PROJECT/ACTIVITY TITLE: Uranium Machining Consolidation at Technical Area 3 from Building 102 into Building 66	**Accession No**:22061 **PRID No:** 16P-0211; 16P-0211 V1	**Date**: December 7, 2017
PURPOSE: The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) Los Alamos Field Office proposes to relocate uranium-machining operations at Los Alamos National Laboratory (LANL) from Building 102 to Building 66 both within Technical Area 3 (TA-3). The purpose of the move is to improve the efficiency of machining operations that support hydrodynamic tests and other mission critical programs.		
Location: TA-3 - Buildings 102 and 66	**Project Contact**: Bruce Palmer, PM-10, 505-665-5663, bpalmer@lanl.gov David M. Holtkamp, LANS EPC-ES	
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COVERAGE: Department of Energy National Environmental Policy Act Implementing Procedures 10 Code of Federal Regulations Part 1021, Appendix B to Subpart D of Part 1021—Categorical Exclusions Applicable to Specific Agency Actions: *B1.31 Installation or relocation of machinery and equipment* Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.		

BACKGROUND

TA-3 Building 102, part of the Machine Shops Key Facility at LANL, contains specialized machining that uses depleted uranium in support of hydrodynamic tests and other mission critical programs. Uranium machining operations modify depleted uranium blank pieces into a desired form. This involves cutting, polishing, burning or drilling holes, and cutting with wire under liquid. There are currently between 6 and 10 machines, including several legacy machines and newer computer-automated machines that manufacture components made from depleted uranium.

TA-3 Building 66 is approximately 90,000 square feet and is used mainly for materials synthesis and processing, characterization, fabrication, joining, and coating of metallic and ceramic items. These capabilities are applied to a variety of materials, including depleted uranium. The 2008 LANL Sitewide Environmental Impact Statement (SWEIS) describes the metallic items fabrication using depleted uranium under the Sigma Complex Key Facility capabilities at TA-3 Building 66.[1]

[1] 2008 SWEIS Section 3.1.3.2 Sigma Complex, pp. 3-17 through 3-19.

DESCRIPTION OF PROPOSED ACTION

NNSA proposes to relocate uranium machining operations and equipment from Building 102 in TA-3 to Building 66 at the Sigma Complex in TA-3 (Figure 1) at LANL. This move would improve efficiency in supporting experimental programs and consolidate uranium machining operations into Building 66. The uranium machining area in Building 102 would be decontaminated and used for other operations.

Figure 1: Buildings 102 and 66 at TA-3

Prior to relocation, construction of an addition to Building 66 to house uranium machining operations would be necessary. The addition, would be located on the northeast side of the building, measuring approximately 4,000 square feet or a 4% increase of space to the current structure. The addition would consist of a primary working area measuring approximately 2,500 square feet and an inspection area measuring approximately 1,200 square feet. Both areas would be constructed with climate control for heating, ventilation, and air conditioning capable of 1 to 2 degrees Fahrenheit accuracy for facility safety. Both the working and inspection areas would be vault-type rooms. Additionally, support spaces for mechanical, electrical, telecommunications, fire suppression, and security systems would be provided. [2]

[2] PRID 16P-0211.

IMPACT ASSESSMENT

See Table 1 below for an assessment of potential impacts.

Table 1. Environmental Factors Checklist

Environmental Resource	Analysis
Land Use	Relocation of equipment and operations would remain compatible with existing land use.
Visual	The addition to Building 66 would be consistent with the visual elements of the Sigma Complex in TA-3.
Geology and Soils (geologic hazards, soil productivity, capability, erodibility, and mass failure)	Minor excavation of soil during construction of the Building 66 addition.
Water (regulations, surface and groundwater quality and quantity, groundwater recharge, streamflow regimes)	The Building 66 addition and associated laydown area would be less than 1 acre and would not require a National Pollutant Discharge Elimination System Construction General Permit to regulate storm water discharges from construction activities. Building 66 is a facility subject to the National Pollutant Discharge Elimination System Multi-Sector General Permit for stormwater controls, outfalls, and locations of stormwater monitoring stations. Best management practices must be in place during the project to ensure transfer of sediment and other potential pollutants offsite are minimized. The project requires installation of a holding tank to contain any water used during fire suppression. The need to evaluate and contain potential discharges from fire suppression activities is required by National Fire Protection Association 801, Section 5.10.2. The holding tank would be installed below ground and able to hold up to 10,000 gallons of fire suppression water in the event of an emergency. No materials, waste, or liquids generated during normal operations would be discharged to the holding tank. Administrative controls and routine monitoring would be used to ensure that liquids and materials from operations are not discharged to the tank. Operational effluent would be discharged through existing radioactive liquid waste lines at Building 66 and would be sent to the Radioactive Liquid Waste Treatment Facility at TA-50. The discharge of operational effluent to TA-50 is analyzed in the SWEIS. The SWEIS projected that discharged effluent from Building 66 would be 5.8 million gallons. In 2016, the estimated effluent discharge was 0.26 million gallons. Operations from Building 102 do not discharge any effluent to permitted outfalls. Effluent discharge would be similar to current operations.

Environmental Resource	Analysis
Non - radiological Air Quality	The SWEIS analyzed temporary and minor nonradiological air impacts from construction, primarily in the form of fugitive dust. Construction activities associated with the proposed addition to Building 66 are bounded within this analysis. Due to the amount of asphalt put in place during Building 66 addition construction asphalt air emissions would need to be disclosed in the LANL annual Emergency Planning and Community Right-to-Know Act report. Non-radiological air emissions would be similar to operations currently conducted in Building 102.
Radiological Air Quality	The Proposed Action will not result in an increase in radiological air emissions.
Noise	There would be a temporary and localized minor increase in the noise level during construction of the Building 66 addition.
Ecological(floodplains, wetlands, threatened or endangered species and habitat, migratory birds, exotic organisms)	Construction and operations would occur in a previously developed area and would not affect ecological resources.

<table>
<tr><th>Environmental Resource</th><th>Analysis</th></tr>
<tr><td>Human Health – Radiological Impacts on the Public</td><td>DOE Order 458.1 requires that radiation doses are kept as low as reasonably achievable (ALARA). LANL's Environmental ALARA Program is implemented to systematically verify and document that environmental radiological impacts are ALARA.[3] The SWEIS analyzed several parameters for exposure to the public: projected distance and exposure of millirems[4] per year to the maximally exposed individual from operations at both Buildings 102 and 66; projected dose to the general public within 50 miles of both Buildings 102 and 66; and the estimated risk of latent cancer fatalities from both Buildings 102 and 66 (See table below).

Table 1. Summary of Radiological Impacts on the Public from Normal Operations
<table>
<tr><th>SWEIS Parameter</th><th>Building 102</th><th>Building 66</th></tr>
<tr><td>Distance from the facility to the maximally exposed individual[5]</td><td>3,380 feet (1,030 meters)</td><td>3,560 feet (1,085 meters</td></tr>
<tr><td>Projected doses to the maximally exposed individual[6]</td><td>0.00032 millirem/year</td><td>0.0041 millirem/year</td></tr>
<tr><td>Projected doses to the general public within 50 miles[7]</td><td>0.01 person-rem[8]/year</td><td>0.16 person-rem/year</td></tr>
<tr><td>Estimated latent cancer fatalities[9]</td><td>0.00006</td><td>0.000096</td></tr>
</table>
The DOE airborne exposure limit for the maximally exposed individual is 10 millirem per year under 40 Code of Federal Regulations (CFR) 61.92.[10] The Proposed Action is calculated to result in an offsite dose of less than 0.005 millirem/year, which is a slight increase to the maximally exposed individual dose at Building 66 but remains within the limits permitted by DOE. The SWEIS identifies the dose limits for the general public within 50 miles as being less than 1 person-rem per year.[11] Therefore, the Proposed Action would not result in an increase to projected doses to the general public (0.17 person-rem per year). The SWEIS identifies the corresponding risk of site-wide latent cancer fatalities is estimated to be 0.018 under the No Action Alternative and 0.022 under the Expanded Operations Alternative.[12] The Proposed Action would result in 0.000102, which is bounded within the SWEIS analysis.</td></tr>
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[3] Los Alamos National Laboratory Environmental ALARA Program, PD410, rev. 2, November 7, 2014.

[4] Millirem is one-thousandth of a rem (0.001 rem). Rem is an acronym for Roentgen Equivalent Man, a unit of dose equivalent. The dose equivalent in rem equals the absorbed dose in tissue multiplied by the appropriate quality factor and possibly other modifying factors.

[5] 2008 SWEIS, Table 5-16 Distance and Direction from Key Facilities to the Facility-Specific Maximally Exposed Individual, p. 5-89.

[6] 2008 SWEIS, Table 5-17 Summary of Projected Doses to the Maximally Exposed Individual from Normal Operations at Los Alamos National Laboratory (millirem per year), p. 5-90.

[7] 2008 SWEIS, Table 5-18 Summary of Projected Doses to the General Public Within 50 Miles of Los Alamos National Laboratory from Normal Operations (person-rem per year), p. 5-91.

[8] Person-rem is a unit of collective radiation dose applied to populations or groups of individuals; that is, a unit for expressing the dose when summed across all persons in a specified population or group.

[9] Probabilities of latent cancer fatalities are calculated as 0.0006 per person-rem.

[10] 2008 SWEIS, Section 3.6.1 Comparison of Potential Consequences of Alternatives for Continued Operation at Los Alamos National Laboratory, Human Health, p. 3-78.

Environmental Resource	Analysis
Human Health – Chemical Impacts on the Public	There would be no change to current conditions or increase exposure to the public.
Human Health – Worker Health	Workers supporting the Proposed Action would be drawn from the existing LANL work force. 10 CFR 835.101(c) requires that radiation protection programs for workers keep doses ALARA. LANL's Environmental ALARA Program is implemented to systemically verify and document that environmental radiological impacts are ALARA.[13] ALARA is achieved through the use and implementation of shielding, safe work practices, procedures, and personal protective equipment. Worker doses are required to be kept below 5,000 millirem per year, as mandated in 10 CFR 835. DOE established an agency-wide administrative control limit of 2,000 millirem per year in its *Radiological Control Manual*[14]. This manual also requires DOE contractors such as LANS to establish a lower administrative control limit on the order of 500 millirem to 1,500 millirem per year.[20] DOE also established action levels, for example 1,000 millirem[15] for whole-body dose.[16] The SWEIS identifies the projected radiation exposure for the average individual worker as 139 millirem per year, 0.14 person-rem per year, and excess latent cancer fatality risk of 0.000083.[17] Impacts to noninvolved workers from the Proposed Action would be bounded within the SWEIS analysis.
Cultural Resources (archeological and historical)	Both Buildings 66 and 102 at TA-3 are historic buildings constructed in the late 1950s and are eligible for the National Register of Historic Places under the National Historic Preservation Act of 1966. The removal of machining equipment from Building 102 would not have an adverse effect to the historic integrity of the building. The configuration of the room in Building 102 would be photographed by LANS cultural resources subject matter experts for documentary record. The addition to Building 66 would be considered a potentially adverse effect. The design and building plans would require consultation and agreement from the State Historic Preservation Officer to mitigate potential impacts before the construction of the addition.[18]
Socioeconomics	Minor benefit from temporary employment of the construction workforce.
Infrastructure	Infrastructure is adequate to support the Proposed Action

[11] 2008 SWEIS, Section 4.6.1.2 Radiation in the Environment around Los Alamos National Laboratory, Population within 50 Miles, pp. 4-109 through 4-111.

[12] 2008 SWEIS, Table 5-19 Annual Radiological Impacts on the Public from Los Alamos National Laboratory Operations under the No Action Alternative, p. 5-92; Table 5-22 Annual Radiological Impacts on the Public from Los Alamos National Laboratory Operations under the Expanded Action Alternative, p. 5-96.

[13] Radiation Protection, P121, Chapter 3. ALARA Program, rev. 5, October 27, 2016.

[14] U.S. Department of Energy Radiological Control Manual, DOE/EH-0256T, rev. 1, Assistant Secretary for Environment, Safety and Health, April 1994.

[15] Radiation Protection, P121, Table 12-2, rev. 5, October 27, 2016.

[16] Whole body dose—defined for the purposes of external exposure include head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee (10 CFR 835).

[17] 2008 SWEIS, Table 5-25 Projected Worker Radiation Exposure under the No Action Alternative, p. 5-101.

[18] Cultural Resources subject matter experts PRID 16P-0211 V1 comments.

Environmental Resource	Analysis
Waste Management	Waste types and quantities are expected to be similar to current generation amounts.
Transportation	Very minor temporary increase of vehicles during construction.
Environmental Justice	No change to current conditions.
Facility Accidents	The safety basis analysis would be updated as necessary prior to operations – no significant change is anticipated.

CONCLUSION

Based on this NEPA determination analysis, there are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects or threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders. Consequently, no further NEPA analysis is necessary or required.

NEPA Determination

Based on my review of the Proposed Action, as the National Nuclear Security Administration's Los Alamos Field Office (NA-LA) NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the Proposed Action as described herein, falls within the DOE NEPA Implementing Procedures listed in 10 CFR Part 1021, Subpart D, Appendix B 10 CFR Part 1021, Appendix B to Subpart D of Part 1021—Categorical Exclusions Applicable to Specific Agency Actions: *B1.31 Installation or relocation of machinery and equipment*

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects or threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or executive orders. However, the design and building plans will require consultation and agreement from the State Historic Preservation Officer to mitigate potential impacts prior to the construction of the addition to Building 66. If changes are made to the scope of the action so that it is no longer bounded by the enclosed description, or the project is changed to encompass other actions, NEPA requirements for the action will need to be reassessed at that time and further analysis may be required.

NNSA NEPA Compliance Officer: Jane Summerson	**Date:**
Signature: 	12/11/17