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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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March 3, 2006

The Honorable Samuel W. Bodman
Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Bodman:

Last year, the Department of Energy (DOE) issued DOE Policy 226.1, *Department of Energy Oversight Policy*, and DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*. These new directives define oversight requirements for a broad range of activities including safety, safeguards and security, cyber security, and business operations. Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, addressed the development of these new directives in order to improve federal safety oversight at all levels of DOE. The order requires implementation of these new federal oversight requirements at all DOE sites by September 2006.

Recently, the Defense Nuclear Facilities Safety Board (Board) conducted a review of the technical assessment, safety system oversight, and management walkthrough programs of the DOE Savannah River Operations Office (DOE-SR). Based on the Board's review, DOE-SR must fill a substantial gap if it is to fully implement these new oversight directives by the required date. Unfortunately, DOE-SR has taken limited actions to date toward implementing the new policy and order. In addition, line management often did not appear to appreciate the philosophical changes reflected in the new directives, the higher expectations for line management oversight, and the likely impacts on available resources. The enclosed report documents a number of strengths and weaknesses in DOE-SR's current implementation of oversight programs.

The Board is concerned that the situation at the site office will be exacerbated by the decision to increase the number of contractors at the site from one to two. The associated increase in the number and complexity of required management and operating assessments will further stress an already inadequate situation. The introduction of additional interfaces between contractors, and more complicated sharing of responsibilities between contractors will place greater demands on DOE-SR personnel in order to maintain an acceptable level of safety.

Based on observations at other sites, the situation at DOE-SR does not appear to be unique in the DOE complex. DOE should take aggressive steps to implement the 226 series of directives. These steps could include assigning a lead for implementing the new requirements, performing a formal gap analysis, and developing an implementation plan. Without these, or similar positive steps, the Board has little confidence that the programs will be implemented within the 1-year requirement.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE provide to the Board within 90 days of receipt of this letter plans for implementing DOE Policy 226.1, *Department of Energy Oversight Policy*, and DOE Order 226.1, *Implementation of Department of Energy Oversight Policy* at DOE headquarters and the individual sites. The DOE-SR portion of the response, in particular, should specify corrective actions for improving the technical assessment program, the design review process, the implementation of the Safety System Oversight program, and the participation in the management walkthrough program.

Sincerely,



A. J. Eggenberger
Chairman

c: The Honorable James A. Rispoli
The Honorable Linton Brooks
Mr. Jeffrey Allison
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

February 14, 2006

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: M. T. Sautman

SUBJECT: Oversight Programs of the Savannah River Operations Office

This report focuses on three aspects of the oversight programs of the Department of Energy's Savannah River Operations Office (DOE-SR). The first is the current status of DOE-SR's technical assessment program. Both DOE Policy 226.1, *Department of Energy Oversight Policy*, and DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, are to be implemented in 2006. While DOE-SR was not required to be in full compliance with these new directives at the time of this review, the directives were used as a reference to determine the gap between current performance and what will be expected in the future. In addition, observations concerning DOE-SR's progress in identifying and closing this gap are noted. This review, however, is not intended to be a comprehensive compliance audit or gap analysis. The second aspect examined is the Safety System Oversight (SSO) program, which was implemented as part of the Defense Nuclear Facilities Safety Board's (Board) Recommendation 2000-2, *Configuration Management, Vital Safety Systems*. The third aspect is DOE-SR's management walkthrough program, which is a key part of operational awareness and independent oversight.

The review documented in this report was conducted by the Board's site representative at the Savannah River Site (SRS), M. T. Sautman. It was conducted over a 3-month period and consisted of interviews with DOE-SR management and staff; reviews of procedures, plans, schedules, assessment reports, contractor feedback, and other documents; and examination of performance indicators and database entries. The above three aspects of the review involved the three line management offices at DOE-SR—the Assistant Manager for Nuclear Material Stabilization Project (AMNMSP), the Assistant Manager for Waste Disposition Project (AMWDP), and the Assistant Manager for Closure Project (AMCP)—as well as the independent Office of Environment, Safety and Health (OESH).

The information in this report is based on documentation and records provided in response to the author's requests for documents and information. During interviews conducted for this review, frequent reference was made to assessments and walkthroughs that had not been documented as required by procedure or were not in the Site Issue Management and Technical Assessment System. When this came to light, one manager directed his staff to write reports for all the undocumented reviews they had performed. While the author made a reasonable effort to locate reports, those that existed only in personal files may have been missed. It is important to note that the resolution of oversight findings is negatively impacted when the findings are not documented, are contained in reports that are not readily accessible, or are not tracked to closure.

Background. DOE Policy 450.5, *Line Environment, Safety and Health Oversight*, heavily emphasized the establishment of effective contractor self-assessment programs. DOE line management's oversight function was to maintain operational awareness, review performance against performance measures and indicators, and conduct limited assessments (i.e., reviews of readiness, authorization basis documents, and Integrated Safety Management System [ISMS] documentation). DOE Policy 226.1, issued in June 2005, establishes the policy for oversight programs implemented by DOE line management and independent oversight organizations. It places heavier emphasis on DOE organizations ensuring compliance with requirements and identification of deficient conditions through the use of inspections, assessments, performance evaluations, walkthroughs, and other activities. DOE Order 226.1, issued in September 2005, canceled DOE Policy 450.5 and provides direction for implementing DOE Policy 226.1. The field offices are given 12 months to implement a new order. A DOE manual containing further guidance is under development.

Technical Assessment Program. DOE's technical assessments fall into three categories—facility representative assessments, required assessments, and evaluations of contractor self-assessments—and can be planned or reactive. The facility representative program is not discussed in detail here because of its maturity, the minor impact of the new requirements on this program, and its observed effectiveness. Required assessments apply to 7 of the 20 functional areas defined in DOE-SR's Standards and Requirements Identification Document (S/RID). While required assessments form the foundation of the technical assessment program according to the DOE-SR procedure, the limited number of assessments required by current DOE orders and their breadth is likely insufficient to serve as the baseline oversight program defined in DOE Policy 226.1. For example, the DOE-SR S/RID indicates that no assessments are required by applicable DOE standards for configuration management, engineering, construction, conduct of operations, maintenance, radiation and fire protection, and nuclear and process safety. These areas will need to be addressed by DOE-SR-initiated assessments.

Procedurally, the next layer of the program consists of evaluations of the contractor self-assessment programs, reflecting the old emphasis of DOE Policy 450.5. This type of assessment forms the vast majority of planned assessments to be conducted by DOE subject matter experts and other technical personnel. AMWDP's calendar year 2006 assessment plan invoked the canceled DOE Policy 450.5 rather than DOE Order 226.1. Given the limitations of the required assessments and the fact that DOE Order 226.1 requires line management assessments that go beyond merely evaluating contractor self-assessments, it would be beneficial to recognize the need for planned assessments involving DOE's independent collection and analysis of performance data.

DOE Order 226.1 requires that line management assessments be planned on the basis of requirements, analysis of hazards and risks, past performance, and the effectiveness of contractor assurance systems. Similar guidance is provided for independent oversight assessments. However, these expectations are not reflected in the procedure for DOE-SR's technical assessment program, which provides little guidance beyond saying that the assessment plans must include required assessments and evaluations of contractor self-assessments. Furthermore,

these expectations were not evident in the assessment plans examined for this review or during discussions with managers about their assessment plans. AMWDP's assessment plan provides more guidance than the others, and states that assessment topics should be based on operations and activities under way, previous issues and findings, and potential impacts on safety and product quality. Yet the selection of topics is left to the assessor's discretion when the scope of the assessment is defined; the plan itself merely lists broad assessment topics at the facility or project level (e.g., engineering design review of the liquid waste program).

Assessment plans tend to be basic and simply to list generic facility or subject matter reviews at various frequencies, regardless of whether a program or facility is fairly static or major changes are expected during the year. Furthermore, the actual completion of assessments lags significantly behind schedule. During the first three quarters of 2005, the proportion of planned assessments that had been completed was less than 20 percent for AMCP and AMNMSP, slightly above 20 percent for OESH, and approximately 55 percent for AMWDP. This performance is discussed in more detail in the following paragraphs.

Line Management Assessments—DOE Order 226.1 requires DOE line management to implement such oversight processes as operational awareness activities; assessments of facilities, operations, and programs; assessments of contractor assurance systems; evaluations of contractor performance; and self-assessments. While the facility representative program addresses many of the facility operations requirements, the breadth of technical assessments performed by the rest of line management is narrower than the above expectations. In general, DOE-SR line management performs few technical assessments outside of vital safety system (VSS) assessments (discussed in a later section) and reviews of nuclear/criticality safety documentation.

For example, the 2005 assessments performed by AMNMSP's Nuclear Material Engineering Division (NMED) can be roughly categorized as follows: 56 percent nuclear safety/safety documentation, 24 percent criticality safety program, 13 percent VSS-related, 1 percent design review, and 6 percent other. The latter category includes some very thorough technical assessments (e.g., electrical safety incidents). The resources available to AMCP affected its completion percentage and breadth of reviews. For most of 2005, other than facility representatives and project managers, there was only one person between the two divisions overseeing deactivation and decommissioning who was available to perform additional technical oversight. This individual performed one assessment last year. Considering the number of facilities to be overseen, the industrial and radiological hazards encountered while dismantling and size reducing contaminated equipment, and the fact that these hazards can change on a daily basis, the current resources dedicated to this oversight are very limited.

AMWDP has a more mature technical oversight program and appears to have achieved a better balance among authorization basis reviews, VSS assessments, and other technical assessments, although there are gaps (see below). The assessments that are performed and the corresponding bimonthly reports to the contractor are thorough. In addition, management has high expectations for staff and a clear vision of what is to be accomplished.

It is essential for DOE to ensure that safety is incorporated into a new facility's design during the early design stages to avoid the need for later rework and retrofitting. Although the impact of failing to do so is illustrated by the performance categorization issue at the Salt Waste Processing Facility (SWPF), DOE is doing much better at overseeing other aspects of the SWPF design. For instance, DOE has instituted a number of formal processes for performing technical reviews of contract deliverables, design changes, test plans, technology development plans, and the like. In addition, DOE draws extensively upon the SRS contractor and national laboratory expertise to supplement in-house resources. If DOE's assessments went beyond the design and considered the adequacy of the design contractor's programs and processes, oversight would be strengthened. The Glass Waste Storage Building #2 is another facility where DOE-SR acts as the design authority and has performed thorough design reviews (e.g., compliance of lightning protection system with fire codes).

Unfortunately, DOE-SR reviews the design of new processes and facilities managed by the site Management and Operating (M&O) contractor with much less thoroughness and rigor. AMNMSP's Nuclear Material Engineering Division does not schedule any design reviews, but instead performs design reviews when requested by project managers. The only design review documentation from 2005 that was found during the present review pertained to engineering drawings for the Container Surveillance and Storage Capability project. The division's involvement in technical issues does not appear to be very proactive.

The author reviewed several dozen documents (e.g., technical assessments by project and engineering staff, bimonthly reports, emails, memoranda) provided by AMWDP that related to new facilities (Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit), major modifications (Saltstone Facility upgrades), and new processes (Tank 48 remediation). While AMWDP's engineering and project staff perform more reviews of design changes, technical reviews of design changes have tended to focus on modifications to existing facilities to which SSO personnel are assigned (see the discussion later in this report). Most of the documents related to new facilities address observations from contractor meetings, construction status, approval of safety basis documents, summaries of contractor studies, or editorial comments. While there were some technical comments on designs or test plans, these were limited. There was little evidence that AMWDP planned and conducted methodical, independent design reviews. The AMWDP engineering organization had little input into designs until authorization basis documents had been submitted and had very limited input into technology development plans, test plans, reviews of test reports, project technical risk assessments, and contractor team recommendations for addressing technical issues. Earlier input by DOE engineering organizations could lead to earlier identification of the technical vulnerabilities of a project and reduce the likelihood of technical issues arising late in the design or construction process.

Independent Assessments—DOE Order 226.1 sets forth the matters on which independent oversight processes should focus. OESH's Safety and Radiation Protection Division (SRPD) is responsible for a wide range of programs, including nuclear safety, radiological protection, industrial safety, quality assurance, training, and hoisting and rigging. SRPD has the advantage

of having the highest percentage (among the groups discussed in this report) of senior staff. Free of the need to review authorization bases or perform safety system oversight, the SRPD technical staff should, in theory, be in the best position to dedicate their time to conducting programmatic assessments and identifying safety issues in the field. Unfortunately, a large gap between performance and expectations is found here. Through mid-December 2005, the division's staff of 15 completed 18 technical assessments, and these tended to be clustered. For instance, the 18 technical assessments included 16 occupational safety topics, 1 nuclear safety topic, and 1 assessment of the assessment program. A review of these technical assessments generated a number of observations:

- SRPD has completed some other assessments outside the formal technical assessment program. For example, SRPD conducted assessments of the site M&O contractor's work planning/control and feedback and improvement programs in late 2005, but these were in response to the Implementation Plan for the Board's Recommendation 2004-1. SRPD had not previously planned to conduct any independent ISMS assessments in 2006, nor have they typically performed any ISMS-focused assessments to support previous years' ISMS declarations.
- Although SRPD provided the contractor positive feedback on the radiological protection program throughout 2005, the basis for this feedback was unclear since the most recent assessment conducted by the two health physicists was in April 2004.
- SRPD relied heavily on an independent review of hoisting and rigging commissioned by the site M&O contractor. SRPD's own reviews of the site M&O contractor's hoisting and rigging program consisted of two sentences in a year's worth of assessments.
- SRPD conducted an overall training program evaluation in 2004, although a report was never issued. DOE Standard 1070-94, *Guidelines for Evaluation of Nuclear Facility Training Programs*, recommends a 3-year frequency. SRPD conducted no training assessments in 2005, but focused on ensuring that the contractor performed its own training self-assessments. DOE Standard 1070-94 emphasizes that in addition to overall program evaluations, DOE field organizations should perform day-to-day evaluations of technical training and qualification activities, for example, by monitoring classroom and on-the-job sessions, spot-checking training materials, and reviewing examination results. A review of 10 months of feedback to the contractor revealed one sentence related to observations of this type.
- Six of the occupational safety assessments consisted solely of ensuring that various contractors were posting a certain required Occupational Safety and Health Administration form.

A review of 10 months worth of SRPD feedback to the site M&O contractor revealed much of it to be hands off (e.g., summarizing contractor actions, assessment results, and performance indicators), instead of summarizing findings generated by SRPD staff while performing their own field observations and reviews. DOE Order 226.1 states that independent oversight must provide a balance between reviews of documentation and reviews of the adequacy of implementation through performance tests and observation of work activities. In conclusion, a more proactive and comprehensive approach for overseeing the site M&O contractor will be needed to meet DOE Order 226.1, which states that a balance must be achieved among evaluations of systems (e.g., DOE's ISMS), programs (e.g., radiation protection), facilities, and implementation of individual system elements (e.g., specific work activities).

As was seen with design reviews, DOE-SR provides relatively more oversight when it has a direct contract for a facility. For example, DOE-SR conducted a multidisciplinary technical safety assessment, a combined Phase I/II ISMS Verification Review, and periodic safety walkdowns for the Glass Waste Storage Building #2. It is worth noting that while DOE-SR conducted a follow-up review of the contractor's corrective actions in response to these reviews, no apparent follow-up was conducted on the identified issues and recommendations dealing with DOE's technical assessment program, project self-assessments, and project/programmatic safety oversight.

The division's location in B area does not help with the staff's field presence. The OESH manager and the SRPD director each performed only two management walkthroughs in the first 10 months of 2005. While some of their staff have very field-orientated disciplines, the safety and occupational health lead performed only one walkthrough during the first 9 months of 2005. During discussions conducted for the present review, it was repeatedly mentioned that a large portion of the division's resources was spent on generating paperwork in response to external requests, rather than on conducting planned assessments. Roughly two dozen examples were provided in which SRPD staff coordinated the development of corrective action plans or other reports, mainly for DOE-Headquarters. Division management has formulated a draft technical assessment plan for 2006 that places greater emphasis on field assessments, especially in such areas as quality assurance, training, and radiation protection, which were not thoroughly examined in 2005. However, implementation of this more ambitious plan is uncertain since there has been no change in resources.

OESH lacks the visibility that an assistant manager would bring. The office director also cannot issue any direction to the contractor. While in theory, direction to resolve findings can be issued to the contractor by the deputy manager, this has never been done. Instead, findings are transmitted informally to the contractor for information purposes, and fortunately, the contractor is usually responsive in addressing the findings. This feedback mechanism may have to be formalized if a new site contractor(s) is more resistant to responding to feedback that is not backed by formal contract direction.

Self-Assessments—DOE Order 226.1 requires that DOE organizations perform self-assessments of programmatic and line management oversight processes and activities to determine whether requirements and management expectations are being met. The four offices performed a total of eight self-assessments in 2005, about half of which dealt with the effectiveness of DOE’s oversight. The calendar year 2006 self-assessment plans are a bit more ambitious and have a broader scope.

In July 2005, DOE-SR conducted a self-assessment of its technical assessment program, which concluded that overall, the program “continues to function well.” The results of the present review differ sharply from this conclusion. DOE-SR has a Technical Assessment Program Committee that is chartered for the purpose of monitoring the effectiveness of the program and making recommendations for its improvement; however, the last meeting of this committee was held in August 2004.

Summary—The above discussion illustrates the gap that DOE-SR must fill if it is to fully implement DOE’s new policy and order on oversight within the 1-year requirement. Unfortunately, DOE-SR has taken very limited action to date to develop an implementation plan for either the policy or order, although a gap analysis is planned for early 2006. During interviews, line management often did not appear to appreciate the philosophical changes in the new standards, the higher expectations for line management oversight, and the likely impacts on available resources. Furthermore, there was little indication that implementing these new requirements was a priority of senior management, nor was it clear who would be accountable for their implementation. While the SRPD director suggested he would likely be the lead since he owned the technical assessment program, line management will need to be highly involved since it is here that most of the responsibilities will lie.

When DOE issues new standards, there needs to be a formal review of their applicability at the operations office level, a lead assigned for their implementation, and an implementation plan developed. In addition, management support is required to ensure that the necessary resources are available and that the standards are implemented consistently across the operations office. The current absence of these elements raises concern that the needed upgrades to DOE-SR’s technical assessment program will not be completed this year. Furthermore, the recompetition of the SRS contract could result in two or more prime contractors in the future. This in turn could cause the number of contractor programs requiring oversight to multiply and further increase the resources needed to oversee them.

Safety System Oversight (SSO) Program. DOE Manual 426.1-1A, *Federal Technical Capability Manual*, issued in May 2004 sets forth the roles and responsibilities of SSO personnel, supervisory requirements, and SSO training requirements. All of DOE-SR’s SSO personnel completed their qualifications in 2005 except for two individuals, who will qualify in 2006.

The SSO qualification card includes all of the knowledge, skills, and abilities required by DOE Manual 426.1-1A, but a review of the completed cards revealed a few issues. There is a requirement to conduct three performance-based assessments addressing authorization basis

accuracy; system operation, maintenance, and performance; effects of equipment aging; and the contractor's system engineer program. Most of the assessments cited on the cards are not VSS assessments performed specifically to meet this requirement, but assessments the candidate performed previously, such as readiness reviews. The relevance of the assessments cited on AMWDP's cards is usually obvious from the assessment title or notations made on the card. However, the approving manager for AMNMSP believes the intent of the above requirement is merely to demonstrate that the candidate knows how to perform assessments in general. As a result, the relevancy of the assessments listed is often less than obvious. For example, a readiness review may be listed, but it is not clear whether the candidate's assigned function related to the four assessment topics listed in DOE Manual 426.1-1A. Other examples of questionable relevancy included assessments performed 9 years earlier or at other sites. In some cases, none of the listed assessments dealt with the individual's assigned facility or VSS.

While the qualification cards address the VSS assigned to an individual, DOE-SR has implemented a facility engineer program that could have unintended consequences. In most cases, DOE-SR has chosen to qualify SSO personnel on all of the VSSs in one or more facilities. DOE Manual 426.1-1A discusses the fact that an individual may be assigned more than one VSS, but does not address whether these should be similar systems. However, the Board's Recommendation 2000-2 included a subrecommendation to qualify DOE technical staff as subject matter experts for VSSs. By specializing in one VSS or one type of VSS (e.g., ventilation systems) across a site, this expertise could be developed. DOE-SR's facility-centered approach has resulted in 9 personnel responsible for SSO for ventilation systems. These individuals are sometimes responsible for several more VSSs (e.g., emergency power, safety interlocks, leak detectors, radiation monitors, pressure relief valves).

Because any one individual is unlikely to have the technical background and time to become a subject matter expert in all of these systems, DOE-SR's approach could result in generalists highly familiar with one facility. This possibility is illustrated by the fact that few of DOE-SR's SSO personnel have specialized, formal training on their assigned systems. DOE-SR has two qualified fire protection engineers who perform most of the SSO for fire protection VSSs, but they have been excluded from the SSO qualification program, partly because of where they reside in the organization. Finally, engineering team leads were formally qualified for SSO, but rather than being assigned specific VSSs as required by the manual, they completed a very generic qualification (similar to qualifying as a facility representative without being assigned a facility).

DOE Manual 426.1-1A requires that SSO personnel perform periodic evaluations of equipment configuration and material condition. Implementation of this requirement varies widely across the three line management offices even though comprehensive, generic lines of inquiry have been developed to facilitate VSS assessments. AMCP will not have a qualified SSO until late 2006, so no assessments have been conducted to date. AMWDP has strong management support for the SSO program, which has resulted in the most mature of the programs. AMWDP conducts regular VSS assessments, and a review of more than a dozen of these assessments found them to be consistent with the expectations in DOE Manual 426.1-1A.

Furthermore, detailed SSO responsibilities are included and maintained in Performance and Development Plans as required by the manual. Most of the NMED staff in AMNMSP have completed SSO qualifications, but their SSO responsibilities have been neglected so they can focus on performing authorization basis and criticality safety reviews. While DOE Manual 426.1-1A states that SSO should be the primary function of assigned personnel, NMED management stated that SSOs spend 75 percent of their time conducting authorization basis or criticality safety reviews and only 25 percent of their time performing SSO activities and other technical assessments. This prioritization is reflected in the fact that NMED, which has nine personnel assigned to SSO, performed five VSS assessments (plus four unplanned VSS event investigations) in 2005, although the 2005 assessment plan proposed conducting quarterly assessments of six active facilities (e.g., H-Canyon, HB-Line) and semiannual or annual assessments of five facilities with less activity (e.g., K-Area Material Storage Facility, F-Canyon). The 2006 plan has similar goals for VSS assessments, but discussions with the NMED director gave little reason to believe that the number of assessments conducted in 2006 will be substantially different from that in 2005.

Management Walkthroughs. DOE Order 226.1 requires that line management perform operational awareness activities, such as facility tours/walkthroughs and work observation. Because it is considered important for managers to spend time in the field and be seen, a database was established for documenting all walkthroughs by personnel at the GS-14 level and above. In addition, performance indicators were developed to track whether the offices were meeting their set goal (10–20 hours per month). A review of walkthroughs by person and office indicated that the implementation of management walkthroughs varies widely depending on the level of management support for the activity. The strongest support exists in the AMNMSP office, and the weakest in the AMWDP office. The performance indicators, however, can be misleading since the performance of an office can be greatly biased by one individual. For example, approximately 45 percent of the walkthroughs performed by both AMNMSP and AMWDP between January and October 2005 were conducted by a single person in each office. Thus, one division director in AMWDP performed 46 walkthroughs, while the other three division directors performed a combined 6 in the same 10-month period.

Procedural guidance is provided for the types of things a manager may want to observe. These include comparing plant conditions with technical limits; reviewing log keeping and shift turnovers; and observing plant evolutions, such as valve lineups or sampling. Reviews of walkdown descriptions in the database revealed little evidence that this guidance had been applied. The effectiveness of this program could be increased by going beyond the objective of management visibility and familiarization and using the program more as an opportunity to perform operations oversight.

General Observations. Many of the above issues have been documented elsewhere and were freely acknowledged by managers during interviews conducted for this review. That being said, there was not much energy being expended to try to improve the programs. There was a perception that these oversight programs were not a high priority of top managers. Furthermore, comments made during the interviews indicated there was a belief that any weaknesses were

compensated by facility representative oversight and M&O contractor assessment programs such as the Facility Evaluation Board. Throughout the review, the author observed a high correlation between the performance of the programs and the level of support for them on the part of the immediate managers and the perceived support by senior management. The inconsistent implementation of all three programs examined is indicative of their dependence on the personalities of individual managers, instead of their being driven by the expectations of top management.

DOE-SR has taken a more proactive oversight approach with facilities such as SWPF and the Glass Waste Storage Building #2, where it functions as the design authority. DOE-SR has taken a more hands-off approach regarding the design of modifications, new processes, and new facilities at facilities managed by the site M&O contractor. DOE orders are not as explicit regarding the need to perform design reviews as they are regarding the oversight of operations and safety programs, a fact reflected in the belief that these designs are the site M&O contractor's responsibility.

As experience (e.g., with in-tank precipitation) has shown, the complexity and lack of maturity of many of the technologies used at SRS can lead to substantial impacts on the contractor's ability to achieve DOE's goals. DOE could reduce its exposure to project, technical, and safety risks by taking a more proactive approach to design and process reviews. Doing so would require that DOE develop and maintain a cadre of highly trained subject matter experts who can perform these reviews. DOE's Training and Qualification Program is one way of developing this expertise. While the Board's Recommendation 2000-2 was aimed at reviewing existing facilities, SSO personnel who specialize in a system develop the expertise needed to review new facilities. DOE-SR currently has a number of subject matter experts (e.g., fire protection, electrical) who are drawn upon to perform detailed design reviews. One concern is that this pool of available experts will shrink because of attrition or degrade as the SSOs spread themselves too thin over several disciplines. Meanwhile, the SSO program may not be developing the next generation of subject matter experts needed to conduct quality design reviews, but rather generalists. Considering that DOE-SR has nearly completed qualifying its SSO personnel, DOE-SR might derive greater benefit from addressing this issue by developing and maintaining subject matter experts in key disciplines in parallel with the current SSO program instead of requalifying its engineers.