Department of Energy
Washington, DC 20585

JUL 28 2005

The Honorable A. J. Eggenberger
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

Commitment 4.6 of the Department of Energy's (DOE) implementation plan for Recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, calls for Environmental Management (EM) to review the field implementation of existing critical administrative controls to ensure they are developed, implemented and maintained in accordance with DOE expectations and to develop a report detailing field reviews, lessons learned, and plans and schedules to resolve outstanding implementation deficiencies. The EM actions for Commitment 4.6 have been completed and are documented in the enclosed *Office of Environmental Management Implementation of Specific Administrative Controls Final Report*, July 2005.

This report utilized information derived from the previous EM Headquarters assessments in support of Commitment 4.5 on the derivation of Specific Administrative Controls with information from more recent site self-assessments. The self-assessments were performed as part of the normal safety assessment practices at the sites and supplemented with specific assessments to support the implementation plan of this Recommendation.

If you have any questions, please call me at (202) 586-0738 or have your staff call Dr. Robert Goldsmith at 301-903-4954.

Sincerely,

Inés Triay
Chief Operations Officer
Environmental Management

Enclosure

05.1454

Office of Environmental Management
Implementation of
Specific Administrative Controls

Final Report

July 2005

Executive Summary

The Department of Energy (DOE) Implementation Plan (IP) for the Defense Nuclear Facilities Safety Board's (DNFSB) Recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls* Commitment 4.6 committed the Office of Environmental Management (EM) to review field implementation of critical administrative controls to ensure that they are developed, implemented and maintained in accordance with DOE expectations as part of normal safety basis implementation.

Under Commitment 4.5 of the DNFSB Recommendation 2002-3 IP, the derivation of administrative controls (ACs) with emphasis on "directed action" and "explicit" ACs and their implementation was accomplished via an assessment performed by an EM team that was lead by the Director, Office of Licensing, Office for Environmental Cleanup and Acceleration. The results of that assessment were reported in the *Office of Environmental Management Assessment of Specific Administrative Controls, Final Report.* This report uses the results of the earlier report for Commitment 4.5 with information from more recent site assessments to describe the implementation state of DOE Standard 1186 (DOE-STD-1186), *Specific Administrative Controls (SAC)* in EM safety documentation and implementing procedures.

As identified in the above report there were no identified cases where the omission of SAC led to an imminent safety concern. At this time, eleven EM facilities are reported to conform to the new Standard including two large decontamination and decommissioning (D&D) activities at the K25/27 Facility and the Plutonium Finishing Plant (PFP) both of which contain significant hazards. Administrative controls are being upgraded to conform to the Standard in accordance with the annual update process as specified in 10 Code of Federal Regulations 830, *Nuclear Facility Management.* Facilities in D&D rely heavily on the use of ACs. Large and complex projects, such as the already conforming K25/27 and the PFP, are being brought into conformance with the Standard. Other facilities of lower complexity entering D&D in the near term will not have their existing ACs brought into conformance with the Standard due to limited facility life. Facilities being activated from surveillance and maintenance status to active D&D will be evaluated on a case by case basis for the need to upgrade their ACs. EM facilities, including those undergoing D&D, will have their safety base documentation maintained in accordance with DOE safety requirements.

All EM sites have reported that their existing ACs meet the intent of DOE-STD-1186 in that they are derived from the hazard and accident analyses and flow down into action statements and procedures. Many sites reported that there were weaknesses in describing the hazard basis for the ACs and not stating that a violation of an SAC was an immediate Technical Safety Requirement (TSR) violation. EM sites that have not completed their DSA/TSR upgrades are doing it to conform to DOE-STD-1186 according to the schedules provided in this report.

1.0 Introduction

The DOE IP for the DNFSB Recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls* Commitment 4.6 committed EM to review field implementation of critical ACs to ensure that they are developed, implemented and maintained in accordance with DOE expectations as part of the normal safety basis implementation. In response to this recommendation, the DOE Office of Environmental Safety and Health (EH) released DOE-Standard-1186 *Specific Administrative Controls* in August 2004. In conjunction with the release of this Standard, EH released a series of training modules to support the Standard and serve as a template for site specific training for DOE field activities. At this time all affected personnel both federal and contractor have been trained to the new Standard.

Under Commitment 4.5 of the DNFSB Recommendation 2002-3 IP the derivation of ACs with emphasis on "directed action" and "explicit" ACs and their implementation was accomplished via an assessment by an EM team that was lead by the Director, Office of the Licensing, Office for Environmental Cleanup and Acceleration. The results of this assessment were reported in *Office of Environmental Management Assessment of Specific Administrative Controls, Final Report.* EM sites have performed further assessments on the implementation of their safety basis controls in support of their normal internal safety review process and to support the EM response to IP Commitment 4.6. This report uses the results of that earlier report for Commitment 4.5 with information derived from more recent site assessments to describe the implementation state of DOE-STD-1186, *Specific Administrative Controls* in its safety documentation and implementing procedures.

2.0 Implementation Approach

ACs represents an important part of the defense-in-depth system of controls for the safety of nuclear hazards. Prior to the adoption of DOE-STD-1186, ACs were selected, described, and implemented in an inconsistent manner across the DOE sites. With the adoption of the Standard, a consistent methodology was put in force to assure consistent development and implementation of important-to-safety ACs.

Following a review of their current safety documentation, EM contractors will update this documentation in an annual update process as specified in 10 Code of Federal Regulations (CFR) 830, *Nuclear Safety Management.* Following the approval of the updated documentation, DOE and its contractors will establish an implementation period to bring their systems and procedures into compliance. DOE will then review that implementation. At this time most EM sites are in the process of updating their Documented Safety Analyzes (DSAs) and their TSRs. Schedules for the update process, implementation, and verification are reported in the site specific section of this report.

3.0 Summary of Specific Administrative Control Assessments

The original EM Headquarters (HQ) assessment team found that the majority of EM facilities had either previously defined "explicit" ACs or SACs to protect against accidents with significant consequences. There were no cases found when the omission of SACs led to an imminent safety concern even though most sites did not identify SACs apart from their safety management programs. The team did find that that there was much room for improvement in the clarity and derivational information supporting SACs and the clarity of controls with the TSRs.

Other observations found by the team and described in their final report, *Office of Environmental Management Assessment of Specific Administrative Controls, Final Report* include:

- The most prevalent type of SACs used at EM facilities were those related to the limits that protect key assumptions of the hazard and accident analysis. These includes limits on Material at Risk, limits on combustible loading, limits and prohibitions on work activities, hoisting and rigging restrictions, dome loading limits, and prohibitions of diesel powered equipment and ignition sources.
- No instances were found where SACs had been used in lieu of engineered safety features.
- Some SACs were used to supplement safety structures systems and components that were unreliable, unavailable, or not completely effective on their own.
- Most SACs were not implemented in accordance with DOE-STD-1186.
- It was not always clear when a non-compliance of an AC would result in a violation.

Since the initial round of assessments, EM sites have conducted additional self assessments as part of their normal assessment process or directed assessments aimed specifically to support the DNFSB Recommendation 2002-3 IP. EM sites were allowed to report using either a Criteria for Review Approach Document developed at EM HQ written specifically for this recommendation, the check list from the original EM HQ assessments, or their internal review processes. To date only a limited number of EM facilities have asserted that they conform to DOE-STD-1186. These facilities are as follows: two facilities at Oak Ridge with one of those facilities awaiting DOE verification of the assertion through a DOE Operational Readiness Review; the Hanford Tank Farms and Evaporator Facility; and six facilities at Idaho. The rest of the sites are reporting that they are meeting the intent of the standard. In some cases this is a simple matter of reformatting or providing a better explanation of the derivational basis. All sites covered by this report are implementing the Standard in all of their facilities with an ongoing mission during the annual update process.

Not all EM nuclear facilities will have their DSAs and TSRs updated to conform to the new Standard. Only those facilities with projected long term use will be brought into conformance with the Standard. Lower complexity facilities which are designated for D&D in the near term will not bring existing ACs into conformance with the Standard because of lower complexity and short facility life. Facilities that

are largely inactive or in surveillance and maintenance mode will be evaluated for SAC upgrades on a facility-by-facility basis as they are activated for D&D.

4.0 Assessment Results and Schedules by Site

For the purpose of meeting this commitment, by mutual agreement with the National Nuclear Security Administration (NNSA), the reporting for EM activities at NNSA sites will be reported to the DNFSB through the NNSA chain of command.

4.1 Idaho

The Idaho Site (ID) assessment indicates that SACs have been developed and implemented in the ID safety basis documents. These SACs are maintained where applicable.

The ID Closure contractor has approved and implemented 19 Nuclear Safety Rule compliant DSA/TSR documents that use SACs. A control verification assessment was performed in January 2005, on 4 of the 19 compliant documents. In May 2005, the Office of Nuclear Energy, Science and Technology-ID contractually directed the ID Closure Contractor to implement the standard during the annual update of the safety basis documents. Six of the 19 documents have been updated to comply with the DOE–STD-1186. Complete implementation of the standard is expected by May 2006. Control Implementation Verification is performed by DOE-ID quarterly.

The Advanced Mixed Waste Treatment Project (AMWTP) DSA uses and implements SACs. However, the DSA and TSR do not fully conform to the standard. Contractual direction for the implementation of the standard at the AMWTP will be transmitted following modification of the Bechtel BWXT Idaho (BBWI) contract. A fully compliant DSA and TSR are being developed for inclusion in the next annual update scheduled for November 2005.

Schedule

TSR Update: April 2006
TSR implementation: May 2006
DOE Verification: June 2006

4.2 Oak Ridge

The Oak Ridge Site (OR) has used its Implementation Verification Review (IVR) Process to verify the flowdown and implementation of the safety basis controls for its facilities. The results show that only two facilities/activities have SACs in their TSRs that conform to the DOE-STD-1186. These facilities/activities are Building K25/27 and Onsite Transportation Services. The TRU/Alpha Low Level Waste Treatment Project operated by Foster Wheeler Environmental Corporation is reported to

conform, but this is awaiting DOE verification during an upcoming Operational Readiness Review.

Other OR facilities meet the intent of the Standard, but are not in full conformance. Fully conformant TSRs will be developed for facilities with existing approved DSAs/TSRs that are not scheduled for Demolition and Decontamination under the current Bechtel Jacobs Company contract. This backfitting will be done during the next annual update for the Oak Ridge National Laboratory Melton Valley Solid Waste Storage Facility and the Liquid Low Level Waste Facilities.

Schedule:

Melton Valley Solid Waste Storage Facility
TSR Update: August 2005
TSR implementation: October 2005
DOE Verification: January 2006

Liquid Low Level Waste Facilities
TSR Update: September 2005
TSR Implementation: December 2005
DOE Verification: February 2006

4.3 Ohio

Only one facility of the Ohio Field Office has an SAC and that is the dome loading restrictions at the Fernald Environmental Management Project. Federal and contractor staffs have been trained to DOE-STD-1186 and are well aware of the importance of the control. Since the facility is scheduled to go below the category three threshold this calendar year, no further DSA or TSR upgrades will be performed.

4.4 Portsmouth/Paducah

The Portsmouth/Paducah Project Office (PPPO) used the IVR Process to verify the flow down and implementation of safety basis controls for its facilities. EM directed that PPPO perform a separate assessment on its facilities to verify implementation of the DOE-STD-1186. This assessment report was issued in March 2005. The PPPO review of DSAs and TSRs revealed that the derived and identified "explicit" ACs, (e.g. quantitative administrative procedural limits or criteria for violations), meet the intent of DOE STD-1186. However, the language in these documents required updating to conform to that used in the DOE standard. Facility "explicit" administrative controls derived in safety analyses were included in the TSRs and other implementing procedures. The derivation of the "explicit" administrative controls was not included in the safety analyses. The DSA/TSR updates will be done

as part of the annual DSA update process, and their implementation verified by the normal safety basis revision IVRs.

Schedule

TSR Update: May 2006
TSR Implementation June 2006
DOE Verification: June 2006

4.5 Richland

The Richland Site has approximately 30 nuclear facilities ranging from active facilities like the Canister Storage Building and the Central Waste Complex to facilities in long term surveillance and maintenance mode. An IVR was performed on the active facilities and the Plutonium Finishing Plant Complex, which is in active D&D, to verify the conformance of ACs to the guidance found in DOE-STD-1186. Facilities specifically excluded from the review are those in surveillance and maintenance waiting D&D, or currently in D&D, with the exception noted above. The review of DSAs and TSRs identified that existing ACs are in the form of programmatic ACs, Limiting Conditions for Operating formatted SACs or directive action SACs. The existing ACs meet the intent of DOE-STD-1186, but may not meet the exact format suggested by the Standard. In the future when facilities are reactivated for D&D, they will be reviewed and have their safety basis documentation upgraded as needed.

The IVR process verified that the SACs derived in DSAs were implemented by TSR requirements or implementing procedures. Therefore, these safety basis documents meet the intent of the Standard. However, not all the safety documents included appropriate definitions, and violation criteria. In addition, the language in DSAs and TSRs specific to the controls require updating to conform to DOE STD-1186. Updates to DSAs and TSRs, including TSR violation criteria, will be executed as part of the annual update and IVR.

Schedule

All active facilities
TSR Update: September 2006
TSR Implementation: December 2006
DOE Verification: December 2006

4.6 Office of River Protection

The Office of River Protection assessment of the implementation of DOE-STD-1186 was completed in May 2005. Fourteen SACs were identified and evaluated in this assessment for the tank farms, 242-A Evaporator, and the 222-S Laboratory. Of the

three facilities reviewed, only the 222-S Laboratory was identified to not meet all of the specified requirements and thereby requiring corrective action. It was found that although controls are adequately implemented by procedures the controls and their bases are not sufficiently discussed in the SAC. The TSR update and approval is scheduled for completion in September 2005. No implementation changes will be required by this update.

Schedule DOE Verification: Completed May 2005

222-S Laboratory
TSR Update: September 2005
TSR implementation: N/A

242-A Evaporator
TSR Update: None required
TSR implementation: NA
DOE Verification: Completed May 2005

Tank Farms
TSR Update: None required
TSR implementation: NA

4.7 Savannah River

The Savannah River (SR) Operations Office directed the Westinghouse Savannah River Company (WSRC) to perform a self assessment of the EM nuclear facility ACs. The SR site has 15 EM nuclear facilities of which 14 were having their safety basis documentation upgraded to implement SACs. The 235-F Facility is scheduled to go into D&D and will not be upgraded. The contractor reports that the derivations of ACs largely conform to the intent of DOE-STD-1186 because they are compliant with the 10CFR830 rule and DOE-STD-3009. The current WSRC process demonstrates a link for hazard controls with the link to the hazard and accident analysis. Preventive and mitigative features are described through the hazard and accident analysis process and those controls that are credited are identified in the TSR derivation. The specification of those controls in the TSR documents is not explicitly in the form of SACs and will require some revision of safety basis documents to comply with DOE-STD-1186. In addition, it was determined that improvement in the clarity and derivational information supporting controls that are potential SACs is needed. Full implementation of DOE-STD-1186 will not be achieved until completion of the annual updates for the nuclear facilities, approximately mid-2006 before the current maintenance and operations contract ends in September 2006. EM will assess the implementation of the standard after updates have been completed.

Schedule

Completion of all nuclear facilities
TSR Update: September 2006

TSR implementation: September 2006
DOE Verification: December 2006

4.8 Waste Isolation Pilot Treatment Plant

The original EM HQ team evaluation of the Waste Isolation Pilot Plant (WIPP) specifically recommended that the DSA needs to be updated to be consistent with the derivational guidelines of DOE-STD-1186 including the explicit description of SACs and the associated derivational information. It was also found that the TSRs did not explicitly describe the SACs and that the TSR violation definition was not clearly presented (i.e. a violation of a SAC is an immediate TSR violation). In September 2004 WIPP completed an assessment using the draft standard. The assessment team concluded that ACs had been effectively implemented via formalized operating procedures. No implementation deficiencies were found. The DSA and TSRs have been rewritten to conform fully to the final Standard. These have been sent to EM HQ and are awaiting approval which is expected within 30 days.

Schedule

TSR Update: August 2005
TSR Implementation: November 2005
DOE Verification: December 2005

5.0 Conclusion and Lessons Learned

EM is committed to improve its safety basis documentation and meets its commitments for DNFSB Recommendation 2002-3. The adoption of the SAC Standard has provided a mechanism for the consistent implementation of ACs which are important to safety. To date, eleven EM facilities are reported to conform to the new Standard including two large D&D activities at the K25/27 facility and the Plutonium Finishing Plant both of which contain significant hazards. Administrative controls are being upgraded to conform to the Standard in accordance with the annual update process as specified in 10 Code of Federal Regulations 830, *Nuclear Facility Management*. Facilities in D&D rely heavily on the use of ACs. Large and complex projects, such as the already conforming K25/27 and the PFP, are being brought into conformance with the Standard. Other facilities of lower complexity entering D&D in the near term will not have their existing ACs brought into conformance with the Standard due to limited facility life. Facilities being activated from surveillance and maintenance status to active D&D will be evaluated on a case-by-case basis for the need to upgrade their ACs. . EM facilities, including those undergoing D&D, will have their safety base documentation maintained in accordance with DOE safety requirements.

EM has issued guidance to the field to aid the efforts to implement safety controls and disseminate lessons learned. These are *Environment Management Guidelines and lessons Learned for Nuclear Facility Control Selection and Implementation*, May 20, 2003, and *Supplemental Environmental Management Guidance for Implementing 10 CFR 830, Subpart B, Safety Basis Requirements*, May 28, 2002.

All EM sites have reported that their existing ACs meet the intent of the Standard in that they are derived from the hazard and accident analyses and flow down into action statements and procedures. There was no identified case where the omission of SAC led to an imminent safety concern. Many sites reported that there were weaknesses in describing the hazard basis for the administrative control and not stating that a violation of an SAC was an immediate TSR violation. All EM sites are updating their safety basis documentation to conform to the Standard according to the schedules provided. The Office of Integrated Safety Management and Operations Oversight will be monitoring the safety basis upgrade schedules at the sites.