DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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June 22, 2009

The Honorable Steven Chu
Secretary of Energy
U. S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585-1000

Dear Secretary Chu,

The Defense Nuclear Facilities Safety Board (Board) is pleased to enclose a copy of our Quarterly Report to Congress on the Status of Significant Unresolved Issues with the Department of Energy's Design and Construction Projects (dated June 22, 2009). In the Conference Report accompanying the FY 2007 National Defense Authorization Act, the conferees directed the Board to provide quarterly reports until the Department of Energy (DOE) and the Board submit a joint report "on their efforts to improve the timeliness of issue resolution, including recommendations, if any, for legislation that would strengthen and improve technical oversight of the Department's nuclear design and operational activities." The joint report was submitted to the congressional defense committees on July 19, 2007. While the conferees did not require the Board to continue providing quarterly reports, the Board believes these reports provide an appropriate means to keep all parties apprised of the Board's concerns with new designs for DOE defense nuclear facilities. The Board has received encouraging feedback from Congress. As such, the Board intends to continue issuing quarterly reports to Congress and DOE.

Sincerely,

A. J. Eggenberger
Chairman

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To the Congress of the United States:

The Defense Nuclear Facilities Safety Board (Board) provides quarterly reports to Congress and the Department of Energy (DOE) on the status of significant unresolved technical differences between the Board and DOE on issues concerning the design and construction of DOE's defense nuclear facilities. This quarterly report reflects the status of the Board's concerns through the end of March 2009. It builds on earlier reports to summarize the status of concerns previously raised and identifies new concerns associated with the relevant projects. The status of many concerns has not changed significantly during the reporting period; however, the fact that a concern has not been resolved does not necessarily imply a lack of progress.

In this report, the term "unresolved concern" does not necessarily imply that the Board has a disagreement with DOE or believes DOE's path forward is inappropriate. Some of the concerns noted in these quarterly reports simply await final resolution through further development of the facility design. All of the significant unresolved concerns discussed herein have been communicated to DOE. Lesser concerns that the Board believes can be resolved easily and for which an agreed-upon path forward exists are not included. The Board will follow these items as part of its normal design review process. It is important to note that the Board may identify additional concerns in the course of its continuing design reviews. New concerns identified since the previous quarterly report are noted below, as well as those concerns the Board believes have been resolved. For this reporting period, five new issues were identified, and three issues were resolved. Based on total project cost, a discussion of the Tank 48 Treatment Process Project that will process waste in Tank 48 at the Savannah River Site has been added.

PROJECTS WITH THE MOST SIGNIFICANT UNRESOLVED ISSUES

The Chemistry and Metallurgy Research Replacement (CMRR) Project at Los Alamos National Laboratory (LANL), highlighted in the last quarterly report, remains a concern to the Board. The Board is also highlighting an issue regarding protection of the final exhaust high-efficiency particulate air (HEPA) filters at the Waste Treatment and Immobilization Plant (WTP).

The Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Section 3112, *Limitation on Funding for Project 04-D-125 Chemistry and Metallurgy Research Replacement Facility Project, Los Alamos National Laboratory, Los Alamos, New Mexico,* requires the Board and DOE to each submit a certification to the Congressional defense

committees that the concerns raised by the Board have been resolved before certain funds for the CMRR Project are made available. The Board and DOE have held numerous discussions regarding resolution of concerns and how both organizations can provide such certification. The Board hopes to reach its final decision on certification by September 2009. The Board will work with DOE to reach this ambitious goal.

Los Alamos National Laboratory, Chemistry and Metallurgy Research Replacement Project. In its first quarterly report, the Board noted its concern regarding the project's overall approach for selecting safety-related systems and establishing conservative design criteria for those systems. In the last quarterly report, the Board noted that progress has been made toward addressing the safety strategy for the CMRR Project. The Board's ongoing certification review is focused on identifying findings that must be resolved before the Board reaches a final certification decision. The Board's staff has identified five CMRR Certification Findings:

- Finding #1, CMRR Seismic Design Issues, was issued on January 16, 2009. This Finding highlights concerns that the seismic and structural behavior of the facility is complex and not well understood. A response from the National Nuclear Security Administration (NNSA) was received March 13, 2009. NNSA provided four studies assessing the seismic and structural behavior issues. After reviewing these studies, the Board's staff indicated to NNSA that additional work would be needed to address this Finding. Subsequently, a meeting was held in early May 2009 to reach agreement on the path forward to close this Finding. NNSA committed to provide additional discussion of the complex structural behavior, and provide additional details on how future structural modeling will ensure that the complex structural behavior is understood and that the structure is capable of meeting Performance Category 3 requirements. The Board's staff will review this information as it becomes available.

- Finding #2, CMRR Seismic Design of Active Confinement Ventilation System and Support Systems, was issued on January 16, 2009. This Finding raises a concern with the design and qualification of safety-related active confinement ventilation system equipment given the very high in-structure vertical seismic design motions currently estimated for the CMRR facility. A response from NNSA was received March 13, 2009. NNSA provided a Safety-Related Equipment Seismic Qualification Plan for review that addresses the major equipment in all safety-related systems, including the active confinement ventilation system. Based on feedback from the Board's staff, NNSA committed to a peer review of this plan by individuals with appropriate seismic design expertise. NNSA is also preparing a report updating seismic design motions that is anticipated will significantly lower vertical seismic design motions currently estimated for the CMRR facility. The Board's staff will review this information and its implications for the structural integrity of safety-related systems as it becomes available.

- Finding #3, CMRR Documenting and Maintaining Preliminary Documented Safety Analysis Safety-Related Functions and Requirements, was issued on March 4, 2009. This Finding identifies inadequacies in the processes to control the integration and flow down of safety requirements from the Preliminary Documented Safety Analysis (PDSA) into the design of safety-related systems. An NNSA response was received April 21, 2009. NNSA committed to revising CMRR processes to control the integration and flow down of requirements from the PDSA into the design. NNSA provided a detailed schedule for completing these actions. No additional actions are needed to address this Finding prior to certification. Note that the Board is accepting a NNSA plan that is expected to yield acceptable results post-certification. The Board will closely review the results for both quality and timeliness as they become available.

- Finding #4, CMRR Inadequate Identification of Safety-related Controls, Functional Requirements, and Performance Criteria, was issued on March 16, 2009. This Finding identifies weaknesses in the safety-related controls specified in the CMRR PDSA, particularly with the functional requirements that each safety-related system is required to meet. A response from NNSA was received April 14, 2009. NNSA committed to perform a comprehensive, systematic re-evaluation of the safety functions and functional requirements to ensure that they are consistent with the PDSA hazard and accident analysis as credited. While the Board has agreed to these actions, the complete re-evaluation will not be available until early August 2009. If the completed products are not of acceptable quality or are received late, certification by the Board in September 2009 is unlikely.

- Finding #5, CMRR System Design Descriptions Do Not Incorporate Preliminary Documented Safety Analysis Requirements Adequately, was issued on March 30, 2009. This Finding identifies inconsistencies in safety functions and functional requirements between the CMRR PDSA and system design descriptions for safety-related systems. The system design descriptions are used to ensure that the design of a safety system meets its specified safety function. A response from NNSA was received April 21, 2009. NNSA committed to revising system design descriptions to explicitly include all safety functions, functional requirements, and performance criteria identified in the PDSA. NNSA provided a detailed schedule for completing these revisions. No additional actions are needed to address this Finding prior to certification. The Board will review the revised system design descriptions as they become available for both quality and timeliness post-certification.

As reported in the last quarterly report, the Board is evaluating the adequacy of the Technical Independent Project Review performed by NNSA, and is reviewing the CMRR Preliminary Documented Safety Analysis Report and preparation of the corresponding Safety Validation Report. These actions, along with successful resolution of the five CMRR Certification Findings, will form the technical basis for the Board's certification.

Hanford Site, Waste Treatment and Immobilization Plant. In the Board's seventh Quarterly Report to Congress dated February 9, 2009, the Board provided an update regarding an issue associated with fire safety design for ventilation systems and the development of an alternative means of protecting the final exhaust HEPA filters in the confinement ventilation systems. It was incumbent on the WTP contractor, Bechtel National Incorporated (BNI), to demonstrate that the alternative means were equivalent or superior to those described in DOE Standard 1066, *Fire Protection Design Criteria*.

On January 23, 2009, the DOE Office of River Protection (ORP) suspended further BNI work involving the fire protection strategy then being pursued. In its letter to BNI suspending its activity, ORP indicated it would pursue an exemption to Section 14 of DOE Standard 1066, *Nuclear Filter Plenum Fire Protection*. ORP subsequently decided to tailor Section 14 of DOE Standard 1066 based upon its evaluation of the safety analysis, which concluded that the design provided a level of safety comparable to the standard. Based on preliminary reviews of the revised ventilation system design and fire protection features, the Board's staff believes the design is acceptable. The design now incorporates three important features: (1) ember screens on the inlets to the system, (2) the High Level Waste Facility design was changed to add a bypass to allow safe change out of the second filter stage, and (3) fire suppression was added to the hot cell crane and cable that is used for remote change out of the primary filter. To eliminate questions as to who is the approval authority for the design, the Board's staff suggested during a briefing on this subject by DOE that the Assistant Secretary for Environmental Management (DOE-EM) simply approve the ventilation system design as a part of the approval needed for compliance with the DOE Implementation Plan for the Board's Recommendation 2004-2, *Active Confinement Systems*. DOE-EM agreed with this approach. The Board believes there is now an acceptable path forward on providing fire protection for the HEPA filters for the WTP facilities. This issue will be closed once the Board receives the DOE-EM approval letter.

NEW ISSUES IDENTIFIED DURING THE PERIOD

1. Project: Hanford, Waste Treatment and Immobilization Plant—Pretreatment and High Level Waste Treatment Facilities

New Issue—Hydrogen Gas Control. ORP had previously developed a conservative design criterion and an adequate set of engineered and administrative controls to address potential explosions (deflagrations and detonations) in piping and ancillary vessels as a result of hydrogen accumulation.[1] Recently, ORP has chosen to re-evaluate the design criterion and associated controls due to its concerns regarding the operational complexity introduced by the controls.

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1. This issue was closed by the Board in its third Quarterly Report to Congress dated October 17, 2007, and is now reopened.

On February 26, 2009, ORP accepted the BNI report *WTP-Control of Hazards Associated with Hydrogen Accumulation in Piping and Ancillary Vessels, Alternative Evaluation and Design Approaches*. The Board reviewed this report and believes that it makes several inadequately supported recommendations that, if implemented, will be detrimental to the overall safety of the facility and depart significantly from accepted safety and design practices. Specific issues include:

- The report recommends changing the existing WTP safety design strategy. DOE's current design approach is based on preventing the occurrence of hydrogen explosions except in a very limited set of circumstances. When explosions are possible, the primary confinement boundary is designed to contain the explosion, thereby preventing any release of radioactive material within the facility. DOE is reconsidering a proposal to allow explosions that would permanently deform or breach the primary confinement barrier. The new strategy relies on the facility structure and ventilation system to mitigate any potential radiological exposures to collocated workers and the public. In the Board's opinion, this approach is not consistent with DOE's existing design requirements, which specify that the design of new facilities should rely on prevention rather than mitigation of accidental releases of radiological materials. This approach also accepts the potential consequences associated with explosions (e.g., cost of facility repairs, exposure to workers) with little understanding or analysis of the actual risks.

- The report inappropriately uses nuclear evaluation guidelines, which are intended to be used to classify structures, systems, and components (i.e., as safety class or safety significant), as design criteria. In this case, the evaluation guidelines are being used to justify a design criterion that allows breaching the primary confinement barrier. As discussed above, this approach is contrary to existing DOE requirements and design practices. The Board is working to define specific technical concerns related to the new approach. Preliminary concerns include: (1) consistency between DOE's approach and applicable code requirements for vessel and piping designs, (2) accuracy of the analytical models used to predict vessel and piping response to explosions, and (3) DOE's proposed use of quantitative risk assessment to justify its safety strategy. The overall impact of this changed position on safety would be to increase the risk to the worker.

2. Project: Savannah River Site, Salt Waste Processing Facility

On February 10, 2009, the Board issued its safety in design project letter noting DOE's approval of the Critical Decision-3 (Approve Start of Construction) milestone for the Salt Waste Processing Facility project.[2] The Board found the overall safety strategy for the Salt Waste Processing Facility to be sound and identified no significant safety issues that

2. In a Report Prepared Jointly by the Defense Nuclear Facilities Safety Board and the Department of Energy forwarded to Congress on July 19, 2007, the Board committed to issuing safety in design project letters to apprise DOE of the status of safety issues raised by the Board.

would preclude start of construction. The Board did identify several new issues that will require resolution as the design process continues.

New Issue—Flammable Gas Control. The structural analysis of process piping to withstand potential explosions (deflagrations or detonations) due to flammable gas accumulation does not include several key considerations, including deflagration-to-detonation transitions and reflections due to piping configuration or obstructions. Additionally, the analysis does not provide sufficient technical basis for allowing plastic deformation of the piping in the event of an explosion. This issue is similar to that cited above for WTP. As discussed above, it is the Board's position that allowing explosions within Hazard Category 1, 2, and 3 nuclear facilities such that the primary confinement boundary no longer performs its safety function is not a sound design strategy. Additionally, the heat generated in process vessels due to the action of the air pulse agitators during mixing could cause a temperature rise in the process vessels following a loss of cooling event, which would result in substantially greater flammable gas generation rates. This effect has not been considered in the calculations for flammable gas generation that are used to establish purge air flow rate requirements and the need for high-temperature interlocks.

New Issue—Fire Protection for Final HEPA Filters. The design of the confinement ventilation system does not implement all features or demonstrate the equivalency of the design to those features specified in Section 14 of DOE Standard 1066 for the protection of the final stage of HEPA filters.

New Issue—Operator Actions Following a Seismic Event. The design of the facility does not ensure that all operator actions deemed necessary in the Preliminary Documented Safety Analysis following a seismic event can be readily accomplished.

3. Savannah River Site, Tank 48 Treatment Process Project

Tank 48 is a 1.3 million-gallon tank in the H-Tank Farm at the Savannah River Site that contains organic-rich waste left over from the testing of the In-Tank Precipitation process in the late 1990s. DOE intends to return Tank 48 to service to assist in high-level waste transfer, treatment, and disposition activities at the site. The Tank 48 Treatment Process Project is designed to retrieve and treat the waste to remove organics, and transfer the treated waste back to the tank farms for disposition.

On March 5, 2009, the Board issued its safety in design project letter noting DOE's approval of the Critical Decision-1 (Approve Alternative Selection and Cost Range) milestone for the project. The Board concluded that the Tank 48 Treatment Process Project could be safely designed and operated to achieve the project objectives. The Board strongly suggested that as the project proceeds, DOE fully implement the requirements of DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and the guidance of DOE Standard 1189, *Integration of*

Safety into the Design Process. The Board also noted that the project team intended to conduct an evaluation of the active confinement ventilation system in accordance with the DOE Implementation Plan for the Board's Recommendation 2004-2, which could impact the ventilation system design. The Board recognized that treating the waste in Tank 48 is critical to operations in the high-level waste system at the Savannah River Site, which leads to concern with delays in this project.

New Issue—Project Delays. The most recent DOE Implementation Plan for the Board's Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*, commits to the recovery of Tank 48 by January 2010, but recent planning documents suggest that date could slip to 2012 or later. After 6 years of study, numerous independent reviews, and successful pilot-scale testing of fluidized bed steam reforming, the project team continues to make slow progress. Every DOE review team since 2006 has recommended the fluidized bed reforming process, and it was selected as the preferred alternative in March 2008 when the DOE Savannah River Operations Office approved Critical Decision-1. However, DOE has never acted upon and is now unsure of the decision, and is considering back-up options. The Board has urged DOE to accelerate the recovery of Tank 48.

ISSUES RESOLVED DURING THE PERIOD

1. Project: Hanford Waste Treatment and Immobilization Plant—High Level Waste, Low Level Waste, and Analytical Laboratory Facilities

Issue—Fire Protection. Typical construction practices provide fireproof coatings on structural steel members that may be subjected to a fire. DOE and the contractor proposed not providing a fireproof coating if it could be determined that the facility would not be adversely affected should a steel member fail in a fire. The Board was concerned that DOE did not have an adequate technical basis for not providing a fireproof coating.

Resolution—The Board reviewed DOE's new three-step strategy for resolving safety issues related to fire protection coatings on structural steel used in the construction of the Hanford WTP and issued its findings in a letter on January 8, 2009. In general, the Board found the new fire protection strategy acceptable. One concern remained since DOE's strategy did not address chemical hazards that may be present. Subsequent Board review revealed that the planned fireproof coating is adequate to prevent a structural collapse that would release hazardous chemicals in the event of a design basis fire. This issue is now considered resolved.

2. Project: Savannah River Site, Salt Waste Processing Facility

Issue—Hydrogen Generation Rate due to Thermolysis. The Board was concerned that hydrogen generation from thermolysis (i.e., hydrogen generation that can occur when organic solvent material used in the process is heated in the presence of radiation) was not adequately considered or quantified.

Resolution—Testing accomplished by Idaho National Laboratory demonstrated that the hydrogen generation rate assumed in the design bounds the cumulative hydrogen generation rate, including the effect of thermolysis. The Board considers this issue closed.

3. Project: Savannah River Site, Waste Solidification Building

Issue—Structural Design. In a letter dated June 25, 2008, the Board identified several issues related to the structural design of the Waste Solidification Building. The main issues were related to the roof design and the design of the facility to withstand potential settlement due to the unique soil conditions at the Savannah River Site.

Resolution—NNSA directed the Waste Solidification Building project team to alter the design of the roof to address two-over-one interaction hazards and correct the structural differential settlement analysis, which lacked a complete set of design checks. The revised settlement analysis revealed that certain portions of the original structural design did not comply with design codes for the design basis differential settlement. The project appropriately redesigned the structural members that were not in compliance and updated the structural drawings to reflect these changes. The Board considers this issue closed.

As directed by Congress, the Board will continue to exercise its existing statutory authority.

Respectfully submitted,

A. J. Eggenberger
Chairman

John E. Mansfield
Vice Chairman

Joseph F. Bader
Member

Larry W. Brown
Member

Peter S. Winokur
Member

Enclosure

ENCLOSURE

JUNE 2009
QUARTERLY REPORT
SUMMARY OF SIGNIFICANT UNRESOLVED ISSUES
WITH NEW DEFENSE NUCLEAR FACILITIES

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision Approved	Design Completion[a]	Construction Completion	
Hanford Site	**Waste Treatment and Immobilization Plant**	12,263			(*Operational 2019*)	
	a. Pretreatment Facility		CD-3	72%	28%	1. ~~Seismic ground motion~~—***resolved (Feb 08)*** 2. Structural engineering 3. ~~Chemical process safety~~—***resolved (Oct 07)*** 4. Fire safety design for ventilation systems 5. Hydrogen gas control—***new issue (Jun 09)***
	b. High Level Waste Treatment Facility		CD-3	78%	23%	1. ~~Seismic ground motion~~—***resolved (Feb 08)*** 2. Structural engineering 3. ~~Fire protection~~—***resolved (Jun 09)*** 4. Fire safety design for ventilation systems 5. Hydrogen gas control—***new issue (Jun 09)***
	c. Low Activity Waste Facility		CD-3	88%	59%	1. ~~Fire protection~~—***resolved (Jun 09)*** No open issues remain
	d. Analytical Laboratory		CD-3	75%	54%	1. ~~Fire protection~~—***resolved (Jun 09)*** No open issues remain

a. Percent of design complete is an estimate of completion for the particular stage of design, i.e., if CD-0 is approved the percent represents the completion of conceptual design, if CD-1 is approved the percent represents the completion of preliminary design, if CD-2 is approved the percent represents the completion of final design, if CD-3 is approved the design is typically 90% or greater of the final design.

b. Dates in parentheses indicate the quarterly report in which an issue was considered resolved or a new issue was identified.

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision Approved	Design Completion[a]	Construction Completion	
Hanford Site (continued)	**Demonstration Bulk Vitrification System Project**	224	CD-1	95%	***(Operational to be determined)***	1. ~~Confinement strategy~~ ***—resolved (May 08)*** No open issues remain
	Interim Pretreatment System	182–310	CD-0	<5%	***(Operational 2014)***	No issues identified
	K-Basin Closure Sludge Treatment Project	220 (Estimated using new conceptual design)	Returned to CD-0	0%	***(Operational to be determined)***	~~1. Completeness of Preliminary Documented Safety Analysis~~ ***—review terminated; document not relevant to new conceptual design (Oct 07)*** 2. Adequacy of project management and engineering
	Large Package and Remote Handled Waste Packaging Facility	390	CD-0	0%	Deferred ***(Operational to be determined,*** **post-2016)**	No issues identified
	Tank Retrieval and Waste Feed Delivery System	1,140	One subproject not using the formal CD process	Various degrees of completion	Various degrees of completion and operations	1. ~~Design pressure rating of waste transfer system~~ ***—resolved (Oct 07)*** No open issues remain
	Immobilized High-Level Waste Interim Storage Facility	100	CD-3	90%	Deferred ***(Operational to be determined)***	No issues identified
Idaho National Laboratory	**Integrated Waste Treatment Unit Project**	570.9	CD-3	>95%	22% ***(Operational 2011)***	1. ~~Pilot plant testing~~ ***—resolved (Feb 09)*** 2. ~~Waste characterization~~ ***—resolved (Feb 09)*** 3. ~~Distributed control system design~~ ***—resolved (Feb 09)*** No open issues remain

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision Approved	Design Completion[a]	Construction Completion	
Los Alamos National Laboratory	**Chemistry and Metallurgy Research Replacement Project**	>2,000 (Being reevaluated)	CD-1	90%	Some ground work ***(Operational 2016)***	1. ~~Design-build acquisition strategy~~ ***—resolved (Jun 07)*** 2. Site characterization and seismic design 3. Safety-significant active ventilation system ***—resolved (2) reopened due to issue 6 (Oct 07)*** 4. Safety-class fire suppression system 5. Safety-class and safety-significant container design 6. Deficiencies in Draft Preliminary Documented Safety Analysis
	Technical Area-55 Safety System Upgrades	72	Phase A: CD-2; Phase B: CD-0	Various degrees of completion	***(Complete 2010)*** ***(Complete 2015)***	1. ~~Adequacy of safety systems~~ ***—resolved (Sep 08)*** 2. Inadequate approach to ensure timely improvements to the safety posture
	Upgrades to Pit Manufacturing Capability at Technical Area-55	Annual funding	Not formally implementing CD process	Various degrees of completion	Work ongoing	1. ~~Lack of adherence to DOE Order 413.3A~~ ***—resolved (Sep 08)*** No open issues remain
	Radioactive Liquid Waste Treatment Facility Upgrade Project	119–172	CD-1	60%	***(Operational 2014)***	1. Weak project management and federal project oversight 2. Weak integration of safety into the design process
	New Solid Transuranic Waste Facility Project	133–199	CD-0	60% **On hold**	***(Operational on hold)***	1. Inadequate integration of safety into the design process
	Nuclear Material Safeguards and Security Upgrades Project, Phase 2	240	CD-1	30%	***(Operational 2013)***	No detailed review completed
	Technical Area-55 Radiography Project	38	CD-0	90% **On hold**	***On hold***	No detailed review completed
Nevada Test Site	**Device Assembly Facility—Criticality Experiments Facility**	150	CD-3	100%	>90% ***(Operational 2010)***	1. ~~Structural cracks~~ ***—resolved (Feb 09)*** 2. Deficiencies in fire protection system

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision Approved	Design Completion[a]	Construction Completion	
Oak Ridge National Laboratory	**Building 3019—Uranium-233 Downblending and Disposition Project**	477	CD-2/3A	60%	***(Operational 2012)***	1. Deficiencies in Preliminary Documented Safety Analysis
Pantex Plant	**Weapon Surveillance Facility (previously called Component Evaluation Facility)**	112	CD-0	**On hold**	***(Operational on hold)***	No detailed review completed
Savannah River Site	**Pit Disassembly and Conversion Facility**	2,400–3,200	CD-1	50%	***(Operational being evaluated)***	1. Assumption on combustible loading for seismically induced fire
	Salt Waste Processing Facility	1,340	CD-3	95%	5% ***(Operational 2015)***	1. ~~Geotechnical investigation~~—***resolved (Feb 08)*** 2. Structural evaluation 3. ~~Quality assurance~~ —***resolved (Jun 07)*** 4. ~~Hydrogen generation rate~~—***resolved (Jun 09)*** 5. Flammable gas control—***new issue (Jun 09)*** 6. Fire protection for final HEPA filters—***new issue (Jun 09)*** 7. Operator actions following a seismic event—***new issue (Jun 09)***
	Tank 48 Treatment Process Project	100–150 Being evaluated	CD-1 Alternative selection being reconsidered	60% Being evaluated	***(Operational 2012)*** Being evaluated	1. Project delays—***new issue (Jun 09)***
	Plutonium Preparation Project	340–540	CD-1A	10% **On hold**	***(Operational on hold)***	No issues identified
	Waste Solidification Building	345	CD-2/3	90%	Construction started ***(Operational 2013)***	1. ~~Structural design~~—***resolved (Jun 09)*** 2. ~~Deficiencies in Preliminary Documented Safety Analysis~~—***resolved (Feb 09)*** No open issues remain

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision Approved	Design Completion[a]	Construction Completion	
Y-12 National Security Complex	**Highly Enriched Uranium Materials Facility**	549	CD-3	100%	95% (*Operational 2009*)	1. ~~Water supply for fire protection system—~~ *~~—resolved (Sep 08)~~* No open issues remain
	Uranium Processing Facility	1,400–3,500	CD-1	10%	(*Operational 2017*)	1. ~~Preliminary hazards analysis development~~ *~~—resolved (Jun 07)~~* 2. ~~Nonconservative values for airborne release fraction and respirable release fraction~~ *~~—resolved (Sep 08)~~* No open issues remain