SECTION 9.2

GENERAL SURVEY APPROACHES AND STRATEGIES

1.0 Purpose

To describe the basic considerations for performing radiation measurements and collecting samples during surveys.

2.0 Background

Radiological surveys conducted by the Environmental Survey and Site Assessment Program may be for a variety of purposes. The purpose of the survey dictates the approach or strategy to be followed in developing the survey plan and, consequently, the number, location, and type of measurements and samples to be collected. This section describes the various types of surveys routinely performed and provides examples of the general survey strategies. It should be noted that the guidelines presented here represent the minimum; additional measurements and samples are usually obtained to assure an adequate evaluation of the radiological conditions on the site in question.

3.0 Survey Types and Strategies

3.1 Preliminary or Scoping Survey

A preliminary or scoping survey is performed to obtain information, sufficient to prepare a plan for a more in-depth survey. This type of survey usually includes only cursory judgmental scanning and measurements and limited judgmental sampling to determine the presence of radioactive contamination, identify the potential contaminants, evaluate the levels and general areas of contamination, and identify possible migration pathways. Survey locations are referenced to site-specific (grid) coordinates or other "fixed" site features.

3.2 Designation or Inclusion Survey

To determine whether or not a site is contaminated to the extent that guideline levels are exceeded (and remedial action may be required), a designation or inclusion survey is performed. For this type of survey, measurement and sampling locations are identified in detail, relative to property lines, local coordinate systems, and/or buildings or other "fixed" site features. Survey procedures include a complete surface scan followed by direct measurements and samples. Sufficient samples and direct measurements to prove that portions of the property exceed guidelines are all that are necessary. Typically, up to 20 samples and measurements are required for this purpose.

3.3 Characterization Surveys

To delineate the extent of radiation or contamination, sufficient to evaluate potential radiological hazards and/or develop remedial action plans, a characterization survey is performed. The characterization survey includes thorough surface scans of designated and adjacent areas to identify locations of direct radiation which may indicate residual contamination. Systematic measurements and sampling are then performed throughout these areas. These measurement and sampling locations are usually at equal intervals on an established reference grid system. The number and spacing of the grid intervals must be such that sufficient data points to evaluate the radiological condition of the property are generated. Representative "hot spot" locations, identified by surface scans, are also measured and sampled to provide data on upper ranges of residual contamination levels. Data may also be used to develop radionuclide ratios and other input parameters for dose modeling or comparison to existing release criteria.

3.4 Remedial Action Support Survey

This type of survey consists primarily of multiple direct measurements and field evaluation of samples to evaluate effectiveness of remedial action as it progresses. It is a field decision tool and minimum documentation of the results is necessary.

3.5 Post-Remedial Action Survey

Evidence of the radiological conditions following remedial action is provided by the post-remedial action survey. The survey strategy, including the number and location of measurement and sampling points varies dependent upon the release criteria and the post-remedial action guidance that was implemented.

3.6 Confirmatory or Verification Survey

The purpose of the confirmatory or verification survey is to provide independent evidence that radiological data developed by another organization is accurate and adequately represents the condition of the property. Options available for performing these surveys include standard, stream line, and in-process approaches. The standard confirmatory/verification survey is typically performed at the end of the decommissioning project once the site has completed their final status survey. The approach for this type of survey is to randomly select portions of the property and conduct thorough independent surveys. The portion of the property selected for such a survey is typically up to 10% of the total impacted area of the site to be verified or confirmed. Larger sites may be addressed through a streamlined or in-process survey. These survey types rely on extensive up-front review of procedures and comparative measurements while the site's final status survey is in progress. Each of these survey approaches also include a review of the documents associated with

the decontamination and decommissioning activities and replication of measurements and/or analysis performed by other organizations which have developed data.

During a confirmatory or verification survey, representatives of the site management or their decontamination contractors may be present, and may wish to remediate areas of previously undetected contamination identified by the ESSAP survey. This is acceptable as long as the pre-remediation condition of the site is documented. After remediation by site personnel the remediated areas should be resurveyed and the final condition of the site documented.