

6450-01-P

**DEPARTMENT OF ENERGY**

**National Nuclear Security Administration**

**Amended Record of Decision for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico**

**AGENCY:** National Nuclear Security Administration, U.S. Department of Energy.

**ACTION:** Amended Record of Decision.

**SUMMARY:** The National Nuclear Security Administration (NNSA) of the U.S. Department of Energy (DOE) is issuing this Amended Record of Decision (AROD) for the Nuclear Facility portion of the Chemistry and Metallurgy Research Building Replacement (CMRR) Project at the Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. After completing an EIS, NNSA issued a ROD for the CMRR Project on February 3, 2004, deciding to construct a two-building, partially above-ground, CMRR Facility in Technical Area-55 (TA-55) at LANL. This new facility would replace the aging 60-year-old Chemistry and Metallurgy Research (CMR) Building at LANL, and would ensure the ability to continue to perform analytical chemistry and materials characterization operations using plutonium and other actinides in a safe, secure manner in support of NNSA mission activities. As the CMRR Project planning and design process has progressed over the past 8 years, the first building of the two-building CMRR Facility (the

Radiological Laboratory/ Utility/ Office Building, also known as the RLUOB) has been constructed. During this same time period, primarily as a result of efforts to better understand the seismic environment at the selected construction site in TA-55, several design considerations and ancillary support requirements were identified for the CMRR Nuclear Facility (CMRR-NF) that had not been anticipated in 2003. These design considerations and additional ancillary support requirements were not analyzed in the 2003 CMRR EIS. To address this new information, NNSA recently completed a supplemental environmental impact statement, *Final Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico* (the CMRR-NF SEIS). The CMRR-NF SEIS analyzes the potential environmental impacts of proposed construction changes to the CMRR-NF to address site seismic and safety considerations, as well as newly identified ancillary construction support requirements, such as additional equipment storage areas, soil storage areas, additional transportation needs, and worker parking areas under the Modified CMRR-NF Alternative and compares these impacts to those identified for the construction project selected in the 2004 ROD (No Action Alternative) and for continued operation of the existing CMR facility. NNSA has considered this analysis as well as comments submitted by the public on the Draft and Final CMRR-NF SEIS and has decided to select the Modified CMRR-NF Alternative for constructing and operating the CMRR-NF portion of the CMRR Project. NNSA will select the appropriate Excavation Option (Shallow or Deep) for implementing the construction of this building after initiating final design activities, when additional geotechnical and structural design calculations and more detailed engineering analysis will be performed to support completing the facility design.

**FOR FURTHER INFORMATION CONTACT:** For further information about the CMRR-NF SEIS or this CMRR-NF AROD, or to receive copies of the CMRR-NF SEIS, contact: Mr. George J. Rael, Assistant Manager Environmental Operations, NEPA Compliance Officer, U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Site Office, 3747 West Jemez Road, Los Alamos, NM 87544. Mr. Rael may be contacted by telephone at 505-606-0397, or via e-mail at: [NEPALASO@doeal.gov](mailto:NEPALASO@doeal.gov). The CMRR-NF SEIS is posted at <http://nnsa.energy.gov/nepa> and also at <http://energy.gov/nepa/downloads/eis-0350-s1-final-supplemental-environmental-impact-statement>. For information on the DOE NEPA process, contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (GC-54), U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-4600, or leave a message at (800) 472-2756. Additional information regarding DOE NEPA activities and access to many DOE NEPA documents are available on the Internet through the DOE NEPA Website at: <http://energy.gov/nepa>.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

LANL is a multidisciplinary, multipurpose research institution in north-central New Mexico, about 60 miles (97 kilometers) north-northeast of Albuquerque, and about 25 miles (40 kilometers) northwest of Santa Fe. Since the early 1950s, analytical chemistry (AC) and materials characterization (MC) work has been performed in the CMR Building at LANL. The CMR Building provides essential support for various national security missions, including nuclear nonproliferation programs; the manufacturing, development, and surveillance of pits (the fissile core of a nuclear warhead); life extension programs; dismantlement efforts; waste management;

material recycle and recovery; and research. The CMR Building is almost 60 years old and near the end of its useful life. Many of its utility systems and structural components are aged, outmoded, and deteriorated. In the 1990s, geological studies identified a seismic fault trace located beneath two of the wings of the CMR Building, which raised concerns about the structural integrity of the facility. Over the long term, NNSA cannot continue to operate the mission-critical AC and MC capabilities in the existing CMR Building at an acceptable level of risk to worker safety and health. NNSA has already taken steps to minimize the risks associated with continued operations at the CMR Building.

To ensure that NNSA can fulfill its national security mission for the next 50 years in a safe, secure, and environmentally sound manner, NNSA proposed in 2002 to construct a CMR replacement facility, and this became the subject of the 2003 *Environmental Impact Statement for the Chemistry and Metallurgy Research Building Replacement Project, Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EIS-0350, CMRR EIS) and the subsequent 2004 ROD (69 FR 6967). Since the issuance of the 2004 ROD, new information on the seismic environment at Los Alamos, as well as revisions to safety system requirements, have become available, indicating that changes to the design of the CMRR-NF are appropriate. The need for additional construction support activities and ancillary construction work spaces has also been identified. These changes resulted in NNSA's decision to prepare a supplement to the 2003 CMRR EIS, the CMRR-NF SEIS, pursuant to the regulations of the Council on Environmental Quality (CEQ) for implementing NEPA (40 CFR Parts 1500-1508) and DOE's NEPA Implementing Procedures (10 CFR Part 1021). Decisions in this AROD are based in part on information and analyses contained in the CMRR-NF SEIS, DOE/EIS-0350-S1.

## **NEPA Process for the CMRR-NF SEIS**

NNSA started the process for preparing the CMRR-NF SEIS by publishing in the **Federal Register** a Notice of Intent to prepare the CMRR-NF SEIS, inviting the public to participate in a scoping process to help shape NNSA's supplemental analysis (75 FR 60745, October 1, 2010). The public scoping period extended from October 1 through November 16, 2010. In preparing the Draft CMRR-NF SEIS, NNSA considered all scoping comments received during the scoping period. The Environmental Protection Agency (EPA) and NNSA simultaneously published Notices of Availability for the Draft CMRR-NF SEIS in the **Federal Register on April 29, 2011** (76 FR 24021 and 76 FR 24018, respectively). These notices invited public comment on the Draft CMRR-NF SEIS from April 29 through June 13, 2011. NNSA later published another notice in the **Federal Register** on May 16, 2011, extending the public comment period through June 28, 2011 (76 FR 28222), for a total comment period of 60 days. Four public hearings on the Draft CMRR-NF SEIS were held in Los Alamos, Española, Santa Fe, and Albuquerque, New Mexico, from May 23 through May 26, 2011. NNSA issued the Final CMRR-NF SEIS on August 26, 2011, and the EPA published a Notice of Availability for the Final CMRR-NF SEIS on September 2, 2011 (76 FR 54768).

## **Alternatives Considered**

In the CMRR-NF SEIS, NNSA analyzed the potential environmental impacts associated with three alternatives for the CMRR-NF: (1) the No Action Alternative, (2) the Modified CMRR-NF Alternative, and (3) the Continued Use of CMR Building Alternative.

The No Action Alternative (2004 CMRR-NF) analyzed in the CMRR-NF SEIS consists of continuing to implement earlier NNSA decisions issued in the 2004 ROD based on the 2003

CMRR EIS and modified by subsequent NEPA decisions related to site infrastructure. NNSA determined that the building, as conceived in 2003, would not sufficiently meet subsequent safety and seismic requirements to allow the full suite of NNSA mission-assigned work to be conducted.

Two action alternatives were analyzed in the CMRR-NF SEIS: the Modified CMRR-NF Alternative, and the Continued Use of CMR Building Alternative. The Modified CMRR-NF Alternative consists of constructing and operating a new CMRR-NF at TA-55 adjacent to RLUOB, with certain design and construction modifications and additional support activities that address seismic safety, infrastructure enhancements, nuclear-safety-basis requirements, and sustainable design principles. Two construction options were considered under this alternative: the Deep Excavation Option and the Shallow Excavation Option. All necessary AC and MC activities could be performed within the modified CMRR-NF to support the full suite of NNSA mission work. The Continued Use of CMR Building Alternative would consist of continuing to perform a restricted suite of operations in the existing CMR Building with normal maintenance and component replacements at the level needed to sustain programmatic operations for as long as feasible. Administrative and radiological laboratory operations would be conducted in RLUOB at TA-55, and no construction activities would be associated with this alternative.

### **Preferred Alternative**

As discussed in Volume I, Chapter 2, Section 2.9 of the CMRR-NF SEIS, NNSA identified the Modified CMRR-NF Alternative as its preferred alternative in both the Draft and the Final versions of the document. However, NNSA did not identify a preferred construction option in the CMRR-NF SEIS.

### **Environmentally Preferable Alternative**

Considering the long-term need to maintain its capability to conduct AC and MC operations at LANL, NNSA believes that the Modified CMRR-NF Alternative is the environmentally preferable alternative for meeting its full suite of mission work requirements. Replacing the aging CMR Building with a new facility that incorporates modern safety, security, and efficiency standards would improve NNSA's ability to protect human health and the environment both during normal operations and in the event of an accident or natural phenomena event, such as a wildfire or earthquake.

### **Environmental Impacts of Alternatives**

NNSA analyzed the potential impacts of each alternative on: land use and visual resources; site infrastructure; air quality (including greenhouse gases); noise; geology and soils; surface and groundwater quality; ecological resources; cultural and paleontological resources; socioeconomics; environmental justice; human health; waste management and pollution prevention; transportation; traffic; and cumulative impacts. NNSA also evaluated the potential impacts of each alternative associated with the irreversible or irretrievable commitments of resources, and the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. In addition, NNSA evaluated impacts of potential accidents, including those tied to seismic risk, on workers and surrounding populations. These analyses and results are described in Volume I, Chapter 4 of the CMRR-NF SEIS. The CMRR-NF SEIS includes a classified appendix that analyzes the potential environmental impacts of intentional destructive acts (credible terrorist scenarios) that might occur at the CMRR-NF.

### **Comments on the Final Supplemental Environmental Impact Statement**

Following publication of the Final CMRR-NF SEIS in August 2011, and prior to issuing this AROD, NNSA received 7 comment documents. The appendix to this AROD contains a summary of these comments and provides NNSA's responses for those cases where in NNSA's view the comment documents introduce new concerns/issues that were not addressed in the Final SEIS. NNSA has concluded that none of the comments received necessitate further NEPA analysis.

### **Decisions**

NNSA's decisions are based on its mission responsibilities and its need to sustain AC and MC work at LANL in a manner that allows it to fulfill these responsibilities in a safe and environmentally conscientious manner. The CMRR-NF would provide vitally essential technical support capabilities to NNSA's national security missions, which include maintaining the nation's nuclear weapons stockpile and nonproliferation programs. NNSA has decided to select the Modified CMRR-NF Alternative to continue AC and MC operations at LANL as described in Volume I, Chapter 2, Sections 2.3 and 2.4 of the CMRR-NF SEIS. NNSA will also initiate the facility disposition of the existing CMR Building and the CMRR-NF as operations cease in those structures. The benefits of implementing the Modified CMRR-NF Alternative include reliable, long-term, consolidated plutonium research and storage capabilities for the nuclear security enterprise with modern technologies and facilities; improved health and safety for workers and the public; improved operational efficiency; and reductions in the long-term cost of operating and maintaining the facility.

### **Additional Background and Summary of the NEPA Comparison of Excavation Options**

When the probabilistic seismic hazards analysis was prepared in 2007 (LA-UR-07-3965), the CMRR Project team proposed and investigated changing the design for the CMRR-NF that had been selected in the 2004 ROD to increase the thickness in certain floors, the height between floors to provide access, and the thickness of the basemat to improve performance in a seismic event.

With these changes, the overall building, measured from the bottom of the basemat to the top of the roof, would have been higher. The design was further revised to maintain the above-ground height of the building by providing a deeper building excavation. This design change resulted in the Deep Excavation Option. The Deep Excavation Option would entail excavating through the layer of poorly welded tuff at the construction site and filling the hole with low-slump concrete to the elevation of the bottom of the basemat, as discussed in Volume I, Chapter 2, Section 2.6.2 of the SEIS. The environmental impacts associated with these activities are discussed in Volume I, Chapter 4, Section 4.3.

Scoping comments for the CMRR-NF SEIS requested that NNSA look for and analyze alternative design/construction options for the CMRR-NF, including those which might reduce cost and environmental impact by avoiding the need for a deep excavation. Consistent with the rationale in this request, NNSA performed a review of the requirements for the design of the CMRR-NF, which identified an opportunity to avoid the activities and costs associated with the additional excavation and concrete fill required for the Deep Excavation Option by raising the bottom of the basemat to near the original design elevation. Following this review, NNSA began analyzing this additional option for inclusion in the Draft SEIS. Under this design/construction option for the CMRR-NF, which came to be known as the Shallow Excavation Option, the overall building height (bottom of basemat to top of roof) would remain the same, but the top of the roof would be higher

aboveground than it was in the conceptual and preliminary design. Geotechnical reviews performed for this Shallow Excavation Option concluded that the substrate is sufficiently strong to withstand the weight of the proposed CMRR-NF, such that intolerable amounts of seismically- and non-seismically-induced settlement and lateral shifting of the foundation would not occur. The allowable bearing pressure of the soil is much greater than the pressure caused by the buildings. Both the Deep and the Shallow Excavation options require the same sets of safety controls and the SEIS analysis indicates that they are expected to result in similar offsite environmental consequences. However, the Shallow Excavation Option reduces risk and provides some reductions in construction impacts and cost without affecting other building design requirements. Risk reduction would be realized by a decrease in: excavating, hauling, and storing soil (approximately 9,000 fewer truck trips depending on hauling capacity and 309,000 fewer cubic yards of soil excavated); scope of geotechnical monitoring; extent of slope stabilization; and safety precautions for working in a deep hole. Reductions in construction impacts would include a reduced project footprint for excavated spoils storage (20 fewer acres); fewer truck trips on- and off-site from LANL; fewer materials procured (a savings of 250,000 cubic yards of concrete); and reduced water use (8 million fewer gallons over the course of construction).

NNSA will begin the implementation of its decision to select the Modified CMRR-NF Alternative for constructing and operating the CMRR-NF portion of the CMRR Facility Project by conducting additional detailed design and analysis activities. Continuing forward into final design is expected to result in additional refinement of the information available to NNSA for making its selection of the construction option to be implemented. NNSA will select the appropriate Excavation Option for implementing the construction of this building after initiating final design activities when additional geotechnical and structural design calculations and more-detailed design engineering

analysis will be conducted. In making its selection, NNSA will consider the data it obtains from these studies and analysis, the moderate distinctions in environmental impacts between the two excavation options, and other relevant factors such as additional evaluation of security features and more-detailed cost estimates.

### **Mitigation Measures**

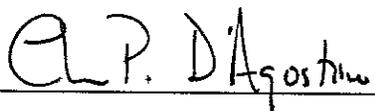
All practicable means to avoid or minimize environmental harm have been and will continue to be adopted and employed in the design, construction, and operation of the CMRR-NF. CMRR-NF construction activities will follow standard practices required by federal and state licensing and permitting requirements for minimizing construction impacts on air and surface-water quality, noise, operational and public health and safety, and accident prevention. As described in Volume I, Chapter 5 of the CMRR-NF SEIS, NNSA and LANL operate pursuant to a number of environmental laws and regulations, as well as several other controls, including DOE Orders, policies and contractual requirements. Many of these mandate actions that would mitigate potential adverse environmental impacts related to the construction and subsequent operation of the CMRR-NF. Based on consideration of these mandated mitigation actions, and the analyses of the environmental consequences provided in the CMRR-NF SEIS for this action, no additional mitigation measures would be necessary for many resource areas because the potential environmental impacts are expected to be well below acceptable levels set in promulgated standards.

A summary of all prior mitigation commitments for LANL that are either underway or to be initiated are included in the over-arching LANL SWEIS Mitigation Action Plan (SWEIS MAP). Prior SWEIS MAP commitments include such actions as continued forest management efforts, trail

management efforts, and implementation of a variety of site sampling and monitoring measures, as well as measures to reduce potable water use and implement resource conservation initiatives. A Mitigation Action Plan (MAP) for the CMRR-NF SEIS ROD will be issued by NNSA and made available at <http://www.doeal.gov/laso/NEPADocuments.aspx>. This MAP will include specific requirements for: potable water usage reduction measures; traffic flow improvements; and measures to meet electric power peak capacity demands. Starting in 2012, these new mitigation measures specific to the CMRR-NF project will be incorporated into the overall LANL SWEIS MAP. Reporting will be consolidated into subsequent MAP Annual Reports issued by NNSA and made publicly available at: <http://www.lanl.gov/environment/nepa/sweis.shtml>.

In addition, NNSA will continue its on-going efforts to support the local Pueblos and other tribal entities in matters of human health, and will participate in various intergovernmental efforts to protect indigenous practices and locations of concern. NNSA will continue to conduct government-to-government consultations with the Pueblos and other tribal entities to incorporate these matters into the SWEIS MAP, as deemed appropriate.

Issued at Washington, DC, this 12 day of OCT, 2011.



Thomas P. D'Agostino  
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#### **Appendix to the CMRR-NF Amended ROD**

Following publication of the *Final Supplemental Environmental Impact Statement for the Nuclear*

*Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos New Mexico, DOE/EIS-0350-S1 (Final CMRR-NF SEIS)* in August 2011, and prior to issuing of this Amended Record of Decision (AROD), the National Nuclear Security Administration (NNSA) received seven comment documents related to the Final CMRR-NF SEIS. Having reviewed and fully considered the comments received in the comment documents, NNSA has determined that these comments do not provide information that affects the analysis in the Final CMRR-NF SEIS.

NNSA has further determined that many of the issues in these comment documents are either similar, or in some cases identical to, comments that were submitted on the Draft CMRR-NF SEIS which were addressed by NNSA in the Final CMRR-NF SEIS comment response document (Volume II of the FSEIS). These include comments related to NNSA's implementation of the NEPA process; the requirements for a supplemental environmental impact statement; the purpose and need for action; the range of alternatives evaluated; radioactive contaminants in the environment; consideration of geologic and seismic risks at LANL in facility design; hazards from earthquakes and wildfires; electrical and water usage; management of radioactive materials; waste management; concerns related to environmental cleanup; decontamination, decommissioning, and demolition of the CMRR-NF; pit production and stockpile stewardship; arms reduction and nonproliferation treaty compliance; and facility costs and potential other uses of funds.

NNSA has determined that it is appropriate to respond further to the following comments extracted from these seven documents and summarized below:

*Comment 1:* The CMRR-NF SEIS Comment Response Document (CRD) (Volume 2) did not include all comments received.

*Response:* NNSA endeavored to include in the CRD all comments that it received in response to the Draft SEIS but inadvertently overlooked one letter which was a variant of Campaign Y. In the CRD, NNSA categorized letters with similar language as “campaigns” for the purpose of providing a consolidated response. The omitted letter mirrored the Campaign Y letter, and also included comments on four additional issues: (1) alternative designation in the SEIS, (2) electricity use at LANL during construction of the CMRR-NF, (3) transuranic waste disposal, and (4) the ability of the preferred site to support the weight of the proposed CMRR-NF. After reviewing these additional comments, NNSA has concluded that they were addressed in NNSA’s responses to other comments received during the public comment period (*see, e.g.*, responses to comments 108-3, 153-5, 204-37, and 57-1, respectively). Therefore, NNSA does not believe that this inadvertent oversight affects the analysis in the Final SEIS or this decision document.

No other commentors contacted NNSA to communicate that their comments were not included in the CRD.

*Comment 2:* The Final CMRR-NF SEIS does not state which Construction Option NNSA prefers for the Modified CMRR-N F Alternative (Shallow Excavation Option or Deep Excavation Option).

*Response:* NNSA prepared the final CMRR-NF SEIS document in accordance with CEQ and DOE NEPA regulations which require the identification of a preferred alternative in a Final EIS document, by identifying the Modified CMRR-NF Alternative as its preferred Alternative. (See Volume I, Chapter 2, Section 2.9.) NNSA analyzed and presented within the CMRR-NF SEIS the full range of potential direct, indirect, and cumulative impacts for each of the two options (Shallow Excavation and Deep Excavation) that NNSA identified for construction of the preferred alternative.

Both the Deep and the Shallow Excavation options contemplate construction of essentially the same building structure to provide the same functional capabilities. Thus both options require the same sets of safety controls and key equipment. Further, as the SEIS analysis indicates, once construction is complete and operations commence, both options are expected to result in similar offsite environmental consequences. The additional geotechnical and structural design calculations and more detailed engineering analysis NNSA will conduct pursuant to the decision announced in this AROD, prior to selecting a construction option for implementation, are not expected to identify any additional environmental impacts associated with either excavation option beyond those analyzed and presented in the final SEIS.

*Comment 3:* The reference, *Interim Report, Update of the Probabilistic Seismic Hazard Analysis and Development of CMRR Design Ground Motions Los Alamos National Laboratory, New Mexico*, was not included in the April 2011 draft document, and therefore the public did not have an opportunity to review and comment on it.

*Response:* As discussed in the Final CMRR-NF SEIS, the reference, a 2009 update to the 2007 probabilistic seismic hazard analysis (PSHA), was not publicly available at the time the Draft CMRR-NF SEIS was prepared; however, it has subsequently been made available to the public upon request and has been incorporated into the Final CMRR-NF SEIS. Based on the 2009 study, the TA-55 horizontal and vertical peak ground acceleration values for a 2,500-year return period showed a reduction in acceleration values compared to the 2007 study. However, the more conservative acceleration values from the 2007 study are currently being used for the seismic design of the CMRR-NF structure, and the public did have an opportunity to review and comment on those values. Regardless of whether the 2007 or 2009 study values are used, NNSA plans to construct the CMRR-NF to meet the requirements of a performance category 3 structure as discussed in the Final CMRR-NF SEIS.

*Comment 4:* LANL should immediately install a network of weak motion seismographs to improve knowledge of kappa.

*Response:* LANL has both weak and strong motion seismic networks that continue to be updated and improved. Numerous earthquakes have been recorded by the weak motion network and are part of the earthquake catalog referenced in the probabilistic seismic hazard analysis (PSHA). Inference of a value for kappa requires an earthquake recording that is on-scale and has significant bandwidth as documented in the 2007 PSHA. Because of this requirement, the number of records that can be used for estimating a value for kappa is limited. LANL has and will continue to improve and upgrade the seismic network. As additional seismic data are collected by the LANL weak and strong motion seismic arrays, the value of kappa will be further refined and its uncertainty reduced. However, further refinement of the value of kappa is not essential for the purposes of the environmental impact analysis.