SECTION 9

VERIFICATION SURVEY

9.1 The verification survey is a QA/QC instrument. It is used to verify a NRC licensee's final Termination Survey or a Close-out Survey of operations involving radioactive material. A verification survey is only an independent sampling of the licensee's or installation's more elaborate survey (termination or close-out), and not a complete duplication. The survey will ensure compliance with all applicable Federal, State and Local radiological regulations.

9.2 Prior to the initiation of the survey, the project officer will coordinate with the licensees and installation representative to gain a perspective concerning the installation. During the survey he will work independently of the activity who performed the termination or close-out survey to ensure QA/QC objectives. At the conclusion of the survey all findings and recommendations will be discussed with the appropriate personnel. If a follow-up survey is warranted, it will also be discussed at that time.

9.3 Objectives. To confirm the adequacy and accuracy of the licensee's final status survey.

9.4 Assumptions. The Termination Survey or Close-out Survey has been completed for the area of interest and submitted to the USAEHA for review. If a grid system was in place, it will remain for the verification survey. If an area was contaminated and cleaned, then the levels of radiological contamination have been reduced to the acceptable limits. Once the area has been cleared for unrestricted use, no radioactive material will be brought into the area.

9.5 Presurvey Preparations.

9.5.1 Coordination. The project officer will coordinate the intended visit with both the licensee and the Installation to be surveyed. This will include the scheduling of the survey, entrance briefings, and installation/facility preliminary visits if necessary. In addition, the survey officer shall request that the installation/facility provide specific information relating to each area of interest. Such requested information shall be

included in a formal notification letter, to be forwarded to the installation/facility prior to the survey. The letter will confirm the initial survey arrangements as well as provide an itemized list of documents, technical information, and other pertinent material which the project officer requires prior to the survey.

9.5.2 Information. The survey officers will be responsible for the collection and review of all pertinent documentation and information. Every site will have its special aspects and special check needs. The following list of information is suggestive only and a specific site checklist will need to be formulated for each site.

(A) Operational radiological history of the site.

(B) Monitoring history of site. (scoping, characterization, and final surveys).

(C) Radiological characteristics of site.

(D) Surveying procedures for the site (if applies)

(E) Names of responsible persons, contractors, etc.

(F) Survey design and procedure followed.

9.6 Conduct of the Verification Survey. A verification survey is only an independent sampling of the licensee's or installation's more elaborate survey (termination or close-out), and not a complete duplication. As a rough guide, the inspector's survey efforts may be a 1 to 10% sampling of the licensee' or facility's results, using the same survey block system staked or otherwise marked out.

9.6.1 Document/Records Review. A thorough review of the Close-Out or Termination Survey Procedures and Survey Reports will be conducted prior to conducting the Verification Survey. The survey team will develop a 10% sampling plan from the installations Close-Out or Termination Report. Additional bias sampling should be done by the survey team.

9.6.2 Inspection of Installation Facilities. The performance of the actual site visits by the survey team members will vary due to installation size, numbers and diversity of facility operations, and the availability of an appropriate escort to view the operations. The inspection of the installation may include, but is not restricted to:

9.6.2.1 A physical inspection of the site to be surveyed to ensure the condition of the site has not changed since the Close-Out or Termination Survey. If the site has been compromised by any radioactivity, the site must be closed out again.

9.6.2.2 An inspection of a grid system or any system that was used to verify that the locations are reproducible. If the locations are not reproducible, then seek the assistance of the Termination or Close-Out Survey team to reproduce the locations. If a grid system is not used, a sampling plan should be designed in such a manner that the locations can easily be reproduced.

9.6.2.3 A clean area, building, room, or office, which has never been compromised by the use, storage, or any activity involving radioactive material, will be converted into a field laboratory. This is where all instrumentation QA/QC functions will be performed and all paperwork can be filled out. If needed a field counting laboratory can also be established, depending on the needs of the project.

9.6.2.4 Background Radiation Study. A radiological background study will be conducted to determine the levels and variance of the natural background radiation which are typical to the area and to the type of buildings. Areas which are known not to have radioactive material stored or used will be surveyed for this purpose (see background study - section 10).

9.6.2.5 Verification Survey.

(A) The grid system of the survey site will be the same grid system used by the licensee or the facility for their final survey of the area. The system should be a network of evenly spaced perpendicular lines. It must be able to assist in locating sampling points and assist in reproducing the sampling data.

(B) Having studied all available prior information on the specific site to be surveyed for the verification survey, including all prior surveys, the survey officers should do independent biased sampling in addition to the sampling plan.

9.6.3 Field measurements and sampling. The verification survey must be made while the stakes, flags, or other temporary markers still define the survey blocks used by the licensee for the final survey. Elements of this survey design include instrumentation survey techniques, soil sampling, water sampling, and other media samples as needed.

9.6.3.1 Instrumentation Survey Techniques

(A) Alpha survey instruments will be held less than 0.5 cm away from the surface to be surveyed. The alpha probe should be held in place for reading (do not "scan" with the alpha probe).

(B) Beta-gamma survey instruments will be held at approximately 1 cm from the surface to be surveyed. Scanning should be done slowly (at about 2 cm/sec).

(C) Gamma survey instruments will be held about 1 meter from the area to be surveyed.

(D) External radiation exposure measurements will be measured from random grids and recorded on the Data Collection Form.

9.6.4 Quality Assurance/Quality Control. The responsibility of ensuring quality surveys is that of all members of the survey team from laboratory technician on up to senior project officer. All data obtained during any survey should be reviewed by a designated QA/QC project officer. At a minimum the following should be looked for on the data collection forms.

(A) Instruments MDAs are less than 75% of the NRC guidelines for release to unrestricted use.

(B) All data sheets are properly filled out.

(C) All instrument Operational Checks are within the guidelines of NUREG/CR-5849.

(D) A Statistical Analysis of all Data (See NUREG/CR-5849). Ensure any value above guidelines are explained.

9.6.4.2 Field blanks, blanks, split samples, duplicates, and spikes should be used to ensure quality data. Depending on the size of the survey, the project officer may have the QA/QC officer replicate a portion of USAEHA's survey to ensure reproducibility and accuracy.

9.7 Final Report. A final report will be prepared after completion of field work and analysis of field samples. A formal report should be dispatched from USAEHA upon conclusion of the survey.