

2.0 TASK 2 - SITE PROFILE REVIEW

This section presents SC&A's proposal for performing Task 2 of the TORP. Much of the material presented above regarding project management for Task 1 applies to this task also and is not repeated here.

2.1 UNDERSTANDING OF THE TASK AND ITS OBJECTIVES

It is our understanding that this task includes the following subtasks:

Prepare a site profile review procedure (delivered to NIOSH within one month from authorization to proceed)

Review the conditions, processes, practices, and incidents at selected DOE and AWE facilities covered under EEOICPA to evaluate the adequacy of the information available in the NIOSH site profiles for 10 to 12 DOE facilities and 2 to 4 AWE facilities.

- (3)** Evaluate worst-case dose estimates resulting from the site profiles to determine adequacy of the data and validation of the data and assumptions.
- (4)** Conduct meetings and interviews with site experts as authorized by the Board
- (5)** Prepare reports, including:

Site profile review procedure
Monthly summary of progress for all site profile reviews
A final report for each site profile review
A final summary report with aggregate findings

2.2 TECHNICAL APPROACH

In order to accomplish the objectives of this task, SC&A will prepare a site profile review procedure and then, following approval of the procedure by the Board, use the procedure to accomplish the following:

- (1)** Identify and evaluate the approach taken in compiling the site profiles through a comprehensive process of independently identifying the selected site's operational history
- (2)** Review all relevant data sources, such as occurrence reports, inspection documentation, safety analyses, etc.
- (3)** Interview worker representatives, worker advocacy groups, and other individuals having knowledge or expertise on site operational or radiological history

- (4) Evaluate worst cases doses resulting from the site profiles to determine adequacy of the data and validation of the data and assumptions

Prepare a Site Profile Review Procedure

SC&A will use this proposal of work as the basis for preparing a site profile review procedure. We believe that the technical approach for performing site profile reviews as described in the following sections constitutes a draft framework for a review procedure and represents a draft deliverable for this subtask.

Reviewing Site Operational History

For many DOE and AWE sites, reliable dosimetry records may be lacking, particularly for workers from the 1940s through 1960s. In these instances, historic operational information that includes the nature of operations, radiological source terms in use, process material concentrations, and location and time periods of worker activities may be the only data available for dose estimations. Such information can be extracted from historic records and documentation being collected by (or accessible from) the Department of Energy, including operational records, material inventories, safety and health inspections and assessments, occurrence reports and routine memorandum and facility reports. This possible source of information will be surveyed at the DOE site or AWE records collection point to ascertain whether the site profiles adequately reflect at least the following information, where feasible:

Operational processes over time, including improvements, upgrades, modifications and terminations (*important because worker exposures are often higher during major process changes*).

Historic radiological inventory, source terms, and movement through facility ("mass balance") to include feed material, products, and byproduct and waste streams.

Any unplanned events, including radiological over-exposures, contaminations, releases, spills, criticality incidents, and unusual occurrences.

Changes in contractor management and attendant changes in safety policies, procedures and practices (*important because new contractors import new radiation protection programs*).

Applicable standard operating procedures, memoranda, directives or recorded practices governing onsite management of radioactive materials and processes.

Actual historic operational practices established by first hand accounts (e.g., worker representatives, site "experts," etc.) (*important because actual facility practices often varied from official procedures*).

Historic radiation protection programs in place, including personnel monitoring requirements, protective equipment practices, dosimetric techniques and equipment in use, and procedural enforcement history (*important to determine whether and to what degree the dosimetry program reflected actual potential exposures possible, given source terms involved*).

Worker rosters with identifiers, work assignments and location, as well as summary of work histories sufficient to determine what categories of workers were assigned to what type and locations of radiological work.

It would be useful to have data on the number of monitored workers, number of workers with doses higher than the minimum detectable levels, average measurable recorded doses, minimum detection levels, and whether doses below the detection limit were recorded as zero. Even better would be to have data on number of workers in specified dose ranges. The reviews will check if this information is provided or if it appears feasible for the site profiles to include such information.

The foregoing information will be used in a comparative manner to ascertain whether the site profiles are complete in how they characterize, from a historic standpoint at a particular site, what radiological materials were present and in what concentrations and chemical forms, what worker groups may have been in proximity with sources of exposure and whether certain activities or unplanned events may have made such exposure likely, and what administrative procedures, operational practices, protective equipment use, and facility conditions may have influenced the likelihood of such exposure.

2.2.3 Reviewing Relevant Data Sources

SC&A will determine whether the NIOSH contractor appropriately identified, evaluated, and incorporated all relevant data sources by comparing the extent to which such information is present in the profile with what can be identified via an independent review of such sources of information. Data sources that will be scanned include the following:

- Department of Energy
 - Field Offices
 - Operating contractors
 - Institutional histories
 - Inspector General files
 - Headquarters and field oversight reports
 - Radiation exposure assessments
- Atomic Weapons Establishment
- Centers for Disease Control
- Nuclear Regulatory Commission
- Environmental Protection Agency
- General Accounting Office
- Defense Nuclear Facilities Safety Board
- Congressional Hearing Records

State environmental and safety regulatory agencies
National Academy of Science
Administrative/court records
Department of Defense
Environmental Monitoring Laboratory (formerly HASL)
Workers compensation records
Worker and public advocacy groups
Historic records in private hands

It is anticipated that a baseline of relevant information contained in these and other data sources will be established at the onset, facilitating subsequent comparisons with site profile information.

2.2.4 Interviewing Sources of Site Knowledge

SC&A, as necessary, will conduct one-on-one or group interviews with selected sources including worker representatives, worker advocacy organizations, individuals with site “expertise” due to past employment or familiarity with operational history, and others who can verify the adequacy of site-profile information that has been collected by the NIOSH contractor.

Interviews will be conducted where convenient for these groups, including near the actual site in question. Lines of inquiry will include the following:

How did actual radiation protection practice compare with documented policy and procedures?

Were there instances of obvious “missed dose,” e.g., not wearing or improperly wearing dosimeters, non-recording of dose, etc.?

Were there any incidents involving potential radiation exposure, whether reported or unreported?

Were there special work activities or facility modifications which constituted process changes that increased radiation exposure potential?

Were workers concerned about past exposure or radiation protection practices?
How did management respond and what, if any, changes occurred in onsite practice?

Did workers wear protective equipment, as required?

Were radiological jobs planned for exposure minimization (e.g., ALARA)?

What was the general housekeeping in the facility; was radiological contamination common during the history of the facility?

Were there special feed materials introduced or contaminants of concern identified from which radiation exposures may have resulted?

Were there certain work activities at the facility that were considered "hotter" jobs from the standpoint of potential radiation exposure?

Were safety procedures followed literally and did management assure that they were enforced uniformly?

In terms of conduct of operation, were workers permitted to smoke, eat or drink in control areas? Was protective clothing and equipment worn in these areas; was egress monitoring conducted?

Were negative or "zero" doses recorded on periodic dosimetric records despite known exposure to significant radiation sources?

Were records and other documentation of radiation exposure discarded or retained by management?

Were there cases of over-exposed film and how were they treated?

The information extracted from these interviews will be used to ascertain the completeness and representation of that in the NIOSH site profiles.

2.2.5 Evaluate Worst Case Doses

Using the site profiles and the information compiled under sections 2.2.2 through 2.2.4 described above, an evaluation of the worst case doses will be performed to determine adequacy of the data and data validation of the data and assumptions. This will be accomplished in a manner that parallels the blind dose reconstruction procedures described above, with the exception that upper end estimates of the doses will be derived by using upper end dosimetry and bioassay data, area monitoring data, and process knowledge, as compiled in the site profile.

2.3 TASK MANAGEMENT

In addition to his role as Deputy Project Manager, [REDACTED] will serve as lead worker and site profile reviewer. As explained earlier, [REDACTED] knows the health and safety issues at DOE and AWE facilities and is therefore especially well qualified to provide independent reviews of worker and site profiles, as directed by the Board. [REDACTED] served as Deputy Assistant Secretary for Health and Safety for DOE's Environmental Safety and Health (ES&H) division and is intimately familiar with DOE operations and radiation protection practices across the DOE complex. [REDACTED] will be assisted by [REDACTED] and [REDACTED]. Both [REDACTED] and [REDACTED] have over 30 years experience, a large portion of which consisted of working with [REDACTED] on matters related to Environmental Safety and Health (ES&H) at DOE facilities. [REDACTED] will also participate in the review of site profiles. [REDACTED] is an expert in nuclear engineering and also a nationally recognized advocate for worker

rights. In addition, in fulfilling his responsibilities under this task, [REDACTED] can draw upon the expertise of any member of the project team, or draw upon outside expertise if necessary. We anticipate that [REDACTED] and [REDACTED] may be called upon, along with the internal and external dosimetry expertise on the project team, to support [REDACTED] in all aspects of the site profile reviews. As the work on this task unfolds, it may be necessary to add additional personnel to the project team. Any new individuals brought aboard to participate on this project will first undergo our conflict of interest avoidance procedures and review by the Board.

2.4 WORK HOUR ALLOCATION AND SCHEDULE OF DELIVERABLES

Exhibit 2-1 presents the work hour allocation for this task. We set aside a modest level of effort for preparing the site profile review procedure, given the level of effort that has already been incorporated into preparing the technical approach to this section. Once the procedure is finalized and approved by the Board, it will be used to perform site profile reviews of 10 to 12 DOE and 2 to 4 AWE site profiles. We assume that, on average, each review will require about [REDACTED] work hours.

The draft procedure will be delivered within one month from authorization to proceed, which we assume will be February 2, 2004. Upon approval of our procedure by the Board, we will begin the site profile reviews. In accordance with the TORP, we have scheduled one year to complete the review of all deliverables, including monthly summary of progress for all site profile reviews, a final report for each site profile review, and a final summary report with aggregate findings.

For the purpose of estimating the level of effort required to meet with site experts, we assumed that half of the 16 site profiles will require such meetings and that each visit will require two individuals for [REDACTED] hours each, for a total of [REDACTED] work hours.

We recognize that SC&A obligations regarding this task also include support to Advisory Board meetings. The level of effort to support Board meetings provided in Task 1 includes addressing the status and findings of Task 2 activities in addition to Task 1 activities.

