The Secretary of Energy
Washington, DC 20585

September 16, 2009

The Honorable John E. Mansfield
Vice Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

As committed to in the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2005-1, *Nuclear Material Packaging,* the Department of Energy (DOE) has developed a DOE-wide plan and schedule for implementing DOE Manual 441.1-1, *Nuclear Material Packaging Manual,* at its defense nuclear facilities. The overall approach used in the enclosed schedule is based upon repackaging highest risk material as soon as practicable and then repackaging lower risk material when it is being accessed for normal operational purposes rather than via a dedicated repackaging campaign. This repackaging strategy will reduce worker safety risk from the storage of nuclear material in older less robust containers while minimizing the radiation exposure and cost associated with the repackaging effort.

The Department recognizes the importance of improving the protection of its workers from the risk of handling nuclear material by repacking it into robust containers specifically designed to store the material and has made good progress in repackaging the highest risk material, which is predominantly located at the Los Alamos National Laboratory. We plan to brief you on our progress to meet the enclosed schedule and to annually update the schedule to reflect progress made and any changes in our repackaging plans.

Please contact me or Dr. James O'Brien, the Responsible Manager for Recommendation 2005-1 Implementation Plan, at (301) 903-1408, if you have questions or comments.

Sincerely,

Steven Chu

Enclosure

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DOE-WIDE SCHEDULE FOR IMPLEMENTATION OF DOE MANUAL 441.1-1, *NUCLEAR MATERIAL PACKAGING,* AT ITS DEFENSE NUCLEAR FACILITIES

1. Summary

The following provides an overview of Department of Energy (DOE) current efforts and schedules for implementing DOE Manual 441.1-1 as part of its integrated effort to minimize nuclear safety materials risks at its defense nuclear facilities.

The vast majority of nuclear materials subject to DOE Manual 441.1-1 are located at two National Nuclear Security Administration (NNSA) sites; with most high-risk material at Los Alamos National Laboratory (LANL) and most low-risk material at Y-12. NNSA is coordinating the implementation of the Manual requirements at these sites with its other two sites with material subject to the Manual, Lawrence Livermore National Laboratory (LLNL) and Sandia National Laboratories (SNL), and has made significant progress in reducing risk through material inventory reduction, disposition, and repacking activities. LANL has been repacking its very high and high-risk items into Hagan cans and has only 22 very high and 208 high-risk items remaining to address. LLNL has processed many of its higher risk items into 3013 Standard containers for shipment offsite to the Savannah River Site (SRS) as part of the inventory reduction effort. DOE plans to continue this effort at LLNL through the 2012 completion date for this inventory reduction project. SNL has shipped many higher risk items subject to the Manual's requirements offsite as part of its inventory reduction project and anticipates shipping their remaining items offsite over the next five years. The Y-12 Plant does not have any high or very high-risk items. Implementation of Manual requirements at Y-12 will be evaluated as part of the start-up of the new Highly Enriched Uranium Material Facility (HEUMF) and Uranium Processing Facility (UPF) and integrated with Y-12's ongoing container improvement effort to minimize the types of containers to improve criticality safety.

Within the Office of Environmental Management (EM), only two sites currently have nuclear materials subject to DOE Manual 441.1-1: Hanford, where approximately 25 nuclear sources and standards are periodically used at the Plutonium Finishing Plant (PFP) for nondestructive assay purposes; and the SRS where there are approximately 100 different materials. EM expects to complete decontamination and decommissioning of PFP by 2013 with the subject materials potentially removed as early as 2011. At SRS, about one-quarter of the materials packages are considered to be high risk and will be the first group of items targeted for repackaging.

For NNSA sites, following the repackaging and/or disposition of highest risk material, the remaining lower risk material will be repackaged when they are being accessed for normal operational purposes rather than via a dedicated repackaging campaign. This will minimize potential worker radiation exposure, maximize operational efficiencies, and

reduce cost while still reducing significant safety risks. Because EM sites have a significantly smaller inventory of nuclear materials, their plan is to repackage all of their materials through a dedicated repackaging campaign. This DOE-wide schedule will be affected by many factors, including ongoing material dispositioning efforts, container qualification, mission need changes, and lessons learned, and will be updated annually.

2. Site-Specific Implementation Plans

Los Alamos National Laboratory

LANL will continue to repackage very high and high-risk items into Hagan cans, which are robust containers specifically designed to hold nuclear material. LANL projects having the remaining 22 very high-risk items as well as some portion of the remaining 208 high-risk items repackaged into Hagan cans by the end of Fiscal Year 2009 (FY 2009). LANL is working to repackage the remaining high-risk items by the end of FY 2010. LANL recognizes that some of the current Hagan cans may not fully meet all the Manual requirements but believes this repacking effort was prudent to expedite risk minimization to the workers. Additionally, LANL is evaluating ways to accelerate the movement of some of the moderate and low-risk items to the Waste Isolation Pilot Plant in order to further reduce risk.

LANL chose to repackage the very high-risk and high-risk materials into current generation Hagan cans while it developed the Next Generation Hagan Can in order to mitigate the highest risk items as soon as practical. LANL is currently preparing a new plan that addresses residual risks from the newly repackaged materials in the current Hagan can design as well as the other moderate and low-risk materials located onsite. LANL anticipates completing this plan in September 2009, and it will focus on what actions make sense from a safety perspective, given the existing funding limitations.

Preliminary design of the New Generation Standard Nuclear Material container is planned for completion by September 2009. Testing of prototype containers is scheduled to be completed by June 2010, based on resource availability. One important issue that remains to be resolved is the design life of the Can's closure O-ring. The current Next Generation Can O-ring design specification calls for a five-year life; however, given the possible large number of containers that may eventually be in use, a design life of 20 to 40 years is desired to minimize maintenance activities.

Lawrence Livermore National Laboratory

LLNL will continue to process items into 3013 Standard containers as a part of the inventory reduction project, which is currently a higher priority than the repacking effort. LLNL will not repack any of the material destined for offsite shipment as part of the inventory reduction as this would create unnecessary additional worker exposure and risk and would divert resources away from completing inventory reduction. The final LLNL inventory configuration will be assessed after all program decisions have been made and the inventory reduction project is complete which is scheduled for 2012. The storage configuration of the remaining items will then be evaluated, and any repackaging efforts needed to reduce risks will be accomplished.

Sandia National Laboratories

SNL has recently completed the disposition of all Security Category I/II nuclear material at the New Mexico laboratory site, which has reduced the amount of material subject to the Manual. The next phase of inventory reduction will involve the offsite shipment of the remaining nuclear materials subject to the requirements of the Manual. NNSA has made the decision to keep these materials in their current storage locations and not repackage them, but instead apply additional administrative controls to protect workers until they are to be shipped offsite. SNL anticipates shipping their remaining items offsite over the next five years. If the inventory reduction and shipment schedule at SNL slips, NNSA will re-evaluate its approach to these materials.

Y-12

The Y-12 Plant does not have any very high or high-risk items in its inventory. NNSA will ensure that the repackaging plans and schedules reflect the much lower risk of the uranium material (as compared to the plutonium material stored at its other sites) and are integrated into the HEUMF and UPF start-up operations and Y12's ongoing container improvement effort to minimize the types of containers being used in order to improve criticality safety. NNSA is working with Y-12 on the specific container designs that will best provide safety and operational flexibility and are cost effective.

Savannah River Site

SRS has 107 containers subject to packaging under DOE Manual 441.1-1. Of these 107 containers, none are very high risk, 26 are considered to be high risk, a little more than 60 are moderate risk and the remainder is low risk. The schedule for repackaging items in Manual 441.1-1 compliant packaging is planned to begin in FY 2011 starting with the 26 high-risk items and completing with the low-risk items in 2014.

Hanford

Hanford has 25 sources and standards that are used for non-destructive assay purposes in the PFP. Of these 25 items, 6 are considered to be high risk. Much of the material that was potentially in the scope of the Manual has already been packaged into over 2,000 DOE Standard 3013 cans. DOE has recently accelerated its plans for completing decontamination and decommissioning of PFP with the expectation it will be completed in 2013 and all 25 items potentially to be dispositioned by 2011. Three of the high-risk items are planned to be dispositioned by the end of Calendar Year 2009 including the highest risk item.