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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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98-0000774



December 23, 1997

The Honorable Federico Peña
Secretary of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585-1000

Dear Secretary Peña:

As a part of the Department of Energy's (DOE) implementation plan for the Defense Nuclear Facilities Safety Board's (Board) Recommendation 95-2, DOE and its contractors are moving forward on a demonstration program. This program will systematically establish, for ten priority facilities, the controls mutually agreed upon by contractors and DOE to be needed for safe facility operation. These controls are being tailored to the hazards of the activities conducted in those facilities to ensure protection of the public, workers and the environment. This integration of work planning and safety planning for the ten designated facilities is proceeding reasonably well. The results are providing an experience base that illustrates not only the merits of such an integrated approach, but good examples that can be used to enlarge the range of applications for safety management programs.

The Board is aware that the Secretary and the Deputy Secretary are looking to the Secretarial Program Officers to aggressively implement integrated safety management (ISM) concepts in the conduct of their programs. The Board commends top management leadership's emphasis on safety and believes the time has come to move beyond the ten priority/demonstration facilities toward a wider scale application of the ISM concept at other defense nuclear facilities. The Board believes that DOE and its contractors have much of this concept already in place for a substantial number of facilities and activities, although not in a form that is readily identifiable and demonstrable. The Board wishes to collect information on all defense nuclear facilities and activities that represent substantial potential safety risks, to determine their current operational safety bases. The objective is to identify needed upgrades, if any. The Board intends to work with DOE to bring all such facilities and activities into compliance with the ISM concept. Enclosure A identifies those facilities the Board considers to be an appropriate set. DOE may wish to add to the list.

Enclosure B identifies requisites for demonstrating that an integrated safety management program is indeed in place for a facility or activity. The Board wishes to know the status of each of these key elements for each of the facilities/activities listed in Enclosure A.

Therefore, pursuant to 42 U.S.C § 2286b(d), the Board requests for each of the facilities and activities listed in Enclosure A the following information:

- The status of each of the requisites for an integrated safety management program as shown in Enclosure B. Where requisites are considered to be already satisfied, the

data provided should include the reference documents in which evidence of such status can be confirmed and the date upon which DOE approved or otherwise indicated acceptance (e.g., SARs, BIOs, TSRs, LCOs, etc.).

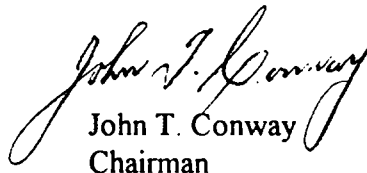
- If DOE and contractors determine, for any of the facilities or activities listed in Enclosure B, that the elements identified as requisites are not presently sufficiently well-developed to pass verification reviews, provide the following:
 - What is the completion status?
 - What is the schedule for upgrades?
 - What compensatory measures are or will be in place pending the upgrades to ensure safe continuing operations?
 - Which facilities or activities listed in Enclosure A are considered priority targets for Authorization Agreements? On what schedule?

Most of the facilities listed in Enclosure A are currently operational and presumably are operating under controls that DOE and its contractors deem acceptable for ensuring adequate radiological protection of the public, workers, and the environment. Hence, much of the information sought should be readily available. However, the Board realizes that in light of the number of facilities involved and the number of questions relevant to each, it may be difficult to assimilate the information and coordinate a response in a short time. The Board requests that a complete report be provided within 60 days. In the interest of obtaining as full as possible a response in that interval, the Board's staff is prepared to assist in any way that will be helpful. Furthermore, the Board encourages DOE to submit partial responses earlier, where that is possible, rather than waiting until all information is available for a full response.

This report will assist the Board in preparing a report requested by Congress, as a part of the Fiscal Year 1998 Defense Authorization Bill on the state of compliance of defense nuclear facilities with applicable DOE safety requirements. The Board believes this status report also will be essential to DOE in planning its path forward for complex-wide integrated safety management.

If you need additional information, please do not hesitate to contact me.

Sincerely,



John T. Conway
Chairman

cc: Mr. Mark B. Whitaker, Jr.

Enclosures

PRIORITY FACILITIES AND ACTIVITIES

ENCLOSURE A

FACILITY	LIFE CYCLE STAGE ¹	HAZARDS ²
SAVANNAH RIVER SITE		
F-Canyon/FB-Line/ FA-Line H-Canyon/HB-Line/ HA-Line 235-F Vault	Operational (EM)	HIGH Plutonium, Uranium, Transuranics, HLW
DWP/ITP/ESP HLW Tanks	Operational (EM)	HIGH Fission Products
RBOF, L-Basin, K- Basin	Operational (EM)	MODERATE Plutonium, Uranium, Fission Products
Tritium Facilities	Operational (DP)	HIGH Tritium
HANFORD		
High Level Waste Tank Farms	Operational (EM)	HIGH Fission Products
K-Reactor Area Fuel Storage Basins	Operational (EM)	MODERATE Spent Nuclear Fuel and Sludge
Plutonium Finishing Plant	Operational (EM)	MODERATE Plutonium
Waste Encapsulation and Storage Facility	Operational (EM)	MODERATE Cesium & Strontium
ROCKY FLATS		
Solution processing and SNM Storage Building 771	Deactivation (EM)	MODERATE Plutonium solution, SNM, and waste
Solution processing and SNM consolidated storage Building 371/374	Operational (EM)	HIGH Plutonium solution, SNM, and waste
Residue Processing and SNM Storage, Building 707	Operational (EM)	MODERATE Plutonium residue SNM, and waste

PRIORITY FACILITIES AND ACTIVITIES

ENCLOSURE A

FACILITY	LIFE CYCLE STAGE ¹	HAZARDS ²
Residue Processing and SNM Storage Building 776	Deactivation and Decommissioning (EM)	MODERATE Plutonium residue SNM, and waste
Building 559, Analysis Laboratory	Operational (EM)	MODERATE Plutonium solution, SNM, and waste
Building 774, Waste Processing	Operational (EM)	LOW Waste plutonium solutions
INEL		
Advanced Test Reactor	Operational (NE)	HIGH Fission Products, Uranium-235
CPP-603 Underwater Fuel Storage	Operational (EM)	MODERATE Fission Products, Uranium, Plutonium
Irradiated Fuel Storage Facility (Dry SNM Storage)	Operational (EM)	HIGH Fission Products
New Waste Calcining Facility	Operational (EM)	HIGH Fission Products
CPP-666, Underwater Fuel Storage	Operational (EM)	HIGH Fission Products
Radioactive Waste Management Complex	Operational (EM)	MODERATE Some Fission Products, Uranium, Plutonium
Unirradiated Fuel Storage Facility	Operational (EM)	LOW Uranium
PANTEX		
Nuclear Weapon Assembly/Disassembly cells	Operational (DP)	HIGH High Explosives, Plutonium, Uranium, Tritium
Nuclear Weapon Assembly/Disassembly Bays	Operational (DP)	HIGH High Explosives, Plutonium, Uranium, Tritium
Building 12-116, SNM Staging Facility (New nuclear facility)	Construction (DP)	MODERATE (at present) Plutonium, Uranium, Tritium

PRIORITY FACILITIES AND ACTIVITIES

ENCLOSURE A

FACILITY	LIFE CYCLE STAGE ¹	HAZARDS ²
Building 12-104A, Special Purpose Bays (New nuclear facility)	Construction (DP)	MODERATE Weapons hazards Radiation Generating Device (LINAC)
Building 12-66, Pit Storage Facility	Operational (DP)	MODERATE Plutonium
Dynamic Balancer	Operational (DP)	HIGH High Explosives, Plutonium, Uranium, Tritium
Weapons Dismantlement Programs (W56, W69, W76, W78, W79)	Operational (DP)	HIGH High Explosives, Plutonium, Uranium, Tritium
Paint Bays, (Bldg 1241)	Operational (DP)	HIGH High explosives, Plutonium
NTS		
Abel Site, Area 27 (to be replaced by the Device Assembly Facility, Area 6)	Operational (DP)	HIGH High Explosives Plutonium, Uranium, Tritium
Radioactive Waste Management sites in Area 5, Area 3 and the TRU Pad	Operational (DP)	MODERATE Plutonium, Uranium
U1a Complex	Operational (DP)	HIGH High Explosives Plutonium, Uranium, Tritium
LANL		
TA-55, Plutonium Facility, LANL's main facility for R&D and processing of plutonium.	Operational (DP)	HIGH. Plutonium. Chemical hazards. Nuclear criticality.
TA-3, Chemistry and Metallurgy Research Building, an R&D facility	Operational (DP)	HIGH. Plutonium, Uranium. Chemical hazards.

PRIORITY FACILITIES AND ACTIVITIES

ENCLOSURE A

FACILITY	LIFE CYCLE STAGE ¹	HAZARDS ²
TA-18, Los Alamos Critical Experiments Facility	Operational (DP)	HIGH Nuclear criticality.
TA-16, Weapons Engineering Tritium Facility	Operational (DP)	MODERATE. Tritium
Defense Nuclear Activities at TA-15, Dual Axis Radiographic Hydrotest (DARHT)	Construction (DP)	HIGH. Radiation generating device. Explosions. Depleted Uranium. Chemical Hazards.
Defense Nuclear Activities at TA-53, Los Alamos Nuclear Scattering Center	Operational (DP)	MODERATE Radiation
LLNL		
Building 332, Plutonium Facility	Operational (DP)	MODERATE Plutonium, Uranium
Building 231 Complex (Vaults)	Operational (DP)	MODERATE Plutonium, Uranium
Building 251, Heavy Element Facility	Operational (DP)	LOW Transuranics
Building 331, Tritium Facility	Operational (DP)	LOW Tritium
OAK RIDGE		
Y-12: Highly Enriched Uranium Processing. (Building 9212/9215 Complex)	Operational (DP)	MODERATE HEU Hazardous, toxic, and radiological materials
Y-12: Disassembly and Assembly. (Buildings 9204-2/2E)	Operational (DP)	MODERATE HEU, lithium Hazardous, toxic, and radiological materials
Y-12: Quality Evaluation. (Buildings 9204-2E/4)	Operational (DP)	MODERATE HEU, lithium Hazardous, toxic, and radiological materials

PRIORITY FACILITIES AND ACTIVITIES

ENCLOSURE A

FACILITY	LIFE CYCLE STAGE ¹	HAZARDS ²
Y-12: Material Storage. (Building 9720-5, 9204-2, 9204-2E, 9204-4, 9212, 9215)	Operational (DP)	MODERATE HEU Hazardous, toxic, and radiological materials
K-25 Highly Enriched Uranium Remediation and Depleted Uranium Tailings Storage	Deactivation (EM)	MODERATE. HEU, DU, HF
ORNL: Material Storage (Building 3019)	Operational (DP)	MODERATE U-233 Hazardous, toxic, and radiological materials
ORNL: Material Storage (MSRE)	Deactivation and Decommissioning (EM)	MODERATE U-233, CxF, HF, hazardous, toxic and radiological materials
K-25: HEU Remediation	Deactivation (pre- Decommissioning) (EM)	MODERATE HEU, hazardous, toxic and radiological materials
K-25: Depleted Uranium Tailings Storage	Deactivation (pre- Decommissioning) (EM)	MODERATE dU, HF, hazardous, toxic and radiological materials
SNL		
Reactor (ACRR) Sandia Pulse Reactor Facility	Operational (DP)	MODERATE Highly enriched uranium fueled reactor.

STATUS QUESTIONS

ENCLOSURE B

For each of the following questions, indicate Yes or No wherever possible. If Yes, name the vehicle/document used to provide the function, and date executed. If No, provide the anticipated completion date, status of completion (i.e., percent complete), and the status of interim compensatory measures.

1. ISMS DEVELOPMENT

- 1.1 Does the contract currently contain a set of applicable safety requirements (e.g., DOE orders, regulations, statutes)?
- 1.2 Have the requirements of the DEAR Clause been incorporated into the contract?
- 1.3 Has the DOE Contracting Officer provided guidance to the contractor on the preparation and content of the ISMS description?
- 1.4 Does the contractor have an outline/plan for its ultimate institutional ISMS structure?
- 1.5 Has the DOE Contracting Officer established a date for the contractor to submit the ISMS description?
 - 1.5.1 What is the established date?
 - 1.5.2 Has the contractor submitted the ISMS description?
- 1.6 Does the contractor have an approved requirements/standards set (e.g., List A/List B, S/RID, WSS)?
- 1.7 Does the approved requirements/standards set address all stages of the life-cycle:
 - 1.7.1 Design/construction,
 - 1.7.2 Startup,
 - 1.7.3 Operations,
 - 1.7.4 D&D?
- 1.8 Has the approved requirements/standards set been promulgated via a system of institutional implementing procedures (e.g., manuals of practice, essential standards -- in other words, the ISMS or equivalent safety management program), or via facility/scope of work-specific procedures?
- 1.9 If the requirements/standards set is not institutionally implemented, describe the approach being taken. In particular:
 - 1.9.1 Have functions and responsibilities been assigned, as required, for the various components of the ISMS (e.g., work planning and authorization, radiation control, waste management, independent review, etc.)? Describe the organizational structure and key personnel for executing the ISMS.

- 1.9.2 Does the ISMS contain a commitment to ensure adequate qualification and training of individuals with responsibilities for safety management that are called out in the ISMS?
- 1.9.3 Does the ISMS include a feedback and improvement function that measures the effectiveness of all components of the system, and that will result in continual improvement of the implementing procedures, as needed?
- 1.9.4 Are the implementing procedures (institutional, facility/scope of work, or other) subject to a configuration management system, to ensure continual compliance with the requirements/ standards set as either the set changes or the implementing procedures evolve?
- 1.9.5 Is there a resource loaded schedule for full implementation of the described ISMS and are those resources committed?

2. ISMS DESCRIPTION, DOE VERIFICATION

- 2.1 Has the DOE Contracting Officer established a date and the scope/expectations for the ISMS Phase I¹ Verification Review?
 - 2.1.1 Describe the approach to be taken.
- 2.2 Has the DOE Contracting Officer selected a team leader for the ISMS Phase I Verification Review?
 - 2.2.1 If Yes, provide the planned/actual review team membership.
- 2.3 Has the ISMS Phase I Verification Review been conducted?
 - 2.3.1 If Yes, provide a copy of the report.
 - 2.3.2 Have all needed contractor corrective actions been completed and verified by DOE?
- 2.4 Has the DOE Contracting Officer approved the contractor's ISMS documentation, based on the ISMS Phase I Verification Review recommendation, and pending any needed contractor corrective actions?

3. ISMS IMPLEMENTATION/EXECUTION

¹Phase I is a term used by DOE to describe verification of ISMS development. Phase II is a term used by DOE to describe verification of ISMS implementation.

STATUS QUESTIONS

ENCLOSURE B

- 3.1 Give the status for each facility, in terms of the following functions:
- 3.1.1 Is the scope of hazardous work authorized for each facility formally and explicitly defined?
 - 3.1.2 Are the hazards of all work identified and analyzed?
 - 3.1.2.1 Via an authorization basis analysis (SAR, BIO, HAR, etc.)?
 - 3.1.2.2 Via day-to-day work planning analysis (job hazard analysis, work permits, radiation work control permits, etc.)
 - 3.1.3 Are controls developed to address the hazards identified that ensure protection of the public, workers, and the environment?
 - 3.1.3.1 Design controls?
 - 3.1.3.2 Administrative controls?
 - 3.1.3.3 Personnel training?
 - 3.1.3.4 TSRs, other facility controls, operation-specific controls?
 - 3.1.3.5 Standard Operating Procedures?
 - 3.1.3.6 Other? (Describe.)
 - 3.1.4 Are controls implemented at the work level?
 - 3.1.5 Describe how controls are implemented for each facility/scope of work.
 - 3.1.5.1 Via TSR implementation and surveillances?
 - 3.1.5.2 Via execution of implementing procedures (institutional, facility/scope of work, or other; describe)?
 - 3.1.5.3 Via verbatim compliance with work procedures that contain the controls?
 - 3.1.5.4 Other? (Describe.)
 - 3.1.6 Is readiness for safe operation, within specified controls, including personnel readiness, verified prior to work initiation?
 - 3.1.6.1 By the operators?
 - 3.1.6.2 By a supervisor or other line manager?
 - 3.1.6.3 By facility personnel?
 - 3.1.6.4 By ES&H support personnel?
 - 3.1.6.5 By DOE, via formal operational readiness confirmation and/or work authorization protocol?

STATUS QUESTIONS

ENCLOSURE B

- 3.1.7 Has an Authorization Agreement or other DOE authorizing protocol been executed?
- 3.1.8 Is continuing operation periodically monitored to explicitly confirm that specified controls remain in place?
 - 3.1.8.1 By the operators (check lists, etc.)?
 - 3.1.8.2 By a supervisor or other line manager?
 - 3.1.8.3 By facility personnel?
 - 3.1.8.4 By ES&H support personnel?
 - 3.1.8.5 By DOE, via operational awareness activities?
- 3.1.9 Are the work definition, hazard analysis (including use of the Unreviewed Safety Question process), controls development, and controls implementation functions (including the configuration management system for controls) periodically reviewed, and deficiencies/opportunities for improvement identified?
 - 3.1.9.1 By line management?
 - 3.1.9.2 By facility personnel?
 - 3.1.9.3 By ES&H support personnel?
 - 3.1.9.4 By an independent institutional organization?
 - 3.1.9.5 By DOE, via functional area reviews and appraisals?
- 3.1.10 Are deficiencies/opportunities for improvement systematically tracked and acted upon?

4. ISMS IMPLEMENTATION DOE VERIFICATION

- 4.1 Has the DOE Contracting Officer established a date and the scope/expectations for the ISMS Phase 2 Verification Review at the facilities or activities listed in Enclosure A?
 - 4.1.1 Describe the approach to be taken, for example, site-wide or for each facility or activity.
- 4.2 Has the DOE Contracting Officer selected a team leader for the ISMS Phase 2 Verification Review?
 - 4.2.1 If the team leader has been selected, provide the planned/actual review team membership.
- 4.3 Has the ISMS Phase 2 Verification Review been conducted?

STATUS QUESTIONS

ENCLOSURE B

- 4.3.1 If Yes, provide a copy of the report.
- 4.3.2 Have all needed contractor corrective actions been completed?

- 4.4 Has the DOE Contracting Officer determined that the contractor's ISMS is implemented at the facility listed in Enclosure A, based on the ISMS Phase 2 Verification Review, and pending any needed contractor corrective actions?