

5/8/95

SANDIA REPORT

SAND94-2032 • UC-630

Unlimited Release

Printed April 1995

Annotated Bibliography of National Environmental Policy Act (NEPA) Documents for Sandia National Laboratories

Joan M. Harris

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550
for the United States Department of Energy
under Contract DE-AC04-94AL85000

Approved for public release; distribution is unlimited.



SF2900Q(8-81)

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Issued by Sandia National Laboratories, operated for the United States Department of Energy by Sandia Corporation.

NOTICE: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government, any agency thereof or any of their contractors or subcontractors. The views and opinions expressed herein do not necessarily state or reflect those of the United States Government, any agency thereof or any of their contractors.

Printed in the United States of America. This report has been reproduced directly from the best available copy.

Available to DOE and DOE contractors from
Office of Scientific and Technical Information
PO Box 62
Oak Ridge, TN 37831

Prices available from (615) 576-8401, FTS 626-8401

Available to the public from
National Technical Information Service
US Department of Commerce
5285 Port Royal Rd
Springfield, VA 22161

NTIS price codes
Printed copy: A03
Microfiche copy: A01

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

SAND94-2032
Unlimited Release
Printed April 1995

Distribution
Category UC - 630

**Annotated Bibliography
of
National Environmental Policy Act (NEPA) Documents
for
Sandia National Laboratories**

Joan M. Harris
Risk Management and NEPA Department
Sandia National Laboratories
P. O. Box 5800
Albuquerque, NM 87185-1037

Abstract

The following annotated bibliography lists documents prepared by the Department of Energy (DOE), and predecessor agencies, to meet the requirements of the National Environmental Policy Act (NEPA) for activities and facilities at Sandia National Laboratories sites. For each NEPA document summary information and a brief discussion of content is provided. This information may be used to reduce the amount of time or cost associated with NEPA compliance for future Sandia National Laboratories projects. This summary may be used to identify model documents, documents to use as sources of information, or documents from which to tier additional NEPA documents.

This page intentionally left blank.

**ANNOTATED BIBLIOGRAPHY
OF
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTS**

TABLE OF CONTENTS

Introduction.....	1
Environmental Assessment for the Robotic Manufacturing Science and Engineering Laboratory (RMSEL).....	3
Environmental Assessment for the Neutron Generator/Switch Tube (NG/ST) Prototyping Facility Relocation	4
Nonnuclear Consolidation Environmental Assessment, Nuclear Weapons Complex Reconfiguration Program	5
Environmental Assessment for the Radioactive and Mixed Waste Management Facility.....	6
Kauai Test Facility (KTF) Environmental Assessment.....	7
Environmental Assessment Explosives Component Facility at Sandia National Laboratories Albuquerque, New Mexico	8
Kauai Test Facility CDX Rocket Operation Environmental Assessment	9
Environmental Impact Statement and Environmental Impact Report for the Continued Operation of Lawrence Livermore National Laboratories and Sandia National Laboratories, Livermore.....	10
Kauai Test Facility Two Experiment Rocket Campaign Environmental Assessment.....	12
Integrated Materials Research Laboratory (IMRL) Environmental Assessment.....	13
Final Supplemental Environmental Impact Statement Waste Isolation Pilot Plant	14
Strategic Defenses Facility Environmental Assessment.....	16
Environmental Effects of Solar Thermal Power Systems, Environmental Assessment of the U. S. Department of Energy's Solar Thermal Technology Program.....	18
Environmental Impact Assessment Sandia Laboratories Albuquerque, New Mexico.....	19
5 Megawatt Solar Thermal Test Facility Environmental Assessment.....	22
Environmental Assessment Tonopah Test Range.....	23

This page intentionally left blank.

NOMENCLATURE, ACRONYMS AND ABBREVIATIONS

Ci	curie, a unit of radioactivity, the amount of any nuclide that undergoes exactly 3.7×10^{10} radioactive disintegrations per second
DOE	United States Department of Energy
EA	environmental assessment
EIA	environmental impact assessment
EIS	environmental impact statement
FONSI	finding of no significant impact
KTF	Sandia National Laboratories Kauai Test Facility
NEPA	National Environmental Policy Act
NG	neutron generator
NOI	notice of intent
NSTTF	National Solar Thermal Test Facility, SNL/NM
R&D	research and development
RD&T	research, development, and testing
RMSEL	Robotic Manufacturing Science and Engineering Laboratory
ROD	record of decision
Sandia	Sandia National Laboratories
SNLA	Sandia National Laboratories Albuquerque, old usage prior to use of "SNL/NM"
SNL/CA	Sandia National Laboratories California Site
SNL/NM	Sandia National Laboratories New Mexico Site
ST	switch tube
TTR	Sandia National Laboratories Tonopah Test Range
WIPP	Waste Isolation Pilot Plant, Carlsbad, New Mexico

This page intentionally left blank.

Introduction:

This document provides an annotated bibliography of the National Environmental Policy Act (NEPA) documents that have been prepared by the Department of Energy (DOE), and predecessor agencies, for activities and facilities at Sandia National Laboratories (SNL) sites. Listed below are the Environmental Assessments (EAs), Environmental Impact Statements (EISs), and other NEPA documents, that pertain to Sandia National Laboratories operations located in New Mexico, California, Nevada, and Hawaii. Information is also presented for selected DOE NEPA documents prepared for activities not specific to SNL sites, but which may be relevant to SNL projects or sites. Document summaries are presented in chronological order according to the document approval date, with the most recent documents appearing first followed by older documents.

This bibliography does not include information on NEPA documents prepared by other agencies, for instance documents prepared by the U. S. Air Force for activities and facilities on the Kirtland Air Force Base. Nor does this bibliography contain information on NEPA documents prepared by SNL for actions proposed by the DOE, or by other agencies, that do not involve activities at SNL.

The information below may be useful when requesting a determination from the DOE regarding the appropriate level of NEPA documentation for new or modified programs or projects. The DOE may find that some projects have already been assessed adequately in existing NEPA documents and that additional environmental analysis is not required. Alternatively, for projects requiring preparation of NEPA documentation, this summary may be useful to identify model documents, documents to use as sources of information, or documents from which to tier. The concept of "tiering" allows project-specific assessments to incorporate by reference information and analyses in approved NEPA documents of broader scope. Use of this bibliography may allow reduction in the time and cost of NEPA compliance for some future SNL programs and projects. General information on the NEPA compliance process may be found in the SNL Environment Safety and Health Manual in Chapter 10 Section I.

Among the goals of NEPA are the incorporation of environmental values into the decision-making process, and the provision of information to both the decision-maker and the public. Thus, NEPA documents are published after DOE approval. The documents discussed below may be available for SNL internal use from the Risk Management and NEPA Department, SNL/NM, or the Environmental Protection Department, SNL/CA. Copies of these documents are available through the National Technical Information Service, U. S. Department of Commerce, and/or through the Department of Energy. The DOE provides draft EAs to affected or host states and Indian Tribes for pre-approval review. Copies of final EAs are provided in local reading rooms for public inspection.

Many factors contribute to the length of time that elapses between a DOE determination that an EA is required and the time that the Finding of No Significant Impact (FONSI) is

signed. Delays may occur in SNL project analysis and document preparation, and also in the review process. A project with a short time frame and extremely high visibility may be expedited and the NEPA process may take only a month or two. However, such projects are exceptions. For most SNL projects a period of one and a half to three years may be required from the time that the first draft EA is submitted for DOE review.

If an SNL project, program, or activity requires an EIS the DOE will contract for the preparation of that document, but the costs will be borne by SNL. The EIS process involves a greater degree of public input than does the EA process, including issuance of a Notice of Intent (NOI) in the Federal Register, public scoping meetings, and public review and comment upon the Draft EIS. The amount of time required for the preparation and review of an EIS is governed by legally required minimum time periods, for instance the time between the publication of the NOI and the scoping meetings, and the public comment period. The EIS prepared for Lawrence Livermore National Laboratory and Sandia National Laboratories/California took two years and four months from the publication of the NOI to the issuance of the Record of Decision (ROD). It is expected that an EIS will be prepared for the Sandia/New Mexico site; DOE indicates that this effort is currently planned to begin in FY96.

A number of NEPA documents for SNL activities are under preparation. These documents are not listed in this annotated bibliography because the NEPA process is not complete and the documents are therefore not available for general public inspection, and cannot be used for tiering or citation. Within SNL, questions regarding the status of draft NEPA documents should be directed to the Risk Management and NEPA Department, SNL/NM, or the Environmental Protection Department, SNL/CA. Inquiries from non-Sandia sources regarding the NEPA compliance status of SNL activities should be directed to the Area Office Manager, DOE Kirtland Area Office.

Title: Environmental Assessment for the Robotic Manufacturing Science and Engineering Laboratory

Document Date: April 1994

Timing: DOE request for EA received May, 1991, FONSI issued April 13, 1994

Identification Number: DOE/EA-0885, SNLA-91-0021, ADM-91-02

Location: Sandia National Laboratories, New Mexico

Proposed Action and Alternatives:

The proposed action is the construction and operation of the Robotic Manufacturing Science and Engineering Laboratory (RMSEL) south of K Street and west of 20th Street at SNL/NM. The proposed action will allow for collocation of on-going operations into a modern facility that is expected to improve staff interactions, visitor access, worker health and safety, and research and development (R&D) functionality. The facility is described as accommodating approximately 150 people and is to include parking areas. Alternatives considered include construction and operation at two other SNL/NM sites, and the no action alternative.

Operations Described:

Research, development and testing operations of the Intelligent Systems and Robotics Center (ISRC) are briefly described, including software and hardware technologies. Robot testing would be performed both in laboratories and high bay areas and outdoors on a test track.

Issues Addressed and Accidents:

Construction and operational impacts are briefly described. Accidents considered include fire in a laboratory, chemical spill in a laboratory (methanol or methyl ethyl ketone), failure of the pressure regulator on a cylinder of compressed gas (methylacetylene-propadiene [MAPP] or propane), personnel injury by robot motion, and an aircraft crash into the building. Engineered and administrative safety features are briefly described. The annual expected frequency of an aircraft crash into the facility is calculated to be 1.6×10^{-4} at the site of the proposed action.

Title: Environmental Assessment for the Neutron Generator/Switch Tube (NG/ST) Prototyping Facility Relocation

Document Date: April 1994

Timing: DOE request for EA received November, 1992, FONSI issued April 8, 1994

Identification Number: DOE/EA-0879, SNA-92-044

Location: Sandia National Laboratories, New Mexico

Proposed Action and Alternatives:

The proposed action is the relocation and consolidation into Building 870 Annex of on-going activities in support of technical assurance of neutron tubes (NT), switch tubes (ST), and neutron generators (NG). The Neutron and Switch Tube Prototyping Laboratory would move from Building 891, and ferroelectric neutron generator (FE NG) prototyping and support activities would move from Building 878. Building 870 Annex would be renovated, some new equipment would be purchased, and some equipment would be relocated from other DOE facilities. Actions connected to the proposed action include moving mechanical shock equipment and testing operations from Building 882 to 860, installation of additional thin-film deposition equipment and FE NG equipment in Building 878, and decontamination and disposal of unneeded equipment not relocated to 870 Annex. This action is also related to actions discussed in the EA for the non-nuclear consolidation of the DOE complex (see below).

The no action alternative is briefly discussed as a continuation of present conditions (operations in Building 891 and 878). Alternatives considered but dismissed include relocation to other existing SNL/NM buildings and new construction.

Operations Described:

Operations are described briefly, including cleaning, vapor honing, lapping, metallizing, plating, firing, brazing, welding, diffusion bonding, carbon doping and vacuum baking. Use of tritium in the form of a metal hydride, acids, solvents, liquid nitrogen, and gaseous hydrogen are mentioned.

Issues Addressed and Accidents:

Safety features are briefly discussed, including hydrogen monitors, use of glove boxes, and radiation monitors. Radioactive waste generation is discussed as being equivalent to one 55 gallon drum containing less than 1 Curie (Ci) of tritium in metal hydride form per year. Effects to workers from an accidental release of, and exposure to, a maximum facility inventory of 30 Ci of tritium is given as 18.0 mrem effective dose equivalent, resulting in 7×10^{-6} excess cancer mortalities. For purposes of comparison the document notes that the typical tritium-containing self-illuminated exit signs found in public buildings, and allowed by nationally recognized codes, contain 20 Ci of tritium per sign.

Title: Nonnuclear Consolidation Environmental Assessment, Nuclear Weapons Complex Reconfiguration Program

Document Date: June 1993

Timing: FONSI Published in the Federal Register July 8, 1993

Identification Number: DOE/EA-0792 (three volumes)

Location:

The EA discusses eight DOE sites: (1) Sandia National Laboratories, Albuquerque, New Mexico; (2) Los Alamos National Laboratory, Los Alamos, New Mexico; (3) Rocky Flats Plant, Golden, Colorado; (4) Kansas City Plant, Kansas City, Missouri; (5) Mound Plant, Miamisburg, Ohio; (6) Y-12 Plant, Oak Ridge, Tennessee; (7) Savannah River Site, Aiken, South Carolina; and, (8) Pinellas Plant, Largo, Florida.

Proposed Action and Alternatives:

The key element of the Proposed Action is the consolidation of electrical and mechanical functions at the Kansas City Plant. The No Action alternative and alternatives for consolidating the majority of electrical and mechanical functions at Mound, Pinellas, and the Rocky Flats Plant are also presented. The proposed action includes relocation of manufacturing of Neutron Generators, Cap Assemblies, Thermal Batteries and Milliwatt Heat Source Surveillance to SNL/NM. SNL/NM facilities specifically mentioned include Buildings: 805, 807, 840, 841, 842, 860, 864, 870, 878, 882, 891, 894, 905 (the Explosives Components Facility), 957, and 6730.

Operations Described:

The EA discusses a portion of the proposal known as "Complex 21." The consolidation of the nonnuclear manufacturing, storage, and surveillance functions of the Complex are discussed. The functions are grouped into six categories: Electrical/Mechanical; Tritium-Handling; Detonators; Beryllium Technology and Pit Support; Neutron Generators, Cap Assemblies and Batteries; and Special Products. The proposed time frame includes building modifications and equipment installation through 1995 and most operations in place by 1997, with full validation of operations following consolidations by 2000. Operations are assumed to continue through the middle of the 21st century.

Issues Addressed and Accidents:

Issues discussed include: Land Use; Air Quality and Acoustics; Water Resources, Geology and Soils; Biotic Resources; Cultural Resources; Socioeconomics; Waste Management; and Human Health (including facility operations and accidents). Use of hydrogen would increase by a factor of two, and use of trichloroethylene (TCE) and methylene chloride would increase approximately 10 %, however, the document concludes that the SNL accident profile would not change significantly as a result of the proposed action. Hazard quotients and hazard indexes are used in evaluating the effects of human exposure to chemicals.

Title: Environmental Assessment for the Radioactive and Mixed Waste Management Facility

Document Date: June 1993

Timing: DOE request for EA received January, 1990, FONSI issued April 23, 1993

Identification Number: DOE/EA-0466

Location:

Building 6920, Technical Area III of SNL/Albuquerque.

Proposed Action and Alternatives:

The alternatives considered in this document consist of the no action alternative, decentralized waste management facilities, and the proposed action. The proposed action consists of the construction and operation of a central Radioactive and Mixed Waste management Facility (RMWMF) in the southeastern portion of Technical Area III. The facility is described as being a 7,500 ft² steel and concrete facility, numbered Building 6920.

Operations Described:

The RMWMF is described as being designed to receive, store, characterize, conduct limited bench-scale treatment or processing of, repackage, and certify low-level waste (LLW) and mixed waste (MW) for shipment to an offsite disposal or treatment facility. Treatment and processing described includes compaction, mixing and solidification, and pH neutralization.

Issues Addressed and Accidents:

A base case (bounding case) accident was considered consisting of a facility fire caused by an earthquake induced rupture in an LPG gas line. Half of the building radioactive materials inventory is considered to be involved, and the release fraction of respirable radioactive material was taken as 1 % for most materials, 0.1% for Uranium, and 100 % for tritium, iodine, and krypton. Accident scenarios include aircraft and helicopter crashes, various fire scenarios, spills, site blackout, and ventilation system failure.

Impacts from construction and normal operations are addressed, including air quality impacts and radiation exposure to workers and the public.

Title: Kauai Test Facility Environmental Assessment

Document Date: July 1992

Timing: DOE request for EA received November, 1988, FONSI issued July 1, 1992

Identification Number: DOE/EA-0492

Location: The Kauai Test Facility (KTF), a Department of Energy facility located within the Department of Defense US Pacific Missile Range Facility (PMRF) on the west coast of the island of Kauai, Hawaii.

Proposed Action and Alternatives:

The document is a site-wide EA for rocket launches of experimental payloads from the KTF. Because the KTF lies entirely within a 100-year floodplain, the EA also serves as a floodplain assessment. Alternatives considered consist of no action, development of a new facility at an alternative location, and decommissioning of the KTF. The alternatives were considered to be feasible but were dismissed from detailed analysis on the basis that they would not meet the purpose and need for action (they would not meet mission requirements in the context of national security).

Operations Described:

The proposed action consists of continuing the operation of the KTF for rail-launched rockets, and conducting planned vertical launches for the Strategic Target System (STARS) and Exoatmospheric Discrimination Experiment (EDX) programs as described by the EIS and EA, prepared by the U.S. Army and the Strategic Defense Initiative Organization, respectively. The proposed action also includes construction of roads, fences, fuel handling, and launch pad facilities as required, and launching other vertical-launch and rail-launch vehicles.

Issues Addressed and Accidents:

Issues addressed include impacts to floodplains and wetlands, air quality, cultural resources, biological resources, socioeconomic conditions, noise, and land use. Nonroutine operations evaluated include post-launch rocket failure, accidental detonation during rocket assembly, and spills of hypergolic fuel. The EA includes a mitigation action plan (MAP) as required under 10 CFR 1021.322(b)(2) and 1021.331. The MAP includes provisions for establishing an air quality monitoring plan, protection of an endangered plant and a threatened bird, implementation of an Archeological Monitoring Plan and a Burial Treatment Plan, implementation of engineering controls and enforcement of administrative controls protecting workers, prior notification to the public and to sugar cane field workers of planned launches to avoid adverse noise impacts, and containment and monitoring of any spills of hazardous materials.

Title: Environmental Assessment Explosives Component Facility at Sandia National Laboratories Albuquerque, New Mexico

Document Date: July 1992

Timing: DOE request for EA received August, 1989, FONSI issued July 10, 1992

Identification Number: DOE/EA-0576, ADM-89-08

Location: Sandia/New Mexico

Proposed Action and Alternatives:

The proposed action consists of the construction and operation of a centralized, integrated facility for the testing and storage of explosive materials and devices. Operations are to be relocated from other parts of the DOE complex and from other locations in SNL.

Alternatives considered include no action, discontinue explosives testing, construction of the ECF at a location other than SNL, construction of the ECF in Technical Area II, construction of the ECF at a remote on-base site, and phased relocation of the ECF to the proposed site. Alternatives were evaluated briefly and qualitatively.

Operations Described:

The EA describes the consolidation of ongoing activities into a single structure. Specific activities included: (1) shipping, receiving, and storage of explosives, pyrotechnics, and propellants; (2) physical and chemical testing of explosives, pyrotechnics, and propellants (including laser ignition); (3) neutron device research, development, and testing (including use of tritium) (RD&T); (4) battery RD&T; (5) stockpile surveillance of explosives, pyrotechnics, and propellants (including aging and materials compatibility studies); and, (6) mixing and testing of propellants.

Issues Addressed and Accidents:

Impacts discussed for ordinary operations include consideration of: construction, air quality, water resources, flora and fauna, land use, noise, cultural resources, socioeconomics, transportation, energy and water consumption, hazardous and radioactive waste management, and hazards to personnel. Impacts from abnormal events include assessment of: aircraft crash; explosion; abnormal battery test; accident involving neutron device research; and facility fire.

Title: Kauai Test Facility CDX Rocket Operation Environmental Assessment

Document Date: May 1992

Timing: DOE request for EA received May 7, 1992, FONSI issued May 22, 1992

Identification Number: DOE/EA-0786

Location: Kauai Test Facility (KTF)

Proposed Action and Alternatives:

The proposed action is described as a one-time rail-launch of a two-stage Terrier/Malamute rocket. Proposed experiments designed to produce radar and other signatures of various decoys of ballistic missiles in space are described. These include an electro/optical chaff experiment consisting of thin titanium foil to be released a about 468 km, release of four balloons at between 290 and 211 km, and an Exoatmospheric Exothermic Chemical Release (EECR) involving release and reaction of titanium, boron, cesium nitrate, and aluminum at 365 and 40 km. An alternative rocket launch facility at Wallops Island, Virginia, is considered. The alternative launch facility could not provide the high-resolution optical systems needed for observation of the experiments that would be available from the Air Force at the Maui Optical Site (AMOS), Maui, Hawaii. The no action alternative is also considered.

Operations Described:

The Countermeasures Demonstration Experiment (CDX) experiment is described as an on-going program conducted by Sandia for the Strategic Defense Initiative Organization (SDIO), to demonstrate and evaluate techniques that might be used to counter defensive systems.

Issues Addressed and Accidents:

Safety and health measures to protect workers and the public are discussed. It is noted that since 1962 KTF had launched 51 systems using the Terrier as the first stage, and since 1979 nine Terrier-Malemute II systems had been launched; all were successful.

The expected effluents from the rocket motors were described, including reportable releases of lead from the Terrier rocket motor. An accident scenario consisting of a catastrophic rocket failure is considered.

Title: Environmental Impact Statement and Environmental Impact Report for the Continued Operation of Lawrence Livermore National Laboratories and Sandia National Laboratories, Livermore

Notice of Intent (NOI): October 5, 1990

Implementation Plan: DOE/SF-501, August, 1991

EIS Document Date: August, 1992; Five volumes, Executive Summary, and Mitigation Monitoring and Reporting Program document

Record of Decision (ROD): January 27, 1993

Mitigation Action Plan: Document dated September, 1993, approved October 6, 1993

Issuing Agencies: Department of Energy and University of California

Identification Number: DOE/EIS-0157 and/or SCH90030847

Location: Livermore, California.

Proposed Action and Alternatives:

The proposed action is described as the continued operation, including near-term (within 5 to 10 years) proposed projects, of the Lawrence Livermore and Sandia Livermore facilities. The document discusses a no action alternative for continuing operations at FY 1992 funding levels without further growth, a modification of operations alternative focused on specific adverse environmental impacts of operations or facilities, and a shutdown and decommissioning alternative. Under the proposed action and no action alternatives, the administrative limit for tritium at SNL/CA Building 968 was assumed to be reduced from 50 g to 0 g.

Operations Described:

The EIS briefly describes operations at SNL, Livermore. These include: engineering research and development for all levels and phases of the nuclear-weapons life cycle; tasks related to national security, including nuclear materials safeguards and security, treaty verification and control, intelligence on foreign technologies and weapons systems, waste management, and programs in support of the DOD; basic and applied research and development for national energy programs, and; fundamental and applied research related to materials and geosciences. In the area of energy research, programs mentioned are: research in fundamental Otto and diesel engine combustion processes, investigation of pulse combustion phenomena, experiments in toxic disposal using supercritical oxidation, coal combustion studies, and magnetic-confinement fusion energy, particularly plasma/material interactions. Existing and projected space, facilities, and staffing levels are discussed.

LLNL/SNL-CA EIS/EIR, continued:

Issues Addressed and Accidents:

The environmental impacts and resources assessed include: land use; socioeconomics; community services; prehistoric and historic cultural resources; aesthetics and scenic resources; geologic resources and hazards; ecology; air quality; surface and ground water; noise; traffic; utilities and energy; materials and waste management; occupational protection (including public exposures); and site contamination. A number of postulated accidents analyses are presented, including: a radiological accident involving an inadvertent nuclear criticality in Building 332, a chemical accident from the release of 100 lb. of liquefied chlorine gas at Building 518, an aircraft crash assuming 2200 lb. of the explosive LX-10 and 300 lb. of aviation fuel (with a calculated probability of occurrence of 6.2×10^{-7} /year), an earthquake with ground motion strong enough to breach building confinement barriers, and a transportation accident involving transuranic waste.

Title: Kauai Test Facility Two Experiment Rocket Campaign Environmental Assessment

Document Date: March 1991

Timing: DOE request for EA received January, 1991, FONSI issued March 6, 1991

Identification Number: DOE/EA-0492, ADM-90-44

Location: Kauai Test Facility (KTF)

Proposed Action and Alternatives:

The proposed action consists of a two experiment rocket campaign during 1991 in which the unrelated STRYPI/LACE (Low Altitude Compensation Experiment) and the Rocket Accelerated Penetrator (RAP-501) would be flown from the KTF. STRYPI/LACE is described as part of an on-going program conducted by the Naval Research Laboratory (NRL) and the Strategic Defense Initiative Office (SDIO), and RAP-501 is described as part of the Navy's Barking Sands Tactical Underwater Range (BARSTER) program. The STRYPI/LACE experiment was to allow use of the Ultraviolet Plume Instrument (UVPI) portion of the LACE Satellite to collect data on the rocket plume. The RAP-501 experiment was to be the fifth test series to demonstrate and collect data on a new design for a high speed water entry weapon. Both rocket campaigns involved rail launched systems.

The no action alternative is briefly described. A launch from Wallops Island, Virginia, was considered but dismissed.

Operations Described:

The proposed action would involve use of STRYPI and NIKE rockets. The document states that since 1965 22 STRYPI and 117 NIKE rocket systems had been flown from KTF. The EA discusses transportation of hardware from New Mexico to KTF, assembly of the rocket systems, countdown, launch, flight safety, and recovery (for RAP-501).

Issues Addressed and Accidents:

The major environmental impacts of rocket launches are described as being exhaust gases and smoke, these are discussed in some detail in the text and appendix A. The impacts of noise are briefly discussed. A potential accident consisting of premature catastrophic rocket failure (pad detonation or burning) is discussed.

Title: Integrated Materials Research Laboratory (IMRL) Environmental Assessment

Document Date: January 1991

Timing: DOE request for EA received January, 1990, FONSI issued January 3, 1991

Identification Number: DOE/EA-0481, ADM-88-07

Location: Sandia National Laboratories, New Mexico

Proposed Action and Alternatives:

The proposed action is described as construction and operation of the Integrated Materials Research Laboratory (IMRL) and associated construction of a 115 kV electric transmission line and associated substations, relocation of a salvage yard, and construction and use of a parking lot. Alternatives considered included no action, an alternative on-site location, and off-site leased location, contract research, and renovation of existing buildings.

Operations Described:

The IMRL is proposed to house personnel and research and development operations in areas including: solid state sciences, ion-solid interactions and surface sciences; laser and chemical physics research; compound semiconductor and device research; condensed matter research; optoelectronics and microsensor research; organic and electronic materials; materials characterization; metallurgy; chemistry; and, ceramics.

Issues Addressed and Accidents:

Accidents discussed include fire in the chemical store room, fire in a laboratory hood, spill of liquid in the laboratory, and failure of a regulator on a gas canister. The document contains an environmental impact matrix comparing impacts of alternatives on topography, soils, surface water, ground water, air quality, noise, vegetation, wildlife, cultural resources, land use, occupational health and safety, and socioeconomics.

Title: Final Supplemental Environmental Impact Statement Waste Isolation Pilot Plant (13 volumes)

Document Date: January 1990

Timing: Unknown/not applicable

Identification Number: DOE/EIS-0026-FS

Location: Carlsbad, New Mexico

Proposed Action and Alternatives:

In 1980, the DOE published the Final Environmental Impact Statement (FEIS) for the WIPP. This FEIS analyzed and compared the environmental impacts of various alternatives for demonstrating the safe disposal of transuranic (TRU) radioactive waste resulting from DOE national defense related activities. Based on the environmental analyses in the FEIS, the DOE published a Record of Decision in 1981 to proceed with the phased development of the WIPP in southeastern New Mexico. The purpose of the Supplemental Environmental Impact Statement (SEIS) was to update the environmental record by evaluating the environmental impacts associated with new information, new circumstances, and proposal modifications.

The SEIS evaluates and compares the Proposed Action and two alternatives. The proposed action is to proceed with a phased approach to the development of the WIPP. Full operation would be preceded by a Test Phase of 5 years during which time certain tests and operational demonstrations would be carried out. The tests would be conducted to reduce uncertainties associated with the prediction of natural processes that might affect long-term performance. Results of these tests would be used to assess the ability of the WIPP to meet applicable Federal standards for the long-term protection of the public and the environment. During the Test Phase NEPA requirements would be reviewed in light of the new information developed and appropriate documentation would be prepared. DOE would issue another SEIS at the conclusion of the Test Phase and prior to a decision to precede to the Disposal Phase.

The first alternative discussed is No Action, under which there would be no research and development facility to demonstrate the safe disposal of TRU waste, and TRU waste would continue to be stored.

The second alternative discussed is to conduct the bin-scale tests at a facility other than the WIPP and to delay emplacement of TRU waste in the WIPP until a determination has been made of compliance with EPA standards for TRU waste disposal. A specialized facility for aboveground bin-scale tests could be constructed at any one of the DOE facilities. In order to analyze the environmental impacts of this alternative in the SEIS the DOE evaluated the Idaho National Engineering Laboratory as a representative facility.

WIPP EIS, continued

Operations Described:

The SEIS provides an overview of the WIPP in Volume 1, Chapter 2, including location, facilities, waste types and forms, waste receipt and emplacement, waste retrieval at the WIPP, plans for decommissioning, site emergency planning and security, transportation, and environmental monitoring programs.

The proposed action and alternatives are described in Vol. 1, Chapter 3. The portion of the discussion most often useful to Sandia Operations involves data collection and field and laboratory tests in support of the WIPP Test Phase. On page 3-28 the statement is made, "Data collection regarding the geologic and hydrologic characteristics of the area surrounding the WIPP has been under way for 14 years as part of site characterization.... Characterization of the disposal system and the surrounding area and the development of models would continue during the Test Phase." Site hydrology, hydrologic testing, and modeling are discussed in chapter 4. Chapter 3 also discussed testing of containers and analysis of transportation of waste by truck to the WIPP.

Issues Addressed and Accidents:

Environmental consequences are discussed in Vol. 1, Chapter 5. Consequences of waste retrieval at a number of DOE sites is discussed. Radiological risks from transportation and transportation accidents are discussed. Section 5.2.3 provides a "Risk Assessment and Analysis of Radiological Environmental Consequences of Operations and Possible Retrieval of Waste at the WIPP."

Title: Strategic Defenses Facility Environmental Assessment

Document Date: July 1988

Timing: FONSI issued July 26, 1988

Identification Number: DOE/EA-0352

Location: Sandia National Laboratories/New Mexico, Technical Area IV, Buildings. 962 and 963

Proposed Action and Alternatives:

The proposed action consists of the construction and operation of two laboratory buildings (962 and 963) and one maintenance building to be located in Technical Area IV to provide laboratory space for conducting defensive weapons experiments, laboratory facilities for support of these experiments, and an Underground Test Program (UGT) field engineering facility. Three alternatives to the proposed action are discussed: The alternatives include: Modification of existing facilities; an alternative site location either at SNL/NM or offsite; and the no action alternative.

Operations Described:

Various activities in support of research on directed energy weapons concepts as well as support of the underground and above ground testing programs are discussed. The project is divided into phases, as follows:

Phase 1. Light laboratory and office space for personnel and equipment in support of the strategic defense program. (Note, this building is 962.)

Phase 2. A high bay/low bay laboratory building and equipment for defensive weapons experiments in six subproject areas and a maintenance building. (Note, the laboratory building is 963.) Phase research subprojects included:

1. Reconnection Gun Project, (an expansion of an existing research project) with the objective of demonstrating the technical feasibility of an electromagnetic launcher designed to accelerate large masses to hypervelocity for weapons applications;
2. The X-ray Laser Project, involving the study of x-ray effects and atomic physics, including vulnerability/lethality, and assets survivability;
3. The repetitive Pulsed Power Project, (an expansion of an existing research project) to develop a pulsed power accelerator capable of continuously producing output pulses of 10 kJ at a repetition rate of 1 kHz with an output power level of 10 megawatts.
4. Directed Nuclear Energy Systems (DNES) Project (also known as the Hawk subproject), to provide a facility to investigate gas-laser candidates for use in Fusion-Activated Laser Concept applications;

SDF EA, continued

5. Microwave Research Project, (an expansion of an existing research project) developed to support research and development of a high power microwave source using Magnetically Insulated Line Oscillator technology developed at SNLA and to examine the effects of electromagnetic coupling on the vulnerability and susceptibility of selected electronics subsystems; and

6. The Delphi Laboratory Project, consisting of an electron accelerator and beam-propagation tank, a compact, high repetition-rate electron accelerator (PT2), and a large (1 kJ) excimer laser to conduct short-range beam propagation studies.

Issues Addressed and Accidents:

Issues addressed in the EA include airborne release of extremely limited amounts of radionuclides produced by the High Repetition Rate PT2 accelerator associated with the Delphi sub-project. A cultural resources survey of the site was performed. Impacts from construction are discussed separately from operational impacts.

A "maximum credible accident" is discussed. The analysis does not consider potential triggering mechanisms, or the likelihood of the event, other than the statement that it is of sufficiently low probability that it is not considered in the design parameters for the facility. The analysis concludes that the potential release of radionuclides from an uncontrolled fire in the UGT decontamination facility (part of the Delphi laboratory subproject) would be undetectable at the SNLA site boundary, and would result in a maximum dose of 10^{-7} mrem at the site boundary.

Title: Environmental Effects of Solar Thermal Power Systems, Environmental Assessment of the U. S. Department of Energy's Solar Thermal Technology Program

Document Date: June 1982

Timing: Unknown/Not Applicable

Identification Number: UCLA 12/1372, UC 11, 62, prepared by the Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles for DOE under Contract No. DE-AM03-76-SF00012

Location:

This document presents a general discussion of programmatic solar thermal technology program activities in the south western portion of the United States.

Proposed Action and Alternatives:

The solar thermal technology program is described and comparisons are made between the effects of conventional coal-fired generating systems and solar thermal energy systems.

Operations Described:

Appendix A describes solar thermal energy systems and components. Brief descriptions of solar energy collector subsystems (such as heliostats, parabolic dishes, parabolic trough, and fixed-mirror distributed focus collectors), solar energy receiver subsystems (such as central and distributed receivers), energy conversion subsystems (such as Rankine, Brayton, and Stirling cycle engines), and energy storage subsystems (such as thermal sensible heat and latent heat, thermochemical, and mechanical storage systems), and heat transfer, storage, and working fluids subsystems (such as eutectic salts, salt/acid solutions, and steam/water systems). Chapter 3 generally describes various potentially affected environments, including "southwest desert" and "urban-industrial" settings.

Issues Addressed and Accidents:

Issues addressed include land and water use, construction impacts, climatic impacts, operational impacts. Environmental impacts from unusual occurrences such as fluid release or brine contamination from solar ponds is discussed. Health and safety impacts from unusual occurrences such as glare and misdirected solar radiation are discussed. Endangered species (as of 1982) of Arizona, California, Colorado, Nevada, New Mexico, and Utah are summarized in Appendix B.

Title: Environmental Impact Assessment Sandia Laboratories Albuquerque, New Mexico

Document Date: May 1977

Timing: No FONSI issued because document was prepared prior to the issuance of the Council on Environmental Quality (CEQ) implementing regulations

Issuing Agency: Energy Research and Development Agency (ERDA) Division of Military Application

Identification Number: EIA/MA 77-1

Location: Sandia National Laboratories, New Mexico, including facilities within the confines of the Kirtland Air Force Base, and in Edgewood

Proposed Action and Alternatives:

On-going laboratory activities and the environmental impacts associated with those activities and accidents are discussed very broadly. Area IV is not addressed. The impacts of transportation outside the boundaries of the Kirtland Air Force Base are explicitly not addressed. Alternatives discussed include plant shutdown or complete relocation and site decommissioning; partial transfer of functions elsewhere; reducing the number and size of the operations with the greatest potential for adverse environmental impact, and wider use of alternative technologies with reduced environmental impact.

Operations Described:

Operations are described generally and without much detail.

Area I: Activities mentioned include research, design, and development of weapons systems and components and related science and engineering studies. Support activities including administration, technical library, computing, systems evaluation, advanced planning, instrumentation, testing, military liaison, fabrication, receiving and shipping, and health and safety. Research on nuclear energy program activities, weapons protection, fuel cycle protection, nuclear reactor safety, and fusion is mentioned, along with RD&T and prototype construction for nonnuclear energy programs, such as solar, fossil fuels, combustion, magma and advanced drilling. The text discusses laboratories containing chemicals, explosives, electromagnetic radiation testing devices, high pressure and vacuum equipment, high voltage equipment, lasers, accelerators, and x-ray equipment. Office space, shops, vaults, the steam plant, and oil and tank farms are mentioned. Research on carbon composites is specifically mentioned.

Area II:

Activities and facilities discussed include: test postmortems on devices, components, and subassemblies; material studies; nondestructive tests; explosive tests using less than 10 pounds of explosives; and explosives storage magazines and igloos.

SNL/NM EIA, continued

Area III:

The description of Area III includes : centrifuge, radiant heat testing, reentry burn-up simulation (arc tunnel), water tunnel, and rocket sled track. Facilities shown on the map but not explicitly discussed include the drop towers, shock and vibration facilities, warehouse and maintenance buildings, the light initiated explosive building, shops, photography facilities, the shipping container test ramp, guns, and rocket launcher.

Area IV: Area IV is not discussed in the EIA.

Area V:

The text mentions three reactors: Annular Core Pulse Reactor (ACPR), Sandia Pulsed Reactor II (SPR II), and Sandia Pulsed Reactor III (SPR III). The text also mentions electron beam generators including: Hermes II, Relativistic Electron Beam Accelerator (REBA), the Hydra, the Febetron, the Pelletron Electron Accelerator, the Heavy Ion Accelerator, and Marx Generators.

Coyote Test Field:

Facilities discussed include the Shock Tubes, Aerial Cable Facilities, Lurance Canyon Test Site, Small Explosive Test Sites, Electroexplosive Facility, high explosive storage igloos, and Laser Strain Seismometer (shown as the Laser Earth Strain Meter on the map). A site for explosive machining is also shown on the map, and an explosive assembly building is shown on one figure.

Edgewood Test Site:

Activities described include approximately 25 airdrops per year of inert shapes, 3-4 downward firings per year of a 12 inch gun, 4-12 firings per year of an 8 inch gun, and some drops to test parachute configurations. aircraft fly-overs to determine acoustic signatures, radar tests of terrain returns, radio-frequency and infrared tests and investigation of drilling techniques.

Proposed modifications and future facilities were mentioned, including:

Modifications to a basement for improved remote handling facilities in existing hot cells, and performance improvement of the ACPR, security upgrades, and the Diode Assembly Addition to the electron beam accelerator facility in Area V. In Coyote Test Field, the Five Megawatt Solar Thermal Test Facility was mentioned.

In Areas I and II the Nuclear Safeguards Security Laboratory, New Cafeteria, Rock Mechanics Laboratory, Warehouse, and Electron Beam Fusion Facility, modifications to Building 868, Surface Physics Research Laboratory, and addition to electromagnetic radiation/electromagnetic pulse (EMR/EMP) facility were discussed.

SNL/NM EIA, continued

Issues Addressed and Accidents:

Accidents addressed for Area I include a spill and fire from a methane tank, a release of ammonia, and a release of tritium.

No accidents were addressed for Area II.

Accidents addressed for Area III include release of shrapnel or test units from the Sled Track, a fire associated with the Sled Track, release of fissile material from a test object at the Sled Track, and an on-site explosion and release of radioactive materials associated with transportation of test objects.

Accidents addressed for Area V include various accidents involving reactors. For the SPR accidents included: fire in the reactor room, improper adjustment during initial reactivity checks, experiment movement changing reactivity, and melt-down of a fissile-material experiment. For the ACPR the accidents included: vaporization of a fission foil, melt-down of a fissile-material experiment, and failure of a "water-logged" fuel elements.

Accidents for the Coyote Test Field included brush fires at the large explosive site or one of the two aerial cable sites, aircraft being affected by a shock wave from a test, loss of a rocket fired from the Sol se Mete Canyon cable site.

Accident scenarios involving the Edgewood site include fires from a gun misfiring, and crash of an aircraft involved in a test.

Discussion:

The Tiger Team assessment in 1991 found that "SNL, Albuquerque, sitewide NEPA document (EIS/MA 77-1) does not adequately assess the individual and cumulative effects of many activities at the SNL, Albuquerque site. Consequently, for certain activities, the sitewide EA is not suitable as a basis for tiering." Because the descriptions in the EIA are out of date, and because it was prepared prior to the issuance of the Council on Environmental Quality's NEPA regulations the Tiger Team found that many impacts of current operations had not been assessed. In its NEPA Rule, 10 CFR 1021, DOE discusses programmatic NEPA documents, including site-wide documents, in Section 1021.330.

Title: 5 Megawatt Solar Thermal Test Facility Environmental Assessment

Document Date: August 1976

Timing: Unknown/not applicable

Issuing Agency: Energy Research and Development Agency (ERDA), prepared by Black & Veatch, Honeywell, Inc. and the Georgia Institute of Technology

Identification Number: None. (Contract E(04-3)-1078)

Location: Albuquerque, New Mexico, Kirtland Air Force Base, Coyote Test Field

Proposed Action and Alternatives:

This document was prepared before the Council on Environmental Quality Regulations were promulgated, and it does not include a discussion of alternatives. The proposed action is the construction and operation of a facility where prototypes and scale models of solar thermal power plants could be tested prior to final design. The testing program is to allow parallel development and comparison of alternate concepts.

Operations Described:

Subsystems to be tested include a collector subsystem consisting of a number of heliostats and their control and drive mechanisms, a receiver subsystem consisting of a boiler/superheater in which the working fluid is heated, and a thermal storage subsystem to store thermal energy for production during periods of low or no insolation. The thermal storage tanks are described as possibly containing hazardous materials such as liquid metals, salts, or sulfur trioxide. Support facilities described include a receiver tower, and a field of heliostats, including pedestals. General support capabilities include test assembly, central control, instrumentation, heat dissipation, water supply and treatment, wastewater treatment, and laboratory and visitor facilities, parking lots and roads. Possible future capabilities for high temperature processing and materials research are mentioned.

Issues Addressed and Accidents:

Biological and archaeological surveys were made of the site. Potential effects discussed include: physical, ecological, socioeconomic, heliostat, receiver tower and receiver, thermal storage, auxiliary boiler, heat rejection, water supply and wastewater effects from construction and operation of the facility. Accidents including fires, explosions, and hazardous materials release are mentioned.

Title: Environmental Assessment Tonopah Test Range

Document Date: December 1975

Timing: Unknown/not applicable

Issuing Agency: Energy Research and Development Agency

Identification Number: EIA/MA/76-2

Location: Tonopah Test Range, Nevada

Proposed Action and Alternatives:

The document discusses the continued operation of the Tonopah Test Range (TTR). Alternatives include complete cessation of work, transfer of some or all of the functions elsewhere, reducing the pace of testing, and changing operational methods.

Operations Described:

The site, including buildings, test targets, etc. is described. Major activities described include: air drops, gun firings, ground launched rockets, air-launched rockets, explosion effects, static rocket tests, and earth penetrator tests.

Issues Addressed and Accidents:

Impacts from normal operations discussed include: target areas for rockets and shells, residual debris, spread of Beryllium and Depleted Uranium, noise, shocks, dust, transportation, electromagnetic radiation, demographics, and environmental contamination and restoration associated with the roller coaster tests. Accidents discussed include: errant rocket flight, inadvertent or premature release of a drop device from an aircraft, structural failure of test devices containing depleted uranium, plutonium, or beryllium, rocket motor explosion, accidental detachment of a rocket motor during a static test, airplane crash, and premature or accidental detonation of explosives.

Other NEPA Issues:

As for the SNL/NM site wide EIS, the age of this document and the fact that it was prepared prior to the issuance of CEQ NEPA regulations (40 CFR 1500-1508) makes the continuing reliance on this document as a source of NEPA compliance somewhat difficult.

This page intentionally left blank.

Distribution:

4 George Laskar
 Assistant Area Manager
 Environment, Safety and Health
 DOE Kirtland Area Office
 MS 0184

1 MS 1355 J. J. Everett, 7256
1 MS 1035 J. J. Baremore, 7200
12 MS 1037 J. M. Harris, 7258
5 MS 1037 T. A. Wolff, 7258
1 MS 0939 C. C. Hartwigsen, 7900
2 MS 0903 J. P. Furaus, 7903
2 MS 1313 M. D. DeWitte, 12650
1 MS 0517 E. N. Cambell-Domme, 2011
1 MS 0461 E. Scott-Patterson, 5501
1 MS 0724 S. Weissman, 6000
1 MS 1067 G. Chavez, 7000
1 MS 1065 T. A. Lovato, 7254
1 MS 9222 T. Larson, 8644
1 MS 9222 L. Peeters Gardizi, 8644
1 MS 0522 R. Welberry, 14000

1 MS 9018 Central Technical Files, 8523-2
5 MS 0899 Technical Library, 13414
1 MS 0619 Print Media, 12615
2 MS 0100 Document Processing, 7613-2