DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

September 3, 2010

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

Dear Secretary Chu,

The Defense Nuclear Facilities Safety Board (Board) is pleased to enclose a copy of our Report to Congress on the Status of Significant Unresolved Issues with the Department of Energy's Design and Construction Projects (dated September 3, 2010). 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 these reports to Congress and DOE.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

Enclosure: as stated

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

September 3, 2010

To the Congress of the United States:

The Defense Nuclear Facilities Safety Board (Board) provides periodic 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 periodic report builds on earlier reports to summarize the status of issues raised through the end of June 2010 and identifies new issues associated with the relevant projects. The status of many issues has not changed significantly during the reporting period; however, the fact that an issue has not been resolved does not necessarily imply a lack of progress.

In this report, the phrase "unresolved issue" does not necessarily mean that the Board has a disagreement with DOE or believes DOE's path forward to resolution is inappropriate. Some of the issues noted in these reports simply await final resolution through further development of the facility design. All of the significant unresolved issues discussed herein have been communicated to DOE. Lesser issues 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 issues in the course of its continuing design reviews. New issues identified since the previous reports are noted below, as well as those issues the Board believes have been resolved. For this reporting period, one new issue was identified, four issues were resolved, and one issue was removed due to a change in project status. The enclosure to this report provides a concise summary of significant unresolved issues.

PROJECTS WITH THE MOST SIGNIFICANT UNRESOLVED ISSUES

The Board is highlighting (1) the adequacy of the safety strategy for a seismic event in the Los Alamos National Laboratory Plutonium Facility and (2) several issues concerning the design of the Hanford Waste Treatment and Immobilization Plant (WTP) that affect the facility's safety basis.

Los Alamos National Laboratory, Technical Area 55/Plutonium Facility. On October 26, 2009, the Board issued Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility Seismic Safety*, which addresses the need to reduce the potential consequences to the public from a seismic event at the Plutonium Facility. DOE accepted the Board's Recommendation on February 2, 2010. The National Nuclear Security Administration (NNSA) is taking near-term action to improve seismic safety at the Plutonium Facility, including better characterization and control of material-at-risk, and implementation of enhanced

combustible loading controls. While these actions, when implemented, will reduce the bounding dose consequence by a factor of 25, the dose consequences will still be above the evaluation guideline of 25 rem. DOE delivered the Recommendation 2009-2 Implementation Plan, which identifies the long-term safety strategy for the facility, on July 13, 2010. The Board is currently evaluating this implementation plan.

Hanford Site, Waste Treatment and Immobilization Plant. The Board continues to be concerned that many changes to the design of WTP are being implemented prior to the resolution of numerous outstanding technical issues. As an example, the Hydrogen in Piping and Ancillary Vessels (HPAV) safety design strategy was not ready to be implemented even though the DOE-Office of River Protection (DOE-ORP) issued a safety evaluation report on February 15, 2010, that included a determination that Bechtel National, Incorporated (BNI) may proceed with planned design and procurement beginning with Pretreatment Facility Planning Area 3 based on the approved safety basis.

In April 2010, DOE-ORP and BNI chartered an independent review of the safety design strategy for control of hydrogen in pipes. This review focused on the revised criteria applied to process piping in the Pretreatment Facility (PTF). The Independent Review Team (IRT) included technical experts from industry and academia with little or no previous knowledge of the PTF design. The review was conducted over an approximately 3 month period ending on July 12, 2010, with the publication of the IRT's report.[1] Based on its technical reviews, the IRT made 35 findings that it believes must be corrected if the new design approach is to meet its objectives and satisfy the safety and mission requirements of the piping and components potentially subjected to hydrogen explosions. Many of the findings will require significant changes to the design approach, which the Board believes will take a great deal of effort and time to implement properly. The IRT also made a number of recommendations it believed DOE-ORP and BNI should take into consideration. Collectively, the IRT's findings and recommendations reinforced the Board's concerns that the revised HPAV strategy was not ready for implementation. The project hopes to finalize and implement its revised HPAV strategy early next year.

The Board is in the process of reviewing the IRT report but has arrived at the following preliminary conclusions:

- The IRT completed its review before the final HPAV safety design strategy was complete. BNI is currently revising documentation (calculations necessary to implement the revised design strategy are still in draft form), the quantitative risk analysis (QRA) model is not yet ready for use in performing final design calculations (an IRT finding), DOE has no standard governing the application of quantitative risk assessment,[2] and BNI has neither developed sufficient criteria nor conducted testing to evaluate the effects of hydrogen deflagration and detonation on in-line components.

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1 *Hydrogen in Piping and Ancillary Vessels in the Pretreatment Facility of the Hanford Waste Treatment Plant,* report by an Independent Review Team for Bechtel National, Inc., July 12, 2010.

2 The Board's Recommendation 2009-1, *Risk Assessment Methodologies at Defense Nuclear Facilities*, issued July 30, 2009, recommended that DOE establish a policy for the use of quantitative risk assessment.

- The IRT report acknowledged that BNI had not fully developed the new design approach for HPAV piping and components at the time of the review.

- The Board believes that the use of QRA at WTP, which is being used as a design tool on a first time basis, should be governed by a DOE standard and not used on an ad hoc basis to meet the specific needs of an individual project. Specifically, DOE's lack of a standard governing the application of QRA has resulted in a number of concerns that should be resolved before QRA is used at WTP. The following two examples illustrate the Board's concerns:

  - DOE Standard 3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis*, does not allow the use of cut-off frequencies to exclude operational accidents from further analysis. However, an IRT finding recommended that DOE adopt de minimis screening criterion for initiating events and event sequences that have a low frequency of occurrence. The Board believes this apparent deviation from accepted practice should not be resolved at the project level. DOE acknowledges this concern but has not developed a path forward to address the IRT finding at this time.

  - The safe operation of DOE's defense nuclear facilities depends on strict compliance with established safety and design bases. However, the QRA for WTP will be formulated using event frequencies and other assumptions that have little or no basis because of the unique nature of the WTP design; for example, the IRT has recommended the use of expert elicitation, a less desirable approach, in lieu of operating experience to establish ranges of operating assumptions. DOE's traditional approach for dealing with these types of uncertainties is to maintain conservative design assumptions and formally protect the validity of each assumption with a technical safety requirement (TSR). Consistent with existing practice, the Board expects DOE will be required to develop and implement TSRs protecting the assumptions used in the QRA. However, DOE's existing directives do not address quantitative risk assessment, so the WTP project will be required to develop a unique set of TSRs without the benefit of a well-established set of standards.

DOE-ORP is continuing to evaluate changes to the safety basis of PTF based on a reduced radiological inventory. The Board has begun reviewing DOE's proposed options for the design of piping and vessels in the PTF hot cell for the protection of workers. As discussed in its previous two reports (December 7, 2009, and April 15, 2010), the Board noted its concern with downgrading the seismic classification of piping systems and vessels, i.e., from Seismic Category-I to Seismic Category-III, without consideration of DOE's stated expectations for maintaining a higher seismic design requirement when needed for worker protection. Following a strong seismic event, DOE has suggested its expectations can be met by (1) isolation of the piping systems and vessels and (2) stopping pumps. The Board agrees that this option would be acceptable provided the safety classification of the systems and components is consistent with DOE Standard 3009, and the detailed safety functions and functional design criteria for systems and components isolating the piping and vessels and stopping the pumps are adequate.

DOE continues to address long-standing technical issues related to pulse jet mixing. On January 6, 2010, the Board expressed its concerns with DOE's adoption of an approach to resolving these issues that (1) bases the functional requirements for mixing on average properties instead of bounding properties of the waste to be processed, and (2) relies on mathematical models that have not been appropriately validated through testing for this application. On May 17, 2010, DOE provided a response to these concerns. This response identified commitments to increase confidence in successful operation of the WTP mixing systems, such as integrated testing at a larger scale. Integrated testing at a larger scale is essential to demonstrate that the safety-related design decisions recently recommended by BNI based on small-scale testing are technically justified. However, details needed to fully understand and assess the adequacy of the DOE commitments as they related to safety for large-scale testing were not provided. Although DOE committed to conducting large-scale testing, it did not establish the scope or schedule for this testing. The Board believes the large-scale testing of both Newtonian and non-Newtonian vessels is necessary, and timely completion of integrated tests of the mixing, transfer, sample line, and pulse jet mixer control systems is required to resolve potential safety issues dealing with criticality, flammable gas buildup and explosions, and overblows. The Board is also reviewing BNI's recent proposals to address mixing issues by adding capabilities such as heel dilution and removal, as well as remote visual inspection of black cell vessels. These added capabilities are intended to offset potential deficiencies in pulse jet mixers or provide defense-in-depth. These added capabilities will also require testing at a large scale. The Board intends to fully evaluate DOE plans for mixing design and large-scale testing during a Board public meeting and hearing planned for October 7–8, 2010.

NEW ISSUES IDENTIFIED DURING THE PERIOD

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

New Issue—Inadequate Technical Justification for Deposition Velocity. The WTP project is modifying a key input parameter to models that predict transport of radioactive plumes, and therefore public dose consequences, following accidents. The project initially adopted a deposition velocity of 0 cm/sec in severity level calculations, which the Board believes is conservative. The value specified was revised by DOE-ORP in conjunction with the changes to reduce the assumed radiological inventory. The revised WTP transport analysis now relies on the default value of 1 cm/sec in DOE's atmospheric dispersion model. This default value deviates significantly from previous values used at the Hanford Site. Changing the deposition velocity from 0 cm/sec to 1 cm/sec for WTP decreases the calculated unmitigated dose consequences to the public by about a factor of 5, and inappropriately contributes to reducing the safety classification of systems and components. Based on an evaluation of open technical literature and what the Board judges to be conservative values for particle size, wind speed, and surface roughness at the Hanford Site, the Board believes that a deposition velocity between 0 cm/sec and 0.3 cm/sec can be technically justified.

ISSUES RESOLVED DURING THE PERIOD

1. Project: Los Alamos National Laboratory, Radioactive Liquid Waste Treatment Facility Upgrade Project

Issue—Weak Project Management and Federal Project Oversight. In a letter dated March 5, 2008, the Board stated that federal oversight of this project required improvement. The federal Integrated Project Team was not well established or providing effective oversight of the design process.

Resolution—Based on recent reviews, the Board observed that the Los Alamos Site Office and NNSA headquarters personnel have improved federal oversight of the project by assigning additional personnel to the Integrated Project Team (both full-time team members and technical subject matter experts from headquarters) and increasing the team's involvement in project oversight. The Board considers this issue closed.

Issue—Weak Integration of Safety into the Design Process. In a letter dated March 5, 2008, the Board stated that integration of the safety and design processes for the project was weak. Particular weaknesses were noted in ensuring that assumptions made during the development of the safety basis were technically justified and factored into the design.

Resolution—Based on recent reviews, the Board observed that project personnel have taken action to improve the integration of safety into the design process. Project personnel took appropriate actions to: (1) develop and implement appropriate tools for tracking and managing key project assumptions and safety requirements; (2) develop an adequate technical basis for selection of process tank and piping materials; (3) identify appropriate seismic design requirements for safety-related structures, systems, and components in accordance with DOE requirements; and (4) implement appropriate hazard analysis techniques to thoroughly characterize project hazards and evaluate worker consequences. The Board considers this issue closed.

2. Project: Los Alamos National Laboratory, Transuranic Waste Facility

Issue—Inadequate Integration of Safety into the Design Process. The conceptual design of the Transuranic Waste Facility project did not demonstrate adequate integration of safety into the design. The project team had not developed adequate information and design specificity for its safety systems, and several of the safety controls did not meet requirements.

Resolution—As noted in the Board's April 2010 Quarterly Report, it was not clear whether this issue was still applicable given recent changes to the project's scope and safety strategy. After reviewing the revised project scope, the Board believes that this issue is no longer applicable and considers it closed.

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

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 DOE Standard 1066, *Fire Protection Design Criteria,* for protection of the final stage of high-efficiency particulate air (HEPA) filters.

Resolution—The project implemented a design change to include a manually activated deluge system upstream of the first HEPA filter stage. In addition, the project developed a crosswalk matrix documenting the technical justification for concluding equivalency with the remaining DOE Standard 1066 requirements. The DOE Savannah River Operations Office approved the equivalency determinations. The Board believes the proposed design change with supporting equivalencies provides an adequate degree of fire protection for the confinement ventilation system. The Board has therefore closed this issue.

4. Project: Hanford Site, K-Basin Closure Sludge Treatment Project

Issue—Adequacy of Project Management and Engineering. For the past several years, the effort to remove sludge from the K-Basins has repeatedly encountered problems requiring a shift in the project's technical approach. Continuing project management problems have caused significant delays. Previous conceptual design approaches encountered funding problems and ultimately were unable to meet the design requirements and safety functions.

Resolution—DOE instituted a formal project management approach by implementing the requirements of DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and the expectations of DOE Standard 1189, *Integration of Safety into the Design Process*. DOE recently approved Critical Decision-1 for Phase I of the project. The Board believes that the project management improvements and DOE's formal approval of an acceptable alternative to support sludge processing adequately resolve this issue.

NEWLY LISTED PROJECT

1. Project: Idaho National Laboratory, Calcine Disposition Project

Description—DOE initiated the Calcine Disposition Project (CDP) as part of the Idaho Cleanup Project to treat 4400 cubic meters of calcined high-level waste stored in six silos at the Idaho Nuclear Technology and Engineering Center. CDP will convert the calcined waste (dry powder) into a more resistant waste solid using a hot isostatic pressing process. The project will pneumatically retrieve calcined waste from the silos and compress the waste under high temperature and pressure in a canister. The canister will be overpacked into an existing spent fuel canister for storage, awaiting ultimate disposal in a geological repository. In the absence of waste acceptance criteria for the geological repository, DOE will adopt the criteria for Yucca Mountain.

Status of Facility—DOE approved Critical Decision-0 on June 29, 2007, formally establishing the mission need. DOE is directing design efforts to achieve the Critical Decision-1 milestone by December 31, 2010. DOE chose the hot isostatic pressing process from several alternatives in a December 2009 Record of Decision. The project intends to utilize structural and process elements of the Integrated Waste Treatment Unit (IWTU) following the completion of its mission in 2012. DOE anticipated the need for CDP when designing IWTU, and specifically required various safety features to accommodate the treatment of calcined waste. CDP is currently undergoing conceptual design with the development of alternatives for analysis and project safety documentation. DOE personnel are conducting Technology Readiness Assessments for the retrieval of the calcine and the hot isostatic pressing process.

Status of Significant Issues—The Board has initiated reviews of this project and has identified no issues at this time.

CHANGE IN PROJECT STATUS

The Board is removing several projects from the listing of projects in the enclosure to this report because of their significant delays and likely cancellation. In the event DOE revives these projects, the Board will again track their progress and communicate outstanding safety issues through this report.

1. Project: Hanford Site, Demonstration Bulk Vitrification System Project

The Demonstration Bulk Vitrification System project was intended to demonstrate the suitability of bulk vitrification for disposing of low-activity waste from the Hanford Tank Farms. The Board is aware of DOE's decision to hold Critical Decision-2 in abeyance until DOE completes additional studies and reaches a decision regarding the preferred strategy for pretreating and immobilizing the low-activity waste.

2. Project: Hanford Site, Interim Pretreatment System

The Interim Pretreatment System project was intended to pretreat liquid waste with lower cesium and strontium concentrations from the Hanford Tank Farms, allowing waste immobilization through early operation of WTP's Low Activity Waste Facility and/or a supplemental low-activity waste immobilization capability. DOE is not funding the project, and little progress was made beyond the initial mission need approval in December 2007.

3. Project: Hanford Site, Immobilized High Level Waste Interim Storage Facility

The Immobilized High Level Waste Interim Storage Facility project was intended to provide interim storage of high-level waste from WTP in advance of shipment to a permanent national repository. The Board understands that DOE is abandoning this project with plans to initiate a new capability to fulfill the mission at a later date.

4. Project: Los Alamos National Laboratory, Nuclear Materials Safeguards and Security Upgrades Project, Phase 2

The Nuclear Materials Safeguards and Security Upgrades Project, Phase 2, is addressing the protection strategy and security requirements necessary for the laboratory to meet DOE's design basis threat. The Board's interest in the project stemmed from the potential of various upgrades to impact the safety-related aspects of Plutonium Facility operations. The project is nearing completion, and the Board has not identified any adverse safety impacts.

5. Project: Los Alamos National Laboratory, Technical Area 55 Radiography Project

The Technical Area 55 Radiography Project was intended to reestablish radiography capability for nuclear weapon components previously performed at Technical Area 8. The project's conceptual design remains on hold. An interim radiography capability in Technical Area 55 is fulfilling current mission requirements.

6. Project: Pantex Plant, Component Evaluation Facility

The Component Evaluation Facility was intended to increase existing and provide new capabilities for the surveillance and requalification of weapons and weapon components at the Pantex Plant. Little progress was made beyond the initial mission need approval, and DOE has no current plans to move forward with the project.

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

Respectfully submitted,

Peter S. Winokur, Ph.D.
Chairman

Jessie H. Roberson
Vice Chairman

John E. Mansfield
Member

Joseph F. Bader
Member

Larry W. Brown
Member

Enclosure

ENCLOSURE

SEPTEMBER 2010 REPORT
SUMMARY OF SIGNIFICANT UNRESOLVED ISSUES
WITH NEW DEFENSE NUCLEAR FACILITIES

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision (CD) Approved	Design Completion[a]	Construction Completion	
Hanford Site	**Waste Treatment and Immobilization Plant (WTP)**	12,263			*(Operational 2019)*	
	a. WTP Pretreatment Facility		CD-3	80%	32%	1. ~~Seismic ground motion~~ ***—resolved (Feb 08)*** 2. ~~Structural engineering~~ ***—resolved (Dec 09)*** 3. ~~Chemical process safety~~ ***—resolved (Oct 07)*** 4. ~~Fire safety design for ventilation systems~~ ***—resolved (Dec 09)*** 5. Hydrogen gas control 6. Structural steel analysis and design 7. Inadequate mixing 8. Deposition velocity ***—new issue (Sep 10)***
	b. WTP High-Level Waste Facility		CD-3	85%	28%	~~1. Seismic ground motion~~ ***—resolved (Feb 08)*** 2. ~~Structural engineering~~ ***—resolved (Dec 09)*** 3. ~~Fire protection~~ ***—resolved (Jun 09)*** 4. ~~Fire safety design for ventilation systems~~ ***—resolved (Dec 09)*** 5. Hydrogen gas control 6. Structural steel analysis and design 7. Deposition velocity ***—new issue (Sep 10)***

[a] Percent of design complete is an estimate of completion for the particular stage of design. That is, 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 completion is typically 90 percent or greater of the final design.

[b] Dates in parentheses indicate the 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 (CD) Approved	Design Completion[a]	Construction Completion	
Hanford Site (continued)	**c. WTP Low-Activity Waste Facility**		CD-3	91%	61%	~~1.Fire protection~~ ***~~–resolved (Jun 09)~~*** 2.Structural steel analysis and design
	d. WTP Analytical Laboratory		CD-3	81%	66%	~~1.Fire protection~~ ***~~–resolved (Jun 09)~~*** No open issues remain
	K-Basin Closure Sludge Treatment Project	268	Phase 1: CD-1 Phase 2: CD-0	Phase 1: 0% Phase 2: 0%	Phase 1: ***(Operational 2013)*** Phase 2: ***(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~~ ***~~–resolved (Sep 10)~~*** No open issues remain
	Large Package and Remote Handled Waste Packaging Facility	390	CD-0	0%	Deferred ***(Operational to be determined)***	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
Idaho National Laboratory	**Integrated Waste Treatment Unit Project (IWTU)**	570.9	CD-3	100%	73% ***(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
	Calcine Disposition Project	600-900	CD-0	< 30%	Will utilize portions of IWTU ***(Operational 2022)***	No issues identified

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision (CD) Approved	Design Completion[a]	Construction Completion	
Los Alamos National Laboratory	**Chemistry and Metallurgy Research Replacement Project—Nuclear Facility**	>2,000 Being reevaluated	CD-1	100% Preliminary design	Some ground work ***(Operational to be determined)***	1. ~~Design-build acquisition strategy~~ ***—resolved (Jun 07)*** 2. ~~Site characterization and seismic design~~ ***—resolved (Dec 09)*** 3. ~~Safety-significant active ventilation system—resolved (2) reopened due to issue 6 (Oct 07)~~ ***—resolved (Dec 09)*** 4. ~~Safety-class fire suppression system~~ ***—resolved (Dec 09)*** 5. ~~Safety-class and safety-significant container design~~ ***—resolved (Dec 09)*** 6. ~~Deficiencies in Draft Preliminary Documented Safety Analysis~~ ***—resolved (Dec 09)*** No open issues remain
	Technical Area-55 Safety System Upgrades	Phase 2: 100	Phase 2: CD-2A	Various degrees of completion	***(Phase 2 Complete 2016)***	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	310–350	CD-1	90% of total design	***(Operational 2016)***	1. ~~Weak project management and federal project oversight~~ ***—resolved (Sep 10)*** 2. ~~Weak integration of safety into the design process~~ ***—resolved (Sep 10)*** No open issues remain

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision (CD) Approved	Design Completion[a]	Construction Completion	
Los Alamos National Laboratory (continued)	**Transuranic Waste Facility**	71-124	CD-0	90%	***(Operational 2015)***	1. ~~Inadequate integration of safety into the design process~~ ***—issue not relevant to revised project scope (Sep 10)*** No open issues remain
Nevada Test Site	**Device Assembly Facility—Criticality Experiments Facility**	150	CD-3	100%	100% ***(Operational 2010)***	1. ~~Structural cracks~~ ***—resolved (Feb 09)*** 2.Deficiencies in fire protection system water supply
Oak Ridge National Laboratory	**Building 3019—Uranium-233 Downblending and Disposition Project**	477	CD-2/3A	60%	***(Operational 2014)***	1.Deficiencies in Preliminary Documented Safety Analysis
Savannah River Site	**Pit Disassembly and Conversion Project (in existing K-Area facilities)**	Under evaluation	CD-0	50%	***(Operational being evaluated)***	1.~~Assumption on combustible loading for seismically induced fire~~ ***—review of Pit Disassembly and Conversion Facility terminated; not relevant to new conceptual design (Apr 10)*** No open issues remain

SITE	FACILITY	TOTAL PROJECT COST ($M)	STATUS			ISSUES[b]
			Critical Decision (CD) Approved	Design Completion[a]	Construction Completion	
Savannah River Site (continued)	**Salt Waste Processing Facility**	1,340	CD-3	>95%	24% (*Operational 2015*)	~~1.Geotechnical investigation~~ —*resolved (Feb 08)* 2. ~~Structural evaluation~~ —*resolved (Dec 09)* 3. ~~Quality assurance~~ —*resolved (Jun 07)* ~~4. Hydrogen generation rate~~ —*resolved (Jun 09)* 5. Flammable gas control 6. ~~Fire protection for final HEPA filters~~ —*resolved (Sep 10)* 7. Operator actions following a seismic event 8. Mixing system controls and operational parameters
	Tank 48 Treatment Process Project	156–181	CD-1	12%	(*Operational 2014*)	1.Project delays
	Waste Solidification Building	345	CD-2/3	100%	30% (*Operational 2013*)	~~1 Structural design~~ —*resolved (Jun 09)* ~~2.Deficiencies in Preliminary Documented Safety Analysis~~ —*resolved (Feb 09)* No open issues remain
Y-12 National Security Complex	**Uranium Processing Facility**	1,400–3,500	CD-1	44%	(*Operational 2018*)	1.~~Preliminary hazards analysis development~~ —*resolved (Jun 07)* 2.~~Nonconservative values for airborne release fraction and respirable release fraction~~ —*resolved (Sep 08)* 3.Structural and geotechnical engineering