DOE/EA-1101

ENVIRONMENTAL ASSESSMENT
for the
PROPOSED CMR BUILDING UPGRADES
at the
LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

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Los Alamos Area Office

Environmental Assessment for the Proposed CMR Upgrades

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EXECUTIVE SUMMARY

In order to maintain its ability to continue to conduct uninterrupted radioactive and metallurgical research in a safe, secure, and environmentally sound manner, the U. S. Department of Energy (DOE) proposes to upgrade the Los Alamos National Laboratory (LANL) Chemistry and Metallurgy Research (CMR) Building. The building was built in the early 1950s to provide a research and experimental facility for analytical chemistry, plutonium and uranium chemistry, and metallurgy. Today, research and development (R&D) activities are performed involving nuclear materials. A variety of radioactive and chemical hazards are present. The CMR Building is nearing the end of its original design life and does not meet many of today's design codes and standards.

The Proposed Action for this Environmental Assessment (EA) includes structural modifications to some portions of the CMR Building which do not meet current seismic criteria for a Hazard Category 2 Facility. Also included are upgrades and improvements in building ventilation, communications, monitoring, and fire protection systems. This EA analyzes the environmental effects of construction of the proposed upgrades. The Proposed Action will have no adverse effects upon agricultural and cultural resources, wetlands and floodplains, endangered and threatened species, recreational resources, or water resources. The Proposed Action would have negligible effects on human health and transportation, and would not pose a disproportionate adverse health or environmental impact on minority or low-income populations within an 80 kilometer (50 mile) radius of the CMR Building.

Under the No-Action Alternative, the CMR Building has a useful life of approximately five to ten years, without upgrades. Continuing operations beyond the facility's useful life could result in higher risks and lower safety margins for workers, the public and the environment, which are not acceptable to DOE. Curtailment and/or shutdown of critical operations could also seriously affect the ability of DOE to perform its assigned missions.

Alternatives included the construction and operation of a new facility, either at LANL or at another site within the DOE Complex. The time necessary to plan and construct such a facility would exceed the remaining useful life of the CMR Building, meaning that ongoing or new research activities could be adversely affected. Further, the cost of constructing a new facility would be more than twice the cost of the proposed upgrades, and new construction could adversely affect water and air quality, biological, and archeological resources. This alternative was not considered reasonable, and was not developed further.

Relocating CMR Building operations to an existing building at LANL or another site within the DOE complex are additional alternatives. No building, without mission commitments, sufficient size, and necessary environmental protection systems, was available at LANL. Locating operations at a site away from LANL plutonium-processing facilities would increase risks to the public. The additional operational costs, technical issues, and schedule effects would result in programmatic inefficiencies not considered reasonable. This alternative was not considered reasonable, and was not developed further.

Two CMR Building wings are not required for current missions. Proposed uses for the two, inactive wings have not been decided upon, so analysis of the environmental effects of their use is premature. Because of the unique capabilities of the CMR Building, DOE has no current plans to decommission any portion. For this reason, this alternative was not considered reasonable and was not developed further.

The volume of low-level solid[a] radioactive waste would increase during CMR Building upgrades due to the removal of construction waste. Waste minimization techniques would be used to reduce waste volume and waste management costs. A small amount of transuranic (TRU) waste might be generated. Radiation risks to workers and the public would not be significantly increased, however, the increased construction workforce could be subject to additional worker injuries/deaths associated with collapse of the building due to an earthquake. Transportation risks would increase as waste is sent to the Technical Area (TA) 54 disposal area, or off-site, but the likelihood of an accident would be very low.

The cumulative effects of the Proposed Action would be to enhance CMR Building environmental health and safety operating parameters, thereby reducing effects on the environment from its continued use.

[a] Use of the term "solid" refers to the solid state of matter not the Resource Conservation and Recovery Act (RCRA) regulatory definition.

1.0 PURPOSE AND NEED

1.1 Background Information

The Chemistry and Metallurgy Research (CMR)[1] Building at Los Alamos National Laboratory (LANL), located in Los Alamos, New Mexico, was constructed in the early 1950s to the industrial building code standards in effect at the time. It was designed to provide a state-of-the-art research and experimental facility for analytical chemistry, plutonium and uranium chemistry, and nuclear materials. Provisions for support disciplines such as drafting, electronics, and machine shops were also included. The CMR Building is now reaching the end of its original design life and does not meet many of today's design codes and standards. Over the years, the Department of Energy (DOE) has systematically identified and corrected some deficiencies and upgraded some systems. However, these upgrades have not kept up with building aging and increasingly stringent safety standards.

The CMR Building is used for R&D involving radioactive and hazardous materials. The analytical chemistry operations in the CMR Building support a wide range of programs at LANL that, in turn, support critical DOE missions assigned to LANL. Some of these programs include basic chemistry research on plutonium and similar radioactive materials, surveillance of the weapons stockpile for safety, stewardship of nuclear materials technologies, non- and counterproliferation, environmental stewardship, and technology development for treatment and minimization of defense industry waste. The Defense Nuclear Facilities Safety Board has recommended that the DOE maintain a strong plutonium chemistry research capability in support of nuclear safety issues at LANL, Rocky Flats Plant, and other sites. Continued safe and reliable operation of the chemical and radiological research activities is critical to the LANL mission and the DOE. While the CMR Facility is currently operating safely, the combination of facility aging and the continuing evolution of standards and requirements, threatens the uninterrupted operation of this facility. The CMR Building requires upgrading if it is to continue to perform essential analytical chemistry and metallurgy operations in a safe, secure and environmentally sound manner for the next 20 to 30 years.

1.2 Purpose and Need for Agency Action

DOE has conducted R&D of radioactive isotopes at LANL since the site's creation in 1943. Over the past half-century, the R&D focus at LANL, originally intended to support the national defense mission, has expanded into many other fields of scientific investigation in response to international and domestic requirements. R&D activities maintained by DOE at LANL cover the spectrum of critical scientific investigation including materials science, nuclear safeguards and

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[1]A Glossary and a list of acronyms appear in Section 7.

security, nuclear weapons materials processing and process development. These activities support technology competence, environmental protection and cleanup, and other basic and applied science research as part of DOE's post-Cold War mission. Chemical and metallurgical research activities are essential to the continued support of national missions, as well as continued compliance with standards and regulations requiring highly accurate and precise measurements. The CMR Building, where these activities are performed, is nearing the end of its design life. DOE needs to maintain the capability to continue to perform uninterrupted interim and ongoing radioactive chemical and metallurgical research activities in a safe, secure, and environmentally sound manner at LANL.

1.3 CMR Upgrades Project History

In 1983, DOE determined that it needed to maintain chemical and metallurgy R&D capabilities at LANL. It was also determined that, due to its age, the CMR Building would have to be replaced or would require major upgrades to maintain critical mission capabilities. Given projected mission requirements at the time, DOE proposed construction of a new facility in TA-55 to assume some of the functions from the CMR Building. In 1986, the Special Nuclear Materials Laboratory (SNML) Project was proposed. The proposed SNML Project involved construction of a new facility to house several activities, including the analytical chemistry capabilities at the CMR Building. Although the SNML Project included space for the CMR analytical chemistry operations, it was not intended to be a replacement facility solely for CMR because other activities related to nuclear materials programs were also part of the SNML Project scope. The SNML Project proceeded through conceptual and preliminary designs before DOE decided during an Energy Systems Acquisition Advisory Board (ESAAB) meeting in February 1991 to place the project on hold. This decision was based upon changes in DOE's mission resulting from the end of the Cold War, and the projected high cost for the new facility. At this time, DOE decided to further evaluate CMR Building renovations to meet the Agency's needs.

Included in the evaluation was an Interim Safety Analysis Report (ISAR) to evaluate the risks of CMR Building operations, identify safety deficiencies in the facility and aid in determining the scope of upgrades required to extend the CMR Building's useful life. As a result of the ISAR evaluation, several compensatory measures (including reducing the amounts of material in the building at any time) were put into place. These measures reduce the potential dose to the public in the event of major accidents, but have had a negative effect on operations and productivity and result in increased operational costs.

To maintain operations, several stand-alone projects were developed in response to environment, safety and health deficiencies requiring immediate action. These initial upgrades were required independent of the decision to proceed with the SNML project or proceed with additional

upgrades to extend the useful life of the CMR Building. Some of these initial stand-alone projects were grouped and identified as CMR Building Phase 1 Upgrades.

In March 1993, after validating continued mission requirements and investigating alternatives, DOE concluded that the most reasonable and cost-effective programmatic option was to upgrade portions of the CMR Building to extend its useful life by 20 to 30 years. A group of potential upgrades supporting the extended use of the CMR Building have been proposed. Conceptual design efforts were begun for these elements, initially identified as CMR Building Phase 2 Upgrades. During the development of the conceptual design, it was determined that some of the upgrades were not required to support existing missions at the CMR Building. These elements were found to be contingent upon possible future CMR missions and were thus excluded from Phase 2, and re-designated as Phase 3 upgrades. At the completion of the Phase 2 conceptual design process in 1995, it was decided that no further planning for Phase 3 upgrades was appropriate, in as much as there was neither a need that could be demonstrated nor funding available for Phase 3. Therefore, the current proposed CMR Building upgrades, commonly referred to as Phase 2, are those identified as necessary infrastructure needs to support existing missions.

During a November 1995 ESAAB meeting, DOE approved consolidation of Phases 1 and 2 CMR Building Upgrades into a single federal budget line item project. The subsequent DOE budget submittal for the CMR Building Upgrades did not include funding requests for Phase 3 Upgrades. Also as a result of the ESAAB meeting, DOE directed the official cancellation and close-out of the SNML Project. As stated previously, the scope of the Proposed Action analysis included in this Environmental Assessment (EA) is limited to Phase 2 activities.

1.4 Environmental Assessment Methodology

This EA analyzes the environmental effects of construction of the proposed upgrades and has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, 42 USC 4332 (1975); Council on Environmental Quality (CEQ) regulations, 40 CFR 1500-1508; and DOE NEPA Implementing Procedures, 10 CFR Part 1021. The purpose of the EA is to provide the DOE with sufficient information to determine whether a Finding of No Significant Impact (FONSI) is warranted for the Proposed Action, or whether an Environmental Impact Statement (EIS) must be prepared. The assessment of effects presented in this EA is designed to be based upon conservative assumptions that have the effect of maximizing estimates of radiological releases and human exposures.

CEQ regulations, 40 CFR 1508, state that an EA serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI. The current DOE NEPA Implementing Procedures, effective as of August 8, 1996, recognize that activities designated by

the Secretary of Energy as Strategic Systems normally require the preparation of an EIS. The proposed CMR Building Upgrades Project was not designated as a Strategic System by the Secretary.

Predecisional draft copies of this EA were sent to the Los Alamos and Albuquerque DOE public reading rooms; the four local Accord Tribes; the State of New Mexico; and various concerned and interested parties for review and comment on January 22, 1996. Additionally, letters announcing the availability of the predecisional draft EA were sent out to more than 30 private citizens and groups, a notice was sent to local newspapers, and the predecisional draft EA was placed on the World Wide Web Computer Internet System. The original review period of 14 calendar days was extended to 28 at the request of several of the draft EA reviewers, as explained in a February 2, 1996 letter. Copies of comments from the reviewers about the January predecisional draft EA are presented in Appendix A, along with DOE's responses and notations of changes made to the text of the revised predecisional draft EA. The revised predecisional draft EA was distributed in the same manner as the original predecisional draft EA, along with the same public notification and distribution on August 28, 1996. The review period was for a period of 14 calendar days and ended on September 11, 1996. Copies of comments from the reviewers about the August revised predecisional draft EA are also presented in Appendix A, along with DOE's responses to those comments.

2.0 DESCRIPTION OF FACILITY AND ALTERNATIVES

This section describes present conditions at the CMR Building, the proposed action, and the other alternatives considered to meet the need for Agency action.

The CMR Building (Building 3-29), located in LANL's TA-3, was completed in the early 1950s to house research and experimental facilities for analytical chemistry, plutonium and uranium chemistry, and metallurgy, as well as some engineering design and support functions. In 1960, an addition (Wing 9) was constructed to support LANL programs requiring hot cell facilities. Figure 2-1 shows the location of the LANL TAs; figure 2-2 shows the location of the CMR Building within TA-3. Figure 2-3 shows the outline of the facility, including its security fence.

At the time the CMR Building was constructed, the facility included state-of-the-art instrumentation and engineered safety controls appropriate for a modern chemistry laboratory. However, the building is now nearing the end of its original design life and does not meet many of today's design codes and standards for a newly constructed facility. Alternatives for dealing with this problem, along with meeting the need for continuing uninterrupted facility operations include:

- upgrading the present building (the Proposed Action).
- no action,
- construction and operation of a new LANL facility,
- alternate site for CMR Building operations at another LANL facility,
- alternate site for CMR Building operations at another DOE facility (non-LANL),
- construction and operation of a new building for CMR Building operations at another DOE site, and
- decommissioning existing Wings 2 and 4 in the CMR Building.

2.1 Description of Facility

The CMR Building is a three-story, reinforced-concrete structure that contains approximately 51,000 square meters (m^2) (550,000 square feet [ft^2]) of floor space. The building has seven office and laboratory wings and one administration wing, all connected to a central (spinal) corridor. Each wing is designed to operate independently, with its own electrical power substations and ventilation system. The first floor of each wing contains approximately 4,460 m^2 (48,000 ft^2) of laboratory space and an equal amount of office space. The basement and second-floor spaces were designed primarily to provide utility services for the first-floor laboratories and offices.

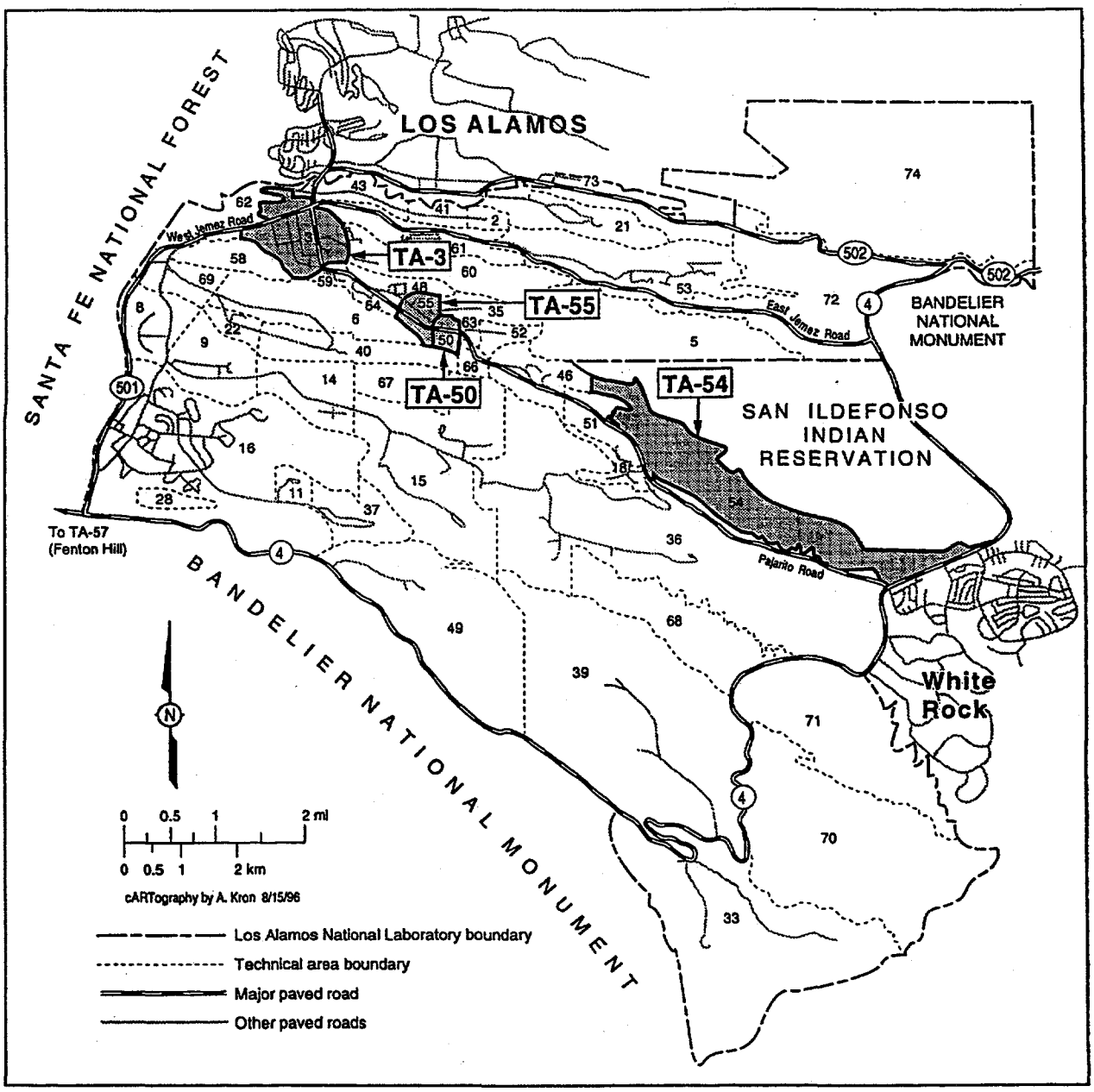

Figure 2-1. Location of Technical Areas at LANL

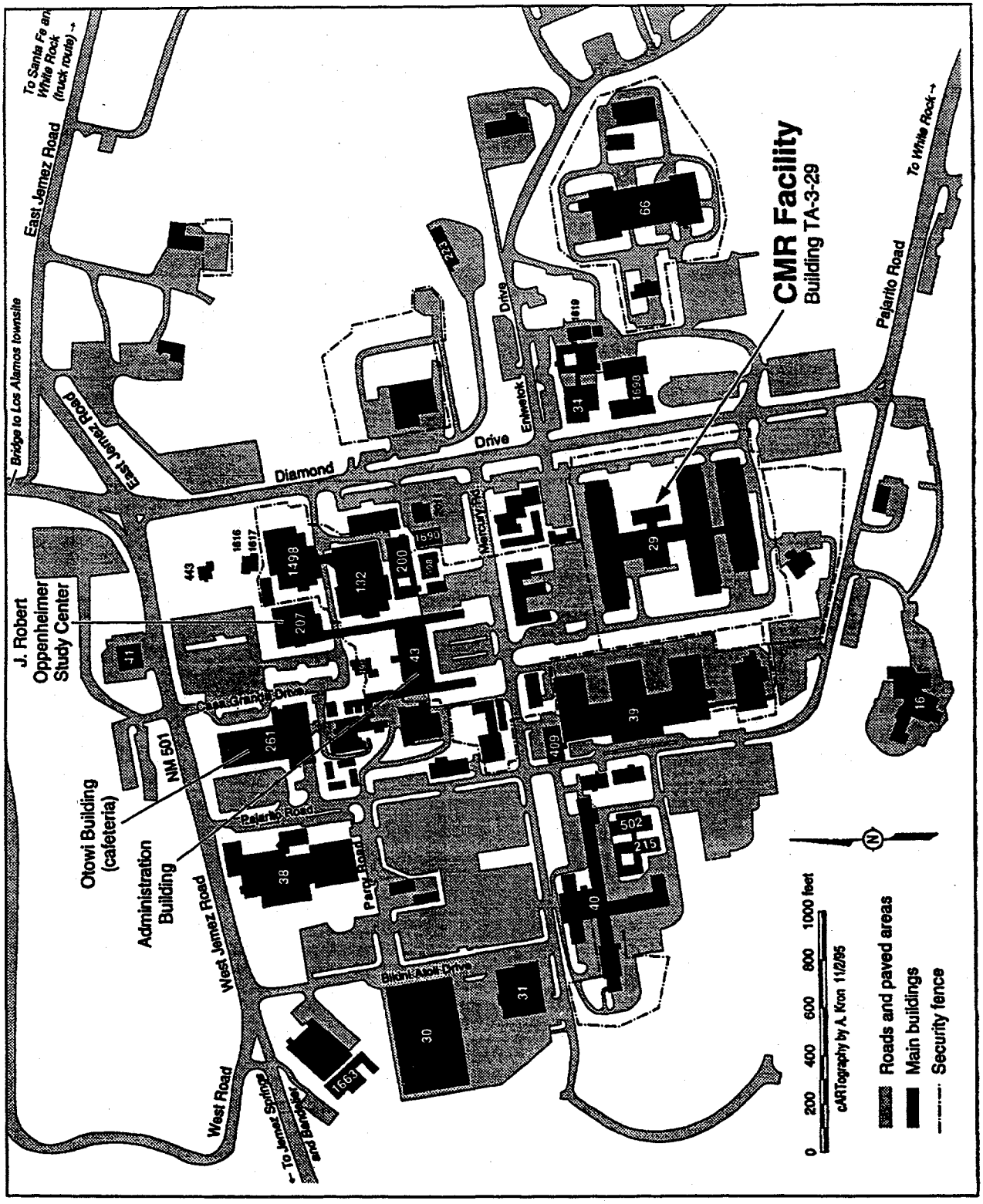

Figure 2-2. Location of CMR Building within TA-3

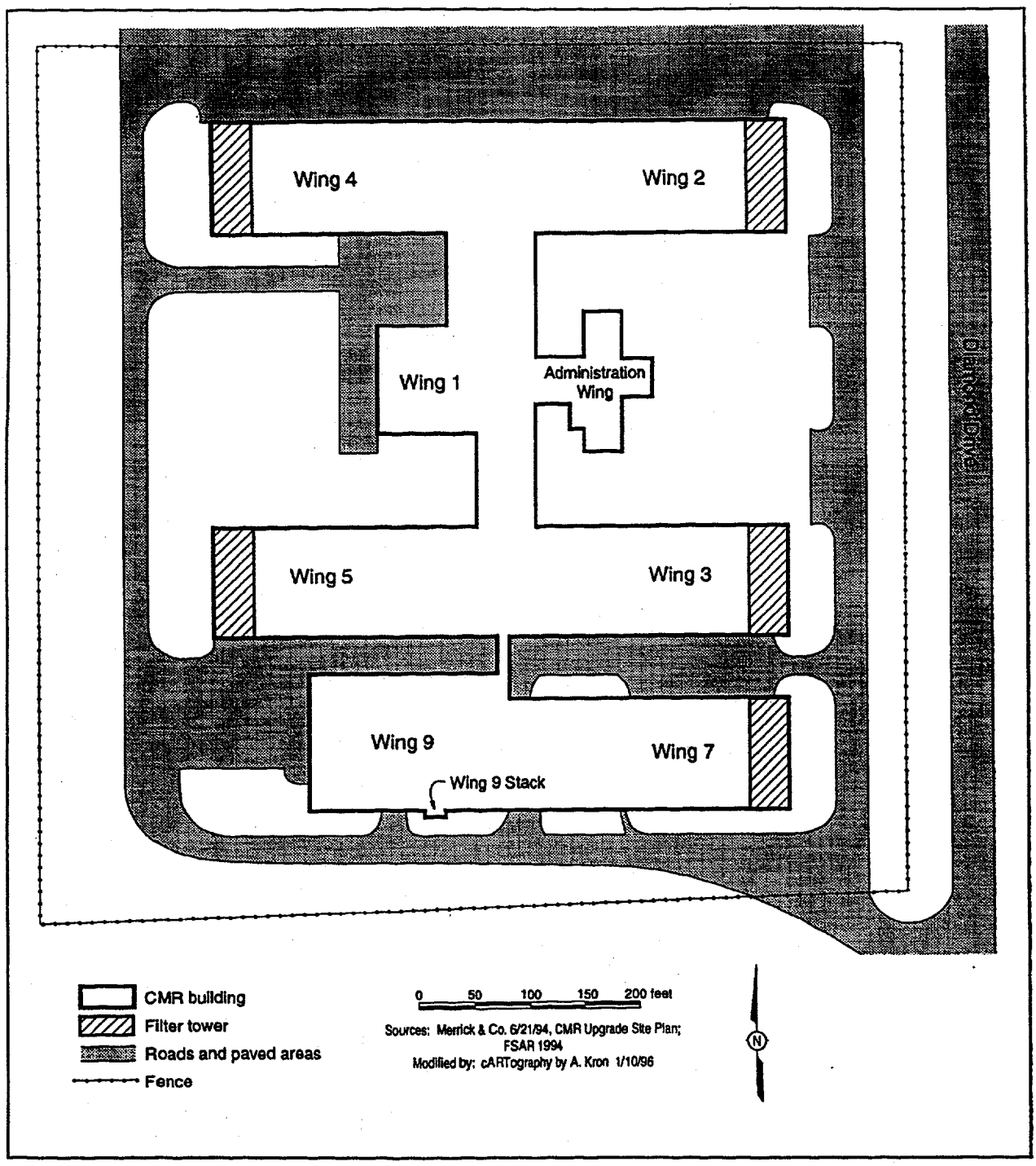

Figure 2-3. Outline of the CMR Building and Security Perimeter

Wings 2, 3, 4, 5, and 7 extend from the spinal corridor and are identical in design and construction. Wings 6 and 8 were planned, but never constructed. The main floor of each wing has change rooms at the entrance, and offices along the outside walls. Two corridors separate the offices from laboratories, which are completely interior. At the end of each wing are filter towers, which house the filter plenums and other large mechanical equipment for the exhaust ventilation system. There are nuclear materials storage vaults on the main floors in Wings 2, 3, 4, 5, and 7. The basements of some wings house laboratory and office areas; the second floors of the wings are large, open areas with some building support equipment and storage areas.

Wings 1, 9, and the Administration Wing are unique. Wing 1 contains offices and inactive laboratories and does not have a filter tower. Wing 9 is a large bay area containing hot cell facilities with remote handling capabilities, and other support laboratories; men's and women's change rooms are at the access to the wing. The Administration Wing houses offices and conference rooms.

The CMR Building was constructed to the 1949 Uniform Building Code (UBC). The facility has been upgraded and maintained by LANL over the years to ensure safe operation in support of programmatic missions. A list of major upgrades performed since 1973 is given in Appendix B.

2.1.1 Wing Operations

The R&D tasks and other operations at the CMR Building are varied, types and numbers of projects change frequently, and many involve nuclear materials. Projects take advantage of the special capabilities of the facility, including safety, security, ventilation, and special processes. User organizations and specific tasks are typically different between the wings and within wings. However, some tasks at the CMR Building are interdependent among wings and users.

Analytical chemistry has been performed in the facility since it was constructed. Process chemistry and metallurgy R&D operations involving plutonium and other actinides have been performed on a continuous basis. These activities support many LANL and other DOE programs conducted primarily outside the CMR Building, such as plutonium processing at TA-55 and uranium-related activities.

Many activities conducted in the CMR Building are hazardous. Controls and procedures are in place to protect workers from chemical, electrical, mechanical, and radioactive hazards. Hoods and glove boxes are used in laboratories where chemical and radioactive materials are handled, and personnel are trained to use them safely. Other safety measures include restricted entry, hazard warning signs, protective clothing, and containerization of hazardous materials. Areas that contain significant quantities of nuclear material are reviewed for criticality concerns by the

LANL criticality safety group to identify safe operating limits. CMR Building personnel interact with health physics, industrial hygiene, and safety service providers to ensure health and safety.

2.1.2 CMR Building Systems

2.1.2.1 Ventilation System

The CMR Building has an extensive ventilation system that moves approximately 2,800 cubic meters per minute (m^3/min) (100,000 cubic feet per minute [cfm]) of air through each laboratory wing. The ventilation system is designed as an independent system in each wing. All areas of the building are served by outside-air supply systems, except for the Administration Wing where the system uses both outside and return air. Exhaust air is high-efficiency particulate air (HEPA)-filtered from Wings 2, 5, 7, and 9 (hot cells), as well as the main vault. In Wing 1, where the laboratory space is currently unused, the exhaust is non-filtered. The Wing 3 exhaust is filtered through cartridge-type particulate air filters; the Wing 4 exhaust is filtered through roughing filters.

2.1.2.2 Electrical System

Primary Power

Primary power to the CMR Building is provided by two 13.2- kilovolt (kV), 3-phase, underground primary feeders derived from the Los Alamos Area Distribution System. The feeders terminate at a 15 kV switchgear (SM-1196).

Secondary Power

Secondary power (480 V, 3-phase, 3-wire) is supplied from the low-voltage section of double-ended unit substations to motor control centers, switchboards, distribution buses, and power panels located throughout the facility. Each low-voltage section is equipped with a manually-operated tie breaker and bus that allow the electrical loads for each wing to be fed from either end of the switchgear. There are two substations each for Wings 2, 3, 4, 5, and 7.

Uninterruptable Power Supply (UPS)

In the event of power failure, the CMR Building is equipped with UPS battery systems that can provide continuous power to the evacuation and paging system, facility computer system, waste assay facility, security alarm and detection system, fire alarm system, and emergency lighting system.

2.1.2.3 Fire Protection System

The CMR Building fire protection system includes:

- closed loop water mains (two feeds from the TA-3 grid),
- automatic wet pipe sprinkler system (initiated by a fusible link on all sprinkler heads),
- halon system in the Wing 3 vault and main vault,
- heat detection in the main vault, wing vaults, and Wing 9 (evacuation alarms and visual alerts),
- evacuation alarm system,
- fire circuitry and control panels (that sends signals to the central alarm station),
- fire divisions (by individual wing), and
- non-combustible construction materials.

2.1.2.4 Radioactive Liquid Waste Drainlines (Acid Drainlines)

The radioactive liquid waste drainline system, also referred to as acid drainlines, routes radioactive liquid waste from CMR Building laboratories to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50.

2.1.3 Current Condition of the CMR Building

All current CMR operations are conducted safely within the approved safety authorization basis. The current condition of the facility, in combination with administrative controls, provides an adequate level of safety for workers and the public. The proposed upgrades would support the continued safe and reliable operation of the facility.

Radioactive materials may be present in Wings 2, 3, 4, 5, 7, and 9 in liquid, solid[2], gaseous, or powder form. A variety of chemicals are used in numerous activities and are stored in the CMR Building. All current operations in the CMR Building are conducted safely within the approved authorization basis. To compensate for building deficiencies, operations are controlled by administrative controls placed on routine operations involving hazardous or radioactive materials. These administrative controls include limits on radioactive inventory.

An ISAR was prepared in 1992 to define the current safety envelope for the facility and identify potential upgrades based on engineering assessments, a limited-scope comparison to criteria, and accident analysis (Romero 1992). The CMR Building was designed to meet 1949 UBC standards. Wind and seismic analyses were conducted to support the ISAR. The wind analysis

[2] Use of the term "solid" refers to the solid state of matter not the RCRA regulatory definition.

indicated that the entire CMR Building meets applicable criteria. The seismic analysis indicated that portions of the building do not meet current standards and criteria for seismic design. Subsequently, a structural analysis was performed as part of the Conceptual Design Report (CDR) (LANL 1995a) for the Proposed Action in accordance with DOE Order 5480.28 "Natural Phenomena Hazards Mitigation," and DOE-STD-1020-94 "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities," the current standards for seismic and natural phenomena hazards.

The seismic analysis indicated that the Administration Wing, Wing 1, the filter towers, the basement, the change room areas, the main vault, and the center corridor met seismic criteria for a Hazard Category 2 facility. (Hazard categories, are defined in DOE Standard 1027-92, "Guidance on Preliminary Hazard Classification and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Safety Analysis Reports.") The first floors (laboratory and offices) and second floors of Wings 2, 3, 4, 5, 7, and 9 did not meet the criteria for a Hazard Category 2 facility. Current seismic design standards for a Hazard Category 2 facility located at LANL require facilities to withstand a horizontal ground acceleration of 0.31g.

The risks to the public from both radioactive materials and hazardous materials were evaluated for the ISAR. No chemicals were found to exceed Emergency Response Planning Guideline (ERPG)-1 or Time-Weighted Average (TWA) levels off-site under accident conditions. The CMR Building chemical inventory does not represent a public health concern. The ISAR risk analysis identified the bounding accident scenario as a postulated earthquake that collapses major portions of the CMR Building, resulting in fire and a release of radioactive material. The maximum credible consequence of such an event was calculated to be within DOE evaluation guidelines (DOE-STD-3009-94, "Preparation Guide for US DOE Non-Reactor Nuclear Facility Safety Analysis Reports") at the nearest residential area.

2.2 Proposed Action

Based upon a comparison of the current condition of the CMR facility to DOE General Design Criteria (DOE 6430.1A) for a new facility, upgrades are proposed that would allow the CMR Building to continue operating safely and reliably for another 20 to 30 years. This Environmental Assessment analyzes the environmental effects of construction of proposed upgrades. These proposed upgrades address deficiencies identified in the ISAR, listed in Appendix C. The proposed upgrades include:

- seismic and tertiary confinement (Wings 3, 5, 7, 9, and Administration Wing),
- security (related to tertiary confinement),
- ventilation confinement zone separation (Wings 3, 5, 7, and 9),
- standby power/communications system,

- Wing 1 upgrades, Heating, Ventilation, and Air Conditioning (HVAC) system/Wing 1 interim decontamination,
- operations center upgrade,
- chilled water upgrade: Wings 3, 5, and 7,
- main vault, Continuous Air Monitors (CAM) and dampers,
- acid vents and drains: Wings 3, 5, and 7,
- fire protection upgrades,
- operations center standby power,
- exhaust duct washdown recycling system: Wings 3, 5, and 7, and
- Wings 2 and 4 safe standby.

Figure 2-4 shows the locations of proposed upgrades. The majority would be performed inside the CMR Building. Some construction activities would occur outside of the building, but within the fenced CMR Facility perimeter. Exterior activities would involve construction of a new cooling tower and one-story chilled-water plant to service HVAC requirements, a new pre-engineered metal building to house standby power generators and associated support equipment, a new one-story filter tower addition to service Wing 3, and installation of concrete columns and steel buttresses around the exterior of the facility for seismic upgrading. Proposed construction activities would disturb a total area of less than 0.4 hectare (one acre). As appropriate, LANL would apply dust suppression and storm water run-off controls in accordance with best management practices during exterior construction activities. Each proposed upgrade is described in further detail in sections 2.2.1.1 through 2.2.1.14. Additional information concerning the details of the proposed upgrades can be found in the CDR (LANL 1995a).

The DOE considered whether or not to upgrade the mostly inactive Wings 2 and 4 of the CMR Building as part of the Proposed Action. DOE has no current programmatic needs to perform analytical chemistry operations in Wings 2 and 4; therefore, upgrading Wings 2 and 4 is not part of this proposal.

Decontamination and decommissioning of the structure would be performed at the end of the useful life of the CMR Building. A separate NEPA analysis will be required at that time.

2.2.1 Description of the Proposed Upgrades

General

The proposed upgrades would involve activities normally associated with construction projects involving modifications to an existing structure. Some specific activities would include: minor demolition; repair and reconfiguration of interior architectural systems (walls, ceilings, floors); removal and/or replacement of existing equipment and mechanical systems; installation of new equipment and mechanical systems; excavation and backfilling around building foundations; reinforced concrete and masonry placement; underground electrical system installation; interior

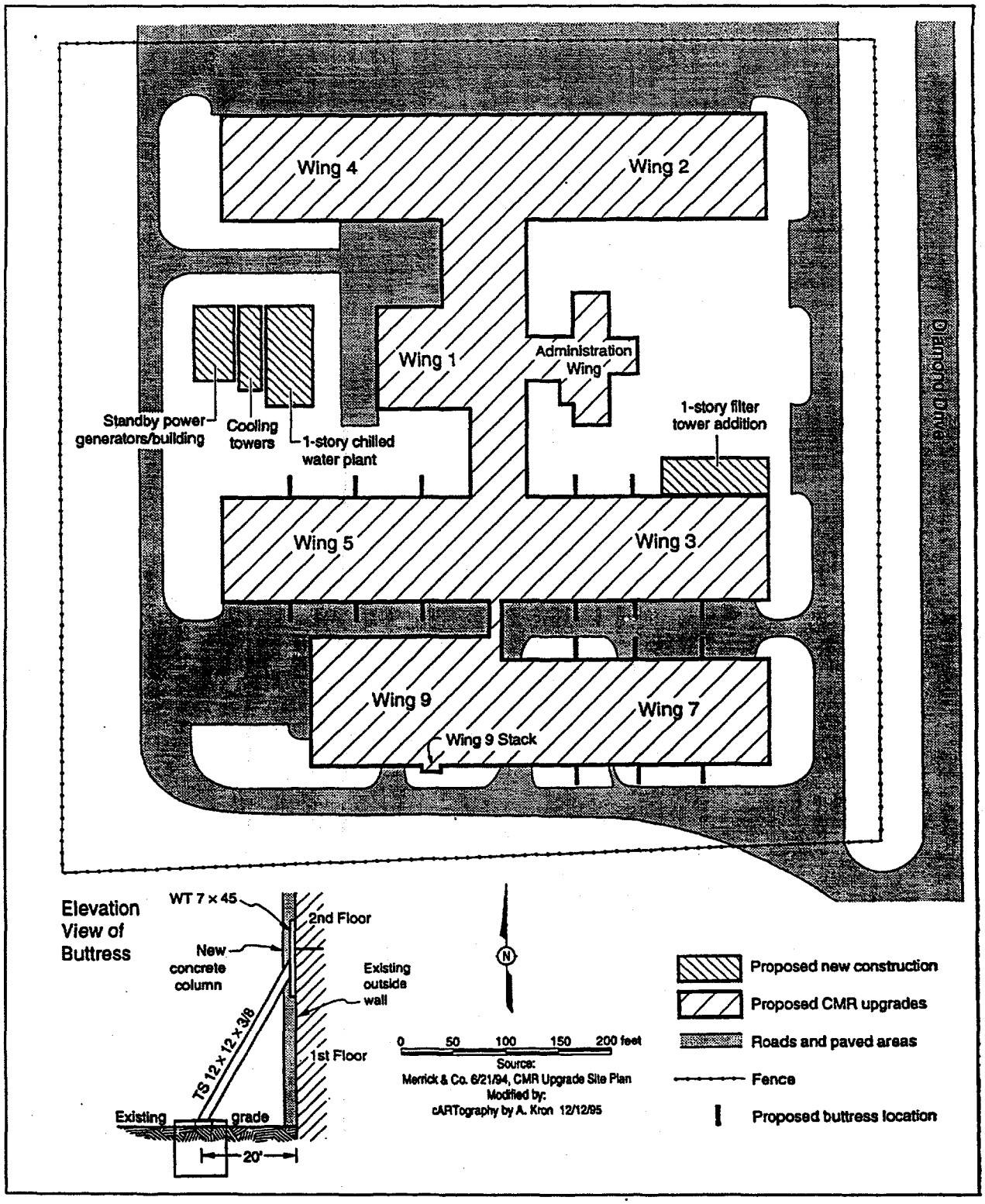

Figure 2-4. Proposed CMR Building Upgrades

electrical wiring/cabling systems installation; plumbing and other standard construction activities.

The CDR envisions that the proposed upgrades would be performed using common construction methods. However, these upgrades would be performed in an operating nuclear facility with associated radiological and chemical hazards. This unique situation requires special controls, procedures and safeguards (such as the use of respirators, coveralls and booties; floor and wall coverings; and monitoring for contamination). Because of both the need to maintain the facility in an operational status and the potential hazards present in the facility, the proposed CMR Building upgrades would take longer than performing similar upgrades for a facility without the same constraints.

Worker Safety

All construction work would be analyzed, planned, and managed to ensure that safety goals are met and that work is conducted safely in accordance with good management practices. The only work involving materials where radioactive contamination might be expected to be disturbed would take place inside the CMR Building; however, air filtration and interior area confinement systems would remain in place while the upgrade activities were performed. Members of the public would therefore not be in contact with these radioactive waste or materials. The radiation safety goal for the Proposed Action is that no single worker's exposure to ionizing radiation would exceed 500 millirem per year (mrem/year). The maximum exposure would not exceed the DOE and LANL Administrative Control level of 2 rem/year. Based upon historical worker exposures at the CMR Building and the relatively low radiation and contamination levels in the building, construction workers' exposures are expected to be well below the safety goal of 500 mrem/year.

DOE seeks to maintain all personnel doses As Low As Reasonably Achievable (ALARA). Both construction workers and workers involved in routine activities would wear appropriate protective clothing (including smocks, booties, and rubber gloves as needed) when working with radioactive material. Personnel are notified of any occupational doses they receive. During construction, appropriate monitors would be used to measure personnel exposures.

Waste Management

As CMR Building upgrades are performed, some uncontaminated construction rubble would be generated. Additionally, wastes generated could be contaminated with Low-Level Radioactive Waste (LLW). Some removed material may also be contaminated with Transuranic (TRU) isotopes. TRU waste contains alpha-emitting radionuclides with an atomic number greater than uranium (transuranic), half-lives greater than 20 years, and concentrations greater than 100

nanocuries per gram of waste material. Mixed wastes are contaminated with both radioactive materials and hazardous (RCRA-regulated) materials, and could also be generated. Such wastes would be managed as mixed LLW or mixed TRU wastes, depending upon the type and level of the radioactive component. Some asbestos waste may also be generated, and would be managed according to applicable regulations. Decontamination activities may also generate some radioactive low-level liquid waste. These wastes would be treated at RLWTF .

An initial conceptual estimate for waste volumes indicated that over 16,400 m^3 (21,400 yd^3) of potentially radiological, RCRA and mixed waste would be generated as a result of the upgrades. This included about 7,340 m^3 (9,600 yd^3) of exhaust air ducting, 840 m^3 (1,100 yd^3) of supply air ducting, 4,890 m^3 (6,400 yd^3) of excavated soil, 3,370 m^3 (4,400 yd^3) of miscellaneous waste (i.e., gloves, anti-contamination materials, etc.), and 1,840 m^3 (2,400 yd^3) of other materials. These numbers are estimates and are rounded off.

A value engineering-type process was then used to identify possible ways to reduce this estimated volume of waste. The process proved to be highly successful since it determined that: (1) most of the excavated soil would be uncontaminated and that all of the uncontaminated excavated soil could be retained within LANL boundaries and reused as fill; and (2) the bulk of the ducting could be reused, decontaminated, or compacted at LANL. This eliminated 12,400 m^3 (16,170 yd^3) of potential waste; bringing the total projected waste volume needing disposal down to 4,000 m^3 (5,200 yd^3). The waste volume reduction would take place at either the CMR Building or the TA-54 waste management area. Therefore, the volume of 4,000 m^3 (5,200 yd^3) is used for disposal considerations in this EA's effects analysis, while the volume of 16,400 m^3 (21,400 yd^3) is used for on-site transportation mileage considerations. The volume of exhaust air ducting, 7,340 m^3 (9,600 yd^3), is used to determine the largest quantity of radioactive material that could be released during an on-site transportation accident (see Section 4.1.5).

All construction wastes would be characterized before leaving the CMR Building. Solid waste not contaminated with radioactive or hazardous constituents would be disposed of at the Los Alamos County Landfill. LLW would be disposed of at TA-54, Area G, or off-site. TRU waste and mixed TRU waste would be sealed into appropriate containers and stored at TA-54 pending disposal off-site. Mixed LLW would be stored at TA-54 or sent off-site for treatment and disposal. Asbestos would be disposed of off-site in a landfill permitted for asbestos disposal. Radiologically contaminated asbestos would be placed into an existing dedicated pit at TA-54, Area G.

The construction contractor would be required to avoid using chemicals that produce liquid RCRA-regulated or mixed wastes. During decontamination activities some RCRA-regulated wastes could be generated. RCRA-regulated wastes are administratively excluded from the RLWTF at TA-50. These wastes are managed and stored at TA-54 and would be sent off-site for final disposal.

The DOE Environmental Restoration (ER) Program addresses LANL site contamination issues. Information provided by the ER Program indicates there are three known Solid Waste Management Units (SWMU) (now referred to as Potential Release Sites) in the immediate vicinity (exterior) of the CMR Building in TA-3, which are directly related to CMR facility operations. All three have been investigated in connection with other work activities and were found to have no contaminants that exceeded action levels, as defined in the ER program. Due to the low contamination levels, budget restrictions and other higher priority areas within LANL, the ER program does not currently have a schedule for further action on these SWMUs. Based upon currently available information, there are no plans to perform remediation of the SWMUs as part of the Proposed Action. Should additional SWMUs be encountered during construction of the proposed upgrades, any remediation or mitigation of adverse effects related to these SWMUs would be performed in accordance with agreements among the DOE, the LANL Environmental Restoration Project, the New Mexico Environment Department (NMED) and the U. S. Environmental Protection Agency (EPA). Additional information concerning contamination levels within TA-3 can be found in LANL's Remedial Field Investigation (RFI) Work Plan for Operational Unit (OU) 1114, dated June 1993, and Addendum 1 to the RFI dated July 1995.

2.2.1.1 Seismic and Tertiary Confinement

The CMR Facility does not meet current seismic criteria for a Hazard Category 2 Nuclear Facility. A benefit of this proposed upgrade would be to reduce potential radiological doses to the public and improve worker safety in the event of an earthquake.

This proposed upgrade project would involve structural modifications to Wings 3, 5, 7, and 9, to meet seismic criteria for a Hazard Category 2 facility with Performance Category 2 and 3 subregions, in accordance with DOE-STD-1020. STD-1020 establishes current design and evaluation criteria for natural phenomena hazards. Modifications to existing exterior structural openings would be performed to create a final confinement barrier. The Administration Wing would also be strengthened to meet seismic criteria for worker safety.

To bring these wings into compliance with the criteria, upgrades, including construction of diagonal braces at the roof diaphragm, exterior bracing from the second floor to ground at the exterior columns, internal vertical bracing from the second floor to the roof, strengthening the exterior columns and adding extra concrete over selected beams on the second floor, and filling in of selected window openings would take place. Wing 9 upgrades would also include strengthening and bracing the hot cell support structures for additional confinement protection in case of a seismic event (earthquake).

2.2.1.2 Security (Related to Tertiary Confinement)

This proposed upgrade would take advantage of opportunities to upgrade building openings, simultaneously, while seismic and tertiary confinement upgrades are conducted.

Building openings in Wings 3, 5, 7, and 9 would be upgraded to meet security requirements making it more difficult for an intruder to get into the area. Upgrades would include man-proofing unattended openings by adding bars, and replacing, upgrading or installing door and window gaskets, seals, and similar hardware.

2.2.1.3 Ventilation Confinement Zone Separation (Wings 1, 3, 5, 7, and 9);

This proposed upgrade would improve worker safety by replacing and upgrading ventilation systems to improve reliability and maintain proper air flows, and by adding instrumentation to notify workers of system failures.

Replacing and upgrading ventilation systems would include renovating the mechanical systems in Wings 3, 5, 7, and 9, by replacing components that are near the end of their useful lives, and improving confinement zone separation throughout each wing. Wings 3, 5, and 7 would be modified architecturally to add additional barriers between the ventilation systems for office and laboratory areas. This would be accomplished by installation of vestibules and doors, as needed. A new filter tower would be constructed on the northeast corner of Wing 3 allowing for the installation of HEPA filters. New mechanical systems would be installed to provide for separation of glovebox exhaust from other exhaust systems for laboratory and office spaces. Alarms would be provided for each enclosure to alert workers when mechanical systems are not operating according to safety standards. These alarms would be wired to the Operations Center.

Two possible construction approaches have been identified for implementation of the confinement zone separation upgrade. Option A would employ a sequential movement of operational processes from Wing 3 to 1 and 2, then 5 to 3 and then 7 to 5, allowing for movement of operations prior to performing upgrades in each wing. Option B would upgrade Wings 3, 5, and 7 without relocating programmatic functions while the upgrades are being performed. For either option, process radioactive material would be removed from the construction zone during the construction activities, but would remain in the building.

2.2.1.4 Standby Power and Communications Systems

This proposed upgrade would reduce the likelihood of the spread of contamination in the laboratories because of ventilation system failure caused by a loss of electric power.

Standby electric power would be provided to the most important mechanical systems in Wings 3, 5, 7, and 9 at a reduced level sufficient to maintain negative pressure in the laboratory enclosures with respect to the offices, corridors, etc. This would reduce the possibility of contamination spreading should off-site power be lost. The system would include engine-generator sets and associated fuel, control, and leak/level detector processing systems. The engine-generator sets would be placed outside on a reinforced concrete pad, located west of Wing 1. The pad would also contain a diesel fuel distribution system, the engine-generator and diesel fuel control systems, and processing electronics for fuel leak-level detectors. The engine-generator sets would be located within the CMR Building perimeter security fence. Underground fuel storage tanks would be placed adjacent to the engine-generator pad. Construction would meet current NMED regulations.

The existing communications system, including telephone and public address systems, would be upgraded by adding emergency telephone handsets to allow for voice announcements and communication from all floors. Additional speakers would be wired into the system, as necessary, for full building coverage.

2.2.1.5 Wing 1 Upgrades (HVAC)/Wing 1 Interim Decontamination

This proposed upgrade would improve worker health and safety by preventing air recirculation through modification of exterior intake and exhaust locations, and decontaminating presently unoccupied contaminated Wing 1 laboratories.

Contamination on the surfaces of benches and equipment in the unoccupied Wing 1 laboratories would be removed where possible, while any remaining contamination would be fixed in-place (such as covering with paint). These activities would be performed in accordance with standard LANL practices for decontamination.

The HVAC exterior intake and exhaust locations would be modified to improve worker health and safety. This would require relocation of existing air intake louvers to the roof, to eliminate the intake of vehicle exhaust fumes from the loading dock area, and extending the building exhaust point, upwards, by adding additional exhaust ducting.

2.2.1.6 Operations Center Upgrade

This proposed upgrade would improve the existing Operations Center's ergonomics and efficiency, the reliability of the central monitoring and control capabilities, and would also result in enhanced worker safety. To accomplish this, the proposed upgrade would integrate building monitoring systems into a central location.

The Operations Center would be upgraded to allow routine monitoring and limited control of essential building functions from a single center designed for this purpose. An equipment console would be installed to house building monitoring and control equipment for the following major CMR Building systems:

- CAMs,
- stack air monitors and alarms,
- fire alarm panels,
- HVAC/building utilities equipment,
- substation switchgear, and
- glovebox temperature, pressure differential, and airflow monitors.

This upgrade would also include interfacing personal computer-based workstations used for the building systems listed above into the control console and central computer system. Monitoring/control systems would be wired into the control panel.

2.2.1.7 Chilled Water Upgrade: Wings 3, 5, and 7

This proposed upgrade would enhance chilled water delivery by replacing the existing 40-year-old evaporative coolers in each wing, with refrigeration units in each wing to provide chilled water needed for process equipment. Process chilled water is currently provided by two evaporative coolers located in each wing. This upgrade would replace the evaporative coolers with a single refrigerated unit in each wing and would also include replacement of the process chilled water piping system. These proposed upgrades are independent and separate from the proposed chilled water plant upgrade included in the ventilation and confinement zone separation upgrade.

A central chilled water plant would be placed outside the building on a reinforced concrete pad constructed west of Wing 1. The pad would contain four 400-ton chilled water units, four cooling towers, five chilled water pumps, five condensing water pumps and ancillary equipment. The chilled water units and pumps would be protected by a pre-engineered metal building, complete with heating, ventilation and lighting. The chilled water plant would provide cooling water to each wing of the CMR Building, with sufficient capacity to maintain heating and cooling requirements for laboratory operations and personnel comfort as part of HVAC mechanical system upgrades.

2.2.1.8 Main Vault Continuous Air Monitors (CAMs), and Dampers

This proposed upgrade would enhance potential airborne radiation monitoring by the installation of CAMs. CAMs would be installed in the main storage vault, CAM controllers would be

installed in the vault anteroom, and remote monitoring (similar to the wing CAM systems) would be incorporated into the CMR Building Health Physics office. Seismic dampers would be installed in the main vault ventilation ducts.

2.2.1.9 Acid Vents and Drains: Wings 3, 5, and 7

This proposed upgrade would correct deficiencies and improve maintainability of the existing acid vents and drains system that remove liquid radioactive wastes produced from CMR Building operations. Deficiencies in the acid vents and drains would be corrected by modifying piping sections that currently have inadequate slope to provide for complete drainage of liquids. Sections of the piping system that connect laboratories to the acid drain lines would be replaced as required.

2.2.1.10 Fire Protection Upgrades

This proposed upgrade would correct CMR Building fire protection system deficiencies identified in the 1992 National Fire Protection Association (NFPA) 101 analysis and a Fire Hazard Analysis, which is being performed as part of the CDR. These analyses will result in a list of fire protection system deficiencies. These deficiencies would be evaluated and prioritized to determine those deficiencies that would be corrected as part of this proposed upgrades project. Examples of potential upgrades that may be performed as part of this project include: adding check valves in fire protection water line risers; adding backflow preventers in the sprinkler system; providing fire dampers in duct penetrations; and replacing fire alarm system panels.

2.2.1.11 Operations Center Standby Power

This proposed upgrade would allow the Operations Center to continue to function during situations where off-site power is lost. This would be accomplished by installing standby power to the CMR Building Operations Center and equipment for transfer capability and wiring from the standby power generator.

2.2.1.12 Exhaust Duct Washdown Recycling System: Wings 3, 5, and 7

This proposed upgrade would advance waste minimization initiatives through the installation of mechanical systems to allow for recycling of the exhaust duct washdown effluent.

A recycling system, installed in the duct washdown system, would provide about an 80 percent reduction in the CMR Building radioactive liquid waste stream thus reducing demands on the LANL RLWTF. Currently, an estimated 2,160,000 liters per year (570,000 gallons per year) of liquid effluent are generated by operating the existing duct washdown system that must be processed by LANL's RLWTF. This proposed upgrade could reduce exhaust duct washdown

system liquid waste generation from operations to about 454,300 liters per year (120,000 gallons per year). This upgrade would add new recycling capability to the existing washdown system. It would require installation of a tank to receive washdown effluent, a piping manifold to connect each wing duct to the receiver tank, a chemical makeup tank, centrifugal pumps, and associated piping and instrumentation/control equipment in each wing.

2.2.1.13 Wings 2 and 4 Safe Standby

This proposed upgrade would establish a safe standby condition in Wings 2 and 4 to ensure existing contamination in the wings would continue to be contained and that equipment would not deteriorate until decisions can be made regarding future programmatic needs for this space. Safety systems required for safe standby would be identified, radioactive materials removed, and systems and glove boxes deactivated and decontaminated. Safe standby means that loose surface contamination would be removed or stabilized. Equipment would be placed in a condition so that maintenance can be performed, but operations cannot take place. Continued maintenance and surveillance are both part of the safe standby procedure and would be performed until a new use is determined for these wings or until they are decommissioned.

2.2.1.14 Construction Work Force and Schedule

Construction activities associated with the proposed upgrades would take about five years to complete. The present schedule calls for construction to begin in 1997 and be completed during 2002. As previously noted, these upgrades would be performed in an operating nuclear facility with associated radiological and chemical hazards. Because of this unique situation, special controls, procedures and safeguards would be required. Because of the need to maintain the facility in an operational status and due to the potential hazards present in the facility, the proposed upgrades would take longer than similar upgrades for a facility without the same constraints.

The estimated number of construction workers involved in each phase of the proposed upgrades is shown in Table 2-1 as is the anticipated duration of each upgrade. The potential for workers to be exposed to radioactive materials and radioactive waste is also shown in the table.

Table 2-1
Estimate of Construction Worker Population and Durations for Upgrades

Upgrades	Numbers of Construction Workers	Duration of Proposed Upgrade	Likelihood of Exposure to Radioactive Materials and Radioactive Waste
Seismic/Tertiary Security	45-55	1 Year	Negligible
Ventilation Confinement Zone Separation/Process Chilled Water	70-80	4 Years	Possible
Acid Vents and Drains	30-35	4 Years	Possible
Operations Center	12-20	4 Months	Negligible
Standby Power & Communications Systems/Opns Center Standby Power	40-50	1 Year	Negligible
Wing 1 Interim Decontamination & HVAC/Wings 2, and 4 Safe Standby	15-20	1 Year	Possible
Fire Protection	15-20	1 Year	Negligible
Main Vault CAMS, Dampers	1-5	2 Months	Possible
Exhaust Duct Washdown Recycle.	1-5	6 Months	Possible

2.3 Alternative 1: No Action

The No Action alternative is to make no improvements or modifications to the CMR Building. The building would continue to be used and operated as it is now. Decontamination and decommissioning would be performed at the end of the building's operational use. Separate NEPA analysis would be required at that time. Without upgrades, the building has a life expectancy of approximately 5 to 10 years, after which DOE would not be able to reliably perform uninterrupted radiological and chemical research activities in a safe, secure, and environmentally sound manner at LANL. Higher worker and public risks and lower safety margins would result from not implementing the upgrades which would be unacceptable to the DOE. Such a situation may result in curtailment and/or shutdown of critical operations which would seriously affect DOE's ability to perform missions assigned to it by Congress and the

President. For these reasons, this alternative does not meet the purpose and need for Agency action, but is analyzed to provide a basis of comparison with the Proposed Action.

2.4 Alternative 2: Construction and Operation of New Facility at LANL

The construction and operation of a new facility was considered and DOE determined that it was not fiscally prudent (Section 1.3). However, construction of a new facility would not meet DOE's need for continued performance of uninterrupted interim and ongoing radioactive chemical and metallurgical research activities at LANL. Planning, design, and construction of a new facility would take a minimum of 10 years to complete. As noted in Section 2.3, the higher risks and lower safety margins that would exist in the CMR Building without upgrades would be unacceptable to DOE within about 5 to 10 years. Further, a new facility is estimated to cost more than twice as much as the proposed upgrades ($348 million vs. $123 million). In addition, the existing CMR Building would have to be decommissioned, incurring additional costs and wastes generated would take up space in the LANL low-level radioactive waste landfill or other permitted waste disposal system.

A new facility could disturb previously undisturbed land. New construction could potentially have adverse environmental effects upon water and air quality, biological resources, and possibly archeological resources. Because this alternative could potentially cause more environmental effects than the proposed upgrades, is estimated to cost more than twice the proposed upgrades, and would jeopardize DOE's requirement to maintain the uninterrupted operational capability to perform radioactive and chemical research, construction and operation of a new facility were not considered reasonable, and therefore, not analyzed further in this EA.

2.5 Alternative 3: Alternate Site for the CMR Building Operations at Other LANL Locations

The choice of an alternative site for CMR Building operations in existing buildings at LANL was considered. Other nuclear qualified LANL facilities where analytical chemistry operations could be performed are not of sufficient size or are currently committed to other programmatic missions. Besides CMR, the only other nuclear qualified space of sufficient size available at LANL is at TA-55; however, movement of CMR activities to the Plutonium Facility at TA-55 would displace about 50 percent of its ongoing activities.

Additionally, other existing buildings at LANL do not have sufficient safeguards and security systems or equivalent environmental and worker protection systems in place for the type of operations currently being performed in the CMR Building. For these reasons, this alternative was not considered to be reasonable and is not analyzed further in this EA.

2.6 Alternative 4: Alternate Site for CMR Building Operations at Another DOE Facility (Non-LANL)

The choice of an alternative site for CMR Building operations in an existing building within the DOE complex was considered. CMR Building activities directly support plutonium processing activities at TA-55 with analytical chemistry and plutonium and uranium chemistry. Locating this support away from LANL would result in additional operating costs, technical issues, and schedule impacts to current operations which would in turn generate programmatic inefficiencies that are not considered reasonable. In addition, this alternative would greatly increase transportation of radioactive materials over public highways, increasing risks to the public. This alternative would require off-site transportation of nuclear materials used in current CMR Building operations. For these reasons, this alternative would not meet the Agency's purpose and need for action and, therefore, is not analyzed further in this EA.

2.7 Alternative 5: Construction and Operation of New Facility for CMR Building Operations at Another DOE Site

Construction of a new facility would be more costly, would potentially jeopardize DOE's ability to maintain uninterrupted analytical chemistry and metallurgy research capabilities, and would potentially cause more environmental effects than upgrading the CMR Building (see explanation set forth in Section 2.4). Moving CMR Building operations to an existing building at another DOE site would increase the public risk due to increased off-site transportation (see discussion in Section 2.6). Constructing a new building at another DOE site and performing CMR Building operations in that new building in support of LANL activities would be more costly, entail more environmental effects, and expose the public to increased risks from additional off-site transportation. For these reasons, this alternative would not meet the Agency's purpose and need for action and, therefore, is not analyzed further in this EA.

2.8 Alternative 6: Decommissioning of Wings 2 and 4 in CMR Building

Not all wings of the CMR Building are required to perform analytical chemistry in support of current LANL mission assignments. The CMR Building was designed, constructed and has been operated for the past 40 years as an analytical chemistry research facility. Decommissioning Wings 2 and 4 of the CMR Building that are not currently required to support existing LANL missions is not considered to be an appropriate use of facility space. Decommissioning implies the ultimate retirement of a building or other capital asset from service and potential future use. Because of the unique capability of the existing CMR Building, DOE has no current plans to decommission any portion of the building. If future programmatic decisions result in no need for the currently available space in Wings 2 and 4, a decision relating to decommissioning could be appropriate. Should future programmatic decisions necessitate the need for increased analytical

chemistry operations, this additional space would be available at the CMR Building. If future programmatic decisions, such as those resulting from the Records of Decision (ROD) accompanying the Stockpile Stewardship and Management (SSM) Programmatic Environmental Impact Statement (PEIS) or the LANL Sitewide EIS (SWEIS) analyses, are made that necessitate use of remaining available space in the CMR Building, such actions would be subject to additional NEPA review. For these reasons, this alternative would not meet the Agency's purpose and need for action, and therefore, is not analyzed further in this EA.

2.9 Foreseeable Related and Future Actions

DOE gave preliminary notice of its intent to prepare the SSM PEIS in October 1994, issued its Notice of Intent to prepare the PEIS on June 14, 1995, and issued its PEIS Implementation Plan on January 5, 1996. The draft PEIS was published in February 1996, and the final PEIS was issued in September 1996. On December 19, 1996, the Programmatic ROD was signed which identified the future missions of the stockpile stewardship and management program and determine the configuration of the nuclear weapons complex needed for stockpile stewardship and management missions. Although the CMR Building has in the past and is expected to continue to support both stockpile stewardship and stockpile management activities, the proposed CMR Building upgrades would not be influenced by programmatic decisions stemming from the PEIS. Regardless of decisions concerning the allocation of stockpile stewardship and management program functions across the DOE complex, DOE will maintain the historical nuclear weapons competencies and capabilities of its weapons laboratories, including LANL, and has no plans to divest itself of its nuclear materials inventory related to weapons research, including that at LANL. Accordingly, DOE needs to maintain its capabilities to perform ongoing chemical and metallurgical R&D activities and operations regardless of the outcome of programmatic stockpile stewardship and management decisions. DOE's decision to reassign mission responsibilities to LANL will require a greater capability and capacity than could be provided by the CMR Building alone. This new mission assignment will be considered in future NEPA reviews that analyze the effects of alternative means of meeting these new mission responsibilities.

Environmental effects from current CMR Building operations were analyzed in "Final Environmental Impact Statement: Los Alamos Scientific Laboratory Site, Los Alamos, New Mexico" (SWEIS [DOE 1979]). In 1994, the DOE committed to preparing a new SWEIS to address ongoing operations and new activities planned for the next 5 to 10 years. The environmental effects from CMR Building current and projected operations are to be assessed in the LANL SWEIS. An Advanced Notice of Intent for the LANL SWEIS was issued August 10, 1994, and included the proposed CMR Building upgrades in a list of recommendations for ongoing NEPA reviews. On May 12, 1995, a Notice of Intent (NOI) for the LANL SWEIS was issued by DOE. As stated in the NOI, DOE has decided to proceed immediately with a separate

NEPA review for those elements of the proposed CMR Building upgrades that address maintenance of the existing infrastructure, improved safety of operations to workers and the public, enhanced environmental management systems, and improved security. This decision was based upon the determination that such upgrades are required under all SWEIS alternatives and would neither influence nor be influenced by the SWEIS. These proposed upgrades are required for the CMR Building to continue to meet current DOE assigned missions. The SWEIS Implementation Plan addresses the results of the SWEIS scoping process and reiterates the decision to proceed with this EA. The implementation plan was approved for public release on November 27, 1995.

DOE issued a final EIS for the proposed production of medical isotopes in April 1996 (DOE 1995c). A ROD was issued on September 11, 1996. The preferred alternative chosen for implementation is to fabricate targets containing highly enriched uranium at the CMR Building and ship the targets to the Annular Core Research Reactor at Sandia National Laboratories, New Mexico, for irradiation and processing. This project is independent from the proposed CMR Building upgrades.

In February 1995, DOE issued a FONSI for the Actinide Waste Test Source Term Project (DOE 1995a). This project is taking place in the CMR Building basement area and is an operational activity independent of the proposed CMR Building upgrades. This project is not dependent on completion of the proposed upgrades included in this EA. Similarly, this project will not affect any of the proposed CMR Building upgrades.

DOE issued a FONSI in December 1995, for a project to reclaim excess sealed radioactive sources containing americium and plutonium mixed with beryllium that are now held by commercial, university, and other owners. Part of this work will be performed in the CMR Building Wing 9 hot cells. This activity will not require the upgrades addressed in this EA and is an operational activity independent of the proposed CMR Building upgrades.

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3.0 AFFECTED ENVIRONMENT

3.1 Environmental Resources Not Affected

Only the issues or resources that may actually be affected by the Proposed Action have been discussed in this chapter. The environmental issues listed below would not be affected by the Proposed Action since no construction activities are proposed outside of the immediate vicinity of the CMR Building that would have any effect on these resources.

- Agricultural resources
- Cultural resources
- Wetlands and floodplains
- Endangered and threatened species
- Recreational resources
- Nesting/foraging habitat of migratory birds
- Environmental Justice

3.2 Regional Setting

Annual surveillance reports prepared by the LANL Environmental Protection Group in the Environment Safety and Health Division describe the LANL environment, including archeology, geology, seismology, geographic setting, land use, hydrology, climatology, meteorology, and the population distribution of Los Alamos County and surrounding areas (LANL 1996). LANL's location within the County and New Mexico is shown in Figure 3-1. The site for the Proposed Action is within developed areas with many similar activities nearby and within the same ecological environment. Detailed descriptions of LANL environs, climatology, meteorology, hydrology, flood plains, wetlands, cultural resources, and habitat suitable for threatened and endangered species are presented in several LANL documents. (DOE 1979, LANL 1990b, LANL 1994a, LANL 1996).

3.3 Site Description and Affected Population

LANL is a DOE facility located on 111 square kilometers (km^2) (43 square miles [mi^2]) of land in Los Alamos County in north-central New Mexico, approximately 100 km (60 mi) north-northwest of Albuquerque. LANL is on the Pajarito Plateau, a series of mesas and canyons, at an elevation of about 2,200 m (7,200 ft) above sea level. Los Alamos has a semiarid, temperate mountain climate with about 0.48 meters (m) (18.7 inches [in]) of annual precipitation (LANL 1996).

Los Alamos County has an estimated population of approximately 18,115 (U. S. Census, 1990, projected to 1995 [Commerce 1991]); the Los Alamos townsite has an estimated population of 11,400, and White Rock has an estimated population of 6,800. A small, privately-owned

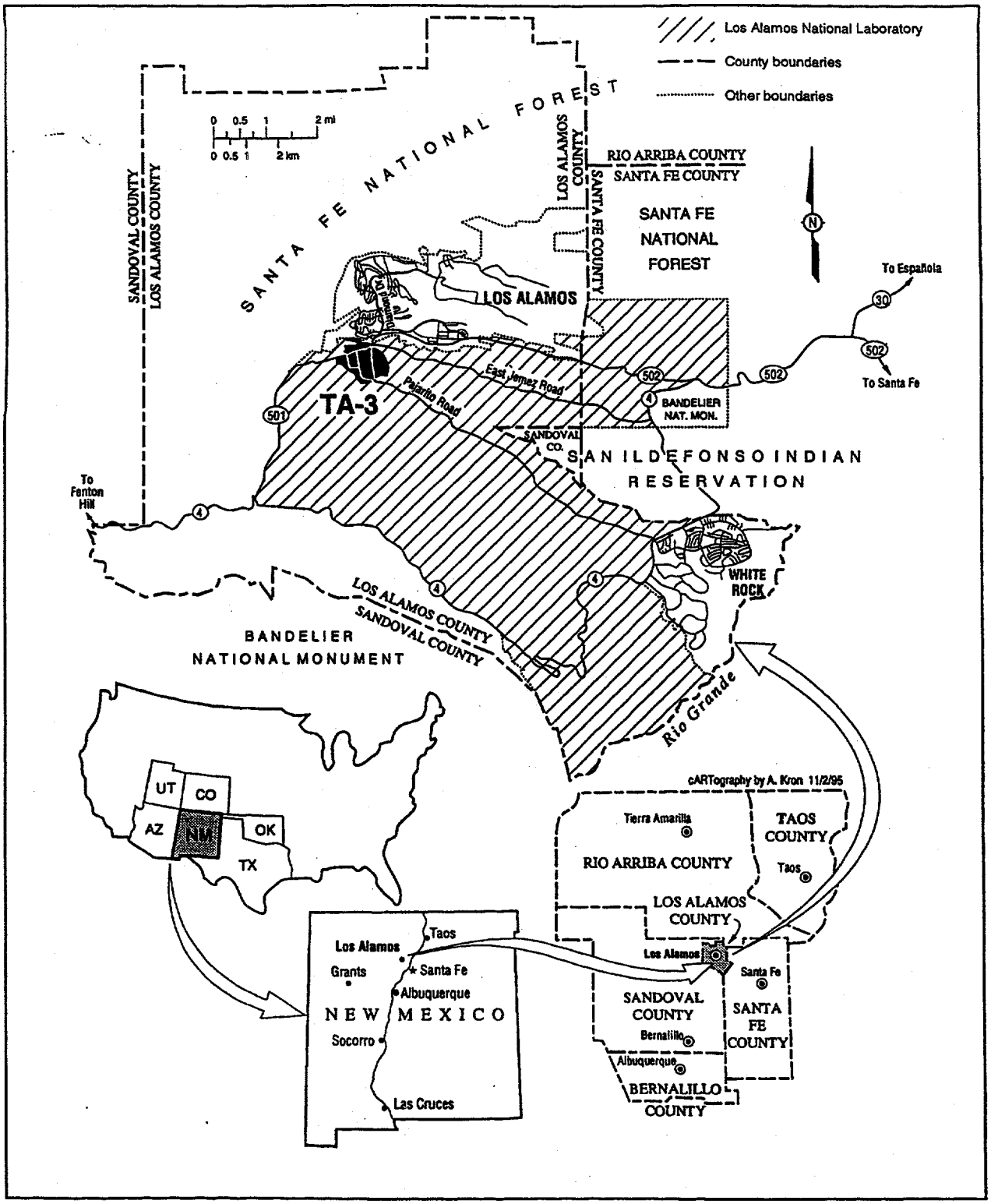

Figure 3-1. Location of LANL and TA-3

residential area, Royal Crest Trailer Park, is surrounded by LANL property and has an estimated population of 500 (Morris 1994). The principal population centers located within an 80 km (50 mi) radius of LANL are Santa Fe, Española, and the Pojoaque Valley, which have a total approximate population of 214,727. Fourteen pueblos and Native American reservations are located within an 80 km (50 mi) radius of LANL. The populations of the four closest pueblos are: San Ildefonso Pueblo (15 km [8 mi] to the east), 1,499; Santa Clara Pueblo (37 km [23 mi] to the northeast), 3,000; Cochiti Pueblo (34 km [9 mi] to the south), 1,342; and Jemez Pueblo (43 km [27 mi] to the southwest), 1,750 (Commerce 1991). LANL employs approximately 12,250 people, principally living within 80 km (50 mi) of LANL.

3.4 Air Quality

LANL and Los Alamos County are remote from major metropolitan areas and major sources of industrial pollution. In 1994, air quality at LANL was much better than ambient air quality standards set by the EPA and the NMED (LANL 1996). Information on nonradioactive air emissions is summarized in the annual Environmental Surveillance Report and the 1990 Non-radioactive Air Emissions Inventory (LANL 1990a). Radioactive and nonradioactive air emissions from normal operations at LANL are in compliance with the Clean Air Act and the New Mexico Air Quality Control Act. An assessment of these emissions is also available in LANL Environmental Surveillance Reports (LANL 1996).

3.4.1 Radiation Environment

The radiation environment consists of (1) background radiation and background levels of radioactivity at LANL and the surrounding community, and (2) the workers' radiation environment within the CMR Building workplace.

The radiation environment at LANL and the surrounding communities is continuously monitored and characterized in the LANL Environmental Surveillance Report (LANL 1996). Air is routinely sampled at locations on LANL property, along the DOE boundary perimeter, and in more distant areas that serve as regional background stations. Atmospheric concentrations of radioactive isotopes are measured. Thermoluminescent dosimeters (TLD) are used to determine external radiation doses in the area. Background dose estimates are subtracted from the measured values to determine the effective dose equivalents and the committed effective dose equivalents to the public at or outside the site boundary and at the nearest residence. (See Glossary for definition of effective dose equivalents.) LANL radiation worker exposures are similarly determined from personnel monitoring and personnel TLD data. The normal operational radiation environment from external exposure and airborne radioactive material for members of the public (LANL 1996) and for LANL workers (LANL 1994b) is summarized in Tables 3-1, 3-2, and 3-3.

From these data, estimates of human risk of developing excess fatal cancers from the radiation environment are made based upon currently accepted mathematical models that estimate radiation risk. These risk estimates predict the chance of excess cancer fatalities. These values

are compared with the risks expected to be caused by the Proposed Action, forming the basis for the radiological environmental effects described in Section 4.1.5.

Table 3-1
1991 Estimated Maximum Individual Dose Commitment[1] from Airborne Actinide Releases from All LANL Operations

Source	Dose (mrem)/year
Total Actinides[2]	0.3
EPA Limit	10.0

[1] Maximum Committed Effective Dose Equivalent (CEDE) to an individual at or outside the site boundary where the highest dose rate occurs and where a person actually resides.
[2] Includes uranium, plutonium, and americium.

Source: LANL 1994a, Table V-5.

Table 3-2
1994 Estimated Annual Effective Doses[1] to Los Alamos Townsite Residents from All LANL Operations

Receptor	Dose (mrem)/year
Average Dose to Residents (Los Alamos townsite)	0.27
Maximum Dose to an Individual[2]	3.5
Background (Los Alamos townsite)	348
DOE Limit to Public	100

[1] Effective Dose Equivalent (EDE) from all sources including external exposures and inhalation of airborne emissions.
[2] At East Gate, due mostly to external penetrating radiation from air activation products released by the Los Alamos Meson Physics Facility.

Source: LANL 1996, Tables I-2, I-3.

Table 3-3
Annual Individual Worker
Occupational Exposure, EDE

Dose Source	Dose (mrem)/year
Average External Dose to all CMR Building Workers who received doses (1994-1995)[1]	44
Background[2]	348
DOE Occupational Limit	5,000

[1] Source: LANL 1993b, p. 3.
[2] Source: LANL 1994.

3.5 Liquid Waste Management

LANL operations produce about 30 million liters/yr (8 million gal./yr) of radioactive liquid that must be treated (LANL 1991). The RLWTF at TA-50 processes radioactive liquid waste using precipitation, filtration and dewatering, and the effluent is discharged through a National Pollutant Discharge Elimination System (NPDES) permitted outfall into Mortandad Canyon. The discharged water infiltrates surface sediments. Surface flow in this canyon is not known to have passed beyond the LANL site boundary since the RLWTF began operating in 1963 (LANL 1996). The overall removal factor for materials dissolved and suspended in the water was 99.4 percent in 1992. Most of the discharged radionuclides in the effluent are physically bound to the sediments in the channel (LANL 1994a). To ensure that sediment-bearing radionuclides are not carried beyond LANL boundaries during major runoff events, a series of three canyon sediment traps were installed 2.3 km (1.4 mi) upstream from the LANL boundary in the early 1970s (LANL 1994a). In 1992, following thunderstorms in 1991 which filled the sediment traps, the traps were excavated to restore the original retention volumes.

The dewatered concentrates annually amount to about 400, 55-gallon drums of LLW, which are disposed of at TA-54. Higher concentration radioactive liquids are processed separately, and the precipitates solidified are stored at TA-54 as TRU waste awaiting final disposal to permitted waste management sites, such as the Waste Isolation Pilot Plant (WIPP).

CMR Building liquid wastes generated by routine operations include radioactive and inorganic chemical wastes. These are disposed of through industrial waste lines to the RLWTF provided that the liquid meets all acceptance criteria. Approximate quantities of radioactive and inorganic

liquids sent to the RLWTF are 36,000 liters per day (11,500 gal per day), or 8.9 million liters per yr (2.4 million gal per yr).

Table 3-4 summarizes liquid radioactive waste generated at LANL and at the CMR Building.

Table 3-4
Summary of Liquid Radioactive Waste

Origin of Liquid Radioactive Waste	Yearly Average of Radioactive Liquid Waste
Total LANL	30 million liters (8 million gal)
CMR Building	8.9 million liters (2.4 million gal)

Source: LANL 1991.

Appropriate arrangements must be made for liquid wastes that do not meet the TA-50 waste acceptance criteria since the TA-54, Area G, waste disposal site cannot accept radioactive liquids for landfill disposal. Liquid wastes that require other forms of disposal include radioactive organic chemical wastes, RCRA-regulated wastes, and other controlled wastes. These wastes are managed and stored at TA-54, and may be sent off-site for final disposal.

Sanitary liquid waste is disposed of directly to the LANL Sanitary Waste Consolidation System. Treated effluent is released directly to the environment.

3.6 Land Use for Waste Disposal

Wastes currently generated at LANL include radioactive low-level and TRU wastes, RCRA-regulated and other chemical wastes, and asbestos. Solid waste and suspect radioactive wastes that have been determined to be free of radioactivity by counting techniques or radioanalysis can be released to the Los Alamos County landfill.

LANL TA-54 disposal site waste management staff report that 4,500 m^3 per yr (5,925 cubic yards [yd^3] per yr) are disposed of in the Area G, low-level radioactive disposal area (LANL 1991). Other types and amounts of waste processed at TA-54 are 153 m^3 per yr (200 yd^3 per yr) of RCRA-regulated hazardous waste, 26 m^3 per yr (34 yd^3 per yr) of RCRA-regulated mixed waste (Tang, 1994), and 5,400 m^3 per yr (7,060 yd^3 per yr) of TRU waste (LANL 1991). All waste is stored and disposed of in accordance with the current permit.

3.7 Environmental Justice

Within a 16-km (10 mi) radius of TA-3, 14 percent of the 18,115 persons are minorities, defined as including Hispanic and Native American people. The principal population centers within an 80 km (50 mi) radius of LANL are Santa Fe, Española, and the Pojoaque Valley. These areas have an approximate total population of 214,727 people. Minority individuals account for 65 percent of the general population of 133,028 living 16 to 48 km (10 to 30 mi) from TA-3. Within an 80 km (50 mi) radius of TA-3, minority individuals account for 54 percent of the population of 214,727. Low-income households increase sharply beyond the 16 km (10 mi) radius of TA-3 (low income is defined as a household income of less than $15,000 in 1990). In the 16 to 49 km (10 to 30 mi) radius of TA-3, 23 percent (12,995 households) of the general population are low-income households. A total of 24 percent of the general population are low-income households within the 80 km (50 mi) radius of TA-3.

Fourteen pueblos and Native American reservations are located within a 80 km (50 mi) radius of LANL. The populations of the four closest pueblos are: San Ildefonso Pueblo, 1,499; Santa Clara Pueblo, 3,000; Cochiti Pueblo, 1,342; and Jemez Pueblo, 1,750 (Commerce 1991).

Under Presidential Executive Order 12898 of February 11, 1994:

> "Section 1-1. IMPLEMENTATION.
>
> 1-101. *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with the principles set forth inthe report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands."

DOE is in the process of finalizing procedures for implementing the Executive Order. The manner in which environmental justice issues should be addressed in an environmental assessment is expected to be addressed in the procedures. The analysis of environmental justice in this EA is not intended to establish the direction of DOE's future procedures implementing the Executive Order. For the purpose of environmental justice analysis, minority populations are defined as all people of color, exclusive of white non-Hispanics; and low-income households are those with incomes of less than $15,000 per year.

The Proposed Action would not result in disproportionately adverse consequences to Environmental Justice populations. The effects considered include land use from waste disposal, dust air emissions caused during construction, and transportation. Any foreseeable effects on land use from routine waste disposal, air quality, and transportation, would not have an adverse health effect on human populations and would fall within regulatory compliance requirements. Construction of the upgrades would have no known disproportionately high adverse human health or environmental effects on minority or low-income populations in the region of interest, i.e., populations residing within 80 km (50 mi) of the site.

3.8 Transportation

LANL has a number of roads, including major thoroughfares, that allow public access. However, since DOE controls the entire area within the LANL boundaries, DOE has the option to restrict traffic on LANL roadways.

3.8.1 Vehicular Traffic

Most vehicular activity in Los Alamos County, including LANL, is commuter traffic. The number of average daily trips on East Jemez Road is 6,000, Pajarito Road, 8,000, and across the Los Alamos Canyon Bridge, 25,000 (LAC 1992). The State of New Mexico reports that Los Alamos County has an annual average of 280 accidents per 2.95×10^8 km (1.83×10^8 mi) driven, and the State accident rate is 50,227 accidents per 3.04×10^{11} km (1.89×10^{11} mi) driven (NMSHTD, 1992). In Los Alamos County, this rate is equivalent to 0.949 accidents per million km (1.53 accidents per million mi) driven; in the State, the rate is equivalent to 0.165 accidents per million km (0.279 accidents per million mi) driven.

3.8.2 Road Closures

Occasionally roads in the county are closed for movement of hazardous material. DOE has the option to restrict traffic on LANL roads, and exercises this option during the movement of hazardous and radioactive material if the material is not packaged in U.S. Department of Transportation (DOT)-approved containers. County residents and LANL employees are notified, in advance, of closures, including routes, dates, and times.

3.8.3 Utilities Along Roadways

Utility corridors usually follow roadways within the LANL boundaries. Utility upgrades or other utility work can obstruct the flow of traffic.

3.9 Seismicity

Geologically, LANL is located within the northern Rio Grande rift, a seismically active province. Although surface-faulting earthquakes have not occurred historically in the LANL region (within 100 km [60 mi] of LANL), geological evidence indicates they have occurred during the Quaternary Period (1.6 million years). In particular, investigations on three of the most significant and closest faults to LANL (Pajarito, Rendija Canyon, and Guaje Mountain) have produced evidence of a number of surface-faulting seismic events. Evidence indicates the most recent occurred between 4,000 to 6,000 years ago. The Valles Volcanic province is situated just west of LANL. Physical evidence indicates the last volcanic eruption occurred approximately 60,000 years ago. Geologically, the province is intimately related to tectonic activity associated with the Rio Grande Rift and the Jemez lineament. Presently, the volcanic center that produced the past eruptions is considered to be dormant, but geologically active. The Valles Volcanic province is noteworthy due to its lack of seismicity.

Evaluation of seismic hazards for LANL's TA-3, where the CMR Building is located, provides results in terms of mean annual probability of exceedance. In any one year, the chance of a seismic event producing a peak horizontal ground acceleration of 0.14g is 1 in 500. In any one year, the chance of a seismic event producing a peak horizontal ground acceleration of 0.30g is 1 in 2,000. The seismic hazard evaluation produced results that have been scrutinized by a variety of subject matter experts, including non-LANL employees. A significant amount of research, investigation, and evaluation was expended over a four-year period (1991-1995) to obtain seismic information. Although bounded by a range of uncertainty, these results are based upon state-of-the-art technology and represent the best estimates available.

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4.0 ENVIRONMENTAL CONSEQUENCES

The Proposed Action upgrades would all take place within the CMR Building, except for the seismic upgrades, and installation of standby power, the new chiller, and the filter towers. These upgrades would take place in an area outside of the existing structure, which was previously disturbed by the original construction, but within the fenced CMR Facility perimeter.

The environmental consequences of the Proposed Action and the No Action alternative are summarized in Table 4-1 and discussed in detail below.

Table 4-1
Summary of Environmental Consequences During Construction Period

	Proposed Action	No-Action Alternative
Air Quality	Air filtration and interior area confinement would remain in place; no emisions are expected from interior construction; dust emissions may be generated by exterior construction activites.	No effects expected
Liquid Waste	Minor effect.	Minor effect.
Land Use for Waste Disposal	4,000 m^3 (5,200 yd^3)[1] for the total project, compacted.	No effects expected
Worker and Public Health	No effects to public. Increased health risk to workers.	No effects expected
Transportation	Increase in truck-miles driven.	No effects expected

[1]This EA uses 4,000 m^3 of waste volume generated to assess the effects of waste disposal on land use. Although an estimated 16,400 m^3 of waste could potentially be generated, waste minimization activities planned into the proposed upgrades would reduce this volume to the estimated 4,000 m^3 requiring disposal.

4.1 Environmental Consequences of the Proposed Action

4.1.1 Effects on Air Quality

During the Proposed Action, routine CMR Building process operations in the immediate construction area would be temporarily suspended. Process radioactive material would be removed from the active construction area, either prior to the start of construction or each night while construction takes place, depending upon the option chosen. However, all process radioactive material would remain in the building. There would be no radioactive or hazardous air emissions from normal construction activities that would produce any environmental effect since air filtration and interior area confinement systems would remain in place during the conduct of upgrade activities. Under accident event conditions, the primary source for potential releases to the environment would be accidents involving the transport of radioactive waste deposited in ventilation ductwork and acid drainlines during the past 42 years of operations. This material, mainly plutonium and small amounts of uranium, is the basis for the human health effect calculations discussed in Section 4.1.6.

Construction would result in increased levels of dust particulates from excavation and air pollutants generated by construction equipment exhaust. The generation of dust is not expected to adversely effect TA-3 area operations. Measures to reduce dust could include: watering, phasing of construction, rescheduling construction to avoid windy periods, and limitations on vehicle access and speed. Immediately following construction, disturbed areas would be seeded, landscaped, and/or stabilized.

4.1.2 Effects on Land Use from Waste Disposal

Construction activities associated with the proposed upgrades would result in the generation of radioactive, chemical, and hazardous wastes, in addition to normal construction waste. Waste items would include waste concrete, soil, ceilings and coverings, piping and plumbing fixtures, wiring and electrical boxes, metal braces, glove boxes, hoods and ductwork, HEPA filters, laboratory equipment and mechanical equipment. Some equipment could contain asbestos. Some RCRA-regulated wastes (such as solvents or metals) may be included in the solid waste. Wastes would be assayed to determine waste classifications, amounts and radioactivity.

Approximately 16,400 m^3 (21,400 yd^3) of potentially radiological, RCRA-regulated, and mixed waste were originally estimated to be generated as a result of the CMR Building Upgrades Project. This volume was estimated by conservatively assuming that the entire existing exhaust ventilation system would be removed and disposed of at a permitted waste disposal site, and all soil disturbed would be disposed of as waste. Evaluations of options for the design of the ventilation system and identification of waste minimization technologies resulted in significant

reductions in the projected volume of radioactive waste. Volume reductions would be achieved by reusing some portions of the mechanical equipment, decontaminating contaminated materials that are removed so that they are no longer classified as radioactively contaminated, reducing the volume of contaminated material and equipment, and reusing soil on-site. The resulting projected estimate of the total volume of radiological, RCRA-regulated, and mixed waste after waste minimization activities is approximately 4,000 m^3 (5,200 yd^3).

The largest source of waste is expected to come from the ventilation and confinement zone separation upgrades. It is expected that the majority of the wastes would be LLW. Although the RCRA-regulated, TRU, and mixed waste streams have not been estimated as a percentage of the total, they are included in the overall total projected waste volume. Characterization to determine waste classification would take place before or during construction.

LLW would be disposed of at TA-54, Area G, the LANL low-level radioactive waste disposal area, or sent off-site. Area G has several active pits in the currently developed area. While the area is nearing its original design capacity based on the use of past pit designs and placements, the currently defined active disposal area may be sufficiently great enough in size to accommodate more pits for disposal activities using newly engineered designs. Room is also available for a number of shafts to be constructed between existing pits, if necessary. Plans being considered for the continued management of LLW for LANL include maximizing the use of the active pit area at Area G for the next ten years; the expansion of waste disposal into the unused western portion of Area G; and offsite transport and disposal of wastes, particularly soils from the Environmental Restoration program (all of which will be included for analysis in the LANL SWEIS). Without the incorporation of any new disposal pit designs or the use of shafts for disposal at the existing active disposal site at Area G, the landfill area would not be filled to capacity before the end of 1998, based upon current projections that include receiving waste from the proposed CMR Building upgrades. The current schedule for the proposed upgrades calls for construction to be conducted over a five-year period, from 1997 through 2002. LANL's overall waste management strategy for the next 10 years, including a proposed expansion of Area G, is to be analyzed in the LANL SWEIS, as stated in the Notice of Intent published in the May 12, 1995 *Federal Register (60 FR 25697)*. The ROD for the SWEIS is expected in 1997 or early 1998, before the developed part of Area G is filled. Depending upon waste management decisions regarding Area G, waste will either be disposed of at the expanded Area G, its replacement facility, or off site.

RCRA-regulated solid wastes, including mixed waste, may be generated during construction. One source would be from the decontamination or disposal of glove boxes and hoods in which RCRA characteristic or listed wastes have been deposited. If materials that result in the generation of RCRA-regulated wastes are used during the decontamination process, the amounts of RCRA-regulated and mixed waste could be increased. The volume of RCRA-regulated

wastes has not been estimated at this time. The total waste volume estimate includes any RCRA-related wastes. Both RCRA-regulated and mixed waste would have to be taken off-site for disposal at a permitted landfill because LANL does not have a permit for disposal. Volumes of wastes produced by routine operations would not be changed by the proposed construction activities.

TRU waste could be generated during the upgrades and the total waste volume estimate includes TRU waste. The specific volume of TRU waste has not been estimated at this time. Buildup of radioactive contamination in the glove boxes and hoods has been kept to a minimum by cleaning, so the amount of TRU waste is expected to be small. However, some hoods, glove boxes, and ductwork may have an activity level high enough to put them in the TRU waste category. This waste would be certified as required, sealed in drums, and stored at TA-54, Area G, for final disposal at a permitted off-site facility. At present, DOE anticipates disposing of TRU and TRU mixed wastes in WIPP near Carlsbad, New Mexico, when that facility recieves authorization to open. Any liquid TRU waste would be solidified, sealed in drums, and stored at TA-54 pending ultimate disposal.

Solid waste not contaminated by radioactive or hazardous constituents could be generated during construction. This solid construction waste and debris would be disposed of at the Los Alamos County Landfill.

4.1.3 Radioactive Liquid Waste Management

Decontamination activities proposed under the CMR Building upgrades may generate radioactive low-level liquid waste. The RLWTF has historically treated as much as 30 million liters (7,920,000 gal) per year and is currently treating 20 million liters (5,280,000 gal) per year. The volume of liquid low-level waste that could be generated under the Proposed Action has not been estimated, but is expected to be much less than 10 million liters (2,640,000 gal) per year. Therefore, any increase due to these activities is well within the capacity of the existing RLWTF (LANL, 1991).

4.1.4 Effects on Worker and Public Health -- Radiation

The effect on human health from the Proposed Action would come from the radiation environment within the CMR Building. As presented in Table 2-1, not all construction workers are expected to be exposed to radioactive material during their routine work. Non-involved workers, those performing other jobs as well as the usual CMR Building personnel, would not be expected to receive any doses due to the proposed upgrades. No increases in airborne radioactive material emissions from the CMR Building are expected due to the upgrades taking place within the building, and therefore, no effects to the public are expected.

Estimates of human health risk from the radiation environment are made based upon currently accepted radiation risk models (International Commission on Radiological Protection [ICRP], 1991). See Appendix D for additional information. These risk estimates show the ultimate

effects of radiation on humans, namely, an estimate of the added cancer fatalities in the exposed population. Human health risk is determined by converting the estimated dose into the probability of contracting a fatal cancer. The dose-to-risk conversion factors used for estimating cancer deaths were five cancer deaths (latent cancer fatalities) per 10,000 person-rem dose (5×10^{-4} deaths per person-rem) for the general population and four cancer deaths per 10,000 person-rem dose (4×10^{-4} cancer deaths per person-rem) for exposed workers. The health risk to an exposed individual is best expressed as the added probability of that individual developing a fatal cancer. As the probability approaches 1, the chances of development of a fatal cancer increase. As probability decreases, the chances of development of a fatal cancer similarly decrease. For exposed populations, the probability is more meaningful when it is considered as the number of additional cancer deaths. If the probability is less than 1.0, no additional cancer deaths are expected. If it exceeds 1.0, then additional cancer deaths are likely to occur.

A conservative estimate of worker doses and health risks is presented in Table 4-2. Exposed workers are assumed to receive 500 mrem (0.5 rem) per year of work, although actual doses are expected to be much smaller. As shown in Table 2-1, less than half of the workers are expected to be exposed to radioactive materials. Construction workers in the CMR Building typically receive much less than 500 mrem per year. A small random sample of CMR Building construction workers indicates that 80 percent of the workers had no occupational exposure, and the remainder had exposures between 10 mrem and 50 mrem during the period January to October 1995. Radiation and contamination levels in the CMR Building are typically low. This construction work would be analyzed, planned, and managed to ensure that worker exposures are kept as low as reasonably achievable. Therefore, construction worker exposures and resulting health risks are expected to be much lower than indicated in Table 4-2. Based upon this calculation, no excess cancer fatalities are expected and workers engaged in this proposed project are not expected to incur any harmful health effects from radiation exposures they receive during normal construction operations. At present, one in five individuals in the United States dies of cancer (the risk is 0.2 per person).

Table 4-2
Summary of Radiation Exposure Doses and Risk of Cancer Deaths to Worker Populations

Upgrades	Dose (person-rem)	Risk of Excess Cancer Fatalities* in Exposed Population
Ventilation confinement zone separation Process chilled water (80 workers, 4 years)	160	6.4×10^{-2}
Acid vents and drains (35 workers, 4 years)	70	2.8×10^{-2}
Main Vault CAMs/Dampers (5 workers, 2 months)	0.4	2×10^{-4}
Exhaust duct washdown recycling (5 workers, 6 months)	1.25	5.0×10^{-4}
Wings 1 interim decontamination/HVAC, Wings 2, and 4 safe standby (20 workers, 1 year)	10	4.0×10^{-3}

*If the probability is less than 1.0, no additional cancer deaths are expected.

For comparison, the normal annual dose to CMR Building operations personnel is 0.044 rem per person per year, corresponding to an individual annual risk of latent cancer fatality of 2×10^{-5}. The DOE occupational annual dose limit of 5 rem per person corresponds to an individual annual risk of latent cancer fatality of 2×10^{-3}.

4.1.5 Effects from Transportation

There would be some effect from transportation during construction if 16,400 m^3 (21,400 yd^3) of waste were to be removed and transported to TA-54. While waste minimization is expected to reduce this waste volume to 4,000 m^3, some of the volume reduction may be accomplished at TA-54. Although some construction material and equipment may be reused on-site, to ensure that this transportation analysis is bounding, the original conceptual estimates of waste volume are used. Construction debris for on-site volume reduction and disposal would be collected into dump trucks of 6 m^3 (8 yd^3) capacity and hauled from the construction site to the TA-54, Area G, waste management area. The volume of 7,340 m^3 (9,600 yd^3) of waste is used to determine the bounding concentrations of radioactive material for on-site transportation accidents. LLW would be disposed of at Area G without any further transportation. Mixed waste for off-site treatment and disposal would be packaged in 3 m^3 (4 yd^3) B-25 boxes for shipment. The B-25 box is a steel container with a tight-fitting lid that meets DOT transportation requirements. If 6 m^3 (8 yd^3) trucks were used to haul the waste to the TA-54 disposal area, a round-trip distance of about 19 km (12 mi), the total project would require an additional 52,000 truck-km (32,100 truck-mi) for waste removal. Assuming that delivery of new construction materials resulted in 10 times that travel distance, then approximately 520,000 km (320,000 mi) might be driven during waste removal and construction.

Should LANL on-site disposal capability not be available, off-site disposal of the contaminated construction waste (LLW, mixed, or RCRA-regulated waste) would require transportation in two segments: (1) untreated waste would be moved 2,160 highway km (1,350 mi) from Los Alamos to the Scientific Ecology Group (SEG) facility in Oak Ridge, Tennesee; (2) treated, contaminated waste would be moved 2,893 highway km (1,808 mi) from Oak Ridge to the Envirocare Facility, near Clive, Utah. Wastes would be transported in DOT-approved containers. Resulting doses to workers and the public from the routine shipments would be extremely small since there is no detectable external dose at the surface of the container.

Local Los Alamos townsite traffic delays may be caused during some CMR Building utility upgrades, since utilities run in or across Diamond Drive. Hooking up the new electrical upgrades or acid waste lines could cause brief (less than one day) interruptions of traffic, if access to utility lines is needed. Long-term transportation effects are not expected.

4.1.6 Accident Analysis

Abnormal events, accidents, and hazards from natural phenomena scenarios were developed and reviewed for CMR Building construction activities to provide bounding events that could cause injuries, or releases of radioactive or hazardous materials to the worker and the public. Conservative assumptions were used for each event, although these assumptions may result in overestimation of the probability and consequences of an event. The conservative approach helps to ensure that the analyzed accidents will bound the environmental effects from actual events. Tables 4-4 and 4-5 summarize the decisions for determining accidents resulting in releases, and for determining release pathways.

After determining the amount of radioactive or hazardous material likely to be released from credible events, dose and risk calculations were made. Summary results are discussed below; details are in Appendix D.

Accidents that were identified, but not considered likely to result in releases of radioactive material to the environment, are shown in Table 4-4. Accidents that were identified and were considered likely to result in releases of radioactive material are shown in Table 4-5. Doses that individuals could receive as a result of accidents are shown in Table 4-6. Also shown are the population risks or added cases of fatal cancer as a result of the doses.

The proposed upgrade of the CMR Building ventilation system includes two construction options. Option A specifies that wings would be vacated and upgraded in series, starting with the upgrade of Wing 1 as a moderate radiation hazard laboratory. In Option B, the HVAC system would be upgraded without relocating the laboratories and without upgrading Wing 1. In this EA, the upgrade Option B with the largest possible effect was used to determine the consequences and risks to the worker, the public, and the environment. This method bounds the worst case for accident or risk without establishing a prescribed method for conducting the upgrade.

Table 4-4
Summary of Accident Events Not Likely to Result in Releases

Initiating Event	Rationale
Wind	• No tornado-strength winds that could cause structural damage occur in Los Alamos County. • Materials that could result in a release during construction are confined to the interior of the building
Airplane	• An aircraft study determined that an airplane crash that penetrates a LANL building is not likely to happen (Fuentes 1988).
Security Breach	• Administrative procedures prevent a security breach. Historical information supports the assumption that a breach is unlikely.
Criticality	• Barrier methods and administrative procedures are used. • Inventory will be reduced during construction. • Material deposited in ducts is insufficient to create criticality concern.

Table 4-5
Summary of Accident Events Likely to Result in Air Emission Releases

Initiating Event	Release Pathways	Mitigating Conditions
Earthquake	• Structure is not seismically qualified. • Fires and explosion resulting from earthquake (see below).	• Small quantity of radioactive material available for release
Fire	• A fire during ductwork removal would ignite holdup material.	• Releases contained within wing.
Explosion	• Possibility of explosion sources no different from that in normal operations.	• May be lower because quantities of chemicals would be removed prior to construction.
Operational Accidents	• Analyzed in CMR facility safety documentation. • Movement of hazardous chemicals in larger quantities than those analyzed for normal operations. • Involved worker exposed.	• Spills contained within wing. • Acutely hazardous chemicals moved prior to construction, double-packaged with absorbent material, and special procedures followed. • Quantities less than 29 CFR 1910, Subpart Z.
Industrial Accidents	• Acid drainline puncture. • Rupture of ductwork. • Exposure to involved worker.	• Releases contained within wing.

Table 4-6
Summary of Radiation Exposure Risks, Including Accidents

EXPOSURE SOURCE	DOSE	RISK OF EXCESS CANCER DEATHS*
Dose from Pu to individual located at site of on-site transportation accident, CEDE	Truck accident: 2.8 rem	Individual risk: 1 in 714 or 1.4×10^{-3}
Dose from Pu to nearest population in on-site transportation accident, CEDE	2.9 person-mrem, truck accident	Population risk: 1.5×10^{-6} excess cancer deaths for the population of 6,501 persons
Dose from Pu to population in off-site transportation accident	1.31 person-mrem	Population risk: 6.7×10^{-7} excess cancer deaths for the population along the shipping routes
Annual dose, normal operations, CMR Building, workers	44 mrem	Individual risk: 1 in 57,000 or 1.8×10^{-5}
Lifetime DOE dose limit to the worker for a planned emergency exposure	10 to 25 rem	Individual risk: 1 in 250 to 1 in 100 or 4×10^{-3} to 1×10^{-2}
Annual dose limit to the worker from DOE operations	5 rem	Individual risk: 1 in 500 or 2×10^{-3}
Annual dose to members of the public from all LANL operations (1994), Los Alamos townsite	3.5 mrem max. individual dose; 0.27 mrem average dose	Individual risk: 1 in 571,000 or 1.8×10^{-6} 1 in 7,400,000 or 1.4×10^{-7}
Annual DOE dose limit to the public from airborne emissions	10 mrem	Individual risk: 1 in 200,000 or 5×10^{-6}
Annual natural background radiation in Los Alamos	339 mrem	Individual risk: 1 in 6,000 or 1.7×10^{-4}

*If the probability is less than 1.0, no additional cancer deaths are expected.

4.1.6.1 Accident Scenarios

Since the Proposed Action is the construction of upgrades to laboratories and support systems, process radioactive material would be removed from active construction areas before starting construction, but would remain in the building. The earthquake scenario was selected as the abnormal event resulting in the most damage to the CMR Building. Accident scenarios were also developed for on-site disposal, and off-site shipment treatment and disposal facilities, of radioactive waste generated during construction.

4.1.6.1.1 Construction Accident - Earthquake

In accordance with DOE Standard 1020 criteria, the most hazardous portions of the CMR Building would be designed to withstand seismic events in the vicinity of LANL up to and including those that would be expected once in 2,000 years. The postulated earthquake is expected to produce peak horizontal ground accelerations of 0.30g at TA-3, site of the CMR Building. An earthquake of this magnitude would result in collapse of the CMR Building in its current configuration. The consequences (quantity of material released, population dose, and latent cancer fatalities) to the public from the release of radioactive materials from the collapsed CMR Building due to this earthquake would be the same in either the No Action alternative, or during construction of the proposed upgrades since the amount of radioactive materials present in the CMR Building would be the same in either situation. Therefore, the consequences from release of radioactive materials present in the CMR Building resulting from an earthquake scenario were not calculated. Consequences of a severe earthquake at LANL, that would collapse multiple buildings, will be presented in the LANL SWEIS, now in preparation.

However, if construction was taking place when the postulated earthquake occurred, an increased worker population due to the increased construction workforce would be present in the CMR Building. These additional personnel could be seriously injured or killed as a result of the building collapsing. Earthquake-related consequences are summarized in Table 4-7.

Table 4-7
Summary of Earthquake-Related Consequences

Accident	Proposed Action	No-Action Alternative
Earthquake and building collapse Personnel in CMR Building	Death or severe injury to 250 CMR Building occupants and ≤ 120 construction workers	Death or severe injury to 250 CMR Building occupants but no construction workers

4.1.6.1.2 Transportation Accident

Accident scenarios were developed for both on-site disposal of construction debris and shipment to off-site treatment and disposal facilities. In order to bound the on-site accident scenario, it was

assumed that construction debris would be collected into 6 m^3 (8 yd^3) capacity dump trucks and hauled from the construction site to the TA-54, Area G, waste disposal area. Assuming that all waste was moved in dump trucks, some 2,700 loads would be required. The total transportation distance would be 52,000 truck km (32,100 truck mi).

Contaminated waste would be properly bagged and contained following DOT and DOE protocols and requirements. The conservative accident assumes the following conditions:

- The amount of radioactive contamination in the total waste is 1.5 Ci of plutonium, mostly from contaminated ductwork.
- A truck tips over on the roadway, releasing either the contents of one B-25 box, or, if it is a 6 m^3 (8 yd^3) dump truck, its entire contents. All bagged, contaminated material spills out, breaking open and making the contaminated material available for release to the air.
- The release fraction is 0.001 of the radioactive material.

For an on-site accident, an individual was assumed to be standing next to the spilled contents of the truck and breathing the contaminated air for 30 seconds; this individual's calculated dose is 2.8 rem. Population dose from an on-site transportation accident was calculated to be 2.9 person-mrem.

In the event that on-site disposal capability is not available, off-site disposal of waste would be required. The conservative off-site shipment scenario assumes that waste is transported to SEG near Oak Ridge, Tennessee, for treatment, then to Envirocare of Utah, near Clive, Utah, for disposal. Waste may also be moved off-site for compaction or treatment and then returned to LANL for disposal. Off-site disposal of contaminated construction waste would require transportation in two segments: (1) untreated waste would be moved 2,160 highway km (1,350 mi) from LANL to the SEG facility in Oak Ridge; (2) treated contaminated waste would be moved 2,893 highway km (1,808 mi) from Oak Ridge to the Envirocare facility near Clive. Wastes would be transported in DOT-approved containers.

The inventory for an off-site transportation accident was determined using the reduced waste volume figures from the "Chemistry and Metallurgy Research Facility Phase 2 Upgrades Waste Minimization/Pollution Prevention Strategic Plan" (LANL 1995b). The initial projected volume of 16,400 m^3 (21,400 yd^3) of radiological/RCRA/mixed waste was reduced to 4,000 m^3 (5,200 yd^3) through waste minimization techniques. This is a reduction of 75 percent in contaminated ductwork waste volume, primarily through reuse of existing ventilation system components and results in a reduction of 75 percent of the original plutonium inventory, from 6 Ci to 1.5 Ci. A 6 m^3 (8 yd^3) dump truck would contain an inventory of 2.2 mCi (6 $m^3 \div 4{,}000\ m^3$ x 1.5 Ci). The container for this shipment is assumed to be a B-25 box whose volume is half that of the 6 m^3 (8 yd^3) dump truck. However, for off-site shipment, a truck is assumed to carry three boxes of waste, or a total inventory of 3.3 mCi plutonium or 1.1 mCi per box.

The dose to the maximally exposed individual would be 635 mrem. The accident doses to the population are due to ground deposition, inhalation, re-suspension, and cloud shine:

- LANL to Oak Ridge, Tennessee 0.57 person-mrem
- Oak Ridge, Tennessee, to Clive, Utah 0.74 person-mrem
- Total 1.31 person-mrem

An occupational risk factor of $4x10^{-7}$ per mrem equates to an individual cancer mortality risk of one chance in 2,500,000 for an exposure of one mrem; the risk factor for the public of $5x10^{-7}$ per mrem equates to an individual risk for cancer mortality of one chance in 2,000,000 for an exposure of one mrem. The health effect is thus expressed as the number of chances of an individual developing a fatal cancer as a result of the CEDE in mrem. For a population group the risk factor of 5×10^{-7} per person-mrem equates to a group risk of one chance in 2,000,000 for an exposure of one mrem.

For off-site shipment, the RADTRAN computer code was used to calculate population doses from accidents en route. The reduced waste volume was also used, per the strategic plan for waste minimization. The total population dose was estimated to be 1.31 person-mrem for off-site treatment and disposal (see Appendix D). If the waste is sent off-site for treatment and returned to LANL for disposal, the population dose is bounded by the total population dose (1.31 person-mrem) for off-site treatment and disposal. The risks of additional cancer fatalities are presented in Table 4-6. Table 4-6 summarizes and compares the risk from the radiation exposures calculated in this section with the risks from doses from natural background radiation and the regulatory limit dose values.

4.2 No Action Alternative

There would be no construction effects on facilities, operations, or the environment in the No Action alternative. The cumulative effect without the proposed upgrades being performed would be decreased functional efficiency, that in turn could potentially result in a longer time of worker hazards exposure or exposure to a greater number of workers. If the facility is not upgraded, DOE would forego the opportunity to decrease risks to the workers, the public, and the environment. LANL's ability to meet current DOE mission assignments during the next 20 to 30 years would be adversely affected because the life expectancy of the building, without upgrades, is 5 to 10 years.

Waste streams from operations would remain unchanged in the No Action alternative. An alternative to the Area G landfill area will still need to be sought for LANL-generated waste in the near term.

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5.0 PERMIT REQUIREMENTS

No new permits or permit modifications would be required for the proposed CMR Building upgrades. The Code of Federal Regulations (40 CFR 61) require prior EPA approval for new construction or modifications that may increase emissions. However, EPA approval would not be required for the proposed CMR Building Upgrades Project since this project will not increase LANL emissions. Since the scope of this EA is limited to only the potential environmental effects associated with construction of the proposed upgrades, operational activities are not within the scope of this EA. It is possible that a change to the current operations within the CMR Building would require permits or EPA approval, however, such issues would be driven by other programmatic decisions and subject to their own independent NEPA review.

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6.0 LIST OF AGENCIES CONSULTED

6.1 U. S. Fish And Wildlife Service

A survey of the CMR Building area for threatened or endangered species was conducted in light of the proposed construction activities; this survey did not reveal the presence of any such species or suitable use habitats for any of these species. Informal consultation under the Endangered Species Act was initiated during November 1995. On December 5, 1995, a letter was transmitted to the U. S. Fish and Wildlife Service, by DOE, providing notification of the proposed project and requesting concurrence in a finding of "no effect." On December 12, 1995, the U. S. Fish and Wildlife Service concurred with the finding of "no effect" completing the informal consultation process (Appendix E).

6.2 New Mexico State Historic Preservation Officer

LANL conducted a cultural resource survey of the areas that could be affected by new construction under the Proposed Action. No cultural resources were found and it was determined that there was no potential for cultural resources to be present. On January 19, 1996, DOE LAAO submitted a report to the New Mexico State Historic Preservation Officer (SHPO) describing the results of the cultural resource's survey. On February 14, 1996, the SHPO's Office concurred with DOE's finding of "no effect," completing the formal consultation process (Appendix E).

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7.0 GLOSSARY AND ACRONYMS

7.1 Glossary

Actinides	The elements, beginning with actinium, atomic number 89, and continuing through lawrencium, atomic number 103, in the Periodic Table of Elements. The series includes uranium, atomic number 92, as well as all man-made transuranic elements.
Atomic number	The number of protons in the nucleus of an atom that is unique for each element.
B-25 box	A commercial metal container approximately 1.2 m by 1.2 m by 2.1 m (4 ft by 4 ft by 7 ft) that meets U. S. Department of Transportation requirements for transporting hazardous waste.
cfm	Cubic feet per minute
Cloud shine	This is a term of art used by health physicists in calculating external dose. When a puff (cloud) of radioactive material passes, the energetic gamma rays emanating from the cloud can expose individuals in its path, even though those individuals are not within the cloud itself.
Committed Effective Dose Equivalent (CEDE)	The sum of committed radiation dose equivalents to various tissues in the body, each multiplied by an appropriate weighing factor. Committed dose is calculated over the 50-year working lifetime of an individual.
Curie (Ci)	A measure of radioactivity equal to 3.7×10^{10} disintegrations per second.
Design Basis Accidents	Postulated accidents, or natural forces, and resulting conditions for which confinement structure, systems, components and equipment must meet their functional goals.
Effective Dose Equivalent (EDE)	Quantity obtained by multiplying the dose equivalents to various organs and tissues by factors that reflect the probability of harm to each in relation to all and summing the products.
ft^2	square feet
g	A unit of force equal to the gravity exerted on a body at rest.

High-Efficiency Particulate Air (HEPA) filter	Specially constructed filters capable of capturing very small airborne particles.
Hot cell	Enclosed work space with walls of reinforced concrete that includes magnetite (a natural iron oxide compound) and mineral oil-filled leaded-glass windows, equipped with remote manipulation devices, used to protect workers from exposure to highly radioactive materials.
km	Kilometer, a measure of distance equal to 1,000 meters, approximately 0.6 miles.
kV	Kilovolt
Lineament	A linear topographic feature (as of the earth) that reveals a characteristic (as a fault or the subsurface structure).
Low-Level Radioactive Waste (LLW)	Solid radioactive waste that is not classified as high-level waste, transuranic waste, or spent nuclear fuel as defined in DOE Order 5820.2A, "Radioactive Waste Management."
m	Meter
m^2	Square meter
m^3	Cubic meter
mi	Mile (1.6 km)
mi^2	Square mile (2.58 km^2).
mrem	Millirem
Mixed waste	Waste containing both radioactive and hazardous components, as defined by the Atomic Energy Act and RCRA.
Person-rem	The unit of population dose that expresses the sum of radiation exposures received by a population. For example, two persons, each with a 0.5 rem exposure, receive 1 person-rem, while 500 people, each with an exposure of 0.002 rem, also receive 1 person-rem.
Radioactivity	The spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nucleus of an unstable isotope.

Radionuclide	Any radioactive isotope of an element.
rem	Acronym of roentgen equivalent man. The unit of dose of any ionizing radiation that produces the same biological effect as a unit of absorbed dose of ordinary X-rays.
Roughing filters	Filters constructed to capture large airborne particulates.
Scientific notation	Presenting numbers by powers of ten, for example: $1x10^4 = 10,000$ $1x10^2 = 100$ $1x10^0 = 1$ $1x10^{-2} = 0.01$ $1x10^{-4} = 0.0001$
seismic event	An earthquake or a somewhat similar transient earth motion
Transuranic (TRU) waste	Waste contaminated with uranium or transuranic elements having a half-life greater than 20 years, in concentrations of 100 nCi/g or greater.
Uniform Building Code	An International Conference of Building Officials' publication that provides requirements for the fire, life, and structural safety aspects for all buildings and related structures.

7.2 Acronyms

ALARA	As low as reasonably achievable
CAM	Continuous air monitor
CDR	Conceptual Design Report
CEDE	Committed Effective Dose Equivalent
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMR	Chemistry and Metallurgy Research
DOE	U. S. Department of Energy
DOT	U. S. Department of Transportation
EA	Environmental Assessment

EDE	Effective Dose Equivalent
EIS	Environmental Impact Statement
EPA	U .S. Environmental Protection Agency
ER	Environmental Restoration
ERPG	Emergency Response Planning Guideline
ESAAB	Energy Systems Acquisition Advisory Board
FONSI	Finding of No Significant Impact
HEPA	High-Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
ICRP	International Commission on Radiological Protection
ISAR	Interim Safety Analysis Report
LANL	Los Alamos National Laboratory
LLW	Low-level radioactive waste
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NMED	New Mexico Environment Department
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
R&D	Research and development
RCRA	Resource Conservation and Recovery Act
RFI	Remedial Field Investigation
ROD	Record of Decision
RLWTF	Radioactive Liquid Waste Treatment Facility
SEG	Scientific Ecology Group
SHPO	State Historic Preservation Officer
SNML	Special Nuclear Materials Laboratory
SSM	Stockpile Stewardship and Management
SWEIS	Sitewide Environmental Impact Statement
SWMU	Solid Waste Management Unit

TA	Technical Area
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent dosimeters
TRU	Transuranic
TWA	Time-Weighted Average
UBC	Uniform Building Code
USC	United States Code
UPS	Uninterruptable Power Supply
WIPP	Waste Isolation Pilot Plant

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8.0 REFERENCES

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Appendix A
Comments and Agency Responses

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Comment 1, page 1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542

February 12, 1996

Cons. #2-22-96-I-048

Larry Kirkman, Acting Area Manager
Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Mr. Kirkman:

This responds to the draft Environmental Assessment (EA) with a cover letter dated January 22, 1996, requesting the U.S. Fish and Wildlife Service (Service) to review and comment on the proposed upgrade of the Chemistry and Metallurgy Research (CMR) Building located in Technical Area (TA) 3 at Los Alamos National Laboratory (LANL). The LANL is located in Los Alamos County, New Mexico.

In a previous letter, dated December 12, 1995, the Service concurred with your determination that the proposed CMR Building renovations and waste handling will have "no effect" on threatened or endangered species or their critical habitats. Our concurrence was based on the fact that the proposed project is located within an existing compound, and that all wastes will be managed according to all applicable laws, regulations, and emergency response procedures so as not to affect the environment. The Service reaffirms its concurrence with your finding.

The Service concurs that the preferred alternative is also the environmentally preferable alternative. From a wildlife health standpoint, a Finding of No Significant Impact appears warranted. However, we seek two clarifications to the final EA. In Appendix C, page C-1, why is cigarette smoking included with other examples of natural environmental radioactivity? Also, why does your radiation risk model address only *added cancer fatalities?* Are localized injuries to organs or *nonfatal* cancers considered a discountable risk? An explanation of this aspect of the risk model would be helpful for citizens to consider the alternatives from a human heath perspective. 1

If you have any questions or comments, please contact Joel D. Lusk at (505) 761-4525.

Sincerely,

Jennifer Fowler-Propst
Field Supervisor

Comment 1, page 2

Larry Kirkman, Acting Area Manager

cc:
Chief, DOE Oversight Bureau, New Mexico Environment Department, Santa Fe, New Mexico.
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico.

Comment 2, page 1

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

February 16, 1996

Elizabeth Withers
LAAO NEPA Compliance Officer
Los Alamos Area Office
528 35th Street
MS-A316
Los Alamos, N.M. 87544

Dear Ms. Withers:

RE: PRE-DECISIONAL DRAFT; ENVIRONMENTAL ASSESSMENT: PROPOSED CMR BUILDING UPGRADES (DOE\EA-1101); LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, N.M.; PREPARED BY U.S. DEPARTMENT OF ENERGY, JANUARY 1996

The following transmits New Mexico Environment Department (NMED) staff comments concerning the above-mentioned Draft Environmental Assessment (DEA). The comments relate principally to a number of questions NMED staff have regarding impacts on surface and ground water quality.

1. Pages 15-16, Section 2.2.1.3:

1 Will the installation of the proposed central chilled water plant require an amendment for increased discharge to a currently permitted NPDES outfall, the addition of a new NPDES outfall to the current permit, or will this system have no discharge of cooling water to the environment?

2. Page 17, Section 2.2.1.7:

See comment 1, above.

3. Page 18, Section 2.2.1.9:

2 It is unclear whether these acid vents and drains are connected to underground piping. If so, are contingency plans in place to mitigate contamination to the environment during excavation? If contamination of the environment is found due to previously unknown leaks of this piping, what actions will be taken to mitigate movement of contamination by surface transport or infiltration into the soil/rock profile and, possibly, ground water?

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4. Page 18, Section 2.2.1.10:

3 Have provisions been made to contain the water that will be drained from the current fire protection system, will the potential exist for this water to become contaminated, and what will be its final disposition? Will a general Notice of Intent (NOI) to discharge be filed with the proper regulatory authority pursuant to the State of New Mexico Water Quality Control Commission (WQCC) regulation 1-201 both before and after upgrades are performed? Again, what will be the final disposition of the water released after upgrades are completed and testing of the system is performed, and is there any possibility for contamination of this water?

5. Page 19, Section 2.2.1.12:

4 What will be the tank and associated equipment containment requirements in the event of a spill or other release of contaminated washdown effluent?

6. Page 30, Section 3.5:

5 To where were sediments removed in the 1992 sediment traps cleanup? Where will they be placed after the traps fill again?

7. General Comment:

6 As stated, outside construction, including excavations, will be necessary during this upgrade. The possibility exists that the excavation material may contain Contaminants of Concern (COC's). Is a storm water pollution prevention plan in place for this construction activity in order to mitigate the transport of contaminants, including storm water drainages at the CMR complex and the destination of these drainages?

We appreciate the opportunity to comment on this document. Please let me know if you have any questions.

Sincerely,

Gedi Cibas, Ph.D.
Environmental Impact Review Coordinator

NMED File No. 965ER

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NEW MEXICO
ENVIRONMENTAL LAW CENTER

February 16, 1996

Elizabeth R. Withers
NEPA Compliance Officer
Office of Environment and Projects
U.S. Department of Energy
Los Alamos Area Office
Los Alamos, N.M. 87544

By mail and facsimile
(505) 665-4872

Re: Chemistry and metallurgy research building in Technical Area 3 at the Los Alamos National Laboratory

Dear Ms. Withers:

I write for the Pueblo of San Ildefonso (Pueblo) to comment on the Department of Energy's (DOE) Pre-Decisional Draft Environmental Assessment (EA) on the proposed upgrades of the Chemistry and metallurgy research (CMR) building at Technical Area 3 at the Los Alamos National Laboratory (LANL). We are submitting this comment in accordance with your letter of February 2, 1996, in which you indicated that the Pueblo would have until today to submit its comment. We are grateful for that extension of time, and we hope that the delay in our submission of this comment does not cause inconvenience.

The Pueblo appreciates the opportunity to comment on the EA, and intends to be involved in future consideration of this project. The Pueblo therefore requests that you provide copies of any further documents on this matter to the Honorable Elmer Torres, the Governor of the Pueblo, to Gaurav Rajen of STAR Associates in Albuquerque, who is working with the Pueblo on this matter, and to me. 1

As the Pueblo indicated in its comment on the Advance Notice of Intent for the LANL site-wide environmental impact statement, the Pueblo agrees that the renovations necessary for protection of safety and the environment should be done on the basis of the EA, and that all other changes should be considered in the site-wide environmental impact statement. The Pueblo does have several concerns about the EA, however, and about the project as it is described in the EA. These are explained below, not necessarily in order of importance.

1. *Lack of consultation with the Pueblo*

First, the EA was prepared without consultation with either the Pueblo or the Los Alamos Pueblos Project. The list of agencies consulted on page 47 of the EA indicates 2

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that the only agencies that were involved in the preparation of the EA were the U.S. Fish and Wildlife Service and the New Mexico State Historic Preservation Office. This was not appropriate.

The Pueblo is a federally recognized Indian Tribe, and President Clinton has directed the heads of federal agencies to operate on a government to government basis with all such Tribes, and to consult those Tribes and take into account their concerns prior to taking actions that affect them. In addition, DOE Secretary O'Leary has directed all elements of DOE to deal with Tribes on that government to government basis, and to follow the DOE American Indian Policy. It specifically provides that DOE shall treat Tribes as governments in accordance with their status and DOE's trust responsibility towards them, and that DOE shall consult and involve Tribes in decisions that affect them. Finally, DOE has entered into an Accord with the Pueblo and has witnessed a Cooperative Agreement between LANL and the Pueblo. Each of those documents also provides that the Pueblo will be given a role in decisions concerning LANL that affect the Pueblo. 2

The United States, DOE, and LANL therefore have each made a commitment to involve the Pueblo in decisions concerning LANL that affect the Pueblo, its members, and their environment. Despite that, the Pueblo was not involved in the preparation of the EA. That is a serious problem for the Pueblo because the consultation with the New Mexico State Historic Preservation Office involved impacts of the proposed project on cultural resources. LANL is built on land that originally belonged to the Pueblo, and that land includes many sites that are sacred to members of the Pueblo. Moreover, construction at LANL facilities such as the CMR may threaten the Pueblo with the destruction of more sites sacred to Pueblo members.

2. Disposal and transportation of waste

The EA points out that the proposed upgrades will involve generation of as much as 5,200 cubic yards of potential construction waste, including LLW, TRU, mixed, RCRA regulated, and asbestos wastes. (EA, page 14) The EA also states that solid waste would be disposed of in the Los Alamos County landfill, and that the other types of waste would be stored or disposed of in the Area G landfill at Technical Area 54 or transported off site. Either of the latter two options is a matter of concern for the Pueblo. 3

The Area G landfill is located on the top of a mesa

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adjacent to the Pueblo's sacred area. Elevated levels oftritium have been detected in sediments leading away from Area G, and the Pueblo is concerned about possible emissions of radioactive gas from the sides of the mesa as well. The Pueblo also is concerned about any possible expansion of the landfill because of the impacts that it would have on sites in the area that are sacred to members of the Pueblo. DOE should not undertake disposal of additional wastes in Area G until these concerns are resolved.

3 Similarly, transportation of waste to another site presents problems for the Pueblo because the main road that leads into LANL passes through the Pueblo's lands, and the Pueblo has no resources with which to deal with any accident involving radioactive or hazardous materials that occurs on the reservation. The Pueblo has one policeman and a totally volunteer fire department, and its personnel are not adequately trained to deal with radioactive or hazardous materials. Moreover, there has been no determination by the Pueblo, the Department, and the State of New Mexico about which entity or entities would have jurisdiction or responsibility to deal with such an accident or how those entities would coordinate their responses. It is not appropriate to transport additional wastes through the reservation until these issues have been addressed.

3. Upgrades of the CMR building acid vents and drains

4 The EA indicates that action is necessary to correct deficiencies in and improve maintainability of the existing acid vents and drains system which handles liquid radioactive waste from the CMR building operations. (EA, page 18) The EA does not describe problems that have occurred with those drains, however, or whether they have been the source or cause of any accidents. There also is no description of the measures that will be used to upgrade them, such as construction of double walls and installation of leak protection and detection devices. In the absence of those sorts of details, it is not possible to evaluate accurately the proposed upgrades of the acid vents.

4. Existing contamination related to CMR building operations

5 The EA discusses very briefly the management of liquid wastes generated at the CMR building and the impacts of the proposed action on air quality and land use. (EA pages 30, 34-35) There is no discussion, however, about the existing contamination, if any, that has resulted from the CMR building operations, or how that contamination will be

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5 addressed. Moreover, there should be detailed site specific descriptions of existing contamination of soil, water, air, and biota, not just references to the annual environmental surveillance reports for LANL as a whole.

5. Accidents

6 The EA contains no history of the accidents that have occurred so far at the CMR building, which makes it difficult to evaluate accurately the accident predictions and scenarios set forth in section 4.1.6. That is troublesome for two reasons. First, several of the deficiencies identified in the Interim Safety Analysis Report, involve problems that could cause serious impacts in the event of an accident. These include the possible loss of negative pressure for glove boxes and the problems with the fire protection systems. Second, some of the accident scenarios involve high rates of fatalities, particularly the earthquake accident scenario in Table 4-6 that would result in a 1 in 9 added chance of cancer mortality.

7 A second problem is that there are no specific analyses of scenarios involving accidents on the Pueblo's reservation. Those are scenarios that should be analyzed separately for two reasons. First, as was pointed out above, accidents that occur on the reservation would be more difficult to deal with because of the absence of plans and personnel to address those accidents. Second, the Pueblo's population is so limited (less that 1,500 people) that any excess cancer deaths would have a much more severe impact on the Pueblo than on another, larger community. The EA therefore should analyze separately accidents on the reservation.

6. Compliance with applicable statutes, regulations, permits, orders, and other governing documents

8 The EA also contains does not analyze whether the CMR building operations have complied with applicable statutes, regulations, permits, orders, and agreements, or how any violations of those governing documents will be remedied. In addition, the EA should explain and address the concerns about specific practices raised by the Defense Nuclear Facilities Safety Board. The failure to address these issues is a problem because of the hazardous nature of the activities conducted at the CMR building. This failure is a serious issue for the Pueblo because the Pueblo does not have the means to insure compliance with all such governing documents.

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Conclusion

The Pueblo agrees that the CMR building should be upgraded in order to address safety concerns. On the other hand, the Pueblo does not agree that the EA adequately sets forth the issues involved in those upgrades. The Pueblo therefore requests that the EA be revised to address the
9 concerns set forth above before any decision is made concerning the proposed CMR building upgrades.

Thank you again for the opportunity to comment on the EA, and for your consideration of these comments.

Yours truly,

Douglas Meiklejohn
Attorney

pc: The Honorable Elmer C. Torres
Governor
Pueblo of San Ildefonso

Gaurav Rajen
STAR Associates

Comment 4, page 1

Los Alamos Study Group

February 13, 1996

Elizabeth R. Withers, NEPA Compliance Officer
Department of Energy
Los Alamos Area Office
Los Alamos, NM 87544

Re: CMR Upgrades, Phase 2, NEPA analysis

Dear Elizabeth:

In your letters dated January 22 and February 2, 1996, you informed this office of the draft environmental assessment (DOE/EA-1101) for the Chemistry and Metallurgy Research (CMR) Building Phase 2 Upgrades, the comment period for which will expire on February 16, 1996.

Importantly, this draft EA does not mention that the project it describes is the middle phase of a three-phase project which will, if completed, cost some $211.1 million, according to the Albuquerque Operations Office (see letter from Corey Cruz, DOE/AL to Greg Mello and Jay Coghlan, 1/15/96). It will be built over a twelve-year period from 1992 to 2004 (see FY 1996 DOE Congressional Budget Request [CBR], Project Data Sheets, Vol. 1, p. 3570. Estimated costs have apparently inflated some $7 million since this CBR was written.

Phase 1, design work for which began in 1992 and construction shortly after in 1993, will cost
1 some $51.6 million. It was given a categorical exclusion under the National Environmental Policy Act (NEPA). Phase 2, with a cost of $122.5 million, is being covered by the 51 pages of the present EA. Phase 3, with an estimated cost of $37 million, is being covered in the LANL Site-Wide Environmental Impact Statement (SWEIS). All three subprojects are parts of a single congressional line item: Project 95-D-102, CMR Upgrades Project.

This project, and the EA describing it, have a long and complex history. Space does not permit their complete elucidation here. Suffice it to say that the project been described in unitary terms since on or before late 1993, when the Los Alamos National Laboratory (LANL), in their
2 Strategic Plan, p. 20, described the consolidation of uranium fabrication facilities that could take place with the "full upgrade of the CMR building...by the year 2000." In that document, the planned upgrade was associated with enhanced weapon prototyping and manufacturing capabilities at LANL, i.e. with a programmatic change of mission for LANL.

By January of 1994, when the FY1995 CBR was released, Project 95-D-102 was the largest construction priority in Defense Programs, accounting for some three-quarters of all unappropriated weapons activities construction costs in that Request.

During the past three years, the definitions and boundaries of the phases of this project have

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Comment 4, page 2

continually shifted, making it difficult for the Department to complete this EA, which was begun some time prior to 1993. Already by 1993 DOE had on its records an EA numbered LAN 93-0006, entitled "CMR Building Upgrades, *Revised Plan*" (emphasis added). Particular work elements have been shifted from one phase to another as needed or convenient.

All this and much more which could be said goes to the following conclusions:

3 1) The Phase 1 upgrades have been done illegally, prior to NEPA analysis;
2) The present EA has an illegally-narrowed scope, representing a project which has been illegally partitioned into three parts;[1]
3) The project is large; indeed it is a Major System Acquisition (MSA) under DOE Order 4240.1K and successor rules and hence requires its own environmental impact statement (EIS) prior to further construction or Title II design; and
4) The project has been conceived and designed as part of a programmatic capability upgrade at LANL under the stockpile management program, requiring analysis in the LANL SWEIS and the DOE programmatic stockpile stewardship and management programmatic EIS (SS&M PEIS). Contrary to statements made in the draft EA, this project will prejudice both the LANL SWEIS and the SS&M PEIS.

What is more, this project is the programmatic and environmental equivalent and successor of the now-defunct Special Nuclear Materials Laboratory (SNML) project, which concededly required an EIS.

We have written previously and provided testimony to the DOE on several occasions about these matters in the context of the LANL SWEIS and SS&M PEIS and, still earlier (6/14/1994), in a separate letter.

4 The extent to which the planned upgrades are needed to solve safety deficiencies at the CMR is unclear. Repeated requests from this office to obtain the underlying studies have been denied by the DOE. According to the draft EA, operations at the CMR are going forward without compliance with DOE regulations or even with ordinary building codes, a scandal for any facility--let alone one that handles plutonium in kilogram quantities.

Aside from the central questions of scope and linkage to other EAs, EISs, and PEISs, this draft EA is greatly deficient on its face. Without belaboring the points too finely, the waste
5 production estimates have been reduced by a factor of four without any substantiating analysis; they are still quite large. The estimated doses to populations from accidents appear to be in
6 error, have no supporting analyses, and appear to apply to individuals rather than populations. The uses of the building and the purposes of the upgrade have been greatly glossed. Overall, essentially all the pertinent areas of analysis have been given short shrift, making it quite

7 [1] Actually, other planned projects undergoing separate NEPA reviews involving building modifications within the CMR are also linked to this project.

2

Comment 4, page 3

impossible for decisionmakers to use this document for its intended purpose. None of the uncertainly and ambiguity that has marked the development of this project up to the present has been retained in this draft EA.

It is clear that a document such as this has only one purpose, namely to provide a pro-forma NEPA compliance that can allow programmatic spending to go forward, unhindered by careful
8 analysis. *We urge you to stop construction on this project until the requisite NEPA analysis is* done and to consider more carefully the scope and impacts of the NEPA analysis for this project in the context of a full EIS. In the meantime, any activities being conducted outside the required safety envelope should be suspended.

Sincerely,

greg mello

Greg Mello

attached: June 14, 1996 letter to Gary Palmer, DOE/DP/HQ

Comment 4, Attachment, page 1

Attachment

Los Alamos Study Group

June 14, 1994

Mr. Gary Palmer, Environmental Protection Specialist
Defense Programs Office of NEPA Compliance and Planning
U.S. Department of Energy
Forrestal Building, Rm. 4B-087
1000 Independence Ave.
Washington, DC 20585

RE: NEPA Compliance for the CMR Upgrades and the NMSF at LANL

Dear Gary:

The Los Alamos Study Group, along with several other organizations, is examining the Department of Energy's (DOE's) plans for two major projects at Los Alamos National Laboratory (LANL): the "CMR Upgrades" and the "Nuclear Materials Storage Facility (NMSF) Renovation." As part of that examination, we have reviewed DOE's plans for compliance with the requirements of the National Environmental Policy Act (NEPA) as it relates to these projects. We conclude that those plans are wholly inadequate and fall far short of the minimum requirements of the Act and applicable DOE Regulations and Orders, as discussed in detail below. **First, these two proposed major federal actions require the preparation of Environmental Impact Statements (EISs). Second, the cumulative impact of these facilities will prejudice the outcome of the planned site-wide EIS for LANL and hence they do not meet the criterion of 40 CFR 1506.1(c)(3) for projects which may proceed during a site-wide EIS.**

Both Facilities Require EISs

1. An EIS Is Required for the CMR Upgrades Project

Summary

DOE is proposing a $200 million upgrade to the Chemistry and Metallurgy Research (CMR) Building at LANL. This project has been designated a Major System Acquisition (MSA) and, as such, should ordinarily require an EIS. The upgrade proposal is in lieu of the previously-proposed Special Nuclear Materials Research and Development Replacement Laboratory (SNML), a project for which DOE conceded the necessity of an EIS. Both the current and previous proposals would significantly enhance LANL's nuclear materials processing capabilities. At present, the CMR Upgrades project is receiving only an Environmental Assessment (EA). We believe that this level of environmental review is inadequate and that an EIS is required.

212 East Marcy Street, Santa Fe, New Mexico 87501; tel: 505-982-7747 fax: 505-982-8502

Comment 4, Attachment, page 2

Background

DOE has provided a description of the background and context for the proposed upgrades:

> Los Alamos National Laboratory (LANL) has four major nuclear materials facility complexes. Sigma complex (depleted uranium work), CMR (enriched uranium and Cat[egory] I & II Pu work[1]); TSTA [the Tritium Systems Test Assembly, located in TA-21], and PF-4 at TA-55. The first two complexes are nearing the age of 40 years. Neither has had a major renovation in that time, nor do they meet current ES&H [Environment, Safety, and Health] requirements. Since CMR has Cat I & II materials, it is at the top of the priority list to be addressed by new construction. [DOE/LANL Capital Assets Management Plan, April 1991, p. 45]

A previous CMR upgrade, known as "Phase I," was part of a weapons complex "revitalization" project, and was originally estimated to cost $49.5 million. According to DOE:

> The CMR Building is the largest structure at LANL (550,000 square feet). Construction of the CMR Building was completed in 1952. Most of the major mechanical and electrical equipment has reached the end of its design life. [FY95 CBR: Project Data Sheets, p. 23]

Now another $155 million is proposed, to bring the total project cost to $204 million. This is for a structure which, as one former LANL employee has noted, had an original cost of about $3 million. In real dollars, the upgrades project is still some five times the original acquisition cost.

The CMR Upgrades Project is an MSA requiring an EIS

DOE Order 4240.1K, 6/23/92, "Designation of Major System Acquisitions and Major Projects," states in relevant part that

> The DOE criteria for designation of a system or project as a MSA considers national urgency, importance, size, complexity, and dollar value. Those systems or projects which have a total project cost or annual FY 1992 appropriations in excess of $100 million (M), or are recommended by Program Secretarial Officers

---

1. DOE categorizes plutonium operations for purposes of risk assessment by the quantity of plutonium involved in the process:
Category I - Activities utilizing 2000 g of Pu or more;
Category II - " " 400 g to 2000 g of Pu;
Category III - " " less than 400 g of Pu.
The description of work at the CMR as "Cat I & II" belies claims that this facility is strictly for analytical work.

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(PSOs), are considered to be MSAs.

By this standard, the CMR Upgrades project must be considered an MSA, and (as you have told us) it has been so declared. Not only is the total project cost twice the recommended threshold for an MSA, but the unappropriated portion of the project comprises more than three-quarters of all unappropriated weapons activities construction proposed by the DOE in this year's budget request (see FY95 CBR, Vol. I, Atomic Energy Defense Activities, p. 74).

The NEPA consequence of designating an action an MSA is embodied in the DOE NEPA regulations at 10 CFR 1021.400, Appendix D to Subpart D, "Classes of Actions That Normally Require EISs," where the first paragraph, D1, reads

> Major System Acquisitions, as designated by DOE Order 4240.1, "Designation of Major Systems Acquisitions and Major Projects."

Thus, the CMR Upgrades project is one of those "actions that normally require EISs."

The CMR Upgrades Project is closely related to the SNML project which concededly required an EIS

The new CMR proposal represents a major increase in the scope of work of its predecessor, with total project cost now estimated at $204 million, over four times the original cost. It is very clear that this project is the replacement for the ill-fated SNML, also a $200+ million project, which apparently foundered on intense and wide-spread public opposition. DOE had determined that an EIS was the necessary level of environmental review for the project, which was designed to replace some of the major functions of the CMR and to relocate them within Technical Area 55 (TA-55), the "plutonium park."

> In FY1990, the SNML project was put on hold pending a substantive review of the project *including other potential options for providing the necessary* specialized laboratory space...Later in FY1991, it was decided not to proceed with the construction of SNML but provide interim upgrades to CMR (Phase 1)... [FY95 CBR: Project Data Sheets, p. 24]

The FY95 request for a line item appropriation for the expanded upgrade at CMR instead of the SNML project is in accordance with the strategy statement found in LANL's most recent Institutional Plan, which specifically links the two projects:

> A new integrated line item will be sought for an FY95 start to consolidate all phases of the [CMR] project. If approved, the SNML project for the CMR Building would be canceled. [LANL FY1994 - FY1999 Institutional Plan, December 1993, p. IV-3]

The CMR project is designed partially to consolidate several nuclear materials functions

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currently being performed at other Laboratory sites.

> In particular, a number of DOE/DP [Defense Programs] -sponsored efforts at TA-21 (DP West) and TA-49 will be relocated to the CMR Building, thereby allowing decontamination and decommissioning of aged and obsolete facilities at TA-21. Enriched-uranium casting functions are also being moved from Sigma complex to the CMR Building. [ibid., p. IV-3]

Further, the CMR project is designed not just to consolidate existing functions, but to provide at least some (if not all) of the new capabilities which would have been attained with the SNML:

> For example, the upgrade of the CMR Building will result in the consolidation of currently dispersed nuclear materials capabilities together with the attainment of new capabilities at substantial cost savings over constructing and operating a completely new facility. [ibid., p. IV-4]

The Phase II and III upgrades do not appear necessary for short-term safety improvements

When approval was being sought for the SNML, the CMR Building was described as old and unsafe. A previous justification for the SNML submitted to Congress stated:

> Corroded and breached air handling ducts, inadequate supply of filtered air, marginal building-wide filter systems, and inadequate control systems contribute to serious situations developing in the CMR building. A system failure would adversely affect safety of personnel and require shutting down the facility." ["Lab: CMR facility safe, but SNM lab needed," The Los Alamos Monitor, 3/29/91, p. 1]

Yet in March of 1991, John R. Phillips, then Group Leader of the former CLS-1, the analytical *group which occupied nearly half of the CMR Building, and Ronald G. Stafford, then Deputy* Division Director for Health, Safety, and Environment, both emphasized that the CMR Building was safe. According to the in-depth Monitor article cited above, both men said the issue was not safety, but "reliability."

The short-term reliability and/or safety issues at the CMR Building had been identified in 1990 by a task force empaneled under the Deputy Assistant Secretary for Military Applications (DASMA). Since FY92, $32.25M has so far been appropriated to address these problems, most of the $49.5M thought to be required. An Interim Safety Analysis Report (ISAR) was prepared in February of 1992, which enumerated the improvements to the facility required "to continue operations in a safe, secure, and reliable manner for at least the next 20 years" (FY95 CBR, p. 26). These longer-term upgrades are the basis for the planned Phase II and III activities. Apparently any urgent safety or reliability problems were or are being addressed in Phase I activities. Thus the testimony of LANL management, together with the project's history, suggest that the Phase II and III Upgrades are not needed to assure the short-term safety of

Comment 4, Attachment, page 5

existing operations at the CMR Building. Should any portions of the Phase II and III activities be needed to address short-term safety issues prior to an EIS, these could and certainly should proceed, but only after a public process identifying the problems and their cost-effective solutions.

In sum, an EIS is needed for this project

The new CMR upgrades are, as noted above, designed to accomplish much of what the SNML project intended. That project was conceded by DOE to require an EIS. At the present time, DOE is preparing an Environmental Assessment (EA) for the CMR project (document # LAN 93-0006), although it has refused to make any portion of it public. This is a significant federal action with potentially severe environmental consequences. DOE Regulations, the SNML precedent, and examination of the substance of the proposed action all lead to the conclusion that this project requires an EIS.

2. An EIS Is Required for the Nuclear Materials Storage Facility

Summary

The NMSF was constructed at LANL by DOE as a FY84 Line Item Project at a Total Project Cost of $21.8 million. An Environmental Assessment was prepared in 1985 and revised in 1986, leading to a Finding of No Significant Impact (FONSI) which is undated but can be presumed to be August 28, 1986. LANL took Beneficial Occupancy of the facility in February 1987, after which it was discovered that gross design and construction errors had rendered the facility unsafe and unusable. DOE now proposes to "renovate" the NMSF at a cost of $31.0 million. The subject of the action (large-scale nuclear materials storage), the gross departures from good design practice (and even from common sense) in the original design, the inadequacy of the previous EA, and the admission that the project would need an EIS if built anywhere else *at LANL, all mandate that this project receive an EIS before going forward.*

Any Large-scale Nuclear Materials Storage Facility Requires an EIS

DOE is presently engaged in an EIS process for large-scale storage of nuclear materials at Pantex. That EIS was forced upon DOE when it became clear that the state of Texas and other interested parties would not accept DOE's initial determination that only an EA was required for the proposed action. That EIS now encompasses (in scoping) possible storage of plutonium and other weapons components (e.g., radioisotopic generators) at LANL, and it is highly questionable whether the present NMSF renovation project can go forward without being wrapped into the Pantex storage EIS. For the purposes of this discussion, it will be assumed that the characteristics of the LANL project (the critical parameters of which are unknown to the public) are such that it may legally proceed independently of the Pantex storage EIS. Nevertheless, the Pantex precedent is persuasive that large-scale storage of nuclear materials legally and practically requires an EIS.

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This is explicitly recognized in the case of the NMSF renovation project. The Activity Data Sheets (ADSs) for this project, appearing in the Capital Assets Management Process (CAMP) 1996 document are attached. On Page A-3, a cursory evaluation of alternatives to the NMSF renovation appears. **For each alternative option, the first and principal reason cited as justification for discarding it is that an "EIS would be required."** This is a conclusive admission. Any attempt now by DOE to argue that a lesser standard of environmental analysis is acceptable will be uniformly and fairly seen as deceitful and in bad faith. Finally, it is (or should be) obvious that whether or not an EIS is required turns on the potential for significant environmental impact, **not** on whether the action can be characterized as "renovation" of an existing structure. These documents answer the substantive question in the affirmative, and the fact that the proposed action may utilize an existing structure is ineffective to avoid the requirement of an EIS.

An EIS is needed to remedy the gross inadequacy of the NMSF EA and to restore public confidence in LANL and DOE's nuclear competence

Even if DOE were not required by law to do an EIS on the NMSF renovation project (as in fact it is), an EIS is sorely needed in this case to remedy two of the most outstanding features *of the NMSF as constructed: 1) the manifest inadequacy of the original EA; and 2) the* destruction of public confidence in DOE and LANL resulting from the horrendous series of errors, oversights, and malpractice in the design and construction of the NMSF.

At present, DOE's expressed intention is to "supplement" the existing EA on the NMSF. This is both legally insufficient and shortsighted. The 1986 EA does not even disclose the most environmentally significant characteristic of the facility, namely, the quantities of nuclear materials to be stored. On that basis alone, it was, and is, fatally deficient under NEPA. Further, the environmental impacts "analysis" which should be the heart of an EA is a mere presentation of the results of a so-called "worst case" analysis which does not even appear in the document. Accident possibilities are discounted by arbitrarily labeling them as "extremely *improbable*" or "*remote*" with no engineering or human factors analysis to support the assumptions. Obvious hazards are discounted by hollow promises of reliance on "safe operating procedures," "safety training of personnel," and "restricted access," with no consideration of the fundamental question of likely impacts from the failure of these measures. An environmental or safety hazards analysis is not accomplished by assuming the adequacy of one's preventive measures--it is in fact avoided by such an assumption--and that is what this EA did. It is a sham, it will not stand scrutiny, and DOE owes an obligation to the public to correct it by doing an EIS on the renovation.

It is rare when we have the opportunity to measure our analytical efforts, particularly in the environmental and safety arena, with the uncompromising light of hindsight. The NMSF provides such an occasion. Nowhere in the EA is there any mention or analysis of the risks, the real and unacceptable risks, embodied in the NMSF as it was actually constructed, and that it is perhaps the best measure of the shocking inadequacy of this document. The preparation of this EA in fact was just one more element of gross negligence and malpractice in the entire,

Comment 4, Attachment, page 7

quite unbelievable, series of failures to maintain even common sense standards of safety in the design and construction of the NMSF. How is it possible that DOE and LANL could have designed and constructed a nuclear materials facility that (according to the ADSs):

1) *Was so poorly designed and constructed that the only option now available is to gut* the facility and sandblast the walls;
2) Was designed so that the Safe Secure Transport's doors could not be opened and secured after entering the facility;
3) *Plutonium had to carried through the office area after removal from its shipping* container;
3) Had two natural-gas-fired boilers located inside the facility;
4) Was finished with a special paint which is debonding throughout the facility;
5) Lacked required radiation shielding;
6) Lacked a nonredundant electrical power source;
7) Located HEPA filtration plenums for the vault HVAC system in the office area;
8) Had a complex cooling system for the plutonium vault which never worked; and
9) Allowed access by tunnel from the office area to PF-4, the plutonium processing facility?

Given the wide internal review the NMSF received, these errors attest to widespread institutional failure, a failure which is evident in the environmental analysis as well. DOE and LANL have, in the public's mind, conclusively demonstrated their incompetence in nuclear material storage facility design, construction, and environmental and safety analysis. The only route to regaining that confidence is to do an EIS on the proposed NMSF renovation.

These Projects Fail the Interim Action Criterion

DOE will soon issue an advanced Notice of Intent to prepare a site-wide EIS for LANL. 40 CFR 1506.1(c) (adopted by DOE at 10 CFR 1021.103) provides:

> While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action which may significantly affect the quality of the human environment unless such action:
> 1) Is justified independently of the program;
> 2) Is itself accompanied by an adequate environmental impact statement; and
> 3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.

DOE defines a site-wide EIS as programmatic in nature (10 CFR 1021.104) and, by the previous discussion, both the CMR upgrades and the NMSF renovation are "major Federal actions which

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may significantly affect the quality of the human environment." Further, consideration must be given not merely to the individual project impacts, but also to their "cumulative impacts," defined by 40 CFR 1508.7 as:

> ...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions...

Therefore, the CMR upgrades and the NMSF renovation may not go forward during the site-wide EIS unless they singly and cumulatively neither "tend to determine subsequent development" nor "limit alternatives." We believe they strongly do so.

As noted in 40 CFR 1508.7, these facilities must be considered in light of the reasonably foreseeable future actions of DOE which include the following projects which are now planned or under construction at LANL:

- the Dual-Axis Radiographic Hydrotest Facility;
- the Consolidated Tritium Complex;
- expansion of the Area G low-level waste dump;
- the Mixed Waste Disposal Facility;
- the Controlled Air Incinerator; and
- the Radioactive Liquid Waste Treatment Facility.

This list is not exhaustive, as you know. The synergistic effect of state-of-the-art weapons development and production facilities combined with waste management and disposal capabilities unmatched in the nuclear weapons complex cannot be ignored - it will, in effect, provide a nucleation site for the condensation of the complex at LANL. Indeed, these actions taken as a whole prejudice the outcome of the Reconfiguration Programmatic Environmental Impact Statement as well as the LANL site-wide EIS. We consider it clear beyond any reasonable doubt that the CMR upgrades and the NMSF renovation, taken in this context, are prejudicial within the meaning of 40 CFR 1501.6(c)(3) and may not go forward prior to a Record of Decision on the LANL site-wide EIS.

Thank you for the opportunity to provide our views on these matters; we hope you will consider them when you prepare the Advanced Notice of Intent (NOI) for the LANL site-wide EIS. Should you have any questions or comments, please do not hesitate to call us.

Sincerely,

John Stroud

greg mello

Greg Mello

cc: Dan Reicher, DOE HQ
Ray Berube, DOE HQ
Carol Borgstrom, DOE HQ
Constance Soden, DOE AL
Earl Bean, DOE LAAO
Diana Webb, DOE LAAO

Comment 5, page 1

2/14/96

Dear Elizabeth;

(Concerning the EA for the CMR building upgrade (I have lost the announcement so I may not have the correct terminologies but it was the last announcement you sent out with a comment deadline of Feb. 16th)

1 I have several concerns with the upgrade for the building. There is a wing that is already polluted. I believe this should be shut down completely + cleaned up and that the other wings which are being prepared for standby status, be used instead.

Also, there was reference to earthquake damage saying that if the building was damaged that it could result in a 1 in 9 cancer rate in the surrounding areas. I would like to point out the the same could happen from explosions or other unforeseen accidents, and that this is too great a risk to assume for any research that is not absolutely necessary — for medical research. In other words, I do not think that nuclear weapons tests should be allowed to go on as they are not necessary to the betterment of mankind.

2 Please, schedule a public hearing on this building upgrade so we can better understand the situation, or put on hold until the wholesite-wide EIS is complete.

Please check your mailing addresses — I may be getting double mailings at my home address in Llano as well

Jean Nichols
La Comunidad
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Penasco NM 87553

Comment 6, page 1

b.l.a.s.t.

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February 16, 1996

Greetings friends,
Here are our thoughts in response to the EA: Proposed CMR Upgrade.

1 1, P. 15, 2.2.1.2 Will these proposed security related upgrades be a hinderance to fire escape and other evacuation plans? We find the fire protection upgrades of p. 18 to be inadequate since like much of this plan will be evaluated and acted upon without a good public environmental assessment. This book which claims to be an
1 EA puts off the big design decissions for later on in the process and does not asses much except for the need to take action.

Obviously a thorough EIS is in order with comments like "If any
2 Solid Waste Management Units in the CMR Building were disturbed by construction, any adverse effects would be mitigated." This indicates an uncertainty about the possible discovery of unknown Solid Waste Units. Exploring for lost SWMUs should be done before any renovation plans are drawn and an analysis of the content made public along with lucid data on details of contamination to ventilation systems. This document is too vauge and shadey. With huge amounts
3 of Pu found in vents at Rocky Flats, what if the CMR building needs decomissioning too?

4 2, P. B-1 "presently most enclosures do not have monitoring devices or alarms to indicate the loss of negative pressure for glove boxes or the loss of air flow for open front boxes" indicates a reason to discontinue all work in such areas until the situation is made safe. The upgrade of fire protection must be complete before any further work is initiated. It should be shut down and the idea of doing these renovations while work continues should be approached with critical analysis, not blind acceptance.

5 Does the acid drain line give off toxic vapor? Can this old build-
6 ing sturcturally support all the added weight and excess tonage? Will stress fractures occure during the heavy work forces? What
7 size and force of earthquake is being planned? Being on a huge resting volcano may indicate large earthquake potential. How good
8 are your HVAC systems if they are now out of calibration and dampers are rusted in one position? There are some truely hazardous work conditions there and it needs to be shut down until the EIS proves complete. The EIS must include a decommission alternative, not just the difiaulties of moving, relocating and suspending such deadly operations.

The public and LANL employees should be encouraged be invited to begin with the scoping process and do a thonough job of oversight participation. So hope to hear you plan to start an EIS. Thanks,

May the light of pure love bring peace on earth, bonnie & ditto

bonnie bonneau and ditto nowakoski

Comment 7, page 1

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(505) 986-9284

February 16, 1996

Elizabeth R. Withers
Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Ms. Withers:

This letter concerns the Environmental Assessment (EA) on the proposed Chemistry and Metallurgy Research (CMR) Building upgrades at the Los Alamos National Laboratory. I feel that an EA is not sufficient for these upgrades and that an EIS should be prepared. There are many deficiencies in this EA and some possible alternatives are not considered.

ALTERNATIVES NOT CONSIDERED

1. Cease all operations in areas of the CMR building that do not meet safety criteria until upgrades are performed.
Since the CMR building does not even meet minimal earthquake standards for a Hazardous Category 2 Facility and has many other deficiencies that don't meet proper safety standards and since so many dangerous materials are contained in this building, operations in this building should cease immediately and not resume until the necessary upgrades have been performed. Hazardous and radioactive materials should be stored in areas that meet the proper safety criteria. Possibly some operations could continue in areas of the building that *do* meet seismic standards like the vault or basement. You state on page 44 in the no-action alternative that *...if an earthquake, explosion, or fire occurred, large volumes of contaminated, unsegregated waste could be generated which could stress available waste storage and disposal capabilities. An earthquake producing an acceleration greater than 0.22 g could cause collapse of entire laboratory wings.* Obviously, some type of upgrades or construction is necessary to use this building safely, but your argument that these upgrades are necessary only goes to show how dangerous it is to be operating this building at any time.

You state on page A-1 that the filter efficiency rating in wing 3 is only 85%. This appears to be an unsafe condition now and operations in this wing should cease. After upgrades what will the efficiency rating be? What are the high-efficiency particulate air (HEPA) filters' efficiency ratings in other wings? What are the actual emissions from each wing now (especially in wings 3 and 4) and what will they be after upgrading?

You state that you are currently upgrading Continuous Air Monitors (CAMS) throughout the facility. It appears that operations should cease in those areas that do

Comment 7, page 2

not have proper continuous air monitoring. The fact that exhaust from Wing 3 eventually ends up in the general-area exhaust system also appears to be an unsafe condition.

These are only a few of the unsafe conditions listed in the EA. The most dangerous condition seems to be that the building wings cannot even withstand ground acceleration of 0.02 g. I have stated many times in other testimony that the Department of Energy (DOE) does not have even a minimal understanding of the importance of containment or how to achieve it. The Department seems to run on the mistaken assumption that earthquakes, fires and human error will never occur. Continuing operations during construction only increases the risk for human error and accidents, but this building appears to be unsafe to use under any circumstances until upgrades are performed.

2. Decommission wings 1, 2 and 4, upgrade the rest of the building as planned.
It appears that you are creating more space for the hoped-for expansion of activities at Los Alamos National Laboratory (LANL) (pit production etc.) It is not at all a given at *this time that expansion will occur, nor should it be encouraged by increased* construction. If this is the actual agenda in this EA, that should be stated clearly and would probably in itself require an EIS.

3. Decommission wings 1 and 2, use wing 4 or put wing 4 on safe stand-by.
Since the cold war is over and we no longer need to create as many bombs as before, all DOE facilities should be running at a smaller size. This alternative allows somewhat more space than alternative 2 but is smaller than current operations.

4. Decommission wing 1, use wing 2 and put wing 4 on safe stand-by.
Again, this alternative allows more space than alternatives 2 and 3, but still decreases the amount of laboratory space. Decreasing the size of future facilities in the nuclear weapons complex would lower costs--an important consideration when everyone is being asked to *cut the fat*. I believe there is a lot of *fat* in LANL's proposed expansion.

5. Decontaminate wings 1, 2 and 4. Do only minimal upgrades on these wings until it is known whether the expansion of LANL activities will actually occur. Finish upgrades at that time. Proceed with other upgrades.
When you discuss decommissioning the entire building and moving operations elsewhere, there is an assumption that activities will continue at their present (or greater) level. With the cold war over, activities should decrease. Intellectual stewardship could continue but at a much lower level. Only the very best weapons scientists would be kept on. This would lower costs and increase the level of competency.

AN EIS IS NECESSARY FOR THESE UPGRADES

Comment 7, page 3

2 1. Under DOE Order 4240.1 the upgrades qualify as a Major System Acquisition due to their estimated cost of greater than $100 million. Major Systems Acquisitions should have a complete EIS.

3 2. More stringent upgrades should be considered. Also, more oversight should go into whether these are the *proper* upgrades. Los Alamos has a history of doing improper construction and design in the Nuclear Materials Storage Facility. This facility also had only an EA. We need to make sure this doesn't happen again.

4 3. A 1 in 9 added chance of cancer mortality if an earthquake should occur during upgrading is unacceptable. (Tables 4-6 and C-1) Some way of doing these upgrades with a lower risk to the surrounding community needs to be figured out, especially since the upgrades will be carried out over a period of at least 8 years. Certainly you cannot come to a Finding of No Significant Impact from this EA with such a high risk to the surrounding community.

5 4. There appears to be a lot of self-regulation in the decisions being made about these upgrades. One question that should be brought up in an EIS is whether another agency should have oversight on these decisions. For instance, on page 9 the current standards for seismic and natural phenomena hazards are listed as DOE Order 5480.28 and DOE-STD-1020-94. On page 10 you state that no chemicals were found to exceed Emergency Response Planning Guideline (ERPG)-1 or Time Weighted Average (TWA) levels offsite under accident conditions. You also say on this page *that the maximum credible consequence of [an earthquake that collapses major portions of the CMR Building, resulting in a fire and a release of radioactive material] was calculated to be less than DOE evaluation guidelines (DOE-STD-3009-94)...at the nearest residential area*, yet your table 4-6 states that the dose from such an earthquake to the nearest population would be 216 person-rems resulting in an added chance of cancer mortality of 1 in 9. If this is an acceptable dose under the DOE evaluation guidelines, those guidelines should be re-evaluated. DOE appears to be setting all the standards and then deciding if they meet these standards. Someone other than DOE should have this authority.

6 5. How dependent are safety measures on the CMR building computers? What kind of computer backup will the upgrades give you under various accident and operational scenarios?

7 6. What are the chances of a criticality incident during upgrade construction? You state in Table 4-4 that a criticality accident is unlikely, but it does not appear that you generally take human error into consideration in your risk analyses. If operations are going to be moved during construction, would this not increase the chances of confusion or human error in this area? What is the history of criticality incidents in this building and in other facilities at LANL?

8 7. You state that these upgrades would be environmentally just, however, since 14 pueblos and reservations are in close proximity to LANL, an accident or earthquake of sufficient magnitude during the upgrades could just about wipe out the pueblo peoples. Although they may make up a small percentage of the total population surrounding LANL, this type of damage to their population would amount to genocide.

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9 8. The accident that would collapse the building is being analyzed in a separate safety analysis study and is not available in this EA. Since the consequences of this accident are so grave, you cannot decide that these upgrades would have no significant impact until this study is complete. What is the seismic history of the Los Alamos area? Is the area volcanically active? What are the chances of various levels of earthquakes occurring? How credible are the estimates of earthquake risk.

10 9. The doses to the public are calculated as the plume passes. What if it rains during a release? Could the plume reach a major population area such as Santa Fe or Albuquerque? What would be the dose if it did and the rate of excess cancer mortality? It appears that you have calculated your 1 in 9 dose on the immediate surrounding population. Table 4-6 gives that population as 26,770 persons. However, this appears to include only Los Alamos County and the 4 nearest pueblos. What about the remaining population in the Pojoaque and Española valleys, including the other pueblos which are also nearby? 1 in 9 for 26,770 is approximately 3,000 people however the actual number of people with added chances of cancer mortality would be much higher if the total population is included. Also, it should be clearly stated in an EIS that in addition to cancer mortality, there would be added cases of non-lethal cancers, genetic damage as well as other types of illnesses cause by a major release. We are talking in excess of 5,000 people who would be affected and this should be made clear. It also appears that your figures are incorrect when you state that the population of Los Alamos County is 18,115 but later say that Los Alamos town is 11,400, White Rock is 6,800 and Royal Crest trailer park is 500 (this adds up to 18,700). Please make sure you are using the correct population figures.

11 10. Do you have an evacuation plan for Los Alamos County and the surrounding areas in the event of an earthquake or accident during the upgrades?

12 11. You state that a fire would be contained within the wings. Could the HEPA filters burn? What would be the consequences?

13 12. You state that the dose to a worker is calculated on that worker breathing contaminated air for only 30 seconds. In an earthquake scenario couldn't that worker be trapped and unable to leave the area or get to a respirator?

14 13. You state that no permits are required. At least a clean air permit must be required for these upgrades. Possibly other permits as well. These needs to be investigated further.

15 14. It appears that your estimates of the probability of an airplane crashing into the facility are based on 1988 data. If this is true do those estimates hold true now, 8 years later?

Two special categories that need to be discussed in more detail in an EIS are **Waste Generation** and **Waste Transportation.**

WASTE GENERATION

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16 The potential waste that would be generated during these upgrades needs to be better characterized and analyzed in more detail. At this point you haven't estimated how much Resource Conservation and Recovery Act (RCRA) regulated and mixed waste would be caused by the upgrades. Nor is the volume of Transuranic (TRU) waste estimated. It is unclear what will be happening with some of this waste. You estimate that the total amount of waste generated would amount to at least 4,000 cubic meters (after compaction etc.) . Since the yearly amount of Low Level Waste (LLW) sent to Technical Area (TA)-54 amounts to 4500 cubic meters, you could be severely shortening the life of TA-54 with these upgrades. Certainly there is a significant impact on the environment if TA-54 has to be expanded or a new waste disposal area built.

17 You state that the upgrades *may* reduce the amount of liquid radioactive waste generated to 120,000 gal/year. What justification do you have for this figure? Can you show that these upgrades are the best way to reduce liquid waste volume? What alternatives have you considered? Presently the CMR building generates 22,000 gal of dewatered concentrates (LLW). What will the volume be after the upgrades? How many gallons of TRU liquid waste will be processed per year and what happens to this waste? The CMR building accounts for 30% of all LANL liquid radioactive waste generation. Again, since the liquid waste treatment plant also needs renovations perhaps operations should be stopped in the CMR building until not only its upgrades are completed, but also until the Radioactive Liquid Waste Treatment Facility (RLWTF) is brought up to proper standards.

18 If 99.4% of the radioactive sediments are removed, what quantity and composition of radionuclides is not removed? I question whether or not the sediment traps are sufficient. When the 1991 thunderstorm filled them in, what happened to the sediments they contained at that time? It is crucial that the CMR building's effluent be reduced as much as possible and these upgrades should be carefully scrutinized. Perhaps more stringent upgrades are needed here.

WASTE TRANSPORTATION

19 Much of the waste generated from these upgrades has the potential to be transported off-site. LLW can be sent to TA-54 *or possibly offsite.* TRU waste or mixed TRU will be stored at TA-54 and then sent off-site. Plain asbestos will be sent off-site. Radioactive chemical wastes, RCRA regulated wastes and some other wastes will also be sent off-site. Low level mixed waste will be sent off-site since LANL has no permit to dispose of it. Some waste will be sent off-site for treatment and returned for disposal. The amounts you are discussing are sometimes unclear as are the destinations for all this waste. However, it is clear that you are talking about potentially thousands of miles of transportation of hazardous and radioactive materials. You say that *accidents due to the extra mileage are not expected,* However, there are always a certain number of accidents that occur for every so many thousand miles traveled. Some of these accidents could release hazardous or radioactive materials. Your own estimates (which I believe are too low) for the WIPP transportation admit to a certain number of accidents which could release radioactivity. We need to know how many shipments of what kinds of materials we are talking about here, how many miles traveled, and more specifics on the transportation containers.

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19 There are questions about whether or not the transportation container regulations are stringent enough for these types of materials. Simply stating that if an accident does occur the packaging would *prevent or minimize releases and injuries* is not enough. All of these factors have a potentially significant impact on the environment and population groups and cannot be dismissed with a Finding of No Significant Impact.

OTHER QUESTIONS

20 Why don't you use the Total Effective Dose Equivalent (TEDE) to determine cancer mortality, not just the Committed effective Dose Equivalent (CEDE)?

21 How did you arrive at your figures for the airborne release fraction of the inventory of radioactive material (RF) and your assumption of a deposition fraction of 0.001in the acid drainlines?

22 When you refer to *mixed waste,* do you mean *Low Level* mixed waste?

23 You say that the CMR building directly supports Plutonium processing in TA-55. What does *processing* mean? Are we not *awash in plutonium?*

24 Where are wings 6 and 8?

25 Why do you need a new filter tower for wing 3?

26 On page 13 under Worker Safety you state that there are relatively low radioactive and contamination levels in the building. What are the actual levels?

27 What does putting wings on *Safe Standby* actually mean?

Los Alamos National Laboratory has a history of improper design and construction in the Nuclear Materials Storage Facility. DOE in general has a poor record of containment of radioactive and hazardous materials. For these reasons and because this EA is incomplete and leaves many unanswered question, a full EIS must be done on these proposed upgrades.

Sincerely,

Deborah Reade

Deborah Reade

Comment 8A, page 1

CCNS

Concerned Citizens for Nuclear Safety

February 20, 1996

Ms. Elizabeth Withers
NEPA Compliance Officer
DOE LAAO
Los Alamos, NM, 87544

Dear Ms. Withers,

Enclosed are CCNS's comments on the CMR Upgrades Environmental Assessment. This copy differs from the copy I faxed you at 4:50 PM in three minor respects:

1) I have corrected some typographical errors;
2) I have added a new footnote number 27 in order to provide a source for the quotation on page 16. Footnotes after number 27 naturally change by one; and
3) On page 21, I had erroneously described the CMR OMB submission as having been attached to the environmental assessment. It was, instead, attached to the September, 1995, CMR Upgrades Project, Project Execution Plan, and is so corrected.

Sincerely,

Jay Coghlan, Research Analyst

107 Cienega Santa Fe • New Mexico • 87501 • USA (505) 986-1973

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Comments on the
Environmental Assessment for Proposed CMR Building Upgrades

February 16, 1996

Submitted by
Jay Coghlan, Research Analyst
Concerned Citizens for Nuclear Safety

Submitted to
Ms. Elizabeth Withers
NEPA Compliance Officer
DOE Los Alamos Area Office

Concerned Citizens for Nuclear Safety (CCNS) submits these comments on the **Environmental Assessment: Proposed CMR Upgrades.** CCNS is a nonprofit, community-based information and education organization focusing on nuclear weapons policies and nuclear waste issues impacting the State of New Mexico. CCNS's grassroots support enables the organization to provide individuals on its 6,000 plus mailing list with information and educational opportunities. CCNS has been actively involved in DOE nuclear weapons complex reconfiguration issues since 1990. We take special interest in the Chemical and Metallurgical Research (CMR) Building because of the likelihood of future key programmatic activities being located in the building.

These comments are organized as follows:

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Programmatic Issues Concerning the CMR Upgrades

In 1989, DOE prepared an environmental assessment for the Special Nuclear Materials Research and Development (SNMR&D) Laboratory. This laboratory was the largest capital project ever proposed for Los Alamos National Laboratory (LANL), with one estimate above $400 million in construction. The SNMR&D lab was to be one of a triad of facilities which would create a "special nuclear materials park" at Technical Area-55. TA-55 already sites PF-4, the only currently operating plutonium processing facility in the country, and the Nuclear Materials Storage Facility, an underground storage vault for weapons-grade materials (currently undergoing renovation for fundamental design deficiencies). Congress declined to fund the SNMR&D lab, the fundamental reason being the lack of clear programmatic need for the facility given the recent end of the Cold War.

The SNMR&D lab proposal is not now entirely dead, but is essentially alive and well in the form of the various proposed phases of CMR Building upgrades. In LANL's words

> Funding of $49.5 for Phase 1 upgrades to the CMR Building was secured in FY92 to support interim upgrades through FY95. In FY93, we will pursue DOE approval to proceed with a conceptual design that will include Phase II and Phase III upgrades for continued long-term operations. A new integrated line item will be sought for an [sic] FY95 start to consolidate all phases of the project. *If approved the Special nuclear materials research and development Laboratory Replacement project for the CMR Building will be canceled.*[1] (emphasis added)

DOE reported in Congressional Budget Requests

> There are no new construction starts in FY 1995; however, the necessary upgrades to the Chemistry and Materials [sic] Research Laboratory at Los Alamos National Laboratory have increased in scope justifying a stand alone construction project.[2]

and

> $6,250,000 was reprogrammed to CMR, Phase I subproject of Nuclear Weapons Research, Development and Testing Facilities Revitalization, Phase III (90-D-102) from Special Nuclear Materials Laboratory Replacement Project (88-D-105).[3]

1 LANL Institutional FY 1994- FY 1999, page IV-3.
2 FY 1995 Congressional Budget Request, Atomic Energy Defense Activities, DOE, page 23.
3 FY 1996 Congressional Budget Request, Project Data Sheets, DOE, page 356.

Comment 8A, page 4

1 It is clear that the mission of the upgraded CMR Building is essentially identical to that of the defunct SNMR&D lab.

> The overall purpose of the [SNMR&D] project is to replace the SNM chemistry and metallurgy laboratories in the aging CMR Building at LANL.[4]

and

> Since its construction 40 years ago, the CMR Building has been used for the research, development , and analytical work with plutonium, uranium and their alloys, and other materials in support of weapons, nuclear materials, and other Laboratory programs. This work continues to be essential to the nation's weapons programs, with the principal activities in the building being in support of the plutonium research, development and demonstration activities conducted at the Laboratory's Plutonium Handling Facility at TA-55.[5]

This relationship between PF-4 at TA-55, and the expected duration of that relationship, is made clear below.

> The CMR Building and TA-55 are the largest mission-related facilities in the Los Alamos National Laboratory installation. Specific analytical chemistry support for plutonium processing at TA-55 includes SNM accountability, waste characterization, and certification of materials. The CMR Building is now 40 years old; however, the systems and space to support chemical and metallurgical laboratories can be made acceptable for meeting the needs of current and projected activities by providing for the upgrades identified in this project. *The long-term Los Alamos National Laboratory mission needs for such capability are currently programmed for at least another 20 to 30 years.*[6] (emphasis added)

CCNS submits that the italicized portion of the quote above is a stunning admission by LANL which lays bare the central problem in this environmental assessment. This EA and the actions that it proposes may be lawful within a narrow scope; nevertheless, these upgrades are being proposed against a backdrop of prejudicial programmatic decisions.

One of the principal objections raised by an aroused citizenry during 1990 scoping hearings for the never-completed SNMR&D Lab environmental impact statement

4 Environmental Assessment: SNMR&D Laboratory Project, LANL, March 1989, page 1-5.
5 FY 1996 Congressional Budget Request, Project Data Sheets, DOE, page 357.
6 FY 1997 LANL Capital Assets Management Plan (CAMP), CMR Activity Data Sheet, page A-17.

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was the likelihood that substantial portions of the 192,000 square feet proposed lab were being reserved for future production activities that would spill over from PF-4. In LANL's words, one of PF-4's missions is to to perform "limited back-up production of plutonium for weapons development."[7] Far from limited production for weapons RD&T, PF-4 performed industrial-size runs for the complex when the Rocky Flats Plant was down. In 1980, PF-4 processed a metric ton and a half of plutonium.[8] As a result, PF-4 was in disrepair.

> PF-4, now 10 years old, has been used for production, for which it was not designed. One fourth of its area is worn out and will need to be replaced by the SNM R&D Lab.[9]

Given that the primary mission of the CMR Building and the proposed SNMR&D Lab are essentially the same, the probability that production activities will spill over from PF-4 to the CMR Building remains. LANL management is already anticipating this.

> The prospect of additional limited manufacturing roles for the Laboratory, especially those involving nuclear materials, places a premium on viable space.....Are there options for PF-4 activities to relocate in wings 3, 5, or 7 of CMR?....Wings 2 and 4 are being mentioned as a location for CSA [canned subassemblies, i.e., highly enriched uranium components for weapons secondaries] work.[10]

It is likely that DOE and LANL are already reserving space in the CMR Building for these future operations.[11] That this process has been ongoing for some years now is supported by the quotation below.

> A meeting was held at Germantown Headquarters (HQ) on September 1, 1992, to review the status of new programs being planned for the Chemistry and Metallurgical Research (CMR) Building. The meeting was attended by members of my staff (the Office of RD&T Facilities and the Office of Engineering and Operations Support), Program Secretarial Officers (PSO) program sponsors, program management from your office, and personnel from the Los Alamos National Laboratory (LANL) representing CMR programs. The meeting objective was to reconcile the schedules for the preparation, review, and approval of the safety analysis documentation with

7 Environmental Assessment: SNMR&D Laboratory Project, LANL, March 1989, page 1-2.
8 LANL Annual Report, 1981, page 22.
9 LANL CAMP, April 1991, page 45.
10 "Manufacturing Assignments and the PEIS," LANL memo, February 6, 1995.
11 "Establish a Safe Standby condition for Wings 2 and 4 pending future programmatic use." CMR Upgrades Project, Project Execution Plan, LANL, September 1995, page 11.

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> the programmatic schedules.[12]

The Defense Nuclear Facilities Safety Board, while commenting on the Fire Resistant Pit program at the CMR Building, noted: *"Technical inconsistencies exist between what is actually being done in the CMR building upgrade design and what is described in program documents, and also between key program documents themselves."*[13] (emphasis added)

DOE has prudently decided to defer from formulating details in a proposed Phase III CMR Upgrade until the completion of both the Stockpile Stewardship and Management (SS&M) Programmatic EIS and the LANL Site-Wide EIS. This position is possibly disingenuous as the old and dead Reconfiguration PEIS (R-PEIS) listed three alternatives for the reconfiguration of the complex: 1) the construction and operation of new facilities; 2) the modification/upgrading of existing facilities; and 3) no action (continued operation of existing facilities). On February 14, 1995, DP Asst. Secretary Victor Reis was quoted in *The Albuquerque Journal* as stating to a Los Alamos audience, "The laboratories have to take on a manufacturing role." He acknowledged that using the laboratories as production sites is the primary option under study for the reconfiguration of the complex.
In CCNS' view, the modify and upgrade alternative is not merely under study, but is being incrementally implemented at this time. LANL is the principal site for implementation of the modify/upgrade alternative for reconfiguring processing operations involving strategic plutonium. LANL management is clear on the subject.

> A consolidation strategy is being followed to effect cost reduction and streamlining of operations. Outdated and less-used facilities are being closed and others are being modified and upgraded to accommodate consolidation of activities. For example, the Chemistry and Metallurgical Research (CMR) facility upgrade allows the consolidation of currently dispersed nuclear materials capabilities *together with the attainment of new capabilities* at a substantial cost savings over a completely new facility.[14] (emphasis added)

This is consistent with the July 1993 R-PEIS Revised NOI's proposal for co-locating

12 "Guidance on Startup Authority and Safety Analysis Documentation for the Los Alamos National Laboratory Chemistry and Metallurgical Research Building New Programs and Operations;" Memo from DOE HQ to Manager, DOE Albuquerque Operations Office; Sept. 22, 1992.
13 "Review of Chemistry and Metallurgical (CMR) Facility Hot Cell Upgrades and the Fire Resistant Pit (FRP) Program;" DNFSB Memo, November 4, 1994. The DNFSB cited two reports by the contractors Merrick & Company and EQE Engineering Consultants, "Project Criteria and Procedures-CMR Facility Seismic/Wind Upgrade-LANL" and "Project Plan-CMR Facility Seismic/Wind Upgrade-LANL;" both February 25, 1994.
14 The 1993 LANL Strategic Plan, "Nuclear Weapons Sector Overview," page 10.

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RD&T functions with nuclear materials storage, processing and component manufacturing operations involving the same material. Together, the CMR upgrades and existing capabilities at TA-55 give LANL the ability to provide plutonium processing operations for a reconfigured nuclear weapons complex with the capability of fabricating 100 to 200 warheads per year.[15] These programmatic decisions have been predetermined and the CMR upgrades are central to the process. This is further buttressed in the FY 97 LANL CAMP. 1

The Los Alamos National Laboratory support of the DOE weapons program includes research, RD&T in accordance with the Mission Area Assignment agreed to by the Assistant Secretary for Defense Programs and the Under Secretary....The Los Alamos National Laboratory CMR Building provides a major capability for Los Alamos National Laboratory to execute this mission.

The continued availability of the Los Alamos National Laboratory's chemistry and metallurgical SNM operations located in the 40-year-old CMR Building is crucially important to the continued support of DOE weapons in essentially all stages of their life cycle.....[16]

As to the LANL Site-Wide EIS, LANL management has already effectively preselected the *Expanded Operations Alternative* listed in that document's May 1995 Notice of Intent. The 1993 LANL Strategic Plan is explicit in stating that the Lab's "unique reason-to-be" will remain nuclear weapons technologies, and makes clear that LANL's goal is to become "the prime...steward for the nation's stockpile." In its own vision of prime stewardship, LANL management is calling for the establishment by FY 96 at the Lab of "complete pit fabrication and inspection capability" and "a complete capability..... to prototype war reserve pits." According to the Plan, the future expanded LANL role will involve all of these manufacturing capabilities and activities: 1
--fabrication of plutonium triggers,
--manufacture of uranium components,
--manufacture of lithium components,
--fire-testing of new plutonium pits at full scale,
--expanded plutonium and SNM storage,

15 "The capability to fabricate a modest number of new warheads or remanufacture those in the enduring stockpile will be optimally located at the chosen nuclear-materials storage and processing site. (One way of assessing the needed capacity for fabrication is to compare the number of weapons in the long-term stockpile with a typical weapon lifetime. From this basis we can estimate a need for about 100 to 200 units per year)....
In the future, the traditional distinction between responsibilities of the production complex and the design laboratories will become somewhat more diffuse."
John D. Immele (LANL Associate Director for NW Technology) and Phillip D. Goldstone (Chief Scientist for LANL ICF Programs); "Redefining the U.S. Nuclear Weapons Program and the DOE Nuclear Weapons Complex;" 1993 Los Alamos Science, page 47.
16 FY 1997 LANL CAMP, page A-14.

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--loading of tritium into nuclear weapons,
--further development of plutonium and uranium processing technologies,
--development of tritium manufacturing techniques,
--manufacture of detonators for weapons, and
--fabrication of beryllium components.

Acquiring or enhancing these capabilities or activities would then give the Lab the ability to manufacture complete nuclear weapons prototypes.

The infrastructure to support LANL strategic planning is then implemented through proposals for future facility construction or upgrades in the FY 1996 LANL Capital Assets Management Plan. Through the year 2015, $4.85 billion in proposals for construction or upgrading of facilities at LANL breaks down as:
• $2.936 billion for nuclear weapons research, development and testing facilities;
• $629 million for plutonium, enriched uranium, tritium, etc. processing and fabrication facilities sufficient for producing complete nuclear weapons;
• $364 million for waste management facilities in support of nuclear weapons programs; and
• $783 million for redirecting the Lab's primary energy research facility into a center for nuclear weapons surveillance and experimental tritium production.

In all, over 95% of all future LANL facilities are for nuclear weapons programs or are in support of those programs. In light of the above, it is not surprising that the public would regard the consolidation of nuclear weapons programs at LANL as a "done deal." The CMR upgrades are just another step in that direction.

DARHT and the CMR Upgrades

NEPA requires the study of interconnected and related actions. The relationship of the CMR Building to the Dual Axis Radiographic Hydrotest (DARHT) Facility needs exploration. As listed in the 1989 SNMR&D EA, one of the four critical plutonium activities conducted at the CMR Building is "chemical analyses of plutonium metal for LANL's weapons testing program." The relationship between the CMR Building and PF-4 has already been demonstrated. The SNMR&D Lab EA states as well that the scrap recovery, isotopic separation, purification and production technologies are "developed and used [at PF-4] to provide plutonium and other special nuclear materials needed for LANL programs in material development and for weapons design and testing." DOE has 34% constructed DARHT and is presently seeking the dissolution of the court-ordered injunction against its completion. In the final DARHT EIS, Appendix I, *Facility Accidents*, are listed dose factors for hypothetical acute accidental releases for plutonium isotopes 236, 238, 239, 240, 241, 242, and 244 (in addition to "regular" weapons-grade Pu-239). Hence, it is reasonable to assume that DARHT hydrotests may at some time use some or all of these isotopes as 2

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surrogate materials. DOE may soon reprocess quantities of Pu-242 at the Savannah River Plant for this purpose.[17] Both the CMR Building and PF-4 would undoubtably be involved in the production and analyses of simulated weapons components for hydrotesting at DARHT. The extent of the future hydrotesting program (number of shots, etc.) is still not well defined.[18] The interrelationship of the completion and operation of the DARHT facility, especially within the context of further consolidation of nuclear weapons programs at LANL, with the CMR Building (and PF-4) has not received adequate scrutiny.

CMR Upgrades and the NPT and CTBT

It has previously been noted how upgrading will make the CMR Building suitable for meeting the needs of current and projected LANL/DOE activities. At the same time, the long-term LANL mission needs for the capabilities that an upgraded CMR Building would provide are currently programmed for at least another 20 to 30 years. These comments now turn to placing an upgraded CMR Building within the context of current and future nonproliferation and disarmament issues.

LANL's primary mission is now self-described as "Reducing the Nuclear Danger," but the Lab's (and the nation's) policy towards nonproliferation is often contradictory. Current national policy prohibits the production of new nuclear weapons designs, while the Nuclear Weapons Posture Review directs that new design and production capabilities be maintained in the remaining complex. This contrasts sharply with the NonProliferation Treaty (NPT), which has been the primary instrument to date preventing the spread of nuclear weapons. The bargain at the core of the NPT is that nonweapons states forswore the acquisition of nuclear weapons. In exchange, the weapons states pledged to

> .....pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control." (Article VI, NPT, 1970)

17 "At present, DOE uses plutonium-242 for research. In accordance with the Atomic Energy Act, specific details on the use of plutonium-242 are classified and restricted from unauthorized disclosure for the protection of national security. The SRS has [14,000 liters of] plutonium solution stored in a stainless-steel tank in H-Canyon that requires processing and conversion to a form suitable for safe storage and potential use." Interim Management of Nuclear Materials FEIS, DOE SRS, October 1995, page 1-22.

18 "This approval [EPA Clean Air Act permit for the DARHT Baseline Alternative] limits the annual expenditure of uranium to 440 lb (200 kg.). This limit was based on the amount of depleted uranium used at PHERMEX during the mid-1980s. However, since that time, underground nuclear testing has ceased, programmatic objectives have changed, and a limit of 1,540 lb (700 kg) would be required to meet all objectives under this alternative." DARHT FEIS, DOE, August 1995, page 3-24.

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DOE's proposed SS&M Program, in which the upgraded CMR Building will play a central role, may be an obstacle to a stringent nonproliferation regime under the renewed NPT. The first question that arises is whether future SS&M facilities can and will be used for new design and production, and hence have a discouraging effect on international observance of the NPT. A more fundamental question is, to the extent that the SS&M Program preserves the stockpile into the indefinite future, how can that program be in alignment with the international commitment to disarm?[19] 3

The SS&M Program takes as its foundation the September 1994 Nuclear Weapons Posture Review with its specific directives to maintain design and production capabilities. This, in turn, drives the CMR Building upgrades. At least equal weight needs to be given in SS&M Program planning to the NPT, which long preceded the Posture Review. U.S. nuclear weapons policies should recognize the primacy of the NPT, which requires corresponding recognition that the basis for selecting ultimate future stockpile sizes already lies in the NPT. Given that it is folly to unilaterally disarm, interim stockpile sizes should be recognized and planned for, but with emphasis placed on their interim status as nuclear weapons states seek to honor their NPT commitment. Instead, the FY96 LANL CAMP states that the LANL mission needs for an upgraded CMR Building are already programmed for at least another 20 to 30 years. CCNS submits that this statement demonstrates LANL's zeal to maintain the nuclear weapons stockpile *ad infinitum*, contrary to international law and our own long-term interests in helping to preserve our uncontested conventional weapons superpower status by drastically reducing global nuclear arsenals.

The CMR Upgrades also need to be placed within the context of ongoing Comprehensive Test Ban Treaty (CTBT) negotiations. These comments have already addressed the likely supporting role that the CMR Building will play for future hydrotesting programs at DARHT. DARHT is commonly regarded as the soon-to-be flagship of DOE's Above Ground Experiments (AGEX) program and may be the precursor to the Advanced Hydrotest Facility. In turn, some countries may regard the AGEX program as being designed to circumvent the intent of the CTBT. This issue has become more timely since the DOE announcement by DOE of a series of underground subcritical experiments at the Nevada Test Site (beginning with a LANL test in June). DOE should make clear what role the CMR Building and PF-4 might play in these pending tests. Any long-term role that the CMR Building could

19 CCNS is not advocating unilateral disarmament. Reducing the nuclear danger, with eventual abolition, should be accomplished through deliberate and carefully phased multilateral arms reductions (such as progressively increasing START-like schedules) involving both declared and undeclared nuclear weapons states. Important initial steps towards disarmament are the achievement of a CTBT, proportional reduction of all stockpiles into the hundreds and below, and a global ban on the development of new nuclear weapons systems (including modifications that possess new military characteristics).

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take in tests that might impede completion or observance of the CTBT needs addressing.

The CMR Upgrades and Public Disclosure

The FY96 LANL CAMP CMR Activity Data Sheet (page A-9) states that the need for the CMR Phase I upgrades was established through the 1990 DOE Deputy Assistant Secretary for Military Application (DASMA) study. It also states that the need for long-term upgrades was identified by a CMR Interim Safety Analysis Report (ISAR). The FY95 DOE Congressional Budget Request (CBR) states that the "ISAR was utilized as the basis to identify and prioritize upgrades that would be required to continue operations in a safe, secure, and reliable manner for at least the next 20 years."[20] The FY96 Congressional Budget Request states that the "findings of the ISAR are the basis for the scope of CMR Upgrades Phases 2 and 3, which were combined with Phase 1 to produce this standalone line item in FY 1995."[21]

CCNS filed a Freedom of Information Act (FOIA) request for the DASMA CMR study in December 1991 with the DOE Albuquerque Operations office (DOE AL file no: 91-338-J). Eventually, all items on the request were satisfied, with the exception of the release of the DASMA Study. In May 1994, CCNS received a letter from DOE AL stating that "this report is in draft status and is, therefore, predecisional." A response from Headquarters as to whether the report could be released was pending.

On March 21, 1995, the Western Environmental Law Center (WELC), on CCNS' behalf, filed a new FOIA request for the DASMA study, the ISAR, and for NEPA documentation for the CMR Upgrade Project, Phases I - III. In April 1995, WELC had a phone conversation with the DOE AL FOIA Officer, which was documented in a letter to that FOIA officer. According to the Law Center, the officer stated that LANL would provide the officer with the DASMA study and CMR NEPA documentation by April 24, 1995, and that WELC would then be advised as to whether DOE had determined if those documents could be released. If the determination was positive, those documents were to be released no later than May 15, 1995.

With respect to the CMR ISAR, the FOIA officer advised WELC that LANL had already determined that the report was predecisional, and therefore would not be provided. However, none of the materials were released, despite a follow-up letter from WELC to the FOIA officer on June 2, 1995.

Both the 1990 DASMA study and the 1992 CMR ISAR are fundamental to informed

20 FY 1995 Congressional Budget Request, Atomic Energy Defense Activities, Project Data Sheets, DOE, page 26.
21 FY 1996 Congressional Budget Request, Atomic Energy Defense Activities, Project Data Sheets, DOE, page 357.

CCNS CMR Upgrades EA Comments, page 10, Feb. 16, 1996

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consideration of the proposed upgrades. They are decidedly not predecisional in nature, since it is stated in the CBRs that together they provide the basis for Phases 1, 2 and 3. DOE and LANL can not have it both ways: they cannot refuse to release these reports on the basis that they are predecisional and yet still use them as the basis for decision-making.

On the need to provide pertinent information to the public, perhaps an apt analogy to the DARHT case can be made. While issuing an injunction against further DARHT construction, Judge Mechem gave the opinion that

> Agency procedures implementing NEPA must involve the public in complying with CEQ regulations.....DOE failed to follow its own procedures which allowed for additional review in the event that public comment raised a "substantial question regarding [a] categorization" affecting NEPA assessment.....*Public comment cannot be elicited without public disclosure.* DOE has since acknowledged the critical element of public involvement in carrying out the NEPA mandate. 57 Fed. Reg. 15122 (rule's purpose is to enhance public review opportunities and "ensure that [DOE's] NEPA procedures are more accessible to the public").[22] (emphasis added)

4

DOE may justifiably argue that portions of both reports are classified. However, that is no excuse for a blanket refusal to release these reports. In the case of the DASMA report, adequate time has passed in which a declassified version, if necessary, could have been prepared since the first FOIA request of December 1991. DOE should have anticipated this necessity because of the CMR's Building's significance and the demonstrated public interest in the SNMR&D laboratory. The lack of a clear DOE response to this matter is particularly unsatisfactory.

CMR Clean Air Act Issues

In November 1991 and November 1992 LANL was issued two separate Notices of Noncompliance by EPA for failing to comply with the regulatory criteria of the Clean Air Act. In addition, in the 1992 Notice, the Lab was found to have exceeded the Clean Air Act 10 millirem public health safety standard once an unapproved "building shielding"reduction factor was disallowed. These notices required DOE to enter into negotiations for a Clean Air Act Federal Faculties Compliance Agreement (CAA FFCA). The draft FFCA was released in June 1995; the final has yet to be approved.

In the draft CAA FFCA, the CMR Building is listed as a "Special Case."

22 Memorandum Opinion and Order, No. 94-1306-M, U.S. District Court for the State of New Mexico. January 26, 1995.

CCNS CMR Upgrades EA Comments, page 11, Feb. 16, 1996

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CMR is a complex building which contains laboratories designed to conduct a wide variety of radiological work. Ten stacks at this facility require continuous sampling in accordance with 40 CFR 61.93(b) but have no ideal sampling location because of their physical configuration....At some of these sampling locations, complete mixing will be impossible to achieve...Sampling will be done to ensure that a representative, or at least conservative, sample is collected.[23]

5 In informal discussion between EPA and CCNS, EPA officials have indicated that the CMR Building's "special case" will be temporary until its phased upgrades are completed (but not necessarily after Phase 2). This requires acknowledgement in the EA. Buried in the draft FFCA Supplement 1, Point Source Evaluation for Sampling Requirements, is the following: "[T]he configuration of the CMR Building, in addition to planned activities that may occur in this building, provides a strong argument for upgrading these point sources to major source status. These emission points will be upgraded to meet 40 CFR 61.93(b) requirements." CMR stacks are scheduled to meet final requirements by March 30, 1998 (Compliance Plan, Table 6-4). The EA needs to make clear that the CMR stacks will fully comply with Clean
5 Air Act regulatory criteria by that time. LANL's noncompliance is already inexcusable since the Clean Air Act required compliance within two years of the 1990 promulgation of the relevant regulations.

From May, 1994, to January, 1995, there were five reported incidences of air monitoring equipment failures at the CMR Building and one unplanned release from effluent stack FE-24.[24] As per the Clean Air Act, DOE needs to ensure the adequacy of quality assurance programs for air monitoring systems at the CMR Building. It is likely that numerous incidents such as the above have occurred in the past. The use of historic emissions data (as per the draft FFCA) is suspect because of the lack of valid past quality assurance programs and independent oversight.

DOE has stated: "Administrative controls have been placed on emissions at the CMR facility, thereby converting ten stacks from major point sources to minor point sources."[25] These CMR administrative controls are then an integral part of the FFCA. Because no further information is given, CCNS assumes that these administrative controls limit the amount of time of operations for certain activities at the CMR Building, analogous to the administrative controls imposed on the Los Alamos Meson Physics Facility. DOE administrative controls could be of limited duration due to programmatic issues that will likely raise levels of operations at both facilities. LANL is already anticipating the need for plutonium pit rebuild activities and highly enriched uranium components fabrication in the CMR

23 Draft LANL CAA FFCA, Appendix A, Compliance Plan, EPA, May 1995, page 8.
24 CMR Occurrence Report, 1990-Present, LANL, January 25, 1995.
25 "Declaration of Steve Fong," DOE LAAO Environmental Engineer, June 1995, page 7.

Comment 8A, page 14

Building, which is located in the most densely populated section of the Lab. Description and duration of administrative controls for all facilities need to be specified in the CMR EA.

LANL and DOE claim that full inventory of radionuclide sources at LANL has been completed. This is significant because the need to continuously monitor a stack is
5 predicated on this inventory. Nothing in the draft FFCA indicates that EPA has or will verify claimed inventories. No description of the inventory process or quality assurance to that process is given. In addition, there are no provisions for updating radionuclide inventories; obviously, radionuclide inventories are not static at LANL. This could be significant as more production operations are consolidated at the Lab and the CMR Building. This CMR EA needs to make clear that CMR radionuclide inventories are indeed complete, periodically updated and verified.

The Draft FFCA states

As long as DOE remains in compliance with the terms of this FFCA, including the Compliance Plan, an application for approval under 40 CFR. S. 61.07 or notification of startup under 40 CFR. S. 61.09 is not required to be submitted for any new construction of or modification within an existing facility if the estimated dose equivalent caused by all emissions from the new construction or modification is less than 1% of the standard prescribed in 40 CFR. S. 61.92.[26]

EPA confuses the FFCA with the Clean Air Act. Forty CFR S. 61.96 (b) exempts DOE from the need to file an application for approval under S. 61.07 or notification of startup under S. 61.09 for new construction or modifications that create facilities with an EDE less than 1% of the 10 mrem/year standard. This same paragraph ends with a statement that a facility is eligible for this exemption only if the facility is in compliance with Subpart H. The CMR Building is not in compliance with Subpart H, nor is the FFCA in effect. Furthermore, DOE and LANL would have to
5 demonstrate that the CMR Buildings annual radioactive air emissions are less than .1 mrem. Why does the EA (page 45) make the claim that no permits are required for the CMR upgrades?

The CMR Project Execution Plan contains the following for the Phase 1 upgrade.

The original scope assumed the UPS [uninterruptable power supply] supporting Stack Monitors would be a safety class system. Since the Stack monitors have been determined to not be a safety class, the UPS's are not now

26 Draft LANL Clean Air Act FFCA, EPA, May 1995.

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required to be safety class.[27]

6 The obvious object of an upgrade is to upgrade. Why were potentially safety class UPSs downgraded to the lack of safety class stack monitors? Will stack monitors and UPSs be brought up to safety class in Phase 2?

7 The EA notes in Appendix A that the Wing 3 bag filter system in FE-20 was replaced with a box filter system, bringing the efficiency rating up from 60% to approximately 85%. Is there further redundant filtration? Why can't higher efficiency HEPA filters be installed?

In attempting to remediate CMR Clean Air problems, the EA should consider shrouded probe technology. This technology is LANL-developed, is likely to be more economical than the presently approved ANSI technology, and appears capable of solving many of the monitoring problems that LANL has experienced. EPA has made it clear that it doesn't have the authority to mandate use of this technology, but has granted conditional approval for use in certain circumstances. This technology may prove especially useful in "special cases" such as the CMR Building, as illustrated below.

> .....in wind tunnel experiments that simulate stack sampling with ANSI-type isokinetic probes, the transmission ratio is about 20% to 40% for 10um aerodynamic equivalent (AED) particles over a range of free stream velocities of 6 to 20 m/s. For an isokinetic probe that has improved design characteristics, the transmission ratio is about 60%. By comparison, a shrouded probe typically has a transmission ratio of 80% to 110% for the same range of conditions.[28]

Finally, in Clean Air matters, all significant estimated quantities of radioactive duct holdup materials should be provided.

CMR Upgrades Impact on Area G

The EA states that 16,340 cubic meters of suspect waste volume could be generated in the Phase 2 Upgrade. This volume may be reduced to 4,000 cubic meters through compaction and other waste minimization activities. [Substantiating analysis for this reduced figure is lacking in the EA and should be reflected in further
8 environmental analysis.] Characterization of this suspect waste will be performed "on the job." Should all of this waste be characterized as "low-level," it would approximate LANL's annual generation of low-level waste. The EA in Table 4-1

27 CMR Upgrades Project, Project Execution Plan, Attachment E, "DOE Baseline Change Proposal," LANL, September 1995.
28 Single-Point Represenative Sampling with Shrouded Probes, LANL, LA-12612-MS, August 1993.

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(page 33) states that the project may well shorten the life of the LLW disposal facility at TA-54. Possible expansion of Area G is to be determined through the LANL Site-Wide EIS process, yet a train of events is in motion that is likely to accelerate the expansion of Area G.

The expansion of Area G has been a controversial issue in the past, one in which San Ildefonso Pueblo has taken a particular interest. The same table, immediately under the entry cited above, states under "Environmental Justice" that no effects to
8 the public are expected. CCNS suggests that any action accelerating the expansion of Area G does have environmental justice impact, one which particularly impacts San Ildefonso Pueblo. Our concerns are heightened by two disparate (perhaps contradictory) processes: 1) the increasing possibility of DOE land transfers back to the Pueblo and 2) rudimentary proposals in the Draft Waste Management PEIS for "regional treatment centers" in which Area G could play a central role. This CMR EA is deficient by its lack of any exploration into the interconnected and related issue of accelerating the expansion of Area G. This must be addressed. Outside of NEPA, CCNS suggests that DOE work closely on a government-to-government basis with San Ildefonso Pueblo on this issue.

CMR Phase 2 Upgrade Risk Assessments

As expressed in the Summary of Radiation Exposure Risks (Table 4-6, EA page 42), the calculated plutonium dose to the nearest population in the event of an earthquake is astonishingly high. That dose is given at 216 person-rem, with an added chance of cancer mortality of one in nine for a population of 26,770. Apparently, a hypothetical earthquake needn't be that severe to cause such a catastrophic release. The Defense Nuclear Facilities Safety Board, in reference to the CMR Fire Resistant Pit Program, noted

> The structural evaluation of the building does not include the effect of possible severing of distribution lines that span from lot to lot, nor does it account for potential loss of safety systems, such as ventilations, that are needed to ensure hazardous material confinement. *Since the building and essential safety systems may not withstand a severe earthquake,*[29] the hot cell upgrades may not be able to perform their intended functions due to these neglected interaction effects.[30] (emphasis added)

The public is well aware of common geothermal activity in the greater Jemez area and the fact that the dominant physical formation in the Jemez Mountains is the

29 Here, the DNFSB footnotes "Project Plan-CMR Facility Seismic/Wind Upgrades-LANL," February 25,1994, page 38.
30 "Review of Chemistry and Metallurgical (CMR) Facility Hot Cell Upgrades and the Fire Resistant Pit (FRP) Program:" DNFSB Memo, November 4, 1994.

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Valle Grande, said to be the nation's largest caldera (formed as a result of volcanic activity). According to preliminary information, three faults run through Lab property, two of which are considered capable of generating an earthquake of the magnitude of seven on the Richter scale. One in-state expert believes that New Mexico is bound to have a 6 magnitude earthquake within a hundred years. While this is most likely to occur in the southern part of the state, seismic activity from the Rio Grande Rift is within striking distance of the Los Alamos Area. In 1918, people were knocked off their feet in Cerrillos, while windows were broken in Santa Fe. Sometime in the 1950s or 1960s, a tremor was felt in Los Alamos. In TA-3 (CMR location), long-term slip rate probabilities are given as one chance in 500 years of a seismic event with a force of .14 G, one in 1,000 years with .21 G, one in 2,000 years with .3 G, and one in 10,000 years with .56 G.

9 Since seismic upgrading is one of the primary components of the CMR Phase 2 Upgrade, DOE and LANL are obviously aware of the danger that potential seismic activity can bring. Given the astonishingly high dose rate in the event of an earthquake during the upgrade process, the EA is grossly deficient by failing to provide any information on event probability. This begs for a deeper level of analysis.

NEPA Segmentation Issues

The broad issue of prejudicial and partially implemented programmatic decisions and the relationship of the CMR Upgrades to these decisions have already been raised. These issues alone raise the gravest of NEPA concerns. In confining discussion here to various ongoing or recent CMR NEPA analyses, serious segmentation concerns are raised as well.

10 With respect to the three phases of upgrades, clear demarcation between the phases has been historically lacking, particularly between Phases 2 and 3. All phases are combined into single line item.

> Defense Programs (DP) has proposed integration of the long-term upgrades with Phase 1 as a single FY95 project to maximize efficiency from a financial, schedule, and *operations* standpoint.[31] (emphasis added)

This proposal was carried out in the FY96 DOE CBR as Project 95-D-102. In critiquing upgrades for separate (but related) CMR Upgrades for the Fire Resistant Pit (FRP) Program, the Defense Nuclear Facilities Safety Board (DNFSB) noted that "[o]ther than budgetary responsibility, LANL management responsibility for these upgrades is diffuse." This statement may apply to all of the proposed upgrades as well. The DNFSB comment on how technical inconsistencies exist between what is actually being down at CMR Upgrades and what is described in program documents

31 FY97 LANL CAMP, page A-15.

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has been already noted. For the past couple of years, the definitions and boundaries of the phases have shifted,[32] resulting in the delay of this EA. It is impossible for the public to distinguish between ES&H concerns (Phase 2's advertised scope) and predetermined programmatic decisions because of the lack of access to fundamental documents (see public disclosure section).

10 DOE and LANL maintain that other CMR upgrade projects are not related to the proposed upgrades. The FRP Program, whose primary objective is to study reactions of molten plutonium with other materials within full-size pits from dismantled nuclear weapons, required the structural upgrading of a portion of the CMR Building. Of the FRP upgrades, the DNFSB wrote

> The upgrades currently being installed will only remedy deficiencies of the hot cell support structure. Other identified structural deficiencies in Wing 9 will not be remedied until Phase II, which has not been funded, is complete. Therefore, the FRP experiments are planned to proceed without remediation of other known structural deficiencies. While representatives from the design contractor stated that the other structural deficiencies will not affect the integrity of the hot cells, the validity of this conclusion is not apparent, since the lateral resistances of the hot cell support system is dependent on the integrity of the adjoining structural components.[33]

Hence, the relationship of this CMR upgrade project to other CMR upgrades could hardly be more direct. Other points the DNFSB raised with respect to the FRP Program are applicable to all CMR Upgrades: potential hazards need to be identified early in the design process; the design process needs to be strong and effective; strong technical oversight of contractors is required; and a mix of relevant building and engineering codes needs to be employed. Using the FRP Program as an example, the public cannot be confident that LANL management is exercising sufficient care in implementing CMR upgrades. As the DNFSB notes:

> The furnace that will be used to heat the pit has been procured and has been installed in a mockup. When questioned as to what codes and standards were used in the design and fabrication of the furnace, LANL could not immediately identify any. It was merely suggested that the codes and standards that the manufacturer normally used might be sufficient.[34]

32 "Realignment of scope between Phases 2 and 3 based upon NEPA approach and establishment of cost and schedule baselines based upon the completed Conceptual Design Report;" FY 1997 OMB Budget Submission for CMR Upgrades Project, attached to CMR EA.

33 "Review of Chemistry and Metallurgical (CMR) Facility Hot Cell Upgrades and the Fire Resistant Pit (FRP) Program:" DNFSB Memo, November 4, 1994.

34 Ibid.

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This would seem comical were it not for the grave nature of these experiments - studying the reactions of molten plutonium with other materials within full-size pits from dismantled nuclear weapons.

10 The CMR EA is deficient in addressing whatsoever dry cask storage of spent fuel rods at the CMR Building.

Fuel handling and storage activities take place in Wing 9, which was added to support those programs requiring hot cell facilities. Prior to suspension of offsite shipments, spent fuel was transferred from the OWR [Omega West Reactor] to CMR Wing 9, temporarily stored, and then shipped to a fuel processing site. Currently, Wing 9 houses 46 OWR spent fuel rod elements in two 20-ton dry storage casks. *Storage in these casks is intended to be short term* and the facility staff is working on arrangements to ship the fuel elements offsite.

No vulnerabilities were identified for RINM [reactor irradiated nuclear materials] at the CMR facility. *However, the current safety analysis report does not address all appropriate aspects of long-term spent fuel storage. The recent justification for continued operations is presumably only valid for a short time.*[35] (emphasis added)

CCNS notes that yet another NEPA process was recently finalized that impacts the CMR Building. This is the Radioactive Source Recovery (RSR) Program, for which a FONSI was issued in November, 1995. Under this EA, the CMR Building (along with PF-4) will chemically separate and recover plutonium-238 and americium from excess radioactive sealed neutron sources. As an understatement, it is curious
10 to have Phase 1, 2 and 3 Upgrades, FRP Upgrades, and the RSR Program NEPA processes, with questions concerning RINM dry cask storage, all coincide so closely in time. This would seem to fly in the face of NEPA regulations on the appropriate determination of scope for environmental impact statements.

To determine the scope of environmental impact statements, agencies shall consider 3 types of actions, 3 types of alternatives, and 3 types of impacts. They include:
(a) actions (other than unconnected single actions) which may be :
(3) similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, *such as a common timing or geography.* An agency may wish to analyze these actions in the same impact statement. *It should do so when the best way to assess*

35 Spent Fuel Working Group Report, DOE, November 1993. This same report also notes that wet storage of spent fuel rods at the Omega West Reactor is at 120% of capacity.

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adequately the combined impacts of similar actions or reasonable alternatives to such actions is to combine them in a single impact statement. (40 CFR, § 1508.25) (emphasis added)

Finally, it is valuable to briefly recite LANL's NEPA history. An internal Lab environmental assessment contained the following findings:
1) LANL projects have proceeded into detailed design or have been completed prior to the initiation and/or completion and approval of NEPA documentation by DOE;
2) The 1979 Site-Wide EIS is being used for tiering when it is no longer adequate;
3) LANL NEPA procedures do not provide adequate methods for identifying all LANL projects or program activities; and
4) LANL staff are making unauthorized NEPA determinations.[36]

In addition, in January 1995, LANL was enjoined by a federal court from further DARHT construction until appropriate environmental review had taken place. In short, the Lab's NEPA history is dismal. It is not clear that the CMR Upgrades NEPA process is divorced from this history.

Summary and Conclusion:
An EIS Is Required for the CMR Upgrades Project

The stated purpose of this CMR Upgrades EA is to supply DOE with sufficient information to determine whether a FONSI is warranted or whether an EIS should be performed. CCNS's opinion is that the CMR upgrades requires preparation of an EIS. The reasons for this (discussed at length in all of the above) can be summarized as follows:
1) By the Lab's admission: "The long-term Los Alamos National Laboratory mission needs for such capability [that an upgraded CMR Building would provide] are currently programmed for at least another 20 to 30 years;"
2) The mission of the now-defunct SNMR&D Lab and an upgraded CMR Building are identical: to support PF-4 at TA-55. The existence of PF-4, as the only currently
11 operating plutonium processing facility in the country, is in large part driving implementation of the modify/upgrade alternative for reconfiguration of the complex in advance of a record of decision. LANL management has been actively seeking this consolidation for some time now. This process effectively prejudices the outcome of both the SS&M PEIS and the LANL SWEIS. The CMR upgrades are a substantial piece of that process;
3) Consideration of the SNMR&D Lab required an EIS. The CMR upgrades are clearly a substitute for the SNMR&D Lab. It is inconsistent that the CMR upgrades do not also require an EIS. NEPA does not exclude upgrades from EISs;
4) Because LANL's RDT&E mission, along with increasing production activity,

36 Environmental Compliance Audit of Environmental Compliance Programs; LANL; Laboratory Assessment Office Appraisals Group; October 4, 1991.

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appears to be already fixed for the next 20 to 30 years, this can have potentially serious impacts on current nonproliferation and disarmament efforts;
5) DOE has failed to provide vital information for informed public opinion on the CMR upgrades;
6) There are serious Clean Air Act issues at the CMR Building, which neither the EA nor the draft LANL Clean Air Act FFCA fully resolve;
7) The given cancer fatality dose for the low-probability, high consequence event of an earthquake during upgrading is astoundingly high. Earthquake probability is not given in the EA;
11 8) The volume of waste to be generated by the upgrades will shorten the expected life of Area G. Expansion of Area G is an already controversial issue and one that will directly impact San Ildefonso Pueblo; and
9) Serious segmentation issues are involved in the CMR Upgrades NEPA process given the historic lack of clear demarcation between the various upgrade phases, the existence of other NEPA processes involving nearly the same space and time and questions regarding spent fuel storage.

Finally, there is the issue of DOE's own determination of the nature of the CMR Upgrades. The CEQ regulation on implementing NEPA procedures, Whether to prepare an environmental impact statement, states

> In determining whether to prepare an environmental impact statement the Federal agency shall:
> (a) Determine under its procedures supplementing these regulations (described in Section 1507.3) whether the proposal is one which:
> (1) Normally requires an environmental impact statement, or
> (2) Normally does not require either an environmental impact statement or an environmental assessment (categorical exclusion).
> (b) If the proposed action is not covered by paragraph (a) of this section, prepare an environmental assessment....(CFR 1500, § 1501.4)

DOE Order 4240.1K, Designation of Major System Acquisition [MSA] and Major Projects, states

> The DOE criteria for designation of a system or project as a MSA considers national urgency, importance, size, complexity, and dollar value. Those systems or projects which have a total projected cost or annual FY 1992 appropriations in excess of $100 million (M), or are recommended by Program Secretarial Officers (PSOs), are considered to be MSAs.

There is an apparent discrepancy in budget figures provided by DOE for the CMR Phase 2 Upgrade. The FY 1996 Congressional Budget Request (CBR) states that the

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total estimated cost is $85 million.[37] More recent information, provided by the DOE Albuquerque Operations Office, puts the Phase 2 Upgrade at $122.5 million.[38] A possible reason for this discrepancy is that the CBR describes the cost as a pre-conceptual design report estimate. The DOE AL estimate is, however, apparently based on finished conceptual design. The $122.5 million is also the same figure given with the CMR Upgrades OMB submission attached to the LANL September, 1995, CMR Upgrades Project, Project Execution Plan.

The CMR Phase 2 Upgrade meets the DOE test for designation as a Major Systems Acquisition (MSA) in all respects, i.e. its size, importance, complexity, and cost, etc. The CMR Upgrades are referred to as a MSA in the FY97 LANL CAMP. Under DOE orders, the NEPA consequence of designating a project as a MSA is clear. The first entry under DOE "Classes of Actions That Normally Require EISs" reads

> Major Systems Acquisitions, as designated by DOE Order 4240.1, "Designation of Major Systems Acquisitions and Major Projects."[39]

11 Hence, the CMR Phase 2 Upgrade, as a MSA and for the reasons just summarized, automatically meets the DOE test for designation as an action that normally requires preparation of an EIS. Consequently, CCNS believes that CFR 1500, § 1501.4, requires that EIS. This environmental assessment should reach the same conclusion.

These comments respectfully submitted,

Jay Coghlan, Research Analyst
2/20/96

37 FY 1996 Congressional Budget Request, Project Data Activity Sheets, DOE, page 358-359.
38 Table: "Projects in Development at LANL," DOE AL, UC/LANL SWEIS Project Office, December 15, 1995.
39 DOE NEPA regulations, 10 CFR 1021.400, Appendix D to Subpart D.

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CCNS
Concerned Citizens for Nuclear Safety

Ms. Elizabeth Withers
NEPA Compliance Officer, DOE LAAO
Los Alamos, NM 87544

March 13, 1996

Dear Ms. Withers,

I would like to retract one comment I made in CCNS's comments (submitted February 20, 1996) on the draft environment assessment for the CMR Building Phase 2 Upgrade. In comment pages 15 - 16 , I stated:

> As expressed in the Summary of Radiation Exposure Risks (Table 4-6, EA page 41), the calculated plutonium dose to the nearest population in the event of an earthquake is astonishingly high. That dose is given at 216 person-rem, with an added chance of cancer mortality of one in nine for a population of 26,770.....Given the astonishingly high dose rate in the event of an earthquake during the upgrade process, the EA is grossly deficient by failing to provide any information on event probability.

My calling the plutonium dose in the event of an earthquake "astonishingly high" was prompted by language in Table 4-6 under "Added Chances of Cancer Mortality" that there was an expectation of "1 in 9 for the population of 26,770 persons." I mistakenly interpreted this to mean .11 x 26,770, or 2974.4. This continued to trouble me, so I again reviewed the figures. I then realized that what is meant is an added chance of cancer mortality of .11 person in a population of 26,770. This strikes me as incredulously low, and needs support in further environmental review. Nevertheless, it is now clear to me that the dose being discussed is vastly
1 smaller than what the language first suggests. Perhaps DOE and LANL can use more obvious language in the future in order to avoid unnecessary concern.

I continue to argue that inclusion of earthquake probability is required for *sufficient environmental review, not only for the CMR Upgrades, but as a baseline* for all proposed LANL projects. This would be an appropriate topic for the LANL SWEIS. However, this information must be incorporated into CMR environmental review as well should CMR review precede completion of the SWEIS.

I apologize for any inconvenience this retraction may entail.

Sincerely,

Jay Coghlan, Research Analyst

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CCNS
Concerned Citizens for Nuclear Safety

March 27, 1996

Ms. Elizabeth Withers
NEPA Compliance Officer
DOE LAAO
Los Alamos, NM 87544

Dear Ms. Withers,

In CCNS' comments on the proposed environmental assessment for the CMR Building Phase 2 Upgrades (submitted February 20, 1996), I addressed the fact that DOE had not yet released relevant documents. Most notable among these was the 1990 DASMA CMR Study, for which CCNS had filed a FOIA request in December, 1991. DOE has since released that study (I received a copy on March 22). I now raise two questions which I hope DOE will address. Needless to say, the comment period expired over a month ago. Nevertheless, these questions should be addressed given that the study was available only after the comment period had long expired.

In the DASMA CMR Study Report (page 14), the panel makes a number of assumptions. Among these are:

- An Environmental Impact Statement (EIS) is anticipated to be required for the reconfiguration of Wings 2 and 4, and for the "Conceptual Design for Secure Conveyance System" and "Construction of Secure Material Transport Route" projects (items 3.2 and 3.20); and
- Permits will be required from EPA and the State of New Mexico to install and operate emission equipment.

As identified in the September 1995 LANL CMR Project Execution Plan, there are no Phase 2 plans to install and operate emission equipment. However, "continuous air monitor installation" and "stack monitor upgrades" are clearly identified components of current Phase 1 upgrades. What EPA permits and New Mexico permits may have been secured for these items?

The Project Execution Plan also identifies "Wings 2 and 4 Safe Standby" as a Phase 2 component which will "[e]stablish a Safe Standby condition for Wings 2 and *4 pending future programmatic use." In any document superseding the present*
1 predecisional CMR EA, can DOE clearly demarcate between a Safe Standby condition and possible preliminary steps towards reconfiguration of Wings 2 and 4?

Thank you for your consideration of these questions.

Sincerely,

Jay Coghlan, Research Analyst

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MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

MEMORANDUM

TO: Gedi Cibas, NMED, Office of the Secretary

FROM: Steve Yanicak, DOE OB, LANL POC

DATE: September 12, 1996

SUBJECT: NMED DOE OB review of U. S. DOE's Revised Predecisional Draft Environmental Assessment for the Proposed CMR Building Upgrades at the Los Alamos National Laboratory, Los Alamos, N.M.

This memo serves as a notice that the DOE OB reviewed but did not comment on the revised aforementioned document dated 8-26-96 due to our formal review of the Predecisional Draft Environmental Assessment for the Proposed CMR Building Upgrades at the Los Alamos National Laboratory, Los Alamos, N.M. on 2-16-96. The U. S. DOE responded to DOE OB's 2-16-96 comments in the revised document, and after reviewing the responses and finding them adequate, we have no further comments.

If there are any questions concerning this memo, please contact me at 672-0448 or Harvey Decker at 672-0459.

cc: Neil Weber, NMED, Chief, DOE OB
Mat Johansen, DOE, LAAO POC, MS A316

Elizabeth W.

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Comments on the

CMR Proposed Upgrade

1 These proposed upgrades of the two or more wings of the CMR building in which I worked for many years, up until 1967, may possibly be needed, but it is by no means clear why there is an urgency about proceeding with them now.

I was responsible for recommending to Dr. Eric Jette, the CMR Division leader, before the construction began, that it would be preferable to use INCONEL instead of stainless steel for the overhead duct work and plenums. The reason was that Inconel would not be subject to stress corrosion cracking, whereas stainless steel would. Stress corrosion cracking has an insidious tendency to occur when the general corrosion has almost been eliminated.

To the best of my knowledge, these plena are still in good shape. The need to replace these old ducts certainly is not well established in the Pre-decisional Draft DOE/EA-1101.

Since most of the planned activity will be devoted to chemical analysis, it is my belief that the analytical methodology has progressed to where aggressive and corrosive chemicals are much less needed now. New electronic analysis methods are available.

2 Concerning the attendant RISK assessments, although the formulae are required by DOE, they appear to give the "right" answers for the Lab position. But what evidence is there that they are realistic? A number is presented without any indication of the reliability of the estimates or the error bars.

These should conform to either the US ASTM standard (E-1739, 1995) adopted by Subcommittee E47.13 or the International standards (ISO 14000) or even to those used by RAC, the Radiation Assessments Corporation of Neasa, SC 29107.

Therefore it is appropriate that these multi-million dollar upgrades be delayed until after the PEIS has been approved.

Dr. James T, Weber, Ph. D.

2651 Caminito Carlitos
Santa Fe, NM 87505

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1304 Calle Ramon
Santa Fe, NM 87501
September 11, 1996

fax 665-4872

Ms. Elizabeth Withers
NEPA
528 35th Street
Los Alamos, NM 87544

Re: Comment on Proposed CMR Building Upgrade - Environmental Assessment

Madam:

The plans to upgrade the CMR building at LANL should be deferred for the following reasons:

1 The building upgrade is part of a plan to convert LANL to the manufacture of Plutonium pits as part of the stockpile stewardship program. This manufacturing process is sufficiently similar to the same work formerly done at Rocky Flats. The process has proved to be dangerous and highly damaging to the environment. I refer you to the various reports on the serious problems at Rocky Flats obtainable from the Colorado Department of Public Health and Environment which I request you add to the record of considerations for this assessment. (e.g. "Assessing Risks of Exposure to Plutonium").

2 Dr. Sigfried Hecker has already begun the transfer of Plutonium manufacture from Rocky Flats according to his testimony of March 12, 1996 before Congress. I ask that you add this record of his testimony to this comment to show that he has not waited for the environmental assessment before presuming permission from the Department of Energy.

3 The National Defense Authorization Act for 1996 provides an additional $141.6 Million over the original budget request for stockpile stewardship activities at LANL. This Act specifically states, "*However, the Committee believes it is premature to initiate long-term capital improvements in advance of the outcome of the stockpile stewardship management Programmatic Environmental Impact Statement process currently underway.*" The proposed building upgrade should be put on hold awaiting the acceptance of the PEIS by the DOE, Washington, DC.

4 Safety, and the lack of effective management of safety at LANL, is an issue receiving top level attention. So long as we continue to risk the safety of LANL employees and civilians in the vicinity of Los Alamos, by accidents in the handling of hazardous materials and the accidental releases of radioactive materials, we cannot accept the increased risk of introducing the inherently dangerous process of refining and reconstituting Plutonium pits on any production scale in the CMR building or on the grounds of LANL.

5 The risk assessment procedure has been called to question by the Citizens Advisory Board for DOE/LANL (see attached recommendation). The risk assessment procedure used by LANL does not conform to National Standards adopted and promulgated by the American Society of Testing and Materials, the national body assigned by ANSI for the development of this standard. Furthermore, the risks of exposure to Plutonium have been underestimated. Furthermore, the

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5 risks from terrorists have been underestimated and too simply dismissed by the unproven assurance that this risk will be dealt with. Furthermore, there is no way to prevent forest fires in the vicinity of LANL. As the recent fires prove, the only way to protect the area surrounding LANL from the release of radioactive materials is to move them elsewhere. This has been verified in a recent statement from DOE official, Mr. Joe Vozella. Accordingly, the prudent thing to do is to locate the manufacture of the Plutonium pits and storage of Plutonium and other hazardous materials far away from populated areas where the danger of forest fires is minimal.

The aforementioned CAB was appointed by the DOE to improve relations between the lab and its neighbors in Northern New Mexico. Testimony, to date, is overwhelmingly opposed to any expansion in the handling or processing of hazardous materials. (see also pages B4 through C7 of the "1996 LANL Survey" prepared at the request of LANL by the UNM Institute for Public Policy). The citizens of Northern New Mexico are well aware of the history of accidents at LANL and the culture of disregarding the concerns of its employees and neighbors.

The CMR building upgrade and the overall plan to augment the lab's handling capabilities for Plutonium should be halted until such time as an independent agency can verify the safety of employees and the adjacent communities.

The GAO, in a number of reports has declared the capabilities of the management of LANL to be grossly inadequate to the tasks undertaken. We must not proceed to add further responsibilities with such grave risks as permanent harm to local populations should LANL management again fail to properly execute the programs they have requested be assigned to them.

Please defer any element of the program to add Plutonium manufacturing to LANL whether it be the upgrading of the CMR building or TA-55 or other locations under the control of LANL management.

Sincerely yours,

H. L. Daneman

Attachments: 11 pages.

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DRAFT REPORT

Assessing Risks of Exposure to Plutonium

Part of Task 3: Independent Analysis of Exposure, Dose, And Health Risk to Offsite Individuals

May 1996

Historical Public Exposures Studies on Rocky Flats
Phase II: Toxicity Assessment and Risk Characterization

Submitted to the Colorado Department of Public Health and Environment, Disease Control and Environmental Epidemiology Division, Rocky Flats Health Studies, in partial fulfillment of contract No. 100APPRCODE 391

"Setting the standard in environmental health" RAC

Radiological Assessments Corporation
417 [illegible] Road, Neeses, SC 29107
Phone 803.536.4883 Fax 803.534.1995

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TESTIMONY OF SIEGFRIED S. HECKER,

DIRECTOR

LOS ALAMOS NATIONAL LABORATORY

HEARING

of the

SUBCOMMITTEE

on

MILITARY PROCUREMENT

COMMITTEE ON NATIONAL SECURITY

UNITED STATES HOUSE OF REPRESENTATIVES

March 12, 1996

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activity, and a flexible remanufacturing system. The preferred alternative will require very close collaboration between the laboratories and the remaining plants. At Los Alamos, we have already seen the benefits of such integration in improving the quality and lowering the costs of those surveillance and manufacturing operations that have been transferred to us from the plants at Mound, Pinellas, and Rocky Flats over the past year. Let me present a few specific examples.

Pit Surveillance and Rebuild

In pit surveillance, we met our annual goal of evaluating 19 surveillance pits one month ahead of schedule, introduced scientific evaluation methods, converted surveillance and inspection records to electronic storage, established a CD-ROM reporting format, and linked surveillance and archiving for the first time.

In pit rebuild, we completed the transfer of necessary Rocky Flats hardware and gauging equipment, developed a smaller and more accurate inspection gauge, eliminated a hazardous fluid previously used in density measurements, switched to dry machining so that we could eliminate chlorinated hydrocarbons and fluorocarbons for component cleaning in favor of recyclable supercritical carbon dioxide, and initiated a modern and simpler quality control program for production.

Detonator Manufacturing

With the shutdown of operations at the Mound Plant in Ohio, the Department assigned detonator evaluation and manufacturing responsibility to Los Alamos. We have demonstrated the capability to perform the evaluations; completing the first one late in 1995. Included in the assignment to fabricate detonators for the future stockpile is the design and manufacture of detonator simulators used in stockpile evaluation flight test units. Though these simulators do not actually enter the nuclear stockpile, we have demonstrated the ability to meet the same rigorous war-reserve quality standards as those required for stockpile components.

Fabrication Support

In FY-1995, we also demonstrated the capability to manufacture other parts used in the physics package so that we could support our local hydrotesting program. For example, we cold pressed to specified density and machined several lithium salt parts, measurably reducing waste generated. We also fabricated our most challenging nuclear package case from a uranium alloy. Finally, we are making good progress in the process of casting uranium to nearly final shape.

Neutron Generators

Los Alamos also was assigned responsibility for the tritium loading of neutron tubes for a neutron generator designed by the Sandia National Laboratories. Although it was expected to take up to five years to transfer the skills needed to perform this work, Los Alamos researchers applied

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their knowledge of tritium hardware and processes and transferred the production capability to the Laboratory with significant improvements. The result is a system that is providing deuterated targets and will provide tritiated targets to Sandia National Laboratories for incorporation into neutron generators on schedule within months instead of years. The improved process also reduced radioactive waste generated by 90 percent.

Plutonium Pit Manufacturing

The preferred SSM-PEIS alternative for pit manufacturing calls for a limited-scale production of pits at the Los Alamos TA-55 plutonium facility, the only facility in the nation currently able to tackle such an assignment. We are aggressively supporting this decision because we believe that pit manufacturing at the level of approximately 50 pits per year would greatly complement our current R&D and surveillance missions, while concurrently saving the taxpayers a lot of money.

We are developing a plan that would put in place the capacity to build 50 complete pits per year on a single-shift basis. The interior equipment and utilities in one wing of the plutonium facility will be rearranged so that we have an integrated production and R&D area. To meet the projected build requirements of the military, we are placing the plutonium facility project on a fast-track internal validation and review for submission as a new construction start in the FY 1998 budget.

We will be in very limited pit production for the W88 warhead for the Trident II pit rebuild program (rebuilding units destroyed in surveillance) during FY-1998. Getting started as soon as possible is important to meet the Navy's requirements and to capture the pit production knowledge base before it is lost. No war reserve pits have been manufactured in the United States since Rocky Flats shut down its plutonium operations in June, 1989. By employing the integrated R&D, surveillance and remanufacturing paradigm, we expect to improve the existing fabrication processes, minimize waste generation, and reduce worker radiation exposure. In addition, the hands-on manufacturing operations will help to maintain rigorous nuclear weapons safety practices among our scientists, engineers and technicians.

We are also teaming with colleagues at Lawrence Livermore, Savannah River, and Pantex to develop contingencies for larger-scale pit-production requirements. We expect to learn much from the W88 pit rebuild program and the 50-pit manufacturing module at TA-55 that would allow the team to design a modular, large-scale production capability that could be deployed rapidly should requirements change. I should add that such teaming is also occurring with Savannah River, Pantex, Allied-Signal Kansas City, and the Y-12 plant to address other nuclear weapons component production capabilities. In all cases, we will use the integrated R&D, surveillance, and remanufacturing paradigm.

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Nuclear Facility Upgrades at Los Alamos

In addition to the TA-55 facility upgrade to handle the small-scale pit manufacturing mission, Los Alamos has two other facilities that will require substantial upgrades or life extensions to meet the missions envisioned in the SSM-PEIS. The Chemistry-Metallurgy Research (CMR) building and the Nuclear Materials Storage Facility (NMSF). The CMR building is 44 years old and houses the analytical chemistry laboratories that are crucial to the operations of the TA-55 plutonium facility. Plutonium operations at TA-55 would shut down within weeks if the CMR building were to be shut down. The CMR facilities also provide the nuclear material standards for all other sites through distribution by the New Brunswick Laboratory. Upgrades of the CMR have been ongoing for the past few years. We expect continued funding to be included in the President's FY-1997 budget submission.

Since Los Alamos recently took over the pit surveillance program we will also be in desperate need of renovating the Nuclear Materials Storage Facility because the vault at TA- 55 is projected to be at capacity by the year 2002. The renovation project of the NMSF is needed to allow it to accept special nuclear material in that time frame. The total project cost is $56.7 million, and is expected to be funded in the FY 1997 DOE/DP budget as a new start.

Collectively, these three facilities projects provide the foundation for maintaining our ability to meet the Department's plutonium needs, including surveillance and limited pit manufacture, in a safe, reliable, and environmentally responsible manner. These modernized facilities represent the cornerstone for ensuring the continued reliability of primaries in the nuclear stockpile.

Tritium Supply

In December, 1995, the DOE announced a dual track approach to ensure a supply of tritium for the nuclear stockpile. This dual approach involves a commercial, light-water reactor path, either purchased or leased, and an Accelerator Production of Tritium (APT) project. Los Alamos is the technical lead for APT but we are collaborating closely with Westinghouse which operates the Savannah River plant which has been designated as the preferred production site for APT if APT is selected as the preferred technology. We are also working closely with Brookhaven, Lawrence Livermore, and Sandia National laboratories. This team will be augmented by a prime contractor to manage the construction project in August, 1996.

The activities at Los Alamos are focused on engineering design and development over the next three years to reduce the cost- and schedule-risk associated with the project. We are prototyping system components to understand costs and fabrication issues and are investigating new technologies that project 20-40% savings in the estimated operating costs of $200 M for the APT

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Calendar No. 145

104TH CONGRESS 1st Session	SENATE	REPORT 104-112

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1996

REPORT

[TO ACCOMPANY S. 1026] S/026

ON

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 1996 FOR MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL YEAR FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

TOGETHER WITH

ADDITIONAL AND MINORITY VIEWS

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

JULY 12 (legislative day, JULY 10), 1995.—Ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1995

95-111

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cerns in this area, the Committee urges the Department to transition and refocus the current technology transfer activities into other areas, particularly advanced manufacturing and advanced computing to develop the capability to support future manufacturing and technological needs which directly support the weapons programs through weapon support agreements. The Committee recommendation, therefore, includes $50,000,000 to complete the highest priorities cooperative research and development agreements which remain. The remaining resources are to be allocated to carry out a redirected program. The Committee supports laboratory industrial partnerships and expects the Department to leverage this funding, when appropriate, to meet stockpile stewardship and management missions. The Committee recommendation includes the full-budget request for the advanced computational technology initiative.

The Committee has also provided $10,000,000 to support science education activities ranging from high school, graduate, and postgraduate levels through its national laboratories and Nevada operations office. These activities help ensure a highly trained, diverse, and scientific work force is available to fill defense programs needs.

Marshall Islands.—Funding of $6,800,000 is provided for the Marshall Islands, the same as the budget request.

STOCKPILE MANAGEMENT

The Committee recommends an appropriation of $2,060,683,000 for stockpile management activities. The stockpile management mission is to provide for maintenance, evaluation, dismantlement, transportation, and disposal of nuclear weapons in accordance with quality, quantity, and schedule requirements approved by the President in the nuclear weapons stockpile plan.

The Committee has provided an additional $161,600,000 over the budget request for enhanced stockpile surveillance, advanced manufacturing, and core stockpile management activities. The Committee recognizes the concerns of the authorization committee about the Department's national security infrastructure. However, the Committee believes it is premature to initiate long-term capital improvements in advance of the outcome of the stockpile stewardship/management programmatic environmental impact statement process currently underway. The Committee is supportive of more fundamental initiatives in advanced manufacturing, especially activities in partnership with private industry. Additional emphasis and attention should be given to advanced computerized manufacturing and dual revalidation techniques.

The Committee recommendation for stockpile management reflects the merger of operating, capital equipment, and general plant project funding.

New tritium source.—Funding of $50,000,000, as requested in the budget, is provided to initiate a new tritium source project. The Committee directs the Department to conduct a fair and impartial assessment of alternatives for providing tritium including various types of reactors and the accelerator concept. Establishing an assured supply of tritium for national security needs is the critical objective of this program. The Committee expects the Department to assure that the new tritium source will not in any way jeopard-

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RECOMMENDATION
September 10, 1996

Moved by: _ER/WM Committee_____

Passed: __July 9, 1996 and Resubmitted ___September 10, 1996_

Concerning the proposed plan to transfer Plutonium manufacture from Rocky Flats to LANL, the CAB recommends all expenditures for this purpose should be deferred at once pending approval of the production plan by the DOE, Washington DC. based on the latest risk assessment practices.

We recommend that the DOE update the Programmatic Environmental Impact Statement to incorporate an independent risk assessment analysis based on the techniques recently adopted by ASTM Subcommittee E47.13, ASTM Committee E-50 and proposed for adoption by the ISO (International Standards Organization).

The CAB proposes that a greater weight be assigned to human safety in contrast to the LANL assessment emphasizing cost differences between competing sites and that population density and safety of transportation of hazardous materials be given much greater consideration in the choice of sites.

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1996 LANL SURVEY

A Report on How New Mexicans View Affirmative Action, Community Outreach, Public Involvement, & Lab Operations

By
John Gastil, Kristin Kenyon,
& Hank Jenkins-Smith

Summer 1996

Prepared for
Los Alamos National Laboratory
by the

University of New Mexico
Institute for Public Policy
1805 Sigma Chi Road
Albuquerque, NM 87131-1121
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ISO 14000

Approaching Implementation

by Joe Cascio

Joe Cascio is vice president of Environmental Management Systems at Global Environment & Technology Foundation in Annandale, Va. He was head of the U.S. American National Standards Institute delegation to the International Organization for Standardization's (ISO's) Strategic Advisory Group on the Environment (SAGE) from 1992 to 1993 and is now chairman of the U.S. Technical Advisory Group to ISO Technical Committee 207 on Environmental Management.

Introduction

The focus of interest on the International Organization for Standardization's (ISO's) series of environmental management standards, ISO 14000, is quickly shifting from the learning of basic concepts and definitions to implementation issues. ISO 14001—the environmental management systems (EMS) specification—is, of course, the center of that focus.

Managers are beginning to realize that ISO 14001 offers a new approach to environmental protection that relies less on command-and-control dictates from the government and more on proactive, organizational efforts to take control of environmental aspects through better management and employee involvement and commitment. Under ISO 14001 some things will remain the same (e.g., meeting legal requirements) and some things will change. Below are some new areas of emphasis necessary for a successful implementation. Following that are a few thoughts on registration strategies, and finally, a response to some frequently voiced concerns.

Some Essential Elements of Implementation

An organization's preparation for, approach to, and continuing efforts toward ISO 14001 conformance require greater emphasis on certain elements of management than was true under the command and control paradigm. These changes will, in fact, bring about the cultural change ISO 14000 promises—the establishment of an organizational environmental ethic.

Finding Environmental Aspects

ISO 14001 directs organizations to find environmental aspects which may arise from their activities, products and services. Aspects include any attributes, conditions, our outcome that either has or may have an environmental impact. Examples include effluents, emissions, hazardous waste, energy consumption, solid waste, recyclability, recycled content, water use, materials consumption and vehicle occupancy. This inquiry is conducted on a holist basis in that the analysis considers all ramifications of each aspect without trying to force fit it into a narrow category. Traditionally, under command and control, environmental aspects were categorized and treated as either air, water, soil, or hazardous waste problems.

The creators of ISO 14001 expect organizations to take responsibility for their environmental aspects without having to be ordered or directed by a government agency. Organizations are expected to exhibit maturity, initiative and stewardship via-à-vis their environmental obligations and consequences. Under command and control, organizations were often lulled into a passive role—expecting direction and commands from the regulators. As a national strategy, this resulting passivity did not contribute to optimum environmental protection. ISO 14001 provides the basis for moving to a more dynamic and effective model of human behavior that leads to improved environmental performance.

Involving Employees

One of the expectations of ISO 14001 is that employees must be made aware of their responsibility and trained to exercise environmental care. This type of involvement by employees was not often emphasized under command and control, under which the more typical organizational response was to assign environmental protection to a specialized staff of environmental engineers. That staff would normally interface with regulators on permits, inspections, reports, compliance and enforcement issues. Most of the other employees were not involved in these matters. ISO 14001 promotes change that brings all employees into the picture as knowledgeable, responsible and committed actors in protecting the environment.

One way to raise employees' awareness and involvement is to have them participate in the process of defining the EMS. The identifi-

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Risk-Based Corrective Action (RBCA)

An Effective Framework for Dealing with Chemical Release Sites

by Curtis C. Stanley

Curtis C. Stanley is staff hydrogeologist at Shell Development Company, Houston, Texas, and is responsible for technical support to the various organizations within the company, such as Waste Sites, Manufacturing, Retail, Transportation, and Exploration and Production. He has conducted or supervised investigations and remedial actions at over 500 locations in 43 states (and several countries). Currently, Stanley is focusing his efforts on risk assessment technology and waste sites. In addition to these efforts, Stanley overviews in-house research programs. He is a member of ASTM Committee E-50 on Environmental Assessment.

Introduction

Over the last 15 years, considerable resources have been expended on corrective action at properties impacted by petroleum and chemical releases. In many cases, the process for addressing many of these sites has been generic, overly rigid and conservative. In addition, many cleanup goals were formulated on nonrisk-based criteria (e.g., non-detection, total petroleum hydrocarbons, etc.) and were difficult or impossible to achieve. These factors helped to drive cleanup costs to very high levels without adding a significant benefit to society. As an example, the high costs associated with remedy selection at Superfund sites is the result of a generic, overly rigid and conservative program. Due to these high costs, responsible parties (RPs) have become very concerned about liability issues and much of the program's money has been spent on attorneys to fight liability issues rather than on actual cleanup.

Currently, the methods for determining "how clean is clean" are being questioned and reevaluated. Both industry and environmental agencies are making efforts to focus on risk when making decisions regarding urgency for, and extent of, corrective action. While risk-based cleanups have been encouraged, many regulators, environmental consultants, and RPs have been uncomfortable with the practice. This is due to a number of reasons including lack of clear guidance, the perception that problems can be "risked away," and overly rigid protocols such as those associated with Superfund.

In response to needs expressed by regulatory agencies and industry, ASTM undertook the challenge to develop a standardized approach to risk-based corrective action (RBCA). In 1994, ASTM ES 38, Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites was approved as an emergency standard. In 1995, it was modified and approved as a full ASTM standard, E 1739. In developing this standard, a diverse and balanced task group was established with representatives from the US Environmental Protection Agency (EPA), state regulatory agencies, state cleanup funds, environmental consulting firms, and petroleum, banking, and insurance companies. Recently, the EPA announced a public/private partnership called "Partners in RBCA Implementation" (PIRI) with members from the EPA, ASTM, and industry. PIRI is now conducting training and/or implementation of RBCA for petroleum releases (underground storage tank programs) in over 40 states and has sponsored development of several important RBCA tools (worksheets, spreadsheets, and guidance documents) to help facilitate implementation. Due to the success of this program, many other waste program groups within the states and EPA have become interested in applying the RBCA process outside of petroleum releases (Voluntary Cleanup, Superfund, the Resource Conservation and Recovery Act (RCRA), Brownfields, etc.).

In response to these needs, ASTM is currently developing a generic RBCA standard that can be applied at any chemical release site within Committee E-50 on Environmental Assessment in Subcommittee E50.04 on Voluntary Cleanup. In general, this ASTM standard retains the same RBCA characteristics as the earlier standard (E 1739), and describes a framework for building a streamlined and technically-defensible "risk-based corrective action" program. The main body of the standard describes a logical sequence of activities and decisions to be followed from the time a release occurs until regulatory closure is achieved. The process or framework has been developed in such a way that resources are more effectively allo-

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Los Alamos Study Group

September 12, 1996

Elizabeth R. Withers, NEPA Compliance Officer
U.S. Department of Energy
Los Alamos Area Office
Los Alamos, NM 87544

Re: Supplementary commentary material on draft EA, CMR Upgrades Project

Dear Elizabeth--

1. Please find attached:

- An April 6, 1994 public memorandum of the Los Alamos Study Group describing this project and its lack of adequate NEPA compliance. This memo cites DOE and LANL sources which show that:
  - o The CMR Upgrades Project has been described and planned as a single unitary project;
  - o This project is to replace the Special Nuclear Materials Laboratory project (which required an EIS);
  - o This project is to house operations like enriched uranium casting which have significant environmental impacts; and
  - o This project will bring "new capabilities" to the CMR building and LANL.
- An April 28, 1994 letter to Hazel O'Leary requesting a moratorium on major new construction, including this project, from dozens of New Mexico and national organizations and governments. Subsequently, the City of Santa Fe endorsed this call for a moratorium in a formal resolution. All these organizations were concerned about the sum total of connected actions and cumulative impacts resulting from LANL's plans to increase and consolidate nuclear materials operations and associated waste disposal--of which plans this project is a central and interdependent part.

2. There was not time to integrate all the many potential comments of the Natural Resources Defense Council and ourselves into a single document and so I would like to draw your attention to a few additional document citations which bear on the question of whether this project has been illegally segmented.

a. The first is a Defense Nuclear Facilities Safety Board Memorandum from Ajit Gwal to G. W. Cunningham, Technical Director, 2/22/95, reporting on trip to CMR building 1/23/95 - 1/26/95. Mr. Gwal reports that:

1 An interim safety analysis report [ISAR] was written in 1992 that identifies the facility weaknesses and formed the basis for a 10-year upgrade project. The

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1 project is divided into three phases with the first through third phases scheduled to be complete in 1996, 2002, and 2003, respectively. (Emphasis added.)

Note that: 1) the project is described in unitary terms; 2) the third phase is to be completed just one year after the second phase--which means that Phase 3, which is supposedly to encompass the entire upgrade of Wings 2 and 4 without prejudice from previous phases, is or was apparently just the last 10% or so of the project effort; and 3) the purpose of all three phases is the same--upgrading facility "weaknesses."

It is a pity that the DOE has judged that the ISAR is too sensitive to be released to the public even though the consequent Conceptual Design Report has been, with minor excisions, so released.

2 b. The second is the CAMP 97 project description--the most current available as of this writing. There the "Integrated Upgrades Project (Phases 2 and 3)" is described (emphasis added). DOE notes that

> Defense Programs (DP) has proposed integration of the long-term upgrades with Phase I as a single FY95 project to maximize efficiency from a financial, schedule, and operations standpoint. (p. A-15)

I.e. the phases of this project are, in every relevant sense of the term, very closely connected. In fact, they are one umbrella project comprising a number of work elements, the designation of which as "Phase 1," "Phase 2," and "Phase 3" has changed in some cases.

c. It is quite clear that when this project was begun, Phase 3 included work elements that would be required to meet current safety requirements, rather than expanded mission needs. This is clear from a DOE presentation provided by LAAO and headquarters personnel (DP-32) to DNFSB staff in October 1994. At that time, Phase 3 included not only wings 2 and 4 upgrades but also "controls and operations center upgrades," ($22M) and, tellingly, "electric and standby power" ($7M). Without these Phase III upgrades, the CMR building would not really meet current requirements, even for current missions. The only conclusion consistent with this information is that when the decision was made to proceed with the CMR Upgrades project, the entire project was implied.

3 Thus, the DOE was not following its own regulations, which "normally" required an EIS for any Major Systems Acquisition, of which this project was one. It matters little that DOE has subsequently changed its order to better harmonize with its own lack of compliance, since this was done after the decision to proceed with project 90-D-102.

Thank you for your attention. We at the Los Alamos Study Group petition you to initiate an Environmental Impact Statement for this project prior to further detailed and, of course, construction.

Sincerely, Greg Mello, Executive Director greg mello

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April 28, 1994

Secretary Hazel O'Leary
U.S. Department of Energy
Forrestal Building
1000 Independence SW
Washington, DC 20585

Re: Request for moratorium on major new construction at Los Alamos National Laboratory (LANL)

Dear Secretary O'Leary:

For the past seventeen months, Indian Pueblos and citizens' groups have repeatedly petitioned the Department of Energy (DOE), LANL, and the University of California to provide a comprehensive National Environmental Policy Act (NEPA) analysis prior to any expansion of LANL's nuclear waste disposal areas. From the beginning, these New Mexicans have also sought long-overdue site-wide NEPA analysis of LANL, recognizing that the Department stands poised to make major programmatic decisions affecting the mission of the Laboratory and the ancestral Indian lands on which it operates. These requests began in October of 1992 and have involved all eight northern Indian Pueblos and at least two dozen environmental and peace organizations. The combined membership of the New Mexico environmental groups alone is at least 20,000 people.

Despite the reasonableness of these requests, despite the legal requirements which stand behind them, and despite the commitments you and your deputies have made to environmental justice and substantive public involvement, the Department continues to commit resources at LANL -- and in some cases to continue construction -- without NEPA compliance.

While the public participation mandates of NEPA are being neglected here in New Mexico, it appears possible that the nationwide four-year reconfiguration programmatic EIS (R-PEIS) process, in which tribes, the public and states participated in good faith, may not provide any further public analysis or comparison of alternatives for research, development and production of nuclear weapons. Without any published analysis or public comment, has your department quietly selected one of the R-PEIS alternatives -- upgrading nuclear weapons production facilities in place, primarily at LANL? If this is true, the inevitable outcome will be further desecration of the Pajarito Plateau.

Meanwhile, you have convened a Task Force to study the future missions of the DOE laboratories, and it has begun to meet -- without any representation from the Pueblos or citizens' groups. In both this and the R-PEIS process, decisions have been made or will be made about

1

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Los Alamos without benefit of local, state and tribal participation. These decisions will critically affect the people and the land of northern New Mexico. They will affect the return of tribal lands, they will affect our environment, they will affect our economy, and they will affect our identity as a region.

DOE's recently released Environmental Management 1994 lists LANL among the Department's four worst facilities in terms of environmental cost effectiveness--they did less and it cost more than all but a few other DOE sites. Last week LANL informed the public that its environmental restoration milestones would not be met due to funding cuts, yet we are being asked to accept increased nuclear waste generation without the opportunity to provide comment. We believe that *if current policies continue, most of the contaminated areas will never be cleaned up. But there* is a DOE request to spend $200 million over the next eight years to upgrade just one nuclear weapons facility at LANL, the Chemistry and Metallurgy Research Building, not to mention more millions in requested funding for new weapons projects to be located here.

The NEPA compliance problems at LANL, including the lack of an adequate site-wide EIS and the construction of new facilities without any NEPA analysis or outside comment, have been recognized in two LANL audits and the DOE Tiger Team inspection.

Last September, the Albuquerque Field Office recommended in a memorandum to Facilities *Management that a site-wide EIS not be prepared. The Pueblos and groups with long-standing* interest in this question were not involved in this recommendation, and indeed did not know until months later that it had been made. Now, both LANL and DOE's Los Alamos Area Office have written letters in recent weeks requesting a site-wide EIS.

We applaud this shift in DOE's NEPA stance at LANL. However, the mere preparation of a NEPA document which will be completed many months -- if not years -- from now, long after the critical decisions have been made, is by no means what that law requires. We call your attention to the most fundamental requirements of the Council on Environmental Quality NEPA regulations (Chapter 40 of the Code of Federal Regulations):

> §1500.1(b): NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken...
>
> §1501.2: Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts...

Contrary to this clear prescription, LANL's new weapons and waste management projects are advancing independently of either environmental analysis or public comment. There continues to be no indication whatsoever that any of the projects at LANL of greatest concern to the Pueblos and the public are being made contingent upon the outcome of any NEPA process.

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Assistant Secretary Thomas Grumbly has said repeatedly that major and controversial decisions will not be made in a "new" DOE without active participation by Indian tribes and other affected communities. Your own commitment to openness and democratic accountability has distinguished you from your predecessors. We call on you to demonstrate the consistency of your vision by **declaring a moratorium on all major new projects at Los Alamos National Laboratory which may, taken singly or together, have significant environmental impact until the completion of a site-wide EIS and the subsequent appropriate level of NEPA analysis for each project.**

We know you will appreciate the gravity of our request and hope that you will grant us a prompt and favorable reply.

Sincerely,

(see attached signatory list)

cc: President Bill Clinton
Vice President Albert Gore
Senator Pete Domenici
Senator Jeff Bingaman
Congressman Bill Richardson
William Perry, Secretary of Defense
Governor Bruce King
Judith Espinosa, Secretary, NMED
Michael Burkhart, Secretary, NMDH
Bruce Twining, DOE/AL
Jerry Bellows, DOE/LAAO
Walter Massey, UC
Sig Hecker, LANL
Robert Galvin, SEAB

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Signatories to Hazel O'Leary letter as of April 27, 1994:

Albuquerque Center for Peace and Justice
All Peoples Coalition
Archdiocese of Santa Fe
American Friends Service Committee-Colorado Office, Denver, CO*
American Friends Service Committee-New Mexico Project
American Friends Service Committee-Pacific Southwest Regional Office, Pasadena, CA*
Amigos Bravos
Auga Allegre Wellness Center
Carson Forest Watch
Citizen Alert, Reno, NV*
Citizens for Alternatives to Radioactive Dumping
Communications Workers of America, Local 7037
Concerned Citizens for Nuclear Safety
Conversion Alternatives and Strategies Education
Citizens for Environmental Justice-Savannah, GA*
Economists Allied for Arms Reductions*
El Rito Community United Methodist Church
Energy Research Foundation-Columbia, SC*
Eight Northern Indian Pueblos Council
Florida Coalition for Peace and Justice*
Forest Guardians
Greenpeace*
Hospital and Health Care Workers, District 1199
International Union of Operating Engineers
La Communidad
Las Clinicas del Norte
Los Alamos Study Group
Lytle Foundation
Natural Resources Defense Council*
New Mexico Alliance
New Mexico Conference of Churches
New Mexico Public Interest Research Group
New Mexico Green Party
Nuclear Free Nation
Nuclear Guardianship Project
Oak Ridge Environmental Peace Alliance*
Panhandle Area Neighbors and Landowners, Amarillo, TX*
People for Peace
Physicians for Social Responsibility-USA*
Physicians for Social Responsibility-NM
Picuris Pueblo
Portsmouth/Piketon Residents for Environmental Safety & Security-PRESS, OH*
Rio Grande, Rio Bravo
Rio Grande Chapter of Sierra Club
Rocky Mountain Peace Center*
Rural Alliance for Military Accountability
Sisters of Loretto
Sanctuary Foundation*
Snake River Alliance, Boise, ID*
Southwest Research and Information Center
STAND-Amarillo, Texas*
Tribal Environmental Watch Alliance
Tri-Valley CARES-Livermore, California*
Wildfire-Action for the Environment
Western States Legal Foundation*
Patti J. Bushee, Santa Fe City Councilor, District 1
Cris Moore, Santa Fe City Councilor, District 2
Steve Farber, Santa Fe City Councilor, District 2

*national or out-of-state organizations

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Los Alamos Study Group

April 6, 1994

LANL's CMR Upgrades

Summary

The Department of Energy (DOE) is proposing a $ 200 million upgrade to the Chemistry and Metallurgy Research (CMR) Building at Los Alamos National Laboratory (LANL). The upgrade proposal is in lieu of the previously-proposed Special Nuclear Materials Research and Development Replacement Laboratory (SNML). Both the current and previous proposals would significantly enhance LANL's nuclear materials processing capabilities. Although DOE ordered the preparation of an Environmental Impact Statement (EIS) for the SNML, the CMR upgrades project is receiving only an Environmental Assessment (EA). It is the position of LASG that this level of environmental review is inadequate and that an EIS is required.

Background

Perhaps the best description of the background and context for the proposed upgrades is that provided by DOE itself:

> Los Alamos National Laboratory (LANL) has four major nuclear materials facility complexes. Sigma complex (depleted uranium work), CMR (enriched uranium and Cat I & II Pu work[1]); TSTA [the Tritium Systems Test Assembly] - located in TA-21), and PF-4 at TA-55. The first two complexes are nearing the age of 40 years. Neither has had a major renovation in that time, nor do they meet current ES&H [Environment, Safety, and Health] requirements. Since CMR has Cat I & II materials, it is at the top of the priority list to be addressed by new construction. [DOE/LANL Capital Assets Management Plan, April 1991, p.45]

In its FY1995 Congressional Budget Request (CBR), DOE is proposing to upgrade the CMR Building at LANL. A previous upgrade known as "Phase 1," was part of a weapons complex "revitalization" project, and was originally estimated to cost $ 49.5 million. According to DOE:

> The CMR Building is the largest structure at LANL (550,000 square feet). Construction of the CMR Building was completed in 1952. Most of the major mechanical and electrical equipment has reached the end of its design life. [FY95 CBR: Project Data Sheets, p.23]

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Relation to the former SNML proposal

The new CMR proposal represents a major increase in the scope of work, with total project cost now estimated at over $ 200 million. It is very clear that this project is the replacement for the ill-fated SNML, also a $ 200+ million project, which foundered on intense and wide-spread public opposition. That opposition was manifested in numerous public forums, but principally in the public scoping hearings held on the project pursuant to the preparation of an Environmental Impact Statement (EIS). DOE had determined that an EIS was the necessary level of environmental review for the project, which was designed to replace major functions of the CMR and relocate them within Technical Area 55 (TA-55), the "plutonium park." As a result of the public outcry over the project, it was quietly dropped.

> In FY1990, the SNML project was put on hold pending a substantive review of the project including other potential options for providing the necessary specialized laboratory space... Later in FY1991, it was decided not to proceed with the construction of SNML but provide interim upgrades to CMR (Phase 1)... [ibid., p. 24]

The FY95 request for a line item appropriation for the expanded upgrade at CMR instead of the SNML project is in accordance with the strategy statement found in LANL's most recent Institutional Plan, which specifically links the two projects:

> A new integrated line item will be sought for an FY95 start to consolidate all phases of the [CMR] project. If approved, the SNML project for the CMR Building would be canceled. [LANL FY1994 - FY1999 Institutional Plan, December 1993, p. IV-3]

The CMR project is designed partially to consolidate several nuclear materials functions currently being performed at other Laboratory sites.

> In particular, a number of DOE/DP [Defense Programs] - sponsored efforts at TA-21 (DP West) and TA-49 will be relocated to the CMR Building, thereby allowing decontamination and decommissioning of aged and obsolete facilities at TA-21. Enriched-uranium casting functions are also being moved from Sigma complex to the CMR Building. [ibid., p. IV-3]

Further, the CMR project is designed not just to consolidate existing functions, but to provide the new capabilities which would have been attained with the SNML:

> For example, the upgrade of the CMR Building will result in the consolidation of currently dispersed nuclear

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> materials capabilities together with the attainment of new capabilities at substantial cost savings over constructing and operating a completely new facility. [ibid., p.IV-4]

The CMR Building is old and unsafe, and significant upgrades and extensions of its capabilities demand meaningful environmental review. A previous justification for the SNML submitted to Congress stated:

> Corroded and breached air handling ducts, inadequate supply of filtered air, marginal building-wide filter systems, and inadequate control systems contribute to serious situations developing in the CMR building. A system failure would adversely affect safety of personnel and require shutting down the facility." [reprinted in the *Los Alamos Monitor*, 3/29/91, p.1]

An EIS is needed for this project

The new CMR upgrades are, as noted above, designed to accomplish much of what the SNML project intended. That project was conceded by DOE to require an EIS. At the present time, DOE is preparing an Environmental Assessment (EA) for the CMR project (document # LAN 93-0006), although it has refused to make any portion of it public. Preparation of an EA provides for no public, state, or tribal input or opportunity for comment before the document is released. Further, DOE has never, for any project at LANL, prepared an EA without promptly concluding that the document justified a Finding Of No Significant Impact (FONSI). If DOE is permitted to continue with this project without preparing an EIS, a FONSI will routinely and inevitably follow, the public and all other interested parties will have been effectively shut out of the process, and DOE and LANL will congratulate themselves for achieving their goal unhindered by the once-conceded need for public involvement. Will the public, the state, and the Pueblos allow this travesty of the National Environmental Policy Act to occur without protest?

Endnotes:

1. DOE categorizes plutonium operations for purposes of risk assessment by the quantity of plutonium involved in the process:
   - Category I - Activities utilizing 2000 g of Pu or more,
   - Category II - " " 400 g to 2000 g of Pu;
   - Category III - " " less than 400 g of Pu

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NATURAL RESOURCES DEFENSE COUNCIL, INC.
LOS ALAMOS STUDY GROUP
CONCERNED CITIZENS FOR NUCLEAR SAFETY

Elizabeth R. Withers
NEPA Compliance Officer
U.S. Department of Energy
Los Alamos Area Office
Los Alamos, NM 87544

Fax: (505) 665-4872

September 12, 1996

Dear Ms. Withers:

The Natural Resources Defense Council, Inc. ("NRDC") and the Los Alamos Study Group ("LASG") submit the following comments on the Revised Predecisional Draft Environmental Assessment for the Proposed CMR Building Upgrades at the Los Alamos National Laboratory ("LANL"), Los Alamos, New Mexico (DOE/EA-1101)("revised draft EA").

1 **I. The CMR Upgrades Constitute Major Federal Action With Significant Environmental Impacts Requiring an Environmental Impact Statement ("EIS")**

In the revised draft EA, the Department of Energy ("DOE") admits that the proposed action fell within the recently discontinued category of "Major Systems Acquisitions," which under DOE NEPA regulations in effect until August 8, 1996, required preparation of an EIS. The only exception to this requirement was the presence of extraordinary circumstances related to the specific proposal that would affect the significance of the environmental effects of the proposal, an exception which DOE has never invoked or justified. To the contrary, as shown below and in previous comments, the extraordinary circumstances related to this particular project serve only to increase its potential environmental impacts.

Although DOE's recently amended NEPA regulations no longer refer to the category of Major Systems Acquisitions, an EIS is nonetheless still required. First, as we and others have repeatedly argued, DOE has improperly segmented the NEPA review of the various phases of the CMR Buildings Upgrade Project. Phase I of the upgrades, which is so inextricably intertwined with the current proposed upgrades that both phases are considered a single budget line item, began long before DOE amended its NEPA regulations. The regulations in effect at the time the upgrades project was proposed and begun clearly indicated that an EIS was and still is required.

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Even if the Phase II upgrades are considered in isolation, the fact that DOE has amended its regulations means only that DOE must individually analyze this project in an EA in order to determine whether an EIS is required. 40 C.F.R. § 1501.4(b)(c). The revised draft EA only reinforces our prior conclusion that the proposed upgrades constitute a major federal action with significant impacts on the human environment. This conclusion is inescapable when the impacts of the narrowly defined proposed action are considered in tandem with the cumulative impacts of past, present, and reasonably foreseeable future actions at and near the facility. The revised draft EA fails to conduct such a cumulative impact analysis as required by law, to take a hard look at potential environmental impacts, or to make a convincing case that the potential impacts would be insignificant. Any decision not to prepare an EIS on the basis of this wholly deficient EA would be arbitrary and capricious.

A. The Proposed Upgrades Are A Major Federal Action under the National Environmental Policy Act ("NEPA")

The CMR Building, with over half a million square feet of floor space, is the largest structure at LANL. Its primary purpose is to support the plutonium research, development and demonstration activities at LANL's Plutonium Handling Facility. It is also our understanding that the CMR Building contains an extensive set of radioactive and other hazardous materials laboratories, industrial-scale processing and manufacturing areas, and may now, or as a result of these upgrades, contain prototyping and fabrication facilities for enriched and depleted uranium nuclear weapons components.

Because of the extensive contamination that exists throughout the CMR Building, DOE originally estimated that construction of the Phase II upgrades alone would generate over 16,000 cubic meters of highly toxic radioactive, hazardous and mixed waste. Even accepting *arguendo* DOE's exceptionally ambitious estimate that three-quarters of this waste could be eliminated by reuse or other waste minimization efforts, the remaining waste would nonetheless equal the amount of low level radioactive waste produced each year by the entire Los Alamos Laboratory. Much of this waste would have to be disposed of offsite or drive the early expansion of on-site disposal facilities. This $122.5 million dollar construction project would take five years to complete, much longer than would normally be required for a project of this type, because of all the special precautions needed to protect workers from radiation exposure and to avoid mistakes that could spread existing contamination or even lead to criticality.

A federal action of the type described in this EA would be considered "major" using any reasonable criteria of size, scope, type or cost.[1] Courts have held much smaller

[1] See NRDC v. Grant, 341 F. Supp. 356 (E.D.N.C. 1972) (a "major federal action is federal action requiring substantial planning, time, resources or expenditure"); Township of Ridley v. Blanchette, 421 F. Supp. 435 (E.D. Pa. 1976) (major actions are projects with, *inter alia*, federal funding usually over one million dollars or large increments of time for planning and construction).

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projects to be major federal actions under NEPA.[2] As stated by one court, in a definition that would easily embrace the substantial project at issue here:

> *In sum, "major" is a term of reasonable connotation, and serves to differentiate between projects which do not involve sufficiently serious efforts to justify the costs of completing an impact statement, and those projects with potential effects which appear to offset the costs of time and resources of preparing a statement.*[3] [Emphasis in original].

The Council on Environmental Quality ("CEQ") NEPA regulations, which are binding on DOE, have adopted a unitary standard under which an action is held to be a major action if it is significant. 40 C.F.R. § 1508.18 ("'[m]ajor' reinforces but does not have a meaning independent of significantly.'"). As shown below, the potential environmental impacts of the proposed action are plainly of sufficient magnitude to require preparation of an EIS.

B. The Proposed Action Would Have a Significant Impact On the Human Environment

According to the D.C. Circuit, in preparing an environmental assessment, an agency must: (1) take a "hard look" at the potential environmental impacts, as opposed to bald conclusions unaided by preliminary investigation; (2) identify the relevant areas of environmental concern; (3) make a convincing case that the environmental impact is insignificant; and (4) if there is an impact of true "significance," convincingly establish that changes in the project have sufficiently minimized it.[4] The revised draft EA fails to meet this test, but instead provides ample evidence that the project would indeed have significant environmental impacts.

The Ninth Circuit has held that "[t]he standard for determining whether to prepare an EIS is whether 'the plaintiff has alleged facts which, if true, show that the proposed

[2] See, e.g., Monroe County Conservation Council, Inc. v. Volpe, 472 F.2d 693 (2d Cir. 1972) ($14 million bridge with 60 percent federal funding); Bosco v. Beck, 475 F. Supp. 1029 (D. N. J. 1979) ($4 million water project), aff'd mem., 614 F.2d 769 (3d Cir. 1980), cert. denied, 449 U.S. 882 (1980).

[3] Township of Ridley v. Blanchette, supra, 421 F. Supp. 435 at 446. DOE appears to consider the potential environmental impacts of this project of sufficiently serious concern to justify the extraordinary step of reissuing the draft EA for a second round of public comment and revision, and to offset the cost of preparing an EA nearly 150 pages long, when the CEQ regulations recommends that Eas should normally be 10-15 pages. CEQ, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, Question 36.

[4] Sierra Club v. U.S. Dept. of Transportation, 753 F.2d 120 (D.C. Cir. 1985); Maryland-National Capital Park & Planning Comm'n. v. United States Postal Service, 487 F. 2d 1029, 1040 (D.C. Cir. 1973).

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project may significantly degrade some human environmental factor."[5] [emphasis added]. In explaining this standard, the Ninth Circuit has declared that "'[t]he plaintiff need not show that significant effects will in fact occur, but if the plaintiff raises significant questions whether a project *may* have a significant effect an EIS *must* be prepared.[emphasis added].[6] Our previous comments, as well as those of the State of New Mexico, the Pueblo of San Ildefonso, and other commenters, have raised a plethora of substantial questions that demonstrate the potential for significant environmental impact.

The proposed action, even as narrowly construed by DOE -- i.e., the construction, but not operation, of only the middle phase of a three-part construction project -- meets several of the criteria included in the CEQ definition of "significantly" in 40 C.F.R. § 1508.27. Courts have held that the presence of one or more of these factors should result in an agency decision to prepare an EIS.[7] A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial. 40 C.F.R. § 1508.27 (b)(1).

The proposed action, which would involved the handling, transportation and disposal of significant amounts of plutonium, one of the most hazardous substance known to mankind, involves unique and potentially severe risks to public health and safety. 40 C.F.R. §§ 1508.27 (b)(2) and (5). These potential impacts are exacerbated by the generation, handling and disposal of significant quantities of other radioactive, hazardous and mixed wastes, including such toxic materials as radiologically contaminated asbestos. Yet the revised draft EA fails to take a hard look at these potential impacts.

To the contrary, it explicitly admits that DOE has not yet estimated the volume of wastes contaminated by plutonium and other transuranics that the project would generate. DOE further admits that it has not yet estimated the volume of RCRA-regulated hazardous wastes and mixed wastes to be generated, but states that the amounts of such wastes could increase as a result of decontamination activities. The EA does not analyze the environmental impacts of onsite treatment, storage and disposal of these wastes, including the potential for accidental releases. For most waste categories, the EA merely states where such wastes will be treated, stored and/or disposed. For RCRA wastes, the EA does not even mention where such wastes will be disposed..

As for low-level radioactive wastes, the EA explicitly declines to analyze the impacts that will be caused by the construction upgrades, which will significantly increase the annual production of LLW at LANL, rapidly overwhelm the available capacity for onsite disposal, and require either major expansion of onsite capacity or offsite disposal.

[5] The Steamboaters v. FERC, 759 F.2d 1382, 1392 (9th Cir. 1985)(quoting Columbia Basin Land Protection Ass'n v. Schlesinger, 643 F.2d 585, 597 (9th Cir. 1981).

[6] Id. at 1392 (quoting Foundation for North American Wild Sheep v. U.S. Dep't of Agriculture, 681 F.2d at 1178). See also Public Service Co. of Colorado v. Andrus, 825 F. Supp. 1483, 1495 (D. Idaho 1993).

[7] Id. [citing LaFlamme v. FERC, 852 F.2d 389, 398 (9th Cir. 1988)].

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The EA dances nimbly around this issue by claiming that the ROD for the site-wide EIS, which has not yet even been issued in draft form, will be issued before the onsite capacity at Area G has been exceeded. Yet although the CEQ regulations permit the use of tiering in order to avoid repeating the analysis contained in a programmatic EIS, they certainly do not envision or permit the use of tiering from a programmatic document that does not yet even exist.

As stated in their comments, the Pueblo of San Ildefonso is very concerned that the disposal of these wastes at Area G, and particularly the expansion of the landfill, could have a significant impact on the sacred Pueblo areas adjacent to this site. Since the CEQ regulations also consider significant the proximity of a proposed action to unique cultural resources and the potential for adversely affecting such resources (40 C.F.R. § 1508.27(b)(3) and (8), this issue also triggers the need for an EIS.

DOE has also failed to take a hard look at a number of other related issues raised by commenters, including the potential for disturbance of existing contamination during the excavation process, toxic emissions from acid drain lines, drainage or runoff of contaminated stormwater, and the potential for criticality accidents caused by human error. The potential for significant health and safety impacts in projects such as this one, which at every step require dealing with highly toxic substances and contaminated materials, cannot be discounted simply by stating that administrative controls and best management practices will be utilized. Similarly, DOE cannot rely on the possibilities for waste minimization in order to conclude that an EIS is not needed. CEQ has stated that agencies "should not rely on the possibility of mitigation as an excuse to avoid the EIS requirement...[unless] the proposal itself so integrates mitigation from the beginning that it is impossible to define the proposal without including the mitigation."[8]

DOE admits that the CMR Building, as currently constructed, does not meet DOE seismic requirements and would collapse in the event of a severe earthquake. A number of commenters were reasonably concerned about the risk to the public of death or injury from such an event. DOE decided to respond to these concerns in the revised draft EA by simply omitting the risk calculations that it had previously included. The agency's weak justification for this action was that the risks during the construction process would be the same as in the no action alternative, and could therefore be omitted. This argument makes no sense, since presumably the seismic risks for the action alternatives considered in the EA (including other LANL facilities and DOE sites) would be less than those caused by complete building collapse. This significant risk to public health and safety also requires full analysis in an EIS.

All of the impacts discussed above relate only to the proposed action as narrowly formulated by DOE -- that of constructing the Phase II upgrades. Yet if the project were considered in its entirety, the impacts would be correspondingly greater. We and other commenters have repeatedly explained why the various upgrades to the CMR Building

[8] CEQ, "Forty Most Asked Questions Concerning CEQ's NEPA Regulations, supra, Question 39.

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must be considered together for NEPA purposes. Yet an even greater deficiency in this EA is the deliberate omission of the environmental impacts of facility operation. The whole purpose of the upgrades is to extend the useful life of the CMR Building another 20 or 30 years. DOE explicitly refuses to consider the impacts of this extended operation in the EA, despite the fact that it would have major implications in such areas as waste management and transportation and accident risks. Such segmentation is impermissible in situations like this, where the two actions are inextricably intertwined. It is clear that the CMR Building could not continue operating for long without the upgrades, and that DOE would not undertake the upgrades but for the opportunity to continue operations for an extended period. These actions therefore meet the criteria for "connected actions" under NEPA and must be considered together.

C. DOE Has Failed to Prepare a Mandatory Cumulative Impact Analysis

Another glaring weakness in this EA is its failure to conduct a cumulative impact analysis. "Cumulative impact" is the impact on the environment which results from the incremental impact of the [federal] action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions. 40 C.F.R. § 1508.7 (emphasis added). If, when these cumulative or synergistic impacts are analyzed, there are "substantial questions" as to whether the impacts may be collectively significant, an EIS must be prepared, even if the actions are individually minor.[9] Once the cumulative impact of a number of actions crosses the threshold of "significant effect on the environment," a discussion of those cumulative impacts in individual EA's no longer complies with NEPA.[10]

The cumulative impacts analysis "should consider (1) past and present actions without regard to whether they themselves triggered NEPA responsibilities and (2) future actions that are 'reasonably foreseeable' even if they are not yet proposals and may never trigger NEPA review requirements."[11] According to the Ninth Circuit, a meaningful cumulative impacts analysis must identify:

> (1) the area in which effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions -- past, proposed, and reasonably foreseeable -- that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact

[9] Sierra Club v. Penfold, 664 F. Supp. 1299 (D. Alaska), aff'd, 857 F.2d 1307 (9th Cir. 1988).

[10] Northern Alaska Environmental Center v. Lujan, 15 Envt. L. Rep. 21048 (D. Alaska 1985); 16 Envt. L Rep. 20245 (D. Alaska 1985).]

[11] Fritiofson v. Alexander, 772 F.2d 1225, 1244 (5th Cir. 1985).

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that can be expected if the individual impacts are allowed to accumulate.[12]

Although the revised draft EA contains a section entitled Foreseeable Related and Future Actions, it can by no stretch of the imagination be considered a cumulative impacts analysis. Although DOE correctly identifies a few of the projects that have or will likely be performed at the CMR Building, it does not even attempt to analyze the potential environmental impacts of these projects. Instead, the agency simply makes the incredible and unsupported assumption that each of these projects is "independent" of the proposed CMR Building upgrades. Yet as shown above, this argument is irrelevant. All projects with potential impacts in the same area as the proposed action must be considered in a cumulative impacts analysis, even if they are independent actions performed by another Federal agency or even a private party.[13]

An adequate cumulative impacts analysis for this project would consider the cumulative impacts of, at a minimum, the following past, present, and reasonably foreseeable projects:

(1) CMR Building Phase I upgrades;
(2) CMR Building Phase III upgrades;
(3) Current operations of the CMR Building;
(4) Reasonably foreseeable future operations of the CMR Building during its extended 20-30 year useful life;
(5) Pit fabrication supported by the CMR Building (a SSM PEIS preferred alternative);
(6) Fabrication of targets containing highly enriched uranium at the CMR Building and shipping targets to Sandia (a preferred alternative in the EIS for medical isotopes production);
(7) The Actinide Waste Source Term Project;
(8) Reclamation of excess sealed radioactive sources in the CMR Building Wing 9 hot cells;
(9) Secondary fabrication activities;
(10) Two separate sets of decontamination and decommissioning activities for the CMR Building -- one during upgrades and one at the end of its useful life;
(11) Expansion of Area G or, alternatively, increased off-site shipments of low-level radioactive wastes through Native American lands.

The result -- and perhaps the intent -- of these activities appears to be to expand the function of the CMR Building, and LANL itself, from a research and development laboratory to a weapons production facility. When the cumulative environmental impacts of these myriad activities are considered together, it is abundantly clear that the time for an EIS on the CMR Building is already long past.

[12] Id. at 1245.
[13] 40 C.F.R. § 1508.7.

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2 **II. The CMR Upgrades Cannot Proceed in Advance of the SSM PEIS And the LANL SWEIS**

The CMR Building upgrades should not proceed until a Record of Decision is issued for both the Stockpile Stewardship and Management programmatic EIS ("SSM PEIS") and the LANL sitewide EIS ("SWEIS"). The CEQ regulations provide that, while work on a required program EIS is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment, except in certain limited circumstances. 40 C.F.R. § 1506.1(c). As a major Federal action with significant environmental effects, the CMR upgrades project falls within this prohibition, since, as we have explained in detail elsewhere, it is within the scope of both the SSM PEIS and the SWEIS, and is not covered by an existing program EIS.

The only exception to this prohibition is for actions that are themselves covered by an adequate EIS, are justified independently of the program, and will not prejudice the ultimate decision on the program. Id. None of these circumstances exist here, and the absence of even one of these factors -- most obviously in this case, the lack of an adequate EIS -- renders the exception inapplicable.

III. Conclusion

DOE has not made a convincing case in the EA that the impacts of the project, especially when considered together with other CMR activities, would not have an individual or cumulatively significant impact on the environment. DOE has not taken a hard look at all the relevant environmental impacts. No matter what additional revisions DOE may make to the EA, it will not adequately support a FONSI. DOE must prepare an EIS.

3 If DOE nonetheless decides to prepare a FONSI for this project, we request that the agency make a proposed FONSI available for public review for 30 days before making a final determination whether to prepare an EIS. Such a procedure is required by CEQ and DOE regulations in circumstances where the proposed action is, or is closely similar to, one which normally requires the preparation of an EIS. 40 C.F.R. § 1501.4(e)(2); 10 C.F.R. § 1021.322(d). Since DOE has admitted that the CMR Building upgrades project fell within the category of actions normally requiring an EIS, at least until the regulations were changed several weeks ago, this is clearly a case in which a proposed FONSI is required.

Comment 13, page 9

Sincerely,

Barbara A. Finamore

Barbara A. Finamore
Senior Staff Attorney
Natural Resources Defense Council

/s/ Greg Mello

Greg Mello
Executive Director
Los Alamos Study Group

/s/ Jay Coghlan

Jay Coghlan
LANL Program Director
Concerned Citizens for Nuclear Safety

cc: Dan Reicher, DOE HQ
Carol Borgstrom, DOE HQ

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COMMENT CODE	LOCATION OF EA REVISIONS
1-1	Appendix D, Section D.1, Page D-1

RESPONSE

The text has been revised to remove cigarette smoke as a naturally occurring event. The Department of Energy (DOE) policy guide, "Recommendations for the Preparation of Environmental Assessments (EA) and Environmental Impact Statements, May 1993," directs that human health effects from exposure to ionizing radiation be presented in terms of cancer fatalities. Nonfatal cancers are considered to be bound by fatal cancers and are discounted.

COMMENT CODE	LOCATION OF EA REVISIONS
2-1	None required.

RESPONSE

At present, cooling water is discharged from a National Pollutant Discharge Elimination System (NPDES)-permitted outfall (03A 021) into upper Mortandad Canyon. Any discharge from the proposed chilled water plant would be discharged through this same outfall. Based upon the current conceptual design, installation of the proposed central chilled water plant would not require an amendment to the NPDES permit for increased discharge, or addition of a new outfall to the current permit. If the projected discharge volume or characteristics change, LANL would seek a modification to the NPDES permit before discharging through this outfall.

COMMENT CODE	LOCATION OF EA REVISIONS
2-2	None required.

RESPONSE

Excavation of underground piping is not currently planned. The only acid drain lines proposed for renovation are inside the CMR Building. Any excavation at LANL requires a permit that includes an Environmental, Safety and Health (ES&H) review to determine if the area is contaminated. If found to be contaminated, special precautions, including the use of trained personnel, Personal Protective Equipment, and containment or removal of the contaminant, would be performed, as appropriate. All construction operations associated with the Proposed Action would be analyzed, planned, and managed to ensure that safety goals are met, and that work is conducted safely in accordance with good management practices.

COMMENT CODE	LOCATION OF EA REVISIONS
2-3	None required.

RESPONSE

A general Notice of Intent to discharge would be filed with the State of New Mexico both prior to and after upgrades are performed. Water drained from the system during the upgrades would not be contaminated; only in the event of a fire is there potential for water from the fire protection system to become radioactively contaminated. However, these waters would be collected in the CMR building, sampled and disposed of through the LANL waste management system.

COMMENT CODE	LOCATION OF EA REVISIONS
2-4	None required.

RESPONSE

At present, the project is at the conceptual design stage. Exact tank and associated equipment containment requirements have not been finalized. However, the final design for elements of the project, which include spill containment requirements, would be in compliance with applicable regulations.

COMMENT CODE	LOCATION OF EA REVISIONS
2-5	None required.

RESPONSE

The sediment traps in Mortandad Canyon, downstream from the Radioactive Liquid Waste Treatment Facility's outfall, were cleaned out in 1988 and 1992. The sediments were placed at the sides of the canyon bottom, out of the main flow channel. Since 1992, there has been little sediment deposition in the traps. For the long term, the sediments may be managed as part of the ER program. The DOE Environmental Restoration (ER) Program addresses on-site contamination issues including contamination in the canyon bottoms.

COMMENT CODE	LOCATION OF EA REVISIONS
2-6	None required.

RESPONSE

A Storm Water Pollution Prevention Plan (SWPPP) is required for construction activities that exceed five acres. Under the Proposed Action, construction activities outside the CMR Building are expected to disturb less than one acre. Although a SWPPP is not required for the Proposed Action, best management practices would be applied, as necessary, to control storm water run-off during construction activities.

COMMENT CODE	LOCATION OF EA REVISIONS
3-1	None required.

RESPONSE

DOE will provide copies of additional documentation to designated representatives as requested.

COMMENT CODE	LOCATION OF EA REVISIONS
3-2	None required.

RESPONSE

DOE recognizes that the pueblo is a federally-recognized Indian Tribe. As part of the National Environmental Policy Act (NEPA) consultation process, the tribe was furnished a copy of the EA and asked to provide comments. Your letter represents your response to our request and constitutes your involvement in our NEPA decision-making process and, as appropriate, your comments and suggestions have been incorporated into this EA. Additionally, the pueblo was notified of the Department's intent to prepare an EA for this proposed project via a December 8, 1993 letter to the Pueblo of San Ildefonso Governor from the Deputy Assistant Secretary for Facilities, Defense Programs. While the DOE does not generally afford an opportunity for the public or other Governments and agencies to participate in the writing of EAs, an opportunity to participate in the process by comment on the Predecisional Draft EA was provided by making the draft EA available to the general public and the Pueblo of San Ildefonso.

DOE appreciates the participation of San Ildefonso Pueblo in this decision-making process. As noted, DOE has entered into an Accord with the San Ildefonso Tribal Government to emphasize and strengthen the government-to-government relationship. DOE and LANL recognize the interest of tribal members in sites of cultural significance, and will continue to work with the

Pueblo Government to protect and maintain these properties. The August 16, 1996 signing of a Memorandum of Understanding between DOE, the Pueblo of San Ildefonso, and the Bureau of Indian Affairs relating to environmental monitoring is the most recent demonstration of that commitment.

COMMENT CODE	LOCATION OF EA REVISIONS
3-3	Section 4.1.2, Page 40

RESPONSE

DOE recognizes that waste disposal, particularly at TA-54, Area G, and waste transportation are concerns to the San Ildefonso Pueblo. Under the Proposed Action, LLW would be disposed of at TA-54, Area G, or sent off-site. The LANL LLW disposal area, TA-54, Area G, has several active pits in the currently developed area. The currently developed operational area is approaching the end of its projected design life, but it would not be filled to capacity before the end of 1998 based upon current projections that include receiving waste from the proposed CMR Building upgrades. The current schedule for the proposed upgrades calls for construction to be conducted over a five-year period, from 1997 through 2002. LANL's overall waste management strategy for the next 10 years, including a proposed expansion of Area G, is to be analyzed in the LANL SWEIS, as stated in the Notice of Intent published in the May 12, 1995 *Federal Register* (60 FR 25697). The ROD for the SWEIS is expected in 1997, before the developed part of Area G is filled. Depending upon waste management decisions regarding Area G, waste will either be disposed of at the expanded Area G, its replacement facility, or off-site. Decisions on whether to proceed with the proposed CMR Building upgrades do not depend upon decisions regarding the possible expansion of LANL LLW disposal areas.

While the proposal to upgrade the CMR Building does not include a specific proposal to transport waste across San Ildefonso Pueblo, it is possible that DOE may, at some point, contract with a private vendor to treat and dispose of low level waste off-site. DOE recognizes that emergency preparedness is a continuing concern for nearby communities, including San Ildefonso Pueblo. Therefore, under the Accord and ongoing cooperative agreements with San Ildefonso Pueblo, DOE and LANL are working with tribal officials regarding emergency response procedures in the event of transportation accidents on tribal lands. Under the Federal Radiological Emergency Response Plan (FRERP), the DOE maintains a Radiological Assistance Program (RAP) under which the resources of the DOE and the national laboratories can be made available to assist in any actual or suspected incident involving radiological materials. These resources are available upon request and coordination through the DOE and LANL Emergency Operations Centers (EOC). In the event of an incident involving radiological materials on San Ildefonso Pueblo, the State of New Mexico, Department of Public Safety (NMDPS), would have primary responsibility for responding because such an incident would occur on public highways for which easements have been granted across pueblo lands. In such an incident, the NMDPS would contact the DOE/LANL EOCs and request assistance if required. The State of New

Mexico also maintains a radiological response team to address such incidents. In some cases involving DOE shipments of radiological materials, the DOE/LANL EOCs may be contacted prior to contacting the NMDPS. In such cases, the DOE/LANL EOCs would immediately contact the NMDPS and determine which agency would be the incident commanders responsible for directing emergency and clean-up operations. Resources available through the LANL RAP include about 40 trained on-call personnel to respond to emergency situations.

In addition to incidents involving radiological materials, similar capabilities exist for dealing with incidents involving hazardous materials. Separate Memoranda of Agreement between DOE and LANL and various state and local governmental agencies describe how LANL Hazardous Materials (HAZMAT) resources are made available. Most local fire departments also maintain HAZMAT response capabilities.

Any private carrier company involved in such an accident would share responsibility for emergency response and clean-up actions.

COMMENT CODE	LOCATION OF EA REVISIONS
3-4	None required.

RESPONSE

The major problems associated with the acid vents and drains are pipe leakage and incomplete drainage from CMR Building internal piping. The proposed design solution to address these problems is described in the Conceptual Design Report, which has been placed in the DOE public reading room. Final design would take place after a decision is made to implement the project based in part on the environmental analysis contained in the EA.

COMMENT CODE	LOCATION OF EA REVISIONS
3-5	Section 2.2.1, Page 17

RESPONSE

The analysis in the EA is limited to the potential effects of construction upgrades associated with the Proposed Action. Therefore, as indicated in Section 2.9, operational effects from the CMR Building are to be analyzed in the LANL SWEIS. Clean-up of any existing contamination outside of the CMR Building is not part of the Proposed Action and has not been analyzed in the EA. The DOE Environmental Restoration (ER) Program addresses LANL site contamination issues. Information provided by the ER Program indicates there are three known Solid Waste Management Units (SWMU) (now referred to as Potential Release Sites) in the immediate vicinity (external) of the CMR Building in TA-3, which are directly related to CMR Building

operations. All three SWMUs have been investigated in connection with other work activities, and were found to have no contaminants that exceeded action levels defined by the ER program. Due to the low contamination levels, budget restrictions and other higher priority areas within LANL, the ER program does not currently have a schedule for further action on these SWMUs. Based upon currently available information, there are no plans to perform remediation of the SWMUs as part of the Proposed Action. Should additional SWMUs be encountered during construction of the proposed upgrades, any remediation or mitigation of adverse effects related to these SWMUs would be performed in accordance with agreements among the DOE, the LANL Environmental Restoration Project, the New Mexico Environment Department (NMED) and the U.S. Environmental Protection Agency (EPA). Additional information concerning contamination levels within TA-3 can be found in LANL's Remedial Field Investigation (RFI) Work Plan for Operational Unit (OU) 1114, dated June 1993, and Addendum 1 to the RFI, dated July 1995. Both documents are available in the DOE public reading room.

COMMENT CODE	LOCATION OF EA REVISIONS
3-6	Section 2.1.3, Page 11; Section 4.1.4, Pages 42-43; Section 4.1.6, Table 4-6, Page 46; Section 4.1.6.1.1, Page 47; Appendix D, Table D-1, Page D-6

RESPONSE

This EA addresses possible accidents related to construction during proposed upgrades. A history of accidents at the CMR Building and all other LANL facilities is available at the DOE public reading room in the Los Alamos townsite. As part of Occurrence Reporting Process System, DOE Order 232.1, LANL is required to place copies of occurrence reports in the DOE public reading room. Accidents that could occur during operations would be addressed in the LANL SWEIS now under development. All CMR Building current operations are conducted safely within the approved safety authorization basis. The information in Table 4-6 has been revised to clarify risks to the public.

Information in the January 1996 predecisional draft EA which stated 1 in 9 excess cancer fatalities for a population of 26,770 persons does not mean that 1 in 9 people will die of latent cancer. This information was intended to show that the estimated number of latent radiation-induced cancers in the exposed population is less than one (0.11). The 0.11 latent cancer fatalities is calculated by multiplying the total dose of 216 person-rem for the exposed population by the standard dose-to-risk conversion factor of 5×10^{-4} deaths per person-rem for the general public. This calculation results in a total of 0.11, or $\frac{1}{9}$ latent cancer fatalities for the exposed population. Therefore, the Predecisional Draft EA analysis reflected no excess latent cancer fatalities are expected in the exposed population of 26,770 (the risk is less than one [0.11 or $\frac{1}{9}$]).

The predecisional draft EA included a dose calculation based upon the amount of radioactive material in the construction zone, in the form of contamination in the ductwork and acid drainlines. The calculation did not reflect the fact that the process radioactive material would

remain within the CMR Building; i.e., the same amount of material would be in the CMR Building in either the No Action Alternative or the Proposed Action resulting in the same effect on the environment. The only significant difference in effects between the Proposed Action and the No Action Alternative would be the number of workers who would be in the building and could be either seriously injured or killed as a result of building collapse during an earthquake. Therefore, the final EA no longer includes public dose calculations resulting from an earthquake during construction. The purpose of the seismic upgrades in the Proposed Action is to enable the CMR Building to withstand the design-basis earthquake, thereby allowing the facility itself to serve as a containment barrier for radioactive materials that could potentially be released.

COMMENT CODE	LOCATION OF EA REVISIONS
3-7	None required.

RESPONSE

The transportation accident analysis in Table 4-6 includes consequences to the public should an accident occur off-site along public highways. For the purposes of the EA analysis, San Ildefonso Pueblo is included in this category. Additionally, the response to comment 3-3 provides additional information concerning responsibilities and available resources for responding to off-site incidents involving hazardous and radiological materials and wastes.

COMMENT CODE	LOCATION OF EA REVISIONS
3-8	None required.

RESPONSE

The LANL SWEIS will analyze CMR Building operations. This EA analyzes the potential effects of upgrades to the building and not ongoing operations. All proposed upgrades would be performed in compliance with applicable statutes, regulations, permits, orders and agreements.

COMMENT CODE	LOCATION OF EA REVISIONS
3-9	As noted under individual comment responses.

RESPONSE

The EA has been revised to reflect comments received, as appropriate. Additionally, DOE will consider issues raised by the Pueblo of San Ildefonso and all other commentors prior to a final determination on CMR Building upgrades.

COMMENT CODE	LOCATION OF EA REVISIONS
4-1	Section 1.3 (new), Pages 2 and 3.

RESPONSE

In 1983, DOE determined that it needed to maintain chemical and metallurgy R&D capabilities at LANL. It was also determined that, due to its age, the CMR Building would have to be replaced or would require major upgrades to maintain critical mission capabilities. Given projected mission requirements at the time, DOE proposed construction of a new facility in TA-55 to assume some of the functions from the CMR Building. In 1986, the Special Nuclear Materials Laboratory (SNML) Project was proposed. The proposed SNML Project involved construction of a new facility to house several activities, including the analytical chemistry capabilities from the CMR Building. Although the SNML Project included space for the CMR analytical chemistry operations, it was not intended to be a replacement facility for CMR because other activities related to nuclear materials programs were part of the SNML Project scope. The SNML Project proceeded through conceptual and preliminary designs before DOE decided to place the project on hold during an Energy Systems Acquisition Advisory Board (ESAAB) meeting in February 1991. This decision was based upon changes in DOE's mission resulting from the end of the Cold War and the projected high cost for the new facility. At this time, DOE decided to further evaluate the CMR Building renovations to meet the Agency's needs.

Included in the evaluation was an Interim Safety Analysis Report (ISAR) to evaluate the risks of CMR Building operations, identify safety deficiencies in the facility and aid in determining the scope of upgrades required to extend the CMR Building's useful life. As a result of the ISAR evaluation, several compensatory measures (including reducing the amounts of material in the building at any time) were put into place. These measures reduce the potential dose to the public in the event of major accidents, but have had a negative effect on operations and productivity and result in increased operational costs.

To maintain operations, several stand-alone projects were developed in response to environment, safety and health deficiencies requiring immediate action. These initial upgrades were required independent from the decision to proceed with the SNML project or proceed with additional CMR Building upgrades to extend the useful life of the CMR Building. Some of these initial stand-alone projects were grouped and identified as CMR Building Phase 1 upgrades.

In March 1993, after validating continued mission requirements and investigating alternatives, DOE concluded that the most reasonable and cost-effective programmatic option was to upgrade portions of the CMR Building to extend its useful life by 20 to 30 years. A group of potential upgrades supporting the extended use of the CMR Building have been proposed. Conceptual design efforts were begun for these elements, initially identified as CMR Building Phase 2 upgrades. During the development of the conceptual design, it was realized that some of the upgrades were not required to support existing missions at the CMR Building. These elements were found to be contingent upon possible future CMR missions and were thus excluded from Phase 2 upgrades, and re-designated as Phase 3 upgrades. At the completion of the Phase 2

upgrades conceptual design process in 1995, it was decided that no further planning for Phase 3 upgrades was appropriate, in as much as there was neither a need that could be demonstrated nor funding available for Phase 3 upgrades. Therefore, the current proposed CMR Building upgrades, commonly referred to as Phase 2 upgrades, are those identified as necessary infrastructure needs to support existing missions.

During a November 1995 ESAAB meeting, DOE approved consolidation of Phases 1 and 2 CMR Building upgrades into a single federal budget line item project. The subsequent DOE budget submittal for the CMR Building Upgrades did not include funding requests for Phase 3 Upgrades. As a result of the ESAAB meeting, DOE also directed the official cancellation and close-out of the SNML Project. As stated previously, the scope of the Proposed Action analysis included in this EA is limited to Phase 2 upgrade activities.

DOE's view is that from a NEPA perspective, activities planned as part of the CMR Building Upgrades Project are not connected to those that make up the Phase 1 upgrades and do not require analyses within the same NEPA document. Phase 1 upgrades were developed and are being implemented as immediate actions required to protect the safety and health of workers and were subjected to an appropriate level of NEPA review before being initiated. Phase 2 upgrades are intended to extend the useful life of the facility and are the subject of this EA. Although both Phase 1 and Phase 2 upgrades have now been consolidated into a single budget line item project for budget purposes, the basic purpose and intent and timing for the two phases differ distinctly and analyzing potential environmental effects in separate NEPA analyses is allowable under DOE's NEPA implementing procedures.

COMMENT CODE	LOCATION OF EA REVISIONS
4-2	None required.

RESPONSE

The upgrades in this Proposed Action are not associated with enhanced weapon prototyping and manufacturing capability. The scope of the upgrades discussed in the 1993 LANL Strategic Plan is not within the scope of the Proposed Action. Completion of the CMR Building upgrades would not result in the enhanced capabilities referenced by the commentor.

Reorientation of DOE's mission requirements is described in the final PEIS for Stockpile Stewardship and Management. The LANL stockpile stewardship mission has historically included development and prototyping of new designs or modifications to existing designs for safety, reliability, or functionality. Options about LANL's role in the Stockpile Management mission in a downsized weapons complex are also analyzed in the final PEIS. Options in the final PEIS include expansion of LANL's role in prototype fabrication and small-scale production needed to support a smaller national nuclear stockpile. The Secretary of Energy signed a Record of Decision on December 16, 1996, that will downsize the weapon secondary fabrication

capability at the Y-12 Plant, downsize the non-nuclear component fabrication at the Kansas City Plant, leave the assembly and disassembly capability at the Pantex Plant, and re-establish a pit production fabrication capability at LANL, with the high explosive fabrication capability remaining at the Pantex Plant.

The fully upgraded CMR Building referred to in the 1993 Strategic Plan would have required the upgrades described in the draft EA, plus upgrades to Wings 1, 2, and 4. As noted in the EA, Wing 1 is being used as office space to support the ongoing upgrades of Wings 3, 5, 7, and 9. Wings 2 and 4 are being transitioned into a safe standby mode. New missions assigned to LANL through the SSM PEIS that require new construction or upgrades to existing facilities, or other such activities, will be the subject of future NEPA reviews.

COMMENT CODE	LOCATION OF EA REVISIONS
4-3	Section 1.4, Pages 3 and 4

RESPONSE

DOE determined that Phase 1 upgrades described in Appendix A, Page A-3, were categorically excluded from the need for further documentation in accordance with CEQ regulations (40 CFR 1500) and DOE NEPA Implementing Procedures (10 CFR 1021). This determination was based upon the fact that the scope of proposed work activities fell within the classes of actions listed under 10 CFR 1021, Subpart D, categorical exclusions. The Phase 1 upgrades were determined to neither individually, nor cumulatively, have a significant effect on the environment since they were all interior maintenance or replacement activities. Copies of the approved categorical exclusions have been placed in the DOE public reading room within the Los Alamos townsite.

As discussed in the response to comment 4-1, DOE believes that although Phases 1 and 2 of the CMR Building upgrades have been consolidated into a single line item for budget purposes, analyzing potential environmental affects separately is appropriate due to the distinct purpose and intent of each phase and their timing. Additionally, even though many activities included in the Phase 2 upgrades could have also been individually categorically excluded, DOE elected to perform this EA to analyze their potential cumulative effects and allow for stakeholder participation.

Current DOE NEPA Implementing Procedures (10 CFR 1021) effective August 8, 1996, state that activities designated by the Secretary of Energy as Strategic Systems normally require the preparation of an EIS. The proposed CMR Building Upgrades Project was not designated as a Strategic System by the Secretary. Prior to August 8, 1996, the cost of the proposed CMR Building Upgrades Project fell within the prior DOE designation of a Major System Acquisition (MSA). DOE's previous NEPA Implementing Procedures specified that MSAs normally required and EIS; however, preparation of an EIS was not mandatory. Reviews of projects performed by DOE Defense Programs and Energy Research elements over the past 10 years

indicates that out of 17 MSA Projects, 18 percent were the subject of EISs, and 82 percent were subjected to EA levels of NEPA review and analysis. Within Defense Programs, of nine MSA projects, seven were the subjects of EA's, with two projects, the Special Nuclear Materials R&D Laboratory at LANL, and the F&H Canyon Exhaust Upgrades Project at Savannah River Site (SRS) requiring EISs. The EIS for the SRS F&H Canyon Exhaust Upgrades was never completed; the scope of proposed actions was downgraded due to significant programmatic reductions and the proposed actions qualified as categorically excluded actions. One additional project, the SRS Uranium Solidification Facility, was originally determined to require an EA, which was never completed; the project's environmental analysis was, instead, included in the Interim Management of Materials EIS. A key factor in determining whether or not an EIS is required is whether the action either individually or cumulatively has a significant impact on the human environment. By comparing the scope of the proposed CMR Building upgrades with other MSA projects involving similar activities, a direct correlation can be seen between the scope of activities and the level of NEPA documentation required. Key examples include the Security Enhancements Project at the Pantex plant ($130M), and the SRS Plantwide Fire Protection Upgrades ($458M). Upgrades to the CMR Building and these two projects involve modifications of existing operating facilities with no major changes in operations. The level of NEPA documentation deemed appropriate by DOE to evaluate the potential environmental effects for each was an EA. Additionally, CEQ Regulations (40 CFR 1508) state that an EA serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or FONSI.

The CMR Building Upgrades Project specifically addresses upgrades to meet existing assigned missions. The proposed upgrades would not prejudice the LANL SWEIS. The CMR Building, with proposed upgrades, would constitute a part of LANL's existing infrastructure for the next 30 years. Whether the decisions reached based on the SWEIS analysis are to increase or decrease defense-related operations, the CMR Building would continue to be used for its analytical chemistry capabilities. Irrespective of the decision reached regarding SS&M PEIS, the CMR Building would still be required for current LANL missions. The SS&M PEIS decision to increase LANL's defense role may require additional changes to the CMR Building; those changes would be subject to additional NEPA analysis.

COMMENT CODE	**LOCATION OF EA REVISIONS**
4-4	Section 1.3, Page 2; Section 2.1.3, Page 11

RESPONSE

As stated in the EA, DOE has acknowledged that the CMR Building in its current configuration and status is not in full compliance with modern building codes and DOE Regulations governing non-reactor nuclear facilities. The major purpose of the upgrades under the Proposed Action is to address the major components of the facility infrastructure systems which are either not in full compliance, or have reached the end of their useful design life. A major goal is to increase the

safety and reliability of these building systems in order to extend the useful life of the CMR Building. This will allow DOE to continue analytical chemistry operations in support of existing, ongoing missions, in a safe, environmentally sound manner. As an interim measure, current operations are being conducted with administrative controls and compensatory measures to reduce the level of risk and to address the fact that the facility is not in full compliance with DOE regulations and current building codes. This has had a major negative effect on operations and productivity and has resulted in a significant increase in CMR Building operational costs; however, DOE implemented these measures to ensure operations are being conducted within an acceptable level of risk, with adequate protection for workers, the public and the environment.

Recently-released information regarding the background studies supporting the EA is available in DOE public reading rooms. The 1990 DASMA report has been released, as well as the Conceptual Design Report. Both reports contain information about CMR Building safety deficiencies that would be addressed in the Proposed Action.

COMMENT CODE	LOCATION OF EA REVISIONS
4-5	Section 2.2.1, Page 16

RESPONSE

An initial conceptual estimate for waste volumes indicated that over 16,400 m^3 (21,400 yd^3) of potentially radiological, RCRA and mixed wastes would be generated as a result of the upgrades. This included about 7,340 m^3 (9,600 yd^3) of exhaust air ducting, 840 m^3 (1,100 yd^3) of supply air ducting, 4,890 m^3 (6,400 yd^3) of excavated soil, 3,370 m^3 (4,400 yd^3) of miscellaneous waste (gloves, anti-contamination materials, etc.), and 1,840 m^3 (2,400 yd^3) of other materials. These numbers are estimates and are rounded off.

A value engineering-type process was then used to identify ways to reduce these estimated waste volumes. This process proved to be highly successful since it was determined that: (1) most of the excavated soil would be uncontaminated and that all of the uncontaminated excavated soil could be retained within LANL boundaries and reused as fill; and (2) the bulk of the ducting could be reused, decontaminated, or compacted at LANL. This eliminated 12,400 m^3 (16,170 yd^3) of potential waste; bringing the total projected waste volume needing disposal down to 4,000 m^3 (5,200 yd^3). The waste volume reduction would take place at either the CMR Building or the TA-54 waste management area. Therefore, the volume of 4,000 m^3 (5,200 yd^3) is used for disposal considerations in this EA's effects analysis while the volume of 16,400 m^3 (21,400 yd^3) is used for on-site transportation mileage considerations. The volume of exhaust air ducting, 7,340 m^3 (9,600 yd^3) is used to determine the largest quantity of radioactive material that could be released during an on-site transportation accident (see Section 4.1.5 of the predecisional draft EA).

While these reductions are significant, they are only a first step. Waste minimization would continue during the project. It is expected that future efforts would identify other waste minimization opportunities; however, the 4,000 m^3 (5,200 yd^3) is used in the analysis of the Proposed Action since additional waste minimization activities have not yet been developed and validated.

COMMENT CODE	LOCATION OF EA REVISIONS
4-6	Section 4.1.4, Pages 42-43; Section 4.1.6, Table 4-6, Page 46; Section 4.1.6.1.1, Page 47; Appendix D, Table D-1, Page D-6

RESPONSE

The methodology used for dose calculations is provided in Appendix D. Table 4-6 presents doses to individuals as well as to populations from three different accident scenarios. The table has been modified to clarify estimated population doses and the accompanying text enhanced to clarify the interpretation of Table 4-6. Information in the predecisional draft EA that stated 1 in 9 for a population of 26,770 persons, does not mean that 1 in 9 people will die of latent cancer. This information was intended show that the estimated risk of latent radiation-induced cancer deaths in the exposed population is less than one (0.11). The 0.11 latent cancer fatalities risk is calculated by multiplying the total dose of 216 person-rem for the exposed population by the standard dose-to-risk conversion factor of 5×10^{-4} deaths per person-rem for the general public. This results in a total risk of 0.11, or $\frac{1}{9}$, latent cancer fatalities for the exposed population. Therefore, the predecisional draft EA analysis reflected no excess latent cancer fatalities are expected in the exposed population of 26,770 (the risk is less than 1 [0.11 or $\frac{1}{9}$]).

The January 1996 predecisional draft EA included a dose calculation based upon the amount of radioactive material in the construction zone, in the form of contamination in ductwork and acid drainlines. The calculation did not reflect the fact that the process radioactive material would remain within the CMR Building. The same amount of material would be in the building under either the No Action Alternative or the Proposed Action resulting in the same effect on the environment. The only significant difference in effects between the Proposed Action and the No Action Alternative would be the number of workers who would be in the building that could be either seriously injured or killed as a result of building collapse during an earthquake. Therefore, the predecisional draft EA no longer includes public dose calculations resulting from an earthquake during construction. The purpose of the seismic upgrades in the Proposed Action is to enable the CMR Building to withstand the design-basis earthquake, thereby allowing the facility itself to serve as a containment barrier for radioactive materials that could potentially be released.

COMMENT CODE	LOCATION OF EA REVISIONS
4-7	None required.

RESPONSE

Although several projects and activities take place within the CMR Building, they are ongoing operational or R&D activities, which were subjected to separate and specific NEPA analyses and determinations and are described in Section 2.9. These projects and activities are independent from the proposed CMR Building upgrades. These projects do not require the upgrades under the Proposed Action. This EA addresses the effects of the proposed upgrades, and not the effects of operations.

COMMENT CODE	LOCATION OF EA REVISIONS
4-8	None required.

RESPONSE

Construction activities for the Proposed Action have not begun. This EA is being prepared to evaluate whether a FONSI is warranted for the Proposed Action, or if an EIS is required. All current CMR Building operations are conducted safely within the approved safety authorization basis. The response to Comment 4-4 addresses administrative controls and compensatory measures currently in place at the CMR Building.

COMMENT CODE	LOCATION OF EA REVISIONS
4-Attachment	None required.

RESPONSE

DOE responded to the issues raised in this letter by issuing an Advance Notice of Intent (ANOI) to prepare a LANL SWEIS in the August 10, 1994 *Federal Register*. DOE later issued a Notice of Intent (NOI) to prepare a LANL SWEIS, that included comments received on the ANOI, in the May 12, 1995 *Federal Register*. In both the ANOI and the NOI, the public was initiated to provide input regarding DOE's proposed strategy to proceed immediately with a NEPA review (i.e., the proposed CMR Building Upgrades EA) for actions that would maintain the existing infrastructure, improve the safety of operations, enhance environmental management systems, and improve security. Additional upgrades (e.g., the Phase 3 Upgrades), would be addressed in the LANL SWEIS, or other appropriate NEPA analysis. Consistent with its proposed strategies in the ANOI and NOI, and after considering public comment, DOE made the decision to prepare the proposed CMR Building Upgrades EA. The proposed Phase 3 Upgrades project has since

been eliminated from further consideration pending programmatic decisions regarding future mission changes that could affect use of the CMR Building.

COMMENT CODE	LOCATION OF EA REVISIONS
5-1	None required.

RESPONSE

There are existing levels of contamination within the CMR Building resulting from the past 40-plus years of operations. It is against DOE and LANL policies to allow routine operations to continue in areas where contamination levels exceed levels specified in the DOE Radiation Protection Regulations (10 CFR 835).

It is unclear which wing of the CMR Building the commentor is referring to. As part of the conceptual design process for the Proposed Action, a number of space use configurations were considered. The Proposed Action only includes upgrades to those portions of the facility which are currently programmatically required. Because of existing contamination throughout the facility, the Proposed Action also includes placing Wings 2 and 4 in a safe standby condition. Wings 2 and 4 are not currently required for programmatic needs.

Continued operation of the CMR Building is necessary to meet current LANL mission assignments. Operations in the CMR Building include administrative controls and compensatory measures, and are conducted safely within the approved Safety Authorization Basis.

COMMENT CODE	LOCATION OF EA REVISIONS
5-2	None required.

RESPONSE

DOE structured public meetings on the proposed LANL SWEIS to encourage members of the public to comment on a number of projects, including the proposed CMR Upgrades. In the ANOI for the LANL SWEIS, DOE listed proposed projects and invited members of the public to comment on whether the NEPA reviews for these projects should precede, be incorporated into, or be deferred until after completion of the SWEIS. A brief summary of each project and DOE's recommendation were included in the ANOI. Information sheets were made available and technical experts were present to discuss the projects with interested citizens. DOE has decided not to hold additional public meetings on this proposed project. DOE has invited public participation in this Proposed Action by making the predecisional draft EA available for public review.

COMMENT CODE	LOCATION OF EA REVISIONS
6-1	None required.

RESPONSE

Security upgrades will be performed in accordance with life safety code requirements ensuring safe exit in emergency situations. This EA is based upon the conceptual design report that is incorporated, by reference, in the EA and that has been placed in the DOE public reading room in Los Alamos, New Mexico. At the current conceptual design stage of the project, detailed engineering designs have not been developed. Detailed engineering designs are not prepared until decisions are made to proceed with the proposal, i.e., the go/no go stage. Sufficient information is generally presented at the conceptual design stage with which to assess environmental effects of a proposal. DOE NEPA implementing procedures require that DOE complete its NEPA review for each proposal before making a decision to proceed (e.g., normally in advance of, and for the use in reaching, a decision to proceed with detailed design). As a result, DOE does not expend valuable resources until the decision to proceed has been made. Final design of the CMR Building upgrades has not been initiated.

COMMENT CODE	LOCATION OF EA REVISIONS
6-2	Section 2.2.1, Page 17

RESPONSE

Cleanup of any existing contamination outside of the CMR Building is not part of the Proposed Action and is not analyzed in the EA. The DOE Environmental Restoration (ER) Program addresses LANL site contamination issues. Information provided by the ER Program indicates there are three known SWMUs (now also referred to as Potential Release Sites) in the immediate vicinity exterior to the CMR Building in TA-3, which are directly related to CMR operations. All three SWMUs have been investigated in connection with other work activities, and were found to have no contaminants that exceeded action levels defined in the ER program. Due to the low contamination levels, budget restrictions and other higher priority areas within LANL, the ER program does not currently have a schedule for further action on these SWMUs. Based upon currently available information, there are no plans to perform remediation of SWMUs as part of the Proposed Action. Should additional SWMUs be encountered during construction of the proposed upgrades, remediation or mitigation of adverse effects related to these SWMUs would be performed in accordance with agreements among the DOE, the LANL ER Program, the NMED and the EPA. Additional information concerning contamination levels within TA-3 can be found in LANL's Remedial Field Investigation (RFI) Work Plan for Operational Unit (OU) 1114, dated June 1993, and Addendum 1 to the RFI, dated July 1995. Both documents are available in the DOE public reading room.

COMMENT CODE	LOCATION OF EA REVISIONS
6-3	None required.

RESPONSE

The CMR Building is an R&D facility, as opposed to the Rocky Flats Plant that was a production facility. Therefore, the anticipated amount of plutonium holdup (material trapped) in the CMR Building ventilation system is expected to be less than that at Rocky Flats. Measurements have been made of plutonium and uranium holdup in the CMR Building exhaust ducts (LANL 1992), primarily to determine if sufficient material had accumulated to become a criticality hazard. No significant quantities of plutonium or uranium were found. All duct systems have fissile material holdup estimates far below the 400-gram (equivalent to about 24 Ci of ^{239}Pu) limit suggested by DOE. According to the measurements, the maximum fissionable material hold-up in any duct system is about 6 Ci of ^{239}Pu. Construction activities would be planned to minimize potential exposure during the upgrades.

COMMENT CODE	LOCATION OF EA REVISIONS
6-4	Section 2.1.3, Page 11

RESPONSE

The entire CMR Building ventilation system is monitored by Facility Engineers in the Administrative Wing Operations Center to ensure the system is working properly (the Operations Center is staffed during normal working hours). The LANL Utilities Department, which is staffed 24 hours per day, also receives data from the CMR Building to monitor whether the ventilation system is functioning properly. In addition, gauges in the hallways of Wings 3, 5, 7, and 9 allow personnel to assess if the ventilation system is working properly. Finally, in the laboratory rooms, there are several ventilation system function indicators. Some fume hoods are equipped with operator aids, such as tissues hung from the sash to show air flow direction. Gloves on gloveboxes are drawn into the box when the air flow direction is correct. The ventilation system is also extremely noisy during normal operations and it becomes quite noticeable to operators when it is not functioning.

All CMR Building operations are conducted safely within the approved safety authorization basis. No cessation of building operations is required due to the present lack of monitoring devices or alarms. The current condition of the facility, augmented by administrative controls, provides an adequate level of safety for workers and the public. Similarly, activities and projects are undertaken in such a manner that existing fire protection is adequate and is not compromised. The proposed upgrades would support the continued safe and reliable operation of the facility.

COMMENT CODE	LOCATION OF EA REVISIONS
6-5	None required.

RESPONSE

Toxic vapor emissions during operations have not been a problem in the past; however, vapor emissions are considerations in the design of the proposed upgrades. Hazards associated with construction activities on the acid drain lines would be analyzed during the design process and appropriate mitigation measures taken to protect the workers and the public.

COMMENT CODE	LOCATION OF EA REVISIONS
6-6	None required.

RESPONSE

Detailed design and construction planning activities for the proposed CMR Building upgrades would include structural analysis. This analysis would be performed to validate the basic structure's ability to withstand equipment weight and external forces (such as earthquake and wind), as well as to analyze potential loading conditions that would exist during actual construction. At the current conceptual design stage of the project, detailed structural analyses required to assess these issues are not available. However, the detailed design process, including design validation, would ensure that the appropriate designs are developed and implemented with acceptable margins of safety in accordance with current codes and standards.

COMMENT CODE	LOCATION OF EA REVISIONS
6-7	Section 3.9 (new), Page 37 Section 4.1.6.1.1, Page 47

RESPONSE

In accordance with DOE STD 1020 criteria, the most hazardous portions of the CMR Building would be designed to withstand seismic events in the vicinity of LANL up to and including those expected once in 2000 years. A mean magnitude of 6.0 on the Richter Scale is the dominant earthquake anticipated. The postulated earthquake used to develop the structural design has a peak horizontal ground acceleration of 0.30g at TA-3, site of the CMR Building.

COMMENT CODE	LOCATION OF EA REVISIONS
6-8	Section 2.1.3, Page 11

RESPONSE

The existing ventilation system provides adequate air flow to ensure workers and the public are protected. The condition of dampers and other controls makes operation of the facility more labor intensive and less flexible in response to operations but it is being operated in a safe configuration.

All CMR Building operations are conducted safely within the approved safety authorization basis. Therefore, no cessation of building operations is required. The proposed upgrades would support the continued safe and reliable operation of the CMR Building, which is necessary to meet current LANL mission assignments.

COMMENT CODE	LOCATION OF EA REVISIONS
7-1	Section 2.8 (new), Pages 25 and 26

RESPONSE

The response provided for comment 4-4 addresses commentors' issues with respect to their proposed Alternative 1.

Alternatives 2 through 4, as proposed by the commentor, relate to decommissioning a portion of the CMR Building under various scenarios. A number of space use configurations were considered in the conceptual design process for upgrading the CMR Building. The Proposed Action includes upgrades to those portions of the facility that are currently programmatically required. The Proposed Action also provides for the preservation of those parts of the facility which are not currently required. The DOE does not consider the decommissioning of any portion of the CMR Building as an appropriate use of the facilty. Further discussion of these alternatives has been included in a new Section 2.8, Page 26.

Alternative 5, as proposed by the commentor, is essentially an embodiment of the Proposed Action that is analyzed in the EA.

COMMENT CODE	LOCATION OF EA REVISIONS
7-2	Section 1.4, Page 3

RESPONSE

Current DOE NEPA Implementing Procedures (10 CFR 1021) effective August 8, 1996, state that activities designated by the Secretary of Energy as Strategic Systems normally require the preparation of an EIS. The proposed CMR Building Upgrades Project was not designated as a Strategic System by the Secretary. Prior to August 8, 1996, the cost of the proposed CMR Building Upgrades Project fell within the prior DOE designation of a Major System Acquisition (MSA). DOE's previous NEPA Implementing Procedures specified that MSAs normally required and EIS; however, preparation of an EIS was not mandatory. CEQ regulations, 40 CFR 1508, specify that an EA serves to briefly provide sufficient evidence and analysis for determining whether to prepare and EIS or a FONSI. Additional information is provided in the response to Comment 4-3 concerning the prior MSA designation of the Proposed Action and the corresponding level of NEPA documentation.

COMMENT CODE	LOCATION OF EA REVISIONS
7-3	None required.

RESPONSE

As described in Section 2.2 of the EA, the proposed CMR Building upgrades are based upon a comparison of the current condition of the facility to DOE General Design Criteria (DOE Order 6430.1A) for a new facility, and good engineering practices. The upgrades selected for inclusion in this Proposed Action are the minimum upgrades necessary to extend the life of the facility and meet current mission assignments for the next 20 to 30 years. While additional, more stringent upgrades could be considered, the Proposed Action upgrades are adequate to meet the present goal of extending the life of the CMR Building.

COMMENT CODE	LOCATION OF EA REVISIONS
7-4	Section 4.1.4, Page 40; Section 4.1.6, Table 4-6, Page 45; Appendix D, Table D-1, Page D-6

RESPONSE

The responses to comments 3-6 and 4-6 provide additional information clarifying the risk of latent cancer fatalities. The EA analysis reflects no excess latent cancer fatalities are expected in the exposed population (the risk is less than 1 [0.11 or $\frac{1}{9}$]). Additional information is available in comment responses 3-6 and 4-6.

COMMENT CODE	LOCATION OF EA REVISIONS
7-5	None required.

RESPONSE

DOE, like any other federal agency, is required to develop implementing regulations, orders and standards to ensure compliance with state and federal laws and regulations (OSHA, CWA, CAA, etc.). Numerous state and federal organizations and agencies are responsible for oversight activities to ensure DOE compliance. The primary federal entity providing direct oversight of the DOE is the Defense Nuclear Facilities Safety Board (DNFSB). The DNFSB is chartered by Congress to evaluate nuclear operations in the DOE complex and make recommendations to the Secretary of Energy to enhance safe operation. The DOE and the DNFSB share the common goals of ensuring protection of public and worker health and safety, and the well being of the environment. Safety and design documentation for the CMR operations and the proposed CMR Building Upgrades Project been forwarded to the DNFSB. They have been monitoring the project and will continue to review its development and implementation, if DOE decides to go forward with the Proposed Action. Also see responses to comments 3-6, 4-6 and 7-4.

COMMENT CODE	LOCATION OF EA REVISIONS
7-6	None required.

RESPONSE

The functioning of CMR Building safety systems and alarms is not dependent upon computer systems either currently installed or planned as part of the proposed upgrades. The intent of the Proposed Action is to install an integrated computerized system in the operations center that will monitor the safety alarms but not control their functions. The Proposed Action would also provide for the installation of stand-by power for these monitoring systems if primary power is lost.

COMMENT CODE	LOCATION OF EA REVISIONS
7-7	None required.

RESPONSE

The potential for criticality accidents during construction is very low, as reflected in Table 4-4. The duct holdup study (incorporated by reference in the EA) indicates there is not enough plutonium present for criticality to occur. Administrative controls would be in effect during the proposed upgrades to reduce confusion or human error that might increase the chances of a

criticality event. There has never been a criticality accident in CMR Building. If necessary, based upon additional hazards analysis that would be performed during detailed design, special procedures would be implemented during construction to eliminate the possibility of criticality accidents.

COMMENT CODE	LOCATION OF EA REVISIONS
7-8	None required.

RESPONSE

The EA states that there would be no disproportionately adverse consequences to Environmental Justice populations. The analysis in the EA presents the effects of the Proposed Action both under normal conditions and accident scenarios upon the local communities. This analysis reflects no excess latent cancer fatalities are expected in the exposed population (see response to 3-6). Foreseeable effects on land use from waste disposal, air quality, and transportation, would not have significant health effects on human populations, and would fall within regulatory compliance requirements.

COMMENT CODE	LOCATION OF EA REVISIONS
7-9	New Section 3.9, Page 37

RESPONSE

The design basis accident analyzed in the safety analysis report under development for the CMR Building is the same earthquake accident analyzed in this EA. As discussed in the responses to comments 3-6 and 7-4, the predecisional draft EA has been modified to better explain the effects should an earthquake occur during the upgrades.

Geologically, LANL is located within the northern Rio Grande rift, a seismically active area. Although surface-faulting earthquakes have not occurred historically in the LANL region (within 100 km [60 mi]), geological evidence indicates they have occurred during the Quaternary Period (1.6 million years). In particular, investigations on three of the most significant and closest faults to the Laboratory (Pajarito, Rendija Canyon, and Guaje Mountain) have produced evidence of a number of surface-faulting seismic events. The evidence indicates the most recent occurred between 4,000 to 6,000 years ago. The Valles Volcanic province is situated just west of LANL. Physical evidence indicates the last volcanic eruption occurred approximately 60,000 years ago. Presently, the volcanic center that produced the past eruptions is considered to be dormant. The Valles Volcanic province is noteworthy for its lack of seismicity.

Evaluation of the siesmic hazard for LANL TA-3, where the CMR Building is located, provides results in terms of mean annual probability of exceedance. In any one year, the chance of a seismic event producing a peak horizontal ground acceleration of 0.14g is 1 in 500. In any one year, the chance of a seismic event producing a peak horizontal ground acceleration of 0.30g is 1 in 2000. The seismic hazard evaluation produced results that have been scrutinized by a variety of subject matter experts, including non-LANL employees. A significant amount of research, investigation, and evaluation was expended over a four-year period (1991-1995) to obtain seismic information. Although bounded by a range of uncertainty, these results are based upon state-of-the-art technology and represent the best estimates available.

COMMENT CODE	LOCATION OF EA REVISIONS
7-10	Section 4.1.4, Pages 42-43; Section 4.1.6, Table 4-6, Page 46; Appendix D, Table D-1, Page D-6

RESPONSE

Rain falling through a release plume would capture material from the plume and deposit it onto the ground near the release point thereby reducing the airborne concentration of the plume. A plume could potentially reach Santa Fe or Albuquerque, depending upon meterological conditions at the time of an accident. However, doses would be less than those presented in Table 4-6 because the plume would disperse as it travels downwind. The risk resulting from such an event would be less than one additional cancer fatality in the exposed population, regardless of wind direction. The predecisional draft EA text and Tables 4-6 and D-1 have been revised to clarify population risk. The response to comments 3-6 and 4-6 also provide additional information clarifying population risk. Predecisional draft EA population figures have been rounded and are based on the 1990 U. S. Census, projected to 1995.

COMMENT CODE	LOCATION OF EA REVISIONS
7-11	None required.

RESPONSE

Los Alamos County currently has an evacuation plan under development that addressess potential accidents. The proposed title of the plan is, "Los Alamos County All Hazards Emergency Operations Plan." For futher information on the status of the plan, the commentor should contact the Office of the Emergency Management Coordinator for Los Alamos County at (505) 662-8035.

COMMENT CODE	LOCATION OF EA REVISIONS
7-12	None required.

RESPONSE

CMR Building exhaust HEPA filters are far enough away from the wings so that the physical separation prevents laboratory fires from damaging the filters. Fires would be contained within the wings. The CMR Building also uses fire resistant HEPA filters, qualified by Underwriter's Laboratories. No potential fire accident scenario has been identified that could cause the filters to burn.

COMMENT CODE	LOCATION OF EA REVISIONS
7-13	Section 4.1.6.1.1, Page 47; Section 4.1.6.1.1, Table 4-7, Page 47 (new).

RESPONSE

The earthquake accident scenario has been revised to consider a more severe earthquake event with total building collapse. The scenario assumes that all workers in the CMR Building are either killed from collapse of the building or severely injured.

COMMENT CODE	LOCATION OF EA REVISIONS
7-14	Section 5.0, Page 51

RESPONSE

Text has been added to the EA to clarify potential permit requirements. Although not actually a permit requirement, 40 CFR 61 requires prior EPA approval for new construction or modifications that may increase emissions. EPA approval would not be required for the proposed CMR Building upgrades since the project will not increase LANL emissions. Since the scope of this EA is limited to only the potential environmental effects associated with construction of the proposed upgrades, operational activities are not within the scope of this EA. It is possible that a change to the current operations within the CMR Building would require permits or EPA approval, however, such issues would be driven by other programmatic decisions and subject to their own independent NEPA review.

COMMENT CODE	LOCATION OF EA REVISIONS
7-15	None required.

RESPONSE

Aircraft crash data from 1988 remain valid, therefore, estimates of the probability of airplane crashes remain valid. The 1988 data, which included Ross Aviation aircraft, is bounding as there is no longer a contract aviation carrier based at the Los Alamos Airport. Since Ross Aviation no longer operates in Los Alamos, the probability of an aircraft crashing into the CMR Building would be expected to be lower; however, the revised probability was not recalculated for this predecisional draft EA.

COMMENT CODE	LOCATION OF EA REVISIONS
7-16	Section 2.2.1, Page 16; Section 4.1.2, Page 41

RESPONSE

The predecisional draft EA has been revised to clarify waste issues. Initial analyses of waste are based upon conceptual design work. Additional waste characterization, to include analysis, would be performed as part of detailed design.

LLW could be disposed of at the LANL TA-54, Area G, LLW disposal area. Area G has several active pits in the currently developed area. While the area is nearing its original design capacity based on the use of past pit designs and placements, the currently defined active disposal area may be sufficiently great enough in size to accommodate more pits for disposal activities using newly engineered designs. Room is also available for a number of shafts to be constructed between existing pits, if necessary. Plans being considered for the continued management of LLW for LANL include maximizing the use of the active pit area at Area G for the next ten years; the expansion of waste disposal into the unused western portion of Area G; and offsite transport and disposal of wastes, particularly soils from the Environmental Restoration program (all of which will be included for analysis in the LANL SWEIS). Without the incorporation of any new disposal pit designs or the use of shafts for disposal at the existing active disposal site at Area G, the landfill area would not be filled to capacity before the end of 1998, based upon current projections that include receiving waste from the proposed CMR Building upgrades. The current schedule for the proposed upgrades calls for construction to be conducted over a five-year period, from 1997 through 2002. LANL's overall waste management strategy for the next 10 years, including a proposed expansion of Area G, is to be analyzed in the LANL SWEIS, as stated in the Notice of Intent published in the May 12, 1995 *Federal Register (60 FR 25697)*. The ROD for the SWEIS is expected in 1997 or early 1998, before the developed part of Area G is filled. Depending upon waste management decisions regarding Area G, waste will either be disposed of at the expanded Area G, its replacement facility, or off site.

COMMENT CODE	LOCATION OF EA REVISIONS
7-17	Section 4.1.2, Page 40

RESPONSE

Proposed CMR Building upgrades include an estimated reduction in liquid exhaust duct washdown waste generated during subsequent operations. This reduction is based upon engineering study activities. The duct washdown recycle system upgrade has been identified as an effective means to reduce the volume of liquid waste. During the conceptual design process, alternative technologies to reduce the volume of washdown waste were considered. The proposed upgrades were determined to be the most effective solution for meeting the operational requirements of the system. This proposed upgrade could reduce the amount of liquid radioactive waste generated from future operation of the duct washdown system to 454,300 liters per year (120,000 gallons per year).

The amount of TRU waste generated each year depends upon operations. TRU liquid waste is managed through the LANL Waste Management Program, and currently is slated for final disposition at WIPP. The revised predecisional draft EA has been modified to include information regarding disposition of TRU liquid waste potentially generated by the proposed upgrades.

COMMENT CODE	LOCATION OF EA REVISIONS
7-18	None required.

RESPONSE

The quantity and composition of radionuclides not removed by the RLWTF (discharged) are published in the Annual Surveillance Report, Section V, Page 121, Table V-6 (LANL 1996). During the 1991 thunderstorm event, when water filled the sediment traps in Mortandad Canyon, sediment is believed to have remained in the traps and was not transported down stream. RLWTF discharges are in full compliance with the NPDES Permit issued by the EPA under the Clean Water Act. Also see comment response to Comment 2-5.

COMMENT CODE	LOCATION OF EA REVISIONS
7-19	Section 4.1.5, Page 44; Section 4.1.6, Page 45; Section 4.1.6.1.2, Pages 47 and 48; Appendix D, Sections D.2.1 and D.2.2, Pages D-2 and D-3.

RESPONSE

The EA has been revised to clarify the effects of transportation and transportation accidents. Information regarding numbers of shipments, waste material type, and numbers of kilometers (miles) per shipment is in Appendix D, Section D.2.2. Waste generated by the Proposed Action would be transported in DOT-approved shipping containers. Certification of shipping containers by DOT is specific to the type of waste to be transported. Requirements for certification are in 49 CFR §173.401, Subpart I.

COMMENT CODE	LOCATION OF EA REVISIONS
7-20	Appendix D, Section D.1

RESPONSE

TEDE is essentially equivalent to CEDE for materials that could be released during potential accidents considered in this EA.

COMMENT CODE	LOCATION OF EA REVISIONS
7-21	None required.

RESPONSE

The information on these parameters is provided in Appendix D, page D-4.

COMMENT CODE	LOCATION OF EA REVISIONS
7-22	None required.

RESPONSE

The term "mixed waste" used in the predecisional draft EA refers to both low-level and TRU mixed waste. Where the distinction is important to the discussion, the specific waste type designation has been used.

COMMENT CODE	LOCATION OF EA REVISIONS
7-23	None required.

RESPONSE

Plutonium processing includes many different activities. The largest "plutonium processing" activity at LANL is stabilization and packaging undertaken to address the DNFSB 94-1 recommendation. This work will place the LANL inventory of 2.7 metric tons of plutonium metal and oxide into double-contained stainless steel cans, meeting DOE STD 3013-94. LANL will complete the stabilization by 2002 in line with the Implementation Plan submitted by the Secretary of Energy to the DNFSB. Another aspect of "plutonium processing" is the R&D support provided to other DOE sites to meet the DNFSB 94-1 recommendation. Work is also underway to determine how to perform the minimum processing of residues that exist at the Hanford Site, SRS, and the Rocky Flats Plant into a form for safe storage. Storage is needed until a national Fissile Material Disposition Program has determined the proper disposal strategy, consistent with the non-proliferation goals. Some "plutonium processing" supports the Fissile Material Disposition Program. Currently, this work is aimed at the dematerialization of weapons components and placing plutonium into STD 3013-94 storage cans, along with mixed oxide fuel work to support the multi-national options. Some "plutonium processing" supports ongoing studies into the long-term aging characteristics of weapons components and the destructive evaluation of weapons returned from the Pantex Plant. A very small capability has been maintained at LANL to dismantle weapons components and place fissile materials into safe storage.

The CMR Building supports all of these efforts by providing chemical analysis, isotopic analysis, analytical standards and material characterization. The upgrades outlined in Phase 2 support continuation of the plutonium processing efforts outlined.

COMMENT CODE	LOCATION OF EA REVISIONS
7-24	Section 2.1, Page 9.

RESPONSE

Wings 6 and 8 were planned but never constructed.

COMMENT CODE	LOCATION OF EA REVISIONS
7-25	None required.

RESPONSE

The proposed Wing 3 filter tower is needed to allow installation of new HVAC systems with HEPA filters, while existing systems in the existing filter tower remain operational. New filter towers for Wings 5 and 7 are not proposed at this time because existing filter plenums can be reused and the fans modified, as necessary, with a minimal amount of downtime. The need for a new Wing 3 filter tower may be eliminated during detailed design; however, it is included in the current scope of the Proposed Action to bound potential effects.

COMMENT CODE	LOCATION OF EA REVISIONS
7-26	None required.

RESPONSE

The CMR Building is an operating laboratory facility, so actual contamination levels vary. Office and administrative areas are clean (no radiation or contamination levels above background).

Spills or leaks in laboratories are cleaned up promptly, so these spaces are normally clean.

Residual contamination exists in glove boxes, fume hoods, and equipment areas. The levels of contamination in these areas varies, depending upon the operations, but is always managed so as not to be a hazard to workers in accordance with DOE directives and regulatory requirements.

COMMENT CODE	LOCATION OF EA REVISIONS
7-27	Section 2.2.1.13, Page 22

RESPONSE

Safe standby means that loose surface contamination would be removed or stabilized. Equipment would be placed in a condition where maintenance can be performed, but operations cannot occur. The purpose of this is to ensure that contamination does not spread and equipment does not deteriorate until decisions can be made regarding future programmatic needs. Continued maintenance and surveillance are both part of the safe standby procedure.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-1	None required.

RESPONSE

These comments begin with a discussion of activities underway by DOE in 1989. Given the world events that have occurred during the past seven years, it is not surprising that a great deal of past planning, discussed in the documents cited, has changed. The SNML was proposed at a time when there were five new weapons systems in various phases of development, and a significant shortage of plutonium existed to support the planned production schedules. The Rocky Flats Plant in Colorado was still producing at close to peak capacity. Since the time initial plans were developed for the proposed SNML and then the CMR upgrades, target production levels for a Rocky Flats Plant replacement facility have dropped from 600 pits per year to the levels discussed in the draft SSM PEIS, as first START I then START II were negotiated, then ratified by the Senate. DOE planning reflects the evolution that has occurred as significant changes have been made in the nation's nuclear deterrent policy. At each stage of these changes in national policy, nuclear materials support work performed at LANL has been redirected. The most recent planning document describing DOE's plans for performing the nuclear deterrent role is the draft SSM PEIS.

In the draft SSM PEIS, the ongoing mission for the DOE's weapons laboratories is outlined. Continued support for the nuclear stockpile safety and reliability is expected to be maintained by the national laboratories. The knowledge base must be maintained for eventual dismantlement of the stockpile.

If LANL is selected for a production role in the SSM PIES's ROD(s) then some activities could be moved into the CMR Building from TA-55. These activities would be moved into space upgraded, later, for this purpose. Current plans in the CMR Building Conceptual Design Report only discuss the upgrade of space needed to support the existing set of LANL missions. The report also discusses the need to put Wings 2 and 4 into a safe standby condition since they are not required to support the existing mission set. Under the SSM PEIS ROD(s), additional work may be assigned to LANL. The current preferred alternative describes additional plutonium work. One alternative developed in the draft SSM PEIS is to relocate the weapons secondary component fabrication mission to LANL. This option is not one of the preferred alternatives announced by the Secretary of Energy for the draft SSM PEIS. If either, or both, of these changes take place, Wings 2 and 4 may be needed to support this additional work. Analysis of the potential effects of implementing such a decision would be included in the LANL SWEIS, currently in progress.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-2	None required.

RESPONSE

CMR Building upgrades would support continued operations to meet currently-assigned missions, and could provide analytical chemistry capability to LANL laboratory facilities, including DARHT. On April 16, 1996, the U. S. District Court for the District of New Mexico filed a Memorandum of Opinion and Order for litigation regarding the Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility. The court found that DARHT is supported by an adequate Environmental Impact Statement and qualifies as an interim action that can proceed while DOE completes the SS&M PEIS and drafts a new LANL SWEIS. In the Memorandum, the judge stated that the larger influence for decisions reached through those analyses is posed by the existing infrastructure at LANL, both in terms of intellectual and technological resources, including hardened nuclear-qualified space for plutonium processing. In the case of the CMR Building Upgrades Project, the project is proposed for DOE to meet current LANL mission needs in a safe, secure and environmentally sound manner, and the CMR Building would make up a part of the existing LANL infrastructure over the foreseeable future. If the decision reached for the proposed CMR Building upgrades is the No Action Alternative, the CMR Building would still make up a part of the LANL infrastructure, but for only about the next 5 to 10 years. Beyond about five years, the capability to perform analytical chemistry would still be needed at LANL, but the reliability and margin of safety of the CMR Building would be lowered and the risk of operating the facility would become unacceptable to DOE. In any case, a decision made to implement either the proposed upgrades or the No Action Alternative would not alter the need for operation of the DARHT Facility, nor would the DARHT Facility's operation alter the need met by the proposed CMR Building upgrades. As such, there is no direct connection between the proposed CMR Building Upgrade Project and the DARHT Facility.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-3	None required.

RESPONSE

National policy forbids the production of new nuclear weapon physics package designs. The policy also requires DOE to maintain the capability to repair and replace warheads in the existing stockpile. Until national policy directs that there will be no national nuclear force, the ability to understand the aging of weapons in the existing stockpile, and replace old components with new or refurbished components, will be needed. The CMR Building plays a significant role in providing the facilities for understanding the aging of weapons, weapons components and materials removed from weapons. The CMR Building also offers analytical chemistry support to understanding the ability of other countries to develop nuclear weapons.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-4	None required.

RESPONSE

DOE has made no decisions to proceed or not proceed with the proposed CMR Building upgrades, and has prepared this NEPA review to assist in making this decision. The documents referred to pre-date the pending decision, hence are "predecisional"; such predecisional documents (which in some cases are now obsolete) were used to assist at various stages of the conceptual design process.

In response to a 1995 Freedom of Information Act (FOIA) request and requests relating to the LANL SWEIS, the Deputy Assistant Secretary for Military Applications (DASMA) Study - Predecisional Report was released to the DOE public reading room on March 15, 1996. As part of the same FOIA request, the ISAR was subjected to a classification review and DOE determined that the document is not releasable. This determination was based on the fact a significant portion of the document may be classified as "For Official Use Only," the entire document contains a significant amount of "Unclassified Controlled Nuclear Information" and the document, interim by definition, will be superceded by the Safety Analysis Report currently under development.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-5	Section 5.0, Page 51

RESPONSE

The CMR Building was brought into compliance with NESHAP air monitoring requirements as part of the Phase 1 Upgrades, not as part of the Proposed Action. Therefore, acknowledgement in the EA is not needed. Final compliance with CAA regulatory requirements has been achieved during calendar year 1996 rather than the previous deadline of March 30, 1998.

Administrative controls for actions in the CMR Building vary according to operations being conducted. Radionuclide inventories' control is not part of the proposed upgrades since that relates to current CMR Building operations. Therefore, it is not necessary to include discussion of radionuclide inventories in the EA.

Text has been added to the predecisional draft EA to clarify potential permit requirements. Although not actually a permit requirement, the Code of Federal Regulations (40 CFR 61) does require prior EPA approval for new construction or modifications that may increase emissions. However, EPA approval would not be required for the proposed CMR Building Upgrades Project since the project will not increase LANL emissions. The comment addresses potential future

operational activities in the CMR Building that would be required to have a permit. Since the scope of this EA is limited to only the potential environmental effects associated with construction of the proposed upgrades, operational activities are not within the scope of this EA. It is possible that a change to the current operations within the CMR Building would require permits or EPA approval, however, such issues would be driven by other programmatic decisions and subject to their own independent NEPA review.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-6	None required.

RESPONSE

Stack monitors, and the UPS system that supports them, are included in Phase 1 of the CMR Building upgrades. These systems were originally designated as Safety Class systems. An interpretation of Safety Class Items in DOE Order 6430.1A was issued by DOE in September 1993, that stated "the designation of Safety Class Items shall be based on the disciplined analysis required by the DOE Orders 5480.22 and 5480.23 and limited to those structures, systems, and components that are (1) determined by safety analysis to be necessary to prevent or to mitigate accidents or transients that either involve the assumed failure of, or present a challenge to, the integrity of physical barrier that prevents the uncontrolled release of radioactive materials that could threaten the health and safety of the public and pose an unacceptable risk to workers; and (2) documented in the Technical Safety Requirements (TSR)s as being necessary to ensure the performance of their safety functions." The results of the safety analysis indicate that the stack monitors and UPS are not Safety Class items. The classification of these systems was changed at the time this determination was made; re-classification of these systems is not anticipated.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-7	Section 2.2.1.3, Page 18

RESPONSE

Currently, no further redundant filtration is in place for Wing 3. The existing filter plenums do not allow for installation of HEPA filters. The Proposed Action would replace Wing 3's existing filters with higher efficiency rated filters. The text in Section 2.2.1.3 has been revised to clarify installation of HEPA filters.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-8	None required.

RESPONSE

Potential Environmental Justice effects from CMR Building operations will be addressed in the new LANL SWEIS.

Concerns regarding waste volume reduction are addressed in the response to comment 5-5. Concerns regarding the proposed expansion of Area G are addressed in the response to comments 3-3 and 7-16.

DOE land transfers are being considered separately, and when this issue is ready for decision additional NEPA analysis will be performed. The ROD for the Waste Management PEIS is anticipated in early 1997; although decisions may affect LANL, preferred alternatives are currently unknown.

Transporting waste from the proposed CMR Buildings upgrades to Area G for disposal would not accelerate the decision to expand Area G; expansion would depend upon the LANL SWEIS ROD, as described in the response to comment 7-16.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-9	Section 3.9 (new), Page 36

RESPONSE

Commentor has provided additional comments in his letter 8B, Page 1, concerning the dose rate during a seismic event. The Comment 7-9 response provides additional information about seismic event probability and magnitude; additional seismic information is provided in the revised predecisional draft EA.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-10	None required.

RESPONSE

The Comment 4-1 response provides additional details and history for the Proposed Action as well as the other phases of the upgrades.

Although several projects and activities take place in the CMR Building, they are independent from the CMR Building upgrades. The Fire Resistent Pit (FRP) project has been cancelled. Holding spent fuel rods is an ongoing LANL activity that will be addressed in the LANL SWEIS. The Radioactive Source Recovery Program EA (DOE/EA-1059) was completed in December 1995, and a FONSI was issued. Proposed CMR Building upgrades do not incorporate any new capabilities required by DARHT.

COMMENT CODE	LOCATION OF EA REVISIONS
8A-11	None required.

RESPONSE

Comment 8A-11 represents a summary of points raised and responded to in responses 8A-1 through 8A-10. As pointed out previously, this EA is being prepared to evaluate whether a FONSI is warranted for the Proposed Action, or if an EIS is required. CEQ regulations (40 CFR 1508) specify that an EA serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.

COMMENT CODE	LOCATION OF EA REVISIONS
8B-1	Section 4.1.4, Page 42; Section 4.1.6, Table 4-6, Page 46; Appendix D, Table D-1, Page D-6

RESPONSE

The predecisional draft EA text has been revised to clarify the dose to the public in the event of an accident. See responses to Comments 3-6 and 4-6.

COMMENT CODE	LOCATION OF EA REVISIONS
8C-1	Section 2.2.1.13, Page 22

RESPONSE

In the revised predecisional draft EA, the bounding scope description of safe standby activities within the Proposed Action has been clarified. Reconfiguration of Wings 2 and 4 is not the subject of this Proposed Action.

COMMENT CODE	LOCATION OF EA REVISIONS
9	None

RESPONSE

DOE appreciates the notice provided by the State of New Mexico of the adequacy of our response to their comments.

COMMENT CODE	LOCATION OF EA REVISIONS
10 - 1	None

RESPONSE

The proposed upgrades to the ventilation system are needed to improve the reliability of function (i.e., the confinement zone separation throughout each wing), to maintain proper air flows, and to add instrumentation that would notify workers of systems failures. As explained in Chapter 2 of the EA, the upgrades to this system would replace some of the forty-year-old system components and would reuse much of the ducting in reconfigured layout in order to enhance the confinement zone separation. Because of changes in safety standards and monitoring requirements, etc., over the years since the 1950s when the system was installed, there is a need to perform these upgrades now. Engineering details concerning the amount of ductwork to be replaced, materials to be used, airflows, etc., will be established as the project design proceeds through the Title I and Title II project design process. The EA is based on a completed Conceptual Design Report which, while not specifying final engineering details, provides sufficient technical information from which to assess potential environmental, health and safety consequences. Comments relative to the type of material to be used for those portions of the existing ductwork will be provided to LANL for consideration as part of the design process. Additional information on the deficiencies identified with the system that would be corrected in the course of the upgrades project is provided in Appendix C of the EA.

COMMENT CODE	LOCATION OF EA REVISIONS
10 - 2	None

RESPONSE

The health risk assessments performed for the Predecisional Draft EA are designed to be very health protective rather than "realistic." The intent is to demonstrate what the worst possible health risks would be if a certain accident occurred or a proposed action was undertaken. In the case of an accident scenario, an effort is made to choose a reasonable scenario that might happen

based on circumstances unique to LANL. You are correct in your statement that no effort has been made to show the uncertainties that are built into the risk calculations at every step of the process. While it would be easy to include this information, it would not likely be particularly meaningful to the average reader, and exclusion of the information does not negate the overall statement that the resulting calculated risk number is conservative or "health protective." The risk assessment calculation methodology used for the EA conforms to current industry standards, specifically those established by the Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC).

COMMENT CODE	LOCATION OF EA REVISIONS
11 -1	None

RESPONSE

Your statement supplies several rationales for deferring the proposed CMR Building upgrades. Each rationale is responded to as a separate comment, beginning with the first point raised by your first paragraph. Your first point is that the upgrades are part of a plan to convert LANL to the manufacture of plutonium (Pu) pits as part of the Stockpile Stewardship Program. As stated in our earlier response to comment 4-2, the CMR upgrades are needed to support current mission assignments into the future for the next 20 to 30 years. Decisions reached by DOE resulting from the SS&M PEIS assign a new mission of pit manufacture to LANL; however, additional NEPA analysis will be required to determine how to accomplish the mission assignment at LANL. The current plan is to incorporate the NEPA analysis for this new mission assignment into the new LANL Sitewide EIS in preparation.

COMMENT CODE	LOCATION OF EA REVISIONS
11 - 2	None

RESPONSE

Your second point is that LANL has already begun the transfer of Pu pits to LANL. The provided reference for this information is the Testimony of Siegfried S. Hecker, Director, Los Alamos National Laboratory, Hearing of the Subcommittee on Military Procurement, Committee on National Security, United States House of Representatives, March 12, 1996. However, the statement of Dr. Hecker's that is referenced does not refer to the proposed new mission of pit manufacture. It refers to equipment being moved to LANL to support the ongoing current missions of pit surveillance and rebuild that are in place at LANL.

COMMENT CODE	LOCATION OF EA REVISIONS
11 - 3	None

RESPONSE

The $141.6M budget addition for stockpile stewardship activities at LANL would not be utilized for the CMR upgrade activities proposed. The funding for this proposal is separate from the $141.6M authorization. The final SS&M PEIS has been released by the Secretary, with a Record of Decision signed on December 19, 1996.

COMMENT CODE	LOCATION OF EA REVISIONS
11 - 4	None

RESPONSE

Safety at LANL is a top issue with DOE/LAAO and LANL management. There will always be a certain risk to workers and to the public from LANL operations. Every effort is being made to insure that the risk is not realized in fact. The added risk to LANL workers and the public from the inclusion of pit production at LANL is addressed in the SS&M PEIS, and will be further addressed in the LANL Sitewide EIS as incorporation of mission changes are analyzed for impacts.

COMMENT CODE	LOCATION OF EA REVISIONS
11 - 5	None

RESPONSE

The human health risk assessment calculation methodology used for the EA conforms to current industry standards, specifically those established by the EPA and NRC (see comment response to 10-2). When additional methodologies become accepted by our regulators, they will be incorporated into our NEPA documents and others. The potential for worker exposure to Pu during the course of the upgrades was based on CMR Building duct holdup radiological surveys. Risk from terrorists is not generally considered for EA analysis and was not included in the Predecisional Draft EA; it is unclear what reference regarding underestimation this comment relates to. It is true that there is no way to prevent forest fires in the vicinity of LANL; however, it is equally impossible to eliminate the potential for wildfire from other sources, such as grass or brush fires or gas-line fires, etc., were the radioactive materials moved elsewhere. LANL was originally located in a remote, unpopulated area where the danger of forest fires was minimal. Fifty years have slightly changed the population base for the general area, though it remains

fairly remote from major population centers, and in that time no forest fire has come closer than within 3 miles of actually burning the core area of LANL facility development. LANL remains a suitable locale for the DOE missions assigned to it.

COMMENT CODE | **LOCATION OF EA REVISIONS**

12 - 1 | None

RESPONSE

See earlier responses 4-1 and 4-3.

COMMENT CODE | **LOCATION OF EA REVISIONS**

12 - 2 | None

RESPONSE

See earlier responses 4-1 and 4-3.

COMMENT CODE | **LOCATION OF EA REVISIONS**

12 - 3 | None

RESPONSE

See earlier response 4-1.

COMMENT CODE | **LOCATION OF EA REVISIONS**

13 - 1 | None

RESPONSE

See responses to commentors 4, 7, and 8. It is DOE's opinion that information developed in the EA analysis indicates that implementation of the CMR Upgrades Project would not have significant environmental impacts. The issue of the action requiring an EIS based on prior DOE implementing regulations for NEPA is an incorrect paraphrase of the regulation. Current DOE implementing regulations (10 CFR 1021, Revision effective 8/8/96), like their predecessors, lists types of proposed actions that normally require the preparation of an EIS. DOE does not agree

with the statement that there has been improper segmentation of corrective actions relating to the CMR Building, nor does it agree that the EA analysis has failed to take a "hard look" at potential environmental effects.

COMMENT CODE	LOCATION OF EA REVISIONS
13 - 2	None

RESPONSE

See Chapter 2.9.

COMMENT CODE	LOCATION OF EA REVISIONS
13 - 3	None

RESPONSE

DOE does not agree that the proposed CMR Upgrade Project either "...is, or is closely similar to, one which normally requires the preparation of an environmental impact statement..." (40 CFR 1501.4e(2)). DOE does not plan to release the finding of no significant impact to the public "...for 30 days before the agency makes its final determination whether to prepare an environmental impact statement and before the action may be begun." Individual upgrades to an existing facility are routinely categorically excluded from the requirement to prepare an EA or EIS under DOE implementing procedures for NEPA. It is DOE's position that the EA was prepared for the proposed CMR upgrade activities to consider the potential cumulative effects of the upgrades to determine their potential for significance, and that the upgrade activities neither individually nor cumulatively are, or are similar to "...one[s] which normally requires the preparation of an environmental impact statement..." (40 CFR 1501.4e(2)).

Appendix B
Modifications to the CMR Building

Ventilation System Upgrades (1973-1974)

Upgrades to the ventilation system included the replacement of bag filter systems with dual HEPA filters in Wings 2, 5, and 7 between 1973 and 1974. The Wing 3 bag filter system in the Fan Exhaust, FE-20, was replaced with a box filter system in September 1991. The box filter system increased the efficiency rating from 60 percent to approximately 85 percent.

Fire Protection System Upgrades (1978)

The fire protection system was upgraded throughout the building to a wet-pipe sprinkler system for Ordinary Hazard Group II to meet the requirements of NFPA-13 and NFPA-24 in 1978. These upgrades were part of a program to upgrade fire protection systems at DOE facilities. In 1987, a halon system was installed in the main vault (Room S021B) and in the Wing 3 vault (Room 3161) to meet the NEPA-12A requirements.

Surety Facility Upgrades (1981/1992)

The Carcinogen/Surety Laboratory (Rooms 4009 and 4034) was used for studies and experiments involving carcinogens and surety materials, during the 1970s and 1980s. Major modifications were done in 1981 to meet the requirements of the U. S. Army's Medical R&D Command Surety Standards. Included were modifications to the filter plenum to accommodate very thick (and heavy) charcoal filters. All drains were plugged, and all sinks were modified to drain into plastic containers to allow water to be chemically decontaminated prior to removal from the laboratory. In 1992, surety laboratory decontamination and decommissioning was completed.

Asbestos Repair and Removal (1984-Present)

This is an ongoing effort that is part of a DOE/LANL program to remove or isolate asbestos throughout the building.

Acid Drainline Replacement (1984)

The acid drainline to TA-50, RLWTF, was replaced in 1984. Most Pyrex™ drainlines were also replaced with stainless steel lines in locations where Pyrex™ was considered vulnerable to accidental physical damage.

Evacuation System - Public Address (PA) and Alarms (1984)

The PA and alarm systems were upgraded in 1984. Installation of additional speakers to ensure all locations of the building have PA coverage was performed to ensure alarms are heard by all building personnel. As a result of a power loss experienced in 1988, a UPS was added to this system in 1989.

Addition of Curbing Around Equipment (1985)

In 1985, concrete curbing was added around equipment areas in the basement for containment of potential spills.

Vacuum System for Continuous Air Monitors (CAMs) (1987)

The environmental sampling units were split from the house vacuum system in 1985 to provide an independent vacuum supply for the CAMs.

Exhaust Duct Cool-Down System (1987)

The exhaust duct cool-down spray control system was replaced in 1987. The cool-down system is designed to suppress a ductwork fire before it could reach the HEPA filters.

HVAC Controls (1987)

The original relay logic controls in Wings 2, 3, 4, 5, and 7 were replaced with an industrial computer control system and graphic status display in 1987. The new system provides a central building location for monitoring the HVAC system, as well as a central point for alarm readout and parameters in the HVAC, cooling water, steam, compressed air, and vacuum systems. Capability for monitoring of ventilation pressures, temperatures, and pressure drops across HEPA filters was also added. Monitoring capability of ventilation system status and process variables in Wing 9 was added in 1989.

Main Storage Vault (1987-1994)

Construction of the Main Storage Vault, in 1986, provided centralized storage and consolidation of radioactive materials as well as the reduction of inventories in individual wings. The vault was constructed to the requirements of DOE Order 6430.1 for Category I Nuclear Facilities, and meets seismic design criteria of .33 g horizontal. The vault features computerized ventilation control, an annunciator system, and dual HEPA filtration on supply and exhaust. The vault in Wing 3 was also upgraded in 1988 to meet safeguards and security requirements for Category II nuclear materials storage. The Main Vault was again upgraded, in 1994, to meet safeguards and security requirements.

Alarm Monitoring (1988)

The alarm condition sensing system was upgraded in 1988 to more accurately identify alarm conditions to assist responding personnel.

PCB Transformers (1989)

Power distribution transformers containing polychlorinated biphenyls (PCBs) were identified and replaced in 1989 as part of a DOE/LANL program.

Removal of Natural Gas Services (1990)

The 1983 CMR Building Safety Assessment identified the maximum credible accident as one involving the presence of natural gas in the Wing 3 Sample Management Area. Sample management procedures were changed, and the accident scenario was rendered physically impossible by the disconnection of natural gas service to the Wing 3 laboratory in 1983. Natural gas service to the CMR Building was disconnected entirely in 1990.

Stack Emissions Monitoring System (1991)

A CAM was installed in the Wing 3 laboratory exhaust stack, FE-19, in August 1991.

Air Sampling Probes (1991)

New air sampling probes were fabricated, and one installed in the Wing 3 laboratory exhaust stack, FE-19, to provide isokinetic sampling.

SNM Waste Assay Facility (1991)

The SNM Waste Assay Facility upgrade, completed in 1991, was an addition to meet safeguards and security requirements. Features include a dual HEPA filtration system and computerized CAM system that reports to a central location within the building.

Phase 1 Upgrades

Phase 1 upgrades include high priority equipment replacements and activities essential to maintain the minimum safe operations for an interim period of 5 to 10 years. Activities constitute routine maintenance work, have no significant potential for environmental effect either singly or cumulatively, and are not intended to extend the useful life of the facility. These upgrades qualified for a categorical exclusion from the need to prepare further NEPA analysis in the form of either an EA or EIS.

Phase 1 upgrade activities include:

- augmenting and replacing existing CAMs in the wings,
- replacing some wing HVAC blowers,
- upgrading basic electrical distribution systems,
- replacing the stack monitoring system,
- installing UPSs for the stack monitoring systems in the laboratory wings,
- making limited improvements to the duct washdown system and to the acid vents and drainlines,
- modifying the sanitary sewer system,
- performing a Fire Hazard Analysis, and
- installing back draft dampers in air supply ducts.

Appendix C
Deficiencies Identified in the ISAR

This section lists deficiencies identified CMR Building ISAR that would be addressed by the proposed upgrades. Following each deficiency, in bold type, is the proposed upgrade to address the deficiency.

Deficiency

Presently, most enclosures do not have monitoring devices or alarms to indicate the loss of negative pressure for glove boxes or the loss of air flow for open-front boxes (ISAR 5.3.1.1). **(Ventilation confinement zone separation)**

Deficiency

Glove boxes (primary confinement) and laboratory areas (secondary confinement) share the same exhaust system with no separation (ISAR 5.3.1.2). **(Ventilation confinement zone separation)**

Deficiency

Many HVAC system controls (fans and hydronics) are out of calibration. Vortex dampers at some locations are rusted or fixed in position. Additionally, links from pneumatic control motors to the dampers are disconnected (ISAR 5.3.2.1). **(Ventilation confinement zone separation)**

Deficiency

In some areas of the CMR building attic and basement, the paging system cannot be clearly heard over machinery or ventilation noises. If the volume is adjusted upward, it becomes garbled or too loud in other areas (ISAR 5.3.3.2). **(Communications system)**

Deficiency

Many of the paging system conductors are not properly routed through conduit or wireways (ISAR 5.3.3.2). **(Communications system)**

Deficiency

The fire protection water system needs an additional check valve below the existing alarm check valve to provide dual protection and isolation of each system (ISAR 5.3.5.10). **(Fire protection)**

Deficiency

The distance between fire hydrants (79A-662 to 79-514) on the south end of the facility that encompasses Wing 9, does not meet fire code regulations for a maximum distance of 122 m

(400 ft). In addition, fire hydrants 79A-662, 121B-665, and 121A-664 do not meet the minimum 15 m (50 ft) spacing from the building to the fire hydrant (ISAR 5.3.5.10). **(Fire protection)**

Deficiency

Smoke detectors should be added on supply and return fans. Thermal detectors need to be added upstream of all exhaust fans in Wings 1, 4, and 9 and in the Administration Wing (ISAR 5.3.5.10). **(Ventilation confinement zone separation)**

Deficiency

There is no provision for automated computer controller monitoring of electrical switch gear for the Wings 2, 5, and 7 ventilation systems from the Operations Room. **(Operations Center/Ventilation zone separation)**

Deficiency

The cooling water system, used to cool the recirculating systems, is dirty with rust, sand, and other particulate matter, making expensive repairs to equipment necessary. These problems have prompted the installation of separate dedicated cooling systems for some of the more delicate equipment. **(Ventilation confinement zone separation)**

Deficiency

There is no means to communicate from remote areas of the attic and basement. **(Communications System)**

Deficiency

The supply-air intake system throughout the building is filtered only by a single roughing filter upstream of the fans and downstream of the coils. This has caused corrosion of equipment downstream of the air intakes, including the preheat coils, the evaporative cooling media, and the primary terminal heating coils. Modifications should include replacement of the corroded equipment along with the installation of a storm-proof louver, a water stop, a roughing filter, and an intake damper at each air intake upstream of the fans and the coils. **(Ventilation confinement zone separation)**

Deficiency

The Wing 1 exhaust system releases to the atmosphere at ground level. **(Wing 1 HVAC)**

Deficiency

The Wing 9 hot-cell exhaust is filtered through a single-stage HEPA filter system and then discharged into the suction side of the general-area exhaust system, which is filtered by a bag filter system. **(Ventilation confinement zone separation)**

Deficiency

Most of the acid drain system is sloped at 0.01 inch per foot of line length, which has created problems with pipe leakage and in-line fluid pooling. **(Acid vents and drains)**

Deficiency

The implementation of DOE Order 6430.1A (UCRL 15910) requires that facilities like the CMR Building continue to function in the event of a Design-Basis Accident (DBA) so that the hazardous materials may be controlled and confined and not pose a hazard to the public or the environment. Current studies show that the existing CMR structure (laboratory wings only) would support a seismic event with a maximum horizontal ground acceleration of only 0.02 g. This does not meet the low or moderate hazard seismic criteria (UCRL 15910) of a maximum horizontal ground acceleration of 0.22 g. **(Seismic/tertiary confinement)**

Deficiency

There is no tertiary confinement of the ventilation system. **(Ventilation confinement zone separation/Seismic/Tertiary confinement)**

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Appendix D
Radioactive Dose Calculations

D.1 Introduction

Human exposure to artificially produced (man-made) radiation began in 1895 with the discovery of X-rays. Today, human exposure to artificially produced radiation is very thoroughly regulated by law and controlled by several regulating agencies that govern the use of nuclear energy and radioactive materials. Legally "permissible" levels (levels limited by law) of radiation exposure for radiation workers and members of the public have been defined and published in regulations. These exposure limits are based on calculated risks of genetic effects and cancers from exposure to all kinds of nuclear and atomic radiation, and are derived from the recommendations of numerous scientific organizations. Beginning in 1928 when the first scientific commission on radiation protection was formed, the effects of radiation exposure were studied as human radiation exposure data became available. Recommendations for exposure limits were published and continue to be revised and updated. More is known about the effects of radiation exposure than about the effects of any other of the many noxious agents that have been introduced, artificially, into the environment (Eisenbud 1987).[1]

The human health risk from exposure to low-level radiation from natural sources of radioactivity (such as uranium and radon in the earth, cosmic rays, etc.,) and artificial sources (such as medical X-rays and isotopes, and accelerators), is expressed in terms of the chances of producing a fatal cancer or a genetic effect (in a future generation). The genetic effects of radiation have yet to be seen in human populations exposed to radiation, even among atomic bomb survivors (Eisenbud 1987). However, the chances of inducing a fatal cancer with radiation exposure have been estimated and are proportional to the amount of radiation (dose) received. These chances can then be compared with the chances of a fatality from other causes to derive a comparative risk estimate.

Dose limits are based upon average risk levels, derived from human exposure data to high levels of radiation, extrapolated to low levels (ICRP 1977). The limit values include external and internal exposure (i.e., exposure to human body tissues that are irradiated following an intake of radioactive material). Internal exposure is calculated over a 50-year working lifetime for an individual, and is called the "Committed Effective Dose Equivalent" (CEDE). External exposure is measured on an annual basis and is called the "Effective Dose Equivalent" (EDE). Radiosensitivity of different body tissues is also taken into account, as well as the biological effect of the radiation, to give an overall dose unit called "Total Effective Dose Equivalent" (TEDE). The TEDE is the sum of the EDE, from external exposures, and the CEDE, from intakes during the year. The DOE's TEDE limit for radiation workers is 5 rem (DOE 1993a). For members of the public, the limit is 10 mrem from DOE airborne emissions (EPA 1989), expressed in terms of the emissions of radionuclides to the ambient air from DOE facilities, not

[1]Reference list appears in Section D.4.

to exceed a total effective dose equivalent of 10 mrem per year. Any external exposure has to be included in these totals, since the limit applies to the sum of both internal and external exposures. In a nuclear facility, normal operations and accidents have the potential to produce radiation exposures to workers and the general public. In the CMR Building Upgrade Project, actinide elements (uranium, plutonium, and americium) residing in drains and ducts from previous operations make up the source term. Normal operations' effects are not analyzed in this EA, only effects from abnormal events relating to construction that could cause the release of these radioactive materials to the workplace or the environment are analyzed. The source terms are derived and personnel exposures are calculated. The most conservative approach assumes that exposures to workers and the public would all be internal exposures from inhalation of actinides. Therefore, the CEDE is the controlling personnel dose. The CEDE from inhalation by an individual is:

$$\mathbf{CEDE = Q \times RF \times X/Q \times DCF \times RR}$$

where:

CEDE	is the 50-year committed effective dose equivalent (in rem), assuming the individual remains at the exposure point during the period of the release.
Q	is the inventory of radioactive material (in Curies).
RF	is the airborne release fraction of Q (Q x RF = Source Term).
X/Q	is the atmospheric dispersion factor at the exposure location (in sec per m^3).
DCF	is the individual isotope dose conversion factor (rem/Ci).
RR	is the respiration rate for reference man (m^3 per sec).

This equation is the basis for the accident and transportation doses calculated in the following sections, either directly or by the GENIIS and RADTRAN computer programs.

D.2 Accident Dose Calculations: Transportation Accidents

D.2.1 On-Site Transportation

On-site transportation of construction debris, containing radioactive material from the CMR Building construction site, to the TA-54-G disposal site would take place on Pajarito Road, the public road that carries all normal traffic through the area. A 6 m^3 (8 yd^3) dump truck would be used. The debris would include pieces of ductwork, acid vents, and drain pipes contaminated with actinides and wrapped in plastic. The worst-case inventory of radioactive material is expected to be the plutonium in the ductwork (the acid drain pipes will be neglected for this analysis). The truck is assumed to tip over, spilling its entire contents, which become the radioactive material inventory for the accident. An individual is assumed to be standing next to the spilled contents and plastic wrapping splits open, allowing plutonium to be released from the ductwork scraps and become airborne.

The inventory for this accident is determined using waste volume figures based on the "Chemistry and Metallurgy Research Facility Phase 2 Upgrades Waste Minimization/Pollution Prevention Strategic Plan" (LANL 1995b). The initial projected volume of 7,340 m^3 (9,600 yd^3) of radiological/RCRA/mixed waste contaminated exhaust ductwork is used for the on-site transportation analysis to calculate the bounding volume concentration of material in the truck.

The dose to an involved worker, or a member of the public who happens to be standing next to the spilled contents, is calculated as follows. Use of an atmospheric dispersion factor at distances closer than approximately 100 m is not normally done. Instead, the quantity released is expressed as a volume concentration of the fraction of the material released that the individual inhales at the standard-man breathing rate for a specified period of time, with no credit taken for dilution or dispersion during the exposure. This means that the individual is assumed to inhale the source term at the standard-man breathing during the period of the exposure:

$$\mathbf{CEDE} = \mathbf{Q_v \times F \times DCF \times RR \times t}$$

where:

CEDE	is the 50-year committed effective dose equivalent as before, in rem
$\mathbf{Q_v}$	is the volume concentration of the material in the truck, 8.2×10^{-4} Ci/m^3 of trash (6 Ci ÷ 7,344 m^3)
F	is the airborne fraction of the spilled material, 0.001
DCF	is the isotopic dose conversion factor for Pu-239, 3.3×10^8 rem/Ci
RR	is the respiration rate, 3.5×10^{-4} m^3 per sec
t	is the exposure time, in seconds

In this scenario, the involved worker, or member of the public, is assumed to be within a meter of the spilled contents of the truck, and breathes the undiluted, contaminated air for 30 seconds before the area is secured or the individual leaves the vicinity. Substituting in the equation:

$$\mathbf{CEDE} = 8.2 \times 10^{-4} \times 0.001 \times 3.3 \times 10^{8} \times 3.5 \times 10^{-4} \times 30$$

$$= 2.8 \text{ rem}$$

Therefore, the maximum dose to an involved worker, or member of the public, from an on-site transportation accident is 2.8 rem.

The population dose from an on-site transportation accident is calculated, as before, except the accident occurs at TA-54-G where the highest population, 6,501 persons, is in the ESE sector. The population dose from plutonium, assuming that the exposure time is the duration of the plume's passage, is 2.9 person-mrem.

D.2.2. Off-Site Transportation

Off-site disposal of contaminated construction waste would require the transportation of waste in two segments: (1) untreated waste would be moved 2,160 highway km (1,350 mi) from Los Alamos to the Scientific Ecology Group (SEG) facility in Oak Ridge, Tennessee; (2) treated contaminated waste would be moved 2,893 highway km (1,808 mi) from Oak Ridge to the Envirocare facility near Clive, Utah. Wastes would be transported in DOT-approved containers. The probability of an accident is relative to the total number of miles traversed over each type of road (urban < suburban < rural). Most accidents would not be sufficiently severe to breach a container that meets DOT approval specifications such as the B-25 box.

The inventory for this accident scenario is determined using the reduced waste volume figures based upon the "Chemistry and Metallurgy Research Facility Phase 2 Upgrades Waste Minimization/Pollution Prevention Strategic Plan" (LANL 1995b). The initial projected volume of 16,400 m^3 (21,400 yd^3) of radiological, RCRA-regulated, and mixed waste is reduced to 4,000 m^3 (5,200 yd^3) through waste minimization techniques. This amounts to a reduction of 75 percent in contaminated ductwork volume in the waste, primarily through reuse of existing ventilation system components. This results in a reduction of 75 percent of the original plutonium inventory, from 6 Ci to 1.5 Ci.

For off-site transportation accident calculations, the bounding case assumes that all removed waste (4,000 m^3 [5,200 yd^3]) is found to be mixed radioactive/RCRA hazardous waste. The entire volume is assumed to be shipped off-site to SEG for treatment, but no volume reduction occurs during treatment. Then, the entire waste volume would be shipped to Envirocare for disposal as LLW. The entire volume of waste (4,000 m^3 [5,200 yd^3]) would contain 1.5 Ci radioactive material. A single load would carry three B-25 boxes, 3 m^3 (4 yd^3) each, with radioactive contents of 1.1 mCi per box, or a total of 3.3 mCi of radioactive material per load.

Population doses along the transportation route were calculated by the RADTRAN program, Version 4.0.17, November 8, 1994. The following assumptions were input into RADTRAN:

- inventory is 1.1 mCi ^{239}Pu per 3 m^3 (4 yd^3) box,
- 445 truck shipments, 3 B-25 boxes, 3 m^3 (4 yd^3) per truck,
- same shipping form for both segments,
- dose rate on box surface is zero, and
- shipments start at 9 AM, on Wednesdays.

The resulting accident free doses to workers and the public would be extremely small since there is no detectable external dose at the container surface. The dose to the maximally-exposed individual from an off-site transportation accident would be 635 mrem. The accident doses to the population are due to ground deposition, inhalation, re-suspension, and cloud shine, and are:

- LANL to Oak Ridge, Tennessee — 0.57 person-mrem
- Oak Ridge, Tennessee, to Clive, Utah — 0.74 person-mrem
- Total — 1.31 person-mrem

D.3 Human Health Risk

"Health effect" is synonymous with "risk" in this discussion and is directly proportional to the total EDE. The linear dose response and relative risk models discussed in "The 1990 Report of the National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation (BEIR-V)" are used to establish the risk factors (BEIR 1990). These models extrapolate fatal tumor risks to future periods and assume the risk to be proportional to the natural cancer incidence, which generally increases with age. Use of these risk factors is required by DOE in their environmental assessment preparation recommendations (DOE 1993b).

BEIR-V gives a lifetime risk factor of a radiation-induced cancer fatality of about $4x10^{-7}$ fatal cancers per mrem for workers, and $5x10^{-7}$ per mrem for members of the general population. The higher value for the public takes into account the higher sensitivity and longer period of exposure for the younger ages present in the general population (NRC 1991). Where the dose to an entire population group is estimated and stated in person-mrem, the risk factor is expressed as 5×10^{-7} per person-mrem. The risk is in terms of added chances of cancer mortality over the entire population rather than an individual.

An occupational risk factor of $4x10^{-7}$ per mrem equates to an individual risk for cancer mortality of one chance in 2,500,000 for an exposure of one mrem; the risk factor for the public of $5x10^{-7}$ per mrem equates to an individual risk for cancer mortality of one chance in 2,000,000 for an exposure of one mrem. The health effect is thus expressed as the number of chances of an individual developing a fatal cancer as a result of the CEDE in mrem. For a population group, the risk factor of 5×10^{-7} per person-mrem equates to a group risk of one chance in 2,000,000 for an exposure of one mrem.

Table D-1 summarizes and compares the risk of excess latent cancer fatalities from the radiation exposures calculated in the previous sections with the risks from doses from natural background radiation and the regulatory limit dose values.

Table D-1
Summary of Radiation Exposure Risks, Including Accidents

EXPOSURE SOURCE	DOSE	RISK OF EXCESS CANCER FATALITIES*
Dose from Pu to individual located at site of on-site transportation accident, CEDE	Truck accident: 2.8 rem	Individual risk: 1 in 714, 1.4×10^{-3}
Dose from Pu to nearest population in on-site transportation accident, CEDE	2.9 person-mrem, truck accident	Population risk: 1.5×10^{-6} excess cancer deaths for the population of 6,501 persons
Dose from Pu to population in off-site transportation accident	1.31 person-mrem	Population risk: 6.7×10^{-7} excess cancer deaths for the population along the shipping routes
Annual dose, normal operations, CMR Building, workers	44 mrem	Individual risk: 1 in 57,000, 1.8×10^{-5}
Lifetime DOE dose limit to the worker for a planned emergency exposure	10 to 25 rem	Individual risk: 1 in 250 to 1 in 100, 4×10^{-3} to 1×10^{-2}
Annual dose limit to the worker from DOE operations	5 rem	Individual risk: 1 in 500, 2×10^{-3}
Annual dose to members of the public from all LANL operations (1994), Los Alamos townsite	3.5 mrem maximum individual dose; 0.27 mrem average dose	Individual risk: 1 in 571,000, 1.8×10^{-6} 1 in 7,400,000, 1.4×10^{-7}
Annual DOE dose limit to the public from airborne emissions	10 mrem	Individual risk: 1 in 200,000, 5×10^{-6}
Annual natural background radiation in Los Alamos townsite	339 mrem	Individual risk: 1 in 6,000, 1.7×10^{-4}

*If the probability is less than 1.0, no additional cancer deaths are expected.

D.4 References

BEIR 1990: National Research Council, "Health Effects of Exposure to Low Levels of Ionizing Radiation-BEIR V," Committee on the Biological Effects of Ionizing Radiations, Board on Radiation Effects Research, Commission on Life Sciences, 1990.

DOE 1988: U.S. Department of Energy, "Internal Dose Conversion Factors for Calculations of Dose to the Public," DOE/EH-0071, July 1988.

DOE 1989: U. S. Department of Energy, "Radiation Protection for Occupational Workers," DOE Order 5480.11, 1989.

DOE 1990: U. S. Department of Energy, "Radiation Protection of the Public and the Environment," DOE Order 5400.5, 1990.

DOE 1992: U.S. Department of Energy, "DOE Standard Hazard Categorization Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports," DOE-STD-1027-92, 1992.

DOE 1993a: U.S. Department of Energy, 10 CFR Part 835, "Occupational Radiation Protection," December 14, 1993.

DOE 1993b: U.S. Department of Energy, "Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements," Office of NEPA Oversight, May 1993.

Eisenbud 1987: "Environmental Radioactivity," pp. 9, 29, Academic Press, 1987.

EPA 1989: U. S. Environmental Protection Agency, 40 CFR Part 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities."

ICRP 1974: International Commission on Radiological Protection, "Reference Manual: Anatomical, Physiological and Metabolic Characteristics," ICRP Publication 23, 1974.

ICRP 1977: The International Commission on Radiological Protection, "Recommendations of the ICRP," Publication 26, 1977.

ICRP 1991: "1990 Recommendations of the International Commission on Radiological Protection," Annals of the ICRP, Vol. 21, Nos. 1-3, 1991.

LANL 1991: "Waste Management at Los Alamos," LALP-90-30, Los Alamos National Laboratory Waste Management Group, 1991.

LANL 1992: Robert S. Marshall, "SNM Holdup Measurements for Los Alamos Exhaust Ducts, Interim Phase II Report," Los Alamos National Laboratory Report LA-12374-MS, September 1992.

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LANL 1993b: Theresa Cull, "CMR Upgrades Assessment Summary," Los Alamos National Laboratory, October 29, 1993.

LANL 1995: "Chemistry and Metallurgy Research Facility Phase 2 Upgrades Waste Minimization/Pollution Prevention Strategic Plan," CMR Facility Upgrades Team, Facilities Project Delivery Group, Los Alamos National Laboratory, August 1995.

NRC 1991: U.S. Nuclear Regulatory Commission, 10 CFR 20, Statements of Consideration, 56 FR 23360, 20-SC-10, May 21, 1991.

Appendix E
Agency Consultation Responses

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Department of Energy
Los Alamos Area Office
Albuquerque Operations Office
Los Alamos, New Mexico 87544

JAN 1 8 1996

RECEIVED
JAN 2 3 1996
HISTORIC PRESERVATION

Mr. Michael Romero Taylor
State Historic Preservation Officer
Office of Cultural Affairs
La Villa Rivera, Room 320
228 E. Palace Ave.
Santa Fe, New Mexico 87501

Dear Mr. Taylor: 19451

The Department of Energy (DOE) proposes to upgrade the existing Chemistry and Metallurgy Research (CMR) Building. While most of the safety upgrades to the facility are not "undertakings" as defined in 36 Code of Federal Regulations Part 800.2(o), "Protection of Historic Properties," the following proposed actions meet the definition of an undertaking requiring Section 106 review: construction of a standby power generator, cooling towers, a chilled water plant, and filter tower building addition. The proposed location for these upgrades is within Technical Area (TA) 3 of Los Alamos National Laboratory. Land surveyed for this project is managed by DOE.

Enclosed is a copy of the cultural resource survey report entitled *CMR Building Upgrades*, Cultural Resource Survey Report No. 118, for your review and concurrence. The survey area, methods, results, and recommendations are contained in the enclosed report.

No archaeological sites are located within the surveyed area.

Your office is asked to concur in a finding of no effect for this project.

Please direct any questions or comments on this undertaking to Elizabeth Withers, Office of Environment and Projects, at (505) 667-8690.

Sincerely,

for: E. Dennis Martinez
Larry Kirkman, P.E.
Acting Area Manager

LAAMEP:9EW-204

for: David Wilkinson
State Historic Preservation Officer

2/14/96
Date

Enclosure

cc:
See Page 2

JAN 1 8 199

Mr. Michael Romero Taylor 2

cc w/o enclosure:
The Honorable Elmer Torres
Governor
San Ildefonso Pueblo
Route 5, Box 315-A
Santa Fe, New Mexico 87501
The Honorable Joseph C. Quintana
Governor
Cochiti Pueblo
P. O. Box 70
Cochiti Pueblo, New Mexico 87072
The Honorable Randolph Padilla
Governor
Jemez Pueblo
P. O. Box 100
Jemez Pueblo, New Mexico 87024
The Honorable Gilbert Tayofa
Governor
Santa Clara Pueblo
P. O. Box 580,
Española, New Mexico 87532
E. Withers, AAMEP, LAAO
R. Enz, Scientech, LAAO
D. Erickson, ESH-DO, LANL, MS-K491
B. Larson, (ESH-20/EARE-96-0261)
ESH-20, LANL, MS-M887

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542

December 12, 1995

Cons. #2-22-96-I-048

Larry Kirkman, Acting Area Manager
Department of Energy
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Mr. Kirkman:

This responds to your letter, dated December 5, 1995, requesting the U.S. Fish and Wildlife Service (Service) concur with your finding of "no effect" on threatened or endangered species or their critical habitats during the upgrade of the Chemistry and Metallurgy Research (CMR) Building located in Technical Area (TA) 3 at Los Alamos National Laboratory (LANL). The LANL is located in Los Alamos County, New Mexico.

The proposed action includes modification of the CMR Building, which could generate tons of hazardous (or similarly defined) wastes. Wastes will be transported 6 miles, either in covered dump trucks or in special transport boxes, from the CMR building along Diamond Drive to Pajarito Road, and down Pajarito Road to TA 54 for disposal. This roadway is located within the developed area on top of a mesa and does not cross any streams, canyons, or other major drainage.

Our conversations with Ms. E. Withers of your staff (on December 7, 1995, and December 11, 1995), revealed all wastes generated will be handled according to all applicable State and Federal laws and regulations. The LANL Emergency Response Procedures plan addresses how spills, leaks, and other accidental releases will be managed should they occur during generation and transportation of wastes. Current information indicated that the proposed project, including the generation and transport of wastes, will occur at a distance greater than ½ mile from any known Mexican spotted owl (*Strix occidentalis lucida*) roosting, nesting, or critical habitat, or any other threatened or endangered species or critical habitat.

The Service concurs with your determination that the proposed CMR Building renovations and waste handling will have "no effect" on threatened or endangered species or their critical habitats. Our concurrence is based on the fact that the proposed project is located within an existing compound, and that all wastes will be managed according to all applicable laws, regulations, and emergency response procedures so as to not affect the environment.

If you have any questions or comments, please contact Joel D. Lusk at (505) 761-4525.

Sincerely,

Jennifer Fowler-Propst
Field Supervisor

cc:
Bureau Chief, New Mexico Environment Department, DOE Oversight Bureau, Santa Fe, New Mexico.
Bureau Chief, New Mexico Environment Department, Hazardous and Radioactive Material Bureau, Santa Fe, New Mexico.
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico.

Department of Energy
Finding of No Significant Impact

Proposed CMR Building Upgrades
at the
Los Alamos National Laboratory
Los Alamos, New Mexico

U. S. Department of Energy
Los Alamos Area Office
528 35th Street
Los Alamos, NM 87544

DEPARTMENT OF ENERGY
FINDING OF NO SIGNIFICANT IMPACT

CMR BUILDING UPGRADES
LOS ALAMOS NATIONAL LABORATORY

FINAL ENVIRONMENTAL ASSESSMENT: The Department of Energy (DOE) - Los Alamos Area Office has prepared an Environmental Assessment (DOE/EA 1101) that analyzes the environmental impacts of constructing proposed upgrades to the Chemistry and Metallurgy Research (CMR) Building at Los Alamos National Laboratory (LANL). The purpose of this project is to enable the DOE to maintain the capability to continue to perform uninterrupted interim and ongoing radioactive chemical and metallurgical research activities in a safe, secure, and environmentally sound manner at LANL over the next 20 to 30 years. Related to this Environmental Assessment (EA) are programmatic National Environmental Policy Act (NEPA) documents recently completed or currently being prepared by DOE [CEQ, 40 CFR 1508.13]. The DOE's *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (SS&M PEIS) (DOE/EIS-0236, September 1996; Record of Decision (ROD), December 19, 1996) looks at the present and reasonably foreseeable mission of the DOE Nuclear Weapons Complex, of which LANL is a part. The new LANL Sitewide Environmental Impact Statement (currently being written) will look at the current and reasonably foreseeable new operations at LANL, of which the CMR Building represents one of the main functional facilities.

The EA examined the potential environmental impacts of the proposed upgrades to the facility and associated activities and evaluated reasonable alternatives, including the no action alternative in accordance with the Council of Environmental Quality (CEQ) Regulations (40 CFR 1500-1508).

The proposed upgrades to the facility are composed of the following elements, each of which are described and evaluated in the attached EA on the pages referenced, including Appendix C of that document:

- seismic and tertiary confinement upgrades (Wings 3, 5, 7, 9 and Administration Wing) (pp. 17-18),
- security system upgrades (related to tertiary confinement) (p. 18),
- ventilation confinement zone separation modifications (Wings 3, 5, 7 and 9) (p.18),
- standby power/communications system upgrades (pp. 18-19),

- Wing 1 upgrades to the Heating, Ventilation and Air Conditioning (HVAC) system and associated Wing 1 interim decontamination (p.19),
- operations center upgrade (pp. 19-20),
- chilled water system upgrade: Wings 3, 5 and 7 (p. 20),
- main vault, Continuous Air Monitor (CAM) and damper upgrades (pp. 20-21),
- acid vent and drain upgrades: Wings 3, 5, and 7 (p. 21),
- fire protection upgrades (p. 21),
- upgrades to ensure operations center standby power (p. 21), and
- exhaust duct washdown recycling system upgrades to Wings 3, 5, and 7 (pp. 21-22).

Also considered and evaluated in this EA are proposed actions to place Wings 2 and 4 in a safe standby condition (p. 22).

Actions to carry out these facility upgrades and associated actions are scheduled to begin in Fiscal Year 1997 and are anticipated to be completed in about Fiscal Year 2002.

SUMMARY OF IMPACTS: The following is a summary of the impacts evaluated in the EA at the referenced pages presented in relation to the significance criteria described in 40 CFR 1508.27(b) Intensity [as refers to the severity of impact relating to the issue of Significance].

1) *Impacts that may be both beneficial and adverse* [40 CFR 1508.27 (b) (1)]:

- The upgrades project is designed to improve the building in such a manner that, when completed, it is anticipated that the CMR Building can be used to meet current mission related activities in a safe, secure and environmentally sound manner for the next 20 to 30 years (pp. 1-3; Appendix C)
- There are no identified adverse impacts from upgrade construction activities associated with:
    - Air quality (p. 40);
    - Land use from waste disposal (pp.40 - 42);
    - Radioactive Liquid Waste Management (p. 42);
    - Transportation (p. 44).

2) *The degree to which the proposed action affects public health or safety* [40 CFR 1508.27 (b) (2)]:

- Public exposure from an increase in airborne radioactive material emissions is not anticipated to occur from the CMR Building due to upgrades taking place within the building; therefore, no radiological effects to the public are expected from the upgrades project (p. 42).
- The highest probability of a cancer fatality in the public resulting from a "worst case" accident scenario is well below the average background cancer mortality rate (pp. 42-49).
- Worker exposure during upgrade activities are within acceptable limits established by DOE (pp.42 - 44).

3) *Unique characteristics of the geographical area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas* [40 CFR 1508.27 (b)(3)]:

- No unique characteristics of the geographical area will be impacted by the project which is to take place either within or immediately adjacent to the CMR Building (p.29). Waste management and disposal of low level waste at Area G at LANL would take place in close proximity to land belonging to San Ildelfonso Pueblo and to nearby Traditional Cultural Properties and cultural resource sites. However, the waste area itself would not disturb or directly affect these sites.

4) *The degree to which effects on the quality of the human environment are likely to become highly controversial* [40 CFR 1508.27 (b)(4)]:

- The project will result in negligible adverse effects on the quality of the human environment (pp. 39 - 49) since the major activities are located within the CMR Building or adjacent to it within already disturbed soils. Waste generated by the CMR Building upgrade activities will be disposed of in existing permitted landfills according to waste type, located either on-site or off-site (pp. 40-42). No new roadways, waste treatment facilities or disposal sites would need to be constructed solely due to waste generation resulting from the proposed upgrades. Human health risk from both activities associated with normal conditions during the upgrades and transportation, as well as from earth quake and transportation accidents were analyzed (pp. 42-49) and determined to be not be significant. Controversial issues surrounding the proposed upgrades to the CMR Building seem to stem from concern

over issues other than potentially significant effects on the quality of the human environment resulting from the projects' implementation (Appendix A).

5) *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks* [40 CFR 1508.27 (b)(7)]:

- No unique, uncertain, or unknown risks to, or effects on, the human environment will result from the upgrades construction activities. Identified potential environmental effects from the upgrade construction actions and associated waste disposal activities are well defined. The proposed upgrades involve common construction activities in a controlled facility setting that involve a well characterized set of construction worker risks. Internal building upgrade activities will be carefully controlled to reduce radiological exposure to workers (pp. 15 and 22). Release of radioactive material from the building to the exterior environment and the public is not expected to occur under normal work conditions due both to the methods and restraints associated with the construction activities, and to the secondary confinement afforded by the building structure and its existing air filtration and interior area confinement systems. Disposal of wastes would occur at existing permitted waste disposal sites as appropriate according to identified waste types. The specific quantity of wastes by category of waste type that would require disposal is unknown; however this numerical uncertainty does not pose an effect on the environment that is highly uncertain, nor does it involve unique or unknown risks. An overestimation or "bounding" waste quantity is used to analyze potential environmental effects (pp. 40-42). Other identified potential environmental effects associated with the proposed upgrade activities are negligible: dust emissions during exterior construction; a small production of liquid radioactive waste; slightly increased health risk to workers and increased number of truck-miles driven during construction and waste disposal activities.

6) *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration* [40 CFR 1508.27 (b) (6)]:

- DOE has no basis to conclude that the proposed upgrades to the facility would set a precedent for future actions that may have significant effects, nor does it believe that conducting these upgrades represents a decision in principle about future considerations. The project is intended to correct structural and building safety and security deficiencies that, when completed, will allow the facility to continue to be

used for the next 20 to 30 years to support current mission assignments that make use of the facilities unique inherent functional capabilities (pp.1-3).

7) *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts* [40 CFR 1508.27 (b)(7)]:

- There are no significant cumulative impacts associated with conducting the upgrades project since they are designed to enhance the building infrastructure and allow it to continue to be used to support current program missions (pp. 26-27; pp. 39 - 49) and are not related to other known proposed actions for the building or general area. The collective upgrades are expected to be conducted over about a five year period. They are neither individually nor collectively related with other actions being performed in the building now or expected to be performed in the building during the anticipated construction period. The cumulative impacts of reasonably foreseeable related future mission assignments have been evaluated in the DOE SS&M PEIS, which analyzed the mission of the DOE Nuclear Weapons Complex, of which LANL is a part. The ROD selected several alternatives considered in that document for implementation at LANL, namely: construction of the ATLAS facility at Technical Area (TA) 35; transport of plutonium-242 material to LANL for storage at TA 55; and the reestablishment of pit fabrication capability at a small capacity level. The CMR Building is expected to play a future role in carrying out the work of the new pit production mission assignment and the NEPA analysis of activities involved in this activity will be included as part of the LANL Sitewide EIS currently in preparation. The Sitewide EIS will not only consider the potential effects of implementing the new assignments at LANL, but will also include the cumulative impacts associated with current and future operations at LANL, which will include the CMR Building conduct of operations. The CMR Building upgrades activities in themselves will neither influence nor be influenced by programmatic decisions stemming from either programmatic EIS. Individual projects that are already underway at the CMR Building or for which decisions have been made to conduct them in the CMR Building have been reviewed and found to be independent of the need, other than in a general sense, for the upgrade activities; they incorporate neither individually nor cumulatively significant impacts (pp. 26-27).

8) *The degree to which the action may adversely effect districts, sites, highways, structure, or objects listed in or eligible for listing in the National Register of Historic*

Places or may cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)]:

- No cultural resources are anticipated to be directly impacted by the proposed upgrade activities (p. 29). The CMR Building is not presently listed in or eligible for listing in the National Register of Historic places, nor do the upgrades project activities represent the loss or destruction of significant scientific, cultural, or historic resources because they will take place either within or immediately adjacent to the building in previously disturbed areas. No new treatment facilities or waste disposal sites will be constructed to meet the needs for disposal of waste generated by the proposed upgrade activities. There is no change in the existing environmental status quo of the LANL waste management and disposal site at Area G of Technical Area 54 anticipated from implementing the proposed action.

9) *The degree to which the action may adversely effect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973* [40 CFR 1508.27(b)(9)]:

- No threatened or endangered species or critical habitat protected under the Endangered Species Act of 1973 will be effected by the proposed upgrades activities (p. 29). Activities will either take place inside the CMR Building or within fenced areas immediately adjacent to the building in disturbed soils that offer very poor habitat for wildlife. On-site transportation of wastes will occur along existing roadways to the TA 54 waste management area at LANL. Off-site transportation of packaged wastes to existing treatment or landfill areas similarly will also occur along existing roadways.

10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment [40 CFR 1508.27 (b)(10)]:

- DOE is unaware of any Federal, State, or local law or requirements imposed for the protection of the environment that would be violated by the proposed facility upgrades or associated actions.

PREDECISIONAL DRAFT REVIEW & COMMENT: On August 27, 1996, DOE invited review and comment on a revised predecisional draft EA from the State of New Mexico and four American Indian Pueblos: Cochiti, Jemez, Santa Clara and San Ildefonso (i.e., four accord

pueblos). In addition, DOE made this revised predecisional draft EA available to Los Alamos County and the general public at the same time it was provided to the State of New Mexico and four accord pueblos by placing it in the DOE Public Reading Rooms in the Los Alamos National Laboratory Outreach Center and Reading Room in Los Alamos, and the TVI-Main Campus Library in Albuquerque. Also, local stakeholder groups were notified of the availability of the predecisional draft by letter on August 28, 1996. DOE had earlier sought review and comment on a draft of the EA on January 19, 1996. In response to the comments and concerns voiced by respondents, and because of a change in DOE's National Environmental Policy Act Implementing Procedures that became effective on August 8, 1996, DOE decided to prepare a revised predecisional draft EA to include copies of the respondents letters with DOE responses. This was the document made available on August 27 to accord the State, the four Accord Pueblos, and other interested stakeholders with an additional review and comment period.

Comments were received from the Los Alamos Study Group; the Natural Resources Defense Council, Inc. together with The Los Alamos Study Group and the Concerned Citizens for Nuclear Safety; Mr. H.L. Daneman, and Dr. James T. Waber. These sets of comments were addressed in the Final EA, and individual responses to the comments were prepared by LAAO, and included in the EA; copies of the EA were sent to the respondents. Notification was received from the State of New Mexico that DOE responses to the State's comments on the January 1996 version of the predicisional draft EA were adequate and that the State did not intend to review the revised draft document.

FINDING: The Environmental Assessment for the Proposed CMR Building Upgrades identifies relevant issues of environmental concern, takes a "hard look" at potential environmental effects and is the basis for DOE concluding that the proposed actions will not have a significant effect on the human environment within the meaning of NEPA and the CEQ Regulations, 40 CFR Sections 1508.18 (Major Federal Action) and 1508.27 (Significance). Two potential upgrade designs regarding spacial arrangements are encompassed within the analysis provided by this Environmental Assessment: (1) upgrade the chemistry space in all three wings (3,5,7) with collocated office space as the wings are currently configured; or (2) upgrade the chemistry space and relocate the office space (and thus the workers) away from the laboratory space to improve worker safety. This second design actually increases operational laboratory space in each wing to the extent that the existing chemistry operations could be accommodated in just two wings and the third wing would then be put into a safe standby condition. If the second spacial design is selected

by the DOE, two analytical chemistry laboratory wings will be upgraded and the third wing will be placed into a safe standby condition. If space contained within the third analytical chemistry laboratory wing is considered for other programmatic needs, DOE will perform a separate National Environmental Policy Act analysis regarding those proposed new mission uses.

DOE makes this Finding of No Significant Impact pursuant to the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.], the Council on Environmental Quality (CEQ.) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act [40 CFR 1500] and the DOE National Environmental Policy Act Implementing Procedures [10 CFR 1021]. Therefore, based on the EA that analyzes the potential environmental impacts that would be expected to occur if the DOE were to remodel and upgrade portions of the CMR Building, the proposed action does not constitute a major federal action that would significantly affect the human environment within the mandate of NEPA. Therefore, the DOE has concluded that no environmental impact statement is required for this proposal.

Signed in Los Alamos, New Mexico this 11th day of February, 1997.

G. Thomas Todd

G. Thomas Todd
Area Manager
Los Alamos Area Office

FOR FURTHER INFORMATION CONTACT: For further information on this proposal, this Finding Of No Significant Impact (FONSI), or the DOE's National Environmental Policy Act (NEPA) review program concerning proposals at LANL, please contact:

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Copies of this FONSI (with the approved Environmental Assessment attached) will be made available for public review at the DOE Reading Rooms within the Los Alamos National Laboratory Outreach Center and Reading Room, 1450 Central Avenue, Suite 101, Los Alamos, New Mexico, 87544 at (505) 665-2127 or (800) 543-2342. Copies will also be made available in the DOE Public Reading Room located within the TVI-Main Campus Library, 525 Buena Vista SE, Albuquerque, New Mexico, 87106 at (505) 224-3000.