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HAZARDOUS WASTES REMEDIAL ACTIONS PROGRAM

DEPARTMENT OF ENERGY HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM QUALITY ASSURANCE PROGRAM

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ABSTRACT

This paper describes the Quality Assurance Program developed for the Hazardous Waste Remedial Actions Program Support Contractor Office (HAZWRAP SCO). Key topics discussed include an overview of the HAZWRAP SCO mission and organization, the basic quality assurance program requirements and the requirements for the control of quality for the Department of Energy and Work for Others hazardous waste management programs, and the role of ensuring quality through the project team concept for the management of remedial response actions. The paper focuses on planning for quality assurance for this remedial waste management process from preliminary assessments of remedial sites to feasibility studies. Some observations concerning the control of quality during the implementation of remedial actions are presented.

INTRODUCTION

Federal agencies are under increasing pressure from Congress and the public sector to effectively address environmental problems. These hazardous waste management problems are on a national scale, and the remediation costs are estimated in the billions of dollars. Regardless of where we work, we are all affected, and our marching orders are clear.

The challenge facing hazardous waste managers today centers on producing effective results with the limited funds available and without a very good prospect of additional funds being made available under the current

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budgetary environment. Our efforts must produce cost-effective results, so it becomes paramount for us to be more efficient and to improve productivity. Good business practices, together with effective use of program management principles focused to control the quality of our work, can help ensure that this national problem will be effectively addressed and resolved in a timely manner.

This quality assurance (QA) challenge has been accepted by Hazardous Waste Remedial Actions Program Support Contractor Office (HAZWRAP SCO) management, whose policy it is to effectively maintain and enforce a QA program to achieve program goals of excellence in all aspects of work and quality performance in carrying out its mission. Specifically, the quality of the services and the products produced from those services must be controlled and verified to ensure program success. All program office personnel participate in the QA program, and the responsibility for the quality of all phases of work is accepted and discharged by the line organization. The SCO QA Program is documented in an SCO program plan.[1] The adherence to the provisions of the QA Program Plan and the applicable implementation of and compliance with resulting procedures are mandatory for all HAZWRAP SCO personnel.

The purpose of this paper is to describe the QA Program established for the HAZWRAP SCO. The paper entitled "The Hazardous Waste Remedial Actions Program: An Overview" by Ronald F. Swiger, provided the overview of HAZWRAP. It focused on the HAZWRAP SCO roles and missions, SCO organization, and the seven major hazardous waste programs supporting the Department of Energy (DOE) and other federal agencies, such as the Department of Defense and the Environmental Protection Agency (EPA).

This paper focuses on the role of QA in the remedial waste management process. The nature of the QA activities within the program office is outlined, and the types of program activities associated with the remedial waste management process are described to show the diversity of the QA program. The QA program is outlined to include the basic QA program elements and the requirements for the control of quality. Also, the HAZWRAP procedural framework is addressed. The paper focuses on a description of the operational QA support provided to the Work For Others remedial actions planning projects. The paper closes with a short case history of the QA activities conducted in support of an Air Force remedial actions project that was completed last year.

NATURE OF QUALITY ASSURANCE ACTIVITIES

The work within the HAZWRAP SCO is broad and varied, thus, the QA support needed is also diverse. Program activities address airborne hazardous materials; waste minimization; technology research, development, and demonstration; information and data systems; institutional and environmental planning; environmental restoration; and remedial actions planning. These national programs could be expanded and/or additional programs could be added as national requirements dictate.

The nature of the QA activities for these programs varies. The QA support provided can be thought of as programmatic QA and operational QA.

Programmatic QA support is provided to the program office in the areas of QA planning, procedural framework development, and surveillance. The identification and execution of effective operational and administrative controls for the program office are prime concerns. The office must consist of clearly defined program management functions operating within a clear and concise procedural framework. Responsibilities must be clearly defined and accepted by the line and staff elements. A worthy goal is to achieve confidence that the "system" will continue to work even when key personnel are not available.

Programmatic QA is also provided to SCO programs where hazardous waste projects are accomplished by other DOE Operations Offices or other established organizations. These organizations tend to have well-established QA programs; therefore, the emphasis is to ensure that the QA plans and procedures invoked by these external organizations are consistent with ensuring that project objectives are achieved within cost, schedule, and performance guidelines.

The final element in the nature of the QA support provided is operational QA. Operational QA is characterized as an integral part of the project team, and independence is still maintained because of direct access to the SCO QA function. Because the Remedial Action Planning (RAP) Program team charter is basically to define the work and to verify its quality in accordance with applicable regulatory requirements, the QA element of the activities is very prevalent. It is a viable entity within the team and not the extraneous function forcing compliance through fear as sometimes perceived. QA support is provided directly to the project activities, usually on a day-to-day basis, in support of the project manager. In essence, the project manager delegates the QA responsibilities to the operational QA team member. The focus is on ensuring that the applicable QA requirements are defined and effectively met by the SCO contractor.

All three of these QA support elements combine synergistically to help ensure program office mission success. Because the constraints on the length of this paper do not permit a complete discussion of all three QA support elements, the remainder of the paper will focus on the operational QA element.

SUPPORT CONTRACTOR OFFICE PROJECT MANAGEMENT PROCESS

The SCO project management process involves the sponsor, the SCO, and the SCO subcontractor working together as a "team." The process involves project management activities, such as project management, project baseline planning and control, identification and procurement of subcontractor services, verification of subcontractor contractual activities and deliverables, decision documentation, and regulatory/code applicability and compliance. Close coordination among all participants, including the appropriate regional, state, and local regulatory agencies, is a critical element of the process. The project management process is tailored to each unique remedial action phase or type of remedial response action.

SUPPORT CONTRACTOR OFFICE QUALITY ASSURANCE PROGRAM

The SCO QA program is outlined in the HAZWRAP program plan, Implementation Plan Quality Assurance Requirements, DOE/HWP-38, November 1987.[1] The document establishes the QA Program requirements for HAZWRAP and assigns responsibility for ensuring that program objectives will be achieved. The requirements are based on the American National Standard, American National Standards Institute/American Society of Mechanical Engineers NQA-1, Quality Assurance Program Requirements for Nuclear Facilities. The 18 elements defined in the standard are tailored to HAZWRAP's needs. Two additional program requirements, Software Quality Assurance and Problem Prevention, are included. The requirements apply to the SCO, its subcontractors, and the DOE/Oak Ridge Operations prime HAZWRAP contractors, which consist of five 8(a) firms. These program requirements will be used as guidance for the DOE Operations Offices and their contractors participating in HAZWRAP.

Basically, all participants in HAZWRAP will establish a QA program in the detail necessary to ensure the quality of assigned HAZWRAP work and will have an independent QA functional structure to ensure effective implementation of the program. The various controls applied to the work activities affecting quality will be established and maintained to the degree necessary to ensure that quality objectives, which can be either programmatic, administrative, or technical, are met. The program/project procedural framework is a major tool that facilitates control. It consists of well-arranged, concise procedures, with clear policy statements, information, or instructions, that collectively provide a viable control system for ensuring the quality of the work.

Because the QA program plan outlines basic requirements at the program level, the requirements are very general in nature and address the "what-is-expected" rather than "how-the-expectations-are-to-be-achieved." The key is to individually tailor the program requirements to each of the programs within the SCO. The requirements then become more specific in nature and are delineated via a lower-tier QA plan and/or QA procedures.

The remainder of this paper will address the operational QA support provided to the Remedial Actions Planning (RAP) Program.

OPERATIONAL QUALITY ASSURANCE SUPPORT

The RAP Program consists of over 150 active projects in support of sponsors such as the Air Force, Army, and Navy. Most of the projects are Air Force remedial response actions projects, where inactive hazardous waste sites at various installations are addressed under the Comprehensive Environmental Response, Compensation, and Liability Act. The EPA regions and/or state and local regulatory agencies are the major regulatory players.

Each project is managed by a RAP Program project team organization headed by the SCO project manager. The project team organization is consistent with the DOE project management system outlined in DOE Order, 4700.1, Project Management System. The sponsor is involved with the SCO organizational element through the interagency agreement, the identification of the project

scope, and oversight of the project. The appropriate regulatory agencies interface with the sponsor.

The SCO RAP Program organizational entity is responsible for planning and accomplishing the work defined for the project. An SCO project manager, who is responsible for the success or failure of the defined project, is assigned. The SCO project manager tailors selected project management functions to match project management needs. This technical and programmatic support may be totally dedicated or matrixed from the respective program management source. Typical project specialist functions are hydrogeology, QA, analytical quality control, health and safety, procurement, and finance. Each function is responsible for the quality of the work performed. Technical support requirements may change as the remedial response action types change. The RAP Program subcontractor also supports the team through the SCO contractual arrangements by accomplishing the defined remedial response actions.

The QA specialist is responsible to the SCO project manager for ensuring that all project-planned and systematic actions necessary to provide adequate confidence that project objectives will be met and that the services and/or products will satisfy the established needs. Operational QA involves planning, engineering, and surveillance. Operational QA also involves the quality control of sampling, analysis, and reporting of environment-related measurement data. The SCO's sampling and analysis quality control program will be addressed in the paper presented at this meeting entitled "Sampling and Analysis Quality Control for the Site Inspections and Remedial Investigations," by Mitzi Miller and Henry Beiro.

The QA specialist-specific responsibilities include, but are not limited to, the following:

- Ensuring that project QA requirements are defined and implemented and that the project QA plan is adequately developed and effectively implemented through the RAP Program subcontractor. EPA QAMS-005/80, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, EPA-600-4-83-004, together with the EPA Guidance For Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9335.3-01, Draft, March 1988, are the principle guidance documents used for development of the project QA plan when the emphasis is on the quality of the environment-related data. As project emphasis switches from sampling and analysis to selection of alternatives, remedial design, and construction/maintenance, other control elements identified in the SCO QA Implementation Plan[1] should be invoked or expanded, such as remedial design, document control, handling/storage/shipping, and QA audits.

- Assisting in the identification of potential and actual problems and taking actions to eliminate or minimize the impact. The thrust is on preventing problems through the QA assessment process and, when problems do occur, ensuring that they are identified and corrected in a timely manner. The applicability of the subcontractor's problem identification and correction system to the contracted work is of major interest.

- Reviewing and commenting on subcontractor work plans, QA plans and associated procedures, health and safety plans, and other related documents and reports required as deliverables. This activity is a very important tool because it aids in ensuring that the right information has been stipulated in the form of requirements, questions, and interpretations and that the subcontractor has properly responded to it. A key feature is the information feedback loop to the reviewers to ensure that all comments are clearly understood and properly addressed. Quality is jeopardized when a controversial comment is unilaterally determined to be ignored and not incorporated. There must be a feedback loop to ensure that such issues are resolved for the good of the project.

- Improving project and subcontractor performance through audits, reviews, and investigations. The emphasis is on identifying conditions adverse to achieving project objectives. Actions required to improve these conditions are identified, incorporated, and tracked. Close coordination with the subcontractor QA team element is required.

- Developing the project QA documents/records file to ensure that records/documents furnishing documentary evidence of quality are specified, maintained, and available. The legal implications and liabilities associated with hazardous waste management and the remedial actions emphasize the importance of this activity.

Thus, the QA function is an integral part of the project team, and the policing image is replaced with functions working hand in hand with other project functions, facilitating effective execution of the project.

The other element of the project QA function is quality control. This function is concerned with the quality of the environment-related measurement data, which is central to the remedial investigation response action. This function will also be presented by Mitzi Miller and Henry Beiro. The QA and quality control functions work very closely together to ensure project quality. All activities are coordinated to prevent redundancy and improve efficiency.

Following is a case study of operational QA support provided to the remedial actions project at Eglin Air Force Base (AFB).

A CASE STUDY - OPERATIONAL QUALITY ASSURANCE

Eglin AFB is located approximately 7 miles north of Fort Walton Beach, Florida. The Base is the home of the Air Force Systems Command Armament Division, the host unit, and is the free world's largest AFB in terms of land area, covering roughly two-thirds the size of Rhode Island. Major activities include armament research, development, and demonstration; operational ground support; and flying units.[2]

One of the specific activities at the Base is testing of and training in the use of armor-piercing cannon systems using penetrators manufactured from depleted uranium. The tests are conducted on one of the test ranges where

sand is used as a berm containment for the projectiles upon impact. The bulk of the depleted uranium fragments are periodically removed from the sand, but residual contamination has resulted from the abrasion of the projectiles upon impact with the sand. Consequently, the sand in the berm must be collected and replaced with some regularity. Over 3500 barrels of contaminated sand have been accumulated. The project involved consolidating the barrels, verifying a solidification process, solidifying the contaminated materials, repackaging the materials, and transporting the materials to an approved radioactive waste disposal facility.

A variety of regulatory requirements were involved from the Air Force; Nuclear Regulatory Commission; the states of Florida, Georgia, and South Carolina; and the local communities. The SCO appointed a project manager to plan and execute the project. The project manager organized his project team to oversee project activities such as environmental assessment, site certification, site operations, contract administration, and QA. Chem-Nuclear, Inc. (CNSI) was selected as the remedial actions subcontractor, and interface was established with the Air Force project manager located at Eglin AFB. An effective communications link among these major players was established.

A project work plan detailing the work to be accomplished was developed, reviewed, and modified until the project functions from the three entities, including QA, concurred. The plan was then approved by the sponsor, SCO, and CNSI. Applicable plans for the control of quality, such as QA, health and safety, packaging and handling, and transportation, were included.

There were four major QA objectives:

1. To establish a well-defined QA plan and to help identify the control of quality elements as applied to other project plans. This objective was achieved through team meetings with the subcontractor and sponsor.

2. To understand the CNSI QA plan and how it would be applied to the project. The subcontractor's approach to controlling quality at the site was determined by reviewing all referenced documents and procedures in the work plan for applicability to the operations at the site.

3. To determine the project status before the initiation of solidification operations. This objective was accomplished by reviewing site operational procedures and plans, reviewing functional statuses with site subcontractor personnel and the SCO site representative, reviewing training plans and records, and observing all start-up operations, including the solidification process dry run.

4. To verify that project objectives would be met. An audit of the entire operations at the site was conducted far enough into the operations to allow for corrective actions, if required. The audit revealed that the CNSI policy, plans, and procedures as defined or referenced in the project work plan were effectively implemented on-site at Eglin AFB. All QA reviews and investigations were documented and provided to the project manager for action and he/she

forwarded the reports to the subcontractor for action and to the sponsor for information.

The Depleted Uranium Waste Removal and Disposal Project was a success. Over 165 shipments were made without incident, and there were no rejections of the repackaged waste at the waste disposal facility by the state of South Carolina. These facts alone testify that the project was well planned and controlled by the CNSI site remedial actions team. It is a pleasure to once again congratulate them for there professionalism and dedication to getting the job done within established project cost, schedule, and performance. The project cost was about $2.4 million, and the project was completed in about 4 months.

SUMMARY

The SCO QA program is established and operating. The QA plan has been distributed to all major HAZWRAP participants, including the subcontractors. The requirements for the development of QA plans for HAZWRAP-assigned programs are delineated. Applying the 2 basic program requirements outlined and adapting the 18 control of quality elements to specific programs and projects are keys to ensuring the quality of the HAZWRAP programs.

The nature of the QA effort is diverse because the HAZWRAP major programs are diverse. The QA support can be characterized as programmatic QA and operational QA, which means that appropriate QA principles must be applied at both the program level as well as at the operational level for projects.

The project team concept used by the SCO is working very well and facilitates the planning and execution of projects within the SCO. It offers flexibility to meet program needs. Teams can be organized in minimum time because the functional specialists are already available and trained. The concept was first used on the Depleted Uranium Waste Removal and Disposal Project at Eglin AFB and proved to be very effective in ensuring that the project objectives were met.

The waste management challenge is clear. We must identify and remediate hazardous waste sites in a timely and cost-effective manner. The QA discipline, when effectively integrated with the mainstream program/project activities, can play a major role in helping meet this challenge. We must remain flexible but firm in the conviction that QA, when properly applied, will produce cost-effective results. The challenge is to effectively integrate the QA discipline with basic project management functions to effectively achieve control of the remedial response actions process. This remedial response actions process is being redefined and/or clarified by EPA. We must also continue to redefine and/or clarify the QA requirements to ensure that the process will meet the needs of hazardous waste management.

REFERENCES

1. Implementation Plan Quality Assurance Requirements, DOE/HWP-38, Hazardous Waste Remedial Actions Program, Martin Marietta Energy Systems, Inc., November 1987.

2. U.S. Air Force Depleted Uranium Waste Removal and Disposal Project, Eglin Air Force Base, Florida, Detailed Implementation Plan, Hazardous Waste Remedial Actions Program, Martin Marietta Energy Systems, Inc., September 1986.