
Import	tblGrid_DgmData_QC	QCActionReqComm	95		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	QCActionReqRes	96		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	AddQCComm	97		YES	varchar	-1	-1							
Import	tblGrid_DgmData_QC	AnomLabCorr	98		YES	bit									
Import	tblGrid_DgmData_QC	AnomLabCorrComm	99		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	AnomLabCorrRes	100		YES	varchar	255	255							
Import	tblGrid_DgmData_QC	dtRecMod	101	(getdate())	YES	datetime						3			
Import	tblGrid_DgmData_QC	Gen_AddQCComm	102		YES	float			53	2					
Import	tblGrid_DgmData_QC	s_Generation	103		YES	float			53	2					
Import	tblGrid_DgmData_QC	s_GUID	104		NO	uniqueidentifier							PK_tblGrid_DgmData_QC	PK	PRIMARY_KEY_CONSTRAINT
Import	tblGrid_DgmData_QC	vchContractor	105		YES	nvarchar	50	100							
Import	tblSite	vchSite	1		NO	nvarchar	50	100					PK_tblSites	PK	PRIMARY_KEY_CONSTRAINT
Import	tblSite	vchSiteDesc	2		YES	nvarchar	255	510							
Import	tblSite	ftPerimeter	3		YES	float			53	2					
Import	tblSite	ftArea	4		YES	float			53	2					
Import	tblSite	vchComments	5		YES	nvarchar	255	510							
Import	tblSite	vchContractor	6		YES	nvarchar	50	100							
Import	tblSite_Feature_Data	guidSiteFeatureDataID	1	(newid())	YES	uniqueidentifier									
Import	tblSite_Feature_Data	RecordId	2		YES	float			53	2					
Import	tblSite_Feature_Data	UnitID	3		YES	float			53	2					
Import	tblSite_Feature_Data	UserName	4		YES	varchar	255	255							
Import	tblSite_Feature_Data	TimeStamp	5		YES	datetime						3			
Import	tblSite_Feature_Data	dtWorkDate	6		YES	datetime						3			
Import	tblSite_Feature_Data	vchTeam	7		YES	nvarchar	255	510							
Import	tblSite_Feature_Data	CultDesc	8		YES	varchar	64	64							
Import	tblSite_Feature_Data	GetGPS	9		YES	varchar	255	255							
Import	tblSite_Feature_Data	Latitude	10		YES	varchar	255	255							
Import	tblSite_Feature_Data	Longitude	11		YES	varchar	255	255							
Import	tblSite_Feature_Data	Altitude	12		YES	varchar	255	255							
Import	tblSite_Feature_Data	dtRecMod	13	(getdate())	YES	datetime						3			
Import	tblSite_Feature_Data	UploadtoDB	14		YES	varchar	1	1							
Import	tblSite_Feature_Data	s_Generation	15		YES	float			53	2					
Import	tblSite_Feature_Data	s_GUID	16		NO	uniqueidentifier							PK_tblSite_Feature_Data	PK	PRIMARY_KEY_CONSTRAINT
Import	tblSite_Feature_Data	vchContractor	17		YES	nvarchar	50	100							
Import	tblSites_Grid_Lnk	vchSite	1		NO	nvarchar	50	100							
Import	tblSites_Grid_Lnk	vchGridID	2		NO	nvarchar	50	100							
Import	tblSites_Grid_Lnk	ftArea	3		YES	float			53	2					
Import	tblSites_Grid_Lnk	dtVegetationRemoval	4		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtGridSurvey	5		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtSurfaceRemoval	6		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtGeoSurvey	7		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtRawDataDelivered	8		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtProcessedDataDelivered	9		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtReacquisition	10		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtExcavation	11		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtSubsurfaceRemoval	12		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtAnalogRemoval	13		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC1PostXCheck	14		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC1Excavation	15		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC2DigitalQCSurvey	16		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC2RawDataDelivered	17		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC2ProcessedDataDelivered	18		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC2Reacquisition	19		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC2DigitalExcavation	20		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQC3AnalogInspection	21		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQCDigital	22		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQAAnalog	23		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtQADigital	24		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	dtModified	25		YES	smalldatetime						0			
Import	tblSites_Grid_Lnk	vchComments	26		YES	nvarchar	255	510							
Import	tblSites_Grid_Lnk	vchContractor	27		YES	nvarchar	50	100							
Import	tblTableDictionary	iColumnID	1		NO	int			10	10	0				
Import	tblTableDictionary	vchColumnName	2		YES	nvarchar	50	100							
Import	tblTableDictionary	iTableID	3		NO	int			10	10	0				
Import	tblTableDictionary	vchTableName	4		YES	nvarchar	50	100							
Import	tblTableDictionary	iFieldType	5		YES	int			10	10	0				
Import	tblTableDictionary	vchFieldType	6		YES	nvarchar	50	100							
Import	tblTableDictionary	iFieldLength	7		YES	int			10	10	0				
Import	tblTableDictionary	biPrimaryKey	8		YES	bit									
Import	tblTableDictionary	vchRKeyTable	9		YES	nvarchar	50	100							
Import	tblTableDictionary	vchRKeyCol	10		YES	nvarchar	50	100							
Import	tblTableDictionary	vchColumnDescShort	11		YES	nvarchar	50	100							
Import	tblTableDictionary	vchColumnDescLong	12		YES	nvarchar	500	1000							
Import	tblTableDictionary	vchContractor	13		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	iColumnID	1		NO	int			10	10	0				
Import	tblTableDictionary_BAK	vchColumnName	2		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	iTableID	3		NO	int			10	10	0				
Import	tblTableDictionary_BAK	vchTableName	4		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	iFieldType	5		YES	int			10	10	0				
Import	tblTableDictionary_BAK	vchFieldType	6		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	iFieldLength	7		YES	int			10	10	0				
Import	tblTableDictionary_BAK	biPrimaryKey	8		YES	bit									
Import	tblTableDictionary_BAK	vchRKeyTable	9		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	vchRKeyCol	10		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	vchColumnDescShort	11		YES	nvarchar	50	100							
Import	tblTableDictionary_BAK	vchColumnDescLong	12		YES	nvarchar	500	1000							
Import	tblTableDictionary_BAK	vchContractor	13		YES	nvarchar	50	100							
Import	tblTableDictionary_Updated	iColumnID	1		YES	float			53	2					
Import	tblTableDictionary_Updated	vchColumnName	2		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	iTableID	3		YES	float			53	2					
Import	tblTableDictionary_Updated	vchTableName	4		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	iFieldType	5		YES	float			53	2					
Import	tblTableDictionary_Updated	vchFieldType	6		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	iFieldLength	7		YES	float			53	2					
Import	tblTableDictionary_Updated	biPrimaryKey	8		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	vchRKeyTable	9		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	vchRKeyCol	10		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	vchColumnDescShort	11		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	vchColumnDescLong	12		YES	nvarchar	255	510							
Import	tblTableDictionary_Updated	vchContractor	13		YES	nvarchar	50	100							
Import	tblveg_removal_ops	iVegRemovalOpID	1		NO	int			10	10	0				
Import	tblveg_removal_ops	dtWorkDate	2		YES	smalldatetime						0			
Import	tblveg_removal_ops	dtStartTime	3		YES	datetime						3			
Import	tblveg_removal_ops	dtEndTime	4		YES	datetime						3			
Import	tblveg_removal_ops	vchTeam	5		YES	nvarchar	25	50							
Import	tblveg_removal_ops	chOpCompleted	6		YES	char	1	1							
Import	tblveg_removal_ops	iTeamLeader	7		YES	int			10	10	0				
Import	tblveg_removal_ops	vchContractor	8		YES	nvarchar	20	40							
Import	tblveg_removal_ops	vchCostCode	9		YES	nvarchar	15	30							
Import	tblveg_removal_ops	iExcavationsTotal	10		YES	int			10	10	0				
Import	tblveg_removal_ops	ftNonOEScrapLBs	11		YES	float			53	2					
Import	tblveg_removal_ops	ftOEScrapLBs	12		YES	float			53	2					
Import	tblveg_removal_ops	iSlope	13		YES	int			10	10	0				
Import	tblveg_removal_ops	vchVegRemovalName	14		YES	nvarchar	50	100							
Import	tblveg_removal_ops	vchVegRemovalCode	15		YES	nvarchar	10	20							
Import	tblveg_removal_ops	vchSurveyInstr	16		YES	nvarchar	25	50							
Import	tblveg_removal_ops	vchVegSourceType	17		YES	nvarchar	50	100							
Import	tblveg_removal_ops	txOpNotes	18		YES	nvarchar	4000	8000							
Import	tblveg_removal_ops	dtDataEntered	19		YES	datetime						3			
Import	tblveg_removal_ops	vchDataEntry	20		YES	nvarchar	10	20							
Import	tblveg_removal_ops	vchDataSource	21		YES	nvarchar	150	300							
Import	tblveg_removal_ops	txReviewComments	22		YES	nvarchar	4000	8000							
Import	tblveg_removal_ops	vchQCInitials	23		YES	nvarchar	5	10							
Import	tblveg_removal_ops	dtQC	24		YES	datetime						3			
Import	tblveg_removal_ops	biDEQCChecked	25		YES	bit									

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TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Import	tblveg_removal_ops	vchDEQCInitials	26		YES	nvarchar	5	10							
Import	tblveg_removal_ops	txModNotes	27		YES	nvarchar	4000	8000							
Import	tblveg_removal_ops	biDiscrepancy	28		YES	bit									
Import	tmpAnomalyUpdate	iOeEncounteredId	1		NO	int			10	10	0				
Import	tmpAnomalyUpdate	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
Import	tmpAnomalyUpdate	iOpId	3		YES	bigint			19	10	0				
Import	tmpAnomalyUpdate	guidGOL	4		YES	uniqueidentifier									
Import	tmpAnomalyUpdate	DgmDig	5		NO	int			10	10	0				
Import	tmpAnomalyUpdate	QC	6		NO	int			10	10	0				
Import	tmpAnomalyUpdate	GeoPic	7		NO	int			10	10	0				
Import	tmpAnomalyUpdate	vchAnomalyId	8		YES	nvarchar	50	100							
Import	tmpAnomalyUpdate	guidAnomaly	9	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
Import	UpdateFields	vchTable	1		YES	nvarchar	50	100							
Import	UpdateFields	ID	2		YES	int			10	10	0				
Import	UpdateFields	vchField	3		YES	nvarchar	50	100							
Import	UpdateFields	vchDesc	4		YES	nvarchar	300	600							
Import	UpdateFields	maxNotes	5		YES	nvarchar	255	510							
Update	lkpCondition	vchCondition	1		NO	nvarchar	25	50					PK_lkpCondition	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpCondition	vchConditionDesc	2		YES	nvarchar	50	100							
Update	lkpDemo_Action	vchDemoAction	1		NO	nvarchar	50	100					PK_lkpDemo_Action	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpDemo_Action	vchDemoActionDesc	2		YES	nvarchar	250	500							
Update	lkpDisposition	vchDisposition	1		NO	nvarchar	30	60					PK_lkpDisposition	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpDisposition	vchDispositionDesc	2		YES	nvarchar	255	510							
Update	lkpGrid_Op_Type	vchGridOpType	1		NO	nvarchar	50	100					PK_lkpGrid_Op_Type	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpGrid_Type	vchGridType	1		NO	nvarchar	10	20					PK_lkpGrid_Type	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpMeasure_Type	vchMeasureType	1		NO	nvarchar	25	50					PK_lkpMeasure_Type	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpOE_models	iOEModelID	1		NO	int			10	10	0		PK_lkpOE_models	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpOE_models	vchOEModel	2		NO	nvarchar	255	510							
Update	lkpOE_models	vchOEModelDesc	3		YES	nvarchar	255	510							
Update	lkpOE_models	iRIACode	4		YES	int			10	10	0				
Update	lkpOE_models	vchOEFiller	5		YES	nvarchar	25	50							
Update	lkpOE_models	vchOECasing	6		YES	nvarchar	25	50							
Update	lkpOE_models	vchOEPurpose	7		YES	nvarchar	25	50							
Update	lkpOE_models	vchSource	8		YES	nvarchar	50	100							
Update	lkpOE_models	vchComments	9		YES	nvarchar	500	1000							
Update	lkpOE_models	ftNEW	10		YES	float			53	2					
Update	lkpOE_models	ftFillerWeight	11		YES	float			53	2					
Update	lkpOE_models	biCurrentlyInUse	12	((1))	YES	bit									
Update	lkpOE_models	biMasterPickList	13	((0))	YES	bit									
Update	lkpOE_models	biSensitiveFuze	14		YES	bit									
Update	lkpOE_models	DocFileName	15		YES	nvarchar	255	510							
Update	lkpOE_models	vchSize	16		YES	varchar	20	20							
Update	lkpOE_models	vchCategory	17		YES	varchar	20	20							
Update	lkpOE_Purpose	vchOEPurpose	1		NO	nvarchar	25	50					PK_lkpOE_Purpose	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpOE_Type	vchOEType	1		NO	nvarchar	10	20					PK_lkpOE_Type	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpOE_Type	vchOETypeDesc	2		YES	nvarchar	50	100							
Update	lkpRIA	iRIACode	1		NO	int			10	10	0		PK_lkpRIA	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpRIA	vchRIADesc	2		NO	nvarchar	255	510							
Update	lkpSite_type	ioeencounteredid	1		YES	bigint			19	10	0				
Update	lkpSite_type	vchSitetype	2		YES	varchar	50	50							
Update	lkpSite_type	vchSiteName	3		YES	varchar	50	50							
Update	lkpSurveyInstr	vchSurveyInstr	1		NO	nvarchar	25	50					PK_lkpSurveyInstr	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpSurveyInstr	vchSurveyInstrDesc	2		YES	nvarchar	255	510							
Update	lkpSurveyInstr	vchComments	3		YES	nvarchar	255	510							
Update	lkpTeam	vchTeam	1		NO	nvarchar	25	50					PK_lkpTeam	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpTeam	vchTeamType	2		YES	nvarchar	5	10							
Update	lkpTeam_Member	iMemberID	1		NO	int			10	10	0		PK_lkpTeam_Member	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpTeam_Member	vchOrgEmployeeID	2		YES	nvarchar	50	100							
Update	lkpTeam_Member	vchLastName	3		YES	nvarchar	50	100							
Update	lkpTeam_Member	vchFirstName	4		YES	nvarchar	50	100							
Update	lkpTeam_Member	vchMiddleName	5		YES	nvarchar	50	100							
Update	lkpTeam_Member	vchTeamType	6		YES	nvarchar	5	10							
Update	lkpTeam_Member	vchOrganization	7		YES	nvarchar	50	100							
Update	lkpTeam_Member	vchPosition	8		YES	nvarchar	50	100							
Update	lkpTeam_Type	vchTeamType	1		NO	nvarchar	5	10					PK_lkpTeam_Type	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpTeam_Type	vchTeamTypeDesc	2		YES	nvarchar	50	100							
Update	lkpTerrain	vchTerrainCode	1		NO	nvarchar	20	40					PK_lkpTerrain	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpTerrain	vchTerrainDescLong	2		YES	nvarchar	255	510							
Update	lkpTerrain	vchTerrainDescShort	3		YES	nvarchar	50	100							
Update	lkpUOM	vchUOM	1		NO	nvarchar	5	10					PK_lkpUOM	PK	PRIMARY_KEY_CONSTRAINT
Update	lkpUOM	vchUOMDesc	2		YES	nvarchar	25	50							
Update	lkpUOM	vchMeasureType	3		YES	nvarchar	25	50							
Update	tblGrid	guidGrid	1	(newid())	NO	uniqueidentifier							PK_tblGrid	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid	vchGridID	2		NO	nvarchar	50	100							
Update	tblGrid	vchGridIDShort	3		YES	nvarchar	10	20							
Update	tblGrid	vchGridDesc	4		YES	nvarchar	255	510							
Update	tblGrid	vchGridType	5		YES	varchar	50	50							
Update	tblGrid	ftArea	6		YES	float			53	2					
Update	tblGrid	vchComments	7		YES	nvarchar	255	510							
Update	tblGrid	Acreage	8		YES	numeric			10	10	2				
Update	tblGrid	Large_ID	9		YES	varchar	50	50							
Update	tblGrid	Medium_ID	10		YES	varchar	50	50							
Update	tblGrid	SW_X	11		YES	float			53	2					
Update	tblGrid	SW_Y	12		YES	float			53	2					
Update	tblGrid	UniqueGridID	13		YES	varchar	50	50							
Update	tblGrid	UnitID	14		YES	varchar	50	50							
Update	tblGrid	AnalSurfOpTeamID	15		YES	varchar	50	50							
Update	tblGrid	AnalSurfOpComp	16		YES	bit									
Update	tblGrid	DtAnalSurfOpComp	17		YES	datetime						3			
Update	tblGrid	AnalSurfOpCom	18		YES	varchar	255	255							
Update	tblGrid	AnalSurfOpQCTeamID	19		YES	varchar	255	255							
Update	tblGrid	AnalSurfOpQCComp	20		YES	bit									
Update	tblGrid	DtAnalSurfOpQCComp	21		YES	datetime						3			
Update	tblGrid	AnalSurfOpQCCom	22		YES	varchar	255	255							
Update	tblGrid	AnalSurfOpQATeamID	23		YES	varchar	255	255							
Update	tblGrid	AnalSurfOpQAComp	24		YES	bit									
Update	tblGrid	DtAnalSurfOpQAComp	25		YES	datetime						3			
Update	tblGrid	AnalSurfOpQACom	26		YES	varchar	255	255							
Update	tblGrid	AnalIntOpTeamID	27		YES	varchar	50	50							
Update	tblGrid	AnalIntOpComp	28		YES	bit									
Update	tblGrid	DtAnalIntOpComp	29		YES	datetime						3			
Update	tblGrid	AnalIntOpCom	30		YES	varchar	255	255							
Update	tblGrid	AnalIntOpQCTeamID	31		YES	varchar	255	255							
Update	tblGrid	AnalIntOpQCComp	32		YES	bit									
Update	tblGrid	DtAnalIntOpQCComp	33		YES	datetime						3			
Update	tblGrid	AnalIntOpQCCom	34		YES	varchar	255	255							
Update	tblGrid	AnalIntOpQATeamID	35		YES	varchar	255	255							
Update	tblGrid	AnalIntOpQAComp	36		YES	bit									
Update	tblGrid	DtAnalIntOpQAComp	37		YES	datetime						3			
Update	tblGrid	AnalIntOpQACom	38		YES	varchar	255	255							
Update	tblGrid	DGMArrayOpTeamID	39		YES	varchar	50	50							
Update	tblGrid	DGMArrayOpComp	40		YES	bit									
Update	tblGrid	DtDGMArrayOpComp	41		YES	datetime						3			
Update	tblGrid	DGMArrayOpCom	42		YES	varchar	255	255							
Update	tblGrid	DGMArrayDataProcComp	43		YES	bit									
Update	tblGrid	DtDGMArrayDataProcComp	44		YES	datetime						3			
Update	tblGrid	DGMArrayDataProcCom	45		YES	varchar	255	255							
Update	tblGrid	DGMArrayDataQCTeamID	46		YES	varchar	50	50							
Update	tblGrid	DGMArrayDataQCComp	47		YES	bit									
Update	tblGrid	DtDGMArrayDataQCComp	48		YES	datetime						3			
Update	tblGrid	DGMArrayDataQCCom	49		YES	varchar	255	255							
Update	tblGrid	DGMArrayDataQATeamID	50		YES	varchar	50	50							
Update	tblGrid	DGMArrayDataQAComp	51		YES	bit									
Update	tblGrid	DtDGMArrayDataQAComp	52		YES	datetime						3			
Update	tblGrid	DGMArrayDataQACom	53		YES	varchar	255	255							
Update	tblGrid	DGMPortOPTeamID	54		YES	varchar	50	50							
Update	tblGrid	DGMPortOpComp	55		YES	bit									
Update	tblGrid	DtDGMPortOpComp	56		YES	datetime						3			
Update	tblGrid	DGMPortOpCom	57		YES	varchar	255	255							
Update	tblGrid	DGMPortDataProcComp	58		YES	bit									
Update	tblGrid	DtDGMPortDataProcComp	59		YES	datetime						3			
Update	tblGrid	DGMPortDataProcCom	60		YES	varchar	255	255							
Update	tblGrid	DGMPortDataQCTeamID	61		YES	varchar	50	50							
Update	tblGrid	DGMPortDataQCComp	62		YES	bit									
Update	tblGrid	DtDGMPortDataQCComp	63		YES	datetime						3			
Update	tblGrid	DGMPortDataQCCom	64		YES	varchar	255	255							
Update	tblGrid	DGMPortDataQATeamID	65		YES	varchar	50	50							
Update	tblGrid	DGMPortDataQAComp	66		YES	bit									
Update	tblGrid	DtDGMPortDataQAComp	67		YES	datetime						3			
Update	tblGrid	DGMPortDataQACom	68		YES	varchar	255	255							
Update	tblGrid	DGMReacOpTeamID	69		YES	varchar	50	50							
Update	tblGrid	DGMReacOpComp	70		YES	bit									
Update	tblGrid	DtDGMReacOpComp	71		YES	datetime						3			
Update	tblGrid	DGMReacOpCom	72		YES	varchar	255	255							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGrid	DGMDigOpTeamID	73		YES	varchar	50	50							
Update	tblGrid	DGMDigOpComp	74		YES	bit									
Update	tblGrid	DtDGMDigOpComp	75		YES	datetime						3			
Update	tblGrid	DGMDigOpCom	76		YES	varchar	255	255							
Update	tblGrid	DGMDigOpQCTeamID	77		YES	varchar	50	50							
Update	tblGrid	DGMDigOpQCComp	78		YES	bit									
Update	tblGrid	DtDGMDigOpQCComp	79		YES	datetime						3			
Update	tblGrid	DGMDigOpQCCom	80		YES	varchar	255	255							
Update	tblGrid	DGMDigOpQATeamID	81		YES	varchar	50	50							
Update	tblGrid	DGMDigOpQAComp	82		YES	bit									
Update	tblGrid	DtDGMDigOpQAComp	83		YES	datetime						3			
Update	tblGrid	DGMDigOpQACom	84		YES	varchar	255	255							
Update	tblGrid	vchGridBlockID	85		YES	varchar	50	50							
Update	tblGrid	Status	86		YES	varchar	255	255							
Update	tblGrid	OverwriteStatus	87		YES	varchar	255	255							
Update	tblGrid	CoverageCategory	88		YES	varchar	10	10							
Update	tblGrid	SurveyType	89		YES	varchar	255	255							
Update	tblGrid	dtRecMod	90	(getdate())	YES	datetime						3			
Update	tblGrid	s_Generation	91		YES	float			53	2					
Update	tblGrid	s_GUID	92		YES	uniqueidentifier									
Update	tblGrid_Ops_Lnk	guidGOL	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Ops_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Ops_Lnk	dtWorkDate	2		YES	smalldatetime						0			
Update	tblGrid_Ops_Lnk	dtStartTime	3		YES	datetime						3			
Update	tblGrid_Ops_Lnk	dtEndTime	4		YES	datetime						3			
Update	tblGrid_Ops_Lnk	vchGridID	5		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	guidGrid	6		YES	uniqueidentifier									
Update	tblGrid_Ops_Lnk	vchGridAlias	7		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	iSpecialCaseAreaID	8		YES	int			10	10	0				
Update	tblGrid_Ops_Lnk	vchOpClass	9		YES	nvarchar	6	12							
Update	tblGrid_Ops_Lnk	vchoptype	10		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchSite	11		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchSiteAlias	12		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchSiteMRA	13		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchSiteMRS	14		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchSiteAR	15		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	iGridConditionID	16		YES	int			10	10	0				
Update	tblGrid_Ops_Lnk	biDiscrepancy	17		YES	int			10	10	0				
Update	tblGrid_Ops_Lnk	vchAARID	18		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchTeam	19		YES	nchar	25	50							
Update	tblGrid_Ops_Lnk	iTeamleaderID	20		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchContractor	21		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	txOpNotes	22		YES	nvarchar	-1	-1							
Update	tblGrid_Ops_Lnk	chOpCompleted	23		YES	char	1	1							
Update	tblGrid_Ops_Lnk	txModNotes	24		YES	nvarchar	-1	-1							
Update	tblGrid_Ops_Lnk	dtDataEntered	25		YES	date						0			
Update	tblGrid_Ops_Lnk	vchDataEntry	26		YES	nvarchar	50	100							
Update	tblGrid_Ops_Lnk	vchDataSource	27		YES	nvarchar	255	510							
Update	tblGrid_Ops_Lnk	RecordId	28		YES	float			53	2					
Update	tblGrid_Ops_Lnk	UnitID	29		YES	float			53	2					
Update	tblGrid_Ops_Lnk	UserName	30		YES	varchar	255	255							
Update	tblGrid_Ops_Lnk	TimeStamp	31		YES	datetime						3			
Update	tblGrid_Ops_Lnk	vchGridBlockID	32		YES	varchar	50	50							
Update	tblGrid_Ops_Lnk	vchGridType	33		YES	varchar	255	255							
Update	tblGrid_Ops_Lnk	dtRecMod	34	(getdate())	YES	datetime						3			
Update	tblGrid_Ops_Lnk	UploadtoDB	35		YES	varchar	255	255							
Update	tblGrid_Ops_Lnk	s_Generation	36		YES	float			53	2					
Update	tblGrid_Ops_Lnk	s_GUID	37		YES	uniqueidentifier									
Update	tblGrid_Ops_Lnk	iIncidentalID	38		YES	bigint			19	10	0				
Update	tblGrid_AnalogRemoval_Ops	lAnalogRemovalOpsID	1		YES	bigint			19	10	0				
Update	tblGrid_AnalogRemoval_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblAnalogRemoval_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_AnalogRemoval_Ops	biBackhoeRequired	3		YES	bit									
Update	tblGrid_AnalogRemoval_Ops	biBackhoeCompleted	4		YES	bit									
Update	tblGrid_AnalogRemoval_Ops	iDepthofSurvey	5		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iAnomaliesDetected	6		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iExcavationsTotal	7		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iBackhoeExcavations	8		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	ftNonOEScrapLBs	9		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	iMDItems	10		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	ftOEScrapLBs	11		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	iMECItems	12		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iSurface	13		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iDepth0to12	14		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iDepth12to24	15		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iDepth24to36	16		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	iDepth36to48	17		YES	int			10	10	0				
Update	tblGrid_AnalogRemoval_Ops	biDemoRequired	18		YES	bit									
Update	tblGrid_AnalogRemoval_Ops	chQCPassed	19		YES	nvarchar	4	8							
Update	tblGrid_AnalogRemoval_Ops	dtQC	20		YES	datetime						3			
Update	tblGrid_AnalogRemoval_Ops	RecordId	21		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	UnitID	22		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	UserName	23		YES	varchar	255	255							
Update	tblGrid_AnalogRemoval_Ops	TimeStamp	24		YES	datetime						3			
Update	tblGrid_AnalogRemoval_Ops	ftMEClbs	25		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	txModNotes	26		YES	varchar	255	255							
Update	tblGrid_AnalogRemoval_Ops	vchQCInitials	27		YES	varchar	5	5							
Update	tblGrid_AnalogRemoval_Ops	vchGridID	28		YES	varchar	50	50							
Update	tblGrid_AnalogRemoval_Ops	vchTeam	29		YES	varchar	25	25							
Update	tblGrid_AnalogRemoval_Ops	iTeamleaderID	30		YES	varchar	50	50							
Update	tblGrid_AnalogRemoval_Ops	dtWorkDate	31		YES	datetime						3			
Update	tblGrid_AnalogRemoval_Ops	vchSensiFuzeItems	32		YES	varchar	-1	-1							
Update	tblGrid_AnalogRemoval_Ops	iSensiFuzeWt	33		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	dtRecMod	34	(getdate())	YES	datetime						3			
Update	tblGrid_AnalogRemoval_Ops	UploadtoDB	35		YES	varchar	1	1							
Update	tblGrid_AnalogRemoval_Ops	Gen_vchSensiFuzeItems	36		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	s_Generation	37		YES	float			53	2					
Update	tblGrid_AnalogRemoval_Ops	s_GUID	38		YES	uniqueidentifier									
Update	tblGrid_AnalogRemoval_Ops	vchSurveyInstr	39		YES	nvarchar	25	50							
Update	tblGrid_AnalogRemoval_Ops	txOpNotes	40		YES	nvarchar	-1	-1							
Update	tblGrid_AnalogSurface_Ops	guidGOL	1		YES	uniqueidentifier									
Update	tblGrid_AnalogSurface_Ops	txOpNotes	2		YES	ntext	1073741823	2147483646							
Update	tblGrid_AnalogSurface_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Update	tblGrid_AnalogSurface_Ops	iQCPattern	4		YES	int			10	10	0				
Update	tblGrid_AnalogSurface_Ops	iQCPercent	5		YES	int			10	10	0				
Update	tblGrid_AnalogSurface_Ops	chQCPassed	6		YES	nvarchar	4	8							
Update	tblGrid_AnalogSurface_Ops	txReviewComments	7		YES	nvarchar	-1	-1							
Update	tblGrid_AnalogSurface_Ops	vchQCInitials	8		YES	nvarchar	5	10							
Update	tblGrid_AnalogSurface_Ops	dtQC	9		YES	datetime						3			
Update	tblGrid_AnalogSurface_Ops	vchDEQCInitials	10		YES	nvarchar	5	10							
Update	tblGrid_AnalogSurface_Ops	txModNotes	11		YES	nvarchar	-1	-1							
Update	tblGrid_AnalogSurface_Ops	biDiscrepancy	12		YES	bit									
Update	tblGrid_AnalogSurface_Ops	ftNonOEScrapLbs	13		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	ftOEScrapLBs	14		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	ioeitems	15		YES	int			10	10	0				
Update	tblGrid_AnalogSurface_Ops	isurface	16		YES	int			10	10	0				
Update	tblGrid_AnalogSurface_Ops	RecordId	17		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	UnitID	18		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	UserName	19		YES	varchar	255	255							
Update	tblGrid_AnalogSurface_Ops	TimeStamp	20		YES	datetime						3			
Update	tblGrid_AnalogSurface_Ops	vchGridID	21		YES	varchar	50	50							
Update	tblGrid_AnalogSurface_Ops	vchTeam	22		YES	varchar	25	25							
Update	tblGrid_AnalogSurface_Ops	iTeamleaderID	23		YES	varchar	50	50							
Update	tblGrid_AnalogSurface_Ops	dtWorkDate	24		YES	datetime						3			
Update	tblGrid_AnalogSurface_Ops	vchSensiFuzeItems	25		YES	nvarchar	-1	-1							
Update	tblGrid_AnalogSurface_Ops	iSensiFuzeWt	26		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	dtRecMod	27	(getdate())	YES	datetime						3			
Update	tblGrid_AnalogSurface_Ops	UploadtoDB	28		YES	varchar	1	1							
Update	tblGrid_AnalogSurface_Ops	Gen_txOpNotes	29		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	Gen_vchSensiFuzeItems	30		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	s_Generation	31		YES	float			53	2					
Update	tblGrid_AnalogSurface_Ops	s_GUID	32		NO	uniqueidentifier							PK_tblAnalogSurface_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_AnalogSurface_Ops	iExcavationsTotal	33		YES	bigint			19	10	0				
Update	tblGrid_DgmDig_Ops	guidGOL	1		YES	uniqueidentifier									
Update	tblGrid_DgmDig_Ops	vchDigInstruments	2		YES	nvarchar	255	510							
Update	tblGrid_DgmDig_Ops	iExcavationsTotal	3		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	ftNonOEScrapLbs	4		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	ftOEScrapLBs	5		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	iOEItems	6		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iSurface	7		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iDepth0to12	8		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iDepth12to24	9		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iDepth24to36	10		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iDepth36to48	11		YES	int			10	10	0				
Update	tblGrid_DgmDig_Ops	iBIPRequired	12		YES	bit									
Update	tblGrid_DgmDig_Ops	vchSurveyNotes	13		YES	nvarchar	-1	-1							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGrid_DgmDig_Ops	chQCPassed	14		YES	nchar	4	8							
Update	tblGrid_DgmDig_Ops	vchQCInitials	15		YES	nvarchar	5	10							
Update	tblGrid_DgmDig_Ops	dtQC	16		YES	datetime						3			
Update	tblGrid_DgmDig_Ops	biDEQCChecked	17		YES	bit									
Update	tblGrid_DgmDig_Ops	dtDigDate	18		YES	datetime						3			
Update	tblGrid_DgmDig_Ops	vchDigTeam	19		YES	nvarchar	50	100							
Update	tblGrid_DgmDig_Ops	RecordId	20		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	UnitID	21		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	UserName	22		YES	varchar	255	255							
Update	tblGrid_DgmDig_Ops	TimeStamp	23		YES	datetime						3			
Update	tblGrid_DgmDig_Ops	vchGridID	24		YES	varchar	50	50							
Update	tblGrid_DgmDig_Ops	iTeamleaderID	25		YES	varchar	50	50							
Update	tblGrid_DgmDig_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Update	tblGrid_DgmDig_Ops	UploadtoDB	27		YES	varchar	1	1							
Update	tblGrid_DgmDig_Ops	Gen_vchSurveyNotes	28		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	s_Generation	29		YES	float			53	2					
Update	tblGrid_DgmDig_Ops	s_GUID	30		NO	uniqueidentifier							PK_tblDGMDig_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_GeoPick_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGeoPickOps	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_GeoPick_Ops	dtProcessDate	2		YES	datetime						3			
Update	tblGrid_GeoPick_Ops	biDigSheetMade	3		YES	bit									
Update	tblGrid_GeoPick_Ops	biHeaderanomFile	4		YES	bit									
Update	tblGrid_GeoPick_Ops	vchAnomSelectFile	5		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchAnomPickChannel	6		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	ftAnomPickThreshold	7		YES	numeric			18	10	3				
Update	tblGrid_GeoPick_Ops	biSpecialCase	8		YES	bit									
Update	tblGrid_GeoPick_Ops	biFileHeaderCheck	9		YES	bit									
Update	tblGrid_GeoPick_Ops	txOpNotes	10		YES	nvarchar	4000	8000							
Update	tblGrid_GeoPick_Ops	dtQC	11		YES	datetime						3			
Update	tblGrid_GeoPick_Ops	vchQCInitials	12		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	txQCComments	13		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	txInterpComments	14		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchInterpGWS	15		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchInterpSet	16		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchExprtFileName	17		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	txDeliveryComments	18		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	dtDeliver	19		YES	datetime						3			
Update	tblGrid_GeoPick_Ops	vchCorrAction	20		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	txModNotes	21		YES	nvarchar	4000	8000							
Update	tblGrid_GeoPick_Ops	vchGeosoftSurveyDatabase	22		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchGeosoftSurveyTargetDatabase	23		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	vchSubmittedXYZFileName	24		YES	nvarchar	255	510							
Update	tblGrid_GeoPick_Ops	iAnomsSelected	25		YES	int			10	10	0				
Update	tblGrid_GeoPick_Ops	iAnomsToBeInvestigated	26		YES	int			10	10	0				
Update	tblGrid_GeoPick_Ops	vchGridID	27		YES	varchar	255	255							
Update	tblGrid_GeoPick_Ops	UniqueGridID	28		YES	varchar	255	255							
Update	tblGrid_GeoPick_Ops	biDeliver	29		YES	varchar	1	1							
Update	tblGrid_GeoPick_Ops	dtRecMod	30	(getdate())	YES	datetime						3			
Update	tblGrid_GeoPick_Ops	RecordID	31		YES	float			53	2					
Update	tblGrid_GeoPick_Ops	Gen_txModNotes	32		YES	float			53	2					
Update	tblGrid_GeoPick_Ops	Gen_txOpNotes	33		YES	float			53	2					
Update	tblGrid_GeoPick_Ops	s_Generation	34		YES	float			53	2					
Update	tblGrid_GeoPick_Ops	s_GUID	35		YES	uniqueidentifier									
Update	tblGrid_Odds_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblOdds_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Odds_Ops	dtWorkDate	2		YES	smalldatetime						0			
Update	tblGrid_Odds_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Update	tblGrid_Odds_Ops	vchContractor	4		YES	nvarchar	50	100							
Update	tblGrid_Odds_Ops	dtDataEntered	5		YES	smalldatetime						0			
Update	tblGrid_Odds_Ops	vchDataEntry	6		YES	nvarchar	50	100							
Update	tblGrid_Odds_Ops	vchDataSource	7		YES	nvarchar	50	100							
Update	tblGrid_Odds_Ops	vchReviewComments	8		YES	nvarchar	4000	8000							
Update	tblGrid_Odds_Ops	vchQCInitials	9		YES	nvarchar	50	100							
Update	tblGrid_Odds_Ops	vchDEQCInitials	10		YES	nvarchar	50	100							
Update	tblGrid_Odds_Ops	txModNotes	11		YES	nvarchar	4000	8000							
Update	tblGrid_Odds_Ops	biDiscrepancy	12		YES	bit									
Update	tblGrid_Other_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGrid_Other_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Other_Ops	dtFound	2		YES	datetime						3			
Update	tblGrid_Other_Ops	dtCollected	3		YES	datetime						3			
Update	tblGrid_Other_Ops	vchLocation	4		YES	nvarchar	255	510							
Update	tblGrid_Other_Ops	vchEventDesc	5		YES	nvarchar	512	1024							
Update	tblGrid_Other_Ops	biIncidental	6		YES	bit									
Update	tblGrid_Other_Ops	iIncidentalFormID	7		YES	int			10	10	0				
Update	tblGrid_Other_Ops	vchPhotoFileName	8		YES	nvarchar	255	510							
Update	tblGrid_Other_Ops	vchPdfFileName	9		YES	nvarchar	255	510							
Update	tblGrid_Other_Ops	imgPdfFile	10		YES	image	2147483647	2147483647							
Update	tblGrid_Other_Ops	vchContractor	11		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	iMemberID	12		YES	int			10	10	0				
Update	tblGrid_Other_Ops	vchLastName	13		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	vchFirstName	14		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	vchAddress1	15		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	vchAddress2	16		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	vchCity	17		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	vchState	18		YES	nvarchar	2	4							
Update	tblGrid_Other_Ops	vchZipCode	19		YES	nvarchar	12	24							
Update	tblGrid_Other_Ops	vchPhone	20		YES	nvarchar	20	40							
Update	tblGrid_Other_Ops	vchFax	21		YES	nvarchar	15	30							
Update	tblGrid_Other_Ops	vchCountry	22		YES	nvarchar	25	50							
Update	tblGrid_Other_Ops	vchEmail	23		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	txOpNotes	24		YES	nvarchar	4000	8000							
Update	tblGrid_Other_Ops	USACEFormReceivedBY	25		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	dtUSACEDateReceived	26		YES	datetime						3			
Update	tblGrid_Other_Ops	dtUSACEDateCompleted	27		YES	datetime						3			
Update	tblGrid_Other_Ops	vchDENRFormReceivedBY	28		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	dtDENRDateReceived	29		YES	datetime						3			
Update	tblGrid_Other_Ops	vchDENRRegAgencyNotified	30		YES	nvarchar	50	100							
Update	tblGrid_Other_Ops	dtDENRDATERegAgencyNotified	31		YES	datetime						3			
Update	tblGrid_Other_Ops	vchDataSource	32		YES	nvarchar	150	300							
Update	tblGrid_Other_Ops	dtDataEntered	33		YES	datetime						3			
Update	tblGrid_Other_Ops	vchDataEntry	34		YES	nvarchar	10	20							
Update	tblGrid_Other_Ops	txReviewComments	35		YES	nvarchar	4000	8000							
Update	tblGrid_Other_Ops	vchQCInitials	36		YES	nvarchar	5	10							
Update	tblGrid_Other_Ops	vchDEQCInitials	37		YES	nvarchar	5	10							
Update	tblGrid_Other_Ops	txModNotes	38		YES	nvarchar	4000	8000							
Update	tblGrid_Other_Ops	biDiscrepancy	39		YES	bit									
Update	tblGrid_Other_Ops	vchOpClass	40		YES	nvarchar	6	12							
Update	tblGrid_Other_Ops	RecordId	41		YES	float			53	2					
Update	tblGrid_Other_Ops	UnitID	42		YES	float			53	2					
Update	tblGrid_Other_Ops	UserName	43		YES	varchar	255	255							
Update	tblGrid_Other_Ops	TimeStamp	44		YES	datetime						3			
Update	tblGrid_Other_Ops	dtWorkDate	45		YES	datetime						3			
Update	tblGrid_Other_Ops	vchTeam	46		YES	varchar	25	25							
Update	tblGrid_Other_Ops	iTeamleaderID	47		YES	varchar	50	50							
Update	tblGrid_Other_Ops	vchGridID	48		YES	varchar	50	50							
Update	tblGrid_Other_Ops	dtRecMod	49	(getdate())	YES	datetime						3			
Update	tblGrid_Other_Ops	UploadtoDB	50		YES	varchar	1	1							
Update	tblGrid_Other_Ops	Gen_imgPdfFile	51		YES	float			53	2					
Update	tblGrid_Other_Ops	Gen_txModNotes	52		YES	float			53	2					
Update	tblGrid_Other_Ops	Gen_txOpNotes	53		YES	float			53	2					
Update	tblGrid_Other_Ops	Gen_txReviewComments	54		YES	float			53	2					
Update	tblGrid_Other_Ops	Gen_vchEventDesc	55		YES	float			53	2					
Update	tblGrid_Other_Ops	s_Generation	56		YES	float			53	2					
Update	tblGrid_Other_Ops	s_GUID	57		YES	uniqueidentifier									
Update	tblGrid_QA_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblQA_ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_QA_Ops	vchSurveyInstr	2		YES	nvarchar	25	50							
Update	tblGrid_QA_Ops	iMECItems	3		YES	smallint			5	10	0				
Update	tblGrid_QA_Ops	iQAPattern	4		YES	int			10	10	0				
Update	tblGrid_QA_Ops	iQAPercent	5		YES	int			10	10	0				
Update	tblGrid_QA_Ops	chQAPassed	6		YES	nvarchar	4	8							
Update	tblGrid_QA_Ops	txModNotes	7		YES	ntext	1073741823	2147483646							
Update	tblGrid_QA_Ops	QA_Type	8		YES	nvarchar	50	100							
Update	tblGrid_QA_Ops	dtWorkDate	9		YES	datetime						3			
Update	tblGrid_QA_Ops	vchGridID	10		YES	varchar	50	50							
Update	tblGrid_QA_Ops	QATeamID	11		YES	varchar	25	25							
Update	tblGrid_QA_Ops	QATeamLeader	12		YES	varchar	25	25							
Update	tblGrid_QA_Ops	dtRecMod	13	(getdate())	YES	datetime						3			
Update	tblGrid_QA_Ops	RecordID	14		YES	float			53	2					
Update	tblGrid_QA_Ops	Gen_txModNotes	15		YES	float			53	2					
Update	tblGrid_QA_Ops	s_Generation	16		YES	float			53	2					
Update	tblGrid_QA_Ops	s_GUID	17		YES	uniqueidentifier									
Update	tblGrid_QA_Ops	txOpNotes	18		YES	nvarchar	-1	-1							
Update	tblGrid_QC_Ops	IQC1OpsID	1		NO	bigint			19	10	0				
Update	tblGrid_QC_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblQC1_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_QC_Ops	IDemoOpsID	3		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iAnomaliesChecked	4		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iAnomaliesPassed	5		YES	int			10	10	0				

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGrid_QC_Ops	iAnomaliesFailed	6		YES	int			10	10	0				
Update	tblGrid_QC_Ops	ftNonOEScrapLBs	7		YES	int			10	10	0				
Update	tblGrid_QC_Ops	ftOEScrapLBs	8		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iOEItems	9		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iSurface	10		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iDepth0to12	11		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iDepth12to24	12		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iDepth24to36	13		YES	int			10	10	0				
Update	tblGrid_QC_Ops	iDepth36to48	14		YES	int			10	10	0				
Update	tblGrid_QC_Ops	vchSurveyNotes	15		YES	nvarchar	255	510							
Update	tblGrid_QC_Ops	chQCPassed	16		YES	nvarchar	4	8							
Update	tblGrid_QC_Ops	vchQC_Type	17		YES	nvarchar	50	100							
Update	tblGrid_QC_Ops	RecordId	18		YES	float			53	2					
Update	tblGrid_QC_Ops	UnitID	19		YES	float			53	2					
Update	tblGrid_QC_Ops	UserName	20		YES	varchar	255	255							
Update	tblGrid_QC_Ops	TimeStamp	21		YES	datetime						3			
Update	tblGrid_QC_Ops	dtWorkDate	22		YES	datetime						3			
Update	tblGrid_QC_Ops	vchGridID	23		YES	varchar	10	10							
Update	tblGrid_QC_Ops	QCTeamID	24		YES	varchar	25	25							
Update	tblGrid_QC_Ops	QCTeamLeader	25		YES	varchar	25	25							
Update	tblGrid_QC_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Update	tblGrid_QC_Ops	UploadtoDB	27		YES	varchar	1	1							
Update	tblGrid_QC_Ops	s_Generation	28		YES	float			53	2					
Update	tblGrid_QC_Ops	s_GUID	29		YES	uniqueidentifier									
Update	tblGrid_QC_Ops	vchSurveyInstr	30		YES	nvarchar	25	50							
Update	tblGrid_Reac_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblReac_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Reac_Ops	guidAnomaly	2		YES	uniqueidentifier									
Update	tblGrid_Reac_Ops	iNumberOfFlags	3		YES	int			10	10	0				
Update	tblGrid_Reac_Ops	vchReaqInstr	4		YES	nvarchar	50	100							
Update	tblGrid_Reac_Ops	biInvestigated	5		YES	bit									
Update	tblGrid_Reac_Ops	Reac_CH	6		YES	float			53	2					
Update	tblGrid_Reac_Ops	txReaqComments	7		YES	nvarchar	-1	-1							
Update	tblGrid_Reac_Ops	txReaqQCComments	8		YES	nvarchar	-1	-1							
Update	tblGrid_Reac_Ops	RecordId	9		YES	float			53	2					
Update	tblGrid_Reac_Ops	UnitID	10		YES	float			53	2					
Update	tblGrid_Reac_Ops	UserName	11		YES	varchar	255	255							
Update	tblGrid_Reac_Ops	TimeStamp	12		YES	datetime						3			
Update	tblGrid_Reac_Ops	dtWorkDate	13		YES	datetime						3			
Update	tblGrid_Reac_Ops	vchGridID	14		YES	varchar	10	10							
Update	tblGrid_Reac_Ops	ReacTeamID	15		YES	varchar	25	25							
Update	tblGrid_Reac_Ops	ReacTeamLeader	16		YES	varchar	25	25							
Update	tblGrid_Reac_Ops	dtRecMod	17	(getdate())	YES	datetime						3			
Update	tblGrid_Reac_Ops	UploadtoDB	18		YES	varchar	1	1							
Update	tblGrid_Reac_Ops	Gen_txReaqComments	19		YES	float			53	2					
Update	tblGrid_Reac_Ops	Gen_txReaqQCComments	20		YES	float			53	2					
Update	tblGrid_Reac_Ops	s_Generation	21		YES	float			53	2					
Update	tblGrid_Reac_Ops	s_GUID	22		YES	uniqueidentifier									
Update	tblGrid_Scrape_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblScrape_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Scrape_Ops	iRRDLBs	2		YES	float			53	2					
Update	tblGrid_Scrape_Ops	iMDLBs	3		YES	float			53	2					
Update	tblGrid_Scrape_Ops	iMECItems	4		YES	smallint			5	10	0				
Update	tblGrid_Scrape_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Update	tblGrid_Scrape_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Update	tblGrid_Scrape_Ops	dtQC	7		YES	datetime						3			
Update	tblGrid_Scrape_Ops	biDEQCChecked	8		YES	bit									
Update	tblGrid_Scrape_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Update	tblGrid_Scrape_Ops	biDiscrepancy	10		YES	bit									
Update	tblGrid_Scrape_Ops	iCubicYards	11		YES	int			10	10	0				
Update	tblGrid_Scrape_Ops	iInLift	12		YES	int			10	10	0				
Update	tblGrid_Scrape_Ops	iFtDistanceToStockpile	13		YES	int			10	10	0				
Update	tblGrid_Scrape_Ops	vchEquipmentUsed	14		YES	nvarchar	50	100							
Update	tblGrid_Scrape_Ops	RecordId	15		YES	float			53	2					
Update	tblGrid_Scrape_Ops	UnitID	16		YES	float			53	2					
Update	tblGrid_Scrape_Ops	UserName	17		YES	varchar	255	255							
Update	tblGrid_Scrape_Ops	TimeStamp	18		YES	datetime						3			
Update	tblGrid_Scrape_Ops	IScrapeOpID	19		YES	varchar	255	255							
Update	tblGrid_Scrape_Ops	dtWorkDate	20		YES	datetime						3			
Update	tblGrid_Scrape_Ops	vchGridID	21		YES	varchar	50	50							
Update	tblGrid_Scrape_Ops	vchTeam	22		YES	varchar	25	25							
Update	tblGrid_Scrape_Ops	iTeamleaderID	23		YES	varchar	50	50							
Update	tblGrid_Scrape_Ops	dtRecMod	24	(getdate())	YES	datetime						3			
Update	tblGrid_Scrape_Ops	UploadtoDB	25		YES	varchar	1	1							
Update	tblGrid_Scrape_Ops	Gen_txReviewComments	26		YES	float			53	2					
Update	tblGrid_Scrape_Ops	s_Generation	27		YES	float			53	2					
Update	tblGrid_Scrape_Ops	s_GUID	28		YES	uniqueidentifier									
Update	tblGrid_Sift_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblSift_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Sift_Ops	iRRDLBs	2		YES	int			10	10	0				
Update	tblGrid_Sift_Ops	iMDLBs	3		YES	int			10	10	0				
Update	tblGrid_Sift_Ops	chQCPassed	4		YES	nvarchar	4	8							
Update	tblGrid_Sift_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Update	tblGrid_Sift_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Update	tblGrid_Sift_Ops	dtQC	7		YES	datetime						3			
Update	tblGrid_Sift_Ops	biDEQCChecked	8		YES	bit									
Update	tblGrid_Sift_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Update	tblGrid_Sift_Ops	biDiscrepancy	10		YES	bit									
Update	tblGrid_Sift_Ops	QtyTons	11		YES	int			10	10	0				
Update	tblGrid_Sift_Ops	iMECItems	12		YES	int			10	10	0				
Update	tblGrid_Sift_Ops	RecordId	13		YES	float			53	2					
Update	tblGrid_Sift_Ops	UnitID	14		YES	float			53	2					
Update	tblGrid_Sift_Ops	UserName	15		YES	varchar	255	255							
Update	tblGrid_Sift_Ops	TimeStamp	16		YES	datetime						3			
Update	tblGrid_Sift_Ops	iSiftOpID	17		YES	varchar	255	255							
Update	tblGrid_Sift_Ops	dtWorkDate	18		YES	datetime						3			
Update	tblGrid_Sift_Ops	vchGridID	19		YES	varchar	50	50							
Update	tblGrid_Sift_Ops	vchTeam	20		YES	varchar	25	25							
Update	tblGrid_Sift_Ops	iTeamleaderID	21		YES	varchar	50	50							
Update	tblGrid_Sift_Ops	dtRecMod	22	(getdate())	YES	datetime						3			
Update	tblGrid_Sift_Ops	UploadtoDB	23		YES	varchar	1	1							
Update	tblGrid_Sift_Ops	Gen_txReviewComments	24		YES	float			53	2					
Update	tblGrid_Sift_Ops	s_Generation	25		YES	float			53	2					
Update	tblGrid_Sift_Ops	s_GUID	26		YES	uniqueidentifier									
Update	tblGrid_Sift_Ops	vchEquipmentUsed	27		YES	nvarchar	50	100							
Update	tblGrid_SiteSurvey_Ops	iSiteSurveyOpID	1		YES	bigint			19	10	0				
Update	tblGrid_SiteSurvey_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblSite_Survey_ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_SiteSurvey_Ops	vchSurveyName	3		YES	nvarchar	50	100							
Update	tblGrid_SiteSurvey_Ops	txReviewComments	4		YES	nvarchar	4000	8000							
Update	tblGrid_SiteSurvey_Ops	vchQCInitials	5		YES	nvarchar	5	10							
Update	tblGrid_SiteSurvey_Ops	biDEQCChecked	6		YES	bit									
Update	tblGrid_SiteSurvey_Ops	vchDEQCInitials	7		YES	nvarchar	5	10							
Update	tblGrid_SiteSurvey_Ops	ftGridPercent	8		YES	real			24	2					
Update	tblOE_Encountered	iOEEncounteredID	1		YES	int			10	10	0				
Update	tblOE_Encountered	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tblOE_Encountered	PK	PRIMARY_KEY_CONSTRAINT
Update	tblOE_Encountered	dtWorkDate	3		YES	datetime						3			
Update	tblOE_Encountered	iOpID	4		YES	bigint			19	10	0				
Update	tblOE_Encountered	guidGOL	5		YES	uniqueidentifier									
Update	tblOE_Encountered	vchGridID	6		YES	nvarchar	50	100							
Update	tblOE_Encountered	vchSurveyInstr	7		YES	nvarchar	100	200							
Update	tblOE_Encountered	iLocalNorthing	8		YES	smallint			5	10	0				
Update	tblOE_Encountered	iLocalEasting	9		YES	smallint			5	10	0				
Update	tblOE_Encountered	ftNorthing	10		YES	float			53	2					
Update	tblOE_Encountered	ftEasting	11		YES	float			53	2					
Update	tblOE_Encountered	iQTY	12		YES	smallint			5	10	0				
Update	tblOE_Encountered	ftLength	13		YES	real			24	2					
Update	tblOE_Encountered	ftWidth	14		YES	real			24	2					
Update	tblOE_Encountered	iOffsetDist	15		YES	int			10	10	0				
Update	tblOE_Encountered	vchOffsetDir	16		YES	nvarchar	50	100							
Update	tblOE_Encountered	ftInclination	17		YES	float			53	2					
Update	tblOE_Encountered	vchOrientation	18		YES	nvarchar	2	4							
Update	tblOE_Encountered	iDepth	19		YES	smallint			5	10	0				
Update	tblOE_Encountered	ftWeight	20		YES	float			53	2					
Update	tblOE_Encountered	vchOriginalOENomenclature	21		YES	nvarchar	255	510							
Update	tblOE_Encountered	iOEModelIDFinal	22		YES	int			10	10	0				
Update	tblOE_Encountered	vchNonOEDesc	23		YES	nvarchar	255	510							
Update	tblOE_Encountered	vchOEType	24		YES	nvarchar	10	20							
Update	tblOE_Encountered	vchConditionInit	25		YES	nvarchar	25	50							
Update	tblOE_Encountered	vchConditionFinal	26		YES	nvarchar	25	50							
Update	tblOE_Encountered	vchDispositionInit	27		YES	nvarchar	120	240							
Update	tblOE_Encountered	vchDispositionInterm	28		YES	nvarchar	120	240							
Update	tblOE_Encountered	vchDispositionFinal	29		YES	nvarchar	120	240							
Update	tblOE_Encountered	biFragment	30		YES	tinyint			3	10	0				
Update	tblOE_Encountered	chBurialPit	31		YES	char	1	1							
Update	tblOE_Encountered	biDemoRequired	32		YES	tinyint			3	10	0				
Update	tblOE_Encountered	biDemoPerformed	33		YES	tinyint			3	10	0				
Update	tblOE_Encountered	dtDemo	34		YES	datetime						3			

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblOE_Encountered	vchDemoAction	35		YES	nvarchar	4000	8000							
Update	tblOE_Encountered	guidDemoOp	36		YES	uniqueidentifier									
Update	tblOE_Encountered	dtQA	37		YES	datetime						3			
Update	tblOE_Encountered	vchQAInitials	38		YES	nvarchar	5	10							
Update	tblOE_Encountered	dtQC	39		YES	datetime						3			
Update	tblOE_Encountered	vchQCInitials	40		YES	nvarchar	100	200							
Update	tblOE_Encountered	iLocationProxCode	41		YES	smallint			5	10	0				
Update	tblOE_Encountered	vchContractor	42		YES	nvarchar	50	100							
Update	tblOE_Encountered	dtDataEntered	43		YES	datetime						3			
Update	tblOE_Encountered	vchDataEntry	44		YES	nvarchar	10	20							
Update	tblOE_Encountered	txOEItemNotes	45		YES	nvarchar	500	1000							
Update	tblOE_Encountered	vchDataSource	46		YES	nvarchar	150	300							
Update	tblOE_Encountered	txReviewComments	47		YES	nvarchar	4000	8000							
Update	tblOE_Encountered	biDEQCChecked	48		YES	tinyint			3	10	0				
Update	tblOE_Encountered	vchDEQCInitials	49		YES	nvarchar	100	200							
Update	tblOE_Encountered	txModNotes	50		YES	nvarchar	4000	8000							
Update	tblOE_Encountered	biDiscrepancy	51		YES	tinyint			3	10	0				
Update	tblOE_Encountered	guidAnomaly	52		YES	uniqueidentifier									
Update	tblOE_Encountered	ftDemoNorthing	53		YES	float			53	2					
Update	tblOE_Encountered	ftDemoEasting	54		YES	float			53	2					
Update	tblOE_Encountered	RecordId	55		YES	float			53	2					
Update	tblOE_Encountered	UnitID	56		YES	float			53	2					
Update	tblOE_Encountered	UserName	57		YES	varchar	255	255							
Update	tblOE_Encountered	TimeStamp	58		YES	datetime						3			
Update	tblOE_Encountered	vchFinalOENomenclature	59		YES	varchar	255	255							
Update	tblOE_Encountered	UniqAnomalyID	60		YES	varchar	50	50							
Update	tblOE_Encountered	AnomalyType	61		YES	varchar	255	255							
Update	tblOE_Encountered	vchTeam	62		YES	varchar	25	25							
Update	tblOE_Encountered	iTeamleaderID	63		YES	varchar	50	50							
Update	tblOE_Encountered	dtRecMod	64	(getdate())	YES	datetime						3			
Update	tblOE_Encountered	UploadtoDB	65		YES	varchar	1	1							
Update	tblOE_Encountered	Gen_txModNotes	66		YES	float			53	2					
Update	tblOE_Encountered	Gen_txOEItemNotes	67		YES	float			53	2					
Update	tblOE_Encountered	Gen_vchDemoAction	68		YES	float			53	2					
Update	tblOE_Encountered	s_Generation	69		YES	float			53	2					
Update	tblOE_Encountered	s_GUID	70		YES	uniqueidentifier									
Update	tblOE_Encountered	LocalAnomalyID	71		YES	nvarchar	50	100							
Update	tblOE_Encountered	DigUploadtoDB	72		YES	bit									
Update	tblOE_Encountered	ftReaqResponseValue	73		YES	float			53	2					
Update	tblOE_Encountered	ftNonOEScrapLBs	74		YES	float			53	2					
Update	tblOE_Encountered	ftOEScrapLBs	75		YES	float			53	2					
Update	tblOE_Encountered	ftDigResponseValue	76		YES	float			53	2					
Update	tblOE_Seeded	guidSeeded	1	(newid())	NO	uniqueidentifier							PK_tblOE_Seeded	PK	PRIMARY_KEY_CONSTRAINT
Update	tblOE_Seeded	dtWorkDate	2		YES	smalldatetime						0			
Update	tblOE_Seeded	guidGOL	3		YES	uniqueidentifier									
Update	tblOE_Seeded	vchGridID	4		YES	nvarchar	50	100							
Update	tblOE_Seeded	vchSurveyInstr	5		YES	nvarchar	25	50							
Update	tblOE_Seeded	iLocalNorthing	6		YES	smallint			5	10	0				
Update	tblOE_Seeded	iLocalEasting	7		YES	smallint			5	10	0				
Update	tblOE_Seeded	ftNorthing	8		YES	float			53	2					
Update	tblOE_Seeded	ftEasting	9		YES	float			53	2					
Update	tblOE_Seeded	vchProxCode	10		YES	nvarchar	50	100							
Update	tblOE_Seeded	iQTY	11		YES	smallint			5	10	0				
Update	tblOE_Seeded	ftLength	12		YES	float			53	2					
Update	tblOE_Seeded	ftWidth	13		YES	float			53	2					
Update	tblOE_Seeded	ftInclination	14		YES	float			53	2					
Update	tblOE_Seeded	vchOrientation	15		YES	nvarchar	2	4							
Update	tblOE_Seeded	iDepth	16		YES	smallint			5	10	0				
Update	tblOE_Seeded	ftWeight	17		YES	float			53	2					
Update	tblOE_Seeded	vchOriginalOENomenclature	18		YES	nvarchar	255	510							
Update	tblOE_Seeded	iOEModelID	19		YES	int			10	10	0				
Update	tblOE_Seeded	chBurialPit	20		YES	char	1	1							
Update	tblOE_Seeded	vchAnomalyID	21		YES	nvarchar	50	100							
Update	tblOE_Seeded	guidAnomaly	22		YES	uniqueidentifier									
Update	tblOE_Seeded	txOEItemNotes	23		YES	nvarchar	4000	8000							
Update	tblOE_Seeded	vchContractor	24		YES	nvarchar	20	40							
Update	tblOE_Seeded	dtDataEntered	25		YES	datetime						3			
Update	tblOE_Seeded	vchDataEntry	26		YES	nvarchar	10	20							
Update	tblOE_Seeded	txReviewComments	27		YES	nvarchar	4000	8000							
Update	tblOE_Seeded	biDEQCChecked	28		YES	tinyint			3	10	0				
Update	tblOE_Seeded	vchDEQCInitials	29		YES	nvarchar	5	10							
Update	tblOE_Seeded	txModNotes	30		YES	nvarchar	4000	8000							
Update	tblOE_Seeded	guidGrid	31		YES	uniqueidentifier									
Update	tblOE_Seeded	RecordId	32		YES	float			53	2					
Update	tblOE_Seeded	UnitID	33		YES	float			53	2					
Update	tblOE_Seeded	UserName	34		YES	varchar	255	255							
Update	tblOE_Seeded	TimeStamp	35		YES	datetime						3			
Update	tblOE_Seeded	SeedCategory	36		YES	varchar	255	255							
Update	tblOE_Seeded	SeedOpType	37		YES	varchar	255	255							
Update	tblOE_Seeded	vchTeam	38		YES	varchar	25	25							
Update	tblOE_Seeded	iTeamleaderID	39		YES	varchar	50	50							
Update	tblOE_Seeded	vchQCInitials	40		YES	varchar	5	5							
Update	tblOE_Seeded	dtQC	41		YES	datetime						3			
Update	tblOE_Seeded	dtRecMod	42	(getdate())	YES	datetime						3			
Update	tblOE_Seeded	UploadtoDB	43		YES	varchar	1	1							
Update	tblOE_Seeded	Gen_txReviewComments	44		YES	float			53	2					
Update	tblOE_Seeded	s_Generation	45		YES	float			53	2					
Update	tblOE_Seeded	s_GUID	46		YES	uniqueidentifier									
Update	tblAnomaly	guidAnomaly	1	(newid())	NO	uniqueidentifier							PK_tblAnomaly	PK	PRIMARY_KEY_CONSTRAINT
Update	tblAnomaly	guidReacOp	2		YES	uniqueidentifier									
Update	tblAnomaly	guidDGMDigOp	3		YES	uniqueidentifier									
Update	tblAnomaly	guidQC1Op	4		YES	uniqueidentifier									
Update	tblAnomaly	guidGeoPickOp	5		YES	uniqueidentifier									
Update	tblAnomaly	vchGridID	6		YES	nvarchar	50	100							
Update	tblAnomaly	ftEasting	7		YES	float			53	2					
Update	tblAnomaly	ftNorthing	8		YES	float			53	2					
Update	tblAnomaly	vchResponseType	9		YES	varchar	50	50							
Update	tblAnomaly	ftResponseValue	10		YES	float			53	2					
Update	tblAnomaly	biInvestigated	11		YES	bit									
Update	tblAnomaly	iPriority	12		YES	int			10	10	0				
Update	tblAnomaly	vchReaqInstr	13		YES	varchar	50	50							
Update	tblAnomaly	vchReaqResponseType	14		YES	varchar	50	50							
Update	tblAnomaly	ftReaqResponseValue	15		YES	float			53	2					
Update	tblAnomaly	biReaqSuccessful	16		YES	bit									
Update	tblAnomaly	iReaqDistanceFromFlag	17		YES	int			10	10	0				
Update	tblAnomaly	iReaqAzimuthFromFlag	18		YES	int			10	10	0				
Update	tblAnomaly	txReaqComments	19		YES	nvarchar	-1	-1							
Update	tblAnomaly	ftDigWeight	20		YES	float			53	2					
Update	tblAnomaly	biBurialPit	21		YES	bit									
Update	tblAnomaly	biFragHole	22		YES	bit									
Update	tblAnomaly	biMassExcavation	23		YES	bit									
Update	tblAnomaly	biQC1Selected	24		YES	bit									
Update	tblAnomaly	biQC1Passed	25		YES	bit									
Update	tblAnomaly	guidQC1Fail	26		YES	uniqueidentifier									
Update	tblAnomaly	txQC1Notes	27		YES	nvarchar	-1	-1							
Update	tblAnomaly	biGeoQCSelected	28		YES	bit									
Update	tblAnomaly	biGeoQCPassed	29		YES	bit									
Update	tblAnomaly	guidGeoQCFail	30		YES	uniqueidentifier									
Update	tblAnomaly	guidGeoQCDigOp	31		YES	uniqueidentifier									
Update	tblAnomaly	txGeoQCNotes	32		YES	nvarchar	4000	8000							
Update	tblAnomaly	chQCPassed	33		YES	char	4	4							
Update	tblAnomaly	txDigComments	34		YES	nvarchar	-1	-1							
Update	tblAnomaly	biAnomalyStillPresent	35		YES	bit									
Update	tblAnomaly	txReviewComments	36		YES	nvarchar	-1	-1							
Update	tblAnomaly	txModNotes	37		YES	nvarchar	-1	-1							
Update	tblAnomaly	guidGrid	38		YES	uniqueidentifier									
Update	tblAnomaly	ftReaqOffsetEasting	39		YES	float			53	2					
Update	tblAnomaly	ftReaqOffsetNorthing	40		YES	float			53	2					
Update	tblAnomaly	RecordId	41		YES	float			53	2					
Update	tblAnomaly	UnitID	42		YES	float			53	2					
Update	tblAnomaly	UserName	43		YES	varchar	255	255							
Update	tblAnomaly	TimeStamp	44		YES	datetime						3			
Update	tblAnomaly	vchAnomalyID	45		YES	varchar	50	50							
Update	tblAnomaly	LocalAnomalyID	46		YES	varchar	50	50							
Update	tblAnomaly	LocalEasting	47		YES	real			24	2					
Update	tblAnomaly	LocalNorthing	48		YES	real			24	2					
Update	tblAnomaly	ProcessingComm	49		YES	varchar	-1	-1							
Update	tblAnomaly	vchTeam	50		YES	varchar	25	25							
Update	tblAnomaly	iTeamleaderID	51		YES	varchar	50	50							
Update	tblAnomaly	dtWorkDate	52		YES	datetime						3			
Update	tblAnomaly	dtRecMod	53	(getdate())	YES	datetime						3			
Update	tblAnomaly	UploadtoDB	54		YES	varchar	1	1							
Update	tblAnomaly	Gen_ProcessingComm	55		YES	float			53	2					
Update	tblAnomaly	Gen_txDigComments	56		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblAnomaly	Gen_txModNotes	57		YES	float			53	2					
Update	tblAnomaly	Gen_txQC1Notes	58		YES	float			53	2					
Update	tblAnomaly	Gen_txReaqComments	59		YES	float			53	2					
Update	tblAnomaly	Gen_txReviewComments	60		YES	float			53	2					
Update	tblAnomaly	s_Generation	61		YES	float			53	2					
Update	tblAnomaly	s_GUID	62		YES	uniqueidentifier									
Update	tblAnomaly	ftResponsemV	63		YES	float			53	2					
Update	tblAnomaly	QCUploadtoDB	64		YES	nchar	1	2							
Update	tblAnomaly	ftQCResponseValue	65		YES	float			53	2					
Update	tblAnomaly	vchQCTeam	66		YES	nvarchar	25	50							
Update	tblAnomaly	iQCTeamLeaderID	67		YES	nvarchar	50	100							
Update	tblAnomaly	dtQCWorkDate	68		YES	datetime						3			
Update	tblAnomaly_Undug	iAnomalyUndugID	1		NO	int			10	10	0		PK_tblAnomalyUndug	PK	PRIMARY_KEY_CONSTRAINT
Update	tblAnomaly_Undug	vchSite	2		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	guidGrid	3		YES	uniqueidentifier									
Update	tblAnomaly_Undug	vchGrid	4		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	vchGridAlias	5		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	vchTeam	6		YES	nvarchar	25	50							
Update	tblAnomaly_Undug	dtWorkdate	7		YES	smalldatetime						0			
Update	tblAnomaly_Undug	ftNorthing	8		YES	float			53	2					
Update	tblAnomaly_Undug	ftEasting	9		YES	float			53	2					
Update	tblAnomaly_Undug	iQty	10		YES	int			10	10	0				
Update	tblAnomaly_Undug	vchDepth	11		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	vchType	12		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	vchDisposition	13		YES	nvarchar	50	100							
Update	tblAnomaly_Undug	vchContractor	14		YES	nvarchar	50	100							
Update	tblAnomDIDEM61MKII	guidAnomDIDEM61MKII	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDEM61MKII	PK	PRIMARY_KEY_CONSTRAINT
Update	tblAnomDIDEM61MKII	guidAnomaly	2		YES	uniqueidentifier									
Update	tblAnomDIDEM61MKII	vchAnomalyID	3		NO	nvarchar	-1	-1							
Update	tblAnomDIDEM61MKII	CH1_final	4		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	CH2_final	5		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	CH3_final	6		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	CH4_final	7		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	CH_SUM	8		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	CH_AVG	9		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Width	10		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Size	11		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	SignalStrength	12		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	SNR	13		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Fit_Coh	14		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Fit_dec	15		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Fit_inc	16		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Fit_size	17		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Fit_solidAngle	18		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Comments	19		YES	nvarchar	-1	-1							
Update	tblAnomDIDEM61MKII	Tau_1_2	20		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Tau_1_3	21		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Tau_1_4	22		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Tau_2_3	23		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Tau_2_4	24		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	Tau_3_4	25		YES	decimal			18	10	3				
Update	tblAnomDIDEM61MKII	vchGridID	26		YES	varchar	255	255							
Update	tblAnomDIDEM61MKII	UniqueGridID	27		YES	varchar	255	255							
Update	tblAnomDIDEM61MKII	dtRecMod	28	(getdate())	YES	datetime						3			
Update	tblAnomDIDEM61MKII	Gen_Comments	29		YES	float			53	2					
Update	tblAnomDIDEM61MKII	s_Generation	30		YES	float			53	2					
Update	tblAnomDIDEM61MKII	s_GUID	31		YES	uniqueidentifier									
Update	tblAnomDIDEM61MKII	ftEasting	32		YES	float			53	2					
Update	tblAnomDIDEM61MKII	ftNorthing	33		YES	float			53	2					
Update	tblAnomDIDG858	guidAnomDIDG858	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDG858	PK	PRIMARY_KEY_CONSTRAINT
Update	tblAnomDIDG858	guidAnomaly	2		YES	uniqueidentifier									
Update	tblAnomDIDG858	vchAnomalyID	3		NO	nvarchar	-1	-1							
Update	tblAnomDIDG858	TF_Peak	4		YES	decimal			18	10	3				
Update	tblAnomDIDG858	TF_Trough	5		YES	decimal			18	10	3				
Update	tblAnomDIDG858	VG_Peak	6		YES	decimal			18	10	3				
Update	tblAnomDIDG858	VG_Trough	7		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Mag_Peak_offset	8		YES	decimal			18	10	3				
Update	tblAnomDIDG858	AS	9		YES	decimal			18	10	3				
Update	tblAnomDIDG858	H_Final	10		YES	decimal			18	10	3				
Update	tblAnomDIDG858	M_final	11		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Width	12		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Halfwidth_alongLine	13		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Halfwidth_acrossLine	14		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Size	15		YES	decimal			18	10	3				
Update	tblAnomDIDG858	SignalStrength	16		YES	decimal			18	10	3				
Update	tblAnomDIDG858	SNR	17		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_Coh	18		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_Depth	19		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_MagneticMoment	20		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_bl	21		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_b2	22		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_b3	23		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_dec	24		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_inc	25		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_size	26		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Fit_solidAngle	27		YES	decimal			18	10	3				
Update	tblAnomDIDG858	Comments	28		YES	nvarchar	-1	-1							
Update	tblSite_Walk_ops	guidSiteWalkopsID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Walk_ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblSite_Walk_ops	guidGOL	2		YES	uniqueidentifier									
Update	tblSite_Walk_ops	RecordId	3		YES	float			53	2					
Update	tblSite_Walk_ops	UnitID	4		YES	float			53	2					
Update	tblSite_Walk_ops	UserName	5		YES	varchar	255	255							
Update	tblSite_Walk_ops	TimeStamp	6		YES	datetime						3			
Update	tblSite_Walk_ops	lSiteWalkID	7		YES	float			53	2					
Update	tblSite_Walk_ops	dtWorkDate	8		YES	datetime						3			
Update	tblSite_Walk_ops	vchTeam	9		YES	nvarchar	255	510							
Update	tblSite_Walk_ops	vchSurveyInstr	10		YES	varchar	25	25							
Update	tblSite_Walk_ops	txReviewComments	11		YES	varchar	-1	-1							
Update	tblSite_Walk_ops	txOpnotes	12		YES	varchar	-1	-1							
Update	tblSite_Walk_ops	vchContractor	13		YES	varchar	20	20							
Update	tblSite_Walk_ops	vchGridID	14		YES	varchar	50	50							
Update	tblSite_Walk_ops	iTeamleaderID	15		YES	varchar	50	50							
Update	tblSite_Walk_ops	dtRecMod	16	(getdate())	YES	datetime						3			
Update	tblSite_Walk_ops	UploadtoDB	17		YES	varchar	1	1							
Update	tblSite_Walk_ops	Gen_txOpnotes	18		YES	float			53	2					
Update	tblSite_Walk_ops	Gen_txReviewComments	19		YES	float			53	2					
Update	tblSite_Walk_ops	s_Generation	20		YES	float			53	2					
Update	tblSite_Walk_ops	s_GUID	21		YES	uniqueidentifier									
Update	tblGeo_Survey_Ops	guidGeoSurvey	1		YES	uniqueidentifier									
Update	tblGeo_Survey_Ops	dtStartTime	2		YES	datetime						3			
Update	tblGeo_Survey_Ops	dtEndTime	3		YES	datetime						3			
Update	tblGeo_Survey_Ops	txOpNotes	4		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	vchSurveyInstr	5		YES	nvarchar	25	50							
Update	tblGeo_Survey_Ops	vchDataCollectRate	6		YES	nvarchar	50	100							
Update	tblGeo_Survey_Ops	biReSurvey	7		YES	bit									
Update	tblGeo_Survey_Ops	biQCSurvey	8		YES	bit									
Update	tblGeo_Survey_Ops	ftQCPercent	9		YES	nvarchar	50	100							
Update	tblGeo_Survey_Ops	dtCheckTime	10		YES	datetime						3			
Update	tblGeo_Survey_Ops	vchRAW61FileNames	11		YES	nvarchar	255	510							
Update	tblGeo_Survey_Ops	vchXYZFileNames	12		YES	nvarchar	255	510							
Update	tblGeo_Survey_Ops	vchMagRawStn	13		YES	nvarchar	255	510							
Update	tblGeo_Survey_Ops	vchMagRawCorStn	14		YES	nvarchar	50	100							
Update	tblGeo_Survey_Ops	vchMagBaseStnFile	15		YES	nvarchar	250	500							
Update	tblGeo_Survey_Ops	vchMagRawXyz	16		YES	nvarchar	250	500							
Update	tblGeo_Survey_Ops	iInstWarmupTime	17		YES	decimal			18	10	0				
Update	tblGeo_Survey_Ops	biZeroInstrument	18		YES	bit									
Update	tblGeo_Survey_Ops	vchStaticQCFile	19		YES	nvarchar	50	100							
Update	tblGeo_Survey_Ops	iStaticQCET	20		YES	int			10	10	0				
Update	tblGeo_Survey_Ops	biStaticQCConsistent	21		YES	bit									
Update	tblGeo_Survey_Ops	biSpikeTestConsistent	22		YES	bit									
Update	tblGeo_Survey_Ops	vchWeather	23		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	vchCulturalEffect	24		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	vchTerrain	25		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	vchNoteKeeper1	26		YES	nvarchar	255	510							
Update	tblGeo_Survey_Ops	vchNoteKeeper2	27		YES	nvarchar	255	510							
Update	tblGeo_Survey_Ops	vchGridCondition	28		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	ftLnSpacing	29		YES	float			53	2					
Update	tblGeo_Survey_Ops	ftBgnBatVoltage	30		YES	real			24	2					
Update	tblGeo_Survey_Ops	ftEndBatVoltage	31		YES	real			24	2					
Update	tblGeo_Survey_Ops	biQCReview	32		YES	bit									
Update	tblGeo_Survey_Ops	txReviewComments	33		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	vchQCInitials	34		YES	nvarchar	5	10							
Update	tblGeo_Survey_Ops	txModNotes	35		YES	nvarchar	-1	-1							
Update	tblGeo_Survey_Ops	biDiscrepancy	36		YES	bit									

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGeo_Survey_Ops	dtDataEntered	37		YES	datetime						3			
Update	tblGeo_Survey_Ops	vchDataEntry	38		YES	nvarchar	50	100							
Update	tblGeo_Survey_Ops	RecordId	39		YES	float			53	2					
Update	tblGeo_Survey_Ops	UnitID	40		YES	float			53	2					
Update	tblGeo_Survey_Ops	UserName	41		YES	varchar	255	255							
Update	tblGeo_Survey_Ops	TimeStamp	42		YES	datetime						3			
Update	tblGeo_Survey_Ops	vchGridBlockID	43		YES	varchar	50	50							
Update	tblGeo_Survey_Ops	GridsCollected	44		YES	varchar	255	255							
Update	tblGeo_Survey_Ops	vchTeam	45		YES	varchar	255	255							
Update	tblGeo_Survey_Ops	vchCollDir	46		YES	varchar	50	50							
Update	tblGeo_Survey_Ops	DateofSurvey	47		YES	datetime						3			
Update	tblGeo_Survey_Ops	dtRecMod	48	(getdate())	YES	datetime						3			
Update	tblGeo_Survey_Ops	UploadtoDB	49		YES	varchar	1	1							
Update	tblGeo_Survey_Ops	Gen_txOpNotes	50		YES	float			53	2					
Update	tblGeo_Survey_Ops	Gen_txReviewComments	51		YES	float			53	2					
Update	tblGeo_Survey_Ops	Gen_vchCulturalEffect	52		YES	float			53	2					
Update	tblGeo_Survey_Ops	Gen_vchGridCondition	53		YES	float			53	2					
Update	tblGeo_Survey_Ops	Gen_vchTerrain	54		YES	float			53	2					
Update	tblGeo_Survey_Ops	Gen_vchWeather	55		YES	float			53	2					
Update	tblGeo_Survey_Ops	s_Generation	56		YES	float			53	2					
Update	tblGeo_Survey_Ops	s_GUID	57		NO	uniqueidentifier							PK_tblGeo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_Survey_Ops	vchContractor	58		YES	nvarchar	50	100							
Update	tblGeo_GridBlock_Lnk	guidGridBlockLnk	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_GridBlock_Lnk	guidGeoSurvey	2		YES	uniqueidentifier									
Update	tblGeo_GridBlock_Lnk	guidGridBlock	3		YES	uniqueidentifier									
Update	tblGeo_GridBlock_Lnk	vchGridBlockID	4		YES	nvarchar	50	100							
Update	tblGeo_GridBlock_Lnk	vchGridID	5		YES	nvarchar	50	100							
Update	tblGeo_GridBlock_Lnk	guidGrid	6		YES	uniqueidentifier									
Update	tblGeo_GridBlock	guidGridBlock	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_GridBlock	vchGridBlockDesc	2		YES	nvarchar	255	510							
Update	tblGeo_FileData	guidGeoFileData	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileData	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_FileData	guidGeoSurvey	2		YES	uniqueidentifier									
Update	tblGeo_FileData	vchGeoFileDataName	3		YES	nvarchar	255	510							
Update	tblGeo_FileData	vchGeoFileDataType	4		YES	nvarchar	255	510							
Update	tblGeo_FileData	vchGeoFileDataNotes	5		YES	nvarchar	255	510							
Update	tblGeo_FileData	RecordId	6		YES	float			53	2					
Update	tblGeo_FileData	UnitID	7		YES	float			53	2					
Update	tblGeo_FileData	UserName	8		YES	varchar	255	255							
Update	tblGeo_FileData	TimeStamp	9		YES	datetime						3			
Update	tblGeo_FileData	vchGridBlockID	10		YES	varchar	50	50							
Update	tblGeo_FileData	vchPreparer	11		YES	varchar	50	50							
Update	tblGeo_FileData	vchQCInitials	12		YES	varchar	5	5							
Update	tblGeo_FileData	dtQC	13		YES	datetime						3			
Update	tblGeo_FileData	vchProblemDesc	14		YES	varchar	255	255							
Update	tblGeo_FileData	biOKToDeliver	15		YES	varchar	1	1							
Update	tblGeo_FileData	dtDelivery	16		YES	datetime						3			
Update	tblGeo_FileData	dtRecMod	17	(getdate())	YES	datetime						3			
Update	tblGeo_FileData	UploadtoDB	18		YES	varchar	1	1							
Update	tblGeo_FileData	s_Generation	19		YES	float			53	2					
Update	tblGeo_FileData	s_GUID	20		YES	uniqueidentifier									
Update	tblGeo_FileData	vchContractor	21		YES	nvarchar	50	100							
Update	tblGeo_FileProcessing	guidGeoFileProcessing	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileProcessing	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_FileProcessing	guidGeoFileData	2		YES	uniqueidentifier									
Update	tblGeo_FileProcessing	vchGeosoftDatabaseName	3		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	dtProcessingDate	4		YES	datetime						3			
Update	tblGeo_FileProcessing	vchProcessingOperator	5		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biGPSSmoothingPerformed	6		YES	bit									
Update	tblGeo_FileProcessing	iGPSSmoothingWindow	7		YES	int			10	10	0				
Update	tblGeo_FileProcessing	biDriftCorrectionPerformed	8		YES	bit									
Update	tblGeo_FileProcessing	vchDriftCorrectMethod	9		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biDirurnalCorrection	10		YES	bit									
Update	tblGeo_FileProcessing	vchDirunalCorrectionBSFile	11		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	dLatency	12		YES	numeric			18	10	3				
Update	tblGeo_FileProcessing	dSampleSeparation	13		YES	numeric			18	10	3				
Update	tblGeo_FileProcessing	dNoiseMean	14		YES	numeric			18	10	3				
Update	tblGeo_FileProcessing	dNoiseStdDev	15		YES	numeric			18	10	3				
Update	tblGeo_FileProcessing	vchProcessingQCOperator	16		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	dtProcessingQCDate	17		YES	datetime						3			
Update	tblGeo_FileProcessing	vchDataProjection	18		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	vchDeSpikingPerformed	19		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	vchDeSpikingInfo	20		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biMagMap2000	21		YES	bit									
Update	tblGeo_FileProcessing	biGeosoftOasisMontaj	22		YES	bit									
Update	tblGeo_FileProcessing	biHeadingCorrection	23		YES	bit									
Update	tblGeo_FileProcessing	vchHeadInfo	24		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biNormalize	25		YES	bit									
Update	tblGeo_FileProcessing	vchNormInfo	26		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biHeaderProcFile	27		YES	bit									
Update	tblGeo_FileProcessing	biLineBreak	28		YES	bit									
Update	tblGeo_FileProcessing	vchLineBreakInfo	29		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	biTranslateData	30		YES	bit									
Update	tblGeo_FileProcessing	biLagCorrection	31		YES	bit									
Update	tblGeo_FileProcessing	vchLagCrValue	32		YES	nvarchar	255	510							
Update	tblGeo_FileProcessing	vchGridBlockID	33		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dSampleSeparationPercent	34		YES	float			53	2					
Update	tblGeo_FileProcessing	dSampleSeparationStatus	35		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dCoverageType	36		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dCoverageDesignPercent	37		YES	float			53	2					
Update	tblGeo_FileProcessing	dCoveragePercent	38		YES	float			53	2					
Update	tblGeo_FileProcessing	dCoverageDesignStatus	39		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dCoverageStatus	40		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dVelocityPercent	41		YES	float			53	2					
Update	tblGeo_FileProcessing	dVelocityMean	42		YES	float			53	2					
Update	tblGeo_FileProcessing	dVelocityStatus	43		YES	varchar	255	255							
Update	tblGeo_FileProcessing	vchDataPackageFiles	44		YES	varchar	-1	-1							
Update	tblGeo_FileProcessing	vchProcessingComments	45		YES	varchar	-1	-1							
Update	tblGeo_FileProcessing	vchRepeatLineNumbers	46		YES	varchar	255	255							
Update	tblGeo_FileProcessing	biRepeatLinesStatus	47		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dGPSQualityPercentFix	48		YES	float			53	2					
Update	tblGeo_FileProcessing	vchGPSQualityStatus	49		YES	varchar	255	255							
Update	tblGeo_FileProcessing	dtRecMod	50	(getdate())	YES	datetime						3			
Update	tblGeo_FileProcessing	Gen_vchDataPackageFiles	51		YES	float			53	2					
Update	tblGeo_FileProcessing	Gen_vchProcessingComments	52		YES	float			53	2					
Update	tblGeo_FileProcessing	s_Generation	53		YES	float			53	2					
Update	tblGeo_FileProcessing	s_GUID	54		YES	uniqueidentifier									
Update	tblGeo_FileProcessing	vchContractor	55		YES	nvarchar	50	100							
Update	tblGeo_QCSurvey_FileData	iGeoFileFieldQCID	1		YES	bigint			19	10	0				
Update	tblGeo_QCSurvey_FileData	guidGeoFileFieldQC	2	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSurvey_FileData	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCSurvey_FileData	guidGeoFileData	3		YES	uniqueidentifier									
Update	tblGeo_QCSurvey_FileData	guidGeoQCSurveyOp	4		YES	uniqueidentifier									
Update	tblGeo_QCSurvey_FileData	vchPreGeoFileQCName	5		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	vchPreGeoFileQCType	6		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	iPreStaticLineNum	7		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPreDynamicLineNum	8		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPreCableLineNum	9		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPreLatencyLineNum	10		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	vchPreQCSurveyNotes	11		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	vchPostGeoFileQCName	12		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	vchPostGeoFileQCType	13		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	iPostStaticLineNum	14		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPostDynamicLineNum	15		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPostCableLineNum	16		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	iPostLatencyLineNum	17		YES	int			10	10	0				
Update	tblGeo_QCSurvey_FileData	vchPostQCSurveyNotes	18		YES	nvarchar	255	510							
Update	tblGeo_QCSurvey_FileData	vchContractor	19		YES	nvarchar	50	100							
Update	tblGeo_QCSurvey_ops	guidGeoQCSurveyOp	1	(newid())	NO	uniqueidentifier							PK_tblGeoQCSurvey_ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCSurvey_ops	vchFldFrmID	2		YES	nvarchar	50	100							
Update	tblGeo_QCSurvey_ops	vchWeather	3		YES	nvarchar	50	100							
Update	tblGeo_QCSurvey_ops	iSurveytype	4		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	iInstWarmupTime	5		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	vchSurveyInstr	6		YES	nvarchar	25	50							
Update	tblGeo_QCSurvey_ops	vchGeoQCSurveyNotes	7		YES	varchar	-1	-1							
Update	tblGeo_QCSurvey_ops	ftStaticSpikeAM	8		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftStaticSpikePM	9		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftStaticBackgroundAM	10		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftStaticBackgroundPM	11		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	vchPointLocationID	12		YES	varchar	50	50							
Update	tblGeo_QCSurvey_ops	vchPointLocationName	13		YES	varchar	50	50							
Update	tblGeo_QCSurvey_ops	ftRecordedNorthing	14		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftRecordedEasting	15		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftKnownNorthing	16		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftKnownEasting	17		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftDistanceOffset	18		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNameAM	19		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNamePM	20		YES	varchar	50	50							
Update	tblGeo_QCSurvey_ops	iStaticLineNum	21		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	iDynamicLineNum	22		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	iCableLineNum	23		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	iIVSLineNum	24		YES	int			10	10	0				
Update	tblGeo_QCSurvey_ops	vchIVSFileName	25		YES	varchar	50	50							
Update	tblGeo_QCSurvey_ops	vchQCFileName	26		YES	varchar	50	50							
Update	tblGeo_QCSurvey_ops	guidGeoSurvey	27		YES	uniqueidentifier									
Update	tblGeo_QCSurvey_ops	RecordId	28		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	UnitID	29		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	UserName	30		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	TimeStamp	31		YES	datetime						3			
Update	tblGeo_QCSurvey_ops	vchTeam	32		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	vchGPSFileName	33		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	Static_Test_Item_Height	34		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	Test_Item	35		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	iStaticPreLineNum	36		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	iStaticSpikeLineNum	37		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	iStaticPostLineNum	38		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	iPersonnelLineNum	39		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	iTowVehicleLineNum	40		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	ftStaticSpike	41		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	ftStaticBackground	42		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	IVSLocation_ID	43		YES	varchar	255	255							
Update	tblGeo_QCSurvey_ops	iIVSBkgLineNum	44		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	vchDateCollected	45		YES	datetime						3			
Update	tblGeo_QCSurvey_ops	dtRecMod	46	(getdate())	YES	datetime						3			
Update	tblGeo_QCSurvey_ops	UploadtoDB	47		YES	varchar	1	1							
Update	tblGeo_QCSurvey_ops	Gen_vchGeoQCSurveyNotes	48		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	Gen_vchWeather	49		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	s_Generation	50		YES	float			53	2					
Update	tblGeo_QCSurvey_ops	s_GUID	51		YES	uniqueidentifier									
Update	tblGeo_QCSurvey_ops	vchContractor	52		YES	nvarchar	50	100							
Update	tblGeo_Defaults	guidGeoDefaultsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_Defaults	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_Defaults	CableShakeTol	2		YES	float			53	2					
Update	tblGeo_Defaults	CableShakePercent	3		YES	float			53	2					
Update	tblGeo_Defaults	PersonnelTol	4		YES	float			53	2					
Update	tblGeo_Defaults	PersonnelPercent	5		YES	float			53	2					
Update	tblGeo_Defaults	TowVehicleTol	6		YES	float			53	2					
Update	tblGeo_Defaults	TowVehiclePercent	7		YES	float			53	2					
Update	tblGeo_Defaults	StaticBkgTol	8		YES	float			53	2					
Update	tblGeo_Defaults	StaticBkgPercent	9		YES	float			53	2					
Update	tblGeo_Defaults	StaticSpikeTol	10		YES	float			53	2					
Update	tblGeo_Defaults	StaticSpikePercent	11		YES	float			53	2					
Update	tblGeo_Defaults	IVSBkgTol	12		YES	float			53	2					
Update	tblGeo_Defaults	IVSBkgPercent	13		YES	float			53	2					
Update	tblGeo_Defaults	IVSResponseTol	14		YES	float			53	2					
Update	tblGeo_Defaults	IVSPositionTol	15		YES	float			53	2					
Update	tblGeo_Defaults	GPSPostionTol	16		YES	float			53	2					
Update	tblGeo_Defaults	CoverageTolAPP	17		YES	float			53	2					
Update	tblGeo_Defaults	CoverageTolATA	18		YES	float			53	2					
Update	tblGeo_Defaults	CoveragePercentAPP	19		YES	float			53	2					
Update	tblGeo_Defaults	CoveragePercentATA	20		YES	float			53	2					
Update	tblGeo_Defaults	CoverageTolBPP	21		YES	float			53	2					
Update	tblGeo_Defaults	CoverageTolBTA	22		YES	float			53	2					
Update	tblGeo_Defaults	CoveragePercentBPP	23		YES	float			53	2					
Update	tblGeo_Defaults	CoveragePercentBTA	24		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignTolAPP	25		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignTolATA	26		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignPercentAPP	27		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignPercentATA	28		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignTolBPP	29		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignTolBTA	30		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignPercentBPP	31		YES	float			53	2					
Update	tblGeo_Defaults	CoverageDesignPercentBTA	32		YES	float			53	2					
Update	tblGeo_Defaults	ProjectCoordinateSystem	33		YES	varchar	255	255							
Update	tblGeo_Defaults	VelocityTol	34		YES	float			53	2					
Update	tblGeo_Defaults	VelocityPercent	35		YES	float			53	2					
Update	tblGeo_Defaults	AlongLineDensityPercent	36		YES	float			53	2					
Update	tblGeo_Defaults	AlongLineDensityTol	37		YES	float			53	2					
Update	tblGeo_Defaults	ProcFormDriftCorrMethod	38		YES	varchar	255	255							
Update	tblGeo_Defaults	ProcFormLagValue	39		YES	varchar	255	255							
Update	tblGeo_Defaults	ProcFormDeSpikingInfo	40		YES	varchar	255	255							
Update	tblGeo_Defaults	ProcFormLineBreakInfo	41		YES	varchar	255	255							
Update	tblGeo_Defaults	ProcFormProcessingComments	42		YES	varchar	-1	-1							
Update	tblGeo_Defaults	dtRecMod	43	(getdate())	YES	datetime						3			
Update	tblGeo_Defaults	RecordID	44		YES	float			53	2					
Update	tblGeo_Defaults	Gen_ProcFormProcessingComments	45		YES	float			53	2					
Update	tblGeo_Defaults	s_Generation	46		YES	float			53	2					
Update	tblGeo_Defaults	s_GUID	47		YES	uniqueidentifier									
Update	tblGeo_Defaults	vchContractor	48		YES	nvarchar	50	100							
Update	tblGeo_GPSControlPoint	guidGeoGPSControlPointID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_GPSControlPoint	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_GPSControlPoint	vchPointLocationID	2		YES	varchar	50	50							
Update	tblGeo_GPSControlPoint	ftKnownEasting	3		YES	float			53	2					
Update	tblGeo_GPSControlPoint	ftKnownNorthing	4		YES	float			53	2					
Update	tblGeo_GPSControlPoint	vchPointLocationName	5		YES	varchar	255	255							
Update	tblGeo_GPSControlPoint	Comments	6		YES	varchar	-1	-1							
Update	tblGeo_GPSControlPoint	dtRecMod	7	(getdate())	YES	datetime						3			
Update	tblGeo_GPSControlPoint	Gen_Comments	8		YES	float			53	2					
Update	tblGeo_GPSControlPoint	s_Generation	9		YES	float			53	2					
Update	tblGeo_GPSControlPoint	s_GUID	10		YES	uniqueidentifier									
Update	tblGeo_GPSControlPoint	vchContractor	11		YES	nvarchar	50	100							
Update	tblGeo_QCCableShake	guidGeoQCCableShakeID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCCableShake	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCCableShake	vchQCFileName	2		YES	varchar	50	50							
Update	tblGeo_QCCableShake	Sensor_ID	3		YES	varchar	50	50							
Update	tblGeo_QCCableShake	iCableShakeLineID	4		YES	float			53	2					
Update	tblGeo_QCCableShake	Response_Ch1	5		YES	float			53	2					
Update	tblGeo_QCCableShake	Response_Ch2	6		YES	float			53	2					
Update	tblGeo_QCCableShake	Response_Ch3	7		YES	float			53	2					
Update	tblGeo_QCCableShake	Response_Ch4	8		YES	float			53	2					
Update	tblGeo_QCCableShake	PercentInTol_Ch1	9		YES	float			53	2					
Update	tblGeo_QCCableShake	PercentInTol_Ch2	10		YES	float			53	2					
Update	tblGeo_QCCableShake	PercentInTol_Ch3	11		YES	float			53	2					
Update	tblGeo_QCCableShake	PercentInTol_Ch4	12		YES	float			53	2					
Update	tblGeo_QCCableShake	QCStatus_Ch1	13		YES	varchar	50	50							
Update	tblGeo_QCCableShake	QCStatus_Ch2	14		YES	varchar	50	50							
Update	tblGeo_QCCableShake	QCStatus_Ch3	15		YES	varchar	50	50							
Update	tblGeo_QCCableShake	QCStatus_Ch4	16		YES	varchar	50	50							
Update	tblGeo_QCCableShake	Comments	17		YES	varchar	-1	-1							
Update	tblGeo_QCCableShake	dtRecMod	18	(getdate())	YES	datetime						3			
Update	tblGeo_QCCableShake	RecordID	19		YES	float			53	2					
Update	tblGeo_QCCableShake	Gen_Comments	20		YES	float			53	2					
Update	tblGeo_QCCableShake	s_Generation	21		YES	float			53	2					
Update	tblGeo_QCCableShake	s_GUID	22		YES	uniqueidentifier									
Update	tblGeo_QCCableShake	vchContractor	23		YES	nvarchar	50	100							
Update	tblGeo_QCGPSCheck	guidGeoQCGPSCheckID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCGPSCheck	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCGPSCheck	ID	2		YES	float			53	2					
Update	tblGeo_QCGPSCheck	vchGPSFileName	3		YES	varchar	255	255							
Update	tblGeo_QCGPSCheck	vchPointLocationID	4		YES	varchar	50	50							
Update	tblGeo_QCGPSCheck	ftRecordedNorthing	5		YES	float			53	2					
Update	tblGeo_QCGPSCheck	ftRecordedEasting	6		YES	float			53	2					
Update	tblGeo_QCGPSCheck	ftKnownNorthing	7		YES	float			53	2					
Update	tblGeo_QCGPSCheck	ftKnownEasting	8		YES	float			53	2					
Update	tblGeo_QCGPSCheck	ftDistanceOffset	9		YES	float			53	2					
Update	tblGeo_QCGPSCheck	QCStatus	10		YES	varchar	50	50							
Update	tblGeo_QCGPSCheck	Comments	11		YES	varchar	-1	-1							
Update	tblGeo_QCGPSCheck	dtRecMod	12	(getdate())	YES	datetime						3			
Update	tblGeo_QCGPSCheck	Gen_Comments	13		YES	float			53	2					
Update	tblGeo_QCGPSCheck	s_Generation	14		YES	float			53	2					
Update	tblGeo_QCGPSCheck	s_GUID	15		YES	uniqueidentifier									
Update	tblGeo_QCGPSCheck	vchContractor	16		YES	nvarchar	50	100							
Update	tblGeo_QCIVSBackground	guidGeoQCIVSBackgroundID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSBackground	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCIVSBackground	vchIVSFileName	2		YES	varchar	50	50							
Update	tblGeo_QCIVSBackground	iIVSBkgLineID	3		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Sensor_ID	4		YES	varchar	50	50							
Update	tblGeo_QCIVSBackground	Bkg_Response_Ch1	5		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_Response_Ch2	6		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_Response_Ch3	7		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_Response_Ch4	8		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch1	9		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch2	10		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch3	11		YES	float			53	2					
Update	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch4	12		YES	float			53	2					
Update	tblGeo_QCIVSBackground	QCStatus_Ch1	13		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGeo_QCIVSBackground	QCStatus_Ch2	14		YES	varchar	50	50							
Update	tblGeo_QCIVSBackground	QCStatus_Ch3	15		YES	varchar	50	50							
Update	tblGeo_QCIVSBackground	QCStatus_Ch4	16		YES	varchar	50	50							
Update	tblGeo_QCIVSBackground	Comments	17		YES	varchar	-1	-1							
Update	tblGeo_QCIVSBackground	RecordID	18		YES	float			53	2					
Update	tblGeo_QCIVSBackground	dtRecMod	19	(getdate())	YES	datetime						3			
Update	tblGeo_QCIVSBackground	Gen_Comments	20		YES	float			53	2					
Update	tblGeo_QCIVSBackground	s_Generation	21		YES	float			53	2					
Update	tblGeo_QCIVSBackground	s_GUID	22		YES	uniqueidentifier									
Update	tblGeo_QCIVSBackground	vchContractor	23		YES	nvarchar	50	100							
Update	tblGeo_QCIVSResponse	guidGeoQCIVSResponseID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSResponse	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCIVSResponse	vchIVSFileName	2		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	iIVSLineNum	3		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Sensor_ID	4		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	Test_Item	5		YES	varchar	255	255							
Update	tblGeo_QCIVSResponse	Spike_Response_Ch1	6		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Spike_Response_Ch2	7		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Spike_Response_Ch3	8		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Spike_Response_Ch4	9		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Delta_Response_Ch1	10		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Delta_Response_Ch2	11		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Delta_Response_Ch3	12		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Delta_Response_Ch4	13		YES	float			53	2					
Update	tblGeo_QCIVSResponse	ftRecordedNorthing	14		YES	float			53	2					
Update	tblGeo_QCIVSResponse	ftRecordedEasting	15		YES	float			53	2					
Update	tblGeo_QCIVSResponse	X_Offset	16		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Y_Offset	17		YES	float			53	2					
Update	tblGeo_QCIVSResponse	Offset	18		YES	float			53	2					
Update	tblGeo_QCIVSResponse	QCStatus_Ch1	19		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	QCStatus_Ch2	20		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	QCStatus_Ch3	21		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	QCStatus_Ch4	22		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	QCStatus_Offset	23		YES	varchar	50	50							
Update	tblGeo_QCIVSResponse	Comments	24		YES	varchar	-1	-1							
Update	tblGeo_QCIVSResponse	RecordID	25		YES	float			53	2					
Update	tblGeo_QCIVSResponse	dtRecMod	26	(getdate())	YES	datetime						3			
Update	tblGeo_QCIVSResponse	Gen_Comments	27		YES	float			53	2					
Update	tblGeo_QCIVSResponse	s_Generation	28		YES	float			53	2					
Update	tblGeo_QCIVSResponse	s_GUID	29		YES	uniqueidentifier									
Update	tblGeo_QCIVSResponse	vchContractor	30		YES	nvarchar	50	100							
Update	tblGeo_QCPersonnel	guidGeoQCPersonnelID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCPersonnel	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCPersonnel	vchQCFileName	2		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	Sensor_ID	3		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	iPersonnelLineID	4		YES	float			53	2					
Update	tblGeo_QCPersonnel	Response_Ch1	5		YES	float			53	2					
Update	tblGeo_QCPersonnel	Response_Ch2	6		YES	float			53	2					
Update	tblGeo_QCPersonnel	Response_Ch3	7		YES	float			53	2					
Update	tblGeo_QCPersonnel	Response_Ch4	8		YES	float			53	2					
Update	tblGeo_QCPersonnel	PercentInTol_Ch1	9		YES	float			53	2					
Update	tblGeo_QCPersonnel	PercentInTol_Ch2	10		YES	float			53	2					
Update	tblGeo_QCPersonnel	PercentInTol_Ch3	11		YES	float			53	2					
Update	tblGeo_QCPersonnel	PercentInTol_Ch4	12		YES	float			53	2					
Update	tblGeo_QCPersonnel	QCStatus_Ch1	13		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	QCStatus_Ch2	14		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	QCStatus_Ch3	15		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	QCStatus_Ch4	16		YES	varchar	50	50							
Update	tblGeo_QCPersonnel	Comments	17		YES	varchar	-1	-1							
Update	tblGeo_QCPersonnel	RecordID	18		YES	float			53	2					
Update	tblGeo_QCPersonnel	dtRecMod	19	(getdate())	YES	datetime						3			
Update	tblGeo_QCPersonnel	Gen_Comments	20		YES	float			53	2					
Update	tblGeo_QCPersonnel	s_Generation	21		YES	float			53	2					
Update	tblGeo_QCPersonnel	s_GUID	22		YES	uniqueidentifier									
Update	tblGeo_QCPersonnel	vchContractor	23		YES	nvarchar	50	100							
Update	tblGeo_QCSeedItems	guidGeoQCSeedItemsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSeedItems	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCSeedItems	QCSeedType	2		YES	varchar	255	255							
Update	tblGeo_QCSeedItems	Sensor_ID	3		YES	varchar	50	50							
Update	tblGeo_QCSeedItems	vchSurveyInstr	4		YES	varchar	25	25							
Update	tblGeo_QCSeedItems	Response_Value_CH1	5		YES	numeric			10	10	2				
Update	tblGeo_QCSeedItems	Response_Value_CH2	6		YES	numeric			10	10	2				
Update	tblGeo_QCSeedItems	Response_Value_CH3	7		YES	numeric			10	10	2				
Update	tblGeo_QCSeedItems	Response_Value_CH4	8		YES	numeric			10	10	2				
Update	tblGeo_QCSeedItems	ftKnownEasting	9		YES	float			53	2					
Update	tblGeo_QCSeedItems	ftKnownNorthing	10		YES	float			53	2					
Update	tblGeo_QCSeedItems	Test_Item	11		YES	varchar	255	255							
Update	tblGeo_QCSeedItems	IVSLocation_ID	12		YES	varchar	255	255							
Update	tblGeo_QCSeedItems	Static_Test_Item_Height	13		YES	decimal			18	10	2				
Update	tblGeo_QCSeedItems	dtRecMod	14	(getdate())	YES	datetime						3			
Update	tblGeo_QCSeedItems	RecordID	15		YES	float			53	2					
Update	tblGeo_QCSeedItems	s_Generation	16		YES	float			53	2					
Update	tblGeo_QCSeedItems	s_GUID	17		YES	uniqueidentifier									
Update	tblGeo_QCSeedItems	vchContractor	18		YES	nvarchar	50	100							
Update	tblGeo_QCStatic	guidGeoQCStaticID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCStatic	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCStatic	vchQCFileName	2		YES	varchar	50	50							
Update	tblGeo_QCStatic	iStaticPreLineID	3		YES	float			53	2					
Update	tblGeo_QCStatic	iStaticSpikeLineID	4		YES	float			53	2					
Update	tblGeo_QCStatic	iStaticPostLineID	5		YES	float			53	2					
Update	tblGeo_QCStatic	Test_Item	6		YES	varchar	255	255							
Update	tblGeo_QCStatic	Sensor_ID	7		YES	varchar	50	50							
Update	tblGeo_QCStatic	PreBkg_Response_Ch1	8		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_Response_Ch2	9		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_Response_Ch3	10		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_Response_Ch4	11		YES	float			53	2					
Update	tblGeo_QCStatic	Spike_Response_CH1	12		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Spike_Response_CH2	13		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Spike_Response_CH3	14		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Spike_Response_CH4	15		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	PostBkg_Response_Ch1	16		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_Response_Ch2	17		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_Response_Ch3	18		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_Response_Ch4	19		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_PercentInTol_Ch1	20		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_PercentInTol_Ch2	21		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_PercentInTol_Ch3	22		YES	float			53	2					
Update	tblGeo_QCStatic	PreBkg_PercentInTol_Ch4	23		YES	float			53	2					
Update	tblGeo_QCStatic	Spike_PercentInTol_Ch1	24		YES	float			53	2					
Update	tblGeo_QCStatic	Spike_PercentInTol_Ch2	25		YES	float			53	2					
Update	tblGeo_QCStatic	Spike_PercentInTol_Ch3	26		YES	float			53	2					
Update	tblGeo_QCStatic	Spike_PercentInTol_Ch4	27		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_PercentInTol_Ch1	28		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_PercentInTol_Ch2	29		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_PercentInTol_Ch3	30		YES	float			53	2					
Update	tblGeo_QCStatic	PostBkg_PercentInTol_Ch4	31		YES	float			53	2					
Update	tblGeo_QCStatic	Static_Test_Item_Height	32		YES	numeric			10	10	2				
Update	tblGeo_QCStatic	Static_Response_CH1	33		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Static_Response_CH2	34		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Static_Response_CH3	35		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	Static_Response_CH4	36		YES	decimal			18	10	2				
Update	tblGeo_QCStatic	QCStatus_Ch1	37		YES	varchar	50	50							
Update	tblGeo_QCStatic	QCStatus_Ch2	38		YES	varchar	50	50							
Update	tblGeo_QCStatic	QCStatus_Ch3	39		YES	varchar	50	50							
Update	tblGeo_QCStatic	QCStatus_Ch4	40		YES	varchar	50	50							
Update	tblGeo_QCStatic	Comments	41		YES	varchar	-1	-1							
Update	tblGeo_QCStatic	RecordID	42		YES	float			53	2					
Update	tblGeo_QCStatic	dtRecMod	43	(getdate())	YES	datetime						3			
Update	tblGeo_QCStatic	Gen_Comments	44		YES	float			53	2					
Update	tblGeo_QCStatic	s_Generation	45		YES	float			53	2					
Update	tblGeo_QCStatic	s_GUID	46		YES	uniqueidentifier									
Update	tblGeo_QCStatic	vchContractor	47		YES	nvarchar	50	100							
Update	tblGeo_QCTowVehicle	guidGeoQCTowVehicleID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCTowVehicle	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGeo_QCTowVehicle	vchQCFileName	2		YES	varchar	50	50							
Update	tblGeo_QCTowVehicle	Sensor_ID	3		YES	varchar	50	50							
Update	tblGeo_QCTowVehicle	iTowVehicleLineID	4		YES	float			53	2					
Update	tblGeo_QCTowVehicle	Response_Ch1	5		YES	float			53	2					
Update	tblGeo_QCTowVehicle	Response_Ch2	6		YES	float			53	2					
Update	tblGeo_QCTowVehicle	Response_Ch3	7		YES	float			53	2					
Update	tblGeo_QCTowVehicle	Response_Ch4	8		YES	float			53	2					
Update	tblGeo_QCTowVehicle	PercentInTol_Ch1	9		YES	float			53	2					
Update	tblGeo_QCTowVehicle	PercentInTol_Ch2	10		YES	float			53	2					
Update	tblGeo_QCTowVehicle	PercentInTol_Ch3	11		YES	float			53	2					
Update	tblGeo_QCTowVehicle	PercentInTol_Ch4	12		YES	float			53	2					
Update	tblGeo_QCTowVehicle	QCStatus_Ch1	13		YES	varchar	50	50							
Update	tblGeo_QCTowVehicle	QCStatus_Ch2	14		YES	varchar	50	50							
Update	tblGeo_QCTowVehicle	QCStatus_Ch3	15		YES	varchar	50	50							
Update	tblGeo_QCTowVehicle	QCStatus_Ch4	16		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGeo_QCTowVehicle	Comments	17		YES	varchar	-1	-1							
Update	tblGeo_QCTowVehicle	RecordID	18		YES	float			53	2					
Update	tblGeo_QCTowVehicle	dtRecMod	19	(getdate())	YES	datetime						3			
Update	tblGeo_QCTowVehicle	Gen_Comments	20		YES	float			53	2					
Update	tblGeo_QCTowVehicle	s_Generation	21		YES	float			53	2					
Update	tblGeo_QCTowVehicle	s_GUID	22		YES	uniqueidentifier									
Update	tblGeo_QCTowVehicle	vchContractor	23		YES	nvarchar	50	100							
Update	tblDemo_Ops	guidDemoOp	1	(newid())	NO	uniqueidentifier							PK_tblDemo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Update	tblDemo_Ops	dtDemo	2		YES	smalldatetime						0			
Update	tblDemo_Ops	iQtyOEDemoed	3		YES	int			10	10	0				
Update	tblDemo_Ops	vchCondition	4		YES	nvarchar	25	50							
Update	tblDemo_Ops	txReviewComments	5		YES	nvarchar	-1	-1							
Update	tblDemo_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Update	tblDemo_Ops	dtQC	7		YES	datetime						3			
Update	tblDemo_Ops	biDEQCChecked	8		YES	bit									
Update	tblDemo_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Update	tblDemo_Ops	biDiscrepancy	10		YES	bit									
Update	tblDemo_Ops	vchFinalDisposition	11		YES	varchar	50	50							
Update	tblDemo_Ops	dtRecMod	12	(getdate())	YES	datetime						3			
Update	tblDemo_Ops	Gen_txReviewComments	13		YES	float			53	2					
Update	tblDemo_Ops	s_Generation	14		YES	float			53	2					
Update	tblDemo_Ops	s_GUID	15		YES	uniqueidentifier									
Update	tblField_Teamleader_Logbook	vchUserName	1		NO	nvarchar	50	100							
Update	tblField_Teamleader_Logbook	dtTimeStamp	2		YES	datetime						3			
Update	tblField_Teamleader_Logbook	dtWorkDate	3		YES	smalldatetime						0			
Update	tblField_Teamleader_Logbook	dtWorkTime	4		YES	datetime						3			
Update	tblField_Teamleader_Logbook	vchTeam	5		YES	nvarchar	10	20							
Update	tblField_Teamleader_Logbook	vchTeamLeader	6		YES	nvarchar	50	100							
Update	tblField_Teamleader_Logbook	vchTeamMember	7		YES	nvarchar	-1	-1							
Update	tblField_Teamleader_Logbook	vchSite	8		YES	nvarchar	50	100							
Update	tblField_Teamleader_Logbook	txLogEntry	9		YES	nvarchar	1000	2000							
Update	tblField_Teamleader_Logbook	biQCReviewPassed	10		YES	bit									
Update	tblField_Teamleader_Logbook	txQCReviewComments	11		YES	nvarchar	1000	2000							
Update	tblField_Teamleader_Logbook	RecordId	12		YES	float			53	2					
Update	tblField_Teamleader_Logbook	UnitID	13		YES	float			53	2					
Update	tblField_Teamleader_Logbook	UserName	14		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	TimeStamp	15		YES	datetime						3			
Update	tblField_Teamleader_Logbook	vchEMOp	16		YES	varchar	50	50							
Update	tblField_Teamleader_Logbook	vchTestItemmV	17		YES	varchar	50	50							
Update	tblField_Teamleader_Logbook	vchAnalogInstChk	18		YES	varchar	50	50							
Update	tblField_Teamleader_Logbook	dtWorkTimeEnd	19		YES	datetime						3			
Update	tblField_Teamleader_Logbook	Remarks	20		YES	varchar	-1	-1							
Update	tblField_Teamleader_Logbook	WorkCategory	21		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	vchQCInitials	22		YES	varchar	5	5							
Update	tblField_Teamleader_Logbook	dtQC	23		YES	datetime						3			
Update	tblField_Teamleader_Logbook	txModNotes	24		YES	varchar	-1	-1							
Update	tblField_Teamleader_Logbook	Completed_Datasets	25		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	Partial_Datasets	26		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	Datasets_Comp_frm_Partial	27		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	Grids_Reacquired	28		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	Number_Targets_Reacquired	29		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	Standby_Time	30		YES	varchar	255	255							
Update	tblField_Teamleader_Logbook	dtRecMod	31	(getdate())	YES	datetime						3			
Update	tblField_Teamleader_Logbook	UploadtoDB	32		YES	varchar	50	50							
Update	tblField_Teamleader_Logbook	Gen_Remarks	33		YES	float			53	2					
Update	tblField_Teamleader_Logbook	Gen_txLogEntry	34		YES	float			53	2					
Update	tblField_Teamleader_Logbook	Gen_txModNotes	35		YES	float			53	2					
Update	tblField_Teamleader_Logbook	Gen_vchTeamLeader	36		YES	float			53	2					
Update	tblField_Teamleader_Logbook	Gen_vchTeamMember	37		YES	float			53	2					
Update	tblField_Teamleader_Logbook	s_Generation	38		YES	float			53	2					
Update	tblField_Teamleader_Logbook	s_GUID	39		YES	uniqueidentifier									
Update	tblField_Teamleader_Logbook	guidFieldTeamleaderLogbook	40		NO	uniqueidentifier							PK_tblField_Teamleader_Logbook	PK	PRIMARY_KEY_CONSTRAINT
Update	tblField_Teamleader_Logbook	vchContractor	41		YES	nvarchar	50	100							
Update	tblGrid_Alias	vchGridAlias	1		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Alias	vchSite	2		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Alias	vchGridID	3		NO	nvarchar	50	100							
Update	tblGrid_Alias	guidGrid	4	(newid())	NO	uniqueidentifier							PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_Alias	vchContractor	5		YES	nvarchar	50	100							
Update	tblGrid_DgmData_QC	guidGridDgmDataQCID	1	(newid())	NO	uniqueidentifier							PK_tblGrid_DgmData_QC	PK	PRIMARY_KEY_CONSTRAINT
Update	tblGrid_DgmData_QC	GridID	2		YES	varchar	10	10							
Update	tblGrid_DgmData_QC	vchGridBlockID	3		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DateDataQC	4		YES	datetime						3			
Update	tblGrid_DgmData_QC	QCPerfBy	5		YES	varchar	20	20							
Update	tblGrid_DgmData_QC	RawDataDeliv	6		YES	bit									
Update	tblGrid_DgmData_QC	RawDataDelivComm	7		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	RawDataDelivRes	8		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	FinDataPkgSub	9		YES	bit									
Update	tblGrid_DgmData_QC	LineDataEdit	10		YES	bit									
Update	tblGrid_DgmData_QC	LineDataEditComm	11		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	LineDataEditRes	12		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	FieldLogComp	13		YES	bit									
Update	tblGrid_DgmData_QC	FieldLogCompComm	14		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	FieldLogCompRes	15		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	StatCheckTol	16		YES	bit									
Update	tblGrid_DgmData_QC	StatCheckTolComm	17		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	StatCheckTolRes	18		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DynDetRepTol	19		YES	bit									
Update	tblGrid_DgmData_QC	DynDetRepTolComm	20		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DynDetRepTolRes	21		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DynPosRep	22		YES	bit									
Update	tblGrid_DgmData_QC	DynPosRepComm	23		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DynPosRepRes	24		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	VelTolAcc	25		YES	bit									
Update	tblGrid_DgmData_QC	VelTolComm	26		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	VelTolRes	27		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcNoiseAcc	28		YES	bit									
Update	tblGrid_DgmData_QC	ProcNoiseComm	29		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcNoiseRes	30		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TrackSampAcc	31		YES	bit									
Update	tblGrid_DgmData_QC	TrackSampComm	32		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TrackSampRes	33		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DataLev	34		YES	bit									
Update	tblGrid_DgmData_QC	DataLevComm	35		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DataLevRes	36		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	LagCorrPerf	37		YES	bit									
Update	tblGrid_DgmData_QC	LagCorrPerfComm	38		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	LagCorrPerfRes	39		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TrackCovComp	40		YES	bit									
Update	tblGrid_DgmData_QC	TrackCovComm	41		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	CoverCompQCRes	42		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	XYZCorr	43		YES	bit									
Update	tblGrid_DgmData_QC	XYZCorrComm	44		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	XYZCorrRes	45		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcDataOther	46		YES	bit									
Update	tblGrid_DgmData_QC	ProcDataOtherComm	47		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcDataOtherRes	48		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	SeedDetTarg	49		YES	bit									
Update	tblGrid_DgmData_QC	SeedDetTargComm	50		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	SeedDetTargRes	51		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	MapPlot	52		YES	bit									
Update	tblGrid_DgmData_QC	MapPlotComm	53		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	MapPlotRes	54		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargListMatch	55		YES	bit									
Update	tblGrid_DgmData_QC	LegFormat	56		YES	bit									
Update	tblGrid_DgmData_QC	TargListMatchComm	57		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	LegFormatComm	58		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargListMatchRes	59		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	LegFormatRes	60		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargOutBoundRem	61		YES	bit									
Update	tblGrid_DgmData_QC	ColorBar	62		YES	bit									
Update	tblGrid_DgmData_QC	TargOutBoundRemComm	63		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ColorBarComm	64		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargOutBoundRemRes	65		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ColorBarRes	66		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcNoteTargSel	67		YES	bit									
Update	tblGrid_DgmData_QC	CultLabel	68		YES	bit									
Update	tblGrid_DgmData_QC	ProcNoteTargSelComm	69		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	CultLabelComm	70		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	ProcNoteTargSelRes	71		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	CultLabelRes	72		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargLabel	73		YES	bit									
Update	tblGrid_DgmData_QC	StatePlane	74		YES	bit									
Update	tblGrid_DgmData_QC	TargLabelComm	75		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	StatePlaneComm	76		YES	varchar	255	255							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblGrid_DgmData_QC	TargLabelRes	77		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	StatePlaneRes	78		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargSortAmp	79		YES	bit									
Update	tblGrid_DgmData_QC	OtherMap	80		YES	bit									
Update	tblGrid_DgmData_QC	TargSortAmpComm	81		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	OtherMapComm	82		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargSortAmpRes	83		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	OtherMapRes	84		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargSelecOther	85		YES	bit									
Update	tblGrid_DgmData_QC	DataReas	86		YES	bit									
Update	tblGrid_DgmData_QC	TargSelecOtherComm	87		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DataReasComm	88		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	TargSelecOtherRes	89		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	DataReasRes	90		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	QCRevRepComp	91		YES	bit									
Update	tblGrid_DgmData_QC	QCRevRepCompComm	92		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	QCRevRepCompRes	93		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	QCActionReq	94		YES	bit									
Update	tblGrid_DgmData_QC	QCActionReqComm	95		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	QCActionReqRes	96		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	AddQCComm	97		YES	varchar	-1	-1							
Update	tblGrid_DgmData_QC	AnomLabCorr	98		YES	bit									
Update	tblGrid_DgmData_QC	AnomLabCorrComm	99		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	AnomLabCorrRes	100		YES	varchar	255	255							
Update	tblGrid_DgmData_QC	dtRecMod	101	(getdate())	YES	datetime						3			
Update	tblGrid_DgmData_QC	Gen_AddQCComm	102		YES	float			53	2					
Update	tblGrid_DgmData_QC	s_Generation	103		YES	float			53	2					
Update	tblGrid_DgmData_QC	s_GUID	104		YES	uniqueidentifier									
Update	tblGrid_DgmData_QC	vchContractor	105		YES	nvarchar	50	100							
Update	tblSite	vchSite	1		NO	nvarchar	50	100					PK_tblSites	PK	PRIMARY_KEY_CONSTRAINT
Update	tblSite	vchSiteDesc	2		YES	nvarchar	255	510							
Update	tblSite	ftPerimeter	3		YES	float			53	2					
Update	tblSite	ftArea	4		YES	float			53	2					
Update	tblSite	vchComments	5		YES	nvarchar	255	510							
Update	tblSite	vchContractor	6		YES	nvarchar	50	100							
Update	tblSite_Feature_Data	guidSiteFeatureDataID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Feature_Data	PK	PRIMARY_KEY_CONSTRAINT
Update	tblSite_Feature_Data	RecordId	2		YES	float			53	2					
Update	tblSite_Feature_Data	UnitID	3		YES	float			53	2					
Update	tblSite_Feature_Data	UserName	4		YES	varchar	255	255							
Update	tblSite_Feature_Data	TimeStamp	5		YES	datetime						3			
Update	tblSite_Feature_Data	dtWorkDate	6		YES	datetime						3			
Update	tblSite_Feature_Data	vchTeam	7		YES	nvarchar	255	510							
Update	tblSite_Feature_Data	CultDesc	8		YES	varchar	64	64							
Update	tblSite_Feature_Data	GetGPS	9		YES	varchar	255	255							
Update	tblSite_Feature_Data	Latitude	10		YES	varchar	255	255							
Update	tblSite_Feature_Data	Longitude	11		YES	varchar	255	255							
Update	tblSite_Feature_Data	Altitude	12		YES	varchar	255	255							
Update	tblSite_Feature_Data	dtRecMod	13	(getdate())	YES	datetime						3			
Update	tblSite_Feature_Data	UploadtoDB	14		YES	varchar	1	1							
Update	tblSite_Feature_Data	s_Generation	15		YES	float			53	2					
Update	tblSite_Feature_Data	s_GUID	16		YES	uniqueidentifier									
Update	tblSite_Feature_Data	vchContractor	17		YES	nvarchar	50	100							
Update	tblSites_Grid_Lnk	vchSite	1		NO	nvarchar	50	100							
Update	tblSites_Grid_Lnk	vchGridID	2		NO	nvarchar	50	100							
Update	tblSites_Grid_Lnk	ftArea	3		YES	float			53	2					
Update	tblSites_Grid_Lnk	dtVegetationRemoval	4		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtGridSurvey	5		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtSurfaceRemoval	6		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtGeoSurvey	7		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtRawDataDelivered	8		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtProcessedDataDelivered	9		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtReacquisition	10		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtExcavation	11		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtSubsurfaceRemoval	12		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtAnalogRemoval	13		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC1PostXCheck	14		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC1Excavation	15		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC2DigitalQCSurvey	16		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC2RawDataDelivered	17		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC2ProcessedDataDelivered	18		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC2Reacquisition	19		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC2DigitalExcavation	20		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQC3AnalogInspection	21		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQCDigital	22		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQAAnalog	23		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtQADigital	24		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	dtModified	25		YES	smalldatetime						0			
Update	tblSites_Grid_Lnk	vchComments	26		YES	nvarchar	255	510							
Update	tblSites_Grid_Lnk	vchContractor	27		YES	nvarchar	50	100							
Update	tblTableDictionary	iColumnID	1		NO	int			10	10	0				
Update	tblTableDictionary	vchColumnName	2		YES	nvarchar	50	100							
Update	tblTableDictionary	iTableID	3		NO	int			10	10	0				
Update	tblTableDictionary	vchTableName	4		YES	nvarchar	50	100							
Update	tblTableDictionary	iFieldType	5		YES	int			10	10	0				
Update	tblTableDictionary	vchFieldType	6		YES	nvarchar	50	100							
Update	tblTableDictionary	iFieldLength	7		YES	int			10	10	0				
Update	tblTableDictionary	biPrimaryKey	8		YES	bit									
Update	tblTableDictionary	vchRKeyTable	9		YES	nvarchar	50	100							
Update	tblTableDictionary	vchRKeyCol	10		YES	nvarchar	50	100							
Update	tblTableDictionary	vchColumnDescShort	11		YES	nvarchar	50	100							
Update	tblTableDictionary	vchColumnDescLong	12		YES	nvarchar	500	1000							
Update	tblTableDictionary	vchContractor	13		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	iColumnID	1		NO	int			10	10	0				
Update	tblTableDictionary_BAK	vchColumnName	2		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	iTableID	3		NO	int			10	10	0				
Update	tblTableDictionary_BAK	vchTableName	4		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	iFieldType	5		YES	int			10	10	0				
Update	tblTableDictionary_BAK	vchFieldType	6		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	iFieldLength	7		YES	int			10	10	0				
Update	tblTableDictionary_BAK	biPrimaryKey	8		YES	bit									
Update	tblTableDictionary_BAK	vchRKeyTable	9		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	vchRKeyCol	10		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	vchColumnDescShort	11		YES	nvarchar	50	100							
Update	tblTableDictionary_BAK	vchColumnDescLong	12		YES	nvarchar	500	1000							
Update	tblTableDictionary_BAK	vchContractor	13		YES	nvarchar	50	100							
Update	tblTableDictionary_Updated	iColumnID	1		YES	float			53	2					
Update	tblTableDictionary_Updated	vchColumnName	2		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	iTableID	3		YES	float			53	2					
Update	tblTableDictionary_Updated	vchTableName	4		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	iFieldType	5		YES	float			53	2					
Update	tblTableDictionary_Updated	vchFieldType	6		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	iFieldLength	7		YES	float			53	2					
Update	tblTableDictionary_Updated	biPrimaryKey	8		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	vchRKeyTable	9		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	vchRKeyCol	10		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	vchColumnDescShort	11		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	vchColumnDescLong	12		YES	nvarchar	255	510							
Update	tblTableDictionary_Updated	vchContractor	13		YES	nvarchar	50	100							
Update	tblveg_removal_ops	iVegRemovalOpID	1		NO	int			10	10	0				
Update	tblveg_removal_ops	dtWorkDate	2		YES	smalldatetime						0			
Update	tblveg_removal_ops	dtStartTime	3		YES	datetime						3			
Update	tblveg_removal_ops	dtEndTime	4		YES	datetime						3			
Update	tblveg_removal_ops	vchTeam	5		YES	nvarchar	25	50							
Update	tblveg_removal_ops	chOpCompleted	6		YES	char	1	1							
Update	tblveg_removal_ops	iTeamLeader	7		YES	int			10	10	0				
Update	tblveg_removal_ops	vchContractor	8		YES	nvarchar	20	40							
Update	tblveg_removal_ops	vchCostCode	9		YES	nvarchar	15	30							
Update	tblveg_removal_ops	iExcavationsTotal	10		YES	int			10	10	0				
Update	tblveg_removal_ops	ftNonOEScrapLBs	11		YES	float			53	2					
Update	tblveg_removal_ops	ftOEScrapLBs	12		YES	float			53	2					
Update	tblveg_removal_ops	iSlope	13		YES	int			10	10	0				
Update	tblveg_removal_ops	vchVegRemovalName	14		YES	nvarchar	50	100							
Update	tblveg_removal_ops	vchVegRemovalCode	15		YES	nvarchar	10	20							
Update	tblveg_removal_ops	vchSurveyInstr	16		YES	nvarchar	25	50							
Update	tblveg_removal_ops	vchVegSourceType	17		YES	nvarchar	50	100							
Update	tblveg_removal_ops	txOpNotes	18		YES	nvarchar	4000	8000							
Update	tblveg_removal_ops	dtDataEntered	19		YES	datetime						3			
Update	tblveg_removal_ops	vchDataEntry	20		YES	nvarchar	10	20							
Update	tblveg_removal_ops	vchDataSource	21		YES	nvarchar	150	300							
Update	tblveg_removal_ops	txReviewComments	22		YES	nvarchar	4000	8000							
Update	tblveg_removal_ops	vchQCInitials	23		YES	nvarchar	5	10							
Update	tblveg_removal_ops	dtQC	24		YES	datetime						3			
Update	tblveg_removal_ops	biDEQCChecked	25		YES	bit									
Update	tblveg_removal_ops	vchDEQCInitials	26		YES	nvarchar	5	10							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Update	tblveg_removal_ops	txModNotes	27		YES	nvarchar	4000	8000							
Update	tblveg_removal_ops	biDiscrepancy	28		YES	bit									
Update	tmpAnomalyUpdate	iOeEncounteredId	1		NO	int			10	10	0				
Update	tmpAnomalyUpdate	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
Update	tmpAnomalyUpdate	iOpId	3		YES	bigint			19	10	0				
Update	tmpAnomalyUpdate	guidGOL	4		NO	uniqueidentifier									
Update	tmpAnomalyUpdate	DgmDig	5		NO	int			10	10	0				
Update	tmpAnomalyUpdate	QC	6		NO	int			10	10	0				
Update	tmpAnomalyUpdate	GeoPic	7		NO	int			10	10	0				
Update	tmpAnomalyUpdate	vchAnomalyId	8		YES	nvarchar	50	100							
Update	tmpAnomalyUpdate	guidAnomaly	9	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
Update	UpdateFields	vchTable	1		YES	nvarchar	50	100							
Update	UpdateFields	ID	2		YES	int			10	10	0				
Update	UpdateFields	vchField	3		YES	nvarchar	50	100							
Update	UpdateFields	vchDesc	4		YES	nvarchar	300	600							
Update	UpdateFields	maxNotes	5		YES	nvarchar	255	510							
Delete	lkpCondition	vchCondition	1		NO	nvarchar	25	50					PK_lkpCondition	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpCondition	vchConditionDesc	2		YES	nvarchar	50	100							
Delete	lkpDemo_Action	vchDemoAction	1		NO	nvarchar	50	100					PK_lkpDemo_Action	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpDemo_Action	vchDemoActionDesc	2		YES	nvarchar	250	500							
Delete	lkpDisposition	vchDisposition	1		NO	nvarchar	30	60					PK_lkpDisposition	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpDisposition	vchDispositionDesc	2		YES	nvarchar	255	510							
Delete	lkpGrid_Op_Type	vchGridOpType	1		NO	nvarchar	50	100					PK_lkpGrid_Op_Type	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpGrid_Type	vchGridType	1		NO	nvarchar	10	20					PK_lkpGrid_Type	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpMeasure_Type	vchMeasureType	1		NO	nvarchar	25	50					PK_lkpMeasure_Type	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpOE_models	iOEModelID	1		NO	int			10	10	0		PK_lkpOE_models	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpOE_models	vchOEModel	2		NO	nvarchar	255	510							
Delete	lkpOE_models	vchOEModelDesc	3		YES	nvarchar	255	510							
Delete	lkpOE_models	iRIACode	4		YES	int			10	10	0				
Delete	lkpOE_models	vchOEFiller	5		YES	nvarchar	25	50							
Delete	lkpOE_models	vchOECasing	6		YES	nvarchar	25	50							
Delete	lkpOE_models	vchOEPurpose	7		YES	nvarchar	25	50							
Delete	lkpOE_models	vchSource	8		YES	nvarchar	50	100							
Delete	lkpOE_models	vchComments	9		YES	nvarchar	500	1000							
Delete	lkpOE_models	ftNEW	10		YES	float			53	2					
Delete	lkpOE_models	ftFillerWeight	11		YES	float			53	2					
Delete	lkpOE_models	biCurrentlyInUse	12	((1))	YES	bit									
Delete	lkpOE_models	biMasterPickList	13	((0))	YES	bit									
Delete	lkpOE_models	biSensitiveFuze	14		YES	bit									
Delete	lkpOE_models	DocFileName	15		YES	nvarchar	255	510							
Delete	lkpOE_models	vchSize	16		YES	varchar	20	20							
Delete	lkpOE_models	vchCategory	17		YES	varchar	20	20							
Delete	lkpOE_Purpose	vchOEPurpose	1		NO	nvarchar	25	50					PK_lkpOE_Purpose	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpOE_Type	vchOEType	1		NO	nvarchar	10	20					PK_lkpOE_Type	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpOE_Type	vchOETypeDesc	2		YES	nvarchar	50	100							
Delete	lkpRIA	iRIACode	1		NO	int			10	10	0		PK_lkpRIA	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpRIA	vchRIADesc	2		NO	nvarchar	255	510							
Delete	lkpSite_type	ioeencounteredid	1		YES	bigint			19	10	0				
Delete	lkpSite_type	vchSitetype	2		YES	varchar	50	50							
Delete	lkpSite_type	vchSiteName	3		YES	varchar	50	50							
Delete	lkpSurveyInstr	vchSurveyInstr	1		NO	nvarchar	25	50					PK_lkpSurveyInstr	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpSurveyInstr	vchSurveyInstrDesc	2		YES	nvarchar	255	510							
Delete	lkpSurveyInstr	vchComments	3		YES	nvarchar	255	510							
Delete	lkpTeam	vchTeam	1		NO	nvarchar	25	50					PK_lkpTeam	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpTeam	vchTeamType	2		YES	nvarchar	5	10							
Delete	lkpTeam_Member	iMemberID	1		NO	int			10	10	0		PK_lkpTeam_Member	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpTeam_Member	vchOrgEmployeeID	2		YES	nvarchar	50	100							
Delete	lkpTeam_Member	vchLastName	3		YES	nvarchar	50	100							
Delete	lkpTeam_Member	vchFirstName	4		YES	nvarchar	50	100							
Delete	lkpTeam_Member	vchMiddleName	5		YES	nvarchar	50	100							
Delete	lkpTeam_Member	vchTeamType	6		YES	nvarchar	5	10							
Delete	lkpTeam_Member	vchOrganization	7		YES	nvarchar	50	100							
Delete	lkpTeam_Member	vchPosition	8		YES	nvarchar	50	100							
Delete	lkpTeam_Type	vchTeamType	1		NO	nvarchar	5	10					PK_lkpTeam_Type	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpTeam_Type	vchTeamTypeDesc	2		YES	nvarchar	50	100							
Delete	lkpTerrain	vchTerrainCode	1		NO	nvarchar	20	40					PK_lkpTerrain	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpTerrain	vchTerrainDescLong	2		YES	nvarchar	255	510							
Delete	lkpTerrain	vchTerrainDescShort	3		YES	nvarchar	50	100							
Delete	lkpUOM	vchUOM	1		NO	nvarchar	5	10					PK_lkpUOM	PK	PRIMARY_KEY_CONSTRAINT
Delete	lkpUOM	vchUOMDesc	2		YES	nvarchar	25	50							
Delete	lkpUOM	vchMeasureType	3		YES	nvarchar	25	50							
Delete	tblGrid	guidGrid	1	(newid())	NO	uniqueidentifier							PK_tblGrid	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid	vchGridID	2		NO	nvarchar	50	100							
Delete	tblGrid	vchGridIDShort	3		YES	nvarchar	10	20							
Delete	tblGrid	vchGridDesc	4		YES	nvarchar	255	510							
Delete	tblGrid	vchGridType	5		YES	varchar	50	50							
Delete	tblGrid	ftArea	6		YES	float			53	2					
Delete	tblGrid	vchComments	7		YES	nvarchar	255	510							
Delete	tblGrid	Acreage	8		YES	numeric			10	10	2				
Delete	tblGrid	Large_ID	9		YES	varchar	50	50							
Delete	tblGrid	Medium_ID	10		YES	varchar	50	50							
Delete	tblGrid	SW_X	11		YES	float			53	2					
Delete	tblGrid	SW_Y	12		YES	float			53	2					
Delete	tblGrid	UniqueGridID	13		YES	varchar	50	50							
Delete	tblGrid	UnitID	14		YES	varchar	50	50							
Delete	tblGrid	AnalSurfOpTeamID	15		YES	varchar	50	50							
Delete	tblGrid	AnalSurfOpComp	16		YES	bit									
Delete	tblGrid	DtAnalSurfOpComp	17		YES	datetime						3			
Delete	tblGrid	AnalSurfOpCom	18		YES	varchar	255	255							
Delete	tblGrid	AnalSurfOpQCTeamID	19		YES	varchar	255	255							
Delete	tblGrid	AnalSurfOpQCComp	20		YES	bit									
Delete	tblGrid	DtAnalSurfOpQCComp	21		YES	datetime						3			
Delete	tblGrid	AnalSurfOpQCCom	22		YES	varchar	255	255							
Delete	tblGrid	AnalSurfOpQATeamID	23		YES	varchar	255	255							
Delete	tblGrid	AnalSurfOpQAComp	24		YES	bit									
Delete	tblGrid	DtAnalSurfOpQAComp	25		YES	datetime						3			
Delete	tblGrid	AnalSurfOpQACom	26		YES	varchar	255	255							
Delete	tblGrid	AnalIntOpTeamID	27		YES	varchar	50	50							
Delete	tblGrid	AnalIntOpComp	28		YES	bit									
Delete	tblGrid	DtAnalIntOpComp	29		YES	datetime						3			
Delete	tblGrid	AnalIntOpCom	30		YES	varchar	255	255							
Delete	tblGrid	AnalIntOpQCTeamID	31		YES	varchar	255	255							
Delete	tblGrid	AnalIntOpQCComp	32		YES	bit									
Delete	tblGrid	DtAnalIntOpQCComp	33		YES	datetime						3			
Delete	tblGrid	AnalIntOpQCCom	34		YES	varchar	255	255							
Delete	tblGrid	AnalIntOpQATeamID	35		YES	varchar	255	255							
Delete	tblGrid	AnalIntOpQAComp	36		YES	bit									
Delete	tblGrid	DtAnalIntOpQAComp	37		YES	datetime						3			
Delete	tblGrid	AnalIntOpQACom	38		YES	varchar	255	255							
Delete	tblGrid	DGMArrayOpTeamID	39		YES	varchar	50	50							
Delete	tblGrid	DGMArrayOpComp	40		YES	bit									
Delete	tblGrid	DtDGMArrayOpComp	41		YES	datetime						3			
Delete	tblGrid	DGMArrayOpCom	42		YES	varchar	255	255							
Delete	tblGrid	DGMArrayDataProcComp	43		YES	bit									
Delete	tblGrid	DtDGMArrayDataProcComp	44		YES	datetime						3			
Delete	tblGrid	DGMArrayDataProcCom	45		YES	varchar	255	255							
Delete	tblGrid	DGMArrayDataQCTeamID	46		YES	varchar	50	50							
Delete	tblGrid	DGMArrayDataQCComp	47		YES	bit									
Delete	tblGrid	DtDGMArrayDataQCComp	48		YES	datetime						3			
Delete	tblGrid	DGMArrayDataQCCom	49		YES	varchar	255	255							
Delete	tblGrid	DGMArrayDataQATeamID	50		YES	varchar	50	50							
Delete	tblGrid	DGMArrayDataQAComp	51		YES	bit									
Delete	tblGrid	DtDGMArrayDataQAComp	52		YES	datetime						3			
Delete	tblGrid	DGMArrayDataQACom	53		YES	varchar	255	255							
Delete	tblGrid	DGMPortOPTeamID	54		YES	varchar	50	50							
Delete	tblGrid	DGMPortOpComp	55		YES	bit									
Delete	tblGrid	DtDGMPortOpComp	56		YES	datetime						3			
Delete	tblGrid	DGMPortOpCom	57		YES	varchar	255	255							
Delete	tblGrid	DGMPortDataProcComp	58		YES	bit									
Delete	tblGrid	DtDGMPortDataProcComp	59		YES	datetime						3			
Delete	tblGrid	DGMPortDataProcCom	60		YES	varchar	255	255							
Delete	tblGrid	DGMPortDataQCTeamID	61		YES	varchar	50	50							
Delete	tblGrid	DGMPortDataQCComp	62		YES	bit									
Delete	tblGrid	DtDGMPortDataQCComp	63		YES	datetime						3			
Delete	tblGrid	DGMPortDataQCCom	64		YES	varchar	255	255							
Delete	tblGrid	DGMPortDataQATeamID	65		YES	varchar	50	50							
Delete	tblGrid	DGMPortDataQAComp	66		YES	bit									
Delete	tblGrid	DtDGMPortDataQAComp	67		YES	datetime						3			
Delete	tblGrid	DGMPortDataQACom	68		YES	varchar	255	255							
Delete	tblGrid	DGMReacOpTeamID	69		YES	varchar	50	50							
Delete	tblGrid	DGMReacOpComp	70		YES	bit									
Delete	tblGrid	DtDGMReacOpComp	71		YES	datetime						3			
Delete	tblGrid	DGMReacOpCom	72		YES	varchar	255	255							
Delete	tblGrid	DGMDigOpTeamID	73		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGrid	DGMDigOpComp	74		YES	bit									
Delete	tblGrid	DtDGMDigOpComp	75		YES	datetime						3			
Delete	tblGrid	DGMDigOpCom	76		YES	varchar	255	255							
Delete	tblGrid	DGMDigOpQCTeamID	77		YES	varchar	50	50							
Delete	tblGrid	DGMDigOpQCComp	78		YES	bit									
Delete	tblGrid	DtDGMDigOpQCComp	79		YES	datetime						3			
Delete	tblGrid	DGMDigOpQCCom	80		YES	varchar	255	255							
Delete	tblGrid	DGMDigOpQATeamID	81		YES	varchar	50	50							
Delete	tblGrid	DGMDigOpQAComp	82		YES	bit									
Delete	tblGrid	DtDGMDigOpQAComp	83		YES	datetime						3			
Delete	tblGrid	DGMDigOpQACom	84		YES	varchar	255	255							
Delete	tblGrid	vchGridBlockID	85		YES	varchar	50	50							
Delete	tblGrid	Status	86		YES	varchar	255	255							
Delete	tblGrid	OverwriteStatus	87		YES	varchar	255	255							
Delete	tblGrid	CoverageCategory	88		YES	varchar	10	10							
Delete	tblGrid	SurveyType	89		YES	varchar	255	255							
Delete	tblGrid	dtRecMod	90	(getdate())	YES	datetime						3			
Delete	tblGrid	s_Generation	91		YES	float			53	2					
Delete	tblGrid	s_GUID	92		YES	uniqueidentifier									
Delete	tblGrid_Ops_Lnk	guidGOL	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Ops_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Ops_Lnk	dtWorkDate	2		YES	smalldatetime						0			
Delete	tblGrid_Ops_Lnk	dtStartTime	3		YES	datetime						3			
Delete	tblGrid_Ops_Lnk	dtEndTime	4		YES	datetime						3			
Delete	tblGrid_Ops_Lnk	vchGridID	5		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	guidGrid	6		YES	uniqueidentifier									
Delete	tblGrid_Ops_Lnk	vchGridAlias	7		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	iSpecialCaseAreaID	8		YES	int			10	10	0				
Delete	tblGrid_Ops_Lnk	vchOpClass	9		YES	nvarchar	6	12							
Delete	tblGrid_Ops_Lnk	vchoptype	10		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchSite	11		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchSiteAlias	12		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchSiteMRA	13		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchSiteMRS	14		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchSiteAR	15		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	iGridConditionID	16		YES	int			10	10	0				
Delete	tblGrid_Ops_Lnk	biDiscrepancy	17		YES	int			10	10	0				
Delete	tblGrid_Ops_Lnk	vchAARID	18		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchTeam	19		YES	nchar	25	50							
Delete	tblGrid_Ops_Lnk	iTeamleaderID	20		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchContractor	21		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	txOpNotes	22		YES	nvarchar	-1	-1							
Delete	tblGrid_Ops_Lnk	chOpCompleted	23		YES	char	1	1							
Delete	tblGrid_Ops_Lnk	txModNotes	24		YES	nvarchar	-1	-1							
Delete	tblGrid_Ops_Lnk	dtDataEntered	25		YES	date						0			
Delete	tblGrid_Ops_Lnk	vchDataEntry	26		YES	nvarchar	50	100							
Delete	tblGrid_Ops_Lnk	vchDataSource	27		YES	nvarchar	255	510							
Delete	tblGrid_Ops_Lnk	RecordId	28		YES	float			53	2					
Delete	tblGrid_Ops_Lnk	UnitID	29		YES	float			53	2					
Delete	tblGrid_Ops_Lnk	UserName	30		YES	varchar	255	255							
Delete	tblGrid_Ops_Lnk	TimeStamp	31		YES	datetime						3			
Delete	tblGrid_Ops_Lnk	vchGridBlockID	32		YES	varchar	50	50							
Delete	tblGrid_Ops_Lnk	vchGridType	33		YES	varchar	255	255							
Delete	tblGrid_Ops_Lnk	dtRecMod	34	(getdate())	YES	datetime						3			
Delete	tblGrid_Ops_Lnk	UploadtoDB	35		YES	varchar	255	255							
Delete	tblGrid_Ops_Lnk	s_Generation	36		YES	float			53	2					
Delete	tblGrid_Ops_Lnk	s_GUID	37		YES	uniqueidentifier									
Delete	tblGrid_Ops_Lnk	iIncidentalID	38		YES	bigint			19	10	0				
Delete	tblGrid_AnalogRemoval_Ops	lAnalogRemovalOpsID	1		YES	bigint			19	10	0				
Delete	tblGrid_AnalogRemoval_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblAnalogRemoval_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_AnalogRemoval_Ops	biBackhoeRequired	3		YES	bit									
Delete	tblGrid_AnalogRemoval_Ops	biBackhoeCompleted	4		YES	bit									
Delete	tblGrid_AnalogRemoval_Ops	iDepthofSurvey	5		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iAnomaliesDetected	6		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iExcavationsTotal	7		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iBackhoeExcavations	8		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	ftNonOEScrapLBs	9		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	iMDItems	10		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	ftOEScrapLBs	11		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	iMECItems	12		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iSurface	13		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iDepth0to12	14		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iDepth12to24	15		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iDepth24to36	16		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	iDepth36to48	17		YES	int			10	10	0				
Delete	tblGrid_AnalogRemoval_Ops	biDemoRequired	18		YES	bit									
Delete	tblGrid_AnalogRemoval_Ops	chQCPassed	19		YES	nvarchar	4	8							
Delete	tblGrid_AnalogRemoval_Ops	dtQC	20		YES	datetime						3			
Delete	tblGrid_AnalogRemoval_Ops	RecordId	21		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	UnitID	22		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	UserName	23		YES	varchar	255	255							
Delete	tblGrid_AnalogRemoval_Ops	TimeStamp	24		YES	datetime						3			
Delete	tblGrid_AnalogRemoval_Ops	ftMEClbs	25		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	txModNotes	26		YES	varchar	255	255							
Delete	tblGrid_AnalogRemoval_Ops	vchQCInitials	27		YES	varchar	5	5							
Delete	tblGrid_AnalogRemoval_Ops	vchGridID	28		YES	varchar	50	50							
Delete	tblGrid_AnalogRemoval_Ops	vchTeam	29		YES	varchar	25	25							
Delete	tblGrid_AnalogRemoval_Ops	iTeamleaderID	30		YES	varchar	50	50							
Delete	tblGrid_AnalogRemoval_Ops	dtWorkDate	31		YES	datetime						3			
Delete	tblGrid_AnalogRemoval_Ops	vchSensiFuzeItems	32		YES	varchar	-1	-1							
Delete	tblGrid_AnalogRemoval_Ops	iSensiFuzeWt	33		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	dtRecMod	34	(getdate())	YES	datetime						3			
Delete	tblGrid_AnalogRemoval_Ops	UploadtoDB	35		YES	varchar	1	1							
Delete	tblGrid_AnalogRemoval_Ops	Gen_vchSensiFuzeItems	36		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	s_Generation	37		YES	float			53	2					
Delete	tblGrid_AnalogRemoval_Ops	s_GUID	38		YES	uniqueidentifier									
Delete	tblGrid_AnalogRemoval_Ops	vchSurveyInstr	39		YES	nvarchar	25	50							
Delete	tblGrid_AnalogRemoval_Ops	txOpNotes	40		YES	nvarchar	-1	-1							
Delete	tblGrid_AnalogSurface_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblAnalogSurface_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_AnalogSurface_Ops	txOpNotes	2		YES	ntext	1073741823	2147483646							
Delete	tblGrid_AnalogSurface_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Delete	tblGrid_AnalogSurface_Ops	iQCPattern	4		YES	int			10	10	0				
Delete	tblGrid_AnalogSurface_Ops	iQCPercent	5		YES	int			10	10	0				
Delete	tblGrid_AnalogSurface_Ops	chQCPassed	6		YES	nvarchar	4	8							
Delete	tblGrid_AnalogSurface_Ops	txReviewComments	7		YES	nvarchar	-1	-1							
Delete	tblGrid_AnalogSurface_Ops	vchQCInitials	8		YES	nvarchar	5	10							
Delete	tblGrid_AnalogSurface_Ops	dtQC	9		YES	datetime						3			
Delete	tblGrid_AnalogSurface_Ops	vchDEQCInitials	10		YES	nvarchar	5	10							
Delete	tblGrid_AnalogSurface_Ops	txModNotes	11		YES	nvarchar	-1	-1							
Delete	tblGrid_AnalogSurface_Ops	biDiscrepancy	12		YES	bit									
Delete	tblGrid_AnalogSurface_Ops	ftNonOEScrapLbs	13		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	ftOEScrapLBs	14		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	ioeitems	15		YES	int			10	10	0				
Delete	tblGrid_AnalogSurface_Ops	isurface	16		YES	int			10	10	0				
Delete	tblGrid_AnalogSurface_Ops	RecordId	17		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	UnitID	18		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	UserName	19		YES	varchar	255	255							
Delete	tblGrid_AnalogSurface_Ops	TimeStamp	20		YES	datetime						3			
Delete	tblGrid_AnalogSurface_Ops	vchGridID	21		YES	varchar	50	50							
Delete	tblGrid_AnalogSurface_Ops	vchTeam	22		YES	varchar	25	25							
Delete	tblGrid_AnalogSurface_Ops	iTeamleaderID	23		YES	varchar	50	50							
Delete	tblGrid_AnalogSurface_Ops	dtWorkDate	24		YES	datetime						3			
Delete	tblGrid_AnalogSurface_Ops	vchSensiFuzeItems	25		YES	nvarchar	-1	-1							
Delete	tblGrid_AnalogSurface_Ops	iSensiFuzeWt	26		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	dtRecMod	27	(getdate())	YES	datetime						3			
Delete	tblGrid_AnalogSurface_Ops	UploadtoDB	28		YES	varchar	1	1							
Delete	tblGrid_AnalogSurface_Ops	Gen_txOpNotes	29		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	Gen_vchSensiFuzeItems	30		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	s_Generation	31		YES	float			53	2					
Delete	tblGrid_AnalogSurface_Ops	s_GUID	32		YES	uniqueidentifier									
Delete	tblGrid_AnalogSurface_Ops	iExcavationsTotal	33		YES	bigint			19	10	0				
Delete	tblGrid_DgmDig_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblDGMDig_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_DgmDig_Ops	vchDigInstruments	2		YES	nvarchar	255	510							
Delete	tblGrid_DgmDig_Ops	iExcavationsTotal	3		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	ftNonOEScrapLbs	4		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	ftOEScrapLBs	5		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	iOEItems	6		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iSurface	7		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iDepth0to12	8		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iDepth12to24	9		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iDepth24to36	10		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iDepth36to48	11		YES	int			10	10	0				
Delete	tblGrid_DgmDig_Ops	iBIPRequired	12		YES	bit									
Delete	tblGrid_DgmDig_Ops	vchSurveyNotes	13		YES	nvarchar	-1	-1							
Delete	tblGrid_DgmDig_Ops	chQCPassed	14		YES	nchar	4	8							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGrid_DgmDig_Ops	vchQCInitials	15		YES	nvarchar	5	10							
Delete	tblGrid_DgmDig_Ops	dtQC	16		YES	datetime						3			
Delete	tblGrid_DgmDig_Ops	biDEQCChecked	17		YES	bit									
Delete	tblGrid_DgmDig_Ops	dtDigDate	18		YES	datetime						3			
Delete	tblGrid_DgmDig_Ops	vchDigTeam	19		YES	nvarchar	50	100							
Delete	tblGrid_DgmDig_Ops	RecordId	20		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	UnitID	21		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	UserName	22		YES	varchar	255	255							
Delete	tblGrid_DgmDig_Ops	TimeStamp	23		YES	datetime						3			
Delete	tblGrid_DgmDig_Ops	vchGridID	24		YES	varchar	50	50							
Delete	tblGrid_DgmDig_Ops	iTeamleaderID	25		YES	varchar	50	50							
Delete	tblGrid_DgmDig_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Delete	tblGrid_DgmDig_Ops	UploadtoDB	27		YES	varchar	1	1							
Delete	tblGrid_DgmDig_Ops	Gen_vchSurveyNotes	28		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	s_Generation	29		YES	float			53	2					
Delete	tblGrid_DgmDig_Ops	s_GUID	30		YES	uniqueidentifier									
Delete	tblGrid_GeoPick_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGeoPickOps	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_GeoPick_Ops	dtProcessDate	2		YES	datetime						3			
Delete	tblGrid_GeoPick_Ops	biDigSheetMade	3		YES	bit									
Delete	tblGrid_GeoPick_Ops	biHeaderanomFile	4		YES	bit									
Delete	tblGrid_GeoPick_Ops	vchAnomSelectFile	5		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchAnomPickChannel	6		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	ftAnomPickThreshold	7		YES	numeric			18	10	3				
Delete	tblGrid_GeoPick_Ops	biSpecialCase	8		YES	bit									
Delete	tblGrid_GeoPick_Ops	biFileHeaderCheck	9		YES	bit									
Delete	tblGrid_GeoPick_Ops	txOpNotes	10		YES	nvarchar	4000	8000							
Delete	tblGrid_GeoPick_Ops	dtQC	11		YES	datetime						3			
Delete	tblGrid_GeoPick_Ops	vchQCInitials	12		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	txQCComments	13		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	txInterpComments	14		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchInterpGWS	15		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchInterpSet	16		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchExprtFileName	17		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	txDeliveryComments	18		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	dtDeliver	19		YES	datetime						3			
Delete	tblGrid_GeoPick_Ops	vchCorrAction	20		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	txModNotes	21		YES	nvarchar	4000	8000							
Delete	tblGrid_GeoPick_Ops	vchGeosoftSurveyDatabase	22		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchGeosoftSurveyTargetDatabase	23		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	vchSubmittedXYZFileName	24		YES	nvarchar	255	510							
Delete	tblGrid_GeoPick_Ops	iAnomsSelected	25		YES	int			10	10	0				
Delete	tblGrid_GeoPick_Ops	iAnomsToBeInvestigated	26		YES	int			10	10	0				
Delete	tblGrid_GeoPick_Ops	vchGridID	27		YES	varchar	255	255							
Delete	tblGrid_GeoPick_Ops	UniqueGridID	28		YES	varchar	255	255							
Delete	tblGrid_GeoPick_Ops	biDeliver	29		YES	varchar	1	1							
Delete	tblGrid_GeoPick_Ops	dtRecMod	30	(getdate())	YES	datetime						3			
Delete	tblGrid_GeoPick_Ops	RecordID	31		YES	float			53	2					
Delete	tblGrid_GeoPick_Ops	Gen_txModNotes	32		YES	float			53	2					
Delete	tblGrid_GeoPick_Ops	Gen_txOpNotes	33		YES	float			53	2					
Delete	tblGrid_GeoPick_Ops	s_Generation	34		YES	float			53	2					
Delete	tblGrid_GeoPick_Ops	s_GUID	35		YES	uniqueidentifier									
Delete	tblGrid_Odds_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblOdds_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Odds_Ops	dtWorkDate	2		YES	smalldatetime						0			
Delete	tblGrid_Odds_Ops	vchSurveyInstr	3		YES	nvarchar	25	50							
Delete	tblGrid_Odds_Ops	vchContractor	4		YES	nvarchar	50	100							
Delete	tblGrid_Odds_Ops	dtDataEntered	5		YES	smalldatetime						0			
Delete	tblGrid_Odds_Ops	vchDataEntry	6		YES	nvarchar	50	100							
Delete	tblGrid_Odds_Ops	vchDataSource	7		YES	nvarchar	50	100							
Delete	tblGrid_Odds_Ops	vchReviewComments	8		YES	nvarchar	4000	8000							
Delete	tblGrid_Odds_Ops	vchQCInitials	9		YES	nvarchar	50	100							
Delete	tblGrid_Odds_Ops	vchDEQCInitials	10		YES	nvarchar	50	100							
Delete	tblGrid_Odds_Ops	txModNotes	11		YES	nvarchar	4000	8000							
Delete	tblGrid_Odds_Ops	biDiscrepancy	12		YES	bit									
Delete	tblGrid_Other_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblGrid_Other_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Other_Ops	dtFound	2		YES	datetime						3			
Delete	tblGrid_Other_Ops	dtCollected	3		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchLocation	4		YES	nvarchar	255	510							
Delete	tblGrid_Other_Ops	vchEventDesc	5		YES	nvarchar	512	1024							
Delete	tblGrid_Other_Ops	biIncidental	6		YES	bit									
Delete	tblGrid_Other_Ops	iIncidentalFormID	7		YES	int			10	10	0				
Delete	tblGrid_Other_Ops	vchPhotoFileName	8		YES	nvarchar	255	510							
Delete	tblGrid_Other_Ops	vchPdfFileName	9		YES	nvarchar	255	510							
Delete	tblGrid_Other_Ops	imgPdfFile	10		YES	image	2147483647	2147483647							
Delete	tblGrid_Other_Ops	vchContractor	11		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	iMemberID	12		YES	int			10	10	0				
Delete	tblGrid_Other_Ops	vchLastName	13		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	vchFirstName	14		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	vchAddress1	15		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	vchAddress2	16		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	vchCity	17		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	vchState	18		YES	nvarchar	2	4							
Delete	tblGrid_Other_Ops	vchZipCode	19		YES	nvarchar	12	24							
Delete	tblGrid_Other_Ops	vchPhone	20		YES	nvarchar	20	40							
Delete	tblGrid_Other_Ops	vchFax	21		YES	nvarchar	15	30							
Delete	tblGrid_Other_Ops	vchCountry	22		YES	nvarchar	25	50							
Delete	tblGrid_Other_Ops	vchEmail	23		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	txOpNotes	24		YES	nvarchar	4000	8000							
Delete	tblGrid_Other_Ops	USACEFormReceivedBY	25		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	dtUSACEDateReceived	26		YES	datetime						3			
Delete	tblGrid_Other_Ops	dtUSACEDateCompleted	27		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchDENRFormReceivedBY	28		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	dtDENRDateReceived	29		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchDENRRegAgencyNotified	30		YES	nvarchar	50	100							
Delete	tblGrid_Other_Ops	dtDENRDATERegAgencyNotified	31		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchDataSource	32		YES	nvarchar	150	300							
Delete	tblGrid_Other_Ops	dtDataEntered	33		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchDataEntry	34		YES	nvarchar	10	20							
Delete	tblGrid_Other_Ops	txReviewComments	35		YES	nvarchar	4000	8000							
Delete	tblGrid_Other_Ops	vchQCInitials	36		YES	nvarchar	5	10							
Delete	tblGrid_Other_Ops	vchDEQCInitials	37		YES	nvarchar	5	10							
Delete	tblGrid_Other_Ops	txModNotes	38		YES	nvarchar	4000	8000							
Delete	tblGrid_Other_Ops	biDiscrepancy	39		YES	bit									
Delete	tblGrid_Other_Ops	vchOpClass	40		YES	nvarchar	6	12							
Delete	tblGrid_Other_Ops	RecordId	41		YES	float			53	2					
Delete	tblGrid_Other_Ops	UnitID	42		YES	float			53	2					
Delete	tblGrid_Other_Ops	UserName	43		YES	varchar	255	255							
Delete	tblGrid_Other_Ops	TimeStamp	44		YES	datetime						3			
Delete	tblGrid_Other_Ops	dtWorkDate	45		YES	datetime						3			
Delete	tblGrid_Other_Ops	vchTeam	46		YES	varchar	25	25							
Delete	tblGrid_Other_Ops	iTeamleaderID	47		YES	varchar	50	50							
Delete	tblGrid_Other_Ops	vchGridID	48		YES	varchar	50	50							
Delete	tblGrid_Other_Ops	dtRecMod	49	(getdate())	YES	datetime						3			
Delete	tblGrid_Other_Ops	UploadtoDB	50		YES	varchar	1	1							
Delete	tblGrid_Other_Ops	Gen_imgPdfFile	51		YES	float			53	2					
Delete	tblGrid_Other_Ops	Gen_txModNotes	52		YES	float			53	2					
Delete	tblGrid_Other_Ops	Gen_txOpNotes	53		YES	float			53	2					
Delete	tblGrid_Other_Ops	Gen_txReviewComments	54		YES	float			53	2					
Delete	tblGrid_Other_Ops	Gen_vchEventDesc	55		YES	float			53	2					
Delete	tblGrid_Other_Ops	s_Generation	56		YES	float			53	2					
Delete	tblGrid_Other_Ops	s_GUID	57		YES	uniqueidentifier									
Delete	tblGrid_QA_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblQA_ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_QA_Ops	vchSurveyInstr	2		YES	nvarchar	25	50							
Delete	tblGrid_QA_Ops	iMECItems	3		YES	smallint			5	10	0				
Delete	tblGrid_QA_Ops	iQAPattern	4		YES	int			10	10	0				
Delete	tblGrid_QA_Ops	iQAPercent	5		YES	int			10	10	0				
Delete	tblGrid_QA_Ops	chQAPassed	6		YES	nvarchar	4	8							
Delete	tblGrid_QA_Ops	txModNotes	7		YES	ntext	1073741823	2147483646							
Delete	tblGrid_QA_Ops	QA_Type	8		YES	nvarchar	50	100							
Delete	tblGrid_QA_Ops	dtWorkDate	9		YES	datetime						3			
Delete	tblGrid_QA_Ops	vchGridID	10		YES	varchar	50	50							
Delete	tblGrid_QA_Ops	QATeamID	11		YES	varchar	25	25							
Delete	tblGrid_QA_Ops	QATeamLeader	12		YES	varchar	25	25							
Delete	tblGrid_QA_Ops	dtRecMod	13	(getdate())	YES	datetime						3			
Delete	tblGrid_QA_Ops	RecordID	14		YES	float			53	2					
Delete	tblGrid_QA_Ops	Gen_txModNotes	15		YES	float			53	2					
Delete	tblGrid_QA_Ops	s_Generation	16		YES	float			53	2					
Delete	tblGrid_QA_Ops	s_GUID	17		YES	uniqueidentifier									
Delete	tblGrid_QA_Ops	txOpNotes	18		YES	nvarchar	-1	-1							
Delete	tblGrid_QC_Ops	IQC1OpsID	1		NO	bigint			19	10	0				
Delete	tblGrid_QC_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblQC1_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_QC_Ops	IDemoOpsID	3		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iAnomaliesChecked	4		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iAnomaliesPassed	5		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iAnomaliesFailed	6		YES	int			10	10	0				

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGrid_QC_Ops	ftNonOEScrapLBs	7		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	ftOEScrapLBs	8		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iOEItems	9		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iSurface	10		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iDepth0to12	11		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iDepth12to24	12		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iDepth24to36	13		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	iDepth36to48	14		YES	int			10	10	0				
Delete	tblGrid_QC_Ops	vchSurveyNotes	15		YES	nvarchar	255	510							
Delete	tblGrid_QC_Ops	chQCPassed	16		YES	nvarchar	4	8							
Delete	tblGrid_QC_Ops	vchQC_Type	17		YES	nvarchar	50	100							
Delete	tblGrid_QC_Ops	RecordId	18		YES	float			53	2					
Delete	tblGrid_QC_Ops	UnitID	19		YES	float			53	2					
Delete	tblGrid_QC_Ops	UserName	20		YES	varchar	255	255							
Delete	tblGrid_QC_Ops	TimeStamp	21		YES	datetime						3			
Delete	tblGrid_QC_Ops	dtWorkDate	22		YES	datetime						3			
Delete	tblGrid_QC_Ops	vchGridID	23		YES	varchar	10	10							
Delete	tblGrid_QC_Ops	QCTeamID	24		YES	varchar	25	25							
Delete	tblGrid_QC_Ops	QCTeamLeader	25		YES	varchar	25	25							
Delete	tblGrid_QC_Ops	dtRecMod	26	(getdate())	YES	datetime						3			
Delete	tblGrid_QC_Ops	UploadtoDB	27		YES	varchar	1	1							
Delete	tblGrid_QC_Ops	s_Generation	28		YES	float			53	2					
Delete	tblGrid_QC_Ops	s_GUID	29		YES	uniqueidentifier									
Delete	tblGrid_QC_Ops	vchSurveyInstr	30		YES	nvarchar	25	50							
Delete	tblGrid_Reac_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblReac_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Reac_Ops	guidAnomaly	2		YES	uniqueidentifier									
Delete	tblGrid_Reac_Ops	iNumberOfFlags	3		YES	int			10	10	0				
Delete	tblGrid_Reac_Ops	vchReaqInstr	4		YES	nvarchar	50	100							
Delete	tblGrid_Reac_Ops	biInvestigated	5		YES	bit									
Delete	tblGrid_Reac_Ops	Reac_CH	6		YES	float			53	2					
Delete	tblGrid_Reac_Ops	txReaqComments	7		YES	nvarchar	-1	-1							
Delete	tblGrid_Reac_Ops	txReaqQCComments	8		YES	nvarchar	-1	-1							
Delete	tblGrid_Reac_Ops	RecordId	9		YES	float			53	2					
Delete	tblGrid_Reac_Ops	UnitID	10		YES	float			53	2					
Delete	tblGrid_Reac_Ops	UserName	11		YES	varchar	255	255							
Delete	tblGrid_Reac_Ops	TimeStamp	12		YES	datetime						3			
Delete	tblGrid_Reac_Ops	dtWorkDate	13		YES	datetime						3			
Delete	tblGrid_Reac_Ops	vchGridID	14		YES	varchar	10	10							
Delete	tblGrid_Reac_Ops	ReacTeamID	15		YES	varchar	25	25							
Delete	tblGrid_Reac_Ops	ReacTeamLeader	16		YES	varchar	25	25							
Delete	tblGrid_Reac_Ops	dtRecMod	17	(getdate())	YES	datetime						3			
Delete	tblGrid_Reac_Ops	UploadtoDB	18		YES	varchar	1	1							
Delete	tblGrid_Reac_Ops	Gen_txReaqComments	19		YES	float			53	2					
Delete	tblGrid_Reac_Ops	Gen_txReaqQCComments	20		YES	float			53	2					
Delete	tblGrid_Reac_Ops	s_Generation	21		YES	float			53	2					
Delete	tblGrid_Reac_Ops	s_GUID	22		YES	uniqueidentifier									
Delete	tblGrid_Scrape_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblScrape_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Scrape_Ops	iRRDLBs	2		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	iMDLBs	3		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	iMECItems	4		YES	smallint			5	10	0				
Delete	tblGrid_Scrape_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Delete	tblGrid_Scrape_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Delete	tblGrid_Scrape_Ops	dtQC	7		YES	datetime						3			
Delete	tblGrid_Scrape_Ops	biDEQCChecked	8		YES	bit									
Delete	tblGrid_Scrape_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Delete	tblGrid_Scrape_Ops	biDiscrepancy	10		YES	bit									
Delete	tblGrid_Scrape_Ops	iCubicYards	11		YES	int			10	10	0				
Delete	tblGrid_Scrape_Ops	iInLift	12		YES	int			10	10	0				
Delete	tblGrid_Scrape_Ops	iFtDistanceToStockpile	13		YES	int			10	10	0				
Delete	tblGrid_Scrape_Ops	vchEquipmentUsed	14		YES	nvarchar	50	100							
Delete	tblGrid_Scrape_Ops	RecordId	15		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	UnitID	16		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	UserName	17		YES	varchar	255	255							
Delete	tblGrid_Scrape_Ops	TimeStamp	18		YES	datetime						3			
Delete	tblGrid_Scrape_Ops	lScrapeOpID	19		YES	varchar	255	255							
Delete	tblGrid_Scrape_Ops	dtWorkDate	20		YES	datetime						3			
Delete	tblGrid_Scrape_Ops	vchGridID	21		YES	varchar	50	50							
Delete	tblGrid_Scrape_Ops	vchTeam	22		YES	varchar	25	25							
Delete	tblGrid_Scrape_Ops	iTeamleaderID	23		YES	varchar	50	50							
Delete	tblGrid_Scrape_Ops	dtRecMod	24	(getdate())	YES	datetime						3			
Delete	tblGrid_Scrape_Ops	UploadtoDB	25		YES	varchar	1	1							
Delete	tblGrid_Scrape_Ops	Gen_txReviewComments	26		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	s_Generation	27		YES	float			53	2					
Delete	tblGrid_Scrape_Ops	s_GUID	28		YES	uniqueidentifier									
Delete	tblGrid_Sift_Ops	guidGOL	1		NO	uniqueidentifier							PK_tblSift_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Sift_Ops	iRRDLBs	2		YES	int			10	10	0				
Delete	tblGrid_Sift_Ops	iMDLBs	3		YES	int			10	10	0				
Delete	tblGrid_Sift_Ops	chQCPassed	4		YES	nvarchar	4	8							
Delete	tblGrid_Sift_Ops	txReviewComments	5		YES	ntext	1073741823	2147483646							
Delete	tblGrid_Sift_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Delete	tblGrid_Sift_Ops	dtQC	7		YES	datetime						3			
Delete	tblGrid_Sift_Ops	biDEQCChecked	8		YES	bit									
Delete	tblGrid_Sift_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Delete	tblGrid_Sift_Ops	biDiscrepancy	10		YES	bit									
Delete	tblGrid_Sift_Ops	QtyTons	11		YES	int			10	10	0				
Delete	tblGrid_Sift_Ops	iMECItems	12		YES	int			10	10	0				
Delete	tblGrid_Sift_Ops	RecordId	13		YES	float			53	2					
Delete	tblGrid_Sift_Ops	UnitID	14		YES	float			53	2					
Delete	tblGrid_Sift_Ops	UserName	15		YES	varchar	255	255							
Delete	tblGrid_Sift_Ops	TimeStamp	16		YES	datetime						3			
Delete	tblGrid_Sift_Ops	iSiftOpID	17		YES	varchar	255	255							
Delete	tblGrid_Sift_Ops	dtWorkDate	18		YES	datetime						3			
Delete	tblGrid_Sift_Ops	vchGridID	19		YES	varchar	50	50							
Delete	tblGrid_Sift_Ops	vchTeam	20		YES	varchar	25	25							
Delete	tblGrid_Sift_Ops	iTeamleaderID	21		YES	varchar	50	50							
Delete	tblGrid_Sift_Ops	dtRecMod	22	(getdate())	YES	datetime						3			
Delete	tblGrid_Sift_Ops	UploadtoDB	23		YES	varchar	1	1							
Delete	tblGrid_Sift_Ops	Gen_txReviewComments	24		YES	float			53	2					
Delete	tblGrid_Sift_Ops	s_Generation	25		YES	float			53	2					
Delete	tblGrid_Sift_Ops	s_GUID	26		YES	uniqueidentifier									
Delete	tblGrid_Sift_Ops	vchEquipmentUsed	27		YES	nvarchar	50	100							
Delete	tblGrid_SiteSurvey_Ops	iSiteSurveyOpID	1		YES	bigint			19	10	0				
Delete	tblGrid_SiteSurvey_Ops	guidGOL	2		NO	uniqueidentifier							PK_tblSite_Survey_ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_SiteSurvey_Ops	vchSurveyName	3		YES	nvarchar	50	100							
Delete	tblGrid_SiteSurvey_Ops	txReviewComments	4		YES	nvarchar	4000	8000							
Delete	tblGrid_SiteSurvey_Ops	vchQCInitials	5		YES	nvarchar	5	10							
Delete	tblGrid_SiteSurvey_Ops	biDEQCChecked	6		YES	bit									
Delete	tblGrid_SiteSurvey_Ops	vchDEQCInitials	7		YES	nvarchar	5	10							
Delete	tblGrid_SiteSurvey_Ops	ftGridPercent	8		YES	real			24	2					
Delete	tblOE_Encountered	iOEEncounteredID	1		NO	int			10	10	0				
Delete	tblOE_Encountered	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tblOE_Encountered	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblOE_Encountered	dtWorkDate	3		YES	datetime						3			
Delete	tblOE_Encountered	iOpID	4		YES	bigint			19	10	0				
Delete	tblOE_Encountered	guidGOL	5		YES	uniqueidentifier									
Delete	tblOE_Encountered	vchGridID	6		YES	nvarchar	50	100							
Delete	tblOE_Encountered	vchSurveyInstr	7		YES	nvarchar	100	200							
Delete	tblOE_Encountered	iLocalNorthing	8		YES	smallint			5	10	0				
Delete	tblOE_Encountered	iLocalEasting	9		YES	smallint			5	10	0				
Delete	tblOE_Encountered	ftNorthing	10		YES	float			53	2					
Delete	tblOE_Encountered	ftEasting	11		YES	float			53	2					
Delete	tblOE_Encountered	iQTY	12		YES	smallint			5	10	0				
Delete	tblOE_Encountered	ftLength	13		YES	real			24	2					
Delete	tblOE_Encountered	ftWidth	14		YES	real			24	2					
Delete	tblOE_Encountered	iOffsetDist	15		YES	int			10	10	0				
Delete	tblOE_Encountered	vchOffsetDir	16		YES	nvarchar	50	100							
Delete	tblOE_Encountered	ftInclination	17		YES	float			53	2					
Delete	tblOE_Encountered	vchOrientation	18		YES	nvarchar	2	4							
Delete	tblOE_Encountered	iDepth	19		YES	smallint			5	10	0				
Delete	tblOE_Encountered	ftWeight	20		YES	float			53	2					
Delete	tblOE_Encountered	vchOriginalOENomenclature	21		YES	nvarchar	255	510							
Delete	tblOE_Encountered	iOEModelIDFinal	22		YES	int			10	10	0				
Delete	tblOE_Encountered	vchNonOEDesc	23		YES	nvarchar	255	510							
Delete	tblOE_Encountered	vchOEType	24		YES	nvarchar	10	20							
Delete	tblOE_Encountered	vchConditionInit	25		YES	nvarchar	25	50							
Delete	tblOE_Encountered	vchConditionFinal	26		YES	nvarchar	25	50							
Delete	tblOE_Encountered	vchDispositionInit	27		YES	nvarchar	120	240							
Delete	tblOE_Encountered	vchDispositionInterm	28		YES	nvarchar	120	240							
Delete	tblOE_Encountered	vchDispositionFinal	29		YES	nvarchar	120	240							
Delete	tblOE_Encountered	biFragment	30		YES	tinyint			3	10	0				
Delete	tblOE_Encountered	chBurialPit	31		YES	char	1	1							
Delete	tblOE_Encountered	biDemoRequired	32		YES	tinyint			3	10	0				
Delete	tblOE_Encountered	biDemoPerformed	33		YES	tinyint			3	10	0				
Delete	tblOE_Encountered	dtDemo	34		YES	datetime						3			
Delete	tblOE_Encountered	vchDemoAction	35		YES	nvarchar	4000	8000							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblOE_Encountered	guidDemoOp	36		YES	uniqueidentifier									
Delete	tblOE_Encountered	dtQA	37		YES	datetime						3			
Delete	tblOE_Encountered	vchQAInitials	38		YES	nvarchar	5	10							
Delete	tblOE_Encountered	dtQC	39		YES	datetime						3			
Delete	tblOE_Encountered	vchQCInitials	40		YES	nvarchar	100	200							
Delete	tblOE_Encountered	iLocationProxCode	41		YES	smallint			5	10	0				
Delete	tblOE_Encountered	vchContractor	42		YES	nvarchar	50	100							
Delete	tblOE_Encountered	dtDataEntered	43		YES	datetime						3			
Delete	tblOE_Encountered	vchDataEntry	44		YES	nvarchar	10	20							
Delete	tblOE_Encountered	txOEItemNotes	45		YES	nvarchar	500	1000							
Delete	tblOE_Encountered	vchDataSource	46		YES	nvarchar	150	300							
Delete	tblOE_Encountered	txReviewComments	47		YES	nvarchar	4000	8000							
Delete	tblOE_Encountered	biDEQCChecked	48		YES	tinyint			3	10	0				
Delete	tblOE_Encountered	vchDEQCInitials	49		YES	nvarchar	100	200							
Delete	tblOE_Encountered	txModNotes	50		YES	nvarchar	4000	8000							
Delete	tblOE_Encountered	biDiscrepancy	51		YES	tinyint			3	10	0				
Delete	tblOE_Encountered	guidAnomaly	52		YES	uniqueidentifier									
Delete	tblOE_Encountered	ftDemoNorthing	53		YES	float			53	2					
Delete	tblOE_Encountered	ftDemoEasting	54		YES	float			53	2					
Delete	tblOE_Encountered	RecordId	55		YES	float			53	2					
Delete	tblOE_Encountered	UnitID	56		YES	float			53	2					
Delete	tblOE_Encountered	UserName	57		YES	varchar	255	255							
Delete	tblOE_Encountered	TimeStamp	58		YES	datetime						3			
Delete	tblOE_Encountered	vchFinalOENomenclature	59		YES	varchar	255	255							
Delete	tblOE_Encountered	UniqAnomalyID	60		YES	varchar	50	50							
Delete	tblOE_Encountered	AnomalyType	61		YES	varchar	255	255							
Delete	tblOE_Encountered	vchTeam	62		YES	varchar	25	25							
Delete	tblOE_Encountered	iTeamleaderID	63		YES	varchar	50	50							
Delete	tblOE_Encountered	dtRecMod	64	(getdate())	YES	datetime						3			
Delete	tblOE_Encountered	UploadtoDB	65		YES	varchar	1	1							
Delete	tblOE_Encountered	Gen_txModNotes	66		YES	float			53	2					
Delete	tblOE_Encountered	Gen_txOEItemNotes	67		YES	float			53	2					
Delete	tblOE_Encountered	Gen_vchDemoAction	68		YES	float			53	2					
Delete	tblOE_Encountered	s_Generation	69		YES	float			53	2					
Delete	tblOE_Encountered	s_GUID	70		YES	uniqueidentifier									
Delete	tblOE_Encountered	LocalAnomalyID	71		YES	nvarchar	50	100							
Delete	tblOE_Encountered	DigUploadtoDB	72		YES	bit									
Delete	tblOE_Encountered	ftReaqResponseValue	73		YES	float			53	2					
Delete	tblOE_Encountered	ftNonOEScrapLBs	74		YES	float			53	2					
Delete	tblOE_Encountered	ftOEScrapLBs	75		YES	float			53	2					
Delete	tblOE_Encountered	ftDigResponseValue	76		YES	float			53	2					
Delete	tblOE_Seeded	guidSeeded	1	(newid())	NO	uniqueidentifier							PK_tblOE_Seeded	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblOE_Seeded	dtWorkDate	2		YES	smalldatetime						0			
Delete	tblOE_Seeded	guidGOL	3		YES	uniqueidentifier									
Delete	tblOE_Seeded	vchGridID	4		YES	nvarchar	50	100							
Delete	tblOE_Seeded	vchSurveyInstr	5		YES	nvarchar	25	50							
Delete	tblOE_Seeded	iLocalNorthing	6		YES	smallint			5	10	0				
Delete	tblOE_Seeded	iLocalEasting	7		YES	smallint			5	10	0				
Delete	tblOE_Seeded	ftNorthing	8		YES	float			53	2					
Delete	tblOE_Seeded	ftEasting	9		YES	float			53	2					
Delete	tblOE_Seeded	vchProxCode	10		YES	nvarchar	50	100							
Delete	tblOE_Seeded	iQTY	11		YES	smallint			5	10	0				
Delete	tblOE_Seeded	ftLength	12		YES	float			53	2					
Delete	tblOE_Seeded	ftWidth	13		YES	float			53	2					
Delete	tblOE_Seeded	ftInclination	14		YES	float			53	2					
Delete	tblOE_Seeded	vchOrientation	15		YES	nvarchar	2	4							
Delete	tblOE_Seeded	iDepth	16		YES	smallint			5	10	0				
Delete	tblOE_Seeded	ftWeight	17		YES	float			53	2					
Delete	tblOE_Seeded	vchOriginalOENomenclature	18		YES	nvarchar	255	510							
Delete	tblOE_Seeded	iOEModelID	19		YES	int			10	10	0				
Delete	tblOE_Seeded	chBurialPit	20		YES	char	1	1							
Delete	tblOE_Seeded	vchAnomalyID	21		YES	nvarchar	50	100							
Delete	tblOE_Seeded	guidAnomaly	22		YES	uniqueidentifier									
Delete	tblOE_Seeded	txOEItemNotes	23		YES	nvarchar	4000	8000							
Delete	tblOE_Seeded	vchContractor	24		YES	nvarchar	20	40							
Delete	tblOE_Seeded	dtDataEntered	25		YES	datetime						3			
Delete	tblOE_Seeded	vchDataEntry	26		YES	nvarchar	10	20							
Delete	tblOE_Seeded	txReviewComments	27		YES	nvarchar	4000	8000							
Delete	tblOE_Seeded	biDEQCChecked	28		YES	tinyint			3	10	0				
Delete	tblOE_Seeded	vchDEQCInitials	29		YES	nvarchar	5	10							
Delete	tblOE_Seeded	txModNotes	30		YES	nvarchar	4000	8000							
Delete	tblOE_Seeded	guidGrid	31		YES	uniqueidentifier									
Delete	tblOE_Seeded	RecordId	32		YES	float			53	2					
Delete	tblOE_Seeded	UnitID	33		YES	float			53	2					
Delete	tblOE_Seeded	UserName	34		YES	varchar	255	255							
Delete	tblOE_Seeded	TimeStamp	35		YES	datetime						3			
Delete	tblOE_Seeded	SeedCategory	36		YES	varchar	255	255							
Delete	tblOE_Seeded	SeedOpType	37		YES	varchar	255	255							
Delete	tblOE_Seeded	vchTeam	38		YES	varchar	25	25							
Delete	tblOE_Seeded	iTeamleaderID	39		YES	varchar	50	50							
Delete	tblOE_Seeded	vchQCInitials	40		YES	varchar	5	5							
Delete	tblOE_Seeded	dtQC	41		YES	datetime						3			
Delete	tblOE_Seeded	dtRecMod	42	(getdate())	YES	datetime						3			
Delete	tblOE_Seeded	UploadtoDB	43		YES	varchar	1	1							
Delete	tblOE_Seeded	Gen_txReviewComments	44		YES	float			53	2					
Delete	tblOE_Seeded	s_Generation	45		YES	float			53	2					
Delete	tblOE_Seeded	s_GUID	46		YES	uniqueidentifier									
Delete	tblAnomaly	guidAnomaly	1	(newid())	NO	uniqueidentifier							PK_tblAnomaly	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblAnomaly	guidReacOp	2		YES	uniqueidentifier									
Delete	tblAnomaly	guidDGMDigOp	3		YES	uniqueidentifier									
Delete	tblAnomaly	guidQC1Op	4		YES	uniqueidentifier									
Delete	tblAnomaly	guidGeoPickOp	5		YES	uniqueidentifier									
Delete	tblAnomaly	vchGridID	6		YES	nvarchar	50	100							
Delete	tblAnomaly	ftEasting	7		YES	float			53	2					
Delete	tblAnomaly	ftNorthing	8		YES	float			53	2					
Delete	tblAnomaly	vchResponseType	9		YES	varchar	50	50							
Delete	tblAnomaly	ftResponseValue	10		YES	float			53	2					
Delete	tblAnomaly	biInvestigated	11		YES	bit									
Delete	tblAnomaly	iPriority	12		YES	int			10	10	0				
Delete	tblAnomaly	vchReaqInstr	13		YES	varchar	50	50							
Delete	tblAnomaly	vchReaqResponseType	14		YES	varchar	50	50							
Delete	tblAnomaly	ftReaqResponseValue	15		YES	float			53	2					
Delete	tblAnomaly	biReaqSuccessful	16		YES	bit									
Delete	tblAnomaly	iReaqDistanceFromFlag	17		YES	int			10	10	0				
Delete	tblAnomaly	iReaqAzimuthFromFlag	18		YES	int			10	10	0				
Delete	tblAnomaly	txReaqComments	19		YES	nvarchar	-1	-1							
Delete	tblAnomaly	ftDigWeight	20		YES	float			53	2					
Delete	tblAnomaly	biBurialPit	21		YES	bit									
Delete	tblAnomaly	biFragHole	22		YES	bit									
Delete	tblAnomaly	biMassExcavation	23		YES	bit									
Delete	tblAnomaly	biQC1Selected	24		YES	bit									
Delete	tblAnomaly	biQC1Passed	25		YES	bit									
Delete	tblAnomaly	guidQC1Fail	26		YES	uniqueidentifier									
Delete	tblAnomaly	txQC1Notes	27		YES	nvarchar	-1	-1							
Delete	tblAnomaly	biGeoQCSelected	28		YES	bit									
Delete	tblAnomaly	biGeoQCPassed	29		YES	bit									
Delete	tblAnomaly	guidGeoQCFail	30		YES	uniqueidentifier									
Delete	tblAnomaly	guidGeoQCDigOp	31		YES	uniqueidentifier									
Delete	tblAnomaly	txGeoQCNotes	32		YES	nvarchar	4000	8000							
Delete	tblAnomaly	chQCPassed	33		YES	char	4	4							
Delete	tblAnomaly	txDigComments	34		YES	nvarchar	-1	-1							
Delete	tblAnomaly	biAnomalyStillPresent	35		YES	bit									
Delete	tblAnomaly	txReviewComments	36		YES	nvarchar	-1	-1							
Delete	tblAnomaly	txModNotes	37		YES	nvarchar	-1	-1							
Delete	tblAnomaly	guidGrid	38		YES	uniqueidentifier									
Delete	tblAnomaly	ftReaqOffsetEasting	39		YES	float			53	2					
Delete	tblAnomaly	ftReaqOffsetNorthing	40		YES	float			53	2					
Delete	tblAnomaly	RecordId	41		YES	float			53	2					
Delete	tblAnomaly	UnitID	42		YES	float			53	2					
Delete	tblAnomaly	UserName	43		YES	varchar	255	255							
Delete	tblAnomaly	TimeStamp	44		YES	datetime						3			
Delete	tblAnomaly	vchAnomalyID	45		YES	varchar	50	50							
Delete	tblAnomaly	LocalAnomalyID	46		YES	varchar	50	50							
Delete	tblAnomaly	LocalEasting	47		YES	real			24	2					
Delete	tblAnomaly	LocalNorthing	48		YES	real			24	2					
Delete	tblAnomaly	ProcessingComm	49		YES	varchar	-1	-1							
Delete	tblAnomaly	vchTeam	50		YES	varchar	25	25							
Delete	tblAnomaly	iTeamleaderID	51		YES	varchar	50	50							
Delete	tblAnomaly	dtWorkDate	52		YES	datetime						3			
Delete	tblAnomaly	dtRecMod	53	(getdate())	YES	datetime						3			
Delete	tblAnomaly	UploadtoDB	54		YES	varchar	1	1							
Delete	tblAnomaly	Gen_ProcessingComm	55		YES	float			53	2					
Delete	tblAnomaly	Gen_txDigComments	56		YES	float			53	2					
Delete	tblAnomaly	Gen_txModNotes	57		YES	float			53	2					

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblAnomaly	Gen_txQC1Notes	58		YES	float			53	2					
Delete	tblAnomaly	Gen_txReaqComments	59		YES	float			53	2					
Delete	tblAnomaly	Gen_txReviewComments	60		YES	float			53	2					
Delete	tblAnomaly	s_Generation	61		YES	float			53	2					
Delete	tblAnomaly	s_GUID	62		YES	uniqueidentifier									
Delete	tblAnomaly	ftResponsemV	63		YES	float			53	2					
Delete	tblAnomaly	QCUploadtoDB	64		YES	nchar	1	2							
Delete	tblAnomaly	ftQCResponseValue	65		YES	float			53	2					
Delete	tblAnomaly	vchQCTeam	66		YES	nvarchar	25	50							
Delete	tblAnomaly	iQCTeamLeaderID	67		YES	nvarchar	50	100							
Delete	tblAnomaly	dtQCWorkDate	68		YES	datetime						3			
Delete	tblAnomaly_Undug	iAnomalyUndugID	1		NO	int			10	10	0		PK_tblAnomalyUndug	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblAnomaly_Undug	vchSite	2		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	guidGrid	3		YES	uniqueidentifier									
Delete	tblAnomaly_Undug	vchGrid	4		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	vchGridAlias	5		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	vchTeam	6		YES	nvarchar	25	50							
Delete	tblAnomaly_Undug	dtWorkdate	7		YES	smalldatetime						0			
Delete	tblAnomaly_Undug	ftNorthing	8		YES	float			53	2					
Delete	tblAnomaly_Undug	ftEasting	9		YES	float			53	2					
Delete	tblAnomaly_Undug	iQty	10		YES	int			10	10	0				
Delete	tblAnomaly_Undug	vchDepth	11		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	vchType	12		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	vchDisposition	13		YES	nvarchar	50	100							
Delete	tblAnomaly_Undug	vchContractor	14		YES	nvarchar	50	100							
Delete	tblAnomDIDEM61MKII	guidAnomDIDEM61MKII	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDEM61MKII	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblAnomDIDEM61MKII	guidAnomaly	2		YES	uniqueidentifier									
Delete	tblAnomDIDEM61MKII	vchAnomalyID	3		NO	nvarchar	-1	-1							
Delete	tblAnomDIDEM61MKII	CH1_final	4		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	CH2_final	5		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	CH3_final	6		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	CH4_final	7		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	CH_SUM	8		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	CH_AVG	9		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Width	10		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Size	11		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	SignalStrength	12		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	SNR	13		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Fit_Coh	14		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Fit_dec	15		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Fit_inc	16		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Fit_size	17		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Fit_solidAngle	18		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Comments	19		YES	nvarchar	-1	-1							
Delete	tblAnomDIDEM61MKII	Tau_1_2	20		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Tau_1_3	21		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Tau_1_4	22		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Tau_2_3	23		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Tau_2_4	24		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	Tau_3_4	25		YES	decimal			18	10	3				
Delete	tblAnomDIDEM61MKII	vchGridID	26		YES	varchar	255	255							
Delete	tblAnomDIDEM61MKII	UniqueGridID	27		YES	varchar	255	255							
Delete	tblAnomDIDEM61MKII	dtRecMod	28	(getdate())	YES	datetime						3			
Delete	tblAnomDIDEM61MKII	Gen_Comments	29		YES	float			53	2					
Delete	tblAnomDIDEM61MKII	s_Generation	30		YES	float			53	2					
Delete	tblAnomDIDEM61MKII	s_GUID	31		YES	uniqueidentifier									
Delete	tblAnomDIDEM61MKII	ftEasting	32		YES	float			53	2					
Delete	tblAnomDIDEM61MKII	ftNorthing	33		YES	float			53	2					
Delete	tblAnomDIDG858	guidAnomDIDG858	1	(newid())	NO	uniqueidentifier							PK_tblAnomDIDG858	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblAnomDIDG858	guidAnomaly	2		YES	uniqueidentifier									
Delete	tblAnomDIDG858	vchAnomalyID	3		NO	nvarchar	-1	-1							
Delete	tblAnomDIDG858	TF_Peak	4		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	TF_Trough	5		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	VG_Peak	6		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	VG_Trough	7		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Mag_Peak_offset	8		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	AS	9		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	H_Final	10		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	M_final	11		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Width	12		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Halfwidth_alongLine	13		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Halfwidth_acrossLine	14		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Size	15		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	SignalStrength	16		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	SNR	17		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_Coh	18		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_Depth	19		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_MagneticMoment	20		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_bl	21		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_b2	22		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_b3	23		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_dec	24		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_inc	25		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_size	26		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Fit_solidAngle	27		YES	decimal			18	10	3				
Delete	tblAnomDIDG858	Comments	28		YES	nvarchar	-1	-1							
Delete	tblSite_Walk_ops	guidSiteWalkopsID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Walk_ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblSite_Walk_ops	guidGOL	2		YES	uniqueidentifier									
Delete	tblSite_Walk_ops	RecordId	3		YES	float			53	2					
Delete	tblSite_Walk_ops	UnitID	4		YES	float			53	2					
Delete	tblSite_Walk_ops	UserName	5		YES	varchar	255	255							
Delete	tblSite_Walk_ops	TimeStamp	6		YES	datetime						3			
Delete	tblSite_Walk_ops	iSiteWalkID	7		YES	float			53	2					
Delete	tblSite_Walk_ops	dtWorkDate	8		YES	datetime						3			
Delete	tblSite_Walk_ops	vchTeam	9		YES	nvarchar	255	510							
Delete	tblSite_Walk_ops	vchSurveyInstr	10		YES	varchar	25	25							
Delete	tblSite_Walk_ops	txReviewComments	11		YES	varchar	-1	-1							
Delete	tblSite_Walk_ops	txOpnotes	12		YES	varchar	-1	-1							
Delete	tblSite_Walk_ops	vchContractor	13		YES	varchar	20	20							
Delete	tblSite_Walk_ops	vchGridID	14		YES	varchar	50	50							
Delete	tblSite_Walk_ops	iTeamleaderID	15		YES	varchar	50	50							
Delete	tblSite_Walk_ops	dtRecMod	16	(getdate())	YES	datetime						3			
Delete	tblSite_Walk_ops	UploadtoDB	17		YES	varchar	1	1							
Delete	tblSite_Walk_ops	Gen_txOpnotes	18		YES	float			53	2					
Delete	tblSite_Walk_ops	Gen_txReviewComments	19		YES	float			53	2					
Delete	tblSite_Walk_ops	s_Generation	20		YES	float			53	2					
Delete	tblSite_Walk_ops	s_GUID	21		YES	uniqueidentifier									
Delete	tblGeo_Survey_Ops	guidGeoSurvey	1		NO	uniqueidentifier							PK_tblGeo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_Survey_Ops	dtStartTime	2		YES	datetime						3			
Delete	tblGeo_Survey_Ops	dtEndTime	3		YES	datetime						3			
Delete	tblGeo_Survey_Ops	txOpNotes	4		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	vchSurveyInstr	5		YES	nvarchar	25	50							
Delete	tblGeo_Survey_Ops	vchDataCollectRate	6		YES	nvarchar	50	100							
Delete	tblGeo_Survey_Ops	biReSurvey	7		YES	bit									
Delete	tblGeo_Survey_Ops	biQCSurvey	8		YES	bit									
Delete	tblGeo_Survey_Ops	ftQCPercent	9		YES	nvarchar	50	100							
Delete	tblGeo_Survey_Ops	dtCheckTime	10		YES	datetime						3			
Delete	tblGeo_Survey_Ops	vchRAW61FileNames	11		YES	nvarchar	255	510							
Delete	tblGeo_Survey_Ops	vchXYZFileNames	12		YES	nvarchar	255	510							
Delete	tblGeo_Survey_Ops	vchMagRawStn	13		YES	nvarchar	255	510							
Delete	tblGeo_Survey_Ops	vchMagRawCorStn	14		YES	nvarchar	50	100							
Delete	tblGeo_Survey_Ops	vchMagBaseStnFile	15		YES	nvarchar	250	500							
Delete	tblGeo_Survey_Ops	vchMagRawXyz	16		YES	nvarchar	250	500							
Delete	tblGeo_Survey_Ops	iInstWarmupTime	17		YES	decimal			18	10	0				
Delete	tblGeo_Survey_Ops	biZeroInstrument	18		YES	bit									
Delete	tblGeo_Survey_Ops	vchStaticQCFile	19		YES	nvarchar	50	100							
Delete	tblGeo_Survey_Ops	iStaticQCET	20		YES	int			10	10	0				
Delete	tblGeo_Survey_Ops	biStaticQCConsistent	21		YES	bit									
Delete	tblGeo_Survey_Ops	biSpikeTestConsistent	22		YES	bit									
Delete	tblGeo_Survey_Ops	vchWeather	23		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	vchCulturalEffect	24		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	vchTerrain	25		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	vchNoteKeeper1	26		YES	nvarchar	255	510							
Delete	tblGeo_Survey_Ops	vchNoteKeeper2	27		YES	nvarchar	255	510							
Delete	tblGeo_Survey_Ops	vchGridCondition	28		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	ftLnSpacing	29		YES	float			53	2					
Delete	tblGeo_Survey_Ops	ftBgnBatVoltage	30		YES	real			24	2					
Delete	tblGeo_Survey_Ops	ftEndBatVoltage	31		YES	real			24	2					
Delete	tblGeo_Survey_Ops	biQCReview	32		YES	bit									
Delete	tblGeo_Survey_Ops	txReviewComments	33		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	vchQCInitials	34		YES	nvarchar	5	10							
Delete	tblGeo_Survey_Ops	txModNotes	35		YES	nvarchar	-1	-1							
Delete	tblGeo_Survey_Ops	biDiscrepancy	36		YES	bit									
Delete	tblGeo_Survey_Ops	dtDataEntered	37		YES	datetime						3			

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGeo_Survey_Ops	vchDataEntry	38		YES	nvarchar	50	100							
Delete	tblGeo_Survey_Ops	RecordId	39		YES	float			53	2					
Delete	tblGeo_Survey_Ops	UnitID	40		YES	float			53	2					
Delete	tblGeo_Survey_Ops	UserName	41		YES	varchar	255	255							
Delete	tblGeo_Survey_Ops	TimeStamp	42		YES	datetime						3			
Delete	tblGeo_Survey_Ops	vchGridBlockID	43		YES	varchar	50	50							
Delete	tblGeo_Survey_Ops	GridsCollected	44		YES	varchar	255	255							
Delete	tblGeo_Survey_Ops	vchTeam	45		YES	varchar	255	255							
Delete	tblGeo_Survey_Ops	vchCollDir	46		YES	varchar	50	50							
Delete	tblGeo_Survey_Ops	DateofSurvey	47		YES	datetime						3			
Delete	tblGeo_Survey_Ops	dtRecMod	48	(getdate())	YES	datetime						3			
Delete	tblGeo_Survey_Ops	UploadtoDB	49		YES	varchar	1	1							
Delete	tblGeo_Survey_Ops	Gen_txOpNotes	50		YES	float			53	2					
Delete	tblGeo_Survey_Ops	Gen_txReviewComments	51		YES	float			53	2					
Delete	tblGeo_Survey_Ops	Gen_vchCulturalEffect	52		YES	float			53	2					
Delete	tblGeo_Survey_Ops	Gen_vchGridCondition	53		YES	float			53	2					
Delete	tblGeo_Survey_Ops	Gen_vchTerrain	54		YES	float			53	2					
Delete	tblGeo_Survey_Ops	Gen_vchWeather	55		YES	float			53	2					
Delete	tblGeo_Survey_Ops	s_Generation	56		YES	float			53	2					
Delete	tblGeo_Survey_Ops	s_GUID	57		YES	uniqueidentifier									
Delete	tblGeo_Survey_Ops	vchContractor	58		YES	nvarchar	50	100							
Delete	tblGeo_GridBlock_Lnk	guidGridBlockLnk	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block_Lnk	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_GridBlock_Lnk	guidGeoSurvey	2		YES	uniqueidentifier									
Delete	tblGeo_GridBlock_Lnk	guidGridBlock	3		YES	uniqueidentifier									
Delete	tblGeo_GridBlock_Lnk	vchGridBlockID	4		YES	nvarchar	50	100							
Delete	tblGeo_GridBlock_Lnk	vchGridID	5		YES	nvarchar	50	100							
Delete	tblGeo_GridBlock_Lnk	guidGrid	6		YES	uniqueidentifier									
Delete	tblGeo_GridBlock	guidGridBlock	1	(newid())	NO	uniqueidentifier							PK_tblGrid_Block	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_GridBlock	vchGridBlockDesc	2		YES	nvarchar	255	510							
Delete	tblGeo_FileData	guidGeoFileData	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileData	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_FileData	guidGeoSurvey	2		YES	uniqueidentifier									
Delete	tblGeo_FileData	vchGeoFileDataName	3		YES	nvarchar	255	510							
Delete	tblGeo_FileData	vchGeoFileDataType	4		YES	nvarchar	255	510							
Delete	tblGeo_FileData	vchGeoFileDataNotes	5		YES	nvarchar	255	510							
Delete	tblGeo_FileData	RecordId	6		YES	float			53	2					
Delete	tblGeo_FileData	UnitID	7		YES	float			53	2					
Delete	tblGeo_FileData	UserName	8		YES	varchar	255	255							
Delete	tblGeo_FileData	TimeStamp	9		YES	datetime						3			
Delete	tblGeo_FileData	vchGridBlockID	10		YES	varchar	50	50							
Delete	tblGeo_FileData	vchPreparer	11		YES	varchar	50	50							
Delete	tblGeo_FileData	vchQCInitials	12		YES	varchar	5	5							
Delete	tblGeo_FileData	dtQC	13		YES	datetime						3			
Delete	tblGeo_FileData	vchProblemDesc	14		YES	varchar	255	255							
Delete	tblGeo_FileData	biOKToDeliver	15		YES	varchar	1	1							
Delete	tblGeo_FileData	dtDelivery	16		YES	datetime						3			
Delete	tblGeo_FileData	dtRecMod	17	(getdate())	YES	datetime						3			
Delete	tblGeo_FileData	UploadtoDB	18		YES	varchar	1	1							
Delete	tblGeo_FileData	s_Generation	19		YES	float			53	2					
Delete	tblGeo_FileData	s_GUID	20		YES	uniqueidentifier									
Delete	tblGeo_FileData	vchContractor	21		YES	nvarchar	50	100							
Delete	tblGeo_FileProcessing	guidGeoFileProcessing	1	(newid())	NO	uniqueidentifier							PK_tblGeoFileProcessing	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_FileProcessing	guidGeoFileData	2		YES	uniqueidentifier									
Delete	tblGeo_FileProcessing	vchGeosoftDatabaseName	3		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	dtProcessingDate	4		YES	datetime						3			
Delete	tblGeo_FileProcessing	vchProcessingOperator	5		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biGPSSmoothingPerformed	6		YES	bit									
Delete	tblGeo_FileProcessing	iGPSSmoothingWindow	7		YES	int			10	10	0				
Delete	tblGeo_FileProcessing	biDriftCorrectionPerformed	8		YES	bit									
Delete	tblGeo_FileProcessing	vchDriftCorrectMethod	9		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biDirurnalCorrection	10		YES	bit									
Delete	tblGeo_FileProcessing	vchDirunalCorrectionBSFile	11		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	dLatency	12		YES	numeric			18	10	3				
Delete	tblGeo_FileProcessing	dSampleSeparation	13		YES	numeric			18	10	3				
Delete	tblGeo_FileProcessing	dNoiseMean	14		YES	numeric			18	10	3				
Delete	tblGeo_FileProcessing	dNoiseStdDev	15		YES	numeric			18	10	3				
Delete	tblGeo_FileProcessing	vchProcessingQCOperator	16		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	dtProcessingQCDate	17		YES	datetime						3			
Delete	tblGeo_FileProcessing	vchDataProjection	18		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	vchDeSpikingPerformed	19		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	vchDeSpikingInfo	20		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biMagMap2000	21		YES	bit									
Delete	tblGeo_FileProcessing	biGeosoftOasisMontaj	22		YES	bit									
Delete	tblGeo_FileProcessing	biHeadingCorrection	23		YES	bit									
Delete	tblGeo_FileProcessing	vchHeadInfo	24		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biNormalize	25		YES	bit									
Delete	tblGeo_FileProcessing	vchNormInfo	26		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biHeaderProcFile	27		YES	bit									
Delete	tblGeo_FileProcessing	biLineBreak	28		YES	bit									
Delete	tblGeo_FileProcessing	vchLineBreakInfo	29		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	biTranslateData	30		YES	bit									
Delete	tblGeo_FileProcessing	biLagCorrection	31		YES	bit									
Delete	tblGeo_FileProcessing	vchLagCrValue	32		YES	nvarchar	255	510							
Delete	tblGeo_FileProcessing	vchGridBlockID	33		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dSampleSeparationPercent	34		YES	float			53	2					
Delete	tblGeo_FileProcessing	dSampleSeparationStatus	35		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dCoverageType	36		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dCoverageDesignPercent	37		YES	float			53	2					
Delete	tblGeo_FileProcessing	dCoveragePercent	38		YES	float			53	2					
Delete	tblGeo_FileProcessing	dCoverageDesignStatus	39		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dCoverageStatus	40		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dVelocityPercent	41		YES	float			53	2					
Delete	tblGeo_FileProcessing	dVelocityMean	42		YES	float			53	2					
Delete	tblGeo_FileProcessing	dVelocityStatus	43		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	vchDataPackageFiles	44		YES	varchar	-1	-1							
Delete	tblGeo_FileProcessing	vchProcessingComments	45		YES	varchar	-1	-1							
Delete	tblGeo_FileProcessing	vchRepeatLineNumbers	46		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	biRepeatLinesStatus	47		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dGPSQualityPercentFix	48		YES	float			53	2					
Delete	tblGeo_FileProcessing	vchGPSQualityStatus	49		YES	varchar	255	255							
Delete	tblGeo_FileProcessing	dtRecMod	50	(getdate())	YES	datetime						3			
Delete	tblGeo_FileProcessing	Gen_vchDataPackageFiles	51		YES	float			53	2					
Delete	tblGeo_FileProcessing	Gen_vchProcessingComments	52		YES	float			53	2					
Delete	tblGeo_FileProcessing	s_Generation	53		YES	float			53	2					
Delete	tblGeo_FileProcessing	s_GUID	54		YES	uniqueidentifier									
Delete	tblGeo_FileProcessing	vchContractor	55		YES	nvarchar	50	100							
Delete	tblGeo_QCSurvey_FileData	iGeoFileFieldQCID	1		YES	bigint			19	10	0				
Delete	tblGeo_QCSurvey_FileData	guidGeoFileFieldQC	2	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSurvey_FileData	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCSurvey_FileData	guidGeoFileData	3		YES	uniqueidentifier									
Delete	tblGeo_QCSurvey_FileData	guidGeoQCSurveyOp	4		YES	uniqueidentifier									
Delete	tblGeo_QCSurvey_FileData	vchPreGeoFileQCName	5		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	vchPreGeoFileQCType	6		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	iPreStaticLineNum	7		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPreDynamicLineNum	8		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPreCableLineNum	9		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPreLatencyLineNum	10		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	vchPreQCSurveyNotes	11		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	vchPostGeoFileQCName	12		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	vchPostGeoFileQCType	13		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	iPostStaticLineNum	14		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPostDynamicLineNum	15		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPostCableLineNum	16		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	iPostLatencyLineNum	17		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_FileData	vchPostQCSurveyNotes	18		YES	nvarchar	255	510							
Delete	tblGeo_QCSurvey_FileData	vchContractor	19		YES	nvarchar	50	100							
Delete	tblGeo_QCSurvey_ops	guidGeoQCSurveyOp	1	(newid())	NO	uniqueidentifier							PK_tblGeoQCSurvey_ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCSurvey_ops	vchFldFrmID	2		YES	nvarchar	50	100							
Delete	tblGeo_QCSurvey_ops	vchWeather	3		YES	nvarchar	50	100							
Delete	tblGeo_QCSurvey_ops	iSurveytype	4		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	iInstWarmupTime	5		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	vchSurveyInstr	6		YES	nvarchar	25	50							
Delete	tblGeo_QCSurvey_ops	vchGeoQCSurveyNotes	7		YES	varchar	-1	-1							
Delete	tblGeo_QCSurvey_ops	ftStaticSpikeAM	8		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftStaticSpikePM	9		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftStaticBackgroundAM	10		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftStaticBackgroundPM	11		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	vchPointLocationID	12		YES	varchar	50	50							
Delete	tblGeo_QCSurvey_ops	vchPointLocationName	13		YES	varchar	50	50							
Delete	tblGeo_QCSurvey_ops	ftRecordedNorthing	14		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftRecordedEasting	15		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftKnownNorthing	16		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftKnownEasting	17		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftDistanceOffset	18		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNameAM	19		YES	varchar	50	50							
Delete	tblGeo_QCSurvey_ops	vchGeoQCSurveyFileNamePM	20		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGeo_QCSurvey_ops	iStaticLineNum	21		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	iDynamicLineNum	22		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	iCableLineNum	23		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	iIVSLineNum	24		YES	int			10	10	0				
Delete	tblGeo_QCSurvey_ops	vchIVSFileName	25		YES	varchar	50	50							
Delete	tblGeo_QCSurvey_ops	vchQCFileName	26		YES	varchar	50	50							
Delete	tblGeo_QCSurvey_ops	guidGeoSurvey	27		YES	uniqueidentifier									
Delete	tblGeo_QCSurvey_ops	RecordId	28		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	UnitID	29		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	UserName	30		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	TimeStamp	31		YES	datetime						3			
Delete	tblGeo_QCSurvey_ops	vchTeam	32		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	vchGPSFileName	33		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	Static_Test_Item_Height	34		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	Test_Item	35		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	iStaticPreLineNum	36		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	iStaticSpikeLineNum	37		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	iStaticPostLineNum	38		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	iPersonnelLineNum	39		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	iTowVehicleLineNum	40		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	ftStaticSpike	41		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	ftStaticBackground	42		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	IVSLocation_ID	43		YES	varchar	255	255							
Delete	tblGeo_QCSurvey_ops	iIVSBkgLineNum	44		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	vchDateCollected	45		YES	datetime						3			
Delete	tblGeo_QCSurvey_ops	dtRecMod	46	(getdate())	YES	datetime						3			
Delete	tblGeo_QCSurvey_ops	UploadtoDB	47		YES	varchar	1	1							
Delete	tblGeo_QCSurvey_ops	Gen_vchGeoQCSurveyNotes	48		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	Gen_vchWeather	49		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	s_Generation	50		YES	float			53	2					
Delete	tblGeo_QCSurvey_ops	s_GUID	51		YES	uniqueidentifier									
Delete	tblGeo_QCSurvey_ops	vchContractor	52		YES	nvarchar	50	100							
Delete	tblGeo_Defaults	guidGeoDefaultsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_Defaults	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_Defaults	CableShakeTol	2		YES	float			53	2					
Delete	tblGeo_Defaults	CableShakePercent	3		YES	float			53	2					
Delete	tblGeo_Defaults	PersonnelTol	4		YES	float			53	2					
Delete	tblGeo_Defaults	PersonnelPercent	5		YES	float			53	2					
Delete	tblGeo_Defaults	TowVehicleTol	6		YES	float			53	2					
Delete	tblGeo_Defaults	TowVehiclePercent	7		YES	float			53	2					
Delete	tblGeo_Defaults	StaticBkgTol	8		YES	float			53	2					
Delete	tblGeo_Defaults	StaticBkgPercent	9		YES	float			53	2					
Delete	tblGeo_Defaults	StaticSpikeTol	10		YES	float			53	2					
Delete	tblGeo_Defaults	StaticSpikePercent	11		YES	float			53	2					
Delete	tblGeo_Defaults	IVSBkgTol	12		YES	float			53	2					
Delete	tblGeo_Defaults	IVSBkgPercent	13		YES	float			53	2					
Delete	tblGeo_Defaults	IVSResponseTol	14		YES	float			53	2					
Delete	tblGeo_Defaults	IVSPositionTol	15		YES	float			53	2					
Delete	tblGeo_Defaults	GPSPostionTol	16		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageTolAPP	17		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageTolATA	18		YES	float			53	2					
Delete	tblGeo_Defaults	CoveragePercentAPP	19		YES	float			53	2					
Delete	tblGeo_Defaults	CoveragePercentATA	20		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageTolBPP	21		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageTolBTA	22		YES	float			53	2					
Delete	tblGeo_Defaults	CoveragePercentBPP	23		YES	float			53	2					
Delete	tblGeo_Defaults	CoveragePercentBTA	24		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignTolAPP	25		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignTolATA	26		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignPercentAPP	27		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignPercentATA	28		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignTolBPP	29		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignTolBTA	30		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignPercentBPP	31		YES	float			53	2					
Delete	tblGeo_Defaults	CoverageDesignPercentBTA	32		YES	float			53	2					
Delete	tblGeo_Defaults	ProjectCoordinateSystem	33		YES	varchar	255	255							
Delete	tblGeo_Defaults	VelocityTol	34		YES	float			53	2					
Delete	tblGeo_Defaults	VelocityPercent	35		YES	float			53	2					
Delete	tblGeo_Defaults	AlongLineDensityPercent	36		YES	float			53	2					
Delete	tblGeo_Defaults	AlongLineDensityTol	37		YES	float			53	2					
Delete	tblGeo_Defaults	ProcFormDriftCorrMethod	38		YES	varchar	255	255							
Delete	tblGeo_Defaults	ProcFormLagValue	39		YES	varchar	255	255							
Delete	tblGeo_Defaults	ProcFormDeSpikingInfo	40		YES	varchar	255	255							
Delete	tblGeo_Defaults	ProcFormLineBreakInfo	41		YES	varchar	255	255							
Delete	tblGeo_Defaults	ProcFormProcessingComments	42		YES	varchar	-1	-1							
Delete	tblGeo_Defaults	dtRecMod	43	(getdate())	YES	datetime						3			
Delete	tblGeo_Defaults	RecordID	44		YES	float			53	2					
Delete	tblGeo_Defaults	Gen_ProcFormProcessingComments	45		YES	float			53	2					
Delete	tblGeo_Defaults	s_Generation	46		YES	float			53	2					
Delete	tblGeo_Defaults	s_GUID	47		YES	uniqueidentifier									
Delete	tblGeo_Defaults	vchContractor	48		YES	nvarchar	50	100							
Delete	tblGeo_GPSControlPoint	guidGeoGPSControlPointID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_GPSControlPoint	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_GPSControlPoint	vchPointLocationID	2		YES	varchar	50	50							
Delete	tblGeo_GPSControlPoint	ftKnownEasting	3		YES	float			53	2					
Delete	tblGeo_GPSControlPoint	ftKnownNorthing	4		YES	float			53	2					
Delete	tblGeo_GPSControlPoint	vchPointLocationName	5		YES	varchar	255	255							
Delete	tblGeo_GPSControlPoint	Comments	6		YES	varchar	-1	-1							
Delete	tblGeo_GPSControlPoint	dtRecMod	7	(getdate())	YES	datetime						3			
Delete	tblGeo_GPSControlPoint	Gen_Comments	8		YES	float			53	2					
Delete	tblGeo_GPSControlPoint	s_Generation	9		YES	float			53	2					
Delete	tblGeo_GPSControlPoint	s_GUID	10		YES	uniqueidentifier									
Delete	tblGeo_GPSControlPoint	vchContractor	11		YES	nvarchar	50	100							
Delete	tblGeo_QCCableShake	guidGeoQCCableShakeID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCCableShake	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCCableShake	vchQCFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	Sensor_ID	3		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	iCableShakeLineID	4		YES	float			53	2					
Delete	tblGeo_QCCableShake	Response_Ch1	5		YES	float			53	2					
Delete	tblGeo_QCCableShake	Response_Ch2	6		YES	float			53	2					
Delete	tblGeo_QCCableShake	Response_Ch3	7		YES	float			53	2					
Delete	tblGeo_QCCableShake	Response_Ch4	8		YES	float			53	2					
Delete	tblGeo_QCCableShake	PercentInTol_Ch1	9		YES	float			53	2					
Delete	tblGeo_QCCableShake	PercentInTol_Ch2	10		YES	float			53	2					
Delete	tblGeo_QCCableShake	PercentInTol_Ch3	11		YES	float			53	2					
Delete	tblGeo_QCCableShake	PercentInTol_Ch4	12		YES	float			53	2					
Delete	tblGeo_QCCableShake	QCStatus_Ch1	13		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	QCStatus_Ch2	14		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	QCStatus_Ch3	15		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	QCStatus_Ch4	16		YES	varchar	50	50							
Delete	tblGeo_QCCableShake	Comments	17		YES	varchar	-1	-1							
Delete	tblGeo_QCCableShake	dtRecMod	18	(getdate())	YES	datetime						3			
Delete	tblGeo_QCCableShake	RecordID	19		YES	float			53	2					
Delete	tblGeo_QCCableShake	Gen_Comments	20		YES	float			53	2					
Delete	tblGeo_QCCableShake	s_Generation	21		YES	float			53	2					
Delete	tblGeo_QCCableShake	s_GUID	22		YES	uniqueidentifier									
Delete	tblGeo_QCCableShake	vchContractor	23		YES	nvarchar	50	100							
Delete	tblGeo_QCGPSCheck	guidGeoQCGPSCheckID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCGPSCheck	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCGPSCheck	ID	2		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	vchGPSFileName	3		YES	varchar	255	255							
Delete	tblGeo_QCGPSCheck	vchPointLocationID	4		YES	varchar	50	50							
Delete	tblGeo_QCGPSCheck	ftRecordedNorthing	5		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	ftRecordedEasting	6		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	ftKnownNorthing	7		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	ftKnownEasting	8		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	ftDistanceOffset	9		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	QCStatus	10		YES	varchar	50	50							
Delete	tblGeo_QCGPSCheck	Comments	11		YES	varchar	-1	-1							
Delete	tblGeo_QCGPSCheck	dtRecMod	12	(getdate())	YES	datetime						3			
Delete	tblGeo_QCGPSCheck	Gen_Comments	13		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	s_Generation	14		YES	float			53	2					
Delete	tblGeo_QCGPSCheck	s_GUID	15		YES	uniqueidentifier									
Delete	tblGeo_QCGPSCheck	vchContractor	16		YES	nvarchar	50	100							
Delete	tblGeo_QCIVSBackground	guidGeoQCIVSBackgroundID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSBackground	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCIVSBackground	vchIVSFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCIVSBackground	iIVSBkgLineID	3		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Sensor_ID	4		YES	varchar	50	50							
Delete	tblGeo_QCIVSBackground	Bkg_Response_Ch1	5		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_Response_Ch2	6		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_Response_Ch3	7		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_Response_Ch4	8		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch1	9		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch2	10		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch3	11		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	Bkg_PercentInTol_Ch4	12		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	QCStatus_Ch1	13		YES	varchar	50	50							
Delete	tblGeo_QCIVSBackground	QCStatus_Ch2	14		YES	varchar	50	50							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGeo_QCIVSBackground	QCStatus_Ch3	15		YES	varchar	50	50							
Delete	tblGeo_QCIVSBackground	QCStatus_Ch4	16		YES	varchar	50	50							
Delete	tblGeo_QCIVSBackground	Comments	17		YES	varchar	-1	-1							
Delete	tblGeo_QCIVSBackground	RecordID	18		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	dtRecMod	19	(getdate())	YES	datetime						3			
Delete	tblGeo_QCIVSBackground	Gen_Comments	20		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	s_Generation	21		YES	float			53	2					
Delete	tblGeo_QCIVSBackground	s_GUID	22		YES	uniqueidentifier									
Delete	tblGeo_QCIVSBackground	vchContractor	23		YES	nvarchar	50	100							
Delete	tblGeo_QCIVSResponse	guidGeoQCIVSResponseID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCIVSResponse	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCIVSResponse	vchIVSFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	iIVSLineNum	3		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Sensor_ID	4		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	Test_Item	5		YES	varchar	255	255							
Delete	tblGeo_QCIVSResponse	Spike_Response_Ch1	6		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Spike_Response_Ch2	7		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Spike_Response_Ch3	8		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Spike_Response_Ch4	9		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Delta_Response_Ch1	10		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Delta_Response_Ch2	11		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Delta_Response_Ch3	12		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Delta_Response_Ch4	13		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	ftRecordedNorthing	14		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	ftRecordedEasting	15		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	X_Offset	16		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Y_Offset	17		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	Offset	18		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	QCStatus_Ch1	19		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	QCStatus_Ch2	20		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	QCStatus_Ch3	21		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	QCStatus_Ch4	22		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	QCStatus_Offset	23		YES	varchar	50	50							
Delete	tblGeo_QCIVSResponse	Comments	24		YES	varchar	-1	-1							
Delete	tblGeo_QCIVSResponse	RecordID	25		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	dtRecMod	26	(getdate())	YES	datetime						3			
Delete	tblGeo_QCIVSResponse	Gen_Comments	27		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	s_Generation	28		YES	float			53	2					
Delete	tblGeo_QCIVSResponse	s_GUID	29		YES	uniqueidentifier									
Delete	tblGeo_QCIVSResponse	vchContractor	30		YES	nvarchar	50	100							
Delete	tblGeo_QCPersonnel	guidGeoQCPersonnelID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCPersonnel	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCPersonnel	vchQCFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	Sensor_ID	3		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	iPersonnelLineID	4		YES	float			53	2					
Delete	tblGeo_QCPersonnel	Response_Ch1	5		YES	float			53	2					
Delete	tblGeo_QCPersonnel	Response_Ch2	6		YES	float			53	2					
Delete	tblGeo_QCPersonnel	Response_Ch3	7		YES	float			53	2					
Delete	tblGeo_QCPersonnel	Response_Ch4	8		YES	float			53	2					
Delete	tblGeo_QCPersonnel	PercentInTol_Ch1	9		YES	float			53	2					
Delete	tblGeo_QCPersonnel	PercentInTol_Ch2	10		YES	float			53	2					
Delete	tblGeo_QCPersonnel	PercentInTol_Ch3	11		YES	float			53	2					
Delete	tblGeo_QCPersonnel	PercentInTol_Ch4	12		YES	float			53	2					
Delete	tblGeo_QCPersonnel	QCStatus_Ch1	13		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	QCStatus_Ch2	14		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	QCStatus_Ch3	15		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	QCStatus_Ch4	16		YES	varchar	50	50							
Delete	tblGeo_QCPersonnel	Comments	17		YES	varchar	-1	-1							
Delete	tblGeo_QCPersonnel	RecordID	18		YES	float			53	2					
Delete	tblGeo_QCPersonnel	dtRecMod	19	(getdate())	YES	datetime						3			
Delete	tblGeo_QCPersonnel	Gen_Comments	20		YES	float			53	2					
Delete	tblGeo_QCPersonnel	s_Generation	21		YES	float			53	2					
Delete	tblGeo_QCPersonnel	s_GUID	22		YES	uniqueidentifier									
Delete	tblGeo_QCPersonnel	vchContractor	23		YES	nvarchar	50	100							
Delete	tblGeo_QCSeedItems	guidGeoQCSeedItemsID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCSeedItems	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCSeedItems	QCSeedType	2		YES	varchar	255	255							
Delete	tblGeo_QCSeedItems	Sensor_ID	3		YES	varchar	50	50							
Delete	tblGeo_QCSeedItems	vchSurveyInstr	4		YES	varchar	25	25							
Delete	tblGeo_QCSeedItems	Response_Value_CH1	5		YES	numeric			10	10	2				
Delete	tblGeo_QCSeedItems	Response_Value_CH2	6		YES	numeric			10	10	2				
Delete	tblGeo_QCSeedItems	Response_Value_CH3	7		YES	numeric			10	10	2				
Delete	tblGeo_QCSeedItems	Response_Value_CH4	8		YES	numeric			10	10	2				
Delete	tblGeo_QCSeedItems	ftKnownEasting	9		YES	float			53	2					
Delete	tblGeo_QCSeedItems	ftKnownNorthing	10		YES	float			53	2					
Delete	tblGeo_QCSeedItems	Test_Item	11		YES	varchar	255	255							
Delete	tblGeo_QCSeedItems	IVSLocation_ID	12		YES	varchar	255	255							
Delete	tblGeo_QCSeedItems	Static_Test_Item_Height	13		YES	decimal			18	10	2				
Delete	tblGeo_QCSeedItems	dtRecMod	14	(getdate())	YES	datetime						3			
Delete	tblGeo_QCSeedItems	RecordID	15		YES	float			53	2					
Delete	tblGeo_QCSeedItems	s_Generation	16		YES	float			53	2					
Delete	tblGeo_QCSeedItems	s_GUID	17		YES	uniqueidentifier									
Delete	tblGeo_QCSeedItems	vchContractor	18		YES	nvarchar	50	100							
Delete	tblGeo_QCStatic	guidGeoQCStaticID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCStatic	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCStatic	vchQCFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCStatic	iStaticPreLineID	3		YES	float			53	2					
Delete	tblGeo_QCStatic	iStaticSpikeLineID	4		YES	float			53	2					
Delete	tblGeo_QCStatic	iStaticPostLineID	5		YES	float			53	2					
Delete	tblGeo_QCStatic	Test_Item	6		YES	varchar	255	255							
Delete	tblGeo_QCStatic	Sensor_ID	7		YES	varchar	50	50							
Delete	tblGeo_QCStatic	PreBkg_Response_Ch1	8		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_Response_Ch2	9		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_Response_Ch3	10		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_Response_Ch4	11		YES	float			53	2					
Delete	tblGeo_QCStatic	Spike_Response_CH1	12		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Spike_Response_CH2	13		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Spike_Response_CH3	14		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Spike_Response_CH4	15		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	PostBkg_Response_Ch1	16		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_Response_Ch2	17		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_Response_Ch3	18		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_Response_Ch4	19		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_PercentInTol_Ch1	20		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_PercentInTol_Ch2	21		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_PercentInTol_Ch3	22		YES	float			53	2					
Delete	tblGeo_QCStatic	PreBkg_PercentInTol_Ch4	23		YES	float			53	2					
Delete	tblGeo_QCStatic	Spike_PercentInTol_Ch1	24		YES	float			53	2					
Delete	tblGeo_QCStatic	Spike_PercentInTol_Ch2	25		YES	float			53	2					
Delete	tblGeo_QCStatic	Spike_PercentInTol_Ch3	26		YES	float			53	2					
Delete	tblGeo_QCStatic	Spike_PercentInTol_Ch4	27		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_PercentInTol_Ch1	28		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_PercentInTol_Ch2	29		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_PercentInTol_Ch3	30		YES	float			53	2					
Delete	tblGeo_QCStatic	PostBkg_PercentInTol_Ch4	31		YES	float			53	2					
Delete	tblGeo_QCStatic	Static_Test_Item_Height	32		YES	numeric			10	10	2				
Delete	tblGeo_QCStatic	Static_Response_CH1	33		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Static_Response_CH2	34		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Static_Response_CH3	35		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	Static_Response_CH4	36		YES	decimal			18	10	2				
Delete	tblGeo_QCStatic	QCStatus_Ch1	37		YES	varchar	50	50							
Delete	tblGeo_QCStatic	QCStatus_Ch2	38		YES	varchar	50	50							
Delete	tblGeo_QCStatic	QCStatus_Ch3	39		YES	varchar	50	50							
Delete	tblGeo_QCStatic	QCStatus_Ch4	40		YES	varchar	50	50							
Delete	tblGeo_QCStatic	Comments	41		YES	varchar	-1	-1							
Delete	tblGeo_QCStatic	RecordID	42		YES	float			53	2					
Delete	tblGeo_QCStatic	dtRecMod	43	(getdate())	YES	datetime						3			
Delete	tblGeo_QCStatic	Gen_Comments	44		YES	float			53	2					
Delete	tblGeo_QCStatic	s_Generation	45		YES	float			53	2					
Delete	tblGeo_QCStatic	s_GUID	46		YES	uniqueidentifier									
Delete	tblGeo_QCStatic	vchContractor	47		YES	nvarchar	50	100							
Delete	tblGeo_QCTowVehicle	guidGeoQCTowVehicleID	1	(newid())	NO	uniqueidentifier							PK_tblGeo_QCTowVehicle	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGeo_QCTowVehicle	vchQCFileName	2		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	Sensor_ID	3		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	iTowVehicleLineID	4		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	Response_Ch1	5		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	Response_Ch2	6		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	Response_Ch3	7		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	Response_Ch4	8		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	PercentInTol_Ch1	9		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	PercentInTol_Ch2	10		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	PercentInTol_Ch3	11		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	PercentInTol_Ch4	12		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	QCStatus_Ch1	13		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	QCStatus_Ch2	14		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	QCStatus_Ch3	15		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	QCStatus_Ch4	16		YES	varchar	50	50							
Delete	tblGeo_QCTowVehicle	Comments	17		YES	varchar	-1	-1							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGeo_QCTowVehicle	RecordID	18		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	dtRecMod	19	(getdate())	YES	datetime						3			
Delete	tblGeo_QCTowVehicle	Gen_Comments	20		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	s_Generation	21		YES	float			53	2					
Delete	tblGeo_QCTowVehicle	s_GUID	22		YES	uniqueidentifier									
Delete	tblGeo_QCTowVehicle	vchContractor	23		YES	nvarchar	50	100							
Delete	tblDemo_Ops	guidDemoOp	1	(newid())	NO	uniqueidentifier							PK_tblDemo_Ops	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblDemo_Ops	dtDemo	2		YES	smalldatetime						0			
Delete	tblDemo_Ops	iQtyOEDemoed	3		YES	int			10	10	0				
Delete	tblDemo_Ops	vchCondition	4		YES	nvarchar	25	50							
Delete	tblDemo_Ops	txReviewComments	5		YES	nvarchar	-1	-1							
Delete	tblDemo_Ops	vchQCInitials	6		YES	nvarchar	5	10							
Delete	tblDemo_Ops	dtQC	7		YES	datetime						3			
Delete	tblDemo_Ops	biDEQCChecked	8		YES	bit									
Delete	tblDemo_Ops	vchDEQCInitials	9		YES	nvarchar	5	10							
Delete	tblDemo_Ops	biDiscrepancy	10		YES	bit									
Delete	tblDemo_Ops	vchFinalDisposition	11		YES	varchar	50	50							
Delete	tblDemo_Ops	dtRecMod	12	(getdate())	YES	datetime						3			
Delete	tblDemo_Ops	Gen_txReviewComments	13		YES	float			53	2					
Delete	tblDemo_Ops	s_Generation	14		YES	float			53	2					
Delete	tblDemo_Ops	s_GUID	15		YES	uniqueidentifier									
Delete	tblField_Teamleader_Logbook	vchUserName	1		NO	nvarchar	50	100							
Delete	tblField_Teamleader_Logbook	dtTimeStamp	2		YES	datetime						3			
Delete	tblField_Teamleader_Logbook	dtWorkDate	3		YES	smalldatetime						0			
Delete	tblField_Teamleader_Logbook	dtWorkTime	4		YES	datetime						3			
Delete	tblField_Teamleader_Logbook	vchTeam	5		YES	nvarchar	10	20							
Delete	tblField_Teamleader_Logbook	vchTeamLeader	6		YES	nvarchar	50	100							
Delete	tblField_Teamleader_Logbook	vchTeamMember	7		YES	nvarchar	-1	-1							
Delete	tblField_Teamleader_Logbook	vchSite	8		YES	nvarchar	50	100							
Delete	tblField_Teamleader_Logbook	txLogEntry	9		YES	nvarchar	1000	2000							
Delete	tblField_Teamleader_Logbook	biQCReviewPassed	10		YES	bit									
Delete	tblField_Teamleader_Logbook	txQCReviewComments	11		YES	nvarchar	1000	2000							
Delete	tblField_Teamleader_Logbook	RecordId	12		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	UnitID	13		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	UserName	14		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	TimeStamp	15		YES	datetime						3			
Delete	tblField_Teamleader_Logbook	vchEMOp	16		YES	varchar	50	50							
Delete	tblField_Teamleader_Logbook	vchTestItemmV	17		YES	varchar	50	50							
Delete	tblField_Teamleader_Logbook	vchAnalogInstChk	18		YES	varchar	50	50							
Delete	tblField_Teamleader_Logbook	dtWorkTimeEnd	19		YES	datetime						3			
Delete	tblField_Teamleader_Logbook	Remarks	20		YES	varchar	-1	-1							
Delete	tblField_Teamleader_Logbook	WorkCategory	21		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	vchQCInitials	22		YES	varchar	5	5							
Delete	tblField_Teamleader_Logbook	dtQC	23		YES	datetime						3			
Delete	tblField_Teamleader_Logbook	txModNotes	24		YES	varchar	-1	-1							
Delete	tblField_Teamleader_Logbook	Completed_Datasets	25		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	Partial_Datasets	26		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	Datasets_Comp_frm_Partial	27		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	Grids_Reacquired	28		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	Number_Targets_Reacquired	29		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	Standby_Time	30		YES	varchar	255	255							
Delete	tblField_Teamleader_Logbook	dtRecMod	31	(getdate())	YES	datetime						3			
Delete	tblField_Teamleader_Logbook	UploadtoDB	32		YES	varchar	50	50							
Delete	tblField_Teamleader_Logbook	Gen_Remarks	33		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	Gen_txLogEntry	34		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	Gen_txModNotes	35		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	Gen_vchTeamLeader	36		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	Gen_vchTeamMember	37		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	s_Generation	38		YES	float			53	2					
Delete	tblField_Teamleader_Logbook	s_GUID	39		YES	uniqueidentifier									
Delete	tblField_Teamleader_Logbook	guidFieldTeamleaderLogbook	40		NO	uniqueidentifier							PK_tblField_Teamleader_Logbook	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblField_Teamleader_Logbook	vchContractor	41		YES	nvarchar	50	100							
Delete	tblGrid_Alias	vchGridAlias	1		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Alias	vchSite	2		NO	nvarchar	50	100					PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Alias	vchGridID	3		NO	nvarchar	50	100							
Delete	tblGrid_Alias	guidGrid	4	(newid())	NO	uniqueidentifier							PK_tblGrid_Alias	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_Alias	vchContractor	5		YES	nvarchar	50	100							
Delete	tblGrid_DgmData_QC	guidGridDgmDataQCID	1	(newid())	NO	uniqueidentifier							PK_tblGrid_DgmData_QC	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblGrid_DgmData_QC	GridID	2		YES	varchar	10	10							
Delete	tblGrid_DgmData_QC	vchGridBlockID	3		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DateDataQC	4		YES	datetime						3			
Delete	tblGrid_DgmData_QC	QCPerfBy	5		YES	varchar	20	20							
Delete	tblGrid_DgmData_QC	RawDataDeliv	6		YES	bit									
Delete	tblGrid_DgmData_QC	RawDataDelivComm	7		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	RawDataDelivRes	8		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	FinDataPkgSub	9		YES	bit									
Delete	tblGrid_DgmData_QC	LineDataEdit	10		YES	bit									
Delete	tblGrid_DgmData_QC	LineDataEditComm	11		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	LineDataEditRes	12		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	FieldLogComp	13		YES	bit									
Delete	tblGrid_DgmData_QC	FieldLogCompComm	14		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	FieldLogCompRes	15		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	StatCheckTol	16		YES	bit									
Delete	tblGrid_DgmData_QC	StatCheckTolComm	17		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	StatCheckTolRes	18		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DynDetRepTol	19		YES	bit									
Delete	tblGrid_DgmData_QC	DynDetRepTolComm	20		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DynDetRepTolRes	21		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DynPosRep	22		YES	bit									
Delete	tblGrid_DgmData_QC	DynPosRepComm	23		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DynPosRepRes	24		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	VelTolAcc	25		YES	bit									
Delete	tblGrid_DgmData_QC	VelTolComm	26		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	VelTolRes	27		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcNoiseAcc	28		YES	bit									
Delete	tblGrid_DgmData_QC	ProcNoiseComm	29		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcNoiseRes	30		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TrackSampAcc	31		YES	bit									
Delete	tblGrid_DgmData_QC	TrackSampComm	32		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TrackSampRes	33		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DataLev	34		YES	bit									
Delete	tblGrid_DgmData_QC	DataLevComm	35		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DataLevRes	36		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	LagCorrPerf	37		YES	bit									
Delete	tblGrid_DgmData_QC	LagCorrPerfComm	38		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	LagCorrPerfRes	39		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TrackCovComp	40		YES	bit									
Delete	tblGrid_DgmData_QC	TrackCovComm	41		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	CoverCompQCRes	42		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	XYZCorr	43		YES	bit									
Delete	tblGrid_DgmData_QC	XYZCorrComm	44		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	XYZCorrRes	45		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcDataOther	46		YES	bit									
Delete	tblGrid_DgmData_QC	ProcDataOtherComm	47		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcDataOtherRes	48		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	SeedDetTarg	49		YES	bit									
Delete	tblGrid_DgmData_QC	SeedDetTargComm	50		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	SeedDetTargRes	51		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	MapPlot	52		YES	bit									
Delete	tblGrid_DgmData_QC	MapPlotComm	53		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	MapPlotRes	54		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargListMatch	55		YES	bit									
Delete	tblGrid_DgmData_QC	LegFormat	56		YES	bit									
Delete	tblGrid_DgmData_QC	TargListMatchComm	57		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	LegFormatComm	58		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargListMatchRes	59		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	LegFormatRes	60		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargOutBoundRem	61		YES	bit									
Delete	tblGrid_DgmData_QC	ColorBar	62		YES	bit									
Delete	tblGrid_DgmData_QC	TargOutBoundRemComm	63		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ColorBarComm	64		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargOutBoundRemRes	65		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ColorBarRes	66		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcNoteTargSel	67		YES	bit									
Delete	tblGrid_DgmData_QC	CultLabel	68		YES	bit									
Delete	tblGrid_DgmData_QC	ProcNoteTargSelComm	69		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	CultLabelComm	70		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	ProcNoteTargSelRes	71		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	CultLabelRes	72		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargLabel	73		YES	bit									
Delete	tblGrid_DgmData_QC	StatePlane	74		YES	bit									
Delete	tblGrid_DgmData_QC	TargLabelComm	75		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	StatePlaneComm	76		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargLabelRes	77		YES	varchar	255	255							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblGrid_DgmData_QC	StatePlaneRes	78		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargSortAmp	79		YES	bit									
Delete	tblGrid_DgmData_QC	OtherMap	80		YES	bit									
Delete	tblGrid_DgmData_QC	TargSortAmpComm	81		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	OtherMapComm	82		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargSortAmpRes	83		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	OtherMapRes	84		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargSelecOther	85		YES	bit									
Delete	tblGrid_DgmData_QC	DataReas	86		YES	bit									
Delete	tblGrid_DgmData_QC	TargSelecOtherComm	87		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DataReasComm	88		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	TargSelecOtherRes	89		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	DataReasRes	90		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	QCRevRepComp	91		YES	bit									
Delete	tblGrid_DgmData_QC	QCRevRepCompComm	92		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	QCRevRepCompRes	93		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	QCActionReq	94		YES	bit									
Delete	tblGrid_DgmData_QC	QCActionReqComm	95		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	QCActionReqRes	96		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	AddQCComm	97		YES	varchar	-1	-1							
Delete	tblGrid_DgmData_QC	AnomLabCorr	98		YES	bit									
Delete	tblGrid_DgmData_QC	AnomLabCorrComm	99		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	AnomLabCorrRes	100		YES	varchar	255	255							
Delete	tblGrid_DgmData_QC	dtRecMod	101	(getdate())	YES	datetime						3			
Delete	tblGrid_DgmData_QC	Gen_AddQCComm	102		YES	float			53	2					
Delete	tblGrid_DgmData_QC	s_Generation	103		YES	float			53	2					
Delete	tblGrid_DgmData_QC	s_GUID	104		YES	uniqueidentifier									
Delete	tblGrid_DgmData_QC	vchContractor	105		YES	nvarchar	50	100							
Delete	tblSite	vchSite	1		NO	nvarchar	50	100					PK_tblSites	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblSite	vchSiteDesc	2		YES	nvarchar	255	510							
Delete	tblSite	ftPerimeter	3		YES	float			53	2					
Delete	tblSite	ftArea	4		YES	float			53	2					
Delete	tblSite	vchComments	5		YES	nvarchar	255	510							
Delete	tblSite	vchContractor	6		YES	nvarchar	50	100							
Delete	tblSite_Feature_Data	guidSiteFeatureDataID	1	(newid())	NO	uniqueidentifier							PK_tblSite_Feature_Data	PK	PRIMARY_KEY_CONSTRAINT
Delete	tblSite_Feature_Data	RecordId	2		YES	float			53	2					
Delete	tblSite_Feature_Data	UnitID	3		YES	float			53	2					
Delete	tblSite_Feature_Data	UserName	4		YES	varchar	255	255							
Delete	tblSite_Feature_Data	TimeStamp	5		YES	datetime						3			
Delete	tblSite_Feature_Data	dtWorkDate	6		YES	datetime						3			
Delete	tblSite_Feature_Data	vchTeam	7		YES	nvarchar	255	510							
Delete	tblSite_Feature_Data	CultDesc	8		YES	varchar	64	64							
Delete	tblSite_Feature_Data	GetGPS	9		YES	varchar	255	255							
Delete	tblSite_Feature_Data	Latitude	10		YES	varchar	255	255							
Delete	tblSite_Feature_Data	Longitude	11		YES	varchar	255	255							
Delete	tblSite_Feature_Data	Altitude	12		YES	varchar	255	255							
Delete	tblSite_Feature_Data	dtRecMod	13	(getdate())	YES	datetime						3			
Delete	tblSite_Feature_Data	UploadtoDB	14		YES	varchar	1	1							
Delete	tblSite_Feature_Data	s_Generation	15		YES	float			53	2					
Delete	tblSite_Feature_Data	s_GUID	16		YES	uniqueidentifier									
Delete	tblSite_Feature_Data	vchContractor	17		YES	nvarchar	50	100							
Delete	tblSites_Grid_Lnk	vchSite	1		NO	nvarchar	50	100							
Delete	tblSites_Grid_Lnk	vchGridID	2		NO	nvarchar	50	100							
Delete	tblSites_Grid_Lnk	ftArea	3		YES	float			53	2					
Delete	tblSites_Grid_Lnk	dtVegetationRemoval	4		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtGridSurvey	5		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtSurfaceRemoval	6		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtGeoSurvey	7		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtRawDataDelivered	8		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtProcessedDataDelivered	9		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtReacquisition	10		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtExcavation	11		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtSubsurfaceRemoval	12		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtAnalogRemoval	13		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC1PostXCheck	14		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC1Excavation	15		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC2DigitalQCSurvey	16		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC2RawDataDelivered	17		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC2ProcessedDataDelivered	18		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC2Reacquisition	19		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC2DigitalExcavation	20		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQC3AnalogInspection	21		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQCDigital	22		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQAAnalog	23		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtQADigital	24		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	dtModified	25		YES	smalldatetime						0			
Delete	tblSites_Grid_Lnk	vchComments	26		YES	nvarchar	255	510							
Delete	tblSites_Grid_Lnk	vchContractor	27		YES	nvarchar	50	100							
Delete	tblTableDictionary	iColumnID	1		NO	int			10	10	0				
Delete	tblTableDictionary	vchColumnName	2		YES	nvarchar	50	100							
Delete	tblTableDictionary	iTableID	3		NO	int			10	10	0				
Delete	tblTableDictionary	vchTableName	4		YES	nvarchar	50	100							
Delete	tblTableDictionary	iFieldType	5		YES	int			10	10	0				
Delete	tblTableDictionary	vchFieldType	6		YES	nvarchar	50	100							
Delete	tblTableDictionary	iFieldLength	7		YES	int			10	10	0				
Delete	tblTableDictionary	biPrimaryKey	8		YES	bit									
Delete	tblTableDictionary	vchRKeyTable	9		YES	nvarchar	50	100							
Delete	tblTableDictionary	vchRKeyCol	10		YES	nvarchar	50	100							
Delete	tblTableDictionary	vchColumnDescShort	11		YES	nvarchar	50	100							
Delete	tblTableDictionary	vchColumnDescLong	12		YES	nvarchar	500	1000							
Delete	tblTableDictionary	vchContractor	13		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	iColumnID	1		NO	int			10	10	0				
Delete	tblTableDictionary_BAK	vchColumnName	2		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	iTableID	3		NO	int			10	10	0				
Delete	tblTableDictionary_BAK	vchTableName	4		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	iFieldType	5		YES	int			10	10	0				
Delete	tblTableDictionary_BAK	vchFieldType	6		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	iFieldLength	7		YES	int			10	10	0				
Delete	tblTableDictionary_BAK	biPrimaryKey	8		YES	bit									
Delete	tblTableDictionary_BAK	vchRKeyTable	9		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	vchRKeyCol	10		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	vchColumnDescShort	11		YES	nvarchar	50	100							
Delete	tblTableDictionary_BAK	vchColumnDescLong	12		YES	nvarchar	500	1000							
Delete	tblTableDictionary_BAK	vchContractor	13		YES	nvarchar	50	100							
Delete	tblTableDictionary_Updated	iColumnID	1		YES	float			53	2					
Delete	tblTableDictionary_Updated	vchColumnName	2		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	iTableID	3		YES	float			53	2					
Delete	tblTableDictionary_Updated	vchTableName	4		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	iFieldType	5		YES	float			53	2					
Delete	tblTableDictionary_Updated	vchFieldType	6		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	iFieldLength	7		YES	float			53	2					
Delete	tblTableDictionary_Updated	biPrimaryKey	8		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	vchRKeyTable	9		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	vchRKeyCol	10		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	vchColumnDescShort	11		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	vchColumnDescLong	12		YES	nvarchar	255	510							
Delete	tblTableDictionary_Updated	vchContractor	13		YES	nvarchar	50	100							
Delete	tblveg_removal_ops	iVegRemovalOpID	1		NO	int			10	10	0				
Delete	tblveg_removal_ops	dtWorkDate	2		YES	smalldatetime						0			
Delete	tblveg_removal_ops	dtStartTime	3		YES	datetime						3			
Delete	tblveg_removal_ops	dtEndTime	4		YES	datetime						3			
Delete	tblveg_removal_ops	vchTeam	5		YES	nvarchar	25	50							
Delete	tblveg_removal_ops	chOpCompleted	6		YES	char	1	1							
Delete	tblveg_removal_ops	iTeamLeader	7		YES	int			10	10	0				
Delete	tblveg_removal_ops	vchContractor	8		YES	nvarchar	20	40							
Delete	tblveg_removal_ops	vchCostCode	9		YES	nvarchar	15	30							
Delete	tblveg_removal_ops	iExcavationsTotal	10		YES	int			10	10	0				
Delete	tblveg_removal_ops	ftNonOEScrapLBs	11		YES	float			53	2					
Delete	tblveg_removal_ops	ftOEScrapLBs	12		YES	float			53	2					
Delete	tblveg_removal_ops	iSlope	13		YES	int			10	10	0				
Delete	tblveg_removal_ops	vchVegRemovalName	14		YES	nvarchar	50	100							
Delete	tblveg_removal_ops	vchVegRemovalCode	15		YES	nvarchar	10	20							
Delete	tblveg_removal_ops	vchSurveyInstr	16		YES	nvarchar	25	50							
Delete	tblveg_removal_ops	vchVegSourceType	17		YES	nvarchar	50	100							
Delete	tblveg_removal_ops	txOpNotes	18		YES	nvarchar	4000	8000							
Delete	tblveg_removal_ops	dtDataEntered	19		YES	datetime						3			
Delete	tblveg_removal_ops	vchDataEntry	20		YES	nvarchar	10	20							
Delete	tblveg_removal_ops	vchDataSource	21		YES	nvarchar	150	300							
Delete	tblveg_removal_ops	txReviewComments	22		YES	nvarchar	4000	8000							
Delete	tblveg_removal_ops	vchQCInitials	23		YES	nvarchar	5	10							
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Delete	tblveg_removal_ops	biDEQCChecked	25		YES	bit									
Delete	tblveg_removal_ops	vchDEQCInitials	26		YES	nvarchar	5	10							
Delete	tblveg_removal_ops	txModNotes	27		YES	nvarchar	4000	8000							

FULL DETAIL (FORT ORD MMRP DB)

TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION	NUMERIC_PRECISION_RADIX	NUMERIC_SCALE	DATETIME_PRECISION	KEY_CONSTRAINT_NAME	KEY_TYPE	KEY_TYPE_DESCRIPTION
Delete	tblveg_removal_ops	biDiscrepancy	28		YES	bit									
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Delete	tmpAnomalyUpdate	guidOEE	2	(newid())	NO	uniqueidentifier							PK_tmpAnomalyUpdate	PK	PRIMARY_KEY_CONSTRAINT
Delete	tmpAnomalyUpdate	iOpId	3		YES	bigint			19	10	0				
Delete	tmpAnomalyUpdate	guidGOL	4		NO	uniqueidentifier									
Delete	tmpAnomalyUpdate	DgmDig	5		NO	int			10	10	0				
Delete	tmpAnomalyUpdate	QC	6		NO	int			10	10	0				
Delete	tmpAnomalyUpdate	GeoPic	7		NO	int			10	10	0				
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Delete	UpdateFields	vchTable	1		YES	nvarchar	50	100							
Delete	UpdateFields	ID	2		YES	int			10	10	0				
Delete	UpdateFields	vchField	3		YES	nvarchar	50	100							
Delete	UpdateFields	vchDesc	4		YES	nvarchar	300	600							
Delete	UpdateFields	maxNotes	5		YES	nvarchar	255	510							
BatchProcessing	tblProcessingGroup	ID	1	(newid())	NO	uniqueidentifier							ProcessingGroupID	PK	PRIMARY_KEY_CONSTRAINT
BatchProcessing	tblProcessingGroup	Name	2		YES	nvarchar	64	128							
BatchProcessing	tblProcessingGroup	Description	3		YES	nvarchar	-1	-1							
BatchProcessing	tblProcessingLog	EventTimestamp	1	(getdate())	NO	datetime						3			
BatchProcessing	tblProcessingLog	SSIS_PackageID	2		YES	uniqueidentifier							FK_tblProcessingLog_tblSSIS_Package		
BatchProcessing	tblProcessingLog	Status	3		YES	nvarchar	25	50							
BatchProcessing	tblProcessingLog	StartTime	4		YES	datetime						3			
BatchProcessing	tblProcessingLog	EndTime	5		YES	datetime						3			
BatchProcessing	tblProcessingLog	PackageName	6		YES	nvarchar	128	256							
BatchProcessing	tblProcessingLog	TaskName	7		YES	nvarchar	128	256							
BatchProcessing	tblSSIS_Package	ID	1	(newid())	NO	uniqueidentifier							SSIS_PackageID	PK	PRIMARY_KEY_CONSTRAINT
BatchProcessing	tblSSIS_Package	ProcessingGroupID	2		YES	uniqueidentifier							FK_tblSSIS_Package_tblProcessingGroup		
BatchProcessing	tblSSIS_Package	Order	3		YES	int			10	10	0				
BatchProcessing	tblSSIS_Package	PackagePath	4		YES	nvarchar	-1	-1							
BatchProcessing	tblSSIS_Package	OperatorUName	5		YES	varbinary	-1	-1							
BatchProcessing	tblSSIS_Package	OperatorUPWD	6		YES	varbinary	-1	-1							
BatchProcessing	tblSSIS_Package	PackagePWD	7		YES	varbinary	-1	-1							
BatchProcessing	tblVendorRowCountQueries	ID	1	(newid())	NO	uniqueidentifier							VendorRowCountQueriesID	PK	PRIMARY_KEY_CONSTRAINT
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BatchProcessing	tblVendorRowCountQueries	TableName	3		YES	nvarchar	128	256							
BatchProcessing	tblVendorRowCountQueries	FromWhere	4		YES	nvarchar	-1	-1							
ExceptionLog	lkpSSIS_ExceptionCodes	HexCode	1		YES	varchar	10	10							
ExceptionLog	lkpSSIS_ExceptionCodes	ErrorCode	2		YES	int			10	10	0				
ExceptionLog	lkpSSIS_ExceptionCodes	SymbolicName	3		YES	varchar	128	128							
ExceptionLog	lkpSSIS_ExceptionCodes	Description	4		YES	varchar	-1	-1							
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ExceptionLog	Procedure_Exception	ErrorNumber	2		YES	int			10	10	0				
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ExceptionLog	Procedure_Exception	ErrorState	4		YES	int			10	10	0				
ExceptionLog	Procedure_Exception	ErrorProcedure	5		YES	nvarchar	128	256							
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ExceptionLog	Procedure_Exception	ErrorMessage	7		YES	nvarchar	-1	-1							
ExceptionLog	SSIS_Exception	EventTimestamp	1	(getdate())	NO	datetime						3			
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ExceptionLog	SSIS_Exception	guidPK	3		YES	uniqueidentifier									
ExceptionLog	SSIS_Exception	_Target_Table	4		YES	nvarchar	-1	-1							
ExceptionLog	SSIS_Exception	ErrorCode	5		YES	int			10	10	0				
ExceptionLog	SSIS_Exception	ErrorColumn	6		YES	int			10	10	0				
ExceptionLog	SSIS_Exception	PackageName	7		YES	nvarchar	128	256							
ExceptionLog	SSIS_Exception	TaskName	8		YES	nvarchar	128	256							
ExceptionLog	WestonValidationErrors	EventTimestamp	1	(getdate())	NO	datetime						3			
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ExceptionLog	WestonValidationErrors	TableName	3		YES	nvarchar	128	256							
ExceptionLog	WestonValidationErrors	PackageName	4		YES	nvarchar	128	256							
ExceptionLog	WestonValidationErrors	TaskName	5		YES	nvarchar	128	256							
ExceptionLog	WestonValidationErrors	Exception	6		YES	nvarchar	-1	-1							

ATTACHMENT F

mV THRESHOLD DISCUSSION

14.0 mV (sum 4)

TEST SEED #1: 37mm projectile (Horizontal) mV readings						
	Elevation above top of bottom coil	**Channel 1**	**Channel 2**	**Channel 3**	**Channel 4**	**Sum**
Seed 1	10 inches	16.82	9.36	4.25	1.39	31.82
	11 inches	13.88	8.3	4.12	1.76	28.06
	12 inches	12.02	7.44	3.75	1.57	24.78
	13 inches	11.24	6.87	3.43	1.4	22.94
	14 inches	9.69	6.07	3.01	1.28	20.05
	15 inches	8.51	5.23	2.73	1.28	17.75
	16 inches	7.64	4.68	2.42	1.02	15.76
	17 inches	6.54	4.13	2.13	0.89	13.69
	18 inches	5.5	3.33	1.66	0.65	11.14
	19 inches	5.26	3.27	1.69	0.7	10.92
	20 inches	4.5	2.85	1.45	0.57	9.37

The data above uses Test Seed #1.
Test Seed #1 was selected for this test because it has the approximate median response characteristics when compared to the six 37mm projectiles that were tested (see Page #2 - Row 33).

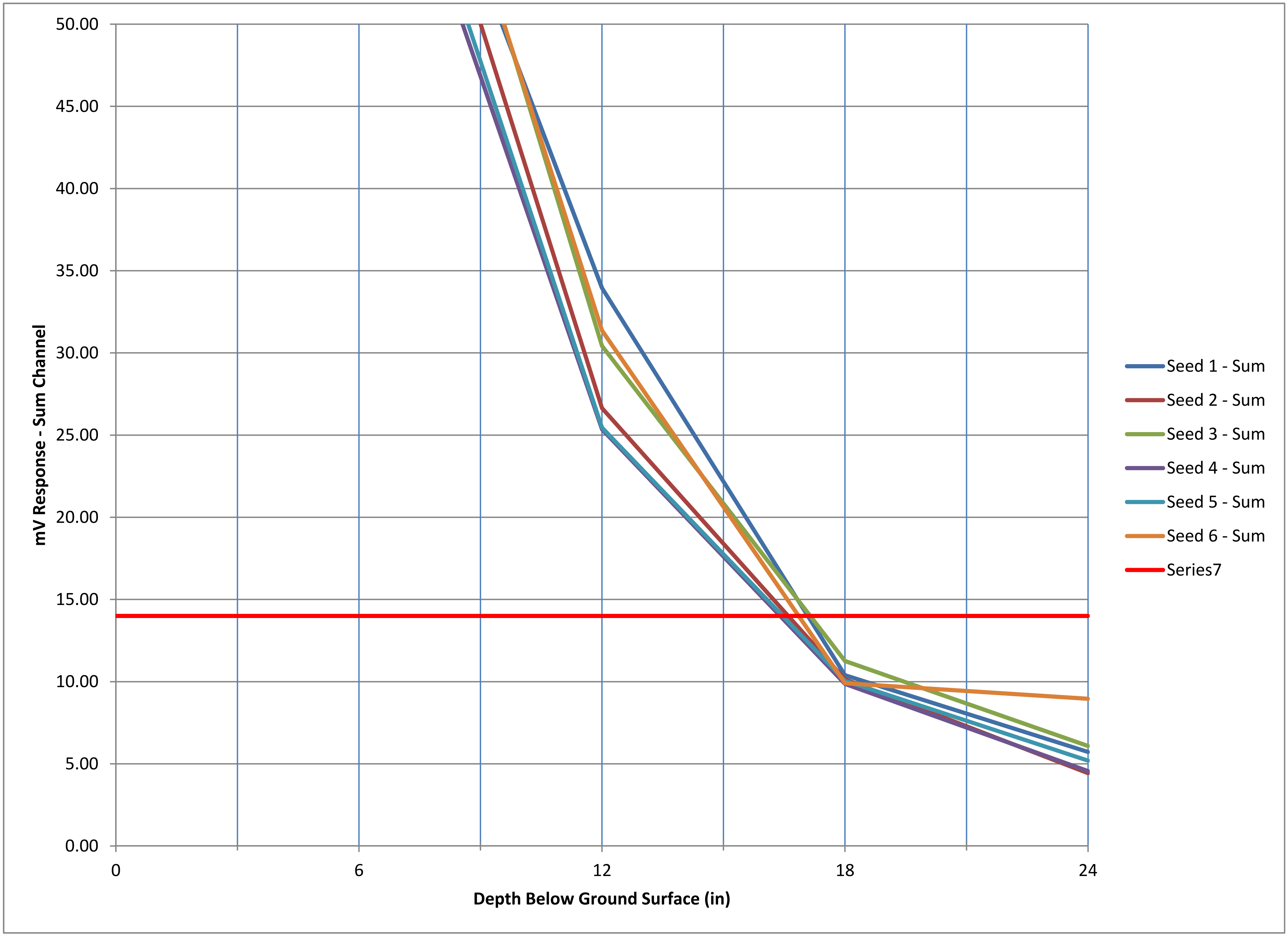
The EM61MK2 was nulled prior to each test. 1 minute of data at each depth (height above coil) was collected. Geosoft was then used to calcualte the mean mV value (Sum4) for each test.

Conclusion: the threshold of 14.0 mV (Sum4) equates to a 37mm projectile (horizontal) being at a depth of appriximately 16.8 inches below ground surface. Page #3 shows this to be true for all six 37mm projectiles that were tested.

		24 inches						18 inches					
		Test #	Channel 1	Channel 2	Channel 3	Channel 4	Sum	Test #	Channel 1	Channel 2	Channel 3	Channel 4	Sum
Seed 1	Background	0	1.83	1.96	1.45	0.77		18	2.54	2.46	1.78	0.90	
	Spike	1	5.04	3.77	2.34	1.12		19	7.63	5.65	3.41	1.52	
	Background	2	2.59	2.16	1.55	0.79		20	2.63	2.52	1.88	0.93	
	Background Mean		2.21	2.06	1.50	0.78			2.59	2.49	1.83	0.92	
	Spike Above Background Mean		2.83	1.71	0.84	0.34	5.72		5.05	3.16	1.58	0.61	10.39
Seed 2	Background	3	2.05	2.15	1.54	0.84		21	1.99	1.85	1.29	0.68	
	Spike	4	3.57	2.9	1.84	0.89		22	7.10	5.57	3.36	1.55	
	Background	5	0.69	1	0.81	0.46		23	2.96	2.95	2.08	1.09	
	Background Mean		1.37	1.58	1.18	0.65			2.48	2.40	1.69	0.89	
	Spike Above Background Mean		2.20	1.33	0.67	0.24	4.43		4.63	3.17	1.68	0.67	10.14
Seed 3	Background	6	2.19	2.57	1.97	0.96		24	0.55	0.73	0.64	0.31	
	Spike	7	3.10	3.21	2.26	1.02		25	5.80	4.10	2.34	0.96	
	Background	8	-1.52	0.11	0.49	0.24		26	0.40	0.53	0.50	0.23	
	Background Mean		0.34	1.34	1.23	0.60			0.48	0.63	0.57	0.27	
	Spike Above Background Mean		2.77	1.87	1.03	0.42	6.09		5.33	3.47	1.77	0.69	11.26
Seed 4	Background	9	1.84	1.81	1.27	0.66		27	1.47	1.58	1.16	0.60	
	Spike	10	4.06	3.09	1.79	0.84		28	6.37	4.53	2.56	1.12	
	Background	11	1.38	1.71	1.18	0.60		29	1.33	1.57	1.13	0.59	
	Background Mean		1.61	1.76	1.23	0.63			1.40	1.58	1.15	0.60	
	Spike Above Background Mean		2.45	1.33	0.57	0.21	4.56		4.97	2.96	1.42	0.53	9.87
Seed 5	Background	12	1.58	1.85	1.41	0.77		30	0.34	0.76	0.57	0.40	
	Spike	13	2.75	2.49	1.69	0.86		31	4.39	3.61	2.09	1.02	
	Background	14	-1.33	0.14	0.45	0.32		32	-1.18	0.35	0.50	0.38	
	Background Mean		0.13	1.00	0.93	0.55			-0.42	0.56	0.54	0.39	
	Spike Above Background Mean		2.63	1.50	0.76	0.32	5.20		4.81	3.06	1.56	0.63	10.05
Seed 6	Background	15	1.86	2.17	1.61	0.85		33	2.98	2.70	1.88	1.00	
	Spike	16	5.76	5.31	3.49	1.72		34	7.73	5.18	2.90	1.30	
	Background	17	2.04	2.84	2.13	1.14		35	1.84	1.86	1.41	0.74	
	Background Mean		1.95	2.51	1.87	1.00			2.41	2.28	1.65	0.87	
	Spike Above Background Mean		3.81	2.81	1.62	0.73	8.96		5.32	2.90	1.26	0.43	9.91
						Average	5.82					Average	10.3

		12 inches						6 inches					
		Test #	Channel 1	Channel 2	Channel 3	Channel 4	Sum	Test #	Channel 1	Channel 2	Channel 3	Channel 4	Sum
Seed 1	Background	36	1.78	1.81	1.30	0.66		54	2.26	2.25	1.61	0.80	
	Spike	37	18.23	12.56	7.00	3.07		55	37.87	24.92	13.10	5.35	
	Background	38	3.75	2.55	1.40	0.57		56	2.07	3.48	2.79	1.43	
	Background Mean		2.77	2.18	1.35	0.62			2.17	2.87	2.20	1.12	
	Spike Above Background Mean		15.47	10.38	5.65	2.46	33.95		35.71	22.06	10.90	4.24	72.90
Seed 2	Background	39	1.88	1.66	1.16	0.63		57	1.11	1.40	1.10	0.53	
	Spike	40	14.74	9.62	5.11	2.18		58	37.40	24.01	12.26	4.84	
	Background	41	1.32	1.52	1.20	0.65		59	2.34	1.89	1.21	0.55	
	Background Mean		1.60	1.59	1.18	0.64			1.73	1.65	1.16	0.54	
	Spike Above Background Mean		13.14	8.03	3.93	1.54	26.64		35.68	22.37	11.11	4.30	73.45
Seed 3	Background	42	2.41	2.22	1.51	0.78		60	1.20	1.32	0.93	0.49	
	Spike	43	16.99	11.18	6.07	2.69		61	39.31	25.26	12.81	5.09	
	Background	44	2.30	1.76	1.28	0.75		62	0.21	1.20	0.98	0.50	
	Background Mean		2.36	1.99	1.40	0.77			0.71	1.26	0.96	0.50	
	Spike Above Background Mean		14.64	9.19	4.68	1.93	30.43		38.61	24.00	11.86	4.60	79.06
Seed 4	Background	45	0.11	0.4	0.42	0.23		63	1.22	1.17	0.79	0.44	
	Spike	46	12.37	7.82	4.00	1.62		64	36.28	22.07	10.84	4.24	
	Background	47	-0.69	0.08	0.23	0.14		65	3.75	1.66	0.77	0.42	
	Background Mean		-0.29	0.24	0.33	0.19			2.49	1.42	0.78	0.43	
	Spike Above Background Mean		12.66	7.58	3.68	1.44	25.35		33.80	20.66	10.06	3.81	68.32
Seed 5	Background	48	1.63	1.41	0.93	0.44		66	2.04	2.5	1.88	0.95	
	Spike	49	13.95	8.63	4.38	1.82		67	35.79	23.76	12.70	5.46	
	Background	50	0.57	0.78	0.61	0.28		68	2.39	2.68	1.92	0.98	
	Background Mean		1.10	1.10	0.77	0.36			2.22	2.59	1.90	0.97	
	Spike Above Background Mean		12.85	7.54	3.61	1.46	25.46		33.58	21.17	10.80	4.50	70.04
Seed 6	Background	51	1.92	1.98	1.45	0.72		69	2.58	2.18	1.42	0.71	
	Spike	52	17.70	11.78	6.38	2.76		70	40.92	25.72	12.92	5.22	
	Background	53	3.56	2.49	1.61	0.79		71	2.87	2.39	1.47	0.70	
	Background Mean		2.74	2.24	1.53	0.76			2.73	2.29	1.45	0.71	
	Spike Above Background Mean		14.96	9.55	4.85	2.01	31.36		38.20	23.44	11.48	4.52	77.62
						Average	28.9					Average	73.6

		0 inches					
		Test #	Channel 1	Channel 2	Channel 3	Channel 4	Sum
Seed 1	Background	72	2.29	2.30	1.65	0.87	
	Spike	73	118.73	74.38	37.38	14.86	
	Background	74	2.74	2.72	1.90	0.97	
	Background Mean		2.52	2.51	1.78	0.92	
	Spike Above Background Mean		116.22	71.87	35.61	13.94	237.63
Seed 2	Background	75	1.66	1.91	1.45	0.69	
	Spike	76	125.20	78.85	39.86	15.83	
	Background	77	4.26	4.12	2.91	1.40	
	Background Mean		2.96	3.02	2.18	1.05	
	Spike Above Background Mean		122.24	75.84	37.68	14.79	250.54
Seed 3	Background	78	2.05	2.01	1.36	0.71	
	Spike	79	127.60	79.72	39.76	15.56	
	Background	80	3.80	4.12	2.94	1.49	
	Background Mean		2.93	3.07	2.15	1.10	
	Spike Above Background Mean		124.68	76.66	37.61	14.46	253.40
Seed 4	Background	81	-0.49	-0.53	-0.43	-0.23	
	Spike	82	108.14	66.58	32.79	12.64	
	Background	83	1.08	0.72	0.33	0.12	
	Background Mean		0.30	0.10	-0.05	-0.06	
	Spike Above Background Mean		107.85	66.49	32.84	12.70	219.87
Seed 5	Background	84	2.88	3.28	2.39	1.19	
	Spike	85	116.46	74.13	38.53	16.31	
	Background	86	3.28	3.85	2.83	1.42	
	Background Mean		3.08	3.57	2.61	1.31	
	Spike Above Background Mean		113.38	70.57	35.92	15.01	234.87
Seed 6	Background	90	1.35	1.23	0.86	0.43	
	Spike	91	106.54	66.66	33.31	13.30	
	Background	92	1.32	1.44	1.06	0.51	
	Background Mean		1.34	1.34	0.96	0.47	
	Spike Above Background Mean		105.21	65.33	32.35	12.83	215.71
						Average	235.3



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mV Response - Sum Channel
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6
12
18
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Depth Below Ground Surface (in)
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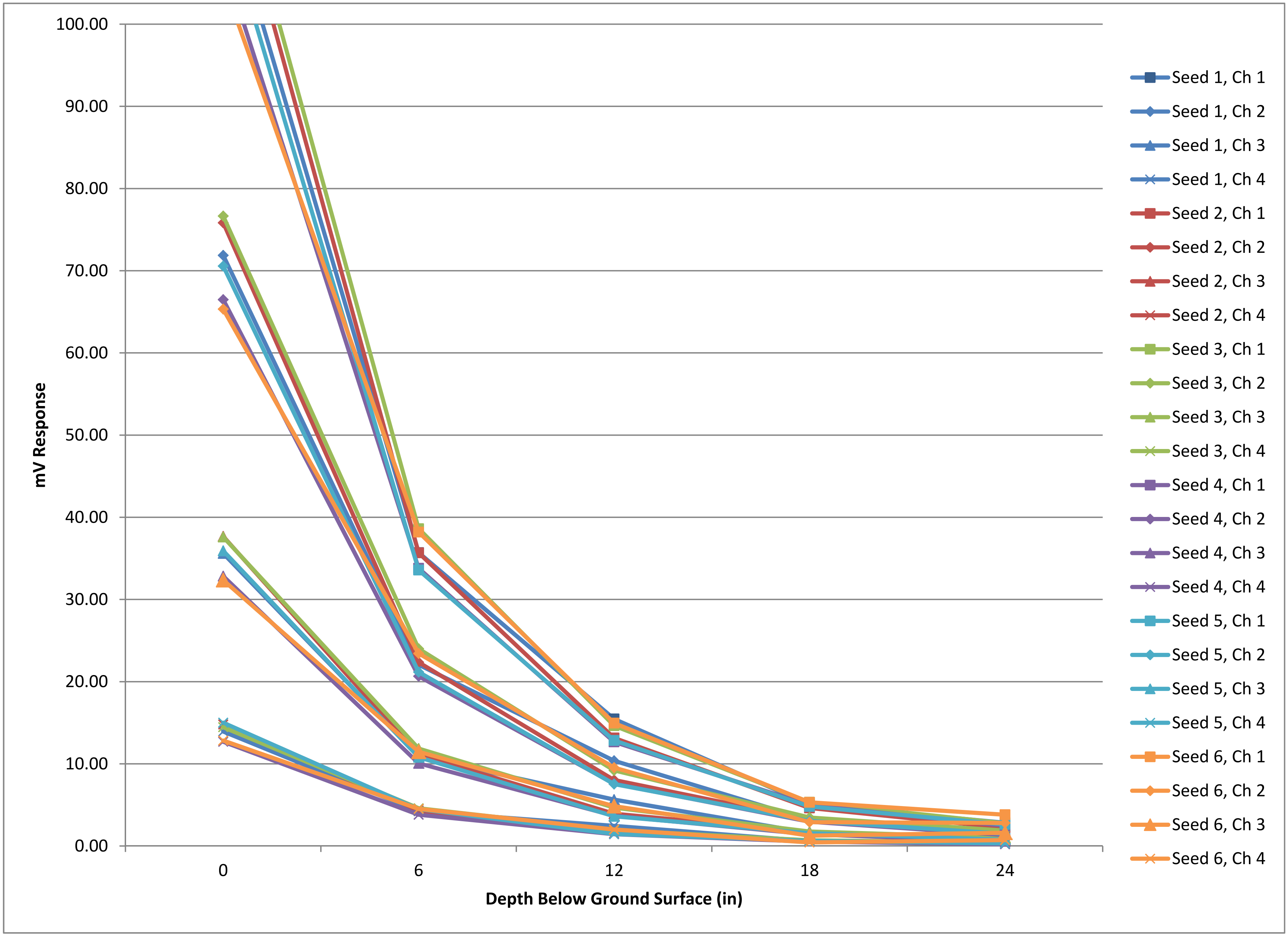
Seed 4 - Sum
Seed 5 - Sum
Seed 6 - Sum
Series7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mV Response
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12
18
24
Depth Below Ground Surface (in)
Seed 1, Ch 1
Seed 1, Ch 2
Seed 1, Ch 3
Seed 1, Ch 4
Seed 2, Ch 1
Seed 2, Ch 2
Seed 2, Ch 3
Seed 2, Ch 4
Seed 3, Ch 1
Seed 3, Ch 2
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Seed 4, Ch 4
Seed 5, Ch 1
Seed 5, Ch 2
Seed 5, Ch 3
Seed 5, Ch 4
Seed 6, Ch 1
Seed 6, Ch 2
Seed 6, Ch 3
Seed 6, Ch 4

ATTACHMENT G

RESPONSES TO COMMENTS

RESPONSES TO COMMENTS

ON THE DRAFT MEC-QAPP

FORMER FORT ORD - RTCs on DRAFT MEC UFP QAPP (Submitted on 8/31/15)				
No.	**Commenter**	**Section Number**	**Comment**	**Response**
COMMUNITY ADVISORY GROUP (CAG) COMMENTS				
1	CAG	Document Distribution List	"Given the ongoing importance of this document, and being advised that it may change, why were copies not sent to representatives of neighboring land owners? Monterey County, and the cities of Seaside, and Marina?"	The County of Monterey and the cities whose jurisdictions cover portions of the former Fort Ord are informed of the status of the Fort Ord environmental cleanup program through the Army's interested parties' mailing list and other avenues. Cleanup related documents such as work plans and remedial action completion reports are included in the Fort Ord Administrative Record which is available to the public (online at www.fortordcleanup.com), including these municipal agencies.
2	CAG	Volume II Cover Page ii, Site History and Problem Definition	"Add maps. Add more maps."	The maps provided in the Cover and Appendix A provide an overview of the area where MEC remediation is currently occurring and planned. Additional information and figures are provided in documents referenced in Worksheet #1 of Appendix A (Plans and reports from previous investigations relevant to this project).
3	CAG	Volume II Cover Page 1, 1.0 Introduction	"Where will the QAPP be maintained after BRAC's Fort Ord site closure? How will the public be able to access it?"	The QAPP will be placed in the Fort Ord Administrative Record. The Army will maintain the Administrative Record as required under CERCLA and NCP.
4	CAG	Volume II Cover 1.3 Quality Assurance Project Plan Expansion and Revisions	"The FOCAG requests being put on the distribution list for all additional appendices, expansions, changes to field methods, analytical methods, standard operating procedures, data quality objectives, project personnel, and any other revisions."	FOCAG is included and currently on the document distribution list for all documents related to the cleanup of the former Fort Ord at the request of FOCAG.
5	CAG	Volume II Cover Page 3, 2.1 Site History and Background	"Please explain the litigation leading up to the RI/FS procedures in 1998. Please provide a map of the "level of hazard" at each site now, November 2015, as a BASELINE, for future reference."	The purpose of this document is to provide standard procedures and methodologies for conducting munitions response field work at the former Fort Ord. It is not necessary to expand the discussion as recommended.

FORMER FORT ORD - RTCs on DRAFT MEC UFP QAPP (Submitted on 8/31/15)				
No.	**Commenter**	**Section Number**	**Comment**	**Response**
6	CAG	Volume II Cover Page 4, regarding archives search report (ASR)	"Where are the archives located now? Are they accessible to the public?"	The versions of the Archives Search Report are available in the Administrative Record and are listed in Section 7.0 References. The Administrative Record is available to the public.
7	CAG	Volume II Cover Page 4, regarding site investigation/sampling	"Please explain that much of the early site investigation/sampling did not document the depths ordnance was found. Please provide the beginning and end dates of the noted contractors work at former Fort Ord HFA? UXB? USA?"	The purpose of this document is to provide methodologies and standard operating procedures for conducting munitions response field work at the former Fort Ord. It is not necessary to expand the discussion as recommended.

FORMER FORT ORD - RTCs on DRAFT MEC UFP QAPP (Submitted on 8/31/15)				
No.	**Commenter**	**Section Number**	**Comment**	**Response**
8	CAG	Volume II Cover Page 7	"Re: "...the primary method of vegetation clearance is prescribed burning. As part of the remedial action prescribed burning will be conducted in up to 800 acres per year in compliance with the HMP." Please explain the Army's assurance that they will limit prescribed burns to no mre than 100 acres at any one time. This was due to smoke impacts and wild fire dangers. Is BLM going to conduct their own burns?"	Prescribed burning has been implemented extensively in support of munitions responses at the former Fort Ord. Prescribed burns are planned and executed in a manner that incorporates best industry practices and precautionary measures to contain the burns within their intended boundaries. A prescribed burn will be executed only when optimum burn conditions are imminent and other requirements (such as the availability of necessary equipment and resources, including contingency resources) are met. The Army provides public notification of planned prescribed burns and safety exclusion zones are established during prescribed burn operations to further protect the public. The Impact Area MRA was divided into units incorporating pre-existing defensible polygons which are defined by 45-ft wide, maintained, fuel breaks. The intention was to develop manageable burn units as close to 100 acres as possible using the existing fuel breaks as the unit boundaries and foundation of the primary containment lines. However, due to terrain, fuel loading, topography, slope, aspect and other fire operation factors, as well as munitions restrictions, some burn units may be larger than 100 acres and some may be smaller. In accordance with the HMP, management of the habitat reserve areas of Fort Ord that will be transferred to BLM will require occasional maintenance prescribed burns.
9	CAG	Volume II Cover Page 7, BLM Area B and MRS-16	"As BASELINE information please explain the area permanently fenced off in MRS-16 due to a deeply buried ordnance cache. Is it the only one?"	As described in the BLM Area B and MRS-16 Remedial Investigation/Feasibility Study, "during the course of MEC removal operations at MRS-16, an area exhibiting very high density of subsurface anomalies was delineated from DGM results. This MRS-16 area consists of 24 grids equating to approximately 5.4 acres. Analog subsurface removal was conducted on a portion of the "saturated area." The "saturated area" also contains three rocket burial pits that have been horizontally delineated, but vertical delineation was not completed. Subsurface investigations in the "saturated area" also included several test trenches. Based on the work completed, it is unlikely that MEC could remain on the surface, but MEC may remain below the surface. A two-strand barbed wire fence has been constructed in a manner that surrounds the "saturated area" along existing trails for convenience, and government property signs have been placed. The purpose of this fence is to delineate the area in which subsurface removal was not completed." This "saturated area" is only present in MRS-16.
10	CAG	Volume II Cover Page 8, Second paragraph	"There is a reference to "proposed roads". Please explain and provide a map of "proposed roads". We think this is new information. Where are the proposed roads? What is their purpose? Who will use them? Who pays for building them? Who maintains them?"	The referenced section describes the planned remedial alternative for BLM Area B sub-areas B-2A and B-3. The alternative includes a provision for performing subsurface MEC removal in areas where ground-intrusive or subsurface activities are anticipated by BLM, and are identified in coordination with BLM. These areas were described as "proposed" and is intended to be inclusive of new and reconfigured routes that may be identified during the period of the remedial action. At this time there is no specific, planned new road within BLM Area B sub-areas B-2A and B-3.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
11	CAG	Page vii of Appendix A	"Please provide a weblink to the Installation Wide Accident Prevention Plan with its supporting Site Safety and Health Plan Please provide a weblink to the Explosives Safety Submission What is the KEMRON's contract with USACE? When did it begin? How long is the contract for? Is it a fixed dollar amount or is it time and materials? How was KEMRON chosen? Do they maintain offices at Fort Ord? What is GIlbane's contract with the USACE? When did it begin? How long is the contract for? Is it a fixed dollar amount or time and materials? Please put the FOCAG on the notification list for any changes to contractors. Email address; focagemail@yahoo.com"	The Accident Prevention Plan and associated Site Safety and Health Plan are provided as appendices to the Site-Specific Work Plans prepared for field work. Approved Explosives Safety Submissions for specific sites are placed in the Administrative Record. Kemron is providing MEC remediation services to the United States Army Corps of Engineers, Sacramento District, under the Worldwide Environmental Services Contract, contract number W912DY-10-D-0027, Task Order CM01. Gilbane is a subcontractor of KEMRON.
12	CAG	Page 11 of Appendix A	"It states, "Meeting minutes will be generated by KEMRON and once reviewed and approved by USACE will be maintained by KEMRON." The FOCAG requests that meeting minutes be made available to the public, with access online. Please provide information on how and where we can access these records."	The referenced section describes that the project team coordinate various project activities. Minutes of internal project meetings are not made available to the public.
13	CAG	Page 12 of Appendix A, Re: Project Planning Session Summary	"Again meeting minutes are planned for this. The FOCAG requests that these meeting minutes also be made available to the public, online. Please provide information on how and where we can access these records."	The referenced section describes the documentation of external project planning sessions. If conducted, the information will be included in future versions of this document.
14	CAG	Page 13 of Appendix A	"The last sentence on this page states, "….the Proposed Plan (PP) and public meeting for the PP are complete and the Army is preparing a ROD for BLM Area B and MRS-16. A portion of BLM Area B has been transferred to BLM." The FOCAG asks, when was the public meeting about the PP? We don't recall being notified. When was a portion of BLM Area B transferred to BLM? Which portion?"	The Proposed Plan public meeting for BLM Area B and MRS-16 was held on April 15, 2015. The notice of the availability of the Proposed Plan for public review and comment was published in the Monterey County Herald and the Salinas Californian on April 7, 2015. A 30-day public comment period on the Proposed Plan was held from April 8, 2015 through May 8, 2015. A public meeting was held on April 15, 2015. As described in the Proposed Plan, "The majority of the property within BLM Area B was transferred to BLM in 1996 as a habitat reserve. The remainder of BLM Area B and MRS-16 is planned for future transfer to BLM." The Proposed Plan included a figure depicting the BLM Area B property transfer status.
15	CAG	Page 15 of Appendix A, Sources of Known or Suspected MEC	"Please correct the first paragraph to say the 7th Infantry, or portions of it, trained at former Fort Ord during WWII. This Infantry Division went on to fight in the South Pacific Theatre. Please add to the second paragraph that Army tank training and anti-tank training was conducted in the Impact Area MRA. Please add to the third paragraph that portions of MRS-16 have been fenced off due to very deep burial pits of ordnance."	It is not necessary to revise the text as recommended.
16	CAG	Figure 2.2 of Appendix A	"This map is hard to read because of the light yellow lines. The copying of it did not come through well at all."	Figure has been revised.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
17	CAG	Page 17 of Appendix A, Third Paragraph	"Please advise the reader of the depths some of the referenced munition items can be found. Some is 10 feet deep in the MRA. No depths are mentioned here. Why? Please advise the reader of ordnance burial pits, and that Army infantry training involved foxholes. Ammunition would often be left in foxholes after a training exercise."	The referenced section describes the potential exposure pathways in a general manner. The Conceptual Site Model for the Impact Area MRA is provided for MEC on the surface and below the surface. The anticipated vertical distribution of munitions items within the Impact Area MRA is discussed in the Track 3 RI/FS (OE-0596R).
18	CAG	Page 27 of Appendix A	"The last paragraph on this page, and the second to last sentence states, "The EM61MK2 may be used at the discretion of the analog intrusive team." Because the MRA contains deeply buried munitions, is this wise to let the contractor determine whether to use the best available technology or not? Is the contractor's team being paid a set price or for time and materials? The Schonstedt is only good to about 2.5 feet below ground surface depending on the type of munition and the make up of the soil. Sampling with a Schonstedt and leaving it up to the discretion of the team on duty as to whether to use better equipment is a recipe for BIG CONTINUING RISKS."	QAPP Worksheet #11 has been extensively rewritten. The referenced sentence described the use of additional tools to complete an intrusive investigation of a detected anomaly. Intrusive anomaly investigation will follow standard procedures (now described in Attachment C, UXO SOP 3 [Intrusive Investigation Using Analog Methods]) and is subject to quality control.
19	CAG	Page 42 of Appendix A	"Please provide a comprehensive definition of IVS."	The IVS is an area containing known buried objects that is used to verify that the geophysical instrument(s) is functioning as designed. Digital geophysical instruments are tested over the IVS periodically during their uses. The specification for IVSs that will be used at the former Fort Ord is provided in Attachment C, GEO SOP 1 (IVS Installation and Use).

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
EPA GENERAL COMMENT				
1	EPA	N/A	The Draft Quality Assurance Project Plan (QAPP), Superfund Response Actions, Volume II, Munitions Response, dated August 2015 (hereinafter referred to as the "Draft QAPP SRA Volume II MR"), refers to expended cartridge cases as "shell casings." A review of the Technical Manual (TM) 43 series for both small arms and artillery ammunition determined that, with the exception of 12-guage shotgun cartridges the term "shell case" is only used to describe the metal body of certain artillery projectiles. It is not used in either of the cited documents to describe cartridge cases (or cartridge casings). To avoid possible confusion, please replace the term "shell" when used in the descriptive term "shell casings" with the term "cartridge," unless the intent is to describe a 12-gage shotgun cartridge or the outer metal body of a projectile.	The MEC QAPP has been extensively revised. The term "shell casing" in Worksheet #12 has been changed to "cartridge casing".
EPA SPECIFIC COMMENTS				
1	EPA	Draft UFP QAPP Volume II Cover Section 2.2.1	Section 2.2.1, Impact Area MRA [Munitions Response Area], Page 7: This section defines DMM as "discarded military munition." This does not match the definition contained in the Acronyms section or in Volume 8, Glossary, of the Department of Defense Ammunition and Explosives Safety Standards (DoD 6055.09-M-V8). Both of these have the correct definition, which is "Discarded Military Munitions." Please correct the noted definition in Section 2.2.1.	Text changed accordingly.
2	EPA	2.1 (WS#10)	Section 2.1, Conceptual Site Model (QAPP Worksheet #10), Page 15: The second paragraph of the SOURCES OF KNOWN OR SUSPECTED MEC [Munitions and Explosives of Concern] subheading contains a sentence that reads, "The former ranges within the MRA contain a concentration of similar expended munitions and MEC." The intent and meaning of this sentence is unclear. As it reads, it appears that the rifle ranges would have a concentration of rockets similar to that found on the rocket ranges, and they would also have a similar distribution of hand grenades as that found on a grenade range. This is very unlikely. Please revise the cited sentence to better express the intent thereof.	Sentence deleted. Worksheet #10 has been revised.
3	EPA	2.2 (WS#11)	Section 2.2, Project Data Quality Objectives [DQOs] (QAPP Worksheet #11), Page 21: The third bullet of the Intrusive Investigation of DGM [Digital Geophysical Mapping] Targets, which is a sub-element of Step 5: Develop the Analytical Approach (Decision Rules), is somewhat confusing. It reads, "100% of the targets intrusively investigated have been verified by the intrusive team with the EM61MK2 to be below the target milliVolt (m V) threshold as specified in the SSWP." It would be easier to understand what is being accomplished if the bullet were revised to read, "Upon completion of each target investigation, the intrusive team will verify that 100% of the targets investigated have no remaining anomaly in the excavation that is equal to or above the target milliVolt (mV) threshold as specified in the SSWP." Please make this, or a similar revision to the cited bullet.	Worksheet #11 has been extensively revised. UXO SOP 4 has been generated (Intrusive Investigation of DGM Targets). Section 7.2 of this SOP is titled "Intrusive Anomaly Verification (Hole Clearance using the EM61MK2 in Analog Mode). Text has been edited accordingly in this SOP.

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4	EPA	Table 2-1	Table 2-1, FCA [Function Check Area] Adjacent to KEMRON Field Office, Page 31: The noted table uses a number of acronyms, slang terms, and incomplete munitions descriptions. These include: • 81 mm Illum: Is this an illumination mortar? • 3.5 Rocket: Is this a 3.5-inch Rocket? • 81mm Tail Boom: Is this a mortar component? • 37mm AP: Is this a 37mm armor piercing projectile or a complete round? • 75mm: What is this? • 2.36 (warhead only): Is this a 2.36-inch rocket warhead? • 2.36 (w/ tail boom): Is this a complete rocket, to include the motor assembly? Rockets usually are described as having a rocket motor, not a tail boom. • 90mm AP: Is this a 90mm armor piercing projectile or a complete round? • 37mm AP: Is this a 37mm armor piercing projectile or a complete round? • 75mm SHRP: Is this a 75mm Shrapnel projectile or a complete round? • 81mm: Is this an 81mm mortar? • 105mm Projo: Is this a 105mm projectile? • 20mm Projo: Is this a 20mm projectile? Please revise the table to include footnotes with definitions of abbreviations and more complete descriptions of the items used in the FCA.	This information is now presented in UXO SOP 1 (FCA Installation). Text has been edited accordingly in this SOP.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
DTSC COMMENTS				
1	DTSC	2.1	Section 2.1 notes that subsurface munitions and explosives of concern (MEC) removal in selected areas is a requirement of the selected remedy. But the criteria for determining which specific areas require subsurface MEC removal is not specified. Specifically, the criteria for considering a site a "high density anomaly area" for the purpose of this decision is not specified. This can be resolved by developing a data quality objective (DQO) to ensure that adequate data is collected to support making this decision in the future. Comment 3 has more detail on technical deficiencies with the DQOs. If the DQOs are adequately developed the result will be specific requirements for data collection to support the determination of "high density anomaly areas" and this comment will be resolved.	As previously recommended by DTSC in comment letters, the text will be revised to describe that the need for additional munitions response actions will be evaluated based solely on the four criteria described in the Track 3 ROD: "When evaluating whether additional removal is recommended, the Army will consider, among other factors: (1) explosive hazards associated with MEC so far recovered; (2) the proximity to potential receptors; (3) the density of MEC recovered; and (4) consistency with ARARs (e.g., HMP and Biological Opinions)." The Track 3 ROD identifies the types of areas where additional work (e.g. subsurface MEC removal) would be conducted. They are: (1) regularly maintained fuel breaks and access roads; (2) 100-ft wide buffers along the habitat-development border; and (3) other areas to address specific risk and/or land use needs, such as future habitat restoration sites (discussed on page 3 of the Track 3 ROD). The third type of areas can be identified through the Technical Memorandum process; once surface MEC removal and DGM are conducted, the data is reviewed and BLM is consulted to identify specific areas that may warrant additional work. The identified areas are then evaluated using the four criteria described in the Track 3 ROD. Examples of the third type of areas include “areas where there are high density of anomalies associated with impact areas where military munitions with sensitive fuzes (all-ways-acting or piezoelectric fuzes, or 40mm grenade high explosive or 40mm practice projectiles M382 series or M407 series [or any other 40mm practice series projectiles containing enough explosives to rupture the projectile]) were fired” (page 3 of the Track 3 ROD). These areas are candidates for subsurface removal utilizing excavation and sifting because standard approach of detection and investigation of intrusive anomalies might not be conducted efficiently. Large scale excavation requires careful evaluation before such a decision is made. The Army will be conducting a field study designed to provide more information about how areas/grids where UXO of the type containing sensitive fuzes were recovered during surface removal could be approached. The Army anticipates further discussions with the regulatory agencies during development and implementation of the field study.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
2	DTSC	WS#10	Worksheet 10 may be designed generic by nature, but should serve as a template to identify data needed to be added to the conceptual site model (CSM) for each Site-Specific Work Plan (SSWP). For example "sources of known or suspected MEC" should contain a listing of the types of suspected MEC for each SSWP. Data gaps and uncertainties associated with the CSM such as this need to be clearly identified. As part of the site specific work this data will need to be collected and used to update the CSM. Other instances where more site specific data will be needed for the SSWP CSM include background information on historic ranges, sources of known or suspected MEC, primary release mechanisms for range operation, land use considerations, key physical aspects such as topography, and current interpretation of the nature and extent of contamination. This important information should be identified as information that needs to be included in each SSWP.	For each unit (or a group of units) where remedial action will be performed, a SSWP will be developed. The SSWP will describe the current understanding of the nature and extent of MEC based on available information such as the military training history and data from previous munitions responses.
3	DTSC	WS#11	Worksheet 11 on DQOs does not follow the process specified by the EPA for development of DQOs as described in "EPA QA/G-4, Guidance for the Data Quality Objectives Process". As this is a designated CERCLA site this EPA guidance should be followed. The following are deficiencies in Worksheet 11: Step 1: The EPA guidance notes that the purpose of Step 1 is to give a concise description of the problem." As currently written Step 1 in the QAPP does not define a "problem". Rather it describes the pre-determined tasks (technology-aided surface MEC removal, subsurface MEC removal, etc.) that will be performed. The main issue with this is that the DQO process is being cut short in the QAPP. Step 1 requires definition of the problem, and this is not done in the QAPP which presents pre-determined solutions to an unstated problem.	Worksheet #11 (DQOs) has been extensively revised following EPA QA/G-4, Guidance on Systematic Planning Using the Data Quality Objectives Process.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
3	DTSC	WS#11	Step 2: The EPA guidance describes the purpose of Step 2 as "Identify principal study question." And the guidance goes on to discuss "principal study questions" and "alternative actions that could result from resolution of the principal study questions" which is exactly the situation associated with the potential follow-on subsurface removal in high density areas with sensitive munitions. As written in the QAPP Step 2 only says that the goal of the study is to conduct remedial activities and it then repeats the tasks from Step 1 that have been pre-determined to be performed. This represents a missed opportunity to use the DQO process to analyze and formalize the process for achieving the primary and alternative actions. Step 3: The EPA guidance describes the purpose of Step 3 as "Identify types and sources of information needed to resolve decisions or produce estimates." Currently Step 3 in the QAPP only reiterates the tasks to be performed that have been pre-determined in Step 1. According to the EPA guidance, Step 3 should identify and confirm the types and potential sources of information needed, information basis for specifying performance or acceptance criteria, and the availability of appropriate sampling and analyses methods. As one example, please identify the data needed to perform the evaluation of whether or not a site requires additional subsurface MEC removal. Step 5: The EPA guidance describes the objective of Step 5 as 1) specifying appropriate population parameters for making decisions and 2) (for "decision problems") choosing a working Action Level and then generate an "If ... then ... else" decision rule. Accomplishing this as described in the EPA guidance would directly support defining the decisions that will be made as a result of this work to 1) consider the removal action complete based on the surface removal, or 2) consider the removal actions to be incomplete based on inadequate data which will require rework, or 3) determine that additional subsurface removal action is needed to meet the requirements of the ROD based on sensitive fuzed munitions and high anomaly density. Step 6: The EPA guidance requires setting Performance or Acceptance Criteria but Step 6 in the QAPP goes into discussions of ravines or steep slopes and vegetation debris for each of the various tasks that were pre-determined in Step 1. This does not comply with the EPA guidance and it is not obvious that ravines and vegetation debris are the major or only sources of data errors as there are likely to be many other sources of data errors that need to be quantified (such as data gaps in DGM, inadequate DGM data, inadequate implementation of procedures, etc.).	Worksheet #11 (DQOs) has been extensively revised following EPA QA/G-4, Guidance on Systematic Planning Using the Data Quality Objectives Process.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
3	DTSC	WS#11	Step 7: The EPA guidance describes Step 7 as "To Develop the Detailed Plan for Obtaining Data DQOs." This is intended to optimize the design but the current Step 7 only reiterates the already described pre-determined tasks from Step 1 with a little more detail and it does not address "optimization of the design".	Worksheet #11 (DQOs) has been extensively revised following EPA QA/G-4, Guidance on Systematic Planning Using the Data Quality Objectives Process.
			The EPA seven-step DQO process is an opportunity to fully evaluate, quantify and technically support the methods and procedures being used to achieve the project goals. The DQOs should be reevaluated following the EPA guidance noted.	
4	DTSC	Various Sections	Step 7 in Worksheet 11 on Page 25 is the first mention of the MEC Procedures Supplement (MPS) and this document is referenced often throughout the remainder of the QAPP and the SOPs. This creates a major technical problem because there are important disagreements between procedural information in the QAPP and the MPS. The following examples are provided but this list is not comprehensive:	All procedures previously described in the MPS are now in SOP format. All SOPs can be found in Attachment C of the MEC QAPP.
			The guidance for technology-aided surface MEC removal in the QAPP (Step 7, Page 25) says that Schonstedt GA-52Cx magnetometers will be used while the MPS says (Section 2.4.4.1) that either unspecified Schonstedt magnetometers or Whites DFX 300 hand-held metal detectors will be used.	The types of hand-held instruments that will be used during technology-aided surface removal is described in Attachment C, UXO SOP 2 (Technology-aided Surface MEC Removal).
			The MPS requires completion of Form QC-1 for preparatory inspections (Section 1 0.4.1.1) while the QAPP has different preparatory checklists in each SOP. The same conflict exists between the QC forms required for initial and follow-up inspections.	The Three-Phase Inspection process and forms (QC-1 through QC-4) will be used for field activities that involve multiple DFWs. The SOP-specific inspection forms will be included in the Three-Phase Inspection process documentation as appropriate.
			Adding further confusion to the issue of inconsistent DFW (see Comment 5 below) is that the MPS contains its own list of DFW in Section 10.5 that are different than any of the various DFW listed in the QAPP (these are described in Comment 5).	Identification of DFWs have been made consistent throughout the document.
			The above list is only examples of important differences between guidance in the MPS and QAPP and a "side-by-side and word-for word" comparison between the MPS and the QAPP will need to be done to find them all. Having two important technical documents with conflicting technical guidance creates numerous technical conflicts that will have to be resolved in order for both guidance documents to be implemented.	See responses above.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
5	DTSC	Various Sections	The QAPP confuses the concept of definable features of work (DFW). In order to be useful, DFW represent the division of the project'tasks into individual work units that will be managed independently from other DFW and to which QC processes are applied. The QAPP mixes and confuses DFW across the various worksheets making the concept of managing individual DFW impossible to understand or implement. For example: a. Worksheet 12 first defines the DFW as: v. Technology-aided surface MEC removal vi. Intrusive investigation using analog methods vii. DGM data collection viii. Target reacquisition ix. Intrusive investigation of DGM targets x. MEC and MPPEH management xi. Data management of surface removal, DGM, and intrusive investigation b. Worksheet 14/16 uses DFW 1 -6 from Worksheet 12 but adds a new DFW, vegetation removal, and deletes DFW 7 from Worksheet 7. c. Worksheet 20 covers the following tasks that are not specifically defined as DFW but appear to be similar: v. Technology-aided surface MEC removal vi. DGM vii. Intrusive investigation of DGM targets viii. Analog investigation d. Worksheet 28 uses undefined tasks in the headings including: v. Technology-aided surface MEC removal vi. Intrusive investigation of analog anomalies vii. DGM operations viii. Intrusive investigation of DGM anomalies e. Worksheet 31/32/33 refers to DFW but these DFW are different than previous versions and include: v. Mobilize and prepare the site vi. Vegetation removal vii. Install FCA viii. Install IVS/BSI ix. Technology-aided surface removal x. DGM survey xi. Target reacquisition xii. Intrusive investigation xiii. Demolition of MEC and MDEH xiv. MPPEH management xv. MMRP field data management This organization is confusing and not in accordance with Worksheet 31/32/33 which requires (Section 6.2) that "The QC Team will ensure that the three-phase QC process is implemented for each DFW" and that "Work will not be performed on a DFW until the preparatory and initial phase inspections have been completed and any non-conformance issues have been resolved." In order to implement these requirements, the DFW must be clearly and consistently identified and preparatory, initial and follow-on QC checklists must be provided for each DFW. The QAPP currently does not have this clearly defined and necessary information.	Identification of DFWs have been made consistent throughout the document.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
6	DTSC	WS #12 Page 30	Worksheet 12, Page 30 says that" ... metallic objects greater than two inches will not constitute a grid failure." This conflicts with best practices (after all, missing a large metal object is an indication of failure to find objects that will interfere with follow-on DGM) and it also conflicts with Worksheet 11, Step 7, Page 26 which says that " ... metallic objects greater than 2 inches in any dimension will be picked up and removed from the site", and the requirement of the MPC (measurement performance criteria) is to remove all surface metal larger than 2-inches. If metal objects larger that 2-inches are required to be picked up and removed from the site then failure to remove them should constitute a failure and Worksheet 12 should be corrected. Worksheet 12 should be carefully reviewed and corrected.	Text in Worksheet #12 has been revised. The revision applies to Worksheet #12, DFW: Technology-aided Surface MEC Removal which has been changed to read: "Location of any MEC or Munitions Debris (MD) item that could be mistaken for MEC will constitute a QC grid failure. Location of any metallic object the size of an LE, MK1, 37mm projectile (without fuze) [1.47" x 1.47" x 3.5"] or larger will constitute a QC failure. Location of single expended small arms cartridge casings on the surface will not constitute a QC failure."
7	DTSC	WS #12 Page 31	Worksheet 12, Page 31 contains a section of "analog instrument function checks". Is the information in this section different than the information on "analog instrument function checks" that is contained in this same worksheet on Page 35? They appear to be very similar but a word-for-word comparison was not performed. There is also a third installment of guidance on "analog instrument function checks" in this same worksheet on Page 49. If all three of these sections on the same subject need to be retained in this same worksheet please explain when one is implemented over the other two. The same comment applies to the two nearly identical sections on "GSV-BSI". Are both of these sections needed? If so, when is one implemented over the other?	Worksheet #12 has been revised. The revision on this topic appears in Worksheet #12, DFW: Function Check Area Installation and Use. Additionally a new SOP has been generated and added to the MEC QAPP. See UXO SOP 1 (FCA Installation and Use).
8	DTSC	WS #12 Page 32	Worksheet 12, Page 32 on GSV "BSI design" does not provide information on the placement of GSV BSI. Will they be buried or placed on the surface? If they will be placed on the surface, will they be emplaced under vegetation? Please provide more information on the placement of GSV BSI.	Worksheet #12 has been revised. The revision on this topic appears in Worksheet #12, DFW: BSI Installation. Additionally a new SOP has been generated and added to the MEC QAPP. See GEO SOP 2 (BSI Installation and Use).
9	DTSC	WS #12 Page 36	Worksheet 12 on "DGM data collection", beginning on Page 36, does not appear to require detection of all of the GSV BSI. This requirement should be added to this worksheet.	See page 38 of original document: Dynamic detection repeatability (GSV blind seeding). "All BSIs must be located." Note that DGM data collection has been broken into 2 separate DFWs: DGM using a person-portable system and DGM using a towed array system. Both of which have an MPC of "All BSIs must be located".
10	DTSC	WS#12 Page 37	Worksheet 12 on "DGM data collection, on Page 37 refers to "category A" and "category B". This is the first mention of these categories. Please explain what these categories are and why they have different MPC (measurement performance criteria)? Also, the note on Page 50 again refers to these two categories and goes on to say that a change from B to A will not require reseeding even though category A has a higher seeding requirement. This does not appear to be appropriate. It is reasonable to assume that the appropriate GSV BSI will be emplaced. Please explain the difference between categories A and B and address the lack of a requirement to emplace additional seeds in the event of an upgrade to category A from category B.	Differences between Category A and Category B areas are introduced in Worksheet #11 (DQO #2 - Step #3). In general, Category A areas are those which will have intrusive investigation following DGM and Category B areas are not expected to have intrusive investigation. The MPCs in Worksheet #12 detail the differences between Category A and Category B surveys. If an area is reclassified from Category B to Category A following DGM data collection, the goal of this text is to remove the potential for negative QC ramifications. This text was added because once the DGM data has been collected, it is impossible to add additional BSIs (i.e. add additional anomalies to the previously collected DGM data). If this scenario does occur, it has been identified in the QAPP and discussed in relation to QC objectives and their pass/fail criteria.

FORMER FORT ORD - RTCs on DRAFT MEC UFP QAPP (Submitted on 8/31/15)				
No.	**Commenter**	**Section Number**	**Comment**	**Response**
11	DTSC	WS#12 Page 39	Worksheet 12 on Page 39, limits the speed of DGM data collection to 4-mph. Please explain if it applies to all DGM data collection because it appears to be very fast for person-portable DGM. Also, the QC checklist in the SOP for towed array DGM is in conflict with Worksheet 12 as it says the maximum speed in the IVS is 3-mph.	4 MPH equates to 178 cm per second. Both the person-portable and towed array systems collect data at a minimum of 10 Hz. This equates to a reading every 18cm (which is similar to the fiducial mode of 1 reading every 20 cm). This is listed as a "not to exceed" speed. Two DFWs now exist in the MEC QAPP for DGM field operations: DGM data collection using a PP system, and DGM data collection for a towed array. MPCs for these 2 systems are the same because using 10 Hz (and a maximum speed of 4 mph), both systems are below the along path sample rate of the standard fiducial mode which is 1 reading every 20 cm. No change to text made.
12	DTSC	WS#17 Page 58	Worksheet 17 on Page 58 is supposed to contain the "MEC investigation design and rationale". But there is no information on the design and the rationale for it in these two paragraphs. This worksheet should be thoroughly revised to contain the required information.	The MEC investigation design and rationale is based solely on the Track 3 ROD and the Track 3 RD/RA Work Plan. Remedial Action activities that are specific to an individual Unit are to be specified in the SSWP for that Unit(s). Text has been added to Worksheet #17.
13	DTSC	WS#18 Page 59	Worksheet 18 on Page 59 contains no information relevant to "sampling locations and methods." Please explain how this worksheet can be compliant with the requirements of the QAPP if it is required to be included but does not contain any relevant information on the topic required to be discussed.	Per the meeting with DTSC on 11/18/2015, this is not a required table because samples are not being collected/taken. Text changed to read: "Worksheet #18 is not applicable to surface or subsurface MEC remediation or DGM activities because no samples are being collected/taken."
14	DTSC	WS#20	There is inconsistency in the Field QC on Worksheet 20 with requirements elsewhere in the QAPP. For example: a. QC observation was required for surface removal on earlier worksheets but is not included on Worksheet 20. b. What does the first row of information for "DGM Data" mean? There are many other field QC requirements throughout this document such as DGM and analog instrument start-up and testing for example. But these additional field QC requirements are not included on this worksheet. Please explain why a few field QC requirements are included on Worksheet 20 but many other requirements are not.	a. QC inspections (Preparatory, Initial, Follow-up) have been added for each matrix listed. b. This row means that for a person-portable DGM operation (where RTK-GPS is used) that one (1) BSI will be installed for each acre - which equates to one BSI per day for the person-portable DGM operation. To clarify, "DGM Data" has been changed to "DGM Data Collection" As described in "a" above, QC inspections for all matrix listed have been added to Worksheet #20. "Field QC requirements" for DGM and analog instruments are intrinsic to these QC inspections, with MPCs for each matrix already being described Worksheet #12. Additionally, these MPCs are not a statistical sample (i.e. no sample population), therefore to discuss specific MPC requirements in this table would be inappropriate. No change to text made other then what is described in "a" above.
15	DTSC	WS#21 SOPs	Some important procedures are not included in SOPs listed on Worksheet 21 and they also are not included in the MPS. For example, MPPEH management and ordnance disposal are not described in QAPP SOPs or the MPS. Since the SOPs contain the three-phase inspection checklists, each DFW needs an SOP and the corresponding three-phase inspection checklists in order to implement the QC inspection requirements in Worksheets 31/32/33 (see comment 5 for a companion comment on inconsistency with the DFW). As currently constructed, the overall group of governing documents (the QAPP, the SOPs and the MPS) contain SOPs and three-phase checklists for some DFW but not others. Please either explain this inconsistency (why is greater QC scrutiny consisting of detailed three-phase checklists provided for some DFW and not others?) or resolve it by providing SOPs and three-phase QC checklists for all DFWs.	Identification of DFWs have been made consistent throughout the document. An SOP with a three-phase QC checklist is provided for each DFW. The SOPs can be found in Attachment C. Worksheet #21 has been changed accordingly.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
16	DTSC	WS#28	Please explain what QC actions are described on Worksheet 28 and how these are different from all the QC actions on other worksheets. Why are only some of the DFW covered in these QC actions? Also, specifically: a. Please explain why detection instrument start-up checks are not included for technology-aided surface MEC removal (Page 71). b. Why is "dynamic repeatability (GSV blind seeding)" the only QC check listed for DGM operations (Page 73)? There are many other QC checks and corrective actions for DGM that should be covered. c. The requirement for each intrusive investigation team to recover a BSI each day does not make sense (Page 76). What if there are no BSI assigned to a team one day. Does that mean that they have a QC failure? These worksheets are inconsistent because only some DFW are covered and only some QC actions are included. Please either explain why this is appropriate or make Worksheet 28 comprehensive for all DFW and all QC actions.	Per discussions with DTSC, Worksheet #28 is not required as it is a duplication of Worksheet #12, and MEC remediation activities do not relate to "Analytical QC" (this isdesigned for chemical sampling operations). Text for Worksheet #28 has been changed to read: "Worksheet #28 is not applicable to surface or subsurface MEC remediation or DGM activities."
17	DTSC	WS#36	Worksheet 36 describes data validation. Please include when data validation is performed.	Frequency of data verification is listed in Worksheet #35. For data validation (Worksheet #36), a column for the frequency that each process is to be validated has been added to this Worksheet, and is every 6 months for each process listed.
18	DTSC	Schedule	The schedule in Attachment B concludes in early January 2016. Will this QAPP be valid after that date?	The schedule for this project has been updated. See Attachment A of the MEC QAPP.

RESPONSES TO COMMENTS
ON THE DRAFT FINAL MEC-QAPP

FORMER FORT ORD - RTCs on DRAFT FINAL MEC UFP-QAPP (Submitted on 9/2/16)				
No.	**Commenter**	**Section Number**	**Comment**	**Response**
COMMUNITY ADVISORY GROUP (CAG) COMMENTS				
1	CAG	Attachment B	The Blind Seed Firewall Plan limits initial access to BSI information. The listing has no specific personnel, only job titles. These are all contractors. When does USACE get the information?	With the exception of the Land Survey personnel, the personnel associated with the specific job titles listed in the Blind Seed Firewall Plan can be found in Section 1.2 of the DF MEC QAPP. Exhibit 1 of the Blind Seed Firewall Plan shows that QC Seed Data is provided to the USACE QA Geophysicist (and USACE OESS) once a week. No changes made to text.
2	CAG	N/A	It is unclear the relationship between KEMRON, NAEVA, and Vigilant Technologies. Information regarding both their qualifications and their familiarity with this Fort Ord Superfund Site would be helpful. Corporate headquarters for all are located outside of California. What was the selection process for these three companies? Who made the decision to contract with them? How much is each costing? How does Gilbane fit in?	KEMRON Environmental Services was selected by USACE for a 5-year contract beginning in October 2014 for MEC removal and soil remediation at the former Fort Ord. The Army followed the source selection process for this contract consistent with the FAR. The source selection process was managed by USACE Sacramento District. Gilbane, NAEVA, and Vigilant Technologies are subcontractors to KEMRON. No changes made to text.
3	CAG	DATA SOP 2	The fort_ord.gdb references are not accessible on our computers. These are polygons not defined as to area.	The referenced geodatabase is for project-use only and is not available to the public. No change made to text.
4	CAG	DATA SOP 3	One of the stated purposes is the deleting data from the MMRP database. Specifically who oversees this? Is there back up? Is data deleted forever? Please define what you mean by deleting data.	Specific instances will occur where data requires editing and/or deletion after it has been loaded onto the MMRP Database. In such instances, corrected records are initiated by UXOQC or the Geophysical QC Manager. The Field Data Manager then reviews the required changes to verify that they are appropriate and then ensures the required changes (including the deletion of the previous incorrect record(s)) are implemented. The KEMRON database and the MMRP DB are backed up on a daily basis. Records that are deleted from these databases can be restored from previous backups. The text above has been added to Section 8.1 of DATA SOP 3 to clarify.

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5	CAG	DATA SOP 3	Regarding the Fort Ord MEC incident reporting forms. Please provide detailed instructions as to how they can be accessed via the fortordcleanup.com website. For example the recent discovery of the 20 mm live projectile (judged as a practice) that was found near the East Garrison housing subdivision under construction. Where can information about this be found?	The Army has established a process for responding to, and documenting reports of suspected MEC on former Fort Ord property by members of the public, contractors, or federal property managers. The Munitions incident recording form is available on fortordcleanup.com under the "Community" tab, and by selecting "Munitions Safety." The referenced incident, a discovery of a 20mm projectile, has been entered into the Army's database. Incident information is included in munitions response site security program annual reports which are made available in the Administrative Record. No change made to text.
6	CAG	FIELD SOP 4	The Hazard Fragmentation Distance is determined to be 450 feet for vegetation removal operations. How was this distance determined? Does the Back Hoe driver, Bulldozer driver, or mower driver wear protective bulletproof gear?	Section 8.1 of FIELD SOP 4 identifies the minimum separation distance for mechanical vegetation cutting as 450 feet. The following revised text has been added to FIELD SOP 4 - Section 8.1: The MSD for vegetation cutting is the safe distance to avoid flying debris from the mastication equipment (e.g. 450 feet for Feller Bunchers with drum-type mastication heads). If an explosives safety exclusion zone is also applicable to the work area, the MSD is the Hazard Fragmentation Distance (HFD) for the MGFD, or the safe distance to avoid flying debris from the mastication equipment (e.g., 450 feet for Feller Bunchers with drum-type mastication heads), whichever is greater. Masticators are armored as needed, based on ordnance known to exist in the Unit/Area. Bulletproof gear is not used by equipment operators at Fort Ord. Masticators are armored as needed, based on ordnance known to exist in the Unit/Area.
7	CAG	FIELD SOP 2 - Section 9.4 FIELD SOP 4 - Section 8.1, 8.2.2	Regarding prescribed burns: Please define the widths and determination of need for secondary and tertiary containment lines.	The need for secondary and tertiary containment lines, and their widths, is a site-specific and are identified in site-specific prescribed burn plans. No change made to text.
8	CAG	GEO SOP 1	Introduces the reader to FIGURE 1: Three sizes of ISO's on page 5 of 9. These are all pretty heavy duty looking lengths of pipe threaded on both ends. We understand these are used for seeding purposes. The FOCAG's question is; how do these new pipes correlate with ordnance that has been buried and rusting for decades? Proof of finding a new sturdy metal pipe "seed" at a certain depth does not mean that MEC, UXO, may be located at the same or similar depth. Please explain.	ISOs are used as a quantitative verification test during the daily Instrument Verification Strip (IVS) QC checks and during the Blind Seeding Process to verify that essential DGM system parameters (as described in Worksheet #12 of the MEC QAPP) are consistently being achieved. The use of ISOs to conduct the instrument verification is independent of items in the ground. Based on the size and overall mass of the ISOs, the ISOs are representative of ordnance items expected to be onsite. Inert munitions items are also used in the IVSs (See GEO SOP 1 - Table 2 (IVS Item Depths and Orientations). No change made to text.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
9	CAG	GEO SOP 1 - Section 7.0 GEO SOP 2 - Section 7.0	The FOCAG reads that the Small ISO's will be placed at a depth of 6 inches in a vertical orientation. This is referred to as Depth To Center of Mass (inches). The FOCAG's questions is: Six inches seems inadequate for a quality assurance project. Please explain.	Although ISOs may not replicate the EM61MK2 signature of a specific ordnance item that is used for target selection, the ISOs are used as quantitative verification tests of essential DGM system parameters to verify that the DGM system is functioning properly; that DGM data for ISOs is within acceptable parameters; and that the DGM data is repeatable. The placement of the same size ISOs (small) at a consistent depth (6" bgs) and orientation (vertical) allow for comparison of DGM data to EM61-MK2 baseline milliVolt readings (for small ISOs at 6 inches bgs - vertical) that were established at the start of the project. See DF MEC QAPP - Worksheet #12. See also Section 7.0 of GEO SOP 1. See also response to Comment #8 above. No change made to text.
10	CAG	GEO SOP 1 - Section 7.0	What does Easting and Northing mean? When will TBD actually be determined? By who?	Easting and Northing are similar to latitude and longitude and provide the X and Y coordinates. The spatial coordinate system to be used at Fort Ord is described in Section 5.2.2 of DATA SOP 2. The locations of seed items in future IVS are listed in GEO SOP 1 as TBD because they have not been determined. As described in GEO SOP 1, "The QC Geophysicist is responsible for installation of an IVS.". This includes determining the locations of the IVS seed items. No change made to text.
11	CAG	GEO SOP 1 - Section 7.0	The depth for the larger projectile seeds go deeper for vertical, but than shallower for horizontal. Horizontal is only 5" for a 40mm Projectile. Please explain.	Using an EM61MK2, the signal that is generated from an elongated (cylindrical) metalic object is much greater when the object is in the vertical orientation when compared to the same object in the horizontal orientation. To illustrate, according to Appendix A of the following report (*EM61-MK2 Response of Standard Munitions Items* , Oct 6, 2008, Naval Research Laboratory): 40mm grenade - 11" bgs - Vertical = ~58.6 mV (Sum4 EM61 channels) 40mm grenade - 5" bgs - Horizontal = ~41.8 mV (Sum4 EM61 channels) The target threshold used at the former Fort Ord is 14 mV (sum 4 EM61 channels). For comparison: 40mm grenade - 20.9" bgs - Vertical = 14.5 mV (Sum4 EM61 channels) 40mm grenade - 11.8" bgs - Horizontal = 13.9 mV (Sum4 EM61 channels) Note: Exact depth calculations for the target threshold of 14 mV (Sum 4 EM61 channels) are not listed in the NRL Tables. No change made to text.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
12	CAG	GEO SOP 3 - Section 4.0	Briefly describes the Geonics EM61-MK2 and the Leica RTK GPS positional equipment. However, we learn on page 4 of 20 that the downline positional precision is approximately +/- 1.1 ft. Please explain.	GEO SOP 3 – Section 4.0 (last paragraph) has been edited. Section 5.3 has been edited. New Sections 5.3.1 and 5.3.2 have been generated. GEO SOP 4 – Section 5.1 has been edited. New Sections 5.1.1 and 5.1.2 have been generated.
13	CAG	GEO SOP 3 - Section 5.4	Why is it necessary to warm up the EM61-MK2 for at least 15 minutes? At what depths can the EM61-MK2 fully warmed up, detect the range of ordnance that is on former Fort Ord?	During the first 5-10 minutes that an EM61MK2 is turned on, the temperature of the internal electronics (and coil) increases slightly. EM61MK2 readings collected during this first 5-10 minutes are known to slightly drift because electrical resistance within the electronics varies with temperature. To be conservative an additional 5 minutes of warm-up time is added. Depth of ordnance detection with the EM61-MK2 depends on a variety of factors such as orientation, inclination, wall thickness, material type, object shape, diameter, length, etc. Note that warming up the EM61MK2 reduces signal drift; it does not relate to depth of detection for munition items. No change made to text.
14	CAG	GEO SOP 7 Section 6.0 UXO SOP 4 Section 7.3	How is a False Negative Report complied if items are not detected or identified as an anomaly?	As stated in Section 6.2 of GEO SOP 7, "The potential for false negatives will be assessed via the use of blind seeds placed by the QC Geophysicist within the survey area. The USACE QA Geophysicist will also place blind seed items within the project area that will also be used to assess the potential for false negatives." If any BSI is missed, then by definition it is a false negative. Additionally, false negatives are also assessed through a comparison of the independently collected QA geophysical data with project DGM data. Anomalies that are detected in the QA DGM data that do not appear in the project DGM data would be considered false negatives in the project DGM data. Text added to GEO SOP 7 (Section 6.2) and UXO SOP 4 (Section 7.3.2) to clarify.

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
EPA COMMENTS				
			EPA had no comments on the DF MEC QAPP	

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No.	**Commenter**	**Section Number**	**Comment**	**Response**
DTSC COMMENTS				
			DTSC had no comments on the DF MEC QAPP	