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# SWEIS ANNUAL REVIEW–CY2002


***Joseph V. Guerrero, Linda S. Bayliss, Christopher S. Catechis, Brenda Bailey White***

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550



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**The pictures on the cover, from top to bottom, and left to right, include:**

**A. Aerial photograph of Sandia National Laboratories Tech Area I from the northwest.**
**B. Photograph of a coyote at Sandia National Laboratories.**
**C. Victor Baca slides a tray of neutron generator tubes into a dessicator cabinet.**
**D. Aerial photograph of the Sandia National Laboratories Solar Facility.**
**E. Tiny precision rotors and stators produced with x-rays can be inserted in millimotors or safing systems. Sandia is partnering with NASA's Jet Propulsion Laboratory to produce parts for upcoming space missions that will study solar flares and the ozone layer. The micromachining technology for producing the parts is known as LIGA, from the German words for lithography, electroplating, and molding.**
**F. Swarms of fully self-contained, miniature autonomous vehicles are being developed to perform dangerous tasks such as locating and disabling land mines or detecting chemical and biological weapons. These one-cubic-inch machines may one day perform microsurgery or planetary exploration.**
**G. Second-graders at Bel-Air Elementary School in Albuquerque get some tips from Susan Bender on operating a computer. A former teacher, Susan uses her contacts to match folks from Sandia with classrooms that would welcome an old but still serviceable Sandia computer. Students seen here are part of a class that recently wrote letters to Jim Borders, Susan's manager, thanking Sandians for the computers. The loans are arranged through Education and New Initiatives Dept.**
**H. Sandia National Laboratories personnel operate Sandia's mobile Explosives Destruction System. This system was designed to destroy unexploded ordinance and munitions.**

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# SWEIS ANNUAL REVIEW—CY2002

## A Comparison of CY2002 Operations to Projections Included in the Site-Wide Environmental Impact Statement for Continued Operation of Sandia National Laboratories/New Mexico

Joseph V. Guerrero
Environmental Management Department
Sandia National Laboratories/New Mexico
P.O. Box 5800
Albuquerque, NM 87185-1042

Linda S. Bayliss and Christopher S. Catechis
Environmental Management Department
Outrider Environmental Planning
& Technical Services
13701 Skyline Road NE
Albuquerque, NM 87123

Brenda Bailey White, Editor
Environmental Management Department
The Plus Group, Inc.
1512-D Wyoming Blvd. NE
Albuquerque, NM 87112

## ABSTRACT

The SNL/NM CY2002 SWEIS Annual Review discusses changes in facilities and facility operations that have occurred in selected and notable facilities since source data were collected for the SNL/NM SWEIS (DOE/EIS-0281). The following information is presented:

- An updated overview of SNL/NM selected and notable facilities and infrastructure capabilities.
- An overview of SNL/NM environment, safety, and health programs, including summaries of the purpose, operations, activities, hazards, and hazard controls at relevant facilities and risk management methods for SNL/NM.
- Updated base year activities data, together with related inventories, material consumption, emissions, waste, and resource consumption.
- Appendices summarizing activities and related hazards at SNL/NM individual special, general, and highbay laboratories, and chemical purchases.

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# ACRONYMS AND ABBREVIATIONS

**A&F** – arming and firing

**ac** – acre(s)

**AC** – alternating current

**AD** – anno domini (Latin, 'in the year of the Lord'; used to designate centuries)

**ACGIH** – American Conference of Governmental Industrial Hygienists

**ACRR** – Annular Core Research Reactor

**AEC** – Atomic Energy Commission

**AFWL** – Air Force Weapons Laboratory

**AHF** – Advanced Hydrotest Facility

**AHR** – advanced hydrodynamic radiography

**AICE** – American Institute of Chemical Engineers

**ALARA** – as low as reasonably achievable

**ALEC** – advanced laser external cavity

**AMPL** – Advanced Manufacturing Processes Laboratory

**ANSI** – American National Standards Institute

**APPRM** – Advanced Pulsed-Power Research Module

**Ar** – argon

**ASME** – American Society of Mechanical Engineers

**AST** – aboveground storage tank

**AWN** – Acid Waste Neutralization (plant)

**B** – billion(s)

**BDBA** – beyond design-basis accident

**BST** – building source term

**BTU** – British thermal unit

**CAA** – Clean Air Act

**CAD** – computer-aided design

**CAM** – computer-aided manufacturing

**CEDE** – committed effective dose equivalent

**CFR** – Code of Federal Regulations

**CHEST** – Conventional High Explosives & Simulation Test (Chestnut Site)

**CHNO** – carbon, hydrogen, nitrogen, and oxygen (explosives)

**Ci** – curie(s)

**cm** – centimeter(s)

**CNC** – computer numerical control

**CO** – carbon monoxide

**Co** – cobalt

**CSPRA** – Compact Short-Pulse Repetitive Accelerator

**CSRL** – Compound Semiconductor Research Lab

**CTB** – Cathode Test Bed

**CTF** – Coyote Test Field

**CTTF-West** – Containment Technology Test Facility-West

**CWL** – Chemical Waste Landfill

**CY** – calendar year(s)

**D&D** – decontamination and demolition

**DARHT** – dual-axis radiographic hydrotest

**DAS** – data acquisition (system)

**dB** – decibel(s)

**DBA** – design basis accident

**DC** – direct current

**DCG** – derived concentration guide

**DIS** – diagnostic instrumentation system

**DoD** – Department of Defense

**DOE** – Department of Energy

**DOE/AL** – DOE/Albuquerque Operations Office

**DOE/KAO** – DOE/Kirtland Area Office

**DOE/OKSO** – DOE/Office of Kirtland Site Operations

**DOT** – Department of Transportation

**DP** – Defense Programs

**dpm** – disintegrations per minute

**DU** – depleted uranium

**EA** – environmental assessment

**EBA** – evaluation-basis accidents

**ECL/ADM** – environmental checklist/action description memorandum

**ECF** – Explosive Components Facility

**EDE** – effective dose equivalent

**EID** – Environmental Information Document

**EOC** – Emergency Operations Center

**EOD** – Explosives Ordnance Disposal

**EPA** – Environmental Protection Agency

**ER** – environmental restoration

**ES&H** – environment, safety, and health

**eV** – electron volt(s)

**FAIT** – Facilities Asbestos Implementation Team

**FGR** – flue gas recirculation

**FHA** – fault hazard analysis

**FLAME** – Fire Laboratory for the Authentication of Models and Experiments

**FMEA** – failure modes and effects analysis

**FONSI** – finding of no significant impact

**FPAC** – firing pad access control

**fpm** – feet per minute

**fps** – feet per second

**FREC** – fuel ringed external cavity

**FSID** – Facilities and Safety Information Document

**FSU** – Former Soviet Union

**ft** – foot or feet

**$ft^3$** – cubic foot

**FTE** – full-time equivalent

**FY** – fiscal year

**g** – gram(s)

***g*** – gravitational acceleration

**gal** – gallon(s)

**GIF** – Gamma Irradiation Facility

**GPS** – Global Positioning System

**GRUMP** – General Repetitive Universal Multi-Purpose (pulser)

**GWPP** – Groundwater Protection Program

**HA** – hazards analysis

**ha** – hectare(s)

**HARP** – Hazard Aggregation Rollup Process

**HC** – hazard category

**HCF** – Hot Cell Facility

**HCPI** – Hazardous Chemicals Purchase Inventory

**HEPA** – high-efficiency particulate air (filter)

**HERMES III** – High-Energy Radiation Megavolt Electron Source III

**HMX** – octohydrotetranitrotetrazocine

**HNAB** – hexanitrostilbene

**HPGe** – high-purity germanium

**HVAC** – heating, ventilation, and air conditioning

**HWMF** – Hazardous Waste Management Facility

**Hz** – hertz

**I** – iodine

**IBEST** – ion beam surface treatment

**ICF** – inertial confinement fusion

**ICS** – instrumentation and control system

**IEEE** – Institute of Electrical and Electronics Engineers

**IDLH** – immediately dangerous to life and health

**IGSV** – In-Ground Storage Vault

**IHE** – insensitive high explosives

**IMP** – Intermediate Pulser

**IMRL** – Integrated Materials Research Laboratory

**in.** – inch(s)

**ISMS** – Integrated Safety Management System

**IST** – initial source terms

**IWFO** – Intelligence Work for Others

**J** – joule(s)

**KAFB** – Kirtland Air Force Base

**k** – kilo- (prefix for one thousand)

**ℓ**– liter(s)

**lb** – pound(s)

**LARPS** – Large Aircraft Robotic Painting System

**LENSTM** – laser engineered net shaping

**LEVIS** – laser evaporation ionization source

**LEWS** – lightening early warning system

**LIBORS** – laser ionization based on resonant saturation (system)

**LICA** – low-intensity cobalt array

**LIHE** – Light Initiated High Explosive

**LIVA** – linear induction voltage adder

**LLMW** – low-level mixed waste

**LLW** – low-level waste

**LMPL** – Liquid Metal Processing Laboratory

**LPF** – leak path factor

**LTCC** – low-temperature co-fired ceramic

**LWDS** – Liquid Waste Disposal System

**m** – meter(s) or milli- (prefix for $10^{-3}$, or one-thousandth)

**µ** – micro- (prefix for $10^{-6}$, or one-millionth)

**M** – mega- (prefix for $10^{6}$, a millionfold) or million

**MA** – mega-ampere(s)

**MACCS** – MELCOR Accident Consequence Code System

**MCL** – maximum contaminant levels

**MCM** – multi-chip modules

**MDL** – Microelectronics Development Laboratory

**MEI** – maximally exposed individual

**MESA** – Microsystems & Engineering Sciences Applications (Complex)

**mi** – mile(s)

**MIPP** – Medical Isotopes Production Program

**MITE** – magnetically insulated transmission experiment

**MITL** – magnetically insulated transmission line

**mm** – millimeter(s)

**Mo** – molybdenum

**MOCVD** – metallorganic chemical vapor deposition

**MPC** – microsecond pulse compressor

**mrem** – millirem(s)

**MSDS** – material safety data sheet

**MTA** – Marx trigger amplifier

**MTG** – Marx trigger generator

**MTRU** – mixed transuranic

**MUSE** – multidimensional, user-oriented synthetic environment

**MV** – megavolt(s)

**MW** – megawatt(s)

**MWL** – Mixed Waste Landfill

**NA** – not applicable

**NAGPRA** – Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)

**NAPD** – not available for public distribution

**NASA** – National Aeronautics and Space Administration

**NEC** – National Electrical Code

**NEPA** – National Environmental Policy Act

**NESHAP** – National Emission Standards for Hazardous Air Pollutants

**NEST** – Nuclear Emergency Search Team

**NFA** – no further action

**NFPA** – National Fire Protection Association

**NG** – nitroglycerin

**NGF** – Neutron Generator Facility

**NHZ** – nominal hazard zone

**NIF** – National Ignition Facility

**NMAC** – New Mexico Administrative Code

**NMED** – New Mexico Environment Department

**$NO_x$** – nitrogen oxide(s)

**NN** – nonnuclear

**NR** – not reported

**NRC** – Nuclear Regulatory Commission

**NRU** – neutron radiography unit

**NSA** – National Security Agency

**NSTTF** – National Solar Thermal Test Facility

**ODMS** – oxygen deficiency monitor system

**OP** – operating procedure

**O&SHA** – operating and support hazard analysis

**OSHA** – Occupational Safety and Health Administration

**PADI** – Professional Association of Diving Instructors

**PBFA** – Particle Beam Fusion Accelerator

**PBX** – plastic bonded explosives

**PCB** – polychlorinated biphenyl

**PCE** – tetrachloroethene

**PDFL** – Photovolataic Device Fabrication Laboratory

**Pe** – probability of event occurring per year

**PETL** – Processing and Environmental Technology Laboratory

**PETN** – pentaerythritol tetranitrate

**PFL** – pulse-forming lines

**PHS** – primary hazard screening

**pico (or p)** – prefix for one-trillionth ($10^{-12}$)

**PKID** – point kinetics, one-dimensional (thermal analysis code)

**PMMA** – polymethyl methacrylate

**ppm** – parts per million

**PPS** – plant protection system

**PQL** – practical quantitation limit

**psi** – pounds per square inch

**PV** – photovoltaic

**R** – roentgen (unit of absorbed radiation dose exposure)

**R&D** – research and development

**rad** – radiation absorbed dose

**RCF** – refractory ceramic fiber

**RCRA** – Resource Conservation and Recovery Act of 1976

**TCSC** – Radiological and Criticality Safety Committee

**RCT** – radiological control technician

**RDX** – hexahydrotrinitrotriazine

**RF** – radio frequency

**RGD** – radiation-generating device

**RHEPP** – Repetitive High-Energy Pulsed Power

**RITS** – Radiographic Integrated Test Stand

**RMMA** – radioactive material management area

**RMWMF** – Radioactive and Mixed Waste Management Facility

**RO/DI/UPW** – reverse osmosis deionized ultra pure water

**ROD** – record of decision

**RP** – rapid prototyping

**rpm** – revolutions per minute

**RTP** – Repetitive Test Pulser

**RTV** – room-temperature vulcanize

**s** – second(s)

**SABRE** – Sandia Accelerator and Beam Research Experiment

**SA** – safety assessment

**SAD** – safety assessment document

**SAR** – safety analysis report

**SCB** – steel confinement box

**scf** – standard cubic feet

**SDI** – Strategic Defense Initiative

**SER** – safety evaluation report

**$SF_6$** – sulfur hexafluoride

**SGB** – shielded glove box

**SHA** – system hazard analysis

**SIH** – standard industrial hazard

**SL** – stereolithography

**SNL** – Sandia National Laboratories

**SNL/NM** – Sandia National Laboratories/New Mexico

**SNM** – special nuclear material

**SOP** – standard operating procedure

**SPHINX** – Short-Pulse High Intensity Nanosecond X-Radiator

**SPR** – Sandia Pulsed Reactor

**STAR** – Shock Thermodynamics Applied Research Facility

**STB** – steel transfer box

**STF** – Subsystem Test Facility

**STP** – storage/transfer pool

**SVOC** – semi-volatile organic compounds

**SWEIS** – site-wide environmental impact statement

**SWISH** – small wind shield

**SWMU** – solid waste management unit

**T&E** – threatened and endangered

**TA** – Technical Area

**TAG** – Tijeras Arroyo Groundwater (Investigation)

**TATB** – triaminotrinitrobenzene

**Te** – technetium

**TCE** – trichloroethene

**TEDE** – total effective dose equivalent

**TESLA** – Tera-Electron Volt Energy Superconducting Linear Accelerator

**TNT** – trinitrotoluene

**TOX** – total halogenated organics

**TRU** – transuranic

**TSCA** – Toxic Substances Control Act

**TSPI** – Time-space-position information

**TSR** – Technical Safety Requirement

**TTF** – Thermal Treatment Facility

**TW** – terawatt(s)

**UGT** – Underground Test (Program)

**UL** – Underwriters Laboratory

**UNO** – United Nations Organization (hazard classification and compatibility group)

**USAF** – U.S. Air Force

**USQ** – unreviewed safety question

**UST** – underground storage tank

**UV** – ultraviolet

**V** – volt(s)

**VDL** – vacuum diode load

**VIS** – vacuum insulator stack

**VMAS** – virtual manufacturing applications system

**VOC** – volatile organic compounds

**VR** – virtual reality

**W** – watt

**WFO** – Work for Others (Program)

**Xe** – xenon

**YAG** – yttrium aluminum garnet

**yr** – year

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# CHAPTER 1.0
# INTRODUCTION

## CONTENTS



## FIGURES

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# SNL/NM CY2002 SWEIS ANNUAL REVIEW

## 1.0 INTRODUCTION

In late 1999, the U.S. Department of Energy (DOE) published the Sandia National Laboratories/New Mexico (SNL/NM) Site-Wide Environmental Impact Statement (SWEIS) examining the environmental impacts of three alternatives for the continued operation of the facility (DOE, 1999). To complete the *National Environmental Policy Act* (NEPA) process, DOE issued a Record of Decision (ROD) in early 2000 identifying the expanded operations alternative as the preferred alternative assessing environmental impacts for operating SNL/NM (DOE, 2000). Under it's NEPA regulations, DOE must evaluate the SWEIS at least every 5 years to determine whether it remains adequate, if a new SWEIS should be prepared, or if a supplement to the existing SWEIS is needed (10 CFR 1021.330). Consistent with this requirement, DOE/Sandia Site Operations (SSO) plans to assess the SWEIS in 2005.

To verify that the SNL/NM operations remain within the analysis of environmental impacts in the SWEIS, the SNL/NM NEPA Team, Org. 3121, collects and compiles environmental information on the previous year's activities. The facilities providing information for this annual review are consistent with the facilities analyzed in the SWEIS. This information, added to other updated data, will be made available to DOE for evaluating the status of the SWEIS in 2005.

The potential environmental impacts associated with the SWEIS expanded operations alternative established a bounding framework to compare SNL/NM activities as they continue to evolve to meet future growth and mission changes. This Calendar Year 2002 (CY2002) SWEIS Annual Review provides a comparison of CY2002 activities to the level of activities assessed in the expanded operations alternative of the SWEIS.

SNL/NM is located on DOE properties within the boundaries of Kirtland Air Force Base (KAFB), which is adjacent to the southern boundary of Albuquerque, New Mexico. Figure 1-1 shows the boundaries of KAFB in relation to Albuquerque, New Mexico, and adjacent offsite areas.

NOTE: The scope of this year's Annual Review shifts from a fiscal year (October through September) to a calendar year (January through December) of data. An additional quarter of data (October to December 2001) is also reported.

## 1.1 SWEIS Alternatives and Analysis

In the SNL/NM SWEIS, DOE analyzed the potential impacts of continued operations and resource management at SNL/NM to meet evolving DOE missions and respond to the concerns of affected and interested individuals and agencies (DOE, 1999, 2000). The analysis included three alternatives—Reduced Operations, No Action, and Expanded Operations (DOE's Preferred Alternative)—that would meet the purpose and need for agency action and would support existing and potential program-related activities at SNL/NM.

Under the reduced operations alternative, DOE and interagency programs and activities at SNL/NM were analyzed at the minimum level of operations needed to maintain SNL/NM facilities and equipment in an operational readiness mode. Under the no action alternative, ongoing DOE and interagency programs and activities at SNL/NM were analyzed to continue the status quo, that is, operating at planned levels as reflected in current DOE management plans.

Under the expanded operations, the preferred alternative, DOE and interagency programs and activities at SNL/NM were analyzed to increase to the highest reasonable activity levels that could be supported by current facilities, including specifically identified potential expansion and construction of new facilities for future actions. Environmental impacts analyzed under this alternative provided a bounding analysis against which to track changes to SNL/NM operations.

Source: SNL/NM 1997

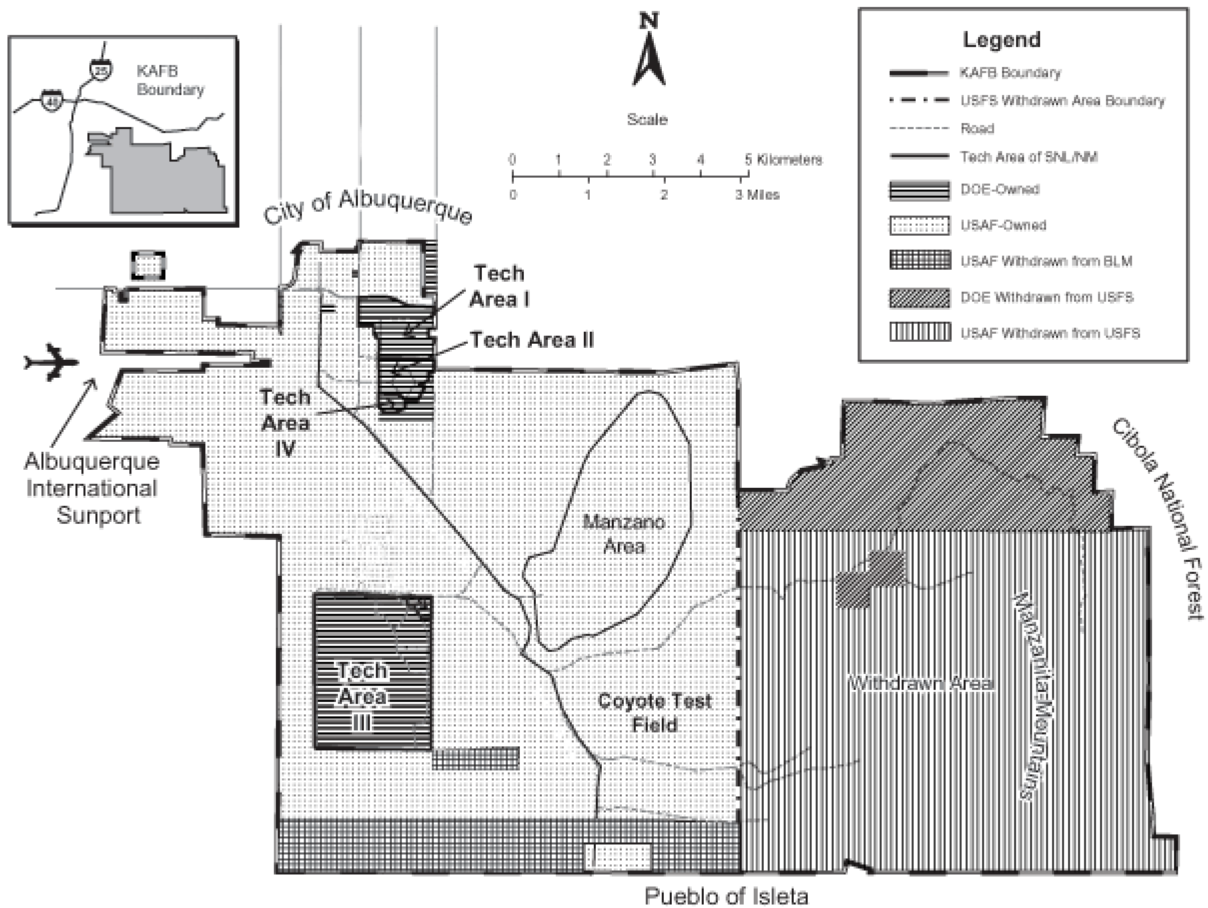


**Figure 1-1. SNL/NM in Relation to Bernalillo County, New Mexico, the Albuquerque Region, and Adjacent Offsite Features**

## 1.2 Goals

The information included in the SWEIS Annual Review identifies the changes or modifications to SNL/NM facilities and operations and the environment associated with these changes over the past year. To support this goal, the Annual Review provides information on SNL/NM activities by:

- Comparing the major changes and modifications of SNL/NM facilities and operations made during the past year to the SWEIS (DOE, 1999).
- Providing SNL/NM and DOE with information on trends and issues from changes in environmental impacts associated with SNL/NM operations.

## 1.3 Scope

Information presented in the CY2002 SWEIS Annual Review is drawn primarily from available SNL/NM databases and reports collected yearly or according to established reporting schedules. Using existing sources of information minimizes the burden to ongoing research and development activities and aids in controlling the costs associated with collecting, validating, and reporting data. This report does not include data required to support extensive, detailed environmental impact assessment and modeling, such as accident risk analysis and transportation data. This level of detail is expected to be collected at the time DOE prepares an analysis on the status of the SWEIS in 2005.

## 1.4 Data Groups

The SWEIS Annual Review is organized to provide the following CY2002 environmental information on SNL/NM operations:

- Chapter 2 provides an update of SNL/NM site-wide operations information reported in the SWEIS, including aggregated site data such as total SNL/NM workers, total payroll and expenditures, annual worker and public radiation doses, utility usage, air emissions, water consumption and wastewater discharge, and similar information. This information is compared to the SWEIS (DOE, 1999).
- Chapter 3 provides a summary of additions and modifications to SNL/NM operations, along with an update of selected and notable facility operations. Types and levels of CY2002 operations are compared to information included in the SWEIS (DOE, 1999; SNL, 1999a).
- Chapter 4 provides information and CY2002 data for selected facilities compared to projected data for the SWEIS expanded operations alternative. The types of data collected include material usage, waste generated, air emissions, process requirements (i.e., process water, process electricity, and boiler needs), and number of workers supporting facility operations.
- Chapter 5 provides CY2002 data for notable facilities compared to projected data collected for the SWEIS analysis. This information includes current operations and capacities, and a summary of CY2002 operations.
- Appendix A provides a summary of activities and hazards associated with SNL/NM individual general, special, and highbay laboratories with new Primary Hazard Screening forms prepared since the publication of the SNL/NM Facilities and Safety Information Document (FSID) and the SWEIS (DOE, 1999; SNL, 1999a).
- Appendix B provides a summary of SNL/NM chemical usage (chemicals of concern identified in the SWEIS), including changes in hazardous chemical use and quantities.
- Appendix C provides data for the 4th quarter (Q4) (October through September) of CY2001 for 12 SNL/NM resource areas and 34 selected facilities analyzed in the SWEIS. (DOE, 1999).

# CHAPTER 2.0
# SUMMARY OF CY2002
# SITE-WIDE OPERATIONS AT SNL/NM

**CONTENTS**

## TABLES

# 2.0 SUMMARY OF CY2002 SITE-WIDE OPERATIONS AT SNL/NM

Published by the U.S. Department of Energy (DOE) in 1999, the SNL/NM Site-Wide Environmental Impact Statement (SWEIS) analyzed the potential direct, indirect, and cumulative environmental impacts of continuing to operate SNL/NM in three alternative modes of operation. The three modes analyzed included a no-action alternative, a reduced operations alternative, and an expanded operations alternative (DOE, 1999). Within the SWEIS, the detailed impact analysis was specific to SNL/NM's major "selected" facilities. The more general site-wide analysis was limited to resource and issue areas that allowed an overall operational rollup and analysis. In nearly all cases, the consequence analysis of potential site-wide impacts focused on potential impacts to human health, air quality, water quality and quantity, and biological resource issues.

Although this chapter focuses on CY2002 operations data rolled up for all of SNL/NM, in a few cases, it also includes information on specific impacts, e.g., worker doses from radioactive air emissions or other sources. Because SNL/NM routinely assesses these impacts, using standard methodologies that were also used in the SWEIS, this information can be compared to baselines and projections included in the SWEIS. A number of other operations parameters, such as material inventories or material usage, however, are not included in the Annual Review, because these data are not routinely collected by SNL/NM and would require a specific data collection effort and analysis more appropriate for when the SWEIS would be reassessed in 2005.

Information included here compares actual CY2002 operating data from twelve resource areas to projected activities (and associated impacts) analyzed in the SWEIS. These resource areas include land use, infrastructure, geology and soils, water resources and hydrology, biological and ecological resources, cultural resources, air quality, human health and worker safety, transportation, waste generation, and socioeconomics. Specific resource areas are presented with the following details:

- Infrastructure includes information on water use, electrical consumption, and wastewater.
- Air quality includes information on criteria pollutants, hazardous air pollutants, and radiological emissions.
- Waste generation includes information on hazardous waste, mixed waste, and solid waste.
- Socioeconomics includes information on the number of employees and total budget.

## 2.1 Land Use

In CY2002, SNL/NM land use designations within Kirtland Air Force Base (KAFB) remained essentially the same as those discussed in the SWEIS. However, a memorandum signed on March 11, 2002 granted SNL/NM the first right of refusal for locating future non-sensitive facilities in support of Sandia programs and missions on the Eubank Tract, which is Federally-administered property located outside the KAFB fence on the west side of Eubank Boulevard, approximately ¼ to ½ mile north of the existing Eubank Boulevard gate.

(SNL, 2002)

### *2.1.1 La Semilla Buffer Zone*

During FY2001, DOE signed a 99-year lease renewal with the State of New Mexico Land Office for use of a 2,750-acre (ac) (1,113-hectare [ha]) buffer zone along the western boundary of KAFB. This buffer zone, known as La Semilla, provides margins of safety and sound buffers for SNL/NM testing activities at the 10,000-Foot Sled Track. The La Semilla buffer zone is bordered by KAFB on the north and east, the Pueblo of Isleta reservation on the south, and the planned Mesa del Sol residential development on the west. The buffer zone is land held in trust by the State of New Mexico Land Office for the benefit of the University of New Mexico.

Planned use of the buffer zone would include hiking and biking trails connecting different areas. There are also plans for a renewable resource research park, an environmental education campus, a native plant garden and arboretum, a wildlife rehabilitation center and rangeland, and reclamation research areas.

The primary role of La Semilla is to act as a buffer between the military base and Mesa del Sol. DOE has leased the property in the past to minimize impacts to any future residential uses that would be exposed to the sounds and vibrations common to Sled Track operations.

(SNL, 2001a)

### *2.1.2 Isleta Pueblo Buffer Zone*

The Isleta Pueblo is adjacent to the south boundary of KAFB. For many years, DOE has leased 6,346 ac (2,570 ha) from the Pueblo to provide a safety buffer zone for the 10,000-Foot Sled Track in Tech Area III (TA-III). During CY2002, DOE continued to assess future testing requirements and the need to renew the lease for this buffer zone, but no actions were taken to actually renew the lease.

(SNL, 2001a)

### *2.1.3 Manzano Storage Facility*

DOE has obtained land-use permits from the U.S. Air Force (USAF) for SNL/NM to use numerous bunkers at the Manzano Storage Facility. SNL/NM continued to use the leased bunkers in CY2002 primarily for the storage of hazardous material and waste.

(SNL, 2001a)

### *2.1.4 Land-Use Permits*

The USAF has granted numerous land-use permits to DOE for SNL/NM use of Air Force or Air Force-controlled properties within KAFB. These land-use permits are usually limited to 5 years, but in a few cases, can extend up to 25 years in length. In CY2002, the DOE requested, in support of SNL/NM programs, a total of ten project-related modifications to existing land-use permits, three new land-use permits, six land-use permit renewals, and one termination of a land-use permit from the USAF.

(Williams, 2003)

## 2.2 Infrastructure

SNL/NM's infrastructure includes facilities and systems for water, sanitary sewer, storm drain, steam, chilled water, electrical transmission, electrical distribution, communications, roads, and parking that support the TAs and those facilities located on property permitted from the USAF. Sandia's utility infrastructure must provide consistent and reliable service and sufficient capacity to meet its mission requirements. As the systems age, the burden on operations and maintenance requirements will increase and the laboratories' mission capability will be affected. Sandia has set a corporate target of maintaining at least 90 percent of each utility system in "good" condition (i.e., the systems are robust, require no major upgrades or replacements for at least 15 years, and have capacity to meet current and projected future mission requirements). According to the *Sandia National Laboratories FY2003 National Nuclear Security Administration Ten-Year Comprehensive Site Plan (for FY2003 – FY2013),* of the seven New Mexico utility systems (i.e., water distribution, sanitary sewer, storm drain, gas, steam, electrical power, and telecommunications), only the gas and electrical power systems are at or above the corporate target.

(SNL, 2001a, 2001b, 2002)

### *2.2.1 Natural Gas*

There have been no changes in the natural gas distribution system since publication of the SWEIS. Table 2-1 presents natural gas usage by SNL/NM in CY2002. The total gas consumption for CY2002, 510 million standard cubic feet (M scf) (14.4 billion liters [B ℓ]) was slightly above the usage analyzed in the SWEIS baseline (495M scf) (DOE, 1999). The Steam Plant produced 416 million pounds (M lb) of steam in CY2002, which was for all of SNL/NM's needs, plus some of the USAF's requirements. This number is down significantly from FY2001 figures for two reasons: FY2001 had a much colder winter than in CY2002, and beginning in CY2002, the USAF began a project to be removed from SNL/NM's steam distribution process, and convert to direct-fired boilers at their buildings. It is expected that the CY2003 figures will be even lower. Note: the natural gas usage given in the SWEIS Annual Review – 2001 was not correct. The correct total gas use in FY2001 was 471M scf (13.3B ℓ). (This is the volume under sea level pressure, not at 12.14 pounds per square inch (psi), which is the "contract" gas pressure for SNL/NM's elevation.)

(Wrons, 2003)

### *2.2.2 Electricity*

SNL/NM is supplied with electrical power through a contract with the Public Service Company of New Mexico. Table 2-1 shows the SWEIS baseline and expanded use of electricity compared to the CY2002 electrical usage of 211,000 megawatt-hours. The CY2002 total usage is 7 percent above the estimated total annual usage analyzed under the SWEIS expanded operations alternative.

(Wrons, 2003; DOE, 1999)

### *2.2.3 Water*

SNL/NM is supplied with water through KAFB wells, with additional supplies provided during peak demands by the City of Albuquerque. Table 2-1 shows the SWEIS baseline and expanded operations water use compared to the CY2002 water use of 451M gallons (gal) (1.71 billion liters [B ℓ]). This is 44 M gal (167M ℓ) below the quantity analyzed in the SWEIS expanded operations alternative. The CY2002 total usage represents 91 percent of the estimated total annual usage analyzed under the SWEIS expanded operations alternative. The higher water usage in CY2002 compared to previous years was due to a number of factors, including increased SNL/NM construction, an increased load on irrigation and cooling tower requirements due to a hot summer, and water line breaks that occurred during four months of the year.

(Aragon, 2003)

## 2.3 Geology and Soils

For the Environmental Restoration (ER) Project, the SNL/NM SWEIS discussed 182 locations of potential soil contamination on DOE and KAFB properties resulting from past SNL/NM activities. Since publication of the SWEIS, 86 subsite locations including 61 Non-ER Septic Systems were added to the original 182 locations, for a total of 268 sites. Of these, 166 have been proposed to the New Mexico Environment Department (NMED) as requiring no further action (NFA) because no contamination was found, or contaminant levels were below risk- or regulatory-based criteria, or cleanup has been completed. For the SWEIS baseline year (1996) only 48 sites had received approved NFAs. By November 2001, the total of NFA approvals reached 137. Of the remaining 131 sites, five are active and will remain on the operating permit, 61 sites are undergoing regulatory review, and 65 sites require final documentation, additional investigation, or cleanup.

In CY2000, the ER Project began planning the transition from cleanup and disposal operations to long-term stewardship responsibilities for monitoring and maintenance operations.

Completion of ER Project work is currently scheduled for 2006; however, the final schedule is highly dependent upon funding and regulatory approval (Freshour, 2003).

Excavation of the Chemical Waste Landfill (CWL, ER Site 74) was completed in February 2002 to a maximum depth of 30 feet below ground surface. A total of over 52,000 cubic yards of soil and waste debris were excavated, segregated, and managed as part of the Landfill Excavation Voluntary Corrective Measure (VCM) project. Approximately 89 percent of the excavated material was moved to the adjacent Corrective Waste Management Unit (CAMU) for treatment and/or final disposal. Approximately 11 percent of the excavated soil was returned to the excavation as backfill material based on risk screening criteria. Less than 1 percent of the excavated waste will require off-site disposal at a permitted disposal facility.

Backfilling the excavation started in June 2002 and was temporarily suspended in August 2002 after reaching the initial goal of 40 percent complete. Completion of backfilling operations is planned for 2003. Final activities associated with waste management and closure of the site operational boundary are ongoing. The draft final report for the Landfill Excavation VCM was completed by the end of 2002. The report contains a risk screening assessment that documents final verification that soil sample results for the excavation and backfill materials meet the risk-based criteria approved by the NMED. Preparation of the Corrective Measures Study (CMS) Report was initiated in late 2002 and will be submitted to the NMED in 2003 along with the Remedial Action Proposal and Post-Closure Care Plan and Permit Application. These documents will define the path to final closure of the CWL, including final cover requirements for the excavation, and continued post-closure care and groundwater monitoring.

The groundwater monitoring program at the CWL continues to show that all volatile organic compounds, including trichloroethene (TCE), are below the drinking water standards, in all monitoring wells. This trend started after the completion of the Vapor Extraction VCM (active extraction phase) in August 1998 and demonstrates the success of this program.

(Mitchell, 2003)

# 2.4 Water Resources and Hydrology

Groundwater beneath KAFB occurs primarily in the Albuquerque-Belen Basin aquifer, currently the sole source of drinking water for Albuquerque and surrounding communities. Depth to regional groundwater ranges from 400 feet (ft) to 500 ft (122 meters [m] to 152 m) for the SNL/NM TAs. A shallow water zone is perched above the regional aquifer. West of TA-II, depth to the shallow water zone is approximately 280 ft. The shallow water zone dips to the southeast and merges with the region east of the KAFB landfill. Basin-wide groundwater levels have been decreasing for more than 30 years, the result of groundwater withdrawal by municipal and private wells exceeding the rate of groundwater recharge. In CY2002, KAFB withdrew 1.13 billion gallons (B gal) (4.28B ℓ) of groundwater, of which SNL/NM used 451 million (M) gal (1.71B ℓ).

(Aragon, 2003)

Water levels in almost all regional wells across KAFB continued to decline in CY2002. A prominent water-level depression is present on the west side of KAFB, with water-level declines up to 1.4 ft (0.4 m) per year.

During CY2002, groundwater samples were collected and analyzed by the Groundwater Protection Program (GWPP) and the ER Project quarterly, biannually, or annually, from 87 monitoring wells. Results from both groups were compared to maximum contaminant levels (MCLs) established by the U.S. Environmental Protection Agency (EPA), and derived concentration guides (DCGs) for radionuclides, established by DOE (Lauffer, 2003).

## 2.4.1 Groundwater Protection Program – Groundwater Surveillance Sampling

Annual sampling was conducted in a total of ten wells and one spring in CY2002 by the GWPP. Analyses were conducted for metals, volatile organic compounds (VOCs), inorganics (including nitrate and cyanide), phenolics, alkalinity, total halogenated organics (TOXs), gross alpha, gross beta, and radionuclide activities. Beryllium in the water sample from Coyote Springs exceeded the MCL of 4 micrograms per liter (µg/ℓ). The beryllium concentration measured was 6.14 µg/ℓ. The sample from the Explosives Ordnance Disposal (EOD) Hill well exceeded the gross alpha MCL of 15 picocuries per liter (pCi/ℓ). The elevated gross alpha concentrations are due to natural conditions associated with the geology at this site and are not the result of contamination caused by activities conducted at KAFB.

(Lauffer, 2003)

## 2.4.2 Mixed Waste Landfill Groundwater Sampling

Mixed Waste Landfill (MWL) annual groundwater sampling was conducted in five wells in April 2002. Quarterly sampling was conducted in 2 relatively new wells, MWL-MW5 and MWL-MW6. Groundwater samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals and total uranium, nitrate plus nitrite, major ions, and radionuclides. No VOCs were detected above MCLs. Chromium exceeded the EPA MCL for one drinking well. The presence of chromium is attributed to the corrosion of stainless steel well screens. Other wells with stainless steel screens had detectable chromium and nickel concentrations. No radionuclide activity exceeded regulatory criteria.

(Lauffer, 2003)

## 2.4.3 Chemical Waste Landfill Groundwater Sampling

Biannual sampling was conducted at 11 Chemical Waste Landfill (CWL) monitoring wells. Analysis was conducted for VOCs, SVOCs, totals metals, polychlorinated biphenyls (PCBs), herbicides, cyanide, total sulfide and dissolved chromium (40 CFR 264, Appendix IX). Chromium was detected at a concentration exceeding the EPA MCL in four wells. The chromium exceedance is due to the corrosion of stainless steel well screens. No other analytes exceed regulatory maximum concentration guidelines.

(Lauffer, 2003)

## 2.4.4 Tech Area V (TA-V) Groundwater Sampling

Quarterly sampling at TA-V was conducted at 13 wells in CY2002. Analytes included VOCs, metals, nitrate, perchlorate, and radionuclide activities. TCE has consistently been detected in one well (LWDS-MW1) at levels up to 17 µg/ℓ. The MCL for TCE is 5 µg/ℓ. The most likely source of the TCE is the drain field for the Liquid Waste Disposal System (LWDS). One of the newly installed monitor wells, TAV-MW8 had a TCE concentration of 6.09 µg/ℓ during the February quarterly sampling. Nitrate concentrations in LWDS-MW1 were at 12.7 milligrams per liter (mg/ℓ) during two quarters. This exceeds the MCL of 10 (mg/ℓ).

(Lauffer, 2003)

## 2.4.5 Tijeras Arroyo Groundwater Sampling

Wells in the Tijeras Arroyo Groundwater (TAG) Investigation area are completed either in the regional aquifer or in a localized shallow groundwater system. Fourteen shallow groundwater system wells and twelve regional monitoring wells were sampled quarterly in

CY2002. TCE and tetrachloroethene (PCE) have been identified in the shallow groundwater system at levels slightly above the MCL of 5.0 µg/ℓ. The highest level of TCE was 7.5 µg/ℓ, which was found in TA2-W-26 during the March/April quarterly sampling. TCE was also measured at 7.23 µg/ℓ in a new well, WYO-4. PCE has been found in TA-W-26 samples at levels slightly above the MCL of 5.0 µg/ℓ. The highest level of 8.1 µg/ℓ was reported from the March/April sampling event. Nitrate is also a contaminant of concern in the TAG Investigation, and samples from four wells showed elevated nitrate levels. The highest nitrate concentration was reported for TJA-4, a regional well. The reported concentration of 49 mg/ℓ exceeds the MCL of 10 mg/ℓ. No other analytes exceeded maximum regulatory criteria.

The TAG Investigation area, which presently includes SNL/NM's TAs I and II, has a long history of industrial tenants that have occupied the area prior to SNL/NM's presence. Past SNL/NM operations have also had the potential to contaminate the groundwater. Currently, the source of contaminants, such as TCE, has not been identified. Due to the complex nature of potential past contaminant scenarios, the source of groundwater contaminants may never be definitively identified.

(Lauffer, 2003)

### *2.4.6 Coyote Canyon Test Area Groundwater Sampling*

Groundwater sampling in the Coyote Canyon Test Area was conducted for three quarters of CY2002 at three monitoring wells. This area includes the general vicinity associated with the active Burn Site Facility in Lurance Canyon. The Burn Site Facility conducts thermal tests using jet fuel, gasoline, and diesel. Low levels of petroleum products and other VOCs have been detected in two of the three monitoring wells onsite. Other analytes included SVOCs, explosives, metals, phenolics, and various anions, including nitrate. Nitrate has been detected consistently in two wells. The highest level was reported at 21.8 mg/ℓ in CYN-MW1D. The MCL for nitrate plus nitrite is 10 mg/ℓ. All petroleum products were detected only at trace levels.

(Lauffer, 2003)

### *2.4.7 Drains and Septic Systems*

Quarterly groundwater sampling of four new wells associated with the Drains and Septic Systems (DSS) investigation was initiated in July of 2002. Eight quarters of sampling are planned for these wells. Groundwater samples were analyzed for VOCs, SVOCs, High Explosives (HE) compounds, total Resource Conservation and Recovery Act (RCRA) metals, hexavalent chromium, total cyanide, nitrate plus nitrite, and major anions and cations. No VOCs and SVOCs were detected. A trace concentration of an explosive compound was detected in one of the wells, CTF-MW3. The only analyte to exceed regulatory maximum concentrations was arsenic, which was reported at 0.0705 mg/ℓ in well CTF-MW2. In comparing the data to the data from another well in the vicinity that has elevated concentrations of arsenic due to natural processes, the arsenic levels in CTF-MW2 appear to be of natural origin.

(Lauffer, 2003)

## 2.5 Biological/Ecological Resources

Continued long-term restricted access and limiting planned development have generally provided protection, benefiting biological resources within the boundaries of KAFB. This benefit continued in CY2002, with no identified Federal threatened and endangered (T&E) species issues at SNL/NM.

Grassland vegetation in open areas of KAFB, the Albuquerque International Sunport, and SNL/NM provides habitat for Gunnison's prairie dog (*Cynomys gunnisoni*) and subsequently for the western burrowing owl (*Athene cunicularia hypugea*). Although the western burrowing owl is not a T&E species, it is a migratory, nongame bird protected under the *Migratory Bird Treaty Act.*

Current management practice regarding prairie dogs is conservation of their habitat for later use by burrowing owls. Conservation efforts are also underway with the State of New Mexico to protect the black-tailed prairie dog (*Cynomys ludovicianus)* as a candidate for federal T&E listing. To date, however, routine biological surveys have not identified this species within KAFB boundaries.

In all areas where potential ground disturbance is proposed, i.e., construction, renovation, or decommissioning activities, SNL/NM performs surveys to detect resident prairie dogs, burrowing owls, and other migratory birds. To reduce the impacts to prairie dogs from construction, SNL/NM makes an effort to stimulate relocation of prairie dog populations by a light grading of the ground surface prior to major ground disturbance. Once the ground cover is removed, the prairie dogs seek a new area of habitation. Burrowing owl nests are avoided as much as possible, or if necessary, the birds can be relocated by qualified handlers to an undisturbed area.

In CY2002 and preceding years, SNL/NM conducted annual ecological monitoring studies at various SNL sites throughout the Kirtland Federal Complex (KFC) for sensitive species. This monitoring has included 15 to 20 surveys each summer for the western burrowing owl.

An inventory of biological and ecological resources compiled for preparation of the SWEIS is included the SNL/NM Environmental Information Document (EID) (SNL, 1999b). The SNL/NM Annual Site Environmental Report (ASER) provides environmental compliance summaries (SNL, 2003a). Processes and procedures directing the management of sensitive species and habitat are included in the SNL Environment, Safety & Health Manual (SNL, 2003b).

# 2.6 Cultural Resources

There are 455 recorded prehistoric and historic archaeological sites within the boundaries of KAFB and the associated buffer zones. The prehistoric archaeological sites include some that date to before AD 1540 (the initiation of Spanish exploration of the area); the historic archaeological sites include sites, buildings, and structures dating from AD 1540 to 1948.

Cultural resources in areas used by SNL/NM continue to benefit from the protection provided by restricted access, compliance with applicable regulations, and established procedures for the protection and conservation of these resources. There are no known archeological sites on DOE-owned land within KAFB. To date, no traditional cultural properties have been specifically identified within SNL/NM TAs however, several tribes have requested that they be consulted under the *Native American Graves Protection and Repatriation Act* of 1990 (NAGPRA) if human remains are discovered during excavations related to SNL/NM activities.

In 2002, SNL/NM conducted historic assessments of buildings and structures scheduled for renovation or demolition. DOE and SNL/NM consulted with the New Mexico State Historic Preservation Officer (SHPO) on these properties. Two buildings (Building 852 and Building S9800B) were found to be historically significant, and the SHPO concurred with the decision to fully document them prior to demolition (Bonaguidi, 2003).

# 2.7 Air Quality

## *2.7.1 Radiological Air Quality*

Radioactive airborne emissions from point sources (i.e., stacks) during CY2002 totaled ~26.03 curies (Ci), less than the 19,311 Ci analyzed in the SWEIS expanded operations alternative. The two largest contributors were the Neutron Generator Production Facility (NGPF) and the Annular Core Research Reactor (ACRR). The NGPF stack emissions totaled 15 Ci and accounted for ~58 percent of the SNL/NM total, but were less than the projected level for expanded operations of ~156 Ci for tritium. Emissions from the ACRR were ~10.6 Ci, and accounted for 41 percent of the SNL/NM total. The emissions represent 136 percent of the projected level for expanded operations of 7.8 Ci/yr for this selected facility. The rise in the ACRR's estimated release was due to increased operational requirements for the reactor. Other sources of radioactive air emissions were present at four other primary facilities located throughout SNL/NM. There was one primary National Emission Standards for Hazardous Air Pollutants (NESHAP) source facility that reported zero emissions. In CY2002, the eight primary radionuclide air-emission sources at SNL/NM used to calculate dose estimates to the public were:

- ACRR, Defense Programs (DP) configuration
- NGPF
- Sandia Pulsed Reactor (SPR)
- Hot Cell Facility (HCF)
- Z Accelerator
- Radioactive and Mixed Waste Management Facility (RMWMF)
- Chemical Waste Landfill (CWL)
- Mixed Waste Landfill (MWL)

The criterion for a facility to be a primary NESHAP source is that the facility is required to perform some form of measurement to determine its production rate of airborne radioisotopes; the result is that the primary list will vary from year to year. Annual radionuclide air-emission estimates for the primary sources are made using one of the following methods:

- Continuous stack monitoring, such as at the NGPF and the RMWMF.
- Periodic measurements of the radionuclide production rate, multiplied by the annual facility energy output or shot history, such as at the ACRR and SPR.
- Measurements of radionuclide concentrations in soils or facilities, multiplied by a conservatively high estimate of the release fraction, such as at the CWL.

The ACRR, medical isotopes production configuration, was removed from the list, since the production of molybdenum-99 (Mo-99) is currently in suspension.

The High-Energy Radiation Megavolt Electron Source III (HERMES III) was removed from the primary NESHAP source list as of CY2001, because it was determined that confirmatory emissions measurements had been performed for a sufficient length of time to adequately characterize the radionuclide production rate in the facility. In addition, the dose to the public resulting from HERMES III emissions has consistently been a small fraction of the overall dose from all Sandia emissions sources (less than 0.01 percent of the total SNL/NM dose).

The Z Accelerator was added to the NESHAP list with the start of experiments involving the irradiation of deuterium targets, resulting in the production and emission of tritium. The tritium emissions have been conservatively estimated based on measured parameters within the facility, thus it was categorized as a primary source. In addition, the Z Accelerator conducted experiments resulting in depleted uranium and stainless steel activation product emissions in CY2002.

The Radiographic Integrated Test Stand (RITS) is not on the primary source list because, although installation of the accelerator began in CY2002, the facility is not expected to be fully operational until 2004.

The Explosive Components Facility (ECF) was included in the SWEIS air quality analysis in expectation of a scope of operations that was never realized, and therefore is not included in the current NESHAP source list.

The CWL was added to the NESHAP source list because the levels of radioactivity in the soil and in the landfill were higher than originally anticipated. Emissions estimates are possible based on measured radionuclide concentrations in soil and the use of a conservative release fraction. The resulting public dose from CWL radionuclide emissions was determined to be a relevant fraction of the total SNL/NM dose (~1 percent); also, the project continued longer than originally projected.

The calculated dose to the maximally exposed individual (MEI) by the air pathway during 2002 was $2.11 \times 10^{-3}$ millirem (mrem), including contributions from stack emissions and non-point sources such as the MWL and the CWL. The calculated MEI dose attributable to SNL/NM operations was 0.4 percent of the 0.51 mrem projected by the SWEIS and its Record of Decision, and is well below the EPA emission standard of 10 mrem/yr (DOE, 1999, 2000). The calculated collective dose to the population within a 50-mile (mi) (80-kilometer [km]) radius of SNL/NM from the annual radiological air emissions due to SNL/NM operations was $6.79 \times 10^{-2}$ person-rem and would be 15.8 person-rem per year under the expanded operations alternative.

(Eckstein, 2003)

## *2.7.2 Nonradiological Air Quality*

Significant sources of nonradiological air emissions in the Albuquerque area are motor vehicles, wood-burning stoves and fireplaces, and open burning. Besides Albuquerque motor vehicle commuting, the largest contribution to air emissions at SNL/NM are the Steam Plant boilers that provide heat to a large number of SNL/NM facilities. The Steam Plant continues to account for more than 90 percent of the total SNL/NM emission of pollutants from fixed facilities regulated by the *Clean Air Act*. All SNL/NM emissions, however, remain below regulatory permitted levels, and are below standards set to protect health, with an ample margin of safety. Hazardous chemical air emissions related to SNL/NM activities are so small as to not require individual facility air quality monitoring. Even so, SNL/NM continues to reduce and limit chemical air emissions through improved administrative and engineering controls whenever possible.

Vehicle emissions, the dominant source of carbon monoxide (CO) from SNL/NM activities, are assessed because the Albuquerque/Bernalillo county area is an EPA-designated "maintenance" area for this pollutant. All other sources of CO at SNL/NM remain small. In fact, the total CO emissions associated with SNL/NM activities are estimated to be ~3 percent of the total CO emissions generated in Bernalillo County.

A summary of emissions of criteria pollutants and other pollutants for CY2002 appears in Table 2-1. Compared to the quantities analyzed in the SWEIS expanded operations alternative, except for CO, all hazardous emissions were lower in CY2002. In fact, nitrogen oxides ($NO_x$) were down significantly, from 162.36 tons/yr to 24.7 tons/yr. The sulfur dioxide emissions were decreased due to lower natural gas prices in the winter of CY2002; therefore, less diesel oil was required to be burned at the Steam Plant than in previous years. Because neither KAFB nor SNL/NM performed vehicle counting during CY2002 to develop estimated daily traffic activity related specifically to SNL/NM operations, an estimate of CO emissions from commuter traffic is not available. However, because the number of full-time employees at SNL/NM in CY2002 (6,790) remained well below the estimated employee population under the SWEIS expanded operations alternative (8,417), it can be assumed that CO emissions from commuter vehicles would remain under the annual total estimated for this alternative of 3,837 tons per year. This would be the case even if contractor employees and students were added to the total base year and expanded operations alternative estimates. In addition, the SWEIS projected that SNL/NM would be able to reduce mobile CO emissions by 250 tons per year through improvements in its fleet vehicle operations. Details on SNL/NM chemical purchases for CY2002 are included in Appendix B. Purchase estimates for chemicals of concern are presented in categories of air pollutants, including hazardous, toxic, and volatile organic compounds.

(du Mond, 2003; Vigil, 2003)

# 2.8 Human Health and Worker Safety

## *2.8.1 Human Health*

The use of radiological or hazardous materials at SNL/NM can potentially affect human health for workers and the public. In New Mexico, the average background radiation dose per person is 360 mrem/yr, more than 80 percent from natural radiation sources such as radon in the soils. The major, nonnatural source of radiation is medical testing, which accounts for 15 percent of the total dose. In CY2002, the maximum dose estimate of radioactive air emissions from SNL/NM facilities for an individual in a publicly accessible area was $2.11 \times 10^{-3}$ mrem/yr, which is less than 0.001 percent of the background radiation dose. The CY2002 collective dose to the population within 50 mi was $6.79 \times 10^{-2}$ person-rem/yr. Nonradiological, chemical air pollutants are released from SNL/NM facilities that contain chemistry laboratories or chemical operations. These pollutant concentrations were below safety levels established for workers in industrial areas and diminished with increasing distance from the sources. Environmental monitoring data collected for CY2002 verify that no chemical contamination reached the public through surface water, soil, or groundwater.

(Eckstein, 2003)

## *2.8.2 Worker Safety*

Working conditions at SNL/NM are consistent with those identified in the SWEIS. Workers in some SNL/NM facilities receive an additional dose of radiation above background radiation, which is measured by personal radiation monitoring devices (dosimetry badges). Radiological workers at SNL/NM are limited to a total effective dose equivalent (TEDE) of 100 mrem per calendar year unless DOE approves an exception.

**Accidents and Injuries**

OSHA recordkeeping requirements changed beginning in CY2002. Prior to CY2002, only Sandia employee Occupational Injuries and Illnesses were recorded on the OSHA Log. Effective CY2002, in addition to Sandia employees, the OSHA 300 Log included employees who are not on Sandia payroll but are supervised by Sandia staff on a day-to-day basis (staff augmentation contractors). There were 301 reported cases of injuries and illnesses in CY2002, compared to 326 cases analyzed in the SWEIS expanded operations alternative (see Table 2-1).

(Gonzales, 2003)

**Ionizing Radiation and Worker Exposures**

Occupational radiation exposures for workers at SNL/NM during CY2002 are summarized in Table 2-1. The collective TEDE for the SNL/NM workforce during CY2002 was the same as the workforce dose of 47 mrem/yr analyzed in the SWEIS. Also, the CY2002 report of 95 workers with a collective effective dose equivalent (EDE) of 4.5 person-rem/yr was below the workforce doses for the SWEIS base year of 255 workers with an annual collective EDE of 12 person-rem/yr.

The collective dose and average TEDE values increased slightly over the last year. This cannot be attributed to any particular operation (DOE, 1999; Potter, 2003).

# 2.9 Transportation

During CY2002, neither KAFB nor SNL/NM performed vehicle-counting studies to develop estimates for daily traffic activity related to SNL/NM operations. The number of SNL/NM employees reported for CY2002 (6,790) however, remains within the estimated number of employees in the expanded operations alternative of the SWEIS (8,417). The SWEIS analysis estimated that 8,417 employees working at SNL/NM would result in an associated 14,940 commuter vehicles on KAFB. The term 'commuter' includes all vehicles operated by SNL/NM employees, contractors, and visitors, DOE employees, and additional support traffic, such as delivery vehicles. Because the number of employees for CY2002 falls within the estimate in the SWEIS for the expanded operations alternative, it can be assumed that the traffic associated with these employees would be bound by the SWEIS impact analysis for this alternative.

(Vigil, 2003)

Transportation activities at SNL/NM involve the receipt, shipment, and transfer of hazardous and nonhazardous material and waste. However, detailed information on the frequency of received hazardous material, number of chemical containers, and shipments is not routinely collected and, therefore, is not reported for this annual review. At the time that the SWEIS is reviewed to determine if it still covers SNL/NM operations, DOE may elect to collect this information.

# 2.10 Waste Generation

Waste management activities at SNL/NM includes managing (incorporating waste minimization policies), storing, and preparing waste for offsite disposal in accordance with applicable federal and state regulations, permits, and DOE orders. SNL/NM generates nonradioactive, radioactive, and chemical waste from research operations, maintenance, construction, and ER activities. Comparisons of CY2002 waste quantities to projections made under the SWEIS expanded operations alternative include three types: radioactive waste, chemical waste, and other waste. Waste volumes reported here are for routine waste generation only, i.e., waste generated from ongoing operations, and do not include decontamination and demolition (D&D), or ER waste. As the comparison of waste volumes generated in CY2002 shows in Table 2-1, reported waste volumes, except for solid waste, were lower than those projected under the SWEIS expanded operations alternative.

(Marley, 2003)

## *2.10.1 Radioactive Waste*

SNL/NM operations generate four categories of radioactive waste: low-level waste (LLW), low-level mixed waste (LLMW), transuranic waste (TRU), and mixed transuranic waste (MTRU). In CY2002, SNL/NM generated 2,773 cubic feet ($ft^3$) (78.5 cubic meters [$m^3$]) of LLW, or 28 percent of waste volume analyzed in the SWEIS expanded operations alternative. During the same period, SNL/NM generated 316 $ft^3$ (8.9 $m^3$) of LLMW or 22 percent of the LLMW projected in the SWEIS expanded operations alternative. Table 2-1 shows no TRU and MTRU waste was generated in CY2002.

(Marley, 2003)

## *2.10.2 Chemical Waste*

Chemical waste generation in CY2002 was less than the 433,400 kilograms (kg) (953,480 pounds [lb]) of waste estimated under the SWEIS expanded operations alternative (excluding ER Project waste). In CY2002, SNL/NM operations generated 26,198 kg (57,740 lb) of RCRA hazardous waste. Other waste, classified as chemical waste, generated onsite under current operations includes biohazardous (medical) waste, asbestos, PCBs, non-RCRA chemicals, and (hazardous) recyclable materials (Vigil, 2003). Chemical waste generated in CY2002 included 135,546 kg (298,828 lb) of PCBs and asbestos combined. (In CY2002, the Hazardous Waste Management Facility [HWMF] picked up 115,592 kg [254,836 lb] of waste with "asbestos" in its name, and 19,954 kg [43,991 lb] of waste with "PCB" in its name. Since there is no way of determining how much asbestos and PCB waste is generated during any time period, these quantities reflect only the waste that was processed through the HWMF [DeLaurentis, 2003].)

During this reporting period, the ER Project continued to clean up past contamination at many sites, generating 43,305 kg (95,471 lb) of hazardous waste and disposing 12,201 kg (26,899 lb) of hazardous waste through the HWMF. These numbers represent, respectively, only the mass of ER Project Hazardous waste generated that was or will be disposed of through the HWMF and only the mass of ER Project Hazardous waste that was disposed of through the HWMF. These volumes do not include other types of waste generated or disposed of (e.g., mixed, *Toxic Substances Control Act* [TSCA], or radioactive), including non-regulated waste that was disposed of through the HWMF. Additionally, these volumes do not include ER project hazardous waste that had other dispositions (e.g., the CAMU Containment Cell). Note that the mass generated during the period does not match the mass disposed of, because "generated" is new waste for that period, and "disposed of" is what actually was sent to the HWMF during the reporting period).

(Shain, 2003)

Table 2-1 presents waste quantities for all chemical waste types, excluding ER Project waste.

The HWMF continued to collect, characterize, manage, and ship waste to commercial facilities for treatment and disposal (see also Section 4.6.1).

(Castillo, 2003; Marley, 2003)

### *2.10.3 Solid Waste*

In CY2002, SNL/NM operations generated 1.4M kg (3.1M lb) of solid waste, some 0.8M kg (1.8M lb) more than solid waste generation estimated for the SWEIS expanded operations alternative. Table 2-1 shows that SNL/NM recycled 983,000 kg (2.2M lb) of solid waste; although this is considerably less than the SWEIS baseline, the baseline included amounts from LANL, the USAF, and other DOE activities at KAFB (see footnote in Figure 4.12-8 of the SWEIS).

(Marley, 2003)

## 2.11 Socioeconomics

There were 6,790 full-time employees working at SNL/NM at the end of December 2002. This represents 81 percent of the 8,417 employees estimated under the SWEIS expanded operations alternative (Vigil, 2003; DOE, 1999).

For CY2002, SNL/NM was the fifth largest major public facility/institution in the Albuquerque metropolitan area, in terms of the number of employees at each facility (A.E.D. website, 4/1/03). The payroll for CY2002 was $575M (DeLaurentis, 2003). The total operating and capital budget for SNL/NM for CY2002 was approximately $1.87B (Conaway, 2003).

SNL/NM operations had a beneficial impact to the local economy for CY2002 of approximately $4.8B. The SWEIS estimated that for every job at SNL/NM, an additional 2.46 jobs were created in the local economy. This correlation still held in CY2002 (Conaway, 2003).

(AED, 2003; Conaway, 2003; DeLaurentis, 2003; DOE, 1999; Vigil, 2003)

# 2.12 Safety Documentation

On Sept 30, 2002, the Final Preliminary Safety Assessment (FPSA) for the Microsystems Fabrication (MicroFab) section of the Microsystems and Engineering Sciences Applications (MESA) complex, was submitted to DOE (Revision 1 of the MESA MicroFab Draft Preliminary Safety Assessment (DPSA) was completed Nov 27, 2001). The Microelectronics Development Laboratory (MDL) Safety Assessment (SA) was reviewed but was not updated during CY2002.

(Hall, 2003)

The Safety Assessment Document (SAD) for the Z-Accelerator was approved internally in February of 2002. However, DOE did not review the SAD, as they did not agree that the Z-Accelerator met the requirements of DOE Order, 420.2A, Safety of Accelerator Facilities.

(Torrison, 2003)

Revision of the Documented Safety Analysis (DSA) for the Manzano Nuclear Facilities (DSA99-01, formerly called the Safety Analysis Report [SAR] for the Manzano Nuclear Facilities [SAR99-01]) was started in CY2002, and continued in progress by the end of the calendar year.

(Spoerner, 2003)

Each year, several hundred Primary Hazard Screenings (PHSs) undergo review and updating. These PHSs cover a wide range of activities and facilities, including laboratories, machine shops, and test facilities. Appendix A of this document provides summaries of laboratories with PHSs added since the publication of the SWEIS and the initial Facilities and Safety Information Document (FSID) (DOE, 1999; SNL, 1999a).

# 2.13 Technical Area Descriptions

## *2.13.1 TA-I Operations*

TA-I is used for administration, site support, technical support, basic research for defense programs, component development, energy programs, microelectronics, technology transfer, business outreach, and exploratory systems. This area includes laboratories and shops used by administrative and technical staff. Facilities also include a print shop, a process development laboratory, an emergency diesel generator plant, a foundry, a solvent spray booth, and a steam plant.

(SNL, 2001b)

## *2.13.2 TA-II Operations*

TA-II was one of many facilities created to facilitate the U.S. demand for an increased nuclear capability in the early years of the Cold War. During 1948 to 1953, TA-II was the primary assembly site for America's nuclear weapons. The area was designed and constructed in 1948 specifically for the final assembly of the non-nuclear components of nuclear weapons. Weapon assembly continued in TA-II after 1952, but the major responsibility for this work shifted to other sites in the Atomic Energy Commission's integrated contractor complex. Consequently, TA-II was used for other work. Additional buildings were constructed, and the original buildings eventually were modified to accommodate research and testing of high-explosive components for nuclear weapons.

When the ECF was completed and occupied, most of the older portions of TA-II were vacated. The buildings and structures have been documented for historical significance and are approved for demolition. Demolition began in FY1999; the remaining structures are planned for D&D through FY2013 (SNL, 2003c).

Other facilities near TA-II include the Safeguards and Security building, Shipping and Receiving, the Waste Transfer Station, Reapplication, Sample Management, and maintenance yards. These facilities demonstrate the transition of TA-II to site support activities.

(SNL, 2001b)

### *2.13.3 TA-III Operations*

TA-III is composed of numerous test facilities devoted to full-scale experiments simulating various natural and induced environments. The facilities include extensive environmental test facilities, such as the Terminal Ballistics Facility (TBF), the Centrifuge Complex, the Sled Track Complex, and the Drop/Impact Complex. Other facilities include an inactive chemical waste landfill, an inactive low-level waste landfill, and a mixed waste landfill. The RMWMF occupies the southeast corner of the area.

(SNL, 2001b)

### *2.13.4 TA-IV Operations*

TA-IV operations and activities taking place are diverse, although the dominant activities include pulsed-power and inertial confinement fusion technology. Other areas of activity include high-power electromagnetic applications, computer science, flight dynamics, satellite processing, robotics, and high energy/density physics programs for stockpile stewardship. The major accelerator facilities include the Z Accelerator, Saturn, the High-Energy Radiation Megavolt Electron Source III (HERMES III), the Short-Pulse High Intensity Nanosecond X-Radiator (SPHINX), the Tera-Electron Volt Energy Superconducting Linear Accelerator (TESLA), the Repetitive High Energy Pulsed-Power Unit I (RHEPP-I), the Repetitive High Energy Pulsed-Power Unit II (RHEPP-II), and the Advanced Pulsed-Power Development Laboratory (APPDL). In CY2002, SNL/NM continued development of a new accelerator called the Radiographic Integrated Test Stand (RITS) (SNL, 2001b).

### *2.13.5 TA-V Operations*

TA-V is a remote, secure nuclear research site housing the water-cooled ACRR, the new GIF, the Hot Cell Facility, and various related nuclear security, waste storage, and support facilities. The SPR reactor was placed in the In-Ground Storage Vault (IGSV) at the end of FY2000. This area provides radiation test environments largely in support of DOE’s Defense Program activities.

(SNL, 2001b)

### *2.13.6 Other On-Site Operations*

Other on-site (within the boundaries of KAFB) remote operations are conducted in facilities permitted for Sandia’s use. These facilities are typically referred to as the Outdoor Test Facilities. Operations include a remote violent physics test area devoted principally to explosives experiments, burn tests, explosives firing, weapon system components and explosives systems testing, explosives technology research, the solar power tower, and sled track impact zones.

(SNL, 2001b)

**Table 2-1. Site-Wide Environmental Issues by Resource Area**

| Resource Area | Units | SWEIS Baseline[a] | SWEIS Expanded Operations Alternative[b] | CY2002 Operations[c] |
|---|---|---|---|---|
| **Land Use** | | | | |
| SNL/NM Land Use w/in KAFB | ac(ha) | 8,824 (3,571) | 8,824 (3,571) | 8,574 (3,470) |
| DOE Buffer Zones | ac(ha) | 9,093 (3,680) | 9,093 (3,680) | 2,750 (1,113) |
| **Infrastructure** | | | | |
| Facilities (Floor Space) | $ft^2$ ($m^2$) | 5.27M[d] (0.49M) | 4.99M[e] (0.46M) | 5.19M (0.48M) |
| Utilities (Annual Basis) | | | | |
| Water Use | gal (ℓ) | 440M (1.67B) | 495M (1.87B) | 451M (1.71B) |
| Water Capacity | gal (ℓ) | 2.0B (7.6B) | 2.0B (7.6B) | 2.0B (7.6B) |
| Sanitary Sewer Discharge | gal (ℓ) | 280M (1.06B) | 322M (1.22B) | 328M (1.24B) |
| Sanitary Sewer Capacity | gal (ℓ) | 850M (3.22B) | 850M (3.22B) | 850M (3.22B) |
| Natural Gas Use | scf (ℓ) | 475M (13.5B) | 475M (13.5B) | 510M[f] (14.4B) |
| Natural Gas Capacity | scf (ℓ) | 2.3B (65B) | 2.3B (65B) | 2.3B (65B) |
| Electrical Use | MWh | 197,000 | 198,000 | 211,000 |
| Electrical Capacity | MWh | 1.1M | 1.1M | 1.1M |
| **Geology and Soils** | | | | |
| Potential Soil/Subsurface Contamination Sites Identified | | 182 | 182 | 268[g] |
| Active Environmental Restoration Sites | ER Sites | 20 | 20 | 5[h] |
| No Further Action Approvals | | 48[i] | NA | 137 |
| **Water Resources and Hydrology** | | | | |
| SNL/NM 10-Year Projected Groundwater Use (SWEIS Projections vs. Actual Withdrawal for 2001) | $ft^3$/yr (ℓ/yr) | 59.4M (1.68B) | 62.6M (1.77B) | 50.9M[j] (1.44B) |
| Developed Area (for Runoff Projections) | $mi^2$ ($km^2$) | 0.72 (1.8) | 0.72 (1.8) | 0.72[k] (1.8) |
| **Biological/Ecological Resources** | | | | |
| Change in Habitat Area | NA | NA | No Change | No Change |
| **Cultural Resources** | | | | |
| Cultural Resources Located in All Areas of Potential Effect | Number of Sites | 192 | 192 | 455 |

**Table 2-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | SWEIS Baseline[a] | SWEIS Expanded Operations Alternative[b] | CY2002 Operations[c] |
|---|---|---|---|---|
| **Air Quality** | | | | |
| Nonradioactive Emissions[l] | | | | |
| Nitrogen Oxides | tons/yr | 153.92 | 162.36 | 24.7 |
| Carbon Monoxide (CO) | | | | |
| Stationary Sources | | 15.21 | 18.36 | 25.1 |
| Mobile Sources | | 4,087 | 3,837 | 3,837[m] |
| Construction Activities | | 132 | 132 | 132 |
| Lurance Canyon Burn Site | | 0.78 | 4.5 | 0.2 |
| Total CO | | 4,235 | 3,992 | 3,994 |
| Particulate Matter | | 3.65 | 7.46 | 2.3 |
| Sulfur Dioxide | | 0.32 | 1.10 | 0.9 |
| Radioactive Emissions (8 Primary Locations)[n] | | | | |
| Argon-41 | Ci/yr | 44.9 | 40.0 | 10.6 |
| Tritium | | 4.52 | 161 | 15.42 |
| Nitrogen-13[o] | | $4.2x10^{-2}$ | 0.16 | 0 |
| Oxygen-15[o] | | $2.6x10^{-2}$ | $3.60x10^{-4}$ | 0 |
| Iodine-131[p] | | $1.96x10^{-3}$ | 3.90 | 0 |
| Iodine-132[p] | | $1.29x10^{-4}$ | 10.0 | 0 |
| Iodine-133[p] | | $9.51x10^{-3}$ | 18.0 | 0 |
| Iodine-134[p] | | 0 | 0.72 | 0 |
| Iodine-135[p] | | $1.32x10^{-3}$ | 11.0 | 0 |
| Krypton-83m[p] | | $9.57x10^{-5}$ | 660.0 | 0 |
| Krypton-85[p] | | $1.53x10^{-3}$ | 0.63 | 0 |
| Krypton-85m[p] | | 0.587 | 970 | 0 |
| Krypton-87[p] | | 0.029 | 190 | 0 |
| Krypton-88[p] | | 0.527 | 1,600 | 0 |
| Xenon-131m[p] | | $3.45x10^{-4}$ | 5.9 | 0 |
| Xenon-133[p] | | 17.5 | 7,200 | 0 |
| Xenon-133m[p] | | 0.768 | 340 | 0 |
| Xenon-135[p] | | 14.7 | 6,900 | 0 |
| Xenon-135m[p] | | 0.976 | 1,200 | 0 |
| Americium-241 | | NA | NA | $2.53x10^{-7}$ |
| Cesium-137[q] | | NA | NA | $3.57x10^{-8}$ |
| Cobalt-60[q] | | NA | NA | $1.32x10^{-3}$ |
| Iron-55 | | NA | NA | $6.0x10^{-3}$ |
| Manganese-54 | | NA | NA | $6.0x10^{-6}$ |
| Nickel-63 | | NA | NA | $3.4x10^{-6}$ |
| Strontium-90 | | NA | NA | $3.89x10^{-7}$ |
| Thorium-232[q] | | NA | NA | $1.91x10^{-7}$ |
| Uranium-234 | | NA | NA | $2.05x10^{-10}$ |

**Table 2-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | SWEIS Baseline[a] | SWEIS Expanded Operations Alternative[b] | CY2002 Operations[c] |
|---|---|---|---|---|
| **Radioactive Emissions (8 Primary Locations)[n] (Cont'd.)** | | | | |
| Uranium-235[q]<br>Uranium-238[q] | | NA<br>NA | NA<br>NA | $1.42 \times 10^{-7}$<br>$1.29 \times 10^{-6}$ |
| Chemicals Purchased[r,s] | | | | |
| Hazardous Air Pollutants (HAPs)<br>Toxic Air Pollutants(TAPs)<br>Volatile Organic Compounds (VOCs) | tons/yr | 2.4<br>13<br>16 | 4.3<br>34.2<br>37.7 | 4.06<br>8.63<br>18 |
| **Human Health and Worker Safety** | | | | |
| Annual Collective Dose | Person-rem/yr | 12<br>(255 workers) | 19<br>(400 workers) | 4.5<br>(95 workers) |
| Average TEDE | mrem/yr | 47 | 47 | 47 |
| Injury/Illness Rate | cases/yr | 311 | 326 | 301[t] |
| **Transportation** | | | | |
| SNL/NM Commuters | Vehicles | 13,582 | 14,940 | 14,940[u] |
| **Waste Generation (Selected Facilities Plus Balance of Operations)** | | | | |
| Radioactive Waste | | | | |
| Low-Level Waste<br>Low-Level Mixed Waste<br>Transuranic Waste<br>Mixed Transuranic Waste<br>Total Radioactive Waste | $ft^3$ ($m^3$) | 3,322 (94)<br>750 (21)<br>0 (0)<br>16 (0.45)<br>4,088 (115.6) | 9,897 (280)<br>1,445 (41)<br>26 (0.74)<br>37 (1.05)<br>11,405 (322.6) | 2,773 (78.5)<br>316 (8.9)<br>0 (0)<br>0 (0)<br>3,089 (87.4) |
| Chemical Waste | | | | |
| RCRA Hazardous Waste | kg (lb) | 55,852<br>(122,874) | 92,314<br>(203,091) | 26,198<br>(57,740) |
| TSCA (PCBs and Asbestos) | | 147,055<br>(323,521) | 122,000<br>(268,400) | 135,546[v]<br>(298,828) |
| Non-RCRA Chemicals | | 69,321<br>(152,506) | 114,576<br>(252,067) | 27,262<br>(60,085) |
| Biohazardous | | 2,463<br>(5,419) | 4,071<br>(8,956) | 348<br>(767) |
| Recyclable Materials (Hazardous)[x] | | 60,768<br>(133,690) | 100,439<br>(220,966) | 82,500[w]<br>(181,830) |
| Total Chemical Waste | | 335,459<br>(738,010) | 433,400<br>(953,480) | 271,854<br>(599,250) |
| Solid Waste | kg (lb)<br>$m^3$ ($yd^3$) | 0.6M (1.3M)<br>2,022 (2,644) | 0.6M (1.3M)<br>2,022 (2,644) | 1.4M (3.1M)[y]<br>4,718 (6,171) |
| Solid Waste Recyclable | kg (lb) | 1.58M (3.48M)[z] | Not Estimated | 983,000<br>(2.2M)[aa] |

**Table 2-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | SWEIS Baseline[a] | SWEIS Expanded Operations Alternative[b] | CY2002 Operations[c] |
|---|---|---|---|---|
| **Noise and Vibration** | | | | |
| SNL/NM Estimated Number of Noise/Vibration-Producing Tests[bb] | Tests/ day | 4.1 | 15.6 | 1.2 |
| **Socioeconomics** | | | | |
| Employment | FTEs | 7,652 | 8,417 | 6,790[cc] |
| Payroll | Dollars | 480M | 530M | 575M |
| Expenditures | Dollars | 1.43B | 1.57B | $1.87B |

[a] The SWEIS baseline represented annual operational activities in FY1996 or FY1997, depending on which year data were available.
[b] The SWEIS expanded operations alternative represents an estimate of SNL/NM operations increasing to the highest reasonable activity that could be supported by then-current facilities, their potential expansion, and construction of new facilities for future actions specifically identified in the SWEIS.
[c] CY2002 Operations are actual, reported SNL/NM activities and associated material use, waste generation, and other support for CY2002.
[d] See footnote in Table 5.4.2-1 of the SWEIS.
[e] GSF by 2008; see footnote in Table 5.4.2-1 of the SWEIS.
[f] Natural gas usage shown in SWEIS AR – FY2001 was not correct. The correct total gas us in FY2001 was 471M scf (13.3B ℓ).
[g] Includes 61 areas of concern (previously non-ER Project septic systems) related to the *Hazardous and Solid Waste Amendments* permit.
[h] Sites that are not currently scheduled for NFAs due to ongoing activities, per the definition of "Active Environmental Restoration Sites" negotiated with the New Mexico Environment Department (NMED).
[i] Page 5-18 of the SWEIS.
[j] The SWEIS included annual and total projections of SNL/NM groundwater withdrawal over a 10-year period from 1998 through 2007. The projections incorporated gradual accomplishment of a 30-percent water conservation factor by SNL/NM by 2004. This is a conservative estimate, which includes the higher water consumption expected due to construction of the MESA facilities, during the next few years.
[k] Estimate based on no changes to undeveloped land.
[l] Data given in the SWEIS Annual Review – FY2001 for nonradioactive emissions were actually for CY2001.
[m] Based on the SNL/NM full-time employee population for CY2002 (6,790), vehicle-related CO emissions for CY2002 would remain within the 10-percent decrease over the base year that was estimated for the expanded operations alternative.
[n] In CY2002, there were eight primary radionuclide air emissions sources at SNL/NM that were used to calculate dose estimated to the public, as opposed to the original 10 that were used in the SWEIS.
[o] The zero value is due to HERMES III being dropped from the primary source list.
[p] Original SWEIS estimate was based on Mo-99 production occurring at the ACRR; the production of Mo-99 is currently in suspension.
[q] Radionuclide was not analyzed in the SWEIS; CY2002 emission value is based wholly or in part on a conservatively high estimate of the release fraction at the CWL.
[r] For reporting purposes, chemical purchases are assumed to equal emissions. The screening process groups chemical purchases into three categories.
[s] Quantities reported include emission factor corrections (see Appendix D of the SWEIS).
[t] In CY2002, the OSHA log was changed to include Sandians and staff augmentation contractors, rather than the number of Sandians, as was previously the case. There were 290 reported cases of accidents and illnesses for Sandians in CY2002.
[u] SNL/NM employee population estimated for CY2002 (6,790) indicates that associated traffic activities would remain within the SWEIS population (8,417) and traffic-related activities included in the expanded operations alternative.
[v] Quantities represent any material with "asbestos" or "PCB" in its name that was processed through the HWMF.
[w] Recyclable Materials (Hazardous) should have been reported as 55,000 kg (122,322 lb) in the SWEIS AR – FY2001.
[x] Added the term "hazardous" for clarification.
[y] Solid Waste should have been reported as 3.0M kg (6.6M lb)in the SWEIS AR – FY2001.
[z] Recycled materials included amounts from LANL, the USAF, and other DOE activities at KAFB; see footnote in Figure 4.12-8 of the SWEIS.

[aa] Solid Waste Recyclable should have been reported as 638,000 kg (1.4M lb) in the SWEIS AR – FY2001.
[bb] In CY2002, a total of 299 tests (at Selected Facilities) were completed.
[cc] Employment numbers at SNL/NM are snapshots in time; actual number of employees may vary continuously.

Sources: Aragon, 2003; Castillo, 2003; Conaway, 2003; DeLaurentis, 2003; DOE, 1999; du Mond, 2003; Eckstein, 2003; Freshour, 2003; Gonzales, 2003; Marley, 2003; Potter, 2003; SNL, 2001a, 2001b; SNL, 2002, 2003a, d, e; Vigil, 2003; Wrons, 2003.

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# CHAPTER 3.0
# SUMMARY OF NEW AND MODIFIED CY2002 SNL/NM OPERATIONS

## CONTENTS



## TABLES

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# 3.0 SUMMARY OF NEW AND MODIFIED CY2002 SNL/NM OPERATIONS

## 3.1 CY2002 SNL/NM Facility Modifications and Additions

The SNL/NM Site-Wide Environmental Impact Statement (SWEIS) assessed seven planned facility construction and modification projects at SNL/NM (DOE, 1999, 2000). Specifically, the SWEIS expanded operations alternative included a discussion of construction or modifications at the New Gamma Irradiation Facility (NGIF), the Steam Plant, the Neutron Generator Production Facility (NGPF), the Microsystems and Engineering Science Applications (MESA) Complex, the Sandia Pulsed Reactor (SPR), the Radiographic Integrated Test Stand (RITS), and the Annular Core Research Reactor (ACRR). Several facilities started or continued construction or modifications in Calendar Year (CY) 2002:

- Plans are under development to construct a new facility known as the Fire Laboratory Accreditation of Modeling by Experiment (FLAME). The FLAME will replace the Radiant Heat Facility and is expected to be completed in CY2005. The FLAME is part of the Test Capabilities Revitalization (TCR) project.

- The MESA project continued early planning and development activities in CY2002. If funded to full implementation, the MESA project could include an estimated $300 million (M) state-of-the-art complex (260,000 gross square feet [$ft^2$], or 24,180 square meters [$m^2$]). The project initiated some retooling of existing operations in CY2002, which included: installation of a new acid exhaust system, replacement of hydrochloric acid and sodium hydroxide bulk storage tanks with a new chemical distribution system, completion of upgrades to the process chilled water system, and installation of an emergency generator. In addition, a new hazardous gas bunker was constructed to replace the current bunker in the basement of the Microelectronics Development Laboratory (MDL). To date, MESA has installed approximately 35 new tools in the MDL.

- Installation of the Radiographic Integrated Test Stand (RITS) accelerator continued in CY2002. Operations supported 216 accelerator shots; however, the facility is not expected to be fully operational until 2004.

- Demolition work was completed at the Containment Technology Test Facility (CTTF)-West and the permitted land was returned to the U.S. Air Force (USAF) in CY2002.

- There were two facility additions initiated at the NGPF, both of which took place in the Advanced Manufacturing Prototyping Facility (AMPF). These new additions involved the installation of a tritium exhaust system and various other pieces of equipment and processes to introduce tritium to the AMPF. The new facility additions will give the AMPF the ability to perform neutron tube development work parallel to production activities within the NGPF. It is expected that the additions will be completed in CY2003.

- Proposed operations for medical isotope production at the ACRR remained in suspension during CY2002. During the year, the reactor operated in the pulse mode for a limited number of defense-related tests and production of non-medical isotopes.

In CY2002, other projects were completed that were included in the SWEIS analysis for “balance of plant” operations, including facility maintenance and refurbishment. Below are brief summaries of the changes that occurred in CY2002:

- Renovations were completed in CY2002, to replace aging equipment and make structural repairs, at the Particle Beam Fusion Lab located in SNL/NM Technical Area IV.

- Construction continued on the buildings that house the Repetitive High Energy Pulsed-Power Unit I (RHEPP I) and at the Z Accelerator, which included the installation of a new liquid nitrogen and helium cryodyne cooled diode trigger system for the RHEPP I.

- Renovation of the Light Initiated High Explosive (LIHE) Facility began in CY2002. The modernization effort will renovate the primary facility, consolidate and replace temporary and substandard facilities, and restore or modernize diagnostic and test equipment.

- Renovation of the Radiography Facilities, in TA-III, began in CY2002. The renovations will modernize systems, including mechanical and electrical systems, to extend the economic useful life of the facility to meet long-term mission needs.

- Refurbishment of the Vibration Facility began in CY2002. This was needed to modernize test and control equipment and remodel a vibration control room, offices, and test cell.

  (SNL, 2001a, 2001b, 2003e)

## 3.2 Comparison of CY2002 SNL/NM Selected Facility Operations to SWEIS Baseline and Expanded Operations Alternative

The operations of the major SNL/NM selected facilities were the bases for assessing the operational impacts analyzed in the SWEIS. Taken together, these facilities and facility groups represent the majority of exposure risks associated with continuing operations at SNL/NM. At the time the SWEIS was prepared and, according to the SWEIS baseline data, these facilities represented:

- Over 99 percent of all radiation doses to SNL/NM personnel.

- Over 99 percent of all radiation doses to the public.

- From 81 to 99 percent of stationary source criteria pollutants (nitrogen dioxide, carbon monoxide, particulate matter less than 10 microns in diameter [$PM_{10}$], and sulfur dioxide), depending on the alternative. This does not include hazardous air pollutants or toxic air pollutants, which instead are analyzed on a site-wide basis in the SWEIS. The remaining stationary source criteria pollutants are associated with backup generators.

- All waste volumes, including radioactive waste, Environmental Restoration (ER) Project waste, and hazardous waste, which are accounted for in analyses of infrastructure, radiological air quality, transportation, and waste generation.

  (DOE, 1999)

This chapter summarizes changes in selected facility operations compared to the original SWEIS baseline and the highest projections of operations under the expanded operations alternative.

### *3.2.1 Selected Facilities in TA-I and TA-II*

In CY2002, operational activities for all five of the selected facilities in TA-I and TA-II were within operational parameters analyzed in the SWEIS expanded operations alternative. At the NGPF, production of neutron generators continued to be less than the expanded operations projection established in the SWEIS. The activities at the MDL resulted in production of 4,800 wafers. The Advanced Manufacturing Processes Laboratory (AMPL) conducted 312,000 hours of operations in CY2002, and the Explosive Components Facility (ECF) continued to conduct operations at levels comparable to what were established in the SWEIS baseline. (See Section 3.2.7 for detailed comparison to SWEIS projections.)

The Integrated Materials Research Laboratory (IMRL) remained at the levels established in the SWEIS analysis.

(SNL, 2003e)

### *3.2.2 Physical Testing and Simulation Facilities (TA-III)*

In CY2002, operational activities for all four of the physical testing and simulation facilities in TA-III were within operational parameters analyzed in the SWEIS expanded operations alternative (see Section 3.2.7). The Terminal Ballistics Complex (TBC) was the most active of the facilities, completing 75 tests in CY2002. This was well within the total of 450 tests analyzed in the SWEIS. The Drop/Impact Complex was the least active, having completed only 3 tests in CY2002.

(SNL, 2003e)

### *3.2.3 Accelerator Facilities (TA-IV)*

In CY2002, operational activities for all ten of the selected facility accelerators in TA-IV were within operational parameters analyzed in the SWEIS expanded operations alternative (see Section 3.2.7). Two facilities, the Repetitive High Energy Pulsed-Power [RHEPP II] accelerator and the Sandia Accelerator for Beam Research [SABRE], were not active and conducted no tests in CY2002. Of the eight facilities that did conduct tests in CY2002, the RHEPP I was the most active, with 4,964 accelerator shots; the Tera-Electron Volt Energy Superconducting Linear Accelerator (TESLA) was the least active, with 75 shots. Testing in the Saturn, Radiographic Integrated Test Stand (RITS), High-Energy Radiation Megavolt Electron Source III (HERMES III), RHEPP I, TESLA, SPHINX, Z Accelerator, and Advanced pulsed-Power Development laboratory (APPDL) in CY2002 all fell within the SWEIS analysis.

In CY2002, facility personnel installed a new liquid-nitrogen and helium-cryodyne-cooled diode trigger system for the RHEP I. Work began in CY2001 to replace the SABRE with the RITS accelerator, with the work being completed in CY2002. Also in CY2002, a capacitor test tester was added to the TESLA hibay, which will be used for future pulse power machines and holds approximately 500 gal of insulating oil.

In CY2002, the Z Facility replaced the crane in the Particle Beam Fusion Lab with a newer model, as well as upgraded the Z Accelerator's laser trigger system. Additionally, the eximer laser system was replaced with 36 individual, solid-state laser towers.

(SNL, 2003e)

## *3.2.4 Reactor Facilities (TA-V)*

In CY2002, operational activities for all reactor facilities were within operational parameters analyzed in the SWEIS expanded operations alternative (see Section 3.2.7). The New Gamma Irradiation Facility (NGIF) was the most active facility with 280 tests. The GIF, Hot Cell Facility (HCF), and Sandia Pulsed Reactor (SPR) had no operations in CY2002.

The ACRR performed an upgrade to the rod control and reactor console. The upgrade included, SNL/NM personnel replacing the software and the computers, as well as the link between the computers and the hardware control system.

The HCF began providing support to the National Aeronautics and Space Administration (NASA) Jupiter Icy Moon Orbiter (JIMO) project and the In-Orbit Space Transportation and Recovery (IOSTAR) Program. Both of these programs are still in the design phase, however, if they proceed it is anticipated that the HCF would begin experimental support of both of projects in the CY2003-CY2004 timeframe.

The NGIF began testing in CY2002, completing 280 tests. It is anticipated that, as the customer base increases, the NGIF will increase operational hours, but will remain within the SWEIS analysis. In addition, the NGIF purchased a 1-Ci Kr-85 beta emitter source to provide beta irradiation capabilities.

The SPR continued to remain in non-operational mode in CY2002. However, in CY2003 and CY2004, SPR will be resuming reactor operations. The anticipated return to operations would remain consistent with the previous mission activities and would not introduce any new capabilities or functions to the mission of the SPR.

(SNL, 2003e)

## *3.2.5 Outdoor Test Facilities*

Test activities at all five of the outdoor test facilities were within operational parameters analyzed in the SWEIS expanded operations alternative. The Explosives Applications Laboratory (EAL), with 107 tests, was the most active; the Containment Technology Test Facility (CTTF)-West was the least active, with no operations in CY2002. The CTTF-West was decommissioned and demolished, and the permitted land returned to the USAF, in CY2002. None of the five facilities added new capabilities in CY2002.

(SNL, 2003e)

## *3.2.6 Infrastructure Facilities*

In CY2002, infrastructure facilities activities for all four of these selected facilities remained essentially unchanged from activities analyzed in the SWEIS. The Steam Plant produced 683 million pounds (M lb) of steam, which is below the 544-M lb projected under the SWEIS expanded operations alternative. The quantities of waste handled at the Hazardous Waste Management Facility (HWMF), Radioactive and Mixed Waste Management Facility (RMWMF), and the Thermal Treatment Facility (TTF) continued a declining trend in CY2002 that began prior to FY1996 (see Section 3.2.7). However, the HWMF is anticipating waste volumes to increase in CY2003 and CY2004, due to Environmental Restoration Activities.

The TTF supports the operations of the Light Initiated High Explosive (LIHE) facility. The LIHE process generates light-sensitive, high-explosive waste that cannot be transportated and, therefore, must be treated on-site in the TTF. In 1992, the LIHE was mothballed, but the TTF continued to be maintained to provide the capability of restarting LIHE. The TTF also provides treatment of certain SNL waste streams. The decision to restart LIHE was made in 2001, with expected funding for building renovation to become available. Generation of LIHE waste may commence as soon as CY2004 as a result of practice sprays and formulation checkout.

(SNL, 2003e)

## *3.2.7 Summary for Selected Facilities*

Table 3-1 summarizes CY2002 facility operations compared to the SWEIS baseline and projections for the expanded operations alternative.

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations[a]**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Advanced Manufacturing Process Laboratory (AMPL) (TA-I)**<br>• Develops and applies advanced manufacturing techniques, including hardware manufacturing, emergency and prototype manufacturing, development of manufacturing processes, and design and fabrication of production equipment. | Operations of 248,000 hours per year. | Operations up to a maximum of 347,000 hours per year. | Operations of 312,000 hours for CY2002. |
| **Explosive Components Facility (TA-II)**<br>• Supports the Neutron Generator Facility.<br>• Conducts research and development on energetic components, including explosives, chemicals, and batteries. | Operations involving neutron generator tests,<br>600 explosives tests,<br>900 chemical analyses, and<br>50 battery tests per year. | Expanded operations involving neutron generator tests,<br>900 explosives tests,<br>1,250 chemical analyses, and<br>100 battery tests per year. | Operations supported completion of NAPD[b] neutron generator tests, 600 explosives tests, 900 chemical analyses, and<br>55 battery tests in CY2002. |
| **Integrated Materials Research Laboratory (IMRL) (TA-I)**<br>• Conducts research on materials and advanced components, including basic chemistry, physics, and energy technology. | Operations of 395,454 hours per year. | Operations up to 395,454 hours per year. | Operations hours not reported for CY2002. |
| **Microelectronics Development Laboratory (MDL) (TA-I)**<br>• Conducts research and development on microelectronic devices for nuclear weapons.<br>• Produces integrated circuits and wafers.<br>• Develops technologies and manufacturing processes to support production requirements. | Production of 4,000 wafers per year. | Production of up to 7,500 wafers per year. | Production of 4,800 wafers in CY2002. |
| **Neutron Generator Facility (NGF) (TA-I)**<br>• Fabricates neutron generators and neutron tubes. | NAPD | NAPD | NAPD |
| **Centrifuge Complex (TA-III)**<br>• Tests objects weighing several tons at over 100 times the force of gravity. | Operations supporting 32 centrifuge tests and 0 impact tests per year. | Operations supporting 120 centrifuge tests and 100 impact tests per year. | Operations supporting 22 centrifuge tests and 0 impact tests in CY2002. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Drop/Impact Complex (TA-III)**<br>• Conducts tests to validate analytical modeling and weapons systems certification.<br>• Conducts research focused on water and underwater tests, design verification, and performance assessments. | Operations supporting 18 drop tests, 1 water impact test, 1 submersion test, and 0 underwater blasts per year. | Expanded operations would support up to a maximum of 50 drop tests, 20 water impact tests, 5 submersion tests, and 10 underwater blasts per year. | Operations supported 3 drop tests, 0 water impact tests, 0 submersion tests, and 0 underwater blasts for CY2002. |
| **Sled Track Complex (TA-III)**<br>• Conducts testing to simulate high-speed impacts of weapons shapes, substructures, and components to verify design integrity, performance, and fusing functions.<br>• Conducts research testing of parachute systems, transportation equipment, and reactor safety. | Operations supporting 10 rocket sled tests, 12 explosives tests, 3 rocket launches, and 40 free-flight launches per year. | Expanded operations would support up to a maximum of 80 rocket sled tests, 239 explosives tests, 24 rocket launches, and 150 free-flight launches per year. | Operations supported 18 rocket sled tests, 14 explosives tests, 3 rocket launches, and 0 free-flight launches in CY2002. |
| **Terminal Ballistics Complex (TA-III)**<br>• Conducts solid-fuel rocket motor tests and ballistics studies in areas of armor penetration, vulnerability, acceleration, flight dynamics, and accuracy.<br>• Tests projectile impacts (all calibers). | Operations supporting 50 projectile impact tests and 25 propellant tests per year. | Expanded operations would support up to a maximum of 350 projectile impact tests and 100 propellant tests per year. | Operations supported 50 projectile impact tests and 25 propellant tests for CY2002. |
| **Advanced Pulsed-Power Development Laboratory (APPDL) (TA-IV)**<br>• Evaluates the performance and reliability of components, including next-generation accelerators.<br>• Conducts research and development in pulsed-power technologies (power storage, high-voltage switching, and installed new tank power flow). | Operations supporting 40 shots per year. | Expanded operations would support a maximum of 2,000 shots per year. | Operations supported 560 shots in CY2002. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **High-Energy Radiation Megavolt Electron Source III (HERMES III) Accelerator (TA-IV)**<br>• Produces gamma-ray effects testing capabilities.<br>• Conducts testing on electronic components and weapons systems for high-fidelity simulation over large areas in near-nuclear-explosion radiation environments.<br>• Installed two new processes in the Materials Processing and Coating Laboratory, housed in the same building as HERMES III. These new processes included the single-point diamond-turning and hydrogen/vacuum firing processes. | Operations supporting 262 shots per year. | Expanded operations would support up to a maximum of 1,450 shots per year. | Operations supported 288 shots in CY2002. |
| **Radiographic Integrated Test Stand (RITS) Accelerator (TA-IV)**<br>• When fully operational, will develop and demonstrate capabilities for future accelerator facility design, focusing on demonstrating inductive voltage technology. | Operations estimated to support 500 shots per year. (Not constructed when the SWEIS was prepared.) | Expanded operations would support a maximum of 800 shots per year. | Operations supported 216 shots in CY2002. |
| **Repetitive High Energy Pulsed-Power I (RHEPP-I) Accelerator (TA-IV)**<br>• Develops pulsed-power technology, including high-power energy tests.<br>• Conducts basic scientific research, development, and testing. | Operations supporting 500 shots per year. | Expanded operations would support up to a maximum of 10,000 tests per year in either single or repetitive modes. | Operations supported 4,964 shots in CY2002. |
| **Repetitive High Energy Pulsed-Power II (RHEPP-II) Accelerator (TA-IV)**<br>• Develops radiation-processing applications using powerful electron or x-ray beams.<br>• Tests high-power magnetic switches and specialty transmission lines. | Operations supporting 80 shots per year. | Expanded operations would support a maximum of 800 shots per year. | No shots were made in CY2002. |
| **Sandia Accelerator and Beam Research Experiment (SABRE) Accelerator (TA-IV)**<br>• Provided x-ray and gamma-ray testing capabilities.<br>• Tested pulsed-power technologies, fusion systems, weapons systems, computer science, flight dynamics, satellite systems, and robotics. | Operations supporting 187 shots per year. | Expanded operations would support a maximum of 400 shots per year. | Operations supported 0 shots in CY2002. The RITS has replaced the SABRE. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Saturn Accelerator (TA-IV)**<br>• Produces x-rays to simulate the radiation effect of nuclear bursts on electronic and material components.<br>• Conducts research on satellite systems, weapons material and components, and reentry vehicle and missile systems. | Operations supporting up to a maximum of 65 shots per year. | Expanded operations would support up to a maximum of 500 shots per year. | Operations supported 178 shots in CY2002. |
| **Short-Pulse High Intensity Nanosecond X-Radiator (SPHINX) Accelerator (TA-IV)**<br>• Produces high-voltage accelerations to measure x-ray-induced currents in integrated circuits and detect-response in materials.<br>• Performs radiation measurements for weapons components. | Operations supporting 1,185 shots per year. | Expanded operations would support a maximum of 6,000 shots per year. | Operations supported 1,684 shots in CY2002. |
| **Tera-Electron Volt Energy Superconducting Linear Accelerator (TESLA) (TA-IV)**<br>• Tests plasma opening switches for pulsed-power drivers.<br>• Conducts basic research in science, material development, and material testing. | Operations supporting 150 shots per year. | Expanded operations would support a maximum of 6,000 shots per year. | Operations supported 75 shots in CY2002. |
| **Z Accelerator (TA-IV)**<br>• Conducts pulse tests on targets to simulate special atmospheric conditions and fusion reaction conditions.<br>• Completed preparatory work for a new series of experiments using depleted uranium, and to restart target cleaning activities, which require metal grinding of surfaces contaminated with beryllium (and potentially lead). | Operations supporting 150 shots per year. | Expanded operations would support a maximum of 350 shots per year. | Operations supported 180 shots in CY2002. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Annular Core Research Reactor (ACRR) (TA-V)**<br>• Produces medical isotopes.<br>• Supports Defense Programs activities. | Irradiation of 8 production targets and 0 defense-related test series. | Expanded operations would support up to a maximum of 1,300 targets and 2 to 3 defense-related test series. | Five defense-related test series were completed in CY2002. |
| **Gamma Irradiation Facility (GIF) (TA-V)**<br>• Supplements the capabilities of the New Gamma Irradiation Facility.<br>• Performs gamma-irradiation experiments. | Operations supporting 1,000 hours. | Expanded operations up to a maximum of 8,000 hours per year. | No test hours were completed in CY2002. |
| **Hot Cell Facility (HCF) (TA-V)**<br>• Supports medical isotopes production, including extraction, purification, product packaging, and quality control.<br>• Supports Defense Programs by providing the capabilities for its short-term testing. | Processing of 8 production targets. | Expanded operations would support up to a maximum of 1,300 targets and 2 to 3 defense-related test series. | Facility was in standby mode. No medical isotope production during CY2002. |
| **New Gamma Irradiation Facility (NGIF) (TA-V)**<br>• Performs gamma-irradiation experiments under both dry and water-pool conditions.<br>• Conducts studies in thermal and radiation effects, weapons component degradation, nuclear reactor material and components, and nonweapon applications. | Not constructed when the SWEIS was prepared. (Construction and operations analyzed in a separate environmental assessment.) | Expanded operations up to a maximum of 24,000 hours per year. | Operations supported 280 test hours in CY2002. |
| **Sandia Pulsed Reactor (SPR) Facility (TA-V)**<br>• Provides multiple, fast-burst reactor, near-fusion spectrum radiation environments.<br>• Tests technologies that support both defense and nondefense projects. | Operations supporting 100 irradiation tests. | Expanded operations would support up to a maximum of 200 irradiation tests. | No irradiation tests were performed in CY2002. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Aerial Cable Facility Complex (Withdrawn Area)**<br>• Conducts impact tests involving weapon systems and aircraft components.<br>• Provides capability for free-fall drop, rocket pull-down, and captive flight tests, data recording, and simulation technologies.<br>• Maintains the capability for drop tests of joint test assemblies that contain depleted uranium, enriched uranium, and insensitive high explosives. | Operations supporting 21 drop/pull-down tests, 6 aerial target tests, and 0 (series of) scoring system tests. | Expanded operations would support up to a maximum of 100 drop/pull-down tests, 30 aerial target tests, and 2 series of scoring system tests. | Operations supported 6 drop/pull-down tests, 0 aerial target tests, and 0 series of scoring system tests in CY2002. |
| **Containment Technology Test Facility-West (Coyote Test Field [CTF])**<br>• Conducted a series of successive experiments leading up to ultimate failure of test vessels.<br>• Decommissioned and demolished in CY2002. | Operations supporting 1 survivability test. | Expanded operations would support up to a maximum of 2 survivability tests. | The CTTF-West was decontaminated and demolished, and the land returned to the U.S. Air Force in CY2002. |
| **Explosives Applications Laboratory (CTF)**<br>• Designs, assembles, and tests explosive materials, components, and equipment.<br>• Work involves arming, fuzing, and firing of explosives and testing of components. | Operations supporting 240 explosive tests. | Expanded operations would support up to a maximum of 360 explosive tests. | Operations supported 107 explosive tests in CY2002. |
| **Lurance Canyon Burn Site (Withdrawn Area)**<br>• Tests, certifies, and validates material and system tolerances.<br>• Burns test objects for short periods of time under controlled conditions. | Operations supporting 12 certification tests, 56 model validation tests, and 37 user tests. | Expanded operations would support up to a maximum of 55 certification tests, 100 model validation tests, and 50 user tests. | Operations supported 10 certification tests, 40 model validation tests, and 23 user tests in CY2002. |
| **Thunder Range Complex (CTF)**<br>• Performs disassembly and evaluation, and calibration and verification testing of special nuclear and nonnuclear systems.<br>• Provides capability for cleaning, physical examination, measurement, sampling, photography, and data collection. | Operations supporting 60 days of equipment disassembly and 1 test series. | Expanded operations would support up to a maximum of 144 days of equipment disassembly and 10 test series. | Operations supported 0 days of equipment disassembly and 0 test series in CY2002. |

**Table 3-1. Comparison of CY2002 SNL/NM Selected Facility Activities to SWEIS/ROD Baseline and Expanded Operations (Continued)**

| Selected Facility Capability Descriptions and CY2002 Modifications | SNL/NM SWEIS/ROD Baseline Operations Activities (FY1996-97) | SNL/NM SWEIS/ROD Expanded Operations Activities | SNL/NM CY2002 Operations Activities Update |
|---|---|---|---|
| **Hazardous Waste Management Facility (HWMF) (Infrastructure)**<br>• Handles, packages, stores, and ships hazardous, toxic, and nonhazardous chemical waste.<br>• Prepares waste for offsite transportation for recycling, treatment, or disposal at licensed facilities. | Management of 203,000 kg per year, including 55,852 kg of RCRA hazardous waste. | Management of 214,000 kg per year, including 92,314 kg of RCRA hazardous waste. | Management of 53,593 kg of RCRA hazardous waste was managed in CY2002. |
| **Radioactive and Mixed Waste Management Facility (RMWMF) (Infrastructure)**<br>• Serves as a centralized facility for receipt, characterization, compaction, treatment, repackaging, certification, and storage of low-level waste (LLW), transuranic waste (TRU), low-level mixed waste (LLMW), and mixed transuranic waste (MTRU).<br>• Prepares waste for offsite treatment and disposal at licensed facilities. | Management of 1.6 million pounds per year, including 11,874 $ft^3$ of LLRW; 5,353 $ft^3$ of LLMW; 214 $ft^3$ of TRU; and 16 $ft^3$ of MTRU. | Management of 2.7 million pounds per year, including 19,592 $ft^3$ of LLW; 8,833 $ft^3$ of LLMW; 353 $ft^3$ of TRU; and 37 $ft^3$ of MTRU. | Management of 1.2 million pounds in CY2002, including ~2,616 $ft^3$ of LLW; 60 $ft^3$ of LLMW; <1 $ft^3$ of TRU; and 0 $ft^3$ of MTRU. |
| **Steam Plant (Infrastructure)**<br>• Produces and distributes steam to SNL/NM and Kirtland Air Force Base facilities. | Steam production was ~ 544 million pounds. | Maximum steam production was set at 544 million pounds. | Steam production was 683 million pounds in CY2002. |
| **Thermal Treatment Facility (Infrastructure)**<br>• Burns small quantities of explosive materials and explosives-contaminated water. | Treatment of a minimal amount of waste. | Treatment of a maximum of 1,200 pounds of waste. | No treatment of waste in CY2002. |

[a]Extensive descriptions of capabilities and activities, (e.g., hours per year) are provided in the SNL/NM Facilities and Safety Information Document (SNL, 1999a).
[b]Not Available for Public Distribution.
Source: DOE, 1999, 2000; SNL, 2003e.

# 3.3 Comparison of CY2002 SNL/NM Notable Facility Operations to Source Information Used to Support the SWEIS

This section compares CY2002 SNL/NM operations to source information published in the SNL/NM Facilities and Safety Information Document (FSID), that was incorporated by reference into the SNL/NM SWEIS (DOE, 1999; SNL, 1999a). Notable facility operations were included in the SWEIS analysis within the balance of operations.

## *3.3.1 Notable Facilities Operations at SNL/NM*

Of the 15 notable facilities identified at SNL/NM, none recorded increases in operational levels during CY2002 (see Chapter 5). Two facilities, the Sandia Lightning Facility and the Proto II accelerator, did not operate in CY2002.

The Sandia Lightning Facility began refurbishment activities during CY2002 to support weapons validation tests scheduled to start in CY2003, as part of the Life Extension Programs. It is expected that the budget for the Liquid Metal Processing Laboratory (LMPL) will increase an additional 25 percent for CY2003. This potential increase in funding is expected to support an increase in activities and experimentation at the LMPL.

The Photovoltaic Systems Evaluation Laboratory West was renamed the Distributed Energy Technologies Laboratory (DETL), in CY2002. In addition, two new capabilities were introduced to the DETL: the testing of microturbines and fuel cells.

It is anticipated that activities at the Radiant Heat Facility will increase in CY2003-CY2004 timeframe to support model validation and verification. Additionally, a new facility will be constructed and completed by FY2005 to replace the Radiant Heat Facility. The new facility will be known as the Fire Laboratory Accreditation of Modeling by Experiment (FLAME), part of Test Capabilities Revitalization (TCR).

(SNL, 2003e)

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# CHAPTER 4.0
# CY2002 SELECTED FACILITIES OPERATIONS

CONTENTS

## TABLES

# 4.0 SELECTED FACILITIES OPERATIONS IN CY2002

This chapter of the Annual Review provides more detailed information on each of the 34 "Selected Facilities" that DOE analyzed in the SNL/NM Site-Wide Environmental Impact Statement (SWEIS). This review includes updates to facility descriptions, a summary of current operations, and any changes to facilities and operations that occurred in CY2002. Comparative baseline and expanded operations data from the SNL/NM SWEIS are also provided (DOE, 1999).

## 4.1 SNL/NM Technical Area I (TA-I) and TA-II Selected Facilities

The following sections provide brief descriptions of each selected facility in TA-I and TA-II, including a summary of current operations and capabilities. Specific emphasis is given to operations conducted in CY2002.

### *4.1.1 Advanced Manufacturing Processes Laboratory (AMPL)*

Consistent with the SWEIS description, the AMPL is a one-story structure with a basement that includes research and support space.

**Current Operations and Capabilities**

Capabilities at the AMPL include prototype creation and limited manufacturing of specialized nuclear weapons components (including neutron generator components). Manufacturing technology development at the AMPL is focused on enhancing capabilities in engineering hardware manufacture, emergency and specialized production of weapon hardware, manufacturing processes, and design and fabrication of unique production equipment.

Activities at the AMPL are typically laboratory and small-scale operations involving materials technology, fabrication, prototyping, and process research. Operations include but are not limited to development of processes utilizing plastics and organics, nonexplosive powders, adhesives, potting compounds, ceramics, glass, laminates, microcircuits, lasers, machine shop equipment, electronic fabrication, multichip modules, thin-film brazing and deposition, and plating. Other activities include materials characterization, mechanical measurement, and calibration mechanical engineering.

(Kuzio, 2001; SNL, 1998, 1999c; Zich, 2000)

**Summary of Advanced Manufacturing Processes Laboratory Operations in CY2002**

In CY2002, operations at the AMPL, including advanced manufacturing research, totaled 312,000 hours and remained essentially unchanged since the SWEIS analyses. Information in Section 4.7 shows that CY2002 material inventories, material consumption, emissions, and process requirements were unchanged compared to the SWEIS expanded operations alternative.

(SNL, 2003e)

### *4.1.2 Explosive Components Facility (ECF)*

The ECF, a low-hazard, nonnuclear facility located in TA-II, is a self-contained, secure site used for explosives testing while providing maximum protection for adjacent facilities and the environment. The complex includes a main building, explosive storage magazines, plus service drives and parking areas.

(Kuzio, 2001)

**Current Operations and Capabilities**

The ECF consolidates numerous ongoing activities relating to SNL/NM's mission in energetic component research, testing, development, and quality control. In operation, the ECF facilitates the coordination of these activities to enhance safety and productivity.

Specific activities at the ECF include physical and chemical testing of explosives, pyrotechnics, and propellants. The ECF also continues to support stockpile surveillance of these energetic materials. Research and development at the ECF involves advanced explosive components, neutron devices, and batteries.

(SNL, 2003e)

**Summary of Explosive Components Facility Operations in CY2002**

During CY2002, the ECF continued to support work performed at the Neutron Generator Production Facility (NGPF) and research and development performed on energetic components. Activities included research, testing, development, and quality control of neutron generators, explosives, chemicals, and batteries. CY2002 operations at the ECF included neutron generator tests, 600 explosive tests, 900 chemical analyses, and 55 battery tests. Section 4.7 shows that CY2002 material inventories, material consumption, emissions, and process requirements were well within the parameters analyzed for the SWEIS expanded operations alternative.

The ECF is currently exploring the possibility of adding additional chemical labs and a separate building for trace analysis of chemical explosives.

(SNL, 2003e)

## *4.1.3 Integrated Materials Research Laboratory (IMRL)*

The IMRL is comprised of office space and laboratory space within a four-story concrete building with a full basement and mechanical penthouse.

**Current Operations and Capabilities**

The IMRL provides offices and laboratory space for conducting materials and advanced components research, including lab studies in chemistry, physics, and alternative energy technologies. Materials studied at the IMRL include ceramics, organic polymers, alloys, and electronic components.

Research at the IMRL enables development of new materials for government and industrial needs, and ranges from the atomic scale, through the development of electronic devices, to full-scale mechanical components. Work involves technology transfer in areas of operational hazards associated with energetic materials, advanced initiation and fuze development, munitions life-cycle engineering, hard target penetration, and computer simulation.

(Davis, 2000; SNL, 2003e)

**Summary of Integrated Materials Research Laboratory Operations in CY2002**

The IMRL did not report data for CY2002 material inventories, material consumption, emissions, and process requirements.

(Kuzio, 2001; SNL, 1999c)

## *4.1.4 Microelectronics Development Laboratory (MDL)*

The MDL, in TA-I, is a two-story structure with a basement, and includes offices, numerous storage areas, and laboratories. The light labs provide work environments primarily for wafer test equipment, die packaging, scanning electron microscopy, device radioactive source exposure, and device inspection.

(Kuzio, 2001)

**Current Operations and Capabilities**

The MDL supports research and development in state-of-the-art microelectronics production methods. Projects performed in the MDL may combine manufacturing techniques currently available at the prototype level. These activities include research and development on microelectronic devices for nuclear weapon applications. MDL's limited production capability of radiation-hardened microelectronics could serve as backup to private industry.

The MDL also supports ongoing efforts between DOE and the U.S. Department of Defense (DoD) to transfer the technology base resident at the DOE national laboratories for the development of advanced, cost-effective, nonnuclear munitions.

MDL activities also entail fabrication (integrated circuits, microsensors/controllers, and micromachines), study and improvement of silicon semiconductor processing, product development for microelectronic systems, corrosion studies, and development of new processes and prototypes, including miniature fuel cells and fuel processors.

(SNL, 2003e)

**Summary of MDL Operations in CY2002**

In CY2002, the MDL continued research and development activities on silicon-based microelectronic devices for nuclear weapons. Microtechnology development and engineering activities included integrated circuit production of 4,800 wafers in CY2002. The total level of MDL activities, summarized in Section 4.7, shows that CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

DOE anticipates that new technologies and manufacturing processes will be required to meet future growth. In CY2000, DOE prepared an environmental assessment and associated finding of no significant impact (FONSI) for the proposed construction and operation of the Microsystems and Engineering Sciences Applications (MESA) Complex, which includes modification and expansion of the MDL. Construction of MESA is necessary to meet required expanded wafer production at MDL and replace the Compound Semiconductor Research Laboratory (CSRL). Planning for these changes continued in CY2002.

In CY2002, the MDL performed several facility upgrades in association with the MESA Project. A new acid exhaust system was installed, the hydrochloric acid and sodium hydroxide bulk storage tanks were replaced with a new chemical distribution system, upgrades to the process chilled water system were completed and an emergency generator was installed. In addition, a new hazardous gas bunker was constructed to replace the current bunker in the basement of the MDL. To date, MESA planning has called for the installation of approximately 35 new tools in the MDL.

(SNL, 2003e)

## *4.1.5 Neutron Generator Production Facility (NGPF)*

The NGPF is a low-hazard, nonnuclear facility located in a two-story structure with a basement, in TA-I. Most processing and assembly operations take place in this building, although various support operations occur elsewhere, such as the ECF (SNL, 1997a).

**Current Operations and Capabilities**

Operations at the NGPF include fabrication of neutron generators and prototype switch tubes. SNL/NM provides experimental testing and production-lot sample testing of explosive neutron generators and 100-percent functional testing of electronic neutron generators. Electronic generators are reusable; when tested, they typically do not generate waste. Explosive generators are one-use items that are tested in a protective enclosure; testing results in the generation of classified mixed waste.

(Stiles, 2000; SNL, 2003e)

**Summary of NGPF Operations in CY2002**

During CY2002, the NGPF continued to fabricate neutron generators and neutron tubes. This total is well below the projected number of neutron generators per year (and associated neutron and switch tubes) included in the SWEIS expanded operations alternative. Support activities included manufacturing, testing, and product development techniques and processes. The total level of activities, summarized in Section 4.7, shows that CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

In CY2002, there were two facility additions initiated in support of operations, both of which took place in the Advanced Manufacturing Prototyping Facility (AMPF). These new additions involve the installation of a tritium exhaust system and various other pieces of equipment and processes to introduce tritium to the AMPF. The new facility additions will give the AMPF the ability to perform neutron tube development work parallel to production activities within the NGPF. It is expected that the additions will be completed in CY2003.

(SNL, 2003e)

# 4.2 Physical Testing and Simulation Facilities (TA-III)

## *4.2.1 Centrifuge Complex*

The Centrifuge Complex is a low-hazard, nonnuclear facility comprised of an indoor centrifuge and an adjacent outdoor centrifuge.

(DOE, 1997a; Kuzio, 2001)

**Current Operations and Capabilities**

The Centrifuge Complex is used for acceleration testing of large objects—weapon systems, satellite systems, reentry vehicles, and rocket motors. SNL Energy and Environment programs that certify designs in transportation technology also use it.

For continuous acceleration tests, objects are attached to one end of a boom that rotates around a central shaft. Vibration and acceleration testing can be combined by mounting an electrodynamic shaker on the arm of the indoor centrifuge.

(DOE, 1997a; SNL, 2003e)

**Summary of Centrifuge Complex Operations in CY2002**

During CY2002, the Centrifuge Complex completed 22 centrifuge tests. This activity level is well within the number of tests analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

A draft Test Capabilities Revitalization (TCR) environmental assessment (EA), in preparation in CY2002, indicated that renovation of the Centrifuge Complex is scheduled for the CY2004 to CY2014 time frame.

(DOE, 2003; SNL, 2003)

## *4.2.2 Drop/Impact Complex*

The Drop/Impact Complex, a low-hazard nonnuclear facility in TA-III, is comprised of two drop towers: a 185-ft (56-m) tower (next to a hard surface) and a 300-ft (91-m) tower (next to a water-filled pool). A 600-ft (182-m)-long rocket sled track, located at the end of the pool opposite the tower, supports rocket-accelerated impact tests into the pool.

**Current Operations and Capabilities**

The 185-ft (56-m) drop tower is used to drop test items weighing up to 9,000 lb (4,091 kg) onto prepared surfaces such as dirt, reinforced concrete, or steel plate. A cable stretched over the top of the tower to anchors on the ground, allows test items weighing up to 2,000 lb (909 kg) to slide down a carriage, and be released to fall onto a target.

A guidewire system on the 185-ft (56-m) drop tower is used to drop punch-type structural shapes to impact on shipping containers. Test items weighing up to 3,000 lb (1,364 kg) can be targeted into the water pool from the 300-ft (91-m) drop tower, and either dropped or accelerated by rocket-assisted pull-down to strike the water at velocities up to 600 ft per second (f/s) (182 meters per second [m/s]), and 30° to 90° angles. Submersion tests, conducted in the water pool, can include detonation of explosive charges up to 1 lb (0.45 kg) to test blast effects.

(DOE, 1997a; Kuzio, 2001; SNL, 2003e)

**Summary of Drop/Impact**
**Complex Operations in CY2002**

During CY2002, the Drop/Impact Complex activities focused on drop test, design verification, and performance assessments. The Drop/Impact Complex completed three drop tests, but performed no water impact, submersion, or underwater blast tests in CY2002. This activity level is well within the number of tests analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were within parameters analyzed in the SWEIS expanded operations alternative.

(SNL, 2003e)

## *4.2.3 Sled Track Complex*

The Sled Track Complex consists of numerous buildings and structures in TA-III. The main building is divided into a control room, a workshop area, and a highbay assembly area. The Sprint Building and the Explosives Assembly and Rocket Motor Conditioning Facility provide support to activities in the main building.

The main sled track is a 10,000-ft (3,048-m) concrete beam supporting two continuously-welded steel rails at a 22-in. (56-cm) gauge with a 1-ft$^2$ (0.09-m$^2$) trough (cast in the concrete beam between the rails). For recoverable sleds, scoops attached underneath drag against water in the trough, thus providing a controllable braking mechanism. The Complex also includes a rocket launcher with a 70-ft (21-m) launch rail. Located just southeast of the main sled track, the rail is used to launch test items into targets. A portable 10-ft (3-m) beam mounted on a trailer is also used at the Sled Track Complex to launch free-flight, rocket-powered, parachute test vehicles.

(DOE, 1997a; Kuzio, 2001; West, 1997)

**Current Operations and Capabilities**

The Sled Track Complex provides a controlled environment for high-velocity impact, aerodynamic, and acceleration testing of small and large items, simulating high-speed impacts of weapon shapes, substructures, and components to verify design integrity, performance, and fuzing functions. The facility also is used to subject weapon parachute systems to aerodynamic loads to verify parachute design integrity and performance. The Complex provides the capability to verify designs in transportation technology, reactor safety, and Defense Programs (DP) transportation systems.

(DOE, 1997a; SNL, 2003e; West, 1997)

**Summary of Sled Track**
**Complex Operations in CY2002**

During CY2002, the Sled Track Complex activities included 18 rocket sled tests, 14 explosive tests, 3 rocket launches, and 0 free-flight launches. This level of operations is well within the number of tests analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

A draft Test Capabilities Revitalization (TCR) environmental assessment (EA), in preparation in CY2002, indicated that renovation of the Sled Track Complex is scheduled for the CY2004 to CY2014 time frame.

(DOE, 2003; SNL, 2003e)

### *4.2.4 Terminal Ballistics Facility (TBF)*

The TBF in TA-III is a low-hazard facility that includes a main building, two smaller buildings, and four explosive storage magazines. The main building houses a small machine shop, office space, a control area, and an indoor firing range. One ancillary building is used for the assembly of large propellant charges and temperature conditioning of propellants. The four magazines are used for long-term storage of propellants and explosives.

An outdoor, large-caliber gun range has a 155-millimeter (mm) “Long Tom” artillery permanently mounted in a revetment adjacent to the main building.

(DOE, 1994a, 1997a; Kuzio, 2001)

**Current Operations and Capabilities**

The TBF provides secure, remote, indoor and outdoor test facilities for ballistics studies and solid-fuel rocket motor tests. Indoor testing of firearms and projectiles is conducted from a fixed stand to provide controlled firing of ammunition (≤20 mm). Various guns may be used for projectile or penetration tests, with targets placed up to ~1,000 ft (~305 m) south of the main building.

For outdoor thrust tests, a rocket is oriented vertically on the static test stand, with the nose resting on a load cell (to measure thrust force during the propellant burn cycle). Spin rockets are tested using a horizontal fixture with a load cell. Munitions testing done outdoors in explosive-rated chambers may include both explosives and chemicals.

(DOE, 1994a, 1997a; SNL, 2003e)

**Summary of Terminal Ballistics Facility Operations in CY2002**

During CY2002, the TBF activities included 50 projectile impact tests and 25 propellant tests. This activity level is well within the number of tests analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative. Estimated expenditures for the TBF exceeded the SWEIS expanded operations alternative due to a one-time rework of the data collection system and purchase of cables and connectors, which began in late 2001.

(SNL, 2003e)

## 4.3 Accelerator Facilities (TA-IV)

### *4.3.1 Advanced Pulsed-Power Development Laboratory (APPDL)*

In CY2002, the Advanced Pulsed Power Research Module (APPRM) was formally renamed the Advanced Pulsed Power Development Laboratory (APPDL). The APPDL (southwest highbay) is a single-pulse accelerator used to evaluate new pulsed-power components and component alignments to improve future accelerator performance. The APPDL occupies floor space in the highbay of a multifloor facility, is also a test bed for other projects, and can be used for conducting general pulsed-power research.

(DOE, 1996; Sullivan et al., 1996; Kuzio, 2001)

**Current Operations and Capabilities**

In CY2002, activities at the APPDL continued to involve the study of power storage, high-voltage switching, and power flow for advanced applications. Additionally, APPDL activities continued for the development of technologies to enhance current facility capabilities or support new designs. Work includes development of advanced pulsed-power sources for future incorporation into machines to be used for weapon effects and weapon physics experiments.

(SNL, 2003e)

**Summary of APPDL Operations in CY2002**

During CY2002, the APPDL operations included 560 accelerator shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. Section 4.7 shows nearly all CY2002 material inventories, material consumption, emissions, and process requirements were below parameters analyzed in the SWEIS expanded operations alternative.

In CY2001, SNL/NM installed a new oil tank for the APPDL, which accounts for the increase in insulator oil. The new tank also supports research and development for the Z Accelerator refurbishment.

(SNL, 2003e)

## *4.3.2 High-Energy Radiation Megavolt Electron Source III (HERMES III)*

The HERMES III is housed in the Simulation Technology Lab. This multifloor building with a basement accommodates offices, shop areas, administrative areas, storage areas, and lab space.

(Fine, 1996; Kuzio, 2001)

**Current Operations and Capabilities**

HERMES III is a high-energy, inductive voltage adder (IVA) accelerator, producing an intense electron beam which, when it interacts with a grounded bremsstrahlung converter, generates intense gamma-ray output with an 18-mega-electron volt (MeV) endpoint voltage. HERMES III can provide high-fidelity simulation over very large areas, with applications including electronics testing for component and weapon system development, to ensure operational reliability of weapon systems in radiation environments caused by nuclear explosions. HERMES III may also be operated in a reverse-polarity mode, for experiments on extraction ion diodes, and radiography research and development. The accelerator is also used to study radiation transport through matter, radiation deposition in materials, damage in components and circuits as they age past expected lifetimes, and research into damage mitigation.

(Fine, 1996; SNL, 2003e; Sullivan, 1995; Sullivan et al., 2000)

**Summary of HERMES III Operations in CY2002**

During CY2002, operations at HERMES III included 331 accelerator shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

(SNL, 2003e)

## *4.3.3 Radiographic Integrated Test Stand (RITS)*

SNL/NM continued development in TA-IV of the RITS accelerator installed in place of the SABRE accelerator in the same highbay. Installation of the RITS began in CY2001; however, the facility is not expected to be fully operational until 2004.

In its initial configuration, RITS would operate at 4 megavolts (MV), 175 kilo-amperes (kA), and 50 nanoseconds (ns), and expand to 16 MV in several phases. The RITS would be configured to provide various output options, including two sequential half-voltage pulses, a single full-voltage pulse, and twin-axis, half-voltage single pulses. When completed, the RITS would consist of a transformer-oil-filled tank containing a high-voltage Marx generator and transfer capacitor, three water-filled pulse-forming lines, an oil-filled transmission line, and a vacuum transmission line that is magnetically insulated, terminating in an x-ray-generating diode load. The new accelerator would use the original SABRE oil storage tank and piping to and from the tank.

(Kuzio, 2001; SNL, 2003e)

**Current Operations and Capabilities**

The RITS is planned as an accelerator and intense electron-beam testbed to develop and demonstrate the capabilities required for Subcritical Experiment (SCE) radiography. The SCEs would provide experimental benchmarking for three-dimensional numerical models of nuclear weapon primaries. The resulting weapons code validation would be used to assess the performance and safety of the enduring stockpile and to qualify remanufacture technologies and life-cycle engineering.

RITS accelerator operations and capabilities would be similar to those of the SABRE accelerator and well within the scope of the nearby HERMES III accelerator. The possible future addition of a contained explosive firing capability will significantly modify facility operations and capabilities, and will be addressed at the time of such an upgrade proposal.

(SNL, 2003e)

**Summary of RITS Operations in CY2002**

SNL/NM began installation of the RITS in CY2001. During CY2002, RITS operations included 216 accelerator shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. When fully operational, RITS is expected to increase operations up to a maximum of 800 tests per year. Operational requirements are presented in Section 4.7 and are consistent with the SWEIS analyses.

Plans for CY2003 operations include a machine upgrade from RITS-3 (5-MV output) to RITS-6 (10-MV output). There is a possibility of accumulating a waste product from cleaning and maintaining the diode, which may contain some radioactive waste.

(SNL, 2003e)

## *4.3.4 Repetitive High Energy Pulsed-Power Unit I (RHEPP I)*

The RHEPP I facility includes a Marx generator, a pulse-forming line (PFL), a linear induction voltage adder (LIVA), and a vacuum diode load (VDL). RHEPP I and HERMES III are housed in the same building. The RHEPP I system consists of a 150-kilowatt (kW) power supply, four stages of linear induction voltage addition, and the vacuum diode.

(Kuzio, 2001; Weber, 1999)

**Current Operations and Capabilities**

RHEPP I was the first SNL/NM RHEPP-type accelerator used for basic technology development of the RHEPP technical concept. It is now used for applications at lower energies including technology development and some experimental work with materials and organic sterilization processes. The RHEPP I also supports technology development for continuous operation of pulsed-power systems that demonstrate high-average-power, ion-beam outputs at energies up to 1 MeV and power up to 45 kW, suitable for industrial applications (Weber, 1999). Other research activities at RHEPP I include development of pulsed-power materials-processing techniques for weapon applications and development of applications related to biological and chemical agent defeat.

(SNL, 2003e)

**Summary of RHEPP I Operations in CY2002**

During CY2002, RHEPP I operations included 4,964 tests, in either the single or repetitive pulse modes. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

In CY2002, facility personnel installed a new liquid-nitrogen and helium-cryodyne-cooled diode trigger system for the RHEPP I.

(SNL, 2003e)

## *4.3.5 Repetitive High Energy Pulsed-Power Unit II (RHEPP II)*

The 2.0-MeV, 25-kA RHEPP II accelerator is located within a multifloor concrete building with lab space, a basement, and a highbay. RHEPP II components include the microsecond pulse compressor (MPC), a water-insulated PFL, LIVA, and a high-power electron beam diode. The system consists of a 750-kW power supply, seven stages of magnetic pulse compression, ten stages of linear induction voltage addition, and a vacuum diode.

(DOE, 1996; Kuzio, 2001; Weber and Zawadzkas, 1996a)

**Current Operations and Capabilities**

The RHEPP II supports the development of radiation-processing applications using high-dose-rate electron or x-ray beams. The RHEPP II accelerator is also a test bed for the continued development of high-power magnetic switches and repetitive, magnetically insulated transmission lines (MITLs) (DOE, 1996; Weber and Zawadzkas, 1996a).

In addition, the accelerator is used to develop pulsed-power technology and applications, including developing advanced accelerators for biosterilization. RHEPP technology has been used for ion beam surface treatment (IBEST) to harden material surfaces and for advanced research that supports sterilization projects for organic materials (e.g., food products and lumber).

(Martinez, 1999; SNL, 2003e)

**Summary of RHEPP II Operations in CY2002**

During CY2002, activities included testing of high-power magnetic switches and specialty transmission lines. RHEPP II operations did not include any accelerator tests in CY2002. The SWEIS analysis included up to 800 tests per year at the RHEPP II facility. Section 4.7 shows CY2002 RHEPP II material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

(SNL, 2003e)

## *4.3.6 Sandia Accelerator for Beam Research (SABRE)*

SABRE was a pulsed accelerator located within the Simulation Technology Laboratory in TA-IV, and was dismantled in CY2001.

The SABRE accelerator facility included an oil tank, two screen rooms, a lead- and concrete-shielded test cell, and several work areas. The 30,000-gal (114,000-ℓ) accelerator oil tank contained two Marx generators (3.6-MeV and 50-kV), a gas switch, an intermediate storage capacitor, and high-voltage distribution lines.

(Knowles and Zawadzkas, 1995; Kuzio, 2001; SNL, 2003e)

**Current Operations and Capabilities**

The SABRE facility supported extraction diode research, weapon component development (simulation of thermal-mechanical shock induced by x-ray deposition), and development and assessment of radiographic sources. Activities at SABRE involved survivability testing of nuclear weapon subsystems and components and technology development to provide radiographic characterization techniques. SABRE supported the light ion program in investigating extraction diodes and MITL coupling; testing surface and subsurface cleaning, improved vacuum conditions, and advanced ion sources; and studying lithium ion transport.

(Molina, 1999; SNL, 2003e)

**Summary of SABRE Operations in CY2002**

During CY2002, SABRE was not operational. Work initiated in CY2001 to replace the SABRE with the RITS accelerator was completed in CY2002.

(SNL, 2003e)

## *4.3.7 Saturn*

The Saturn accelerator in TA-IV is housed in a multifloor facility comprised of a laboratory building (highbay, office space, shop areas, light labs, a mechanical room, radiation exposure cell, and basement), storage tanks, and transfer systems for large quantities of transformer oil and deionized water.

(Fine, 1988; Kuzio, 2001; Miller, 2000)

**Current Operations and Capabilities**

The Saturn accelerator produces x-rays to simulate the radiation effects of nuclear weapon detonation on electronic and material components, as a pulsed-power and radiation source, and as a diagnostic test bed. Areas of application include satellite systems, Strategic Defense Initiative space assets, and reentry vehicle and missile subsystems (Miller, 2000). Activities at Saturn support stockpile stewardship programs in the development and survivability testing of nuclear weapon subsystems and components by providing hostile radiation environmental testing, including simulating the x-rays produced by a nuclear weapon detonation. Saturn is used for demonstrating high-yield fusion in the laboratory.

(SNL, 2003e)

**Summary of Saturn Operations in CY2002**

During CY2002, Saturn operations included 178 accelerator shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

(SNL, 2003e)

## *4.3.8 Short-Pulse High Intensity Nanosecond X-Radiator (SPHINX)*

The SPHINX accelerator facility is a concrete-shielded enclosure adjacent to the Saturn accelerator. The accelerator consists of an 18-stage, low-inductance Marx generator, two oil PFLs and a vacuum PFL, and radiation barriers. The radiation barrier is a concrete-shielded enclosure with a movable skyshine shield attached to the top of the transmission line/dioide.

(Kuzio, 2001; Miller, 1999)

**Current Operations and Capabilities**

SPHINX provides radiation environments for testing DOE components of nuclear weapons and for confirming codes used in the certification of nuclear weapons components. SPHINX can operate in two distinct modes—as a bremsstrahlung x-ray source and as an electron beam source. In the bremsstrahlung (x-ray) mode, researchers study the response of electronics to pulsed, high-energy, x-ray environments. The electron beam mode is used to study the thermostructural response of materials to pulsed radiation. Current activities at SPHINX involve research and development work associated with high-shot-rate, hot x-ray effects simulation to test components that require small-area exposure. The electron beam mode is used to support development work for tactical and strategic satellite systems.

(Nickerson et al., 1995; SNL, 2003e)

**Summary of SPHINX Operations in CY2002**

During CY2002, SPHINX operations included 1,684 shots, well within the number of shots per year analyzed in the SWEIS expanded operations. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements remained unchanged since the SWEIS analyses.

(SNL, 2003e)

### *4.3.9 Tera-Electron Volt Energy Superconducting Linear Accelerator (TESLA)*

The TESLA accelerator facility in TA-IV, formerly known as the Magnetically Insulated Transmission Experiment (MITE) accelerator, is housed in a single-story building divided into two sections, a highbay area and an office/lab area. The accelerator consists of two oil tanks, a water tank, and a concrete-shielded test cell. The test cell includes a vacuum storage inductor, a magnetically controlled plasma opening switch, and an electron beam load. Each oil tank contains 10,000 gal (37,850 ℓ) of transformer oil and a Marx generator.

(Kuzio, 2001; Weber and Zawadzkas, 1996b)

**Current Operations and Capabilities**

The TESLA facility operates to test plasma opening switches for pulsed-power drivers (Weber and Zawadzkas, 1996b). The primary operating mode of TESLA produces a pulse that lasts ~40 ns, with 150 kJ of electrical energy and 700-kA peak diode current at a peak voltage of 5 MV or less. TESLA produces ionizing radiation in the vacuum chamber region in the form of intense prompt radiation (bremsstrahlung). In this primary operating mode, an ion beam is not produced, except incidentally in the plasma opening switch (Weber and Zawadzkas, 1996b).

(SNL, 2003e)

**Summary of TESLA Operations in CY2002**

During CY2002, TESLA operations included 75 shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. Section 4.7 shows most CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative.

In CY2002, insulator oil inventory remained at a higher level than was analyzed in the SWEIS expanded operations alternative. This was the result of adding a new 10,000-gal (37,850-ℓ) tank in CY2000. Hazardous waste generation, while remaining at levels that were higher than estimated in the SWEIS expanded operations alternative, decreased from 330 lb (150 kg) in CY2000 to 220 lb (100 kg) in CY2002.

In CY2002, a capacitor test tester was added to the highbay. It is used to test capacitors for future pulse power machines and holds approximately 500 gal of insulating oil.

(SNL, 2003e)

### *4.3.10 Z Accelerator*

The Z Accelerator is located in a multifloor, masonry building with a basement, lab space, accelerator highbay, support area highbays, laser and facility support systems, water and oil tank farms, lowbay light labs and control room, and gas house.

(Harris and Sullivan, 1996, 2000; Kuzio, 2001)

**Current Operations and Capabilities**

The multi-use Z Accelerator supports the Inertial Confinement Fusion Program and the High-Energy/Density Physics Program for stockpile stewardship. Operating on the principle of pulsed power, the Z Accelerator stores electrical energy over a period of minutes, then releases that energy in a concentrated burst to produce a single, extremely short and powerful pulse that can be focused on a target (Harris and Sullivan, 1996).

Z Accelerator programs support studies of radiation transport, radiation drive symmetry, radiation hydrodynamics, hydrodynamic instabilities, shock physics, equations of state, opacity, and capsule implosion physics. These studies support both near-term stockpile stewardship and a DOE decision to achieve high yield for weapon physics tests and a warm x-ray environment for radiation-effects studies. For radiation-effects research, the Z Accelerator provides x-ray line radiation generated by imploding z-pinches that can simulate the materials' response to an unshielded x-ray threat from a weapon.

(Harris and Sullivan, 1996; SNL, 1999c, 2003e)

**Summary of**
**Z Accelerator Operations in CY2002**

During CY2002, the Z Accelerator performed 180 test shots, well within the number of shots per year analyzed in the SWEIS expanded operations alternative. Section 4.7 shows that for CY2002, the majority of material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative. The inventory of depleted uranium (DU) used in isentropic experiments exceeded parameters analyzed in the SWEIS expanded operations alternative. In CY2002, experiments using an increased amount of DU continued at the Z Accelerator. Low-level and hazardous waste amounts also increased. These increases were documented in a supplement analysis (DOE, 2002).

In CY2002, the Z Accelerator facility replaced the crane in the Particle Beam Fusion Lab with a newer model, as well as upgraded the accelerator's laser trigger system. The eximer laser system was replaced with 36 individual, solid-state laser towers.

In the CY2003 to CY2005 timeframe, the number of shots at the Z Accelerator is planned to increase, from 180 to ≤240 shots. Increased test activity would result in greater material consumption, emissions, and waster generation.

(SNL, 2003e)

## 4.4 Reactor Facilities (TA-V)

### *4.4.1 Annular Core Research Reactor (ACRR) Facility (Pulse Configuration)*

The ACRR facility is part of a larger complex that includes two other major structures. The ACRR facility comprises the reactor room, lowbay, control room, building utilities, several small laboratories, and support staff offices. Important design features of the ACRR include a small pool-type reactor that is under ~18 ft (6.2 m) of water, cranes for the remote handling of irradiated experiment packages, and a high-efficiency particulate air (HEPA)-filtered, ventilated highbay.

In the pulse configuration, the ACRR is a water-moderated and reflected low-power research reactor that uses enriched uranium dioxide-beryllium oxide ($UO_2BeO$) fuel elements, arranged in a closely packed hexagonal lattice, around a central experiment cavity. The highbay is constructed of concrete block walls reinforced by vertical steel columns that support a sheet-metal roof, and thus is a confinement structure rather than a containment structure.

(Kuzio, 2001; Naegeli et al., 1999; SNL, 1996a)

**Current Operations and Capabilities**

The ACRR facility (pulse configuration) provides neutron and sustained gamma environments for the evaluation of experiments, including those for Defense Programs (DP) testing of component electronics, and reactor safety research.

Reactor features include a dry cavity in the central core region and a radiography tube, and it is capable of producing high-energy neutrons in the dry cavity over a very short time period. Four types of experiments can be conducted in the ACRR pulse configuration mode:
(1) irradiation of solids within the radiography tube or other dry cavity, (2) radiography experiments, (3) irradiation of solids or gases within the pool and within or adjacent to the core, and (4) irradiation of solids or gases within the dry central cavity or other dry cavity.

(SNL, 2003e)

**Summary of ACRR**
**Pulse Mode Operations in CY2002**

In CY2002, the ACRR continued to provide neutron and sustained gamma environments for the completion of 4 to 5 campaigns. The ACRR was reconfigured for pulse mode when the medical isotope program was suspended. The *Supplement Analysis, SWEIS for SNL/NM, Reestablishing Long-Term Pulse Mode Testing Capability at the Annular Core Research Reactor, Sandia National Laboratories, New Mexico,* was prepared to address the environmental effects of reestablishing long-term pulse mode testing at the ACRR (DOE, 2001). DOE determined that additional pulse mode testing, including the production of small quantities of radioisotopes and support to other nuclear research programs, would not constitute substantial changes to measures proposed in the SWEIS relevant to environmental concerns (see also Section 4.7). Upgrades to the ACRR rod control and reactor console, performed in CY2002, included replacement of software, computers, and the link to the hardware control system.

(SNL, 2003e)

## *4.4.2 ACRR (Isotope Production Configuration)*

See Section 4.4.1 for the facility description (Kuzio, 2001; Naegeli et al., 1999).

**Current Operations and Capabilities**

Although the ACRR facility can be used for the production of isotopes such as molybdenum-99 (Mo-99), whose daughter, technetium-99m (Tc-99m), is used in nuclear medicine applications, the isotope production program remained suspended in CY2002.

(SNL, 2003e)

**Summary of ACRR**
**<u>Isotope Production Operations in CY2002</u>**

In CY2002, no medical isotopes were produced. Under original plans for medical isotope production, the ACRR would have produced medical and research radioactive isotopes. The ACRR would have been operated for 24 hours per day, 7 days per week, at a maximum power level of 4 megawatts (MW), (~35,000 MW-hours per year) to meet the entire United States' demand for Mo-99 and other isotopes such as iodine-125 (I-125), I-131, and xenon-133 (Xe-133). This would have required the irradiation of about 25 highly enriched uranium targets per week (1,300 per year).

(SNL, 2003e)

## *4.4.3 Gamma Irradiation Facility (GIF)*

The original GIF shares the highbay with the ACRR in a multifloor facility with lab space and a basement.

Main features of the GIF are the deep-water pool and two dry irradiation cells. The pool, mostly below ground, is a rectangular, reinforced-concrete structure with a stainless-steel liner and a berm (above floor level). The GIF pool has been used to store spare fuel elements for the ACRR. Valved pass-through ports, which are located below the surface of the reactor and GIF pools, serve to transfer fuel elements between the two facilities.

(Boldt et al., 2000; Kuzio, 2001; SNL, 1999c)

**<u>Current Operations and Capabilities</u>**

SNL/NM and DOE are assessing future use of the original GIF. In the past, the facility provided high-intensity gamma-ray sources to irradiate experiments. Since no experiments were irradiated, the radioactive sources were safely stored in the deep-water pool under the cell.

**<u>Summary of GIF Operations in CY2002</u>**

No tests were performed in CY2002. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were essentially zero.

(SNL, 2003e)

## *4.4.4 Hot Cell Facility (HCF)*

The HCF is a Hazard Category 3, nonreactor nuclear facility in an underground structure.

**<u>Current Operations and Capabilities</u>**

The HCF remains in a standby status. Work to modify the HCF from its original mission (support for DP testing) to support the DOE Isotope Production and Distribution Program was discontinued with the suspension of the medical isotope production program. SNL/NM and DOE are assessing future applications for the HCF.

(SNL, 2003e)

**<u>Summary of HCF Operations in CY2002</u>**

In CY2002, the HCF remained in standby mode; no medical isotopes were produced. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were essentially zero.

SNL/NM is currently providing support to several industrial entities for various space, nuclear, electric propulsion, and power concepts. The National Aeronautics and Space Administration (NASA) Jupiter Icy Moon Orbiter (JIMO) project and the In-Orbit Space Transportation and Recovery (IOSTAR) program are currently in the design phase; however, if they proceed as anticipated, the HCF would begin support of both projects in the CY2003 to CY2004 time frame.

(SNL, 2003e)

## *4.4.5 New Gamma Irradiation Facility (New GIF)*

The New GIF is a single-story structure consisting of a central highbay with an ancillary lowbay. The highbay houses three concrete test cells and a J-shaped water pool. The pool can store cobalt 60 (Co-60) or equivalent gamma-ray thermal sources in the form of pins that can be shared between the in-cell irradiation facilities and the in-pool irradiation facilities.

The New GIF has three irradiation cells. Test cell 3 is an experiment cell with two source elevators and a movable wall for large vehicle access; test cells 1 and 2 are irradiation cells for use with a high-intensity, adjustable Co-60 array. The design includes the capability to add lead lining to reduce gamma backscatter and, therefore, provide a high-fidelity cell.

(Kuzio, 2001; Mahn et al., 2000; Miller, 1998)

**Current Operations and Capabilities**

At the New GIF, gamma-irradiation experiments vary in test configuration, dose, and dose-rate level. The New GIF is divided so that two types of irradiation experiments (in-cell dry and in-pool wet) can be performed. General features and enhanced capabilities of the New GIF include configurable radiation sources, shielded windows for experiment observation during irradiation, and remote manipulators for experiment or source handling. Also, the New GIF provides in-pool irradiation fixtures to vary experiment configurations, a steam room for thermal cycling following radiation exposures, and overhead traveling cranes.

(Mahn et al., 2000; Miller, 1998)

Typically, irradiations performed in these facilities are at high dose rates, and short to intermediate durations lasting less than a day. At the in-pool facilities, radioactive sources are held in an irradiation fixture in deep water, where they remain stationary. Experiment canisters containing test units are immersed in the pool and positioned in preset locations in the irradiation fixture.

**Summary of New GIF Operations in CY2002**

With completion of construction, the New GIF became operational in CY2002. Gamma-irradiation experiments may be performed under both dry and water-pool conditions. Capabilities include studies in thermal and radiation effects, weapons component degradation, nuclear reactor material and components, and other nonweapon applications.

During CY2002, the New GIF completed 280 tests. This activity level is well within the number of tests analyzed in the SWEIS expanded operations alternative. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within the parameters analyzed in the SWEIS expanded operations alternative.

In CY2002, ~11,000 curies (Ci) of Co-60 were transferred to the New GIF. This represented the entire inventory referred to as the Low Intensity Cobalt Array (LICA). Additionally, a 1-Ci krypton 85 (Kr-85) beta-emitter source was added to provide beta irradiation capability to the New GIF. Also in CY2002, the potential to use liquid nitrogen was added to the Primary Hazard Screening (PHS) for the New GIF. The use of liquid nitrogen would depend on the requirements of experiments, but would not be expected to be of significant quantities.

The purchase of a 100,000-Ci gamma source for use in the New GIF in CY2003 is under consideration. In addition, there is the potential that ~30 Ci of mixed fission products would be brought to the New GIF for tests in CY2005. However, this is contingent upon future program funding and scheduling. It is estimated that, as the customer base increases, the New GIF will increase operational hours to the levels estimated in the expanded alternative in the SWEIS.

(SNL, 2003e)

### *4.4.6 Sandia Pulsed Reactor (SPR) Facility*

The SPR Facility consists of a reactor control room, reactor building, and auxiliary equipment and buildings to support reactor operations. Several storage vaults, which are integral units in adjacent buildings, are available for storing the reactor and fissionable and radioactive materials. The reactor building is a large, thick-walled, steel-reinforced concrete structure in the shape of a cylinder, covered with a hemispherical shell.

(Estes, 1995; Kuzio, 2001)

**<u>Current Operations and Capabilities</u>**

When operational, the SPR-II and SPR-III fast-burst reactors provide near-fission spectrum radiation environments for test support of defense and nondefense activities. The primary facility mission has been to produce high-neutron fluence or pulsed high-neutron doses for testing electronic subsystems and components. Critical experiments are also conducted in the facility to support other programs (Estes, 1995; Miller, 1998). Currently, the reactors and spare fuel materials are being stored in an underground vault (the In-Ground Storage Vault [IGSV]), pending plans for the new underground reactor facility.

Critical assemblies can be built in the SPR Facility for short-term experiments on nuclear energy. Safety elements incorporated into the operation of these small assemblies (typically less than 1 MW) are similar to those of the SPR. The assemblies are temporary, with a much lower power of operation, and lower potential for dispersion of radioactive material.

(Harms, 2000; SNL, 2003e)

**<u>Summary of SPR Operations in CY2002</u>**

During CY2002, SPR Facility operations involved zero irradiation tests, due to the reactor having been placed in the IGSV at the end of CY2000. Section 4.7 shows all CY2002 material inventories, material consumption, emissions, and process requirements were within parameters analyzed in the SWEIS expanded operations alternative. SPR has been in a non-operational mode (with respect to reactor operations) since CY2000; however, in CY2003 and CY2004, reactor operations will resume and continue indefinitely. This return to operational status remains consistent with previous mission activities. Introduction of new capabilities, functions, or missions is not planned at this time.

(SNL, 2003e)

## 4.5 Outdoor Test Facilities

### *4.5.1 Aerial Cable Facility Complex*

The Aerial Cable Facility Complex consists of several cables stretched across Sol Se Mete Canyon, located in a portion of the Cibola National Forest withdrawn from public domain for the exclusive use of Kirtland Air Force Base (KAFB) and DOE. Test objects released from the maximum height of 600 ft (183 m) above the valley floor could achieve gravitationally accelerated velocities of up to 190 ft/s (58 m/s).

(Stibick, 2000; West, 1995)

**<u>Current Operations and Capabilities</u>**

Capabilities of the Aerial Cable Facility Complex include precision testing of full-scale, air-deliverable weapon systems, verification of design integrity and performance, and impact testing for container compliance (10 CFR 71). The complex supports SNL/NM Energy Programs for transportation package certification and design verification of transportation technology.

The aerial cable is used to test missile warning receivers, decoys, and jammers. Test hardware installed in trolleys traverses the cable in captive flight. Threat missiles, launched at various ranges from the cable, are tracked by laser while the warning receiver, decoy, or jammer responses are recorded relative to the missile's position.

(Stibick, 2000)

**Summary of**
**Aerial Cable Facility Operations in CY2002**

During CY2002, the Aerial Cable Facility maintained the capability to include drop tests of joint test assemblies that contain depleted uranium (DU), enriched uranium, and insensitive high explosives (IHE). In CY2002, the total number of drop/pull-down tests involved 6 experiments, and no aerial target tests or scoring system tests were conducted. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were within parameters analyzed in the SWEIS expanded operations alternative.

A draft Test Capabilities Revitalization (TCR) environmental assessment (EA), in preparation in CY2003, indicated that renovation of the Aerial Cable Facility Complex is scheduled for the CY2004 to CY2014 time frame.

(DOE, 2003; SNL, 2003e)

## *4.5.2 Containment Technology Test Facility-West (CTTF-West)*

The CTTF-West, was located in Coyote Test Field (CTF), and included one scale-model reactor containment building. The model was a 1:4 scale representation of a two-buttress, prestressed concrete containment structure with a flat concrete basemat, cylindrical sides, and hemispheric dome. This model has been destroyed, and, except for some samples, all fixtures associated with this test have been removed from the site.

(DOE, 1992; Emerson, 1992; Hessheimer, 2000)

**Current Operations and Capabilities**

In CY2002 the CTTF West was decommissioned and demolished, with approximately 56.7 acres of permitted land being returned to KAFB. Prior to acceptance from KAFB, an environmental baseline survey was completed, and DOE- and SNL-owned facilities were removed from the site. In addition, the permitted site was restored to the same environmental conditions as when it was originally permitted.

(SNL, 2003e)

## *4.5.3 Explosives Applications Laboratory*

The Explosives Applications Laboratory is located at the CTF. The complex includes lab space and explosives storage bunkers.

(Kuzio, 2001)

**Current Operations and Capabilities**

The Explosives Applications Laboratory is used for the design, assembly, and testing of explosive experiments in support of SNL-wide programs. The Explosives Applications Laboratory supports the Nuclear Emergency Search Team (NEST), field test arming and firing (A&F), warhead development, development of emergency destruct systems, and the development of explosive components and systems. The laboratory is also used to maintain A&F systems' readiness for the Underground Test (UGT) Program. Work at the facility involves arming, fuzing, and firing of explosives and the testing of explosive systems components.

(Tachau, 2000; USAF, 2000)

**Summary of**
**Explosives Applications**
**Laboratory Operations in CY2002**

During CY2002, the Explosives Applications Laboratory completed 107 explosive tests. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative, with one exception. The Explosives Applications Laboratory contained 28 gal (106 ℓ) of film developer in its hazardous material inventory. This amount represents an increase of 8 gal (30 liters) over the amount estimated in the SWEIS.

(SNL, 2003e)

## *4.5.4 Lurance Canyon Burn Site*

Lurance Canyon Burn Site includes facilities within an area of ~220 ac (89 ha) in the Withdrawn Area.

Several concrete pools are used at the site for conducting open burn tests. A reinforced concrete pool is used for fire-testing large objects weighing up to 140 tons (127 metric tons) and can accommodate objects as large as railroad cars. A square, steel pool, used for fire-testing intermediate-sized objects, has a metal test stand in the center flanked by two instrumentation towers. Smaller pools have been built to meet specific test requirements.

Two enclosed fire test facilities, the Small Wind Shield (SWISH) and the Fire Laboratory for the Authentication of Models and Experiments (FLAME), are also at the site. These facilities, unique in the United States, were designed to meet Albuquerque/Bernalillo County Air Quality Regulation (20 NMAC 11.05), "Visible Air Contaminants."

Lurance Canyon Burn Site has two double-walled, aboveground, enclosed tanks; one contains water for open pool tests, and the other contains a water/propylene glycol mixture that circulates within the walls of FLAME for cooling during tests. Additional water is stored in two underground, nonpotable water tanks. Jet fuel for open pool tests is stored in another aboveground, enclosed fuel tank located in an earthen containment berm.

(DOE, 1994b, 1995; Stibick, 2000)

**Current Operations and Capabilities**

The Lurance Canyon Burn Site is used for fire-testing weapons, weapon components, and shipping containers in aviation fuel fires, propellant fires, and wood fires to verify design integrity and performance.

Open pool fires are used to simulate transportation accidents, which may involve pooling of spilled motor oil or gasoline. Because of its volatility, gasoline is not used as a test fuel. Aviation fuel produces the same test results, with less danger to site personnel. Most tests use JP-8 aviation fuel, a distillate blend of gasoline and kerosene stocks, with an average molecular weight of 125.

To evaluate the vulnerability of weapons and satellites to accident scenarios, such as a missile fire on a launch pad, some tests may use rocket propellant. Propellants are ignited on a steel plate on the ground, and test objects are supported above the propellants. Rocket propellant fires last up to 10 minutes, with up to 3,000 lb (1,364 kg) of propellant consumed, depending upon the test object size.

Fuel-air mixture tests are conducted to qualify electronic equipment according to National Electrical Code standards. Electronic equipment is operated in an explosive atmosphere to evaluate whether the equipment will cause a spark that could ignite fuel vapors. Wood fire or crib tests are conducted to meet U.S Department of Transportation (DOT) requirements for explosive component shipping containers.

(DOE, 1994b, 1995; SNL, 2003e; Stibick, 2000; Tieszen, 1996)

**Summary of**
**Lurance Canyon**
**Burn Site Operations in CY2002**

During CY2002, 10 certification tests were conducted at the Lurance Canyon Burn Site. Model validation tests and user tests included 40 and 23 tests in CY2002, respectively. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within parameters analyzed in the SWEIS expanded operations alternative. There was an increase in the number of JP-8 burns, from 15 in CY2000, to 65 in CY2001, which continued in CY2002. This increase in JP-8 burns exceeded the SWEIS expanded operations alternative by 15 burns, yet the overall amount of JP-8 burned remained within the projections in the SWEIS expanded operations alternative.

(SNL, 2003e)

## *4.5.5 Thunder Range Complex*

The Thunder Range Complex was used from 1969 through 1993 to support development, safety, reliability, and certification tests of Atomic Energy Commission (AEC)/DOE weapon systems.

Located in the CTF, Thunder Range Complex is generally bounded on the north by Magazine Road, although a triangular area north of this road (North Thunder Range) is also part of the permitted parcel. The complex is bounded on the southeast by a fence along Isleta Road. The portion of the complex closest to the Isleta Pueblo is approximately half a mile north of that boundary (see SNL [1999b], Figures 2-1, 2-6, 2-13, and 2-16).

Three structures are currently being used by SNL/NM. These are located on the northeastern side of the Thunder Range Complex, south of Magazine Road.

Located southwest of Thunder Range Complex is the Conventional High Explosives & Simulation Test (CHEST) Site, which is also shown on maps as Chestnut Site or Range. The Chestnut Range is used for explosives tests. Although SNL/NM explosives testing activities have ceased at the Thunder Range Complex, Chestnut Range continues to be used as an active explosives testing site by the U.S. Air Force (USAF) and its contractors. (See SNL [1999b], Figure 2-6. The Air Force Research Laboratory was formerly known as Phillips Laboratory, and before that as the Air Force Weapons Laboratory.)

**Current Operations and Capabilities**

Previously, SNL has used portions of Thunder Range Complex for ground-truthing activities, such as radar return collection studies. This involves the use of “targets” such as vehicles or passive calibration sources (corner reflectors) placed on the ground surface. SNL/NM personnel have used optical instruments in the past to observe explosive tests done by the USAF at the Chestnut Range. Project plans call for continued observation of some future tests on a nonparticipatory basis. The amount and scope of these observations will be determined by funding.

(DOE, 1997b; Garcia-Sanchez, 1998; Kerschen, 2000; SNL, 1995-1997, 2003_)

**Summary of Thunder**
**Range Complex Operations in CY2002**

During CY2002, no SNL-related outdoor explosive or shock-tube testing occurred at the Thunder Range Complex. Continuing activities on the site are primarily associated with disassembly, inspection, and documentation of special items, such as special nonnuclear munitions. No new construction is anticipated.

Test capabilities at the Thunder Range Complex include disassembly and evaluation, and calibration and verification of special nuclear and nonnuclear systems. Capabilities also involve cleaning, physical examination, measurement, sampling, photography, and data collection. Operations at the Thunder Range

Complex involved no tests in CY2002. In addition, no equipment disassembly operations were completed in CY2002. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements remained unchanged from the SWEIS expanded operations alternative.

(SNL, 2003e)

# 4.6 Infrastructure Facilities

## *4.6.1 Hazardous Waste Management Facility (HWMF)*

The HWMF is a low-hazard facility south of TA-I that consists of two permanent buildings, the Waste Packaging Building and the Waste Storage Building. The facility includes supply sheds, a covered and bermed waste storage area, a catchment pond, offices, and self-contained storage structures.

(Kuzio, 2001; SNL, 1992)

**Current Operations and Capabilities**

The HWMF is responsible for the safe handling, packaging, short-term storage, and shipment (for recycling, treatment, or disposal) of all nonradioactive waste regulated by the *Resource Conservation and Recovery Act* (RCRA), except explosive waste and other hazardous and toxic waste (SNL, 1992).

Nonradioactive, hazardous chemical waste that is generated at SNL/NM and its associated satellite facilities (e.g., the Advanced Materials Laboratory located at the University of New Mexico, Albuquerque) is collected and transported to the HWMF for packing and short-term storage prior to offsite transportation for recycling, treatment, or disposal at a licensed facility. The waste is typically not stored for more than 365 days. No radioactive material or explosive material is managed at the HWMF.

(SNL, 2003e)

**Summary of HWMF Operations in CY2002**

During CY2002, the HWMF continued to prepare waste for offsite transportation for recycling, treatment, or disposal at licensed facilities. Operations at the HWMF remained at one shift. Quantities of RCRA hazardous waste managed were 118,087 lb (53,593 kg) in CY2002 (well within the permitted capacity). Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were within the SWEIS expanded operations alternative analyses.

Due to Environmental Restoration activities, the HWMF is anticipating waste volumes to increase in CY2003 and CY2004, with waste volumes significantly decreasing in CY2005.

The HWMF has increased sampling in CY2003 for waste characterization verification. This is a result of the most recent New Mexico Environment Department audit.

(SNL, 2003e)

## *4.6.2 Radioactive and Mixed Waste Management Facility (RMWMF)*

The RMWMF compound, located in the southeastern portion of TA-III, is designed as a centralized area for receipt, characterization, treatment, repackaging, storage, and shipment of mixed and low-level radioactive waste and hazardous waste regulated by RCRA. The main building provides most of the waste-handling capacity at the facility. The RMWMF includes separate storage for reactive waste, flammable waste, and compressed gas cylinders; outdoor low-level waste and mixed waste storage areas (paved and unpaved); and a synthetic-lined retention pond to hold site surface-water runoff. The retention pond is located west of the RMWMF and also collects water from fire-control activities and storm-water runoff.

The maximum storage capacity at the RMWMF compound is ~285,000 ft³ (8,071 m³). In addition to the storage at the RMWMF, nine other storage areas are used, including the High Bay Waste Storage Facility, and seven of the Manzano storage bunkers. On average, the earth-covered bunkers each provide 2,000 $ft^2$ (186 $m^2$) of storage space.

(Kuzio, 2001; Massey, 1991; SNL, 1996b)

**Current Operations and Capabilities**

SNL/NM operates the RMWMF for receipt, characterization, compaction, treatment (if necessary), repackaging, certification, and storage of low-level waste (LLW), transuranic (TRU) waste, and mixed waste. The RMWMF treats and stores waste until disposal or treatment sites are identified that can accept the waste. Waste volumes vary, depending on the storage time before the waste is shipped for disposal. This facility enables SNL/NM to handle and store the waste in compliance with applicable requirements of federal, state, and local environmental regulations, DOE directives, and offsite waste acceptance criteria. The facility also allows SNL/NM to prepare the waste for shipment, treatment, and disposal in accordance with specific waste certification, packaging, and transport requirements.

(Jassy, 2000; Peters, 1996; SNL, 2003e)

**Summary of RMWMF Operations in CY2002**

During CY2002, the RMWMF continued to prepare waste for offsite treatment and disposal at licensed facilities. Operations at the RMWMF remained at one shift. CY2002 quantities of radioactive waste managed (including newly generated and legacy waste) were ~2,616 $ft^3$ (74 $m^3$) for LLW.

In CY2002, for low-level mixed waste (LLMW), TRU waste, and mixed transuranic (MTRU) waste, the quantities generated and managed are approximately as follows: 60 $ft^3$ (1.7 $m^3$) LLMW, <1 $ft^3$ (<0.030 $m^3$) TRU, and 0 $ft^3$ (0 $m^3$) MTRU waste. The infrastructure-processing rate was 568,000 M lb (257,788 kg) per year. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were well within the levels of the SWEIS expanded operations alternative analysis.

(SNL, 2003e)

### *4.6.3 Steam Plant*

The Steam Plant includes five operational boilers with supporting systems that supply steam to SNL/NM TA-I for heating purposes, freeze protection, domestic hot water, and humidification. For most TA-I buildings, steam is the only heating source; thus, during the winter, the plant operation is critical to the missions of these facilities. Three of the five boilers have reached or exceeded their design life.

(Kuzio, 2001; SNL, 1994a)

**Current Operations and Capabilities**

In addition to providing the steam supply system to all of TA-I, the Steam Plant has several other functions. Steam is also essential to other programmatic missions, such as those at the Standards Lab and the Microelectronics Development Laboratory (MDL). During nonstandard hours at SNL/NM, the Steam Plant provides monitoring for building-critical alarms to all major buildings, and services (such as Telecon) for emergency maintenance problems at all SNL/NM (and SNL/CA) facilities and utility distribution systems.

(Chavez, 2000)

The plant currently uses diesel fuel for the emergency generator and emergency lighting of the boilers during natural gas interruptions.

(SNL, 1994a, 2003e)

**Summary of**
**<u>Steam Plant Operations in CY2002</u>**

The Steam Plant continued to produce and distribute steam to SNL/NM and KAFB facilities. Steam production was 683 million pounds (M lb) (~307M kg) in CY2002 (see Section 4.7). Overall boiler efficiency has improved; future upgrades may include a technology change for continued improvements in boiler efficiency. Section 4.7 shows most CY2002 material inventories, material consumption, emissions, and process requirements were well within the parameters analyzed in the SWEIS expanded operations alternative; however, there was an increase in the inventory of water treatment chemicals, water consumption, electricity consumption, and expenditures.

(SNL, 2003e; Wrons, 2003)

## *4.6.4 Thermal Treatment Facility (TTF)*

The TTF, located in the northeast corner of TA-III, consists of a square burn pan enclosed by a grated metal cage. A remotely operated metal lid can be raised or lowered to cover the burn pan. The cage is centered on a steel-lined concrete pad that is surrounded on three sides by an earthen berm.

(SNL, 1994b)

**<u>Current Operations and Capabilities</u>**

The TTF was originally built to support the Light-Initiated High Explosive (LIHE) Facility with onsite treatment of explosive-contaminated waste that did not comply with transportation requirements. The LIHE Facility was mothballed in 1992, with the possibility of eventual restart.

The TTF has the capability to thermally treat (burn) small quantities of waste explosive substances, waste liquids (water or solvents contaminated with explosive substances), and waste items (rags, wipes, and swabs) contaminated with explosive substances. No radioactive waste is treated at the TTF.

(SNL, 1994b; 2003e)

Ash from a treatment event is not usually hazardous waste (some waste may contain silver), but is collected and managed as such and sent to the HWMF for disposal at an approved offsite landfill.

(SNL, 1994b; 2003e)

**<u>Summary of TTF Operations in CY2002</u>**

During CY2002, there was no waste treated at the TTF. Section 4.7 shows CY2002 material inventories, material consumption, emissions, and process requirements were all less than the SWEIS expanded operations alternative analysis.

The TTF continued a declining trend in CY2002; however, the TTF is necessary to support the Light Initiated High Explosive (LIHE) facility. The LIHE process generates light-sensitive high explosive waste forbidden from transportation, which therefore, must be treated on-site. The TTF has been maintained to provide the capability of restarting LIHE and, to a lesser degree, treatment of certain SNL waste streams. Generation of LIHE waste may commence as soon as CY2004 as a result of practice sprays and formulation checkout. An estimate of the CY2004 volume is currently unknown; however, any processed waste would not exceed 7,300 pounds/year. The SWEIS expanded operations alternative places a maximum amount of waste processed at the TTF at 1,200 lb/yr.

(SNL, 2003e)

# 4.7 Summary of Selected Facility Operations in CY2002

Table 4-1 summarizes operational data from the selected facilities for FY2001, CY2002, and the SWEIS expanded operations alternative. The selected facilities are listed in the order that they appear in the preceding text of Chapter 4. The following guide is provided for ease in locating specific facility operational data.

**Guide to Table 4-1 Entries**

**Table 4-1. Summary of Operational Data from Selected Facilities**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Advanced Manufacturing Processes Lab (AMPL) (TA-I) (Section 4.1.1)** | | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Materials, Ceramics/Glass Electronics, Processes, and Systems | Operational Hours | 347,000 | 312,000 | 312,000 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | kg | 0 | 0 | 0 |
| | Mixed Waste | LLMW | kg | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 6,625[a] | 12,365 | 9,168 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | M $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 204 | 175 | 170 |
| | Expenditures | NA | M dollars | 45 | 26 | 26 |
| **Explosive Components Facility (ECF, near TA-II) (Section 4.1.2)** | | | | | | |
| Major Facility Activities | Test Activities | Neutron Generator Tests | Tests | NAPD | NAPD | NAPD |
| | | Explosive Testing | Tests | 900 | 600 | 600 |
| | | Chemical Analysis | Analyses | 1,250 | 900 | 900 |
| | | Battery Tests | Tests | 100 | 55 | 55 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Explosive Components Facility (ECF, near TA-II) (Section 4.1.2) (Cont'd.)** | | | | | | |
| Material Inventories[b] | Nuclear Material Inventory | Tritium | Ci | 49 | 49 | 49 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 190 | 110 | 110 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | kg | 1,000 | 1,000 | 1,000 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 500 | 400 | 400 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | $2x10^{-3}$ | $1x10^{-3}$ | $1x10^{-3}$ |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 6.4 | 5.4 | 5.4 |
| | Water Consumption | NA | M gal | 7.0 | 6.1 | 6.1 |
| | Electricity Consumption | NA | kWh | 3,400,000 | 2,900,000 | 2,900,000 |
| | Boiler Energy | Natural Gas | M $ft^3$ | 29 | 24 | 24 |
| | Facility Personnel | NA | FTEs | 102 | 88 | 88 |
| | Expenditures | NA | M Dollars | 2.5 | 2.1 | 2.1 |
| **Integrated Materials Research Laboratory (IMRL) (TA-I) (Section 4.1.3)** | | | | | | |
| Major Facility Activities | Other | Research and Development of Materials | Operational Hours | 395,454 | NR | NR |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Integrated Materials Research Laboratory (IMRL) (TA-I) (Section 4.1.3) (Cont'd.)** | | | | | | |
| Material Inventories | Nuclear Material Inventory | Depleted Uranium | mCi | 1.0[c] | 0 | NR |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | NR |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | NR |
| | Explosives Inventory | NA | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | NR |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | NR |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | NR |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | NR |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | NR |
| | Mixed Waste | LLMW | kg | 0 | 0 | NR |
| | | Mixed TRU | $ft^3$ | 0 | 0 | NR |
| | Hazardous Waste | NA | kg | 2,000 | 2,372 | NR |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | NR |
| | Open Burning | NA | gal/burn | 0 | 0 | NR |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | NR |
| | Water Consumption | NA | gal | 0 | 0 | NR |
| | Electricity Consumption | NA | kWh | 0 | 0 | NR |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | NR |
| | Facility Personnel | NA | FTEs | 250 | 220 | 230 |
| | Expenditures | NA | M Dollars | 62 | 45 | NR |
| **Microelectronics Development Laboratory (MDL) (TA-I) (Section 4.1.4)** | | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Microelectronic Devices and Systems | Wafers | 7,500 | 5,000 | 4,800 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Microelectronics Development Laboratory (TA-I) (Section 4.1.4) (Cont'd.)** | | | | | | |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | kg | 0 | 0 | 0 |
| | Transuranic Waste | NA | kg | 0 | 0 | 0 |
| | Mixed Waste | LLMW | kg | 0 | 0 | 0 |
| | | Mixed TRU | kg | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 4,378[a] | 4,816 | 3,768 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 77[a] | 46.7 | 52.5 |
| | Water Consumption | NA | M gal | 77.2[a] | 91 | 110 |
| | Electricity Consumption | NA | kWh | 28,600,000[a] | 26,534,000 | 26,688,216 |
| | Boiler Energy | Natural Gas | $ft^3$ | 34,300,000[a] | 26,136,000 | 24,204,000 |
| | Facility Personnel | NA | FTEs | 500[a] | 140 | 137 |
| | Expenditures | NA | M Dollars | 7.5[a] | 37 | 39[d] |
| **Neutron Generator Production Facility (NGPF) (TA-I) (Section 4.1.5)** | | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Neutron Generators | Neutron Generators | NAPD | NAPD | NAPD |
| Material Inventories | Nuclear Material Inventory | Tritium | Ci | 836 | 800 | 940 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | Tritium | Ci | 652[a] | 204 | 350 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Neutron Generator Production Facility (NGPF) (TA-I) (Section 4.1.5) (Cont'd.)** | | | | | | |
| Waste Generation | Low-Level Waste | NA | kg | 4,000 | 780 | 350[e] |
| | Transuranic Waste | NA | kg | 0 | 0 | 0 |
| | Mixed Waste | LLMW | kg | 300 | 31 | 20[e] |
| | | Mixed TRU | kg | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 3,680 | 2,800 | 3,000 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 156 | 27 | 15 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 5 | 2.9 | 3.1 |
| | Water Consumption | NA | M gal | 5 | 2.9 | 3.1 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 320[a] | 273 | 320 |
| | Expenditures | NA | M Dollars | 5.2[a] | 33 | 31.5 |
| **Centrifuge Complex (TA-III) (Section 4.2.1)** | | | | | | |
| Major Facility Activities | Test Activities | Centrifuge | Tests | 120 | 21 | 22 |
| | | Impact | Tests | 100 | 0 | 0 |
| Material Inventories | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 15 | 3 | 1 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Centrifuge Complex (TA-III) (Section 4.2.1) (Cont'd.)** | | | | | | |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 10 | 2 | 2 |
| | Expenditures | NA | M Dollars | 0.75 | 0.2 | 0.2 |
| **Drop/Impact Complex (TA-III) (Section 4.2.2)** | | | | | | |
| Major Facility Activities | Test Activities | Drop Test | Tests | 50 | 3 | 3 |
| | | Water Impact | Tests | 20 | 0 | 0 |
| | | Submersion | Tests | 5 | 0 | 0 |
| | | Underwater Blast | Tests | 10 | 0 | 0 |
| Material Inventories | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | Minimal | Minimal | Minimal |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Drop/Impact Complex (TA-III) (Section 4.2.2) (Cont'd.)** | | | | | | |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 8 | 2 | 1.6 |
| | Expenditures | NA | Dollars | 146,000 | 52,000 | 50,000 |
| **Sled Track Complex (TA-III) (Section 4.2.3)** | | | | | | |
| Major Facility Activities | Test Activities | Rocket Sled Test | Tests | 80 | 12 | 18 |
| | | Explosive Testing | Tests | 239 | 10 | 14 |
| | | Rocket Launcher | Tests | 24 | 3 | 3 |
| | | Free-Flight Launch | Tests | 150 | 22 | 0 |
| Material Inventories | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 50 | 12 | 12 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | Explosives | kg | 1,670 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Sled Track Complex (TA-III) (Section 4.2.3) (Cont'd.)** | | | | | | |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 3.3 | 3.3 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0.4 | 0.4 |
| | Facility Personnel | NA | FTEs | 40 | 10 | 10 |
| | Expenditures | NA | M Dollars | 2.0[a] | 0.400 | 0.500 |
| **Terminal Ballistics Facility (TA-III) (Section 4.2.4)** | | | | | | |
| Major Facility Activities | Test Activities | Projectile Impact Testing | Tests | 350 | 50 | 50 |
| | | Propellant Testing | Tests | 100 | 25 | 25 |
| Material Inventories | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 0.75 | 0.2 | 0.2 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Terminal Ballistics Facility (TA-III) (Section 4.2.4) (Cont'd.)** | | | | | | |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 2 | 2 | 2 |
| | Expenditures | NA | dollars | 12,000 | 14,000 | 14,000 |
| **APPDL (TA-IV) (Section 4.3.1)** | | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | Shots | 2,000 | 300 | 560 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 130,000 | 164,000 | 225,000 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 200 | 100 | ~100 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 7 | 9.5 | 9.5 |
| | Expenditures | NA | M Dollars | 5.5[a] | 2 | 3.5 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **HERMES III (TA-IV) (Section 4.3.2)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 1,450 | 288 | 288 |
| Material Inventories | Nuclear Inventory | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 160,000 | 160,000 | 160,000 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | 0 | 0 | 0 |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 1.38 | 0.25 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 915 | 549 | 126 |
| Emissions | Radioactive Air Emissions | Nitrogen-13 | Ci | $36.03x10^{-4}$ | $3.4x10^{-4}$ | $4.75x10^{-4}$ |
| | | Oxygen-15 | Ci | $36.03x10^{-5}$ | $3.4x10^{-5}$ | $4.75x10^{-5}$ |
| | Open Burning | NA | kg | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0 | 0 | 0 |
| | Water Consumption | NA | M gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 22[a] | 4 | 4 |
| | Expenditures | NA | M Dollars | 4.4 | 1.2 | 1.55 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **RITS (TA-IV) (Section 4.3.3)** | | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | Shots | 800 | 0 | 216 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | Activated Hardware | kg | ~500 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 40,000 | 0 | 10 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 120 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 272 | 0 | 0 |
| Emissions | Radioactive Air Emissions | Nitrogen-13 | Ci | 0.16 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 10[a] | 0 | 0 |
| | Expenditures | NA | M Dollars | 4 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **RHEPP I (TA-IV) (Section 4.3.4)** | | | | | | |
| Major Facility Activities | Test Activities | Accelerator Tests | Tests | 10,000 | 2,494 | 4,694 |
| Material Inventories | Nuclear Inventory | Depleted Uranium | μg | 100 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 6,000 | 6,000 | 6,000 |
| Material Consumption | Nuclear Material Consumption | Depleted Uranium | μg | 100 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 10 | 1 | 1 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 10 | 2.5 | 2.5 |
| | Expenditures | NA | M Dollars | 5.5 | 1.3 | 1.1 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **RHEPP II (TA-IV) (Section 4.3.5)** | | | | | | |
| Major Facility Activities | Test Activities | Radiation Production | Tests | 800 | 0 | 0 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 5,000 | 5,000 | 5,000 |
| | | Food Products | lb | 100 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 1 | 0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 3 | 0.25 | 0.25 |
| | Expenditures | NA | M Dollars | 0.754 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **SABRE (TA-IV) (Section 4.3.6)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 400 | 150 | 0 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 30,000 | 30,000 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 8.4-- | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 132 | 0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 6 | 3 | 0 |
| | Expenditures | NA | M Dollars | 0.96 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Saturn (TA-IV) (Section 4.3.7)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 500 | 111 | 178 |
| Material Inventories | Nuclear Inventory | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 300,000 | 300,000 | 300,000 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 1,286 | 193.74 | 89.15 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 18[a] | 14 | 14 |
| | Expenditures | NA | M Dollars | 5.4 | 2.8 | 3.0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **SPHINX (TA-IV) (Section 4.3.8)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 6,000 | 1,599 | 1,684 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 1,000 | 1,000 | 1,000 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 107 | 35 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | kg | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0 | 0 | 0 |
| | Water Consumption | NA | M gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 5 | 0 | 1 |
| | Expenditures | NA | M Dollars | 0.71 | 0.4 | 0.6 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **TESLA (TA-IV) FY2001 Update (Section 4.3.9)** | | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | shots | 1,300 | 50 | 75 |
| Material Inventories | Nuclear Inventory | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 10,000 | 20,000 | 20,000 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 65 | 100 | 100 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 5 | 2.5 | 2 |
| | Expenditures | NA | M Dollars | 1.6 | 0.5 | 0.5 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Z Accelerator (TA-IV) (Section 4.3.10)** | | | | | | |
| Major Facility Activities | Test Activities | Tritium | Shots | 75 | 0 | 0 |
| | | Deuterium | Shots | 100 | 6 | 40 |
| | | Plutonium-239 | Shots | NAPD | NAPD | NAPD |
| | | Depleted Uranium | Shots | NAPD | NAPD | NAPD |
| | | Other | Shots | 75 | 152 | 139 |
| | | NA | Total Shots | 350 | 162 | 180 |
| Material Inventories | Nuclear Inventory | Tritium | Ci | 50,000 | 0 | 0 |
| | | Deuterium | ℓ | <5,000 | 350 | 600 |
| | | Plutonium-239 | mg | NAPD | NAPD | NAPD |
| | | Depleted Uranium | mg | NAPD | NAPD | NAPD |
| | Radioactive Material Inventory | Activated Hardware | kg | 10,000 | 2,000 | 2,000 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 700,000 | 700,000 | 700,000 |
| Material Consumption | Nuclear Material Consumption | Tritium | Ci | 7,500 | 0 | 0 |
| | | Deuterium | ℓ | 5,000 | 350 | 600 |
| | | Plutonium-239 | mg | NAPD | NAPD | NAPD |
| | | Depleted Uranium | mg | NAPD | NAPD | NAPD |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0.0013 |
| | Explosives Consumption | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 28 | 10 | 112 |
| | Transuranic Waste | NA | $ft^3$ | 16 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 1,250 | 1,233 | 6,134.73 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 0 | 0 | $9.7x10^{-9}$ |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 115 | 55 | 55 |
| | Expenditures | NA | M Dollars | 4 | 1.82 | 1.98 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **ACRR Pulse Mode (TA-V) (Section 4.4.1)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation Tests | Test Series | 2 to 3 | 5 | 4 to 5 Campaigns |
| Material Inventories[f] | Inventory Nuclear Material | Enriched Uranium | kg | 85 | 12 | 12 |
| | | Plutonium-239 | g | NAPD | NAPD | <10,000 |
| | Radioactive Material Inventory | Cobalt-60 | Ci | 33.6 | 33.6 | 0 |
| | | Other Radioisotopes (Tritium) | Ci | 0 | 20,000[g] | 20,000 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | Enriched Uranium | g | 2 | 2 | 2 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 170 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 5 | 5 | 5 |
| | Mixed Waste | LLMW | $ft^3$ | 5 | 5 | 5 |
| | | Mixed TRU | $ft^3$ | 5 | 0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 14 | 14 | 14 |
| Emissions | Radioactive Air Emissions | Argon-41 | Ci | 7.8 | 39 | 10 |
| | Open Burning | NA | gal/burn | 0 | 0 | NA |
| Process Support | Wastewater Effluent | NA | M gal | 50,000 | 50,000 | 50,000 |
| | Water Consumption | NA | M gal | 100,000 | 100,000 | 100,000 |
| | Electricity Consumption | NA | kWh | 0 | 1,000 | 1,000 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 8 | 4 | 4 |
| | Expenditures | NA | M Dollars | 8 | 4 | 4 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **GIF (TA-V) (Section 4.4.3)** | | | | | | |
| Major Facility Activities | Test Activities | Tests | Hours | 8,000 | 0 | 0 |
| Material Inventories | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | 500 | 0 | 0 |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | 0 | 0 | 0 |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 126 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 14 | 0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 17,000 | 0[g] | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 3 | 0 | 0 |
| | Expenditures | NA | M Dollars | 0 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Hot Cell Facility (TA-V) (Section 4.4.4)** | | | | | | |
| Major Facility Activities | Test Activities | Processing | Targets | 1,300 | 0 | 0 |
| Material Inventories[f] | Nuclear Material Inventory | Enriched Uranium | g | 125 | 0 | 0 |
| | | Low Enriched Uranium (LEU), <20% Enriched, as $UO_2$ | kg | NR | NR | 1,230 |
| | | U-235 in LEU | kg | NR | NR | 74 |
| | | U- (Other) in LEU | kg | NR | NR | 1,156 |
| | Radioactive Material Inventory | NA | Ci | 3.9 | 0 | 0 |
| | Spent Fuel Inventory | Spent Fuel | kg | 399 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | Enriched Uranium | kg | 32.5 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 5,000 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 40 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 22 | 0 | 0 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 2.2 | 0 | 0 |
| | | Argon-41 | Ci | 2.2 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 55 | 0 | 0 |
| | Expenditures | NA | M Dollars | 0 | 0 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **New GIF (TA-V) (Section 4.4.5)** | | | | | | |
| Major Facility Activities | Test Activities | Tests | hrs | 24,000 | 0 | 280 (Operations) |
| Material Inventories[f] | Nuclear Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | Cobalt-60 | Ci | NAPD | NAPD | NAPD |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 126 | 2 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 14 | 1 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 255,000 | 85,000[g,h] | 4,400[i] |
| | Electricity Consumption | NA | kWh | 0 | 20 | 117,000 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 176,000 |
| | Facility Personnel | NA | FTEs | 4 | 2 | 2 |
| | Expenditures | NA | M Dollars | 1 | 1 | 1 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Sandia Pulsed Reactor (SPR) (TA-V) (Section 4.4.6)** | | | | | | |
| Major Facility Activities | Test Activities | Irradiation Tests | Tests | 200 | 0 | 0 |
| Material Inventories[f] | Nuclear Inventory | Plutonium-239 | g | NAPD | NAPD | NAPD |
| | | Enriched Uranium | kg | 1,000 | 0 | 330 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | kg | 900 | 10 | 10 |
| | Transuranic Waste | NA | $ft^3$ | 5 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 14 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 5 | 0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 30 | 1 | 1 |
| Emissions | Radioactive Air Emissions | Argon-41 | Ci | 30.0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 166,000 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 17,000 |
| | Facility Personnel | NA | FTEs | 17 | 4 | 4 |
| | Expenditures | NA | M Dollars | 6 | 4 | 4 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Aerial Cable Facility Complex (Sol Se Mete Canyon) (Section 4.5.1)** | | | | | | |
| Major Facility Activities | Test Activities | Drop/Pull-Down | Tests | 100 | 5 | 6 |
| | | Aerial Target | Tests | 30 | 0 | 0 |
| | | Scoring System Tests | Series | 2 | 0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 (Rocket Motors) | kg | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 9 | 4 | 4 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 24 | 8 | 8 |
| | Expenditures | NA | M Dollars | 0.725[a] | 0.18 | 0.20 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **CTTF-West (in Coyote Test Field) (Section 4.5.2)** | | | | | | |
| Major Facility Activities | Survivability Testing | Test Series | Test Series | 2 | 0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Sealed Source Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Adhesives | g | 500 | 500 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | g | 100 | 100 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 12 | 4 | 0 |
| | Expenditures | NA | M Dollars | 2 | 3 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Explosives Applications Laboratory (in Coyote Test Field) (Section 4.5.3)** | | | | | | |
| Major Facility Activities | Explosive Testing | Tests | Tests | 275 to 360 | 180 | 107 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Film Developer/Fixer | gal | 20 | 30 | 28 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.2 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 1.5 to 2 | 1.5 | 3 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 6 | 5 | 5 |
| | Expenditures | NA | M Dollars | 0.975 | .81 | .81 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Lurance Canyon Burn Site (Section 4.5.4)** | | | | | | |
| Major Facility Activities | Test Activities | Certification | Tests | 55 | 8 | 10 |
| | | Model Validation | Tests | 100 | 45 | 40 |
| | | User Testing | Tests | 50 | 20 | 23 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 900 | 900 | 900 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | JP-8 | burns/gal | 50/25,000 | 65/25,000 | 65/25,000 |
| | | Wood | burns/kg | 10/5,000 | 2/1,000 | 2/1,000 |
| | | Rocket Propellant | burns/kg | 5/7,500 | 0/0 | 0/0 |
| Process Support | Wastewater Effluent | NA | gal | 25,000 | 25,000 | 25,000 |
| | Water Consumption | NA | gal | 0 | 10,000 | 10,000 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 11 | 4.5 | 0.5 |
| | Expenditures | NA | M Dollars | 0.65 | 0.25 | 0.35 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Thunder Range Complex (in Coyote Test Field) (Section 4.5.5)** | | | | | | |
| Major Facility Activities | Other | Equipment Disassembly And Evaluation | Days | 144 | 5 | 0 |
| | Other | Ground Truthing Tests | Test Series | 10 | 1 | 0 |
| Material Inventories[f] | Nuclear Material Inventory | Plutonium-238 | Ci | NAPD | NAPD | NAPD |
| | | Plutonium-239 | Ci | NAPD | NAPD | NAPD |
| | | Americium-241 | Ci | NAPD | NAPD | NAPD |
| | | Americium-243 | Ci | NAPD | NAPD | NAPD |
| | | Normal Uranium | Ci | NAPD | NAPD | NAPD |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | NA | 0 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 0 | 0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | M gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 2.6 | 0.8 | 0 |
| | Expenditures | NA | dollars | 300,000 | 10,000 | 0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **HWMF (South of TA-I) (Section 4.6.1)** | | | | | | |
| Major Facility Activities | Infrastructure | Collection, Packaging, Handling, and Short-Term Storage of Hazardous and Other Toxic Waste | kg | 214,000 | 66,559 | 53,593 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Sealed Source Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | lb | 1,188 | 900 | 330 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 860 | 1,045 | 209 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 14[a] | 13 | 9.5 |
| | Expenditures | NA | M Dollars | 1.0[a] | 1.97 | 1.936 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **RMWMF (TA-III) (Section 4.6.2)** | | | | | | |
| Major Facility Activities | Infrastructure | Receipt, Packaging, and Shipping of Radioactive Waste | lb | 2.7 M | 1.9 M | 1.2 M |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | gal | 6,630 | 6,630 | 6,630 |
| | | Liquid Nitrogen | ℓ | 8,320 | 8,320 | 8,320 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 19,592 | 10,202 | 2,616 |
| | Transuranic Waste | NA | $ft^3$ | 353 | 0 | <1 |
| | Mixed Waste | LLMW | $ft^3$ | 8,833 | 364 | 60 |
| | | Mixed TRU | $ft^3$ | 37[a] | 1 | 0 |
| | Hazardous Waste | NA | kg | 0 | 0 | 0 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 2.203 | $6.43x10^{-2}$ | $6.43x10^{-2}$ |
| | | Strontium-90 | Ci | 0 | $3.83x10^{-7}$ | $3.83x10^{-7}$ |
| | | Americium-241 | Ci | 0 | $2.52x10^{-7}$ | $2.52x10^{-7}$ |
| | | Cesium-137 | Ci | 0 | $1.06x10^{-8}$ | $1.06x10^{-8}$ |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0 | 0 | 0 |
| | Water Consumption | NA | gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 49 | 39 | 40 |
| | Expenditures | NA | M Dollars | 0.528 | 8 | 8 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Steam Plant (TA-I) (Section 4.6.3)** | | | | | | |
| Major Facility Activities | Infrastructure | Generate and Distribute Steam to DOE, TA-I, KAFB East, Coronado Club | lb | 544 M | 529 M | 683 M |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Diesel Fuel | M gal | 1.5 | .75 | 0 |
| | | Propane | gal | 300 | 300 | 100 |
| | | Water Treatment Chemicals | gal | 1,752 | 1,752 | 8,500 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | 0 | 0 | 0 |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 9 | 9 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | NA | gal/burn | 0 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0 | 0 | 0 |
| | Water Consumption | NA | M gal | 20[a] | 0 | 23.1 |
| | Electricity Consumption | NA | kWh | 1.2 M | 1.2 M | 1.27 M |
| | Boiler Energy | Natural Gas | $ft^3$ | 779 M | 806 M | 721 K |
| | Facility Personnel | NA | FTEs | 17 | 16 | 16 |
| | Expenditures | NA | M dollars | 2.87 | 2.8 | 3.0 |

**Table 4-1. Summary of Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | SWEIS Expanded Alternative | Data Reported for FY2001 | CY2002 |
|---|---|---|---|---|---|---|
| **Thermal Treatment Facility (TTF) (TA-III) (Section 4.6.4)** | | | | | | |
| Major Facility Activities | Infrastructure | Treatment of Waste | lb | 1,200 | 0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0 | 0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0 | 0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0 | 0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | gal | 500 | 0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0 | 0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0 | 0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0 | 0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0 | 0 | 0 |
| | | Mixed TRU | $ft^3$ | 0 | 0 | 0 |
| | Hazardous Waste | NA | kg | 272 | 0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0 | 0 | 0 |
| | Open Burning | Propane | gal | 120 | 0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0 | 0 | 0 |
| | Water Consumption | NA | M gal | 0 | 0 | 0 |
| | Electricity Consumption | NA | kWh | 0 | 0 | 0 |
| | Boiler Energy | Natural Gas | $ft^3$ | 0 | 0 | 0 |
| | Facility Personnel | NA | FTEs | 1 | 0.1 | 0 |
| | Expenditures | NA | Dollars | 100,000 | 0 | 0 |

[a] Facilities and Safety Information Document values were used previously, not the SWEIS values.
[b] The average annual inventory of test articles stored at the ECF.
[c] The sample of depleted uranium was used in remote sensing and calibration of lasers, and was stored in the facility.
[d] The CY2002 costs reported for the MDL are a major increase over those included in the SNL/NM SWEIS, but are consistent with the trending of costs reported form FY2000 and FY2001. The reasons for the discrepancy are probably the result of (1) delineating MDL costs differently for the SWEIS than such costs now are identified, (2) the gradual upgrading of MDL equipment in preparation for transition to the Microsystems and Engineering Sciences Applications (MESA) Program, and (3) increased costs of research and development work.
[e] $ft^3$ = cubic feet; last year's values were mistakenly reported in kilograms.

[f] Nuclear and radioactive material inventories listed here are bounding quantities for facility accident analysis and do not represent actual quantities in inventory at a facility. In addition, material inventories are not necessarily stored in facilities where they are used.
[g] Correction to the amount reported in the SWEIS Annual Review –FY2001.
[h] Water consumption for CY2001 was approximately 85,000 gallons. This number is based on the quantity of water needed to initially fill the pool in March 2001, plus the makeup water required during the year to compensate for evaporation.
[i] Quantity represents water required for evaporation makeup.

Ci = curie, FTE = full-time equivalent, g = gram, gal = gallon, kg = kilogram, kWh = kilowatt-hour, LLMW = low-level mixed waste, M = million, µg = microgram, mg = milligram, NA = not applicable, NAPD = not available for public distribution, NR = not reported, TRU = transuranic; UNO = United Nations Organization (explosives categories).

Source: SNL, 2003e; Talley, 2003.

# 4.8 Storage Tanks at SNL/NM

Table 4-2 shows information on aboveground oil and fuel storage tanks at SNL/NM TA-I, including descriptions, locations, contents, capacities, containment, and other information. Table 4-3 shows information on other storage tanks at SNL/NM, including those that store chemicals.

The CY2002 list of petroleum storage tanks appears larger than the list in the FY2001 SWEIS Annual Review; however, there are no new tanks. The Environmental Protection Agency (EPA) ratified the oil storage regulations (40 CFR 112) in 2002. Under the old regulations, SNL/NM listed tanks with a capacity of 660 gallons or greater. The new regulations require that all containers that are 55 gallons and larger be listed; therefore, several smaller tanks were added to the CY2002 list that existed in FY2001 but were not listed.

**Table 4-2. Oil and Fuel Storage Tanks at SNL/NM TA-I**

| Tech Area & Building | Room Location | Capacity (Gallons) | Unit Description | Contents | Containment |
|---|---|---|---|---|---|
| I/605 | Tank Farm | 1,024,000 | AST | Diesel 2 | Earthen |
| I/605 | Tank Farm | 508,000 | AST | Diesel 2 | Earthen |
| I/605 | Tank Farm | 213,898 | AST | Empty - Diesel | Earthen |
| I/605 | Tank Farm | 209,421 | AST | Empty - Diesel | Earthen |
| I/605 | Tank Farm | 45,490 | AST | Empty - Diesel | Earthen |
| I/605 | Tank Farm | 44,129 | AST | Empty - Diesel | Earthen |
| I/605 | East | 10,000 | AST | Diesel 2 | Metallic |
| I/605 | East | 10,000 | AST | Diesel 2 | Metallic |
| I/605 | East | 10,000 | AST | Diesel 2 | Metallic |
| I/862 | South | 9,750 | UST | Diesel 2 | None |
| I/888 | East | 20,000 | UST | Dielectric Oil | None |
| I/888 | East | 20,000 | UST | Dielectric Oil | None |
| I/875 | Fuel Farm | 500 | AST | Diesel 2 | Metallic |
| I/875 | Fuel Farm | 500 | AST | Unleaded Gasoline | Metallic |
| I/875 | Fuel Farm | 2,000 | AST | Ethanol (E-85) | Metallic |
| I/875 | East | 500 | AST | Motor Oil/Used Oil | Metallic |
| I/876 | East | 500 | AST | Motor Oil/Used Oil | Metallic |
| I/605 | Northwest | 500 | AST | Diesel 2 | Metallic |
| III/6523-C | Shed, East Side | 5,000 | AST | Hydraulic Oil | Concrete |
| III/6527 | Outside - North | 1,000 | AST | Used Oil | Concrete |
| III/6587 | West | 1,000 | AST | Used Oil | Concrete |
| IV/963 | Outside - East | 300 | AST | Dielectric Oil | |
| IV/963 | Inside | 4,000 | AST | Dielectric Oil | Concrete |
| IV/963 | Outside - East | 300 | AST | Dielectric Oil | |
| IV/966 | Outside - East #1 | 75,000 | AST | Dielectric Oil | Concrete |
| IV/966 | Outside - East #2 | 75,000 | AST | Dielectric Oil | Concrete |
| IV/966 | Outside - East #3 | 75,000 | AST | Dielectric Oil | Concrete |
| IV/970 | Outside - S/SE | 250,000 | AST | Dielectric Oil | Concrete |
| IV/970 | Outside - S/SE | 250,000 | AST | Dielectric Oil | Concrete |
| IV/970 | Outside - S/SE | 20,000 | AST | Dielectric Oil | Concrete |

**Table 4-2. Oil and Fuel Storage Tanks at SNL/NM TA-I (Continued)**

| Tech Area & Building | Room Location | Capacity (Gallons) | Unit Description | Contents | Containment |
|---|---|---|---|---|---|
| IV/981 | Outside - East Tank | 250,000 | AST | Dielectric Oil | Concrete |
| IV/981 | Outside - West Tank | 250,000 | AST | Dielectric Oil | Concrete |
| IV/983 | Outside SW - #4 East Tank | 250,000 | AST | Dielectric Oil | Concrete |
| IV/983 | Outside SW - #5 west Tank | 250,000 | AST | Dielectric Oil | Concrete |
| IV/983 | Outside - #3 West Tank | 250,000 | AST | Dielectric Oil | Concrete |
| V/6581 | Inside - Equipment Room | 1,500 | AST | Dielectric Oil | Concrete |
| V/6581 | Outside - East | 560 | AST | Diesel 2 | Concrete |
| V/6590-A | Outside - North | 560 | AST | Diesel 2 | Concrete |
| V/6590-A | Inside | 125 | AST | Diesel 2 | Concrete |
| V/6579 | Inside | ~110 | AST | Diesel 2 | Concrete |
| CTF/Burn Site | Outside North | 25,000 | AST | JP-8 | Earthen-Concrete |
| CTF/Burn Site | Mobile Unit | 250 | AST | JP-8 | |
| CTF/Burn Site | Mobile Unit | 100 | AST | JP-8 | |
| CTF/Burn Site | Mobile Unit | 100 | AST | JP-8 | |
| Solar/9980 | Outside - West | 1,000 | AST | Diesel 2 | Metallic |
| Solar/9980 | Outside - South | 55 | AST | Unleaded Gasoline | Concrete |

AST = aboveground storage tank, CTF = Coyote Test Field, S = south, SE = southeast, UST = underground storage tank, W = west.

Source: Fink, 2003.

**Table 4-3. Other Storage Tanks at SNL/NM**

| Material | Capacity | Units | Location | Tech Area |
|---|---|---|---|---|
| ARGON, LIQUID | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 900 | gallon | NAPD | NAPD |
| | 5,000 | gallon | NAPD | NAPD |
| ARGON, LIQUID (EMPTY) | 500 | gallon | NAPD | NAPD |
| DEIONIZED WATER | 60,000 | gallon | NAPD | NAPD |
| | 300,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| | 50,000 | gallon | NAPD | NAPD |
| HELIUM, LIQUID | 9,420 | pound | NAPD | NAPD |
| HYDROGEN, COMPRESSED GAS | 38,000 | cubic feet | NAPD | NAPD |
| | 96,000 | cubic feet | NAPD | NAPD |
| | 38,000 | cubic feet | NAPD | NAPD |
| HYDROGEN, LIQUID | 4,500 | gallon | NAPD | NAPD |
| NITROGEN, CRYOGENIC LIQUID | 11,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 6,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 900 | gallon | NAPD | NAPD |
| | 300 | gallon | NAPD | NAPD |
| | 6,000 | gallon | NAPD | NAPD |
| | 6,000 | gallon | NAPD | NAPD |
| | 17,000 | gallon | NAPD | NAPD |
| | 6,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |

**Table 4-3. Other Storage Tanks at SNL/NM (Continued)**

| Material | Capacity | Units | Location | Tech Area |
|---|---|---|---|---|
| NITROGEN, CRYOGENIC LIQUID (Cont'd.) | 6,000 | gallon | NAPD | NAPD |
| | 11,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 11,000 | gallon | NAPD | NAPD |
| | 9,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 13,000 | gallon | NAPD | NAPD |
| | 3,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 6,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| | 11,000 | gallon | NAPD | NAPD |
| NITROGEN, CRYOGENIC LIQIUD (EMPTY) | 4,400 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,500 | gallon | NAPD | NAPD |
| OXYGEN, LIQUID | 3,000 | gallon | NAPD | NAPD |
| OXYGEN, LIQUID (EMPTY) | 500 | gallon | NAPD | NAPD |
| PROPANE | 1,000 | gallon | NAPD | NAPD |
| | 2,000 | gallon | NAPD | NAPD |
| | 250 | gallon | NAPD | NAPD |
| | 250 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |

**Table 4-3. Other Storage Tanks at SNL/NM (Continued)**

| Material | Capacity | Units | Location | Tech Area |
|---|---|---|---|---|
| PROPANE (Cont'd.) | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 250 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 3,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 3,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 3,000 | gallon | NAPD | NAPD |

**Table 4-3. Other Storage Tanks at SNL/NM (Continued)**

| Material | Capacity | Units | Location | Tech Area |
|---|---|---|---|---|
| PROPANE (Cont'd.) | 3,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 100 | gallon | NAPD | NAPD |
| | 100 | gallon | NAPD | NAPD |
| | 100 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 500 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |
| | 1,000 | gallon | NAPD | NAPD |

NAPD=Not Available for Public Distribution.
Source: Castillo, 2003b.

# CHAPTER 5.0
# CY2002 NOTABLE FACILITIES OPERATIONS

## CONTENTS



## TABLES

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# 5.0 CY2002 NOTABLE FACILITIES OPERATIONS

## 5.1 Introduction

In Chapter 4, major Calendar Year (CY) 2002 operations and activities at SNL/NM selected facilities were summarized and compared against the selected facility operations analyzed in the SNL/NM Site-Wide Environmental Impact Statement (SWEIS) (DOE, 1999). This chapter makes a similar comparison of information for 15 notable facilities located in three Technical Areas (TAs), the Coyote Test Field (CTF), and the Manzano Area of Kirtland Air Force Base (KAFB).

The information recorded here is compiled from personal communications and questionnaires submitted to facility managers or other facility staff. Descriptions of facilities come from safety documentation or facility representative information and have been refined as changes occurred.

## 5.2 TA-I Notable Facilities

### *5.2.1 on Beam Materials Research Laboratory*

The Ion Beam Materials Research Laboratory is a low-hazard, nonnuclear facility built on a concrete slab with structural steel framing, stucco exterior, and a corrugated metal roof.

The Ion Beam Materials Research Laboratory houses several supporting laboratories, including the Ion Implantation Physics Lab, the Electron Cyclotron Resonance Lab, the Ion Implantation and Ion Beam Analysis Lab, the Double Crystal Diffractometry Lab, and the Materials Modification Lab. Major equipment in the facility includes two Van de Graaff accelerators and a 400-kilovolt (kV) ion implanter. The 6 mega-electron volt (MeV) Tandem Van de Graaff generator is part of the facility's equipment.

(Kuzio, 2001)

**Current Operations and Capabilities**

The Ion Beam Materials Research Laboratory continues to perform basic and applied research, provides advanced ion beam capabilities, and is used to establish theories and validate models in materials science, solid-state physics, and accelerator physics. The work of the Ion Beam Materials Research Laboratory supports research and development for Defense Programs, Energy and Environment Programs, and work for others through Laboratory-Directed Research and Development (LDRD) and Cooperative Research and Development Agreements (CRADAs).

**Summary of Ion Beam Materials Research Laboratory Operations in CY2002**

During CY2002, operational levels at the Ion Beam Materials Research Laboratory were consistent with activities performed in CY2001 and at or below operational levels analyzed in the SWEIS. SNL/NM made no major additions or modifications to the facility in CY2002. No new capabilities were introduced in CY2002, and the hazards and hazard controls remained typical of laboratory and industrial environments.

(SNL, 2003e)

### *5.2.2 Sandia Lightning Simulator*

The Sandia Lightning Simulator, a low-hazard, nonnuclear facility, is a prefabricated, single-floor, reinforced concrete structure with a basement. The facility is divided into office space and a highbay laboratory with a screen room, laser room, pump room, and machine shop. The highbay houses four Marx generators contained in two 30,000-gallon (gal) tanks (two Marx banks per tank).

(Kuzio, 2001)

**Current Operations and Capabilities**

When in operation, the Sandia Lightning Simulator generates simulated lightning to test nuclear weapon designs and safety-critical components for conformance to nuclear safety requirements. Other activities include supporting studies of the interaction of lightning with materials and structures, and testing electronic components, military missiles, aircraft, and communications equipment.

**Summary of Sandia Lightning Simulator Operations in CY2002**

During CY2002, SNL/NM refurbished the Sandia Lightning Simulator facility. The facility had been in mothball status since 1996, and refurbishments were needed to support weapons validation tests scheduled to start in CY2003 as part of the Stockpile Life Extension Program. No major additions or modifications to the facility occurred during CY2002, nor were any new capabilities introduced during the same period. Hazards and hazard controls remained typical of laboratory and industrial environments.

(SNL, 2003e)

## *5.2.3 Energy and Environment Building*

The Energy and Environment Building, a low-hazard, nonnuclear facility, is a four-story building that includes 434 offices and 52 laboratory areas supporting energy-related and material science research programs.

(Kuzio, 2001)

**Current Operations and Capabilities**

Operations in the Energy and Environment Building include research, development, and testing of scientifically tailored materials, catalysts, processes, and devices. Areas of research and testing include geophysics, electronics, water quality, and various fields of chemistry.

**Summary of Energy and Environment Building Operations in CY2002**

During CY2002, operational levels at the Energy and Environment Building were consistent with CY2001 operations and the impacts assessed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility in the same period. No new capabilities were introduced, and the hazards and hazard controls remained typical of laboratory and industrial environments.

During CY2002, permission was obtained from the SNL/NM Radioactive and Mixed Waste Management Facility (RMWMF) to generate mixed waste, up to 20 gallons a year. This exception provided for a liquid waste parcel that failed to meet the requirements for *Resource Conservation and Recovery Act (RCRA)* regulated waste. The generation of mixed waste is believed to be a one-time event, and it is not anticipated that any of the Energy and Environment Building laboratories would generate mixed waste in the future. All mixed waste generated at the Energy and Environment Building is managed and treated at the SNL/NM RMWMF as a Treatability Group 5 waste. The treatment residue is ultimately disposed of at the Nevada Test Site as low-level waste.

## *5.2.4 Compound Semiconductor Research Lab (CSRL)*

The CSRL, a low-hazard, nonnuclear facility, is a single-story building with an equipment penthouse. Current plans call for incorporating the existing capabilities of the CSRL with the Microelectronics Development Laboratory (MDL) into the proposed new Microsystems and Engineering Science Applications (MESA) Complex, which is currently under development. Additional discussion on the MESA Complex is included in Chapter 3.0.

(Kuzio, 2001)

**Current Operations and Capabilities**

The CSRL supports the investigation of the physics of compound semiconductors and device structures. The facility also supports fabrication of optoelectronic and digital compound semiconductor devices for both research and prototyping purposes. Specific activities at the CSRL include research and development of microelectronic devices for nuclear weapon applications, fabrication of microelectronic and photonic devices based on compound semiconductors, and study and refinement of techniques for processing compound semiconductors. Other activities include development of new processes and prototypes, fabrication of new, artificially structured materials through advanced growth or processing techniques, and fabrication of microchannels, integrated micro-optics, and other sensors.

**Summary of CSRL Operations in CY2002**

During CY2002, operational levels at the CSRL were consistent with CY2001 operations and with impacts analyzed in the SWEIS. SNL/NM constructed no major additions or modifications or added major new capacity to the facility, and the hazards and hazard controls remained typical of laboratory and industrial environments.

(SNL, 2003e)

## *5.2.5 Power Sources Development Laboratory*

The Power Sources Development Laboratory is a two-story building with a mezzanine. It contains eight laboratories and one chemical storage building, including the Lithium Ambient Battery Fabrication Laboratory, the Materials Processing Laboratory, the Thermal Battery Test Laboratory, the Electrochemical Research Laboratory, the Thermal Battery Research Laboratory, the Ambient Battery Test Laboratory, the Chemical Laboratory, and the Microscopy Laboratory.

**Current Operations and Capabilities**

The Power Sources Development Laboratory supports research and development in the design and prototyping of thermal and lithium batteries. Within the facility, the Thermal Battery Test Laboratory is used to fabricate and test thermal battery cells and modules. Other work includes synthesis of inorganic compounds, testing the sensitivity of heat pellets with a portable laser, and development of new processes, prototypes, and energy storage systems.

**Summary of**
**Power Sources Development**
**Laboratory Operations in CY2002**

During CY2002, operational levels at the Power Sources Development Laboratory were consistent with CY2001 operations, and the impacts analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility in CY2002. No new capabilities were introduced, and the hazards and hazard controls remained typical of laboratory and industrial environments.

(SNL, 2003e)

## *5.2.6 Distributed Energy Technologies Laboratory (DETL)*

Originally named the Photovoltaic Systems Evaluation Laboratory West, this facility was renamed the DETL in 2002. The DETL is a single-story building made up of light electrical and mechanical labs. The facility includes photovoltaic arrays that are located between F Street and the NCO Bypass.

**Current Operations and Capabilities**

The DETL operates as a multipurpose research and testing laboratory supporting the DOE Conservation and Renewable Energy National Photovoltaics Program. Photovoltaic arrays tested at the DETL convert solar energy to direct

current electricity to demonstrate and evaluate commercially available systems.
Researchers at the DETL develop new processes and perform evaluations, perform indoor and outdoor testing on photovoltaic cells, modules, arrays, and systems, and use batteries and diesel generators in hybrid system testing.

**Summary of DETL Operations in CY2002**

During CY2002, operational levels at the DETL were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. While SNL/NM constructed no major additions or modifications to the facility, a new mobile office complex was added to the site. The new mobile office complex includes restrooms, light lab space, two conference rooms and office space. In CY2002 two new capabilities were introduced, the testing of microturbines and fuel cells. All hazards and hazard controls continued to remain typical of laboratory and industrial environments in CY2002.

(SNL, 2003e)

# 5.3 TA-III Notable Facilities

## *5.3.1 Radiant Heat Facility*

The Radiant Heat Facility is a low-hazard, nonnuclear facility with six lab areas, and includes an adjacent concrete bunker and a large array of electrically powered heat lamps.

**Current Operations and Capabilities**

The Radiant Heat Facility provides the capability to study or prove the ability of a test item, such as a satellite component or a transportation container (e.g., radioactive material packaging), to withstand an accident involving a fire. Test items are exposed to a large array of electrically powered heat lamps that create a high-temperature heat environment similar to that of transportation accident fires.

Other activities at the Radiant Heat Facility include environmental, safety, and survivability testing for nuclear weapon applications, small-scale testing to support reactor vessel annealing research, and model validation of thermally driven transport through foam encapsulants, to assess nuclear weapon response in abnormal environments.

**Summary of Radiant Heat Facility Operations in CY2002**

During CY2002, operational levels at the Radiant Heat Facility were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM introduced no new capabilities in the same time period, and hazards and hazard controls remained typical of laboratory and industrial environments.

It is anticipated that test activities will increase in the Fiscal Year (FY) 2003 to FY2004 timeframe to support model validation and verification. However, it is not anticipated that an increase in tests would impact emissions from the site or change hazards or hazard controls.

In addition, a new facility is proposed for construction and completion by FY2005 to replace the Radiant Heat Facility. The new facility will be known as the Fire Laboratory Accreditation of Modeling by Experiment (FLAME). Environmental impacts associated with the FLAME have been analyzed in the Test Capabilities Revitalization (TCR) Environmental Assessment (EA).

(SNL, 2003e; DOE, 2003)

## *5.3.2 Liquid Metal Processing Laboratory (LMPL)*

The LMPL, a low-hazard, nonnuclear facility, is a one-story building with a highbay and attached office building. The facility operations involve nine specialized furnaces and a chemical etching operation. Each of these operations provides metal and metal-alloy melting or ceramic casting capabilities. The operations are highly specialized and provide support in research, development, and production for weapons research.

(Kuzio, 2001)

**Current Operations and Capabilities**

Specific activities in the LMPL include environmental, safety, and survivability testing for nuclear weapon applications and development of metallurgical processing techniques to fabricate weapon components. Other activities include evaluation of material samples provided by Former Soviet Union (FSU) researchers, and materials research and development.

**Summary of LMPL Operations in CY2002**

During CY2002, operational levels at the LMPL were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility in the same time period. No new capabilities were introduced, and hazards and hazard controls remained typical of standard laboratory and industrial environments. The budget for the LMPL may potentially increase by 25 percent in FY2003. This potential increase in funding would result in an increase in activities and experimentation at the LMPL; however, LMPL projected growth in activities is not expected to exceed the expanded operations analysis of the SWEIS.

(SNL, 2003e)

## 5.3.3 Classified Destruction Facility

The Classified Destruction Facility houses equipment necessary to perform its information destruction function, including the Hammermill and Micro DoD (Department of Defense) shredder.

**Current Operations and Capabilities**

During operation, the Hammermill conveyor feeds classified wastepaper into the document destructor, converting the paper to a residue that travels through the duct system to the cyclone separator, which includes a bag system. Compacted residue is transferred to a dumpster. The Micro DoD shredder is used to destroy classified film and plastics; the waste residue goes to a container. When the film to be destroyed contains silver, the residue is segregated for appropriate recycling and disposal.

The Hammermill can process up to 700 pounds (315 kilograms) of paper per hour. The Hammermill and Micro DoD shredder normally operate 4 hours per day, 3 days per week, 50 weeks per year.

**Summary of Classified Destruction Facility Operations in CY2002**

During CY2002, operational levels at the Classified Destruction Facility were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility. No new capabilities were introduced, and hazards and hazard controls remained typical of standard laboratory and industrial environments.

(SNL, 2003e)

## 5.3.4 Vibration/Acoustic Complex

The Vibration/Acoustic Complex includes a single-floor, metal building with a basement that contains electrodynamic exciters, electrohydraulic exciters, electropneumatic acoustic drivers, and several arrays of electrodynamic acoustic drivers. Associated equipment at the facility includes a 180-kVA power amplifier, a 3,000-pounds-per-square-inch (psi) hydraulic power supply, and an 11,000-gal nitrogen storage tank and vaporizer.

The Complex also includes single-story concrete buildings that contain electrodynamic power amplifiers with all associated power supplies and instrumentation, a vault-type room, and a main control room, respectively.

(Kuzio, 2001)

**Current Operations and Capabilities**

SNL/NM researchers use the Vibration/Acoustic Complex to conduct vibration, shock, and acoustic simulations for components and systems from small electronic packages to full-sized weapons components. These simulations provide information on how items respond to controlled vibration and acoustic stimuli. The information is used to define failure levels, to prove system integrity, to determine modes of vibration, and to verify theoretical computer models.

**Summary of Vibration/Acoustic Complex Operations in CY2002**

During CY2002, operational levels at the Vibration/Acoustic Complex were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility during this time period. No new capabilities were introduced. Hazards and hazard controls remained typical of standard laboratory and industrial environments.

(SNL, 2003e)

# 5.4 TA-IV Notable Facilities

## *5.4.1 High Power Microwave Laboratory*

The High Power Microwave Laboratory is a multifloor facility with basement and includes two data-acquisition screen rooms, the microwave control/monitor systems, a light laboratory, an attached anechoic chamber, and a large experimental cell that contains the Intermediate Pulser (IMP), the Cathode Test Bed (CTB), and the General Repetitive Universal Multi-Purpose (GRUMP) Pulser.

(Kuzio, 2001)

**Current Operations and Capabilities**

The High Power Microwave Laboratory provides a large, high-quality, electromagnetic test facility supporting DOE and U.S. Air Force (USAF) vulnerability and susceptibility testing requirements. Experiments in the High Power Microwave Laboratory involve the production of microwave energy by various sources (pulsed-power accelerators).

Currently, the IMP is a single-shot accelerator capable of five shots per day that produce bremsstrahlung radiation. The CTB is a single-shot microwave accelerator capable of repetitive pulsed operations that produce x-rays as an intermediate step in testing cathode materials. The GRUMP Pulser is a CTB used to develop and test different types of cathode materials and configurations.

**Summary of High Power Microwave Laboratory Operations in CY2002**

During CY2002, operational levels at the High Power Microwave Laboratory were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major facility additions during CY2002. No new capabilities were introduced. Hazards and hazard controls remained typical of standard laboratory and industrial environments.

(SNL, 2003e)

## *5.4.2 Proto II*

The Proto II is an eight-module, radially converging, pulsed x-ray simulator. The accelerator is located in a multifloor building with a basement. This building contains 22 offices, several shops and storage areas, and 22 lab areas.

**Current Operations and Capabilities**

During CY2002, the Proto II remained nonoperational, with all fluids drained and energy sources locked out. Proto II was originally designed and constructed as a prototype for driving inertially confined fusion targets. In 1986, it was converted into an x-ray simulator. Currently, there are no plans to bring this accelerator back into operation.

**Summary of Proto II Operations in CY2002**

The Proto II did not operate in CY2002. SNL/NM added no major additions or modifications to the facility during CY2002.

(SNL, 2003e)

# 5.5 Coyote Test Field and Manzano Area

## *5.5.1 Manzano Storage Facility*

The Manzano bunkers, located in the southeast portion of KAFB, were constructed by the DoD in the 1940s. The USAF owns these bunkers.

(SNL, 2003e)

The Manzano Storage Facility is comprised of reinforced concrete bunkers tunneled into the sides of a mountain. Most of the bunkers have a set of double-steel doors, a breezeway, and a second set of double doors into the main chamber.

(SNL, 1997b)

**Current Operations and Capabilities**

During CY2002, DOE leased 13 bunkers from the USAF for SNL/NM to manage and store RCRA mixed waste, low-level radioactive waste, and transuranic waste. The Manzano bunkers, listed on a RCRA Part A permit application, are operating under RCRA interim status, and are required to comply with RCRA regulations for hazardous and mixed waste storage. Periodically, waste management personnel inspect, handle, and move containers at the facility and may open the outer containers of multiple-container packages; however, the inner containers of packages are not opened at the facility, and no process operations are performed there.
Typical waste stored in the bunkers includes tritium-contaminated equipment and cleanup material, and experimental test units. The bunkers can also store restricted-access waste (classified information, high radioactivity levels, or other criteria) as approved by waste management personnel.

**Summary of Manzano Storage Facility Operations in CY2002**

During CY2002, operations at the Manzano Storage Facility were consistent with CY2001 operations and impacts analyzed in the SWEIS. SNL/NM made no major additions or modifications to the facility during CY2002. No new capabilities were introduced, and hazards and hazard controls remained typical of laboratory and industrial environments.

It is currently anticipated that, in CY2004, a large portion of the material stored at the Manzano Storage Facility will be moved to the Auxiliary Hot Cell Facility for processing. This, in turn, would increase the movement of material in and out of the Manzano Storage Facility; however, it is not anticipated that any increase in hazards or hazard controls would result from the planned movement.

(SNL, 2003e)

## *5.5.2 National Solar Thermal Test Facility*

The National Solar Thermal Test Facility is an area of ~115 ac (46.5 ha) that includes solar furnaces, parabolic dishes, parabolic troughs, and a field of 218 computer-controlled heliostats which reflect concentrated solar energy onto a 200-ft (61-m) tower. The complex includes a multistory support building with a basement.

(Kuzio, 2001)

**Current Operations and Capabilities**

Test operations at the National Solar Thermal Test Facility provide research in high temperature and high thermal flux for solar applications, investigation of the thermophysical properties of materials, measurement of the thermal performance of components, systems, and materials, measurement of the effects of aerodynamic heating on radar transmission, and related investigations. The facility also provides large-scale optics for astronomical observations and atmospheric sounding.

**Summary of National Solar Thermal Test Facility Operations in CY2002**

During CY2002, operational levels at the National Solar Thermal Test Facility were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility in CY2002. No new capabilities were introduced, and hazards and hazard controls remained typical of standard laboratory and industrial environments.

(SNL, 2003e)

## *5.5.3 Exterior Intrusion Detection and Assessment Test Field*

The Exterior Intrusion Detection and Assessment Test Field includes several mobile offices, support trailers, a parking lot, and a sensor test area.

**Current Operations and Capabilities**

The Exterior Intrusion Detection and Assessment Test Field provides the capability to test various intrusion detection sensors for use by DOE, DoD, and the private sector. Routine operations at the Exterior Intrusion Detection and Assessment Test Field include tests and evaluations of equipment and techniques for intrusion detection and field modifications to meet test specifications.

**Summary of Exterior Sensor Field Operations in CY2002**

During CY2002, operational levels at the Exterior Intrusion Detection and Assessment Test Field were consistent with CY2001 operations and at or below activity levels analyzed in the SWEIS. SNL/NM constructed no major additions or modifications to the facility during CY2002. Hazards and hazard controls remained typical of standard laboratory and industrial environments.

(SNL, 2003e)

## *5.5.4 Other Notable Facilities in Permitted Areas*

Table 5-1 lists other notable SNL/NM facilities included in the overall SWEIS analysis of SNL/NM facilities and operations. The facilities are located on land permitted from the USAF.

**Table 5-1. Other Facilities on Land Permitted from the U.S. Air Force***

| Facility Name | Facility Location |
|---|---|
| Salvage Reapplication Yard | West of Technical Area IV |
| Explosives Storage Igloos | |
| Explosives Machining Test Facility Complex | Coyote Test Field |
| Explosive Test Facility | |
| Vat Tank Facility Complex | |
| Shock Thermodynamics Applied Research Facility | |
| Coyote Canyon Headquarters | |
| Large Melt Facility Complex (remained inactive during CY2002) | |
| Antenna Measurement Facility | |
| Earth Strain Meter Facility | |
| Electro Explosive Research Facility | |
| Radar Cross Section Measurement Facility | |
| Autonomous Land Vehicle Test Area (now includes some outdoor testing) | |
| Video Technology Lab | |
| Site-Deployable Seismic Verification System | |
| Manzano Saddle Radio Site | Manzano Area |

***** The level and scope of operations at these facilities is defined by the operations descriptions in the land use permit and supporting documents, e.g., Air Force Form 813 (environmental checklists), Air Force environmental assessments, and environmental baseline surveys. Any proposed major change in operations must be documented and approved by both DOE and the Air Force.
Source: SNL, 1999a.

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# CHAPTER 6.0
# REFERENCES

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# 6.0 REFERENCES

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# APPENDIX A
# SUMMARY OF ACTIVITIES AT SNL/NM INDIVIDUAL LABORATORIES

**CONTENTS**

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# Appendix A
# Summary of Activities at SNL/NM Individual Laboratories

## A.1 Introduction

This appendix provides updated information on the activities of individual, general, special, and highbay laboratories at SNL/NM, including laboratories in facilities designated as “Notable Facilities” and “Selected Facilities” in the Site-Wide Environmental Impact Statement (SWEIS) (DOE, 1999).

The information compiled in this appendix was obtained from the Primary Hazard Screening (PHS) program, an element of SNL/NM’s Integrated Safety Management System (ISMS), and from existing, unclassified, SNL/NM facility databases and information resources. It represents SNL/NM laboratories that have prepared PHSs since publication of the SNL/NM Facilities and Safety Information Document in 1999 (SNL, 1999). The PHS program provides a documented output of a hazards analysis process, in which one or more qualified individuals familiar with an operation identifies the hazards, the major requirements for hazard controls, and the laboratory’s or operation’s hazard category.

All the laboratories included in this appendix are categorized as having either standard industrial hazards (SIH) or low (nonnuclear) hazards (Low/NN). These categories apply to the activities taking place in the laboratories located within each of the buildings identified and represent the lowest hazard categories at SNL/NM. For security reasons, the appendix does not include information about laboratories in classified buildings or areas. For the same reason, some PHS titles have been retitled.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Processing and Environmental Technology Laboratory (PETL)** | | | | | **151,055 gross square feet/41,244 square feet of lab space** |
| 1 | MPS-Gas Chromatograph Laboratory<br><br>PHS No. SNL0A00384-001 (10/02/00) | Low/NN (COTM, E, H, P, R, T) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with analyses on solids, liquids, head space, and gas mixtures from various engineering and research activities. | DOE/EA-0945, PETL EA |
| 2 | MPS-Analytical Preparation Laboratory<br><br>PHS No. SNL0A00385-001 (11/14/00) | Low (COTM, E, H, P, T) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with sample preparation and general analytical chemistry on solids and liquids from various engineering and research activities. | DOE/EA-0945, PETL EA |
| 3 | MPS-Liquid Chromatograph Laboratory<br><br>PHS No. SNL0A00387-001 (10/05/00) | Low/NN (COTM, E, EN, H, P, T) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with sample preparation and analysis of solids, liquids, and gases from various engineering and research activities. | DOE/EA-0945, PETL EA |
| 4 | MPS-Analytical Instrumentation Laboratory<br><br>PHS No. SNL0A00388-001 (11/14/00) | Low/NN (COTM, E, H, L, NR, P, RF) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with sample analysis on solids and liquids from various engineering and research activities. | DOE/EA-0945, PETL EA |
| 5 | MPS-Materials Development Laboratory<br><br>PHS No. SNL0A00425-001 (10/18/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0945, PETL EA |
| 6 | MPS-Hybrid Organic-Inorganic Materials Laboratory<br><br>PHS No. SNL0A00426-002 (10/05/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0945, PETL EA |

***Key to Hazard Class and Type:** **B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Processing and Environmental Technology Laboratory (PETL) (Continued)** | | | | | **151,055 gross square feet/41,244 square feet of lab space** |
| 7 | MPS-Hybrid Organic-Inorganic Materials Laboratory<br><br>PHS No. SNL9A00048-004 (11/20/00) | Low/NN (COTM, E, H) | • Defense Programs<br>• Work for Others | This lab's capabilities include synthesizing monomers, polymers and materials, developing new membranes, and conducting basic chemical operations. | DOE/EA-0945, PETL EA |
| 8 | MPS-Jamison PETL Laboratory<br><br>PHS No. SNL9A00053-005 (12/04/00) | Low/NN (COTM, E, H) | • Defense Programs<br>• Work for Others | This lab's capabilities include synthesizing monomers, polymers and materials, and conducting basic chemical operations. | DOE/EA-0945, PETL EA |
| 9 | MPS-Thermal Processing Lab<br><br>PHS No. SNL0A00391-004 (10/10/00) | Low/NN (COTM, T) | • Defense Programs<br>• Work for Others | This lab provides thermal processing of ceramic materials and supports SNL/NM with sample preparation. | DOE/EA-0945, PETL EA |
| 10 | MPS-Sample Preparation and Microscopy Lab<br><br>PHS No. SNL0A00392-001 (10/08/00) | Low/NN (COTM, E, H) | • Defense Programs<br>• Work for Others | This lab provides sample preparation of specimens for microscopy. | DOE/EA-0945, PETL EA |
| 11 | MPS-Encapsulants and Foam Development Laboratory<br><br>PHS No. SNL0A00400-001 (10/09/00) | Low/NN (COTM, E, H, P, T) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with sample analysis on encapsulants and foams from various engineering and research activities. | DOE/EA-0945, PETL EA |
| 12 | MPS-Mass Spectrometry Laboratory<br><br>PHS No. SNL0A00403-001 (11/17/00) | Low/NN (COTM, E, H, P) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with analyses on solids, liquids, and gas mixtures from various disciplines. | DOE/EA-0945, PETL EA |

***Key to Hazard Class and Type:** **B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Processing and Environmental Technology Laboratory (PETL) (Continued)** | | | | | **151,055 gross square feet/41,244 square feet of lab space** |
| 13 | MPS-Focused Ion Beam/Scanning Electron Microscope Lab<br><br>PHS No. SNL0A00404-001 (09/26/00) | Low/NN (E, H, NR, RGD) | • Defense Programs<br>• Work for Others | This lab provides SNL/NM with the dual-beam Focused Ion Beam/Scanning Electron Microscope (FIB/SEM) capability for materials characterization. This laboratory is used to prepare samples for FIB/SEM examination and to perform the actual FIB/SEM analyses on various materials. | DOE/EA-0945, PETL EA |
| 14 | MPS-Welding Process Laboratory<br><br>PHS No. SNL0A00405-001 (09/19/00) | Low/NN (COTM, E, H, P, T) | • Defense Programs<br>• Work for Others | This lab provides SNL/NM with the capability to conduct welding process materials research and development. | DOE/EA-0945, PETL EA |
| 15 | MPS-NMR Lab<br><br>PHS No. SNL0A00430-002 (12/04/00) | Low/NN (E, H, RF) | • Defense Programs<br>• Work for Others | This lab supports SNL/NM with analyses of both solid and solution samples. | DOE/EA-0945, PETL EA |
| 16 | MPS-Surface Preparation Laboratory<br><br>PHS No. SNL0A00457-001 (12/06/00) | Low/NN (COTM, E, H, P, T) | • Defense Programs<br>• Work for Others | This laboratory cleans and prepares samples for surface analysis in support of weapons development and internal research. Instrumentation in this laboratory is also used to perform surface profiles, surface photography, and measure surface adhesion. | DOE/EA-0945, PETL EA |
| 17 | MPS-TEM Lab<br><br>PHS No. SNL0A00460-001 (11/14/00) | Low/NN (COTM, E, H, NR, RGD) | • Defense Programs<br>• Work for Others | This laboratory supports SNL/NM with an electron microscope facility and an adjacent dark room. | DOE/EA-0945, PETL EA |
| 18 | MPS-Micro-systems Laser Process Laboratory<br><br>PHS No. SNL0A00463-001 (12/04/00) | Low/NN (COTM, E, H, L, NR) | • Defense Programs<br>• Work for Others | This lab provides SNL/NM with the capability to research and develop welding process materials. | DOE/EA-0945, PETL EA |

***Key to Hazard Class and Type: B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Processing and Environmental Technology Laboratory (PETL) (Continued)** | | | | | **151,055 gross square feet/41,244 square feet of lab space** |
| 19 | MPS-Building (Retitled) Laboratory<br><br>PHS No. SNL0A00466-001 (03/20/00) | Low/NN (E, H, L, P, NR, T) | • Defense Programs<br>• Work for Others | This lab provides SNL/NM with the capability to conduct material analysis with a laser and infrared spectroscopy. | DOE/EA-0945, PETL EA |
| 20 | MPS-Biosensor Development Lab<br><br>PHS No. SNL0A00476-001 (11/10/00) | Low/NN (B, E, H, L, P, NR, T) | • Defense Programs<br>• Work for Others | This lab provides SNL/NM with the capability to develop and characterize biological sensors for biological warfare agent detection and biomedical applications. | DOE/EA-0945, PETL EA |
| 21 | Advanced Packaging Laboratory<br><br>PHS No. SNL1A00170-001 (06/18/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0945, PETL EA |
| 22 | MEMS Research Laboratory<br><br>PHS No. SNL1A00037-001 (04/16/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for the development of back-end MEMS processes and for testing of fluidic devices. | DOE/EA-0945, PETL EA |
| 23 | Microchem Laboratory<br><br>PHS No. SNL1A00031-002 (4/04/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab provides SNL/NM with the capability to do light electronic testing (low power), soldering PC boards, and data acquisition with standard test equipment and computers. | DOE/EA-0945, PETL EA |
| 24 | Building (Retitled) Laboratory<br><br>PHS No. SNL0A00496-001 (11/30/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0945, PETL EA |
| 25 | Chemical Deprocessing and SEM Laboratory<br><br>PHS No. SNL0A00503-001 (02/01/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0945, PETL EA |

***Key to Hazard Class and Type:** **B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Processing and Environmental Technology Laboratory (PETL) (Continued)** | | | | | **151,055 gross square feet/41,244 square feet of lab space** |
| 26 | MPS (Retitled) Laboratory<br><br>PHS No. SNL2A00127-001 (05/20/02) | Low/NN | Defense Programs | This lab supports SNL with analyses on solids, liquids, and gas mixtures from a wide range of disciplines. | ECL/ADM SNA 02-0198, Novel Catalysts for Hydrogen Fuel Cell Applications<br><br>DOE/EA-0945, PETL EA |
| **Tech Area I: Research – Standards Labs and Offices** | | | | | **75,335 gross square feet/37,631 square feet of lab space** |
| 27 | MPS-Dew Point Laboratory<br><br>PHS No. SNL9A00309-001 (11/17/99) | SIH | • Defense Programs<br>• Work for Others | Equipment includes field portable gas analyzers for sampling gas from a container and simultaneously measuring the gas dew point. | ECL/ADM SNA 95-119, Laboratory Operations Materials and Process Sciences Center |
| 28 | MPS-Encapsulant Synthesis Laboratory<br><br>PHS No. SNL9A00319-001 (11/19/99) | SIH | • Defense Programs<br>• Work for Others | This lab is used for synthesis, formulation, and testing of encapsulants, including removable encapsulants and sticky foams. | ECL/ADM SNA 95-119, Laboratory Operations Materials and Process Sciences Center |
| 29 | Organic Materials Synthesis Lab<br><br>PHS No. SNL9A00324-001 (11/22/99) | Low/NN (COTM, M) | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 95-119, Laboratory Operations Materials and Process Sciences Center |
| **Tech Area I: Research and Development Labs and Offices** | | | | | **91,701 gross square feet/23,503 square feet of lab space** |
| 30 | Tflops Repair Facility (Light Electrical Lab)<br><br>PHS No. SNL0A00437-002 (10/17/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | The Intel Tflops Repair Facility is a light electrical lab. Activities involve the use of equipment necessary to determine, diagnose, and repair problems with the tflops power supplies and processor node boards. | DOE/EIS-0281-064, Tflops Repair Facility |
| 31 | Building (Retitled) HARP<br><br>PHS No. SNL2A00051-001 (05/20/02) | Low/NN | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: High Bay Laboratory and Machine Shop** | | | | | **15,401 gross square feet/8,726 square feet of lab space** |
| 32 | W76-1 AF&F<br><br>PHS No. SNL1A00197-003 (11/11/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab supports testing and prototyping of test units for design and model validation. | DOE/EIS-0281 |
| 33 | Flight Testing New Project/Activity<br><br>PHS No. SNL1A00199-002 (11/01/01) | Low/NN | Defense Programs | This lab supports stockpile stewardship activities. | DOE/EIS-0281 |
| 34 | Building (Retitled) HARP<br><br>PHS No. SNL2A00134-001 (06/18/02) | Low/NN | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |
| **Tech Area I: Energy and Environment Building (Systems Research and Development)** | | | | | **145,321 gross square feet/19,471 square feet of lab space** |
| 35 | Light/Computer Lab<br><br>PHS No. SNL9A00276-002 (10/03/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 36 | Light Lab<br><br>PHS No. SNL9A00277-001 (10/11/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 37 | Evaporation Control<br><br>PHS No. SNL0A00297-001 (04/20/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 38 | Water Chemistry Lab<br><br>PHS No. SNL9A00132-003 (08/23/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab activity includes determining the effects of the addition of small quantities of nontoxic chemicals to bodies of water on the rate of evaporation. The chemicals used are both commercially available and produced in small-scale biological reactors which utilize nonpathogenic, naturally-occurring bacteria and fungi. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Energy and Environment Building (Systems Research and Development) (Continued)** | | | | | **145,321 gross square feet/19,471 square feet of lab space** |
| 39 | Light Lab<br><br>PHS No. SNL9A00278-004 (08/08/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 40 | Bldg. (Retitled) HARP<br><br>PHS No. SNL9A00346-001 (12/06/99) | Low/NN (COTM, E, H, NR, RGD) | This PHS is a rollup of program information for the building. | This PHS is a rollup of information for the building. | DOE/EIS-0281 |
| 41 | ECI X-Ray Diffraction Laboratory<br><br>PHS No. SNL9A00296-002 (08/23/00) | Low/NN (COTM, E, H, R, RGD) | • Basic Energy Sciences<br>• Critical infrastructure | This lab supports SNL/NM's catalysis work covering design and simulation, synthesis, characterization, testing and process control. The lab also supports the development of novel catalysts and catalytic processes, including nanocatalysts, biomimetic catalysts, chiral catalysts, fuel cell catalysts, and membrane reactors. | DOE/EIS-0281 |
| **Tech Area I: Medical Facility** | | | | | **13,831 gross square feet/852 square feet of lab space** |
| 42 | Diagnostic Radiography Laboratory<br><br>PHS No. SNL1A00134-001 (04/16/01) | Low/NN (R, COTM) | ES&H Activities | This lab is used by radiographic technologists to perform x-ray examinations, dark room procedures, documentation of x-ray procedures, and pulmonary function tests. | DOE/EIS-0281 |
| 43 | Decontamination Facility<br><br>PHS No. SNL1A00156-001 (06/11/01) | Low/NN (R, COTM) | ES&H Activities | This lab is used to decontaminate and treat radioactive and/or chemically contaminated employees. | DOE/EIS-0281 |
| 44 | Clinical Laboratory<br><br>PHS No. SNL1A00118-001 (04/16/01) | Low/NN (B, COTM) | ES&H Activities | This lab is used by medical technologists for a variety of lab procedures. | DOE/EIS-0281 |
| 45 | Clinical Laboratory-3333<br><br>PHS No. SNL2A00079-001 (05/02/02) | Low/NN | ES&H Activities | This lab is used by medical technologists for a variety of lab procedures. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Medical Facility (Continued)** | | | | | **13,831 gross square feet/852 square feet of lab space** |
| 46 | Diagnostic Radiography Dept.-Medical<br><br>PHS No. SNL2A00097-001 (04/22/02) | Low | ES&H Activities | Registered radiographic technologists perform x-ray examinations, dark room procedures, pulmonary function tests and various administrative duties. | DOE/EIS-0281 |
| 47 | Oxygen Storage Area-Medical<br><br>PHS No. SNL2A00102-001 (05/13/02) | SIH | ES&H Activities | This area stores oxygen cylinders for use by the Health Services Center personnel. | DOE/EIS-0281 |
| 48 | Patient Care/Treatment/Storage Areas<br><br>PHS No. SNL2A00105-001 (05/13/02) | Low | ES&H Activities | This area is used to evaluate/treat occupational and non-occupational illnesses and injuries, comprehensive surveillance examinations, physical therapy, dispensing of medications, and allergy shot injections. | DOE/EIS-0281 |
| 49 | Decontamination Facility-SNL Medical Dept.<br><br>PHS No. SNL2A00128-001 (07/18/02) | Low | ES&H Activities | This lab is used by nurses, physicians and paramedic to decontaminate and medically treat contaminated personnel. | DOE/EIS-0281 |
| **Tech Area I: Metal Mechanical Building** | | | | | **252 gross square feet/0 square feet of lab space** |
| 50 | Coolant Evaporator (Retitled)<br><br>PHS No. SNL2A00233-001 (10/23/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This facility is dedicated to the processing of machine shop coolant. | DOE/EIS-0281 |
| **Tech Area I: Development Shops** | | | | | **39,885 gross square feet/3,501 square feet of lab space** |
| 51 | High Energy Density Welding/Precision Metal, Metal Preparation, Welding and CMI<br><br>PHS No. SNL0A00361-001 (06/28/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-1264, Rapid Reactivation Project EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Energy Development Laboratory** | | | | **8,031 gross square feet/ 6,331 square feet of lab space** | |
| 52 | Department 6211 Linear Cutting Test Facility<br><br>PHS No. SNL1A00321-002 (06/25/02) | Low | Defense Programs | This facility is used to evaluate cutter performance on rock samples. | DOE/EIS-0281 |
| **Tech Area I: CRM Office Building** | | | | **23,413 gross square feet/6,587 square feet of lab space** | |
| 53 | Neutron Generator Fabrication Wing<br><br>PHS No. SNL0A00440-001 (10/13/00) | Low/NN (COTM, E, EX, H, R, RGD, T) | Defense Programs | Facility operations involve the manufacture of neutron generator (NG) subassembly components, and the final assembly and test operations for NG components and assemblies. | DOE/EA-1264, Rapid Reactivation Project EA; DOE/EA-0879, Neutron Generator/Switch Tube Prototyping Relocation EA |
| 54 | Neutron Generator Fabrication Wing<br><br>PHS No. SNL9A00235-004 (04/19/01) | Low/NN (COTM, E, EX, H, R, RGD, T) | Defense Programs | Facility operations involve the manufacture of NG subassembly components and the final assembly and test operations for NG components and assemblies. | DOE/EA-1264, Rapid Reactivation Project EA; DOE/EA-0879, Neutron Generator/Switch Tube Prototyping Relocation EA |
| 55 | Bulking Solvents<br><br>PHS No. SNL2A00086-001 (04/16/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This PHS is in relation to solvent bulking operations at the Neutron Generator Facility. | DOE/EA-1264, Rapid Reactivation Project EA; DOE/EA-0879, Neutron Generator/Switch Tube Prototyping Relocation EA |
| **Tech Area I: Microelectronics Development Lab** | | | | **94,010 gross square feet/33,201 square feet of lab space** | |
| 56 | MDL Electrical Test<br><br>PHS No. SNL9A00028-002 (06/20/00) | Low/NN (E) | Defense Programs | This lab provides both automatic and manual wafer electrical testing. | DOE/EIS-0281 |
| 57 | Light Laboratory<br><br>PHS No. SNL1A00221-001 (09/05/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Activities in this lab involve precision flip chip assembly and die placement. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Microelectronics Development Lab (Continued)** | | | | | **94,010 gross square feet/33,201 square feet of lab space** |
| 58 | MDL MEMS Release and Dry Processing<br><br>PHS No. SNL9A00331-001 (08/02/00) | Low/NN (COTM, P) | Defense Programs | Activities involve exposing full-size wafers or wafer pieces to acids, oxidizers, bases, and solvents. Other activities involve drying, applying coatings to the parts within a glove box, using the super-critical carbon dioxide drying system, or a combination of these methods. Wet-etching trenches into silicon is also performed. | DOE/EIS-0281 |
| 59 | MDL Electronic Lab (retitled)<br><br>PHS No. SNL0A00351-001 (10/27/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab supports SNL/NM with process development and assembly of optoelectronic transceivers. | DOE/EIS-0281-058, Micro-Transmitter |
| 60 | Gamma Cell (retitled)<br><br>PHS No. SNL0A00353-001 (10/27/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 99-056-006, Gamma Cell |
| **Tech Area I: Environmental Testing Laboratory** | | | | | **55,988 gross square feet/29,339 square feet of lab space** |
| 61 | 9100 Ultrasonic Testing<br><br>PHS No. SNL2A00260-002 (10/19/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to test materials, joints, and subsystems for imperfections using ultrasonics. | DOE/EIS-0281 |
| 62 | HARP for the Building (Retitled)<br><br>PHS No. SNL2A00202-001 (10/29/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |
| **Tech Area I: Aerothermodynamics Laboratory** | | | | | **19,473 gross square feet/14,232 square feet of lab space** |
| 63 | Small Scale Fire Experiments<br><br>PHS No. SNL0A00270-002 (03/15/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 0-032, Small Scale Fire Experiments |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Aerothermodynamics Laboratory (Continued)** | | | | | **19,473 gross square feet/14,232 square feet of lab space** |
| 64 | High Temperature or Speed Apparatus<br><br>PHS No. SNL1A00232-002 (02/05/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 0-032, Small Scale Fire Experiments |
| 65 | Thermodynamic and Fluid Dynamic Measurements<br><br>PHS No. SNL2A00040-001 (02/14/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 0-032, Small Scale Fire Experiments |
| 66 | Diffusion Flame Experiments<br><br>PHS No. SNL2A00041-001 (08/09/02) | Low | Defense Programs | Temperature measurements in small, bench-top-scale flames are conducted. | ECL/ADM SNA 0-032, Small Scale Fire Experiments |
| 67 | HARP for the Building (Retitled)<br><br>PHS No. SNL2A00241-001 (11/27/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | ECL/ADM SNA 0-032, Small Scale Fire Experiments |
| **Tech Area I: Nuclear Material Transport and Storage Facility** | | | | | **19,713 gross square feet/5,049 square feet of lab space** |
| 68 | Microsystems Integration Characterization Lab (MICL)<br><br>PHS No. SNL1A00151-001 (5/28/02) | Low/NN (E, COTM) | Defense Programs | This lab performs micro assembly and electronic testing. | SNA 02-0199 |
| **Tech Area I: Environmental Health Laboratory** | | | | | **15,511 gross square feet/3,189 square feet of lab space** |
| 69 | Radiation Protection Dosimetry Laboratory<br><br>PHS No. SNL1A00326-002 (12/18/02) | Low | ES&H Activities | Lab for processing radiation dosimeters and collection/storing/shipping of bioassay samples for radiological analysis. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Micro Electronics Labs and Offices (Neutron Generator Facility)** | | | | | **29,943 gross square feet/8,918 square feet of lab space** |
| 70 | HARP<br><br>PHS No. SNL2A00104-001 (11/12/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |
| 71 | Electronic Neutron Generator Assembly<br><br>PHS No. SNL9A00242-002 (08/20/99) | Low/NN (COTM, E, EX, H, R, RGD, T) | Defense Programs | Facility operations involve the manufacture of NG subassembly components and the final assembly and test operations for NG components and assemblies. | DOE/EA-1264, Rapid Reactivation Project |
| 72 | Neutron Development<br><br>PHS No. SNL2A00062-001 (05/09/02) | Low | Defense Programs | This lab supports the development of neutron generators. | DOE/EA-1264, Rapid Reactivation Project |
| 73 | B104-Manual Operation of PPE Compactor<br><br>PHS No. SNL1A00298-001 (01/22/02) | Low | Defense Programs | This PHS involves the use of a PPE compactor that supports neutron generator development. | DOE/EA-1264, Rapid Reactivation Project |
| 74 | NG Finished Piece Parts Manufacturing<br><br>PHS No. SNL1A00307-002 (01/16/02) | Low | Defense Programs | This lab manufactures finished piece parts intended for the assembly of neutron generators. | DOE/EA-1264, Rapid Reactivation Project |
| 75 | Analytical and Tritium Technologies<br><br>PHS No. SNL2A00021-001 (03/18/02) | Low | Defense Programs | This lab performs sample analysis on nonradioactive and radioactive components. | DOE/EA-1264, Rapid Reactivation Project |
| 76 | Neutron Tube Manufacturing<br><br>PHS No. SNL2A00029-002 (05/24/02) | Low | Defense Programs | This lab performs acid etching and vapor phase. | DOE/EA-1264, Rapid Reactivation Project |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Micro Electronics Labs and Offices (Neutron Generator Facility) Continued** | | | | | **29,943 gross square feet/8,918 square feet of lab space** |
| 77 | Operations, Maintenance and Functional Tests for Neutron Producing Devices<br><br>PHS No. SNL2A00032-001 (03/01/02) | Low | Defense Programs | Neutron tube and generator testing. | DOE/EA-1264, Rapid Reactivation Project |
| **Tech Area I: Electro-Magnetic Environmental Simulation** | | | | | **6,749 gross square feet/5,476 square feet of lab space** |
| 78 | Bldg. (retitled) Operations and Maintenance<br><br>PHS No. SNL1A00320-001 (12/06/01) | Low | Defense Programs | This lab is used for electromagnetic testing. | DOE/EIS-0281 |
| **Tech Area I: Radio Frequency Facility** | | | | | **15,855 gross square feet/7,473 square feet of lab space** |
| 79 | (retitled) Highbay-Bonded Storage<br><br>PHS No. SNL0A00043-001 (02/25/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-1264-001, Relocation of Bonded Storage |
| **Tech Area I: Independent Vulnerability Assessment Facility** | | | | | **9,609 gross square feet/ 1,188 square feet of lab space** |
| 80 | Light Electrical Lab<br><br>PHS No. SNL0A00051-002 (04/06/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-042, Research, Development, and Testing |
| 81 | Environmental VTR Test Lab<br><br>PHS No. SNL0A00422-001 (09/25/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-019, Automatic Target Recognition |
| 82 | Building (retitled) HARP<br><br>PHS No. SNL2A00030-001 (03/04/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Independent Vulnerability Assessment Facility (Continued)** | | | | | **9,609 gross square feet/ 1,188 square feet of lab space** |
| 83 | Light Electrical Lab (retitled)<br><br>PHS No. SNL2A00295-001 (11/20/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab performs design, assembly, and testing, including circuits and software for the SAASM software development system. | DOE/EIS-0281 |
| **Tech Area I: Reclamation Warehouse and Office** | | | | | **13,493 gross square feet/9,237 square feet of lab space** |
| 84 | Seal Test Lab<br><br>PHS No. SNL0A00365-001 (08/11/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Normal test activities include verifying seal performance, leak-testing seals and containers, and measuring the physical properties. | DOE/EIS-0281 |
| **Tech Area I: Instrumentation Systems Laboratory** | | | | | **147,090 gross square feet/44,754 square feet of lab space** |
| 85 | Light Electronics Laboratory<br><br>PHS No. SNL0A00292-002 (04/21/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Activities at this light electronic lab include software development; development, assembly, and testing of custom electronics hardware; and small mechanical part assembly. | DOE/EIS-0281-042, Research, Development, and Testing |
| 86 | Hype-Spectral Laboratory<br><br>PHS No. SNL1A00058-001 (04/13/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Activities at this lab include optical payload assembly, imaging spectrometry (laser and non-laser), and thin film mirror experiments. | DOE/EIS-0281-042, Research, Development, and Testing |
| 87 | Module Tester Laboratory<br><br>PHS No. SNL1A00029-001 (4/06/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to design, assemble, test, and repair prototype flight electronic equipment. | DOE/EIS-0281-042, Research, Development, and Testing |
| 88 | GPS Lens Test Laboratory<br><br>PHS No. SNL1A00061-001 (04/13/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used primarily in optical testing of global positioning system (GPS) optical components, as well as a variety of satellite optics. | DOE/EIS-0281-042, Research, Development, and Testing |
| 89 | Light Mechanical Laboratory<br><br>PHS No. SNL9A00211-002 (09/02/99) | SIH | Defense Programs | This lab is used to assemble, test, and repair prototype flight hardware. | DOE/EIS-0281-051, Fiber Optic Control Module |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Energy Technology Office and Building** | | | | | **140,216 gross square feet/45,723 square feet of lab space** |
| 90 | Ground Based SAR Applications Testbed<br><br>PHS No. SNL9A00186-001 (08/02/99) | SIH | Defense Programs | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-055, SAR Equipment |
| 91 | Ground Based SAR Applications Testbed<br><br>PHS No. SNL9A00187-001 (08/02/99) | SIH | Defense Programs | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-055, SAR Equipment |
| 92 | Sandia Ground Equipment (SAGE) Laboratory<br><br>PHS No. SNL1A00150-001 (6/01/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-055, SAR Equipment |
| 93 | Light Electronics Laboratory<br><br>PHS No. SNL1A00173-001 (6/01/01) | Low/NN (E, COTM) | Defense Programs | This lab conducts work with digital and analog electronics. | DOE/EIS-0281-055, SAR Equipment |
| 94 | Ground Based SAR Applications Testbed<br><br>PHS No. SNL9A00188-001 (08/02/99) | SIH | Defense Programs | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-055, SAR Equipment |
| 95 | Light Electrical Lab<br><br>PHS No. SNL9A00283-002 (08/02/99) | Low/NN (E) | Defense Programs | The laboratory is used to design, assemble, test, and repair prototype flight electronic equipment. | DOE/EIS-0281-035, Predator UAV |
| 96 | Test Lab<br><br>PHS No. SNL0A00359-001 (06/28/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab performs mechanical assembly and software testing. | DOE/EIS-0281-035, Predator UAV |
| 97 | Optoelectronics Lab<br><br>PHS No. SNL0A00504-001 (12/20/00) | SIH | Defense Programs | This lab supports the characterization of optoelectronic equipment and components. | DOE/EIS-0281-035, Predator UAV |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Energy Technology Office and Building (Continued)** | | | | | **140,216 gross square feet/45,723 square feet of lab space** |
| 98 | Chemical/Deprocessing/SEM Lab<br><br>PHS No. SNL0A00503-002 (01/28/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for sample preparation, examination, and testing of integrated circuits, electronic circuit assemblies, fiber optic sensors, and other components. | DOE/EIS-0281 |
| 99 | JTA Transducer Office and Lab<br><br>PHS No. SNL1A00063-003 (12/23/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for evaluation and qualification of Joint Test Assembly componentry. | DOE/EIS-0281 |
| 100 | Laser Microscopy Lab<br><br>PHS No. SNL1A00227-001 (11/08/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to perform failure analysis on microelectronics devices. | DOE/EIS-0281 |
| 101 | Light Electrical Lab<br><br>PHS No. SNL2A00160-001 (06/11/02) | Low | Defense Programs | This lab performs design, assembly and testing, including circuits and software. | DOE/EIS-0281 |
| 102 | Light Electrical Lab<br><br>PHS No. SNL2A00162-001 (06/25/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to design, assemble, test, and repair various types of RF and electronic equipment. | DOE/EIS-0281 |
| 103 | Light Electrical Lab<br><br>PHS No. SNL2A00163-001 (06/24/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab tests circuits. | DOE/EIS-0281 |
| **Tech Area I: Compound Semiconductor Research Laboratory** | | | | | **39,657 gross square feet/27,600 square feet of lab space** |
| 104 | Staff Machine Shop<br><br>PHS No. SNL0A00377-002 (08/24/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-001, MicroSensor R&D<br><br>ECL/ADM SNA 0-035, EmCore System |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Compound Semiconductor Research Laboratory (Continued)** | | | | | **39,657 gross square feet/27,600 square feet of lab space** |
| 105 | Material and Device Characterization Lab<br><br>PHS No. SNL1A00213-002 (09/19/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-001, MicroSensor R&D<br><br>ECL/ADM SNA 0-035, EmCore System |
| 106 | CSRL<br><br>PHS No. SNL0A00401-001 (12/20/00) | SIH | • Defense Programs<br>• Nonproliferation and Material Control<br>• Emerging Threats<br>• Energy and Critical Infrastructure | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281-001, MicroSensor R&D<br><br>ECL/ADM SNA 0-035, EmCore System |
| 107 | Wave Test Lab<br><br>PHS No. SNL2A00164-001 (08/12/02) | Low | Defense Programs | Activities in this lab involve microwave electronic MEMSL semiconductor device testing. | DOE/EIS-0281-001, MicroSensor R&D<br><br>ECL/ADM SNA 0-035, EmCore System |
| **Tech Area I: Mail Services, Inspection, & Power Development Lab** | | | | | **100,458 gross square feet/32,860 square feet of lab space** |
| 108 | Lithium/Ambient Cell/Battery Test Lab<br><br>PHS No. SNL9A00356-002 (05/22/00) | Low/NN (COTM, E) | • Defense Programs<br>• Basic Energy Sciences | This lab supports SNL/NM with testing of lithium ambient cell/batteries. | DOE/EIS-0281-025, Battery Development<br><br>DOE/EIS-0281-046, Rechargeable Batteries |
| 109 | Lithium Ion Cell Materials<br><br>PHS No. SNL0A00429-001 (10/12/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab manufactures materials for lithium ion cells. | DOE/EIS-0281-025, Battery Development<br><br>DOE/EIS-0281-046, Rechargeable Batteries |
| 110 | Ultrasonic Testing<br><br>PHS No. SNL0A00449-001 (10/17/00) | Low/NN (COTM, E, T) | Defense Programs | Several labs provide space for testing materials, joints, and subsystems for imperfections using eddy current, ultrasonics, and other techniques. Development and staging work is also done. | DOE/EIS-0281-025, Battery Development<br><br>DOE/EIS-0281-046, Rechargeable Batteries |
| 111 | Lithium Ambient Cell/Battery Test Lab<br><br>PHS No. SNL2A00061-001 (03/21/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab tests lithium ambient cell/batteries. | DOE/EIS-0281-025, Battery Development<br><br>DOE/EIS-0281-046, Rechargeable Batteries |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Mail Services, Inspection, & Power Development Lab (Continued)** | | | | | **100,458 gross square feet/32,860 square feet of lab space** |
| 112 | Battery In-Series Testing Lab<br><br>PHS No. SNL2A00228-001 (10/17/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab tests batteries in a series. | DOE/EIS-0281-025, Battery Development<br><br>DOE/EIS-0281-046, Rechargeable Batteries |
| **Tech Area I: Robotics Manufacturing Science and Engineering Lab (RMSEL)** | | | | | **85,758 gross square feet/17,421 square feet of lab space** |
| 113 | Pilot Plant (retitled)<br><br>PHS No. SNL0A00301-004 (05/01/00) | SIH | • Defense Programs<br>• DOE Integrated Activities<br>• LDRD<br>• Work for Others | This lab performs research and development in robotics for disassembling conventional munitions (e.g., artillery shells). | DOE/EA-0885, RMSEL EA |
| 114 | Micro Robot Laboratory<br><br>PHS No. SNL1A00219-001 (08/01/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This is a light electro-mechanical lab for the development of sensor technology and robotic systems. | DOE/EA-0885, RMSEL EA |
| 115 | Light Electrical Lab<br><br>PHS No. SNL0A00061-002 (03/08/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 116 | Light Electrical Lab<br><br>PHS No. SNL0A00062-001 (01/21/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This is a light electrical lab for sensor development work. Activities include soldering and light fabrication. | DOE/EA-0885, RMSEL EA |
| 117 | Motion Lab (retitled)<br><br>PHS No. SNL9A00284-002 (10/05/00) | Low/NN (K) | • LDRD<br>• DOE Integrated Activities<br>• Work for Others | This lab is a testbed for evaluation of certain prototype parts, which are tested to determine the bearing coefficient of friction and a universal joint assembly. | DOE/EA-0885, RMSEL EA |
| 118 | Dextrous Manipulator Laboratory<br><br>PHS No. SNL0A00037-001 (2/21/00) | SIH | • DOE Integrated Activities<br>• LDRD<br>• Work for Others | This laboratory is used to develop dextrous manipulator applications for bomb disposal involving motor vehicles. | DOE/EA-0885, RMSEL EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Robotics Manufacturing Science and Engineering Lab (RMSEL) (Continued)** | | | | | **85,758 gross square feet/17,421 square feet of lab space** |
| 119 | Light Electrical Sensors Lab<br><br>PHS No. SNL0A00058-001 (2/21/00) | Low | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 120 | Mega-Lab Robotic Plasma Torch<br><br>PHS No. SNL9A00108-001 (09/01/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 121 | Robocal Lab<br><br>PHS No. SNL9A00281-001 (11/15/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 122 | Electrical Projects Lab<br><br>PHS No. SNL0A00278-002 (04/03/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 123 | Water Technology<br><br>PHS No. SNL0A00005-001 (02/10/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 124 | Department Projects (retitled)<br><br>PHS No. SNL0A00041-002 (02/24/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 125 | Glovebox Operations (retitled)<br><br>PHS No. SNL9A00282-001 (11/19/99) | Low/NN (L, M, P, T) | • Work for Others<br>• DOE Integrated Activities | Glovebox research and development operations are performed. | DOE/EA-0885, RMSEL EA |
| 126 | Networked Robots (retitled)<br><br>PHS No. SNL0A00272-002 (03/27/00) | Low/NN (NCA) | • Integrated DOE Activities<br>• Work for Others | Activities involve the use of robots or robotic systems, rapid prototyping and systems analysis, and development of sensors and sensor utilization software. | DOE/EA-0885, RMSEL EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Robotics Manufacturing Science and Engineering Lab (RMSEL) (Continued)** | | | | | **85,271 gross square feet/17,421 square feet of lab space** |
| 127 | Sensor Laboratory (retitled)<br><br>PHS No. SNL0A00058-001 (03/02/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 128 | Sensors Project (retitled)<br><br>PHS No. SNL0A00121-001 (03/15/00) | Low/NN (NCA) | Work for Others | Activities include development and use of robots or robotic systems. | DOE/EA-0885, RMSEL EA |
| 129 | Paradex System<br><br>PHS No. SNL0A00409-001 (10/03/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 130 | Paradex I System<br><br>PHS No. SNL0A00410-001 (10/02/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 131 | Paradex II System<br><br>PHS No. SNL0A00406-001 (10/03/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0885, RMSEL EA |
| 132 | IEDD Lab<br><br>PHS No. SNL0A00415-001 (09/05/00) | Low/NN (K) | • Integrated DOE Activities<br>• Work for Others | This lab supports SNL/NM in mobile robotics that have been modified or developed to assist military agencies or civil police groups in bomb disposal and anti-terrorist activities. | DOE/EA-0885, RMSEL EA |
| 133 | Staubli Robotic Integration Lab<br><br>PHS No. SNL1A00270-004 (10/17/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab employs robotic work cells to perform development and demonstration of tooling and software. | DOE/EA-0885, RMSEL EA |
| 134 | Micro/Nano Technologies Lab<br><br>PHS No. SNL1A00282-002 (06/25/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab researches, develops, and tests new hardware and software in support of micromanipulation applications. | DOE/EA-0885, RMSEL EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Robotics Manufacturing Science and Engineering Lab (RMSEL) (Continued)** | | | | | **85,271 gross square feet/17,421 square feet of lab space** |
| 135 | Light Electrical Lab and Office<br><br>PHS No. SNL1A00293-002 (12/02/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Work in this lab involves electro-mechanical assembly and light soldering. | DOE/EA-0885, RMSEL EA |
| 136 | Research and Development Assembly Lab<br><br>PHS No. SNL1A00294-001 (12/23/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to design, assemble, test, and repair various types of prototype hardware systems used in intelligent machine technologies. | DOE/EA-0885, RMSEL EA |
| 137 | Manufacturing Software Development And Electro-Mechanical Assembly Lab<br><br>PHS No. SNL2A00273-001 (12/16/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | The primary activity at this lab is software development. However, some light electromechanical assemblies take place. | DOE/EA-0885, RMSEL EA |
| **Tech Area I: Integrated Materials Research Lab** | | | | | **146,332 gross square feet/51,614 square feet of lab space** |
| 138 | Sensor Laboratory<br><br>PHS No. SNL1A00119-002 (08/24/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 139 | MPS Research Bay (retitled)<br><br>PHS No. SNL9A00047-002 (06/01/00) | Low/NN (COTM, EN, M, P, T, THM) | Defense Programs | Studies include synthetic chemistry using organic and inorganic chemicals (solids, flammables, and nonflammables). | DOE/EIS-0281 |
| 140 | Acoustic Wave Sensor R&D Lab<br><br>PHS No. SNL1A00064-001 (08/29/01) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Work in this lab involves the development of prototype mechanical and electronic sensors. | DOE/EIS-0281 |
| 141 | MPS-Encapsulants Characterization Lab<br><br>PHS No. SNL9A00057-002 (08/15/01) | Low/NN (E, COTM) | Defense Programs | This lab is used for the characterization and study of material properties such as polymer encapsulants. | DOE/EA-0885, RMSEL EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Integrated Materials Research Lab (Continued)** | | | | | **146,332 gross square feet/51,614 square feet of lab space** |
| 142 | Surface Analysis Lab<br><br>PHS No. SNL0A00065-002 (10/30/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 143 | Laboratory<br><br>PHS No. SNL9A00270-001 (06/01/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |
| 144 | MPS-IFM<br><br>PHS No. SNL0A00446-001 (10/17/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab performs research on interfacial force. Small samples of solid materials (typically 1 cc) of rubbers, metals, composites etc. are probed with a 1-micron-radius tip to generate force, creep and relaxation data on a sub-nanometer (dl) and micro-Newton (F) scale. | DOE/EIS-0281 |
| 145 | MPS-Nanomaterial Synthesis, Characterization, and Processing Laboratory<br><br>PHS No. SNL1A00020-002 (03/15/02) | Low | Work For Others | This lab uses various organic solvents under heat and/or pressure to form particles of metals and metal oxides. | DOE/EIS-0281 |
| 146 | Acoustic R&D Lab<br><br>PHS No. SNL1A00092-003 (12/02/02) | Low | Defense Programs | This lab develops acoustic sensors for detection of chemical and biochemical analytes in liquid gases. | DOE/EIS-0281 |
| 147 | Microbiological Research Lab<br><br>PHS No. SNL1A00142-003 (10/10/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for research into microorganisms and recombinant DNA. | ECL/ADM, SNA 03-0041, Characterization of Biological Materials |
| 148 | Microsystems Integration Lab<br><br>PHS No.SNL1A00306-002 (08/08/02) | Low | Defense Programs<br>Work For Others | This lab is used for development, construction, and testing of demo systems for integrated Microsystems. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Integrated Materials Research Lab (Continued)** | | | | | **146,332 gross square feet/51,614 square feet of lab space** |
| 149 | Materials Synthesis Research Lab<br><br>PHS No. SNL2A00004-002 (10/10/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for synthesis of materials and composites used in research. | DOE/EIS-0281 |
| 150 | Light Lab<br><br>PHS No. SNL2A00106-001 (07/30/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab uses a general purpose sample preparation system that selectively filters and concentrates suspended particles having a selected range of surface charge density, size, and polarizability. | DOE/EIS-0281 |
| 151 | Light Lab<br><br>PHS No. SNL2A00181-001 (07/31/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab develops optically based chemical and biological microsensors. | DOE/EIS-0281 |
| 152 | Lithography and Thin Film Deposition Lab<br><br>PHS No. SNL2A00184-003 (10/29/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab works with micro-fabrication and thin film deposition. | DOE/EIS-0281 |
| 153 | MPS-Organic Polymers Aging Lab<br><br>PHS No. SNL2A00290-001 (11/14/02) | Low | • Defense Programs<br>• Work for Others | This lab studies and evaluates the aging characteristics of various organic polymers, most commonly rubbers and plastics. | DOE/EIS-0281 |
| **Tech Area I: Explosive Components Facility** | | | | | **100,308 gross square feet/41,495 square feet of lab space** |
| 154 | Scanning Electron Microscope (SEM)/MET Lab (retitled)<br><br>PHS No. 9713955763-004 (04/04/00) | Low/NN (E, EN, EX, M, P, RGD, T) | • Defense Programs<br>• Work for Others | Features include the SEM and metallographic preparation lab. | DOE/EA-1264, Rapid Reactivation Project Environmental Assessment<br><br>DOE/EIS-0281 |
| 155 | GC/MS Lab<br><br>PHS No. 9713952727-004 (03/07/00) | Low/NN (E, EN, EX, M, P, T) | • Defense Programs<br>• Work for Others | This lab contains a gas chromatograph/mass spectrometer. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Explosive Components Facility (Continued)** | | | | | **100,308 gross square feet/41,495 square feet of lab space** |
| 156 | Characterization Lab (retitled)<br><br>PHS No. 9713949631-004 (03/29/00) | Low/NN (E, EN, EX, P, R, T) | • Defense Programs<br>• Work for Others | This is an explosives characterization lab; activities generate hazardous waste. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 157 | Dynamics Lab (retitled)<br><br>PHS No. 9714152886-004 (03/22/00) | Low/NN (B, E, EN, EX, M, NCA, P, T, THM) | • Defense Programs<br>• Work for Others | Research involves material dynamics. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 158 | Component Testing (retitled)<br><br>PHS No. 972033649-004 (05/03/00) | Low/NN (E, EN, EX, L, N, NCA, P, THM) | • Defense Programs<br>• Work for Others | Activities include component testing and equipment development. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 159 | Thermal Testing Lab (retitled)<br><br>PHS No. 9714151446-004 (04/26/00) | Low/NN (CR, E, EN, EX, L, M, P, T, THM) | • Defense Programs<br>• Work for Others | Activities include optical diagnostic work. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 160 | Hydrocompactor (retitled)<br><br>PHS No. 9715656626-004 (05/03/00) | Low/NN (COTM, E, EN, EX, M, N, P, THM) | • Defense Programs<br>• Work for Others | Activities include materials research and development. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 161 | Production Test Lab<br><br>PHS No. SNL9A00320-003 (03/21/00) | Low/NN (COTM, E, EX, L, M, P) | • Defense Programs<br>• Work for Others | This is a production test lab. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 162 | Neutron Generator Conversion Project<br><br>PHS No. 9717534834-003 (05/31/02) | Low/NN | • Defense Programs | Lab activities include refurbishment and packaging of neutron generators. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |
| 163 | Neutron Generator Test Facility<br><br>PHS No. SNL2A00052-001 (04/12/02) | Low/NN | • Defense Programs | Special projects and studies using neutron generators and components. | DOE/EIS-0281<br><br>DOE/EA-1264, Rapid Reactivation Project Environmental Assessment |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area I: Microsystems and Engineering Sciences Applications (MESA) Complex** | | | | | **100,308 gross square feet/41,495 square feet of lab space** |
| 164 | Microfab (retitled)<br><br>PHS No. SNL0A00016-001 (01/20/00) | Moderate<br><br>(COTM, M, P) | Defense Programs | The Microfab provides a cleanroom facility capable of war reserve (WR) component production, as well as the integration of research, prototyping, and production functions. | DOE/EA-1335, MESA EA |
| 165 | HARP (Microfab & Transition Area)<br><br>PHS No. SNL0A00313-002 (09/21/00) | Low/NN<br><br>(COTM, M, P) | Defense Programs | The MicroFab provides a cleanroom area for microsystems component post-processing and packaging. The MicroFab will be capable of war reserve (WR) production of microsystems in support of the Stockpile Lifetime Extension Process (SLEP). Silicon-based microsystem components will be fabricated in the Silicon Laboratory; photonic and sensor components will be fabricated in the Flexible Laboratory; and components from both laboratories will be processed and packaged in the Post-Processing and Packaging Laboratory. | DOE/EA-1335, MESA EA |
| 166 | HARP (retitled) | Low/NN<br><br>(COTM, E, L, P) | Defense Programs | The laboratories and workspaces will facilitate design, system integration, and the qualification of weapons systems.<br><br>This facility will provide for electrical and laser light laboratories that will form the infrastructure needed to develop and prototype subsystems for nuclear weapon refurbishment. | DOE/EA-1335, MESA EA |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area III: Albuquerque Full-Scale Experimental Complex (AFSEC) Test Facilities** | | | | | |
| 167 | HARP AFSEC Test Facilities<br><br>PHS No. SNL9A00344-002 (04/20/01) | Moderate | • Defense Programs<br>• Work for Others | This PHS is intended to assimilate the hazards of AFSEC TA-III facilities to determine whether any two or more together could constitute a hazard not already considered in individual facility PHSs. The assimilation of these hazards will be used to support the AFSEC line item. | DOE/EIS-0281 |
| **Tech Area III: Plasma Materials Test Facility** | | | | | **4,724 gross square feet/3,717 square feet of lab space** |
| 168 | Liquid Surface Experiment<br><br>PHS No. SNL0A00345-001 (08/19/98) | SIH | Fusion Technology | This lab activity involves the Liquid Surface Experiment–liquid lithium and a tin/lithium alloy in a vacuum chamber using the EBTS electron gun. | • ECL/ADM SNA 96-038, Radiant Heat Facility<br>• DOE/EA-1195, TA III EA (DETT-C) |
| **Tech Area III: Vibration Test Facility** | | | | | **8,034 gross square feet/6,678 square feet of lab space** |
| 169 | Mass Properties Lab<br><br>PHS No. SNL1A00204-001 (08/10/01) | Low/NN (E, COTM, EX, R) | Defense Programs | Work in this lab is concentrated on determining mass properties of re-entry vehicles and spacecraft systems. | SNA 01-0662 |
| 170 | Hydraulic Vibration Facility<br><br>PHS No. SNL2A00146-001 (05/31/02) | Low | Defense Programs | This lab houses two hydraulic shakers used for testing. | DOE/EIS-0281 |
| **Tech Area III: Administrative Center for Test Engineering** | | | | | **18,893 gross square feet/992 square feet of lab space** |
| 171 | Light Lab Activities<br><br>PHS No. SNL2A00156-001 (06/24/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This PHS describes activities that involve a photometrics darkroom, light electronics lab, office space, presentation room, and an area for testing backup lasers for the Laser Tracker. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area III: Liquid Metal Processing Lab** | | | | | **14,993 gross square feet/8,918 square feet of lab space** |
| 172 | Large Aircraft Robotic Painting System (LARPS) Coating System<br><br>PHS No. SNL0A00328-001 (01/07/99) | SIH | Work for Others | The lab supports the LARPS robot which is designed for paint stripping and will be modified to do painting. | DOE/EIS-0281 |
| **Tech Area III: Terminal Ballistics Facility** | | | | | **2,748 gross square feet/2,007 square feet of lab space** |
| 173 | Terminal Ballistics Facility<br><br>PHS No. SNL9A00192-001 (07/18/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |
| 174 | TBF-Indoor Testing and Outdoor Non-Directional Testing<br><br>PHS No. SNL9A00193-001 (07/18/00) | Low/NN (COTM, EX, K, N) | • Defense Programs<br>• Work for Others | Activities include using the indoor firing range and outdoor testing such as land mine detonations, explosive charges, and shape charges. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |
| 175 | TBF-Indoor Testing and Outdoor Non-Directional Testing<br><br>PHS No. SNL9A00195-001 (08/02/00) | Low/NN (COTM, EX, K, N) | • Defense Programs<br>• Work for Others | Activities include using the indoor firing range and outdoor testing such as land mine detonations, explosive charges, and shape charges. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |
| 176 | Terminal Ballistics Facility Outdoor Directional Testing<br><br>PHS No. SNL9A00223-001 (12/14/99) | Moderate (COTM, EX, K, N) | • Defense Programs<br>• Work for Others | Activities include using the indoor firing range and outdoor testing of projectiles. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |
| 177 | TBF Outdoor Directed Firing Platforms<br><br>PHS No. SNL1A00249-001 (11/13/01) | Low | • Defense Programs | This PHS covers the outdoor directional firing of munitions systems with fixed platforms. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area III: Terminal Ballistics Facility (Continued)** | | | | | **2,748 gross square feet/2,007 square feet of lab space** |
| 178 | TBF Outdoor Directed Firing<br><br>PHS No. SNL1A00267-001 (11/13/01) | Low | • Defense Programs | This PHS covers outdoor test firing of small arms. | ECL/ADM SNA 99-014, Target Preparation and Outdoor Ordnance Firing at the Terminal Ballistics Facility |
| **Tech Area IV: Office/Lab Bldg. – Reactor Support Facility** | | | | | **48,491 gross square feet/10,802 square feet of lab space** |
| 179 | Laboratory (retitled)<br><br>PHS No. SNL9A00214-003 (11/03/00) | Low/NN (L, T) | • Work for Others<br>• Defense Programs | Activities involve propagation of a laser from a laboratory to a target shed on the facility. | ECL/ADM SNA 99-045, Advanced Laser Imaging Test |
| 180 | Diagnostics Research Lab<br><br>PHS No. SNL2A00009-001 (06/11/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This PHS covers research for the diagnostics lab. | ECL/ADM SNA 99-045, Advanced Laser Imaging Test |
| 181 | Laser Lab<br><br>PHS No. SNL2A00124-001 (05/15/02) | Low | • Work for Others<br>• Defense Programs | This is a light lab for laser operations | ECL/ADM SNA 99-045, Advanced Laser Imaging Test |
| 182 | Light Lab<br><br>PHS No. SNL2A00175-001 (06/28/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This is a light lab used for hardware assembly and modification. | ECL/ADM SNA 99-045, Advanced Laser Imaging Test |
| **Tech Area IV: Strategic Defense Facility Office/Lab** | | | | | **152,553 gross square feet/26,015 square feet of lab space** |
| 183 | Wrobel Lab<br><br>PHS No. SNL0A00316-001 (05/15/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0352 |
| 184 | Laser Dose Rate Lab<br><br>PHS No. SNL2A00001-001 (05/24/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used to simulate the electrical charge generation within an integrated circuit under dose-rate conditions. | DOE/EA-0352 |
| 185 | HARP<br><br>PHS No. SNL2A00014-001 (05/31/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area IV: Strategic Defenses Facility – Heavy Lab** | | | | | **87,566 gross square feet/58,887 square feet of lab space** |
| 186 | Stronglink Unit Tests<br><br>PHS No. SNL9A00291-001 (07/12/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EA-0352 |
| 187 | Laser Application Lab<br><br>PHS No. SNL1A00002-002 (02/06/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab is used for short-pulse laser research applications. | DOE/EA-0352 |
| 188 | HARP<br><br>PHS No. SNL2A00016-001 (12/04/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EA-0352 |
| **Tech Area IV: Simulation Technology Lab** | | | | | **76,159 gross square feet/36,120 square feet of lab space** |
| 189 | Materials Processing and Coatings Lab<br><br>PHS No. SNL0A00314-002 (05/22/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | SNA 0-021, Relocation and Coordination of Material Processing and Coatings Laboratory |
| 190 | Seraphim Motor Demonstration Testbed<br><br>PHS No. SNL0A00017-001 (01/21/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | SNA 96-089, NIF Prototype Test Bed |
| 191 | Laser Light Lab<br><br>PHS No. SNL2A00190-001 (07/31/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | DOE/EIS-0281 |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area IV: Saturn Facility** | | | | | **42,047 gross square feet/32,352 square feet of lab space** |
| 192 | Materials Processing and Coatings Lab<br><br>PHS No. SNL9A00189-001 (07/19/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | SNA 0-021, Relocation and Coordination of Material Processing and Coatings Laboratory |
| 193 | HARP<br><br>PHS No. SNL2A00018-001 (11/13/02) | Low | This PHS is a rollup of program information for the building. | This PHS is a rollup of program information for the building. | DOE/EIS-0281 |
| **Tech Area IV: Neutron Measurement Lab** | | | | | **2,296 gross square feet/2,015 square feet of lab space** |
| 194 | Light Lab<br><br>PHS No. SNL2A00098-001 (04/22/02) | Low | Defense Programs<br>Work for Others | This lab is used mainly for calibration activities. | DOE/EIS-0281 |
| **Tech Area IV: Components Development Lab** | | | | | **10,032 gross square feet/5,780 square feet of lab space** |
| 195 | Beamlet Operations (retitled)<br><br>PHS No. SNL9A00185-005 (11/05/99) | Low/NN (COTM, E, EN, H, L, M, N, NCA, P, T) | Pulsed Power Applications | Diagnostic operations support facility activities. | SNA 98-080, Backlighter Laser |
| **Tech Area V: Reactor Facility** | | | | | **27,358 gross square feet/16,783 square feet of lab space** |
| 196 | Hot Cell Facility<br><br>PHS No. SNL9A00349-002 (12/09/00) | Low/NN (E, M, P, R) | • Defense Programs<br>• Work for Others | Low dose-rate irradiation activities use sealed cobalt and cesium sources. | ECL/ADM SNA 98-040, Component Irradiation Projects CY 98-99 Tech Area V |
| **Tech Area V: Security Services Building** | | | | | **3,755 gross square feet/1,269 square feet of lab space** |
| 197 | Video Lab<br><br>PHS No. SNL0A00477-001 (11/15/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | |

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| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area V: Technology Support Center** | | | | | **99,579 gross square feet/10,734 square feet of lab space** |
| 198 | Dosimetry Light Lab<br><br>PHS No. SNL9A00226-002 (08/29/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | This lab provides measurement services and experimental support to the accelerator, reactor, and gamma facilities at SNL/NM.<br><br>The light lab is used for staging of equipment and for special projects involving small quantities of chemicals and radioactive materials. | |
| **Tech Area V: New Gamma Irradiation Facility** | | | | | **12,491 gross square feet/9,546 square feet of lab space** |
| 199 | GIF<br><br>PHS No. SNL0A00042-002 (07/17/00) | Category 3 (EX, NR, R, RGD) | Defense Programs | The new GIF provides SNL/NM with 3 concrete-shielded irradiation cells and an 18-foot-deep pool of water in which the stainless-steel-clad cobalt 60 (Co-60) pins (sealed sources) are stored.<br><br>The irradiation cells permit dry irradiation operations in which Co-60 sources are raised from the bottom of the pool into the cells on elevators. Typical irradiations performed in the cells are at very high dose rates (100 to 1,000 kilorads/hour) and for short to intermediate durations (less than a day).<br><br>In-pool irradiations are performed with the sources held in various fixtures in the bottom of the pool. Typical in-pool irradiations are at moderate and low dose rates (<10 kilorads/hr) and for long durations lasting days, weeks, and months. | DOE/EIS-0281 |

***Key to Hazard Class and Type:** **B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Tech Area V: Sandia Pulsed Reactor (SPR) Facility** | | | | | **6,447 gross square feet/4,450 square feet of lab space** |
| 200 | Small Portable X-Ray Machines<br><br>PHS No. SNL0A00357-001 (06/28/00) | Low/NN (COTM, NR, R, RGD) | Defense Programs | This facility uses a portable x-ray system to generate a cone of x-rays with a dose rate of 300 R/minute at 1 meter from the source. Projected across the SPR reactor room, this x-ray system generates 180-R/hr fields against the far wall. The 48-inch-thick wall is sufficient to attenuate this field to less than 0.5 mR/hr at the outer surface of the SPR. | DOE/EIS-0281-052, X-ray of Test Object |
| **Tech Area V: Low Level Counting Lab** | | | | | **2,023 gross square feet/1,390 square feet of lab space** |
| 201 | Radiation Metrology Laboratory (RML)<br>Tech Area V<br><br>PHS No. SNL9A00225-003 (12/07/00) | Low/NN (COTM, E EN, P, R, T) | Defense Programs | This lab provides measurement services and experimental support. | |
| **Tech Area V: Auxiliary Hot Cell Facility** | | | | | **13,982 gross square feet/3,977square feet of lab space** |
| 202 | AHCF<br><br>PHS No. SNL0A00280-001 (12/13/00) | Category 3<br><br>(COTM, EN, R, RGD) | Defense Programs | The Auxiliary Hot Cell Facility characterizes, treats (if required), and repackages radioactive and mixed material and waste for reuse, recycling, or ultimate disposal. | ECL/ADM SNA, 98-063, Modification of Auxiliary Hot Cell Facility |
| 203 | AHCF<br><br>PHS No. SNL9A00221-001 (08/03/99) | Category 3<br><br>(COTM, EN, R, RGD) | Defense Programs | The Auxiliary Hot Cell Facility characterizes, treats (if required), and repackages radioactive and mixed material and waste for reuse, recycling, or ultimate disposal. | ECL/ADM SNA, 98-063, Modification of Auxiliary Hot Cell Facility |
| 204 | Building 6597/Northside Activities<br><br>PHS No. SNL9A00220-001 (11/02/99) | Low<br><br>(COTM, EN, R, RGD) | Defense Programs | The Auxiliary Hot Cell Facility characterizes, treats (if required), and repackages radioactive and mixed material and waste for reuse, recycling, or ultimate disposal. | ECL/ADM SNA, 98-063, Modification of Auxiliary Hot Cell Facility |

***Key to Hazard Class and Type:** **B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Coyote Canyon Complex: Robotic Vehicle Range (RVR) Development Labs** | | | | | **1,231 gross square feet/1,157 square feet of lab space** |
| 205 | Bowsled (retitled)<br><br>PHS No. SNL0A00333-001 (06/14/00) | Low/NN (M, NCA) | Defense Programs | A modified crossbow is used to accelerate test packages into a reaction mass for shock testing. | |
| **CTF: National Solar Thermal Testing Facility (NSTTF)** | | | | | **8,179 gross square feet/3,898 square feet of lab space** |
| 206 | NSTTF Site PHS<br><br>PHS No. SNL1A00183 (8/15/01) | Low/NN (COTM, E) | Work for Others | Solar thermal components and systems are developed, researched, and tested at this large facility. | ECL/ADM SNA 99-028, FY99 Ecological Program SNA 0-012, FY00 Ecological Program AF 99-014 (AF813) Environmental Assessment SNL/NM FY1999-2000 Ecological Program |
| 207 | Fiber Optics Testing at Solar Power Tower<br><br>PHS No. SNL9A00111-001 (08/09/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 99-028, FY99 Ecological Program SNA 0-012, FY00 Ecological Program AF 99-014 (AF813) Environmental Assessment SNL/NM FY1999-2000 Ecological Program |
| 208 | Dish Test Area and Enclosures<br><br>PHS No. SNL9A00202-001 (09/20/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | ECL/ADM SNA 99-028, FY99 Ecological Program SNA 0-012, FY00 Ecological Program AF 99-014 (AF813) Environmental Assessment SNL/NM FY1999-2000 Ecological Program |
| **Eubank Research Park** | | | | | **36,167 gross square feet/7,151 square feet of lab space** |
| 209 | Lite Model Lab<br><br>PHS No. SNL0A00018-001 (01/25/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | |
| 210 | Monitoring Systems Light Lab<br><br>PHS No. SNL0A00019-001 (01/25/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | |
| 211 | Hardwire Lab<br><br>PHS No. SNL9A00107-001 (04/23/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | |

***Key to Hazard Class and Type: B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

| Item No. | PHS Name and No. (Date Completed) | Haz. Class and Type* | Representative Programs | Representative Activities | Recent NEPA Reviews |
|---|---|---|---|---|---|
| **Eubank Research Park (Continued)** | | | | | **36,167 gross square feet/7,151 square feet of lab space** |
| 212 | Building 10500 Light Labs<br><br>PHS No. SNL0A00372-001 (07/19/00) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | |
| **UNM: Advanced Materials Laboratory (AML)** | | | | | **29,400 gross square feet/12,699 square feet of lab space** |
| 213 | MPS – Surface Science Laboratory (retitled)<br><br>PHS No. SNL9A00298-001 (12/21/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | • ECL/ADM SNA 99-025, Five-Year Lease Renewal for the Advanced Materials Lab<br>• ECL/ADM SNA 95-119, Laboratory Operations Materials |
| 214 | MPS-Ceramics Processing Lab<br><br>PHS No. SNL9A00312-001 (11/18/99) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | SIH activities are consistent with operational hazards in general industrial settings and adequately controlled by OSHA regulations. | • ECL/ADM SNA 99-025, Five-Year Lease Renewal for the Advanced Materials Lab<br>• ECL/ADM SNA 95-119, Laboratory Operations Materials |
| 215 | MPS-Surface Science Laboratory<br><br>PHS No. SNL1A00279-003 (10/16/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | The surface science laboratory is primarily used to characterize the surfaces of small samples of catalyst powders and films utilizing UHV techniques, especially X-ray photoelectron spectroscopy (XPS). | • ECL/ADM SNA 99-025, Five-Year Lease Renewal for the Advanced Materials Lab<br>• ECL/ADM SNA 95-119, Laboratory Operations Materials |
| 216 | MPS-AML Microscopes, Fluorescence/Polarization<br><br>PHS No. SNL1A00285-002 (12/09/02) | SIH | A wide variety of SNL/NM program work is classified as standard industrial hazards (SIH). | Laboratory personnel characterize materials (typically thin films) prepared in the AML laboratories. | • ECL/ADM SNA 99-025, Five-Year Lease Renewal for the Advanced Materials Lab<br>• ECL/ADM SNA 95-119, Laboratory Operations Materials |
| 217 | MPS-Catalyst Preparation and New Materials Laboratory<br><br>PHS No. SNL2A00092-001 (04/03/02) | Low/NN | Defense Programs | Staff, technicians, and students perform chemical experiments for catalysis and organometallic oriented chemistry. | • ECL/ADM SNA 02-0205, Beyond Nanoparticles-Attack on a Chemical "Holy Grail"<br>• ECL/ADM SNA 99-025, Five-Year Lease Renewal for the Advanced Materials Lab |

Sources: DOE, 1988, 1994a, b, 1995, 1997, 1999a, b, 2000; SNL, 2003.

***Key to Hazard Class and Type: B** - Biohazard; **COTM** - Use of chemicals or toxic materials; **E** - Electrical; **EN** - Environmental (e.g., air, discharge, hazardous or radioactive waste); **EX** - Explosives; **H** - High voltage pulsed power circuits; **K** - Equipment or machines that could generate kinetic energy; **L** - Use of lasers; **Low/NN** - Low Nonnuclear; **M** - Mechanical; **N** - Noise; **NCA** - Not commercially available equipment; **NR** - Nonionizing radiation; **P** - Pressure; **R** - Radiation; **RF** - Microwave/RF energy sources; **RGD** - Radiation-generating devices; **SIH** - Standard industrial hazard; **T** - Thermal; **THM** - Transportation of hazardous material.

# A.2 References

**DOE, 1988** U.S. Department of Energy, 1988, *Strategic Defenses Facility Environmental Assessment*, DOE/EA-0352, U.S. Department of Energy, Kirtland Area Office, Albuquerque, New Mexico.

**DOE, 1994a** U.S. Department of Energy, 1994a, *Neutron Generator/Switch Tube Prototyping Relocation Environmental Assessment*, DOE/EA-0879, U.S. Department of Energy, Kirtland Area Office, Albuquerque, New Mexico.

**DOE, 1994b** U.S. Department of Energy, 1994b, *Robotic Manufacturing Science and Engineering Laboratory (RMSEL)*, DOE/EA-0885, U.S. Department of Energy, Albuquerque Field Office, Albuquerque, New Mexico.

**DOE, 1995** U.S. Department of Energy, 1995, *Environmental Assessment for the Processing and Environmental Technology Laboratory*, DOE/EA-0945, U.S. Department of Energy, Kirtland Area Office, Albuquerque Field Office, Albuquerque, New Mexico.

**DOE, 1997** U.S. Department of Energy, 1997, *Environmental Assessment of the Sandia National Laboratories Design, Evaluation, and Test Technology Center At Technical Area III,* DOE/EA-1195, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico.

**DOE, 1999a** U.S. Department of Energy, 1999a, in cooperation with the U.S. Air Force, *Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico*, DOE/EIS-0281, U.S. Department of Energy, Kirtland Area Office, Albuquerque, New Mexico.

**DOE, 1999b** U.S. Department of Energy, 1999b, *Rapid Reactivation Project Environmental Assessment*, DOE/EA-1264, U.S. Department of Energy, Kirtland Area Office, Kirtland Air Force Base, Albuquerque, New Mexico.

**DOE, 2000** U.S. Department of Energy, 2000, *Environmental Assessment for the Microsystems and Engineering Sciences Applications Complex and Finding of No Significant Impacts*, DOE/EA-1335, U.S. Department of Energy, Kirtland Area Office, Kirtland Air Force Base, Albuquerque, New Mexico.

**SNL, 1999** Sandia National Laboratories, 1999, *SNL/NM Facilities and Safety Information Document*, SAND99-2126, Sandia National Laboratories, Albuquerque, New Mexico.

**SNL, 2003** Sandia National Laboratories, 2003, Department 3121 National Environmental Policy Act working files, Sandia National Laboratories, Albuquerque, New Mexico.

# APPENDIX B
# CHEMICAL USAGE

## CONTENTS



## TABLES

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# APPENDIX B
# CHEMICAL USAGE

## B.1 Introduction

This appendix provides summary information on the chemicals listed in the SWEIS that were purchased by SNL/NM during CY2002. All of the chemical purchases listed here are from facilities that are covered in the original SWEIS document.

To establish a baseline, SNL/NM chemical usage information included in the SWEIS was from chemical purchase information for CY1996. For recent information, SNL/NM's Air Quality Team provides chemical purchase information for CY2001 and CY2002. Chemical purchase information is derived from the SNL/NM Chemical Information System (CIS), a comprehensive database containing over 90 percent of the chemicals handled at SNL/NM.

The chemicals summarized in this appendix are those reported in the SWEIS and subsequent SNL/NM Air Quality Team reports with total quantities greater than 100 pounds. These are the chemicals that typically pose the greatest risk to human health and the environment. Chemicals purchased infrequently in small quantities are not individually reported, except where their cumulative amounts total more than 100 pounds. This approach focuses information on those chemical quantities of greatest concern and the total quantities purchased.

All chemicals included in this appendix are categorized as hazardous air pollutants (HAPs), volatile organic compounds (VOCs), or toxic air pollutants (TAPs). In some cases, a chemical may fall into two or more categories (e.g., methanol is listed in the HAP and VOC tables). Summaries of the chemical usage methodologies used in the SWEIS analysis are discussed here. (See Appendix D of the SWEIS and the SNL/NM Air Quality Team reports for more detail regarding methodologies on chemical purchase and estimated usage information.)

## B.2 SWEIS Methodology

The SWEIS used three sources of chemical data: the CIS, Hazardous Chemical Purchases Inventory (HCPI), and CheMaster in identifying potential chemical emissions from facility operations. Each chemical database was developed for different purposes and has some specific or unique information.

Because the CIS compiles annual purchases by building number and tracks 90 percent of all chemical purchases made by SNL/NM, the SWEIS identified the CIS as the most current source of information. Of the 25,000 chemicals of concern originally identified from several SNL/NM databases, the SWEIS presented information on ~465 chemicals, which were identified as the potential sources of routine chemical air emissions from SNL/NM's normal operations. This screening process was designed to capture the major sources of routine chemical air emissions.

## B.3 CY2002 SWEIS Annual Review Chemical Usage Methodology

Information in the CY2002 chemical appendix was drawn from the SNL/NM Chemical Inventory Reports for CY2001 and CY2002, which were prepared by the SNL/NM Air Quality Team (SNL, 2002 and 2003a). These reports summarize the potential chemical emissions for SNL/NM, determined by using data provided by the CIS and include information for chemicals that are HAPs and VOCs. Starting in CY2002, TAPs have been included in the report.

The chemical emission information included in the CY2002 SWEIS Annual Review is consistent with the SWEIS data, since both the Air Quality Team reports and the Annual Review rely on the CIS as the best available data source.

# B.4 Compiled Data

Summary chemical emissions data are included in Tables B-1, B-2, and B-3, which contain information on VOCs, HAPs, and TAPs, respectively. Usage of many of these chemicals is relatively small. Approximately 99% are less than 1,000 pounds (lb) (454 kilograms).

As shown in Tables B-1, B-2, and B-3, the total quantity of chemicals purchased in CY2002 was below the SWEIS expanded operations alternative. However, individual chemicals purchased in CY2002 may have quantities larger than the SWEIS baseline (CY1996), the SWEIS expanded operations, or both. The vast majority of chemicals reported in these tables are specialty chemicals found in most laboratories. As a result, SNL/NM chemical purchases (quantity and type) can fluctuate greatly from year to year.

It is difficult to draw conclusions about the effects of the large fluctuations (type and quantity) in chemical purchases on a year-by-year basis as it relates to the SWEIS analysis. The SWEIS analysis considered a conservative screening level (occupational exposure limit [OEL] divided by 100) as a basis for impact analysis. Therefore, even if a purchase quantity exceeds the quantity reported in the SWEIS expanded operations alternative, it is unlikely to exceed the OEL/100 screen. In addition, even if a chemical purchase quantity exceeded the OEL/100 screening level, it is probable (based on the analysis presented in Appendix D of the SWEIS) that an engineering control is in place to mitigate or reduce any potential emissions.

Overall, quantities of chemicals purchased since CY1996 at SNL/NM have slightly decreased. In CY1996, chemical usage was estimated at 55,282 lbs (including HAP, TAP, and VOC chemical purchases). According to the SNL/NM Air Quality Team chemical information reports, for CY1999 through CY2002 chemical purchase values were reported as follows: CY1999 – 53,045 pounds, CY2000 – 51,249 pounds, CY2001 – 53,179 pounds, and CY2002 – 47,654 pounds.

**Table B-1. Chemical Purchases Potentially Resulting in VOC Emissions (Calendar Years 1996, SWEIS Expanded Operations Alternative, CY2001, and CY2002) in Pounds[a]**

| Chemical Abstract Services (CAS) # | Chemical | SWEIS (CY1996) in Pounds | SWEIS (EOA) in Pounds | CY2001 in Pounds | CY2002 in Pounds |
|---|---|---|---|---|---|
| 156-60-5 | 1,2-Dichloroethylene | <1 | 224.4 | 92.51 | 102 |
| 540-84-1 | 2,2,4-Trimethylpentane | <1 | <1 | 583.91 | 29.0 |
| 112-34-5 | 2-Butyl oxyethanol dipropylene glycol | 86.88 | 173.14 | 156.49 | 22.2 |
| 64-19-7 | Acetic acid | 369.56 | 784.2 | 1,251.32 | 594 |
| 67-64-1 | Acetone[b] | 6,870.3 | 18,435 | 6,068 | 11,122.66 |
| 75-05-8 | Acetonitrile | 42.34 | 69.96 | 311 | 423 |
| 100-51-6 | Alcohol, benzyl | 610 | 1,792 | 39.6 | 39.1 |
| 71-43-2 | Benzene | 52.47 | 176 | 54.6 | 95.2 |
| 75-63-8 | Bromotrifluoromethane[b] | <1 | <1 | <1 | <1 |
| 67-66-3 | Chloroform (trichloromethane) | 243.68 | 52.14 | 55.1 | 146 |
| 75-09-2 | Dichloromethane | <1 | <1 | <1 | 549 |
| | (methylene chloride)[c] | | | | [not a SWEIS voc] |
| 64742-53-6 | (Severely hydrotreated light naphthenic) Distillate[b, d] | <1 | <1 | 80.6 | 38.87 |
| 64-17-5 | Ethanol | 22,929.02 | 440.5 | 10,370.16 | 700 |
| 141-78-6 | Ethyl acetate | 48.26 | 57.15 | 220.83 | 146 |
| 60-29-7 | Ethyl ether (diethyl ether) | 48.07 | 48 | 1,352.89 | 332 |
| 78-10-4 | Ethyl silicate | 2.44 | 11.67 | 139.06 | 29.3 |
| 74-85-1 | Ethylene | 114 | 226.6 | 40.9 | <1 |
| 107-21-1 | Ethylene glycol | 174.17 | 421.5 | 935 | 1,975 |
| 64-18-6 | Formic acid | 12.52 | 25.08 | 50.91 | 13.3 |
| 123-92-2 | Isoamyl acetate | 584.33 | <1 | 451.70 | 404 |
| 78-83-1 | Isobutyl alcohol | <1 | 1,994 | 98.59 | 1.77 |
| 67-63-0 | Isopropyl alcohol | 1,251.08 | 574.2 | 2,837 | 3,958 |
| 67-56-1 | Methanol | 1,762 | 3,652 | 1,912 | 1,940 |
| 108-65-6 | Methoxy acetate | 150.23 | 282.6 | 1,425.77 | 1,817 |
| 108-10-1 | Methyl isobutyl ketone | 45.017 | 150.5 | 55.66 | 5.05 |
| 71-36-3 | n-Butyl alcohol[c] | <1 | <1 | <1 | 620 |
| 68-12-2 | n,n-Dimethylformamide | <1 | <1 | 64.07 | 104 |
| 8030-30-6 | Naphtha | <1 | <1 | 287.24 | 183 |
| 110-54-3 | n-Hexane | 34.4 | 40.4 | 512 | 270 |
| 872-50-4 | n-Methyl-2-pyrrolidone | 110.69 | 268.66 | 145 | 4,057 |
| 71-23-8 | Propyl alcohol | 74.66 | 83.4 | 2,429.49 | 889 |
| 57-55-6 | Propylene glycol | <1 | <1 | 1,084.65 | 376 |

**Table B-1. Chemical Purchases Potentially Resulting in VOC Emissions (Calendar Years 1996, SWEIS Expanded Operations Alternative, CY2001, and CY2002) in Pounds[a] (Continued)**

| Chemical Abstract Services (CAS) # | Chemical | SWEIS (CY1996) in Pounds | SWEIS (EOA) in Pounds | CY2001 in Pounds | CY2002 in Pounds |
|---|---|---|---|---|---|
| 127-18-4 | Tetrachloroethylene[b] | 2,227.05 | <1 | 87.06 | 32.18 |
| 109-99-9 | Tetrahydrofuran | 34.1 | 58 | 802.86 | 679 |
| 108-88-3 | Toluene | 51.76 | 111.36 | 505 | 540 |
| 79-01-6 | Trichloroethylene | 1,716.37 | 3,364 | 107 | 110 |
| **TOTAL QUANTITIES** | | **39,953.40** | **33,526.46** | **34,607.97** | **31,793.63** |

[a]CY data reported as FY data in the SWEIS Annual Review – FY2001.
[b]Direct download from CIS, not Air Quality Team reports.
[c]Chemicals with CY2002 purchase greater than 100 lb and not analyzed in SWEIS.
[d]Severely hydrotreated light naphthenic distillate, CAS#64742-53-6 was incorrectly reported for CY2001, as Distillate, CAS#64742-53-6, 97,780.84 pounds.

EOA = Expanded Operations Alternative.
Note: For simplicity purposes, the “<1” may include zero.

Sources: DOE, 1999; SNL, 2002, 2003a, 2003b.

**Table B-2. Chemical Purchases Potentially Resulting in HAP Emissions (CY1996, SWEIS Expanded Operations Alternative, CY2001, and CY2002) in Pounds[a]**

| Chemical Abstract Services (CAS) # | Chemical | SWEIS (CY1996) in Pounds | SWEIS (EOA) in Pounds | CY2001 in Pounds | CY2002 in Pounds |
|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (Methyl chloroform) | 198.01 | 369.6 | 74.1 | 139 |
| 540-84-1 | 2,2,4-Trimethylpentane[c] | <1 | <1 | 583.91 | 29 |
| 101-77-9 | 4,4'-Methylene dianiline (37%)[b] | 123.04 | 369.6 | 8.28 | 6.21 |
| 100-02-7 | 4-Nitrophenol[b] | <1 | <1 | <1 | <1 |
| 75-05-8 | Acetonitrile | 42.34 | 69.96 | 311 | 423 |
| 7784-42-1 | Arsine[b] | 125.29 | 374 | <1 | 45.97 |
| 71-43-2 | Benzene | 52.47 | 176 | 54.6 | 95.2 |
| 7782-50-5 | Chlorine[b] | <1 | 554.4 | 31 | <1 |
| 67-66-3 | Chloroform (trichloromethane) | 243.68 | 52.14 | 55.1 | 146 |
| 7440-47-3 | Chromium (II) Compounds | 52.55 | 115.9 | 1.48 | <1 |
| 7440-48-4 | Cobalt | 52.55 | 111.8 | 18.7 | <1 |
| 75-09-02 | Dichloromethane (Methylene chloride) | 501.2 | 965.8 | 355 | 549 |
| 111-42-2 | Diethanolamine | 239.22 | 699.6 | 1.65 | 27 |
| 107-21-1 | Ethylene glycol | 174.17 | 421.5 | 935 | 1,975 |
| 7664-39-3 | Hydrogen fluoride | 291.88 | 437.4 | 472 | 900 |
| 7439-97-6 | Mercury | 59.98 | 119.68 | 4.22 | 1.1 |
| 67-56-1 | Methanol | 1,762 | 3,652 | 1,912 | 1,940 |
| 108-10-1 | Methyl isobutyl ketone (Hexone) | 45.02 | 150.5 | 19.1 | 5.05 |
| 68-12-2 | n, n-Dimethylformamide[c] | <1 | <1 | 139 | 104 |
| 110-54-3 | n-Hexane | 34.4 | 40.4 | 512 | 270 |
| 7440-02-0 | Nickel | 47.72 | 107.8 | 70.3 | 6.18 |
| 7718-54-9 | Nickel Chloride[b] | 586.53 | 1,755.6 | 9.76 | 1.37 |
| 7786-81-4 | Nickel Sulfate[b] | 586.53 | 1,755.6 | 49.10 | 51.33 |
| 7803-51-2 | Phosphine[b] | <1 | 128.74 | <1 | <1 |
| 127-18-4 | Tetrachloroethylene[b] | 2,227.05 | <1 | 17.9 | 32.18 |
| 108-88-3 | Toluene | 51.76 | 111.36 | 505 | 540 |
| 79-01-6 | Trichloroethylene | 1,716.37 | 3,364 | 107 | 110 |
| 51-79-6 | Urethane | <1 | <1 | <1 | <1 |
| **TOTAL QUANTITIES** | | **9,219.78** | **15,908.38** | **6,247.20** | **7,396.59** |

[a]CY data reported as FY data in the SWEIS annual Review – FY2001.
[b]Direct download from CIS, not AQ Team reports.
[c]Chemicals with CY2001 or CY2002 purchase greater than 100 lb and not analyzed in SWEIS.

Notes: For simplicity purposes, the "<1" may include zero. Hydrogen chloride was excluded due to differences in reporting methodologies between the SWEIS and the annual reports. Hydrogen chloride is used as an industrial chemical in water treatment processes.

Sources: DOE, 1999; SNL, 2002, 2003a, 2003b.

**Table B-3. Chemical Purchases Potentially Resulting in TAP Emissions (CY1996, SWEIS Expanded Operations Alternative, CY2001, and CY2002) in Pounds[a]**

| Chemical Abstract Services (CAS) # | Chemical | SWEIS (CY1996) in Pounds | SWEIS (EOA) in Pounds | CY2001 in Pounds | CY2002 in Pounds |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol[b] | <1 | <1 | <1 | <1 |
| 64-19-7 | Acetic acid | 369.56 | 784.2 | 1,251.32 | 594 |
| 67-64-1 | Acetone[b] | 6,870.3 | 18,435 | 6,068 | 11,122.66 |
| 75-05-8 | Acetonitrile[b] | 42.34 | 69.96 | 311 | 555.97 |
| 67-63-0 | Alcohol, isopropyl | 1,251.08 | 574.2 | 2,837 | 3,958 |
| 7429-90-5 | Aluminum | 464.6 | 1510 | 13.7 | <1 |
| 1344-28-1 | Aluminum oxide | 3,906 | 793.2 | 530 | 50.3 |
| 7664-41-7 | Ammonia | 59.98 | 4,324 | 118 | 3.75 |
| 12125-02-9 | Ammonium chloride | 220.28 | 44 | 17.19 | 13.9 |
| 1336-21-6 | Ammonium hydroxide[b] | 2,579.85 | 7,744 | 681.50 | 1,024.50 |
| 7784-42-1 | Arsin[b] | 125.29 | 374 | <1 | 45.97 |
| 71-43-2 | Benzene[b] | 52.47 | 176 | 54.6 | 125.52 |
| 1113-50-1 | Boric acid[b] | 87.98 | 264 | <1 | <1 |
| 67-66-3 | Chloroform[b] | 243.68 | 52.14 | 55.1 | 166.71 |
| 7440-47-3 | Chromium[b] | 52.55 | 115.9 | 1.48 | 23,587.02 |
| 7440-50-8 | Copper | 608.62 | 1,497 | 22.3 | 17 |
| 75-09-02 | Dichloromethane | 501.2 | 965.8 | 355 | 549 |
| 106-42-4 | Di-p-xylene[b] | 602 | 1,995.4 | <1 | <1 |
| 141-78-6 | Ethyl acetate | 48.26 | 57.15 | 221.83 | 146 |
| 60-29-7 | Ethyl ether | 48.07 | 48 | 1,352.89 | 332 |
| 78-10-4 | Ethyl silicate | 2.44 | 11.67 | 139.06 | 29.3 |
| 107-21-1 | Ethylene glycol[b] | 174.17 | 421.5 | 935 | 2,117.88 |
| 64-18-6 | Formic acid | 12.52 | 25.08 | 7.99 | 13.3 |
| 7664-39-3 | Hydrogen fluoride[b] | 291.88 | 437.4 | 472 | 1,144.81 |
| 7722-84-1 | Hydrogen peroxide | 4,002 | 7,581 | 3,342.86 | 2,148 |
| 1309-37-1 | Iron | 45.6 | 150.3 | 176.62 | 33.2 |
| 123-92-2 | Isoamyl acetate | 584.3 | 1,746.8 | 451.70 | 404 |
| 8008-20-6 | Kerosene[b] | 6.64 | 6.62 | 179.39 | 135.57 |
| 67-56-1 | Methanol[b] | 1,762 | 3,652 | 1,912 | 3,065.26 |
| 108-10-1 | Methyl isobutyl ketone[b] | 45.02 | 150.5 | 19.1 | 23.42 |
| 68-12-2 | n, n-Dimethylformamide[b, c] | <1 | <1 | 139 | 114.14 |
| 71-36-3 | n-Butyl alcohol | 89.87 | 30.0 | <1 | 620 |

**Table B-3. Chemical Purchases Potentially Resulting in TAP Emissions (CY1996, SWEIS Expanded Operations Alternative, CY2001, and CY2002) in Pounds[a] (Continued)**

| Chemical Abstract Services (CAS) # | Chemical | SWEIS (CY1996) in Pounds | SWEIS (EOA) in Pounds | CY2001 in Pounds | CY2002 in Pounds |
|---|---|---|---|---|---|
| 110-54-3 | n-Hexane[b] | 34.4 | 40.4 | 512 | 460.42 |
| 7440-02-0 | Nickel | 47.7 | 107.8 | 70.3 | 6.18 |
| 7697-37-2 | Nitric acid | 5,309.9 | 10,275 | 1,317 | 1,814 |
| 872-50-4 | n-Methyl-2-pyrrolidone[b] | 110.69 | 268.66 | 145 | 4,837.24 |
| 127-18-4 | Perchloroethylene[b] | 2,227 | 2,222 | 17.9 | 32.18 |
| 7664-38-2 | Phosphoric acid | 191.4 | 455 | 609 | 1,439 |
| 71-23-8 | Propyl alcohol | 74.66 | 83.4 | 2,429.49 | 889 |
| 7803-62-5 | Silane (silicon tetrahydride) [b] | 224.91 | 430.4 | 6.02 | 4.93 |
| 7631-86-9 | Silica[b] | 611.8 | 2,017 | 1,653.20 | 388.95 |
| 7664-93-9 | Sulfuric acid | 432.78 | 1,904.9 | 3,130.92 | 3,300 |
| 109-99-9 | Tetrahydrofuran[b] | 34.1 | 58 | 802.86 | 816.99 |
| 108-88-3 | Toluene[b] | 51.76 | 111.36 | 505 | 779.81 |
| 79-01-6 | Trichloroethylene[b] | 1,716.37 | 3,364 | 107 | 120.11 |
| 7440-33-7 | Tungsten as Wolfram[b] | 60.42 | 120.8 | 143.84 | 97.12 |
| 51-79-6 | Urethane[b] | <1 | <1 | <1 | <1 |
| 7440-66-6 | Zinc[b] | 2.23 | 4.9 | 16.9 | 592.28 |
| **TOTAL QUANTITIES** | | **38,241.90** | **77,661.64** | **33,132.06** | **67,719.39** |

[a]CY data reported s FY data in the SWEIS Annual Review – FY2001.
[b]Direct download from CIS, not Air Quality Team reports.
[c]Chemicals with CY2003 purchase greater than 100 pounds and not analyzed in the SWEIS.

Notes: For simplicity purposes, the "<1" may include zero. Hydrogen chloride and sodium hydroxide were excluded due to differences in reporting methodologies between the SWEIS and the annual reports. Both chemicals are used as industrial chemicals in water treatment processes. The following 12 chemicals were excluded because no CAS was assigned in the SWEIS: 2,6-Diethylaniline curing agent, Carboxyl terminated acrylonitrile butadiene, Cerric ammonium nitrate, Citridet Cleaner, Curing agent Z, Diala oil, Fluorinert, Glass microballoons filler, Hexylene glycol, Mold release, Sulfur hexafluoride, and Ultima Gold-Packard. None of the 12 chemicals were purchased in 1999 or 2000.

Sources: DOE, 1999; SNL, 2002, 2003a, 2003b.

# B.5 References

**DOE, 1999** U.S. Department of Energy, 1999, in cooperation with the U.S. Air Force, *Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico*, DOE/EIS-0281, U.S. Department of Energy, Kirtland Area Office, Albuquerque, New Mexico.

**SNL, 2002** Sandia National Laboratories, 2002, *Sandia National Laboratories/New Mexico, Chemical Purchase Inventory Report, Calendar Year 2001*, Sandia National Laboratories, Albuquerque, New Mexico.

**SNL, 2003a** Sandia National Laboratories, 2003a, *Sandia National Laboratories/New Mexico, Chemical Inventory Report, Calendar Year 2002*, Sandia National Laboratories, Albuquerque, New Mexico.

**SNL, 2003b** Sandia National Laboratories, 2003b, SNL Chemical Inventory System Regulatory Reports, internal web site, http://cis.sandia.gov/inventory/regulatory/regulatory.html, Sandia National Laboratories, Albuquerque, New Mexico.

# APPENDIX C
# SUMMARY OF Q4 CY2001 SITE-WIDE OPERATIONS

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## TABLES

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# APPENDIX C
# SUMMARY OF Q4 CY2001 SITE-WIDE OPERATIONS

## C.1 Introduction

This appendix provides detailed information for the fourth quarter (Q4) of Calendar Year (CY) 2001 for 12 SNL/NM resource areas, and on each of the 34 "Selected Facilities" that DOE analyzed in the SNL/NM Site-Wide Environmental Impact Statement (SWEIS) (DOE, 1999). Table C-1 presents Q4 CY2001 data for site-wide environmental issues, organized by resource area, in the same order as they are presented in Table 2-1. Table C-2 includes operational data from selected facilities for the Fiscal Year (FY) 2001 average per quarter, and Q4 CY2001 (October to December 2001) changes to facilities and operations that occurred. Selected facilities are listed in the order that they appear in the preceding text of Chapter 4.

## C.2 Methodology

The values shown in the table for FY2001 operations are actual, reported SNL/NM activities and associated material use, waste generation, and other support for FY2001. Where applicable, the quarterly average data for FY2001 annual operations are calculated by taking one-fourth of the total actual operations data for FY2001. For all instances where the data did not vary over the year, the values are the same for the FY2001 annual operations data and their respective quarterly averages. The values presented for Q4 CY2001 are actual, reported data for each of the resource areas that were tabulated in Table 2-1 of the SWEIS Annual Review – FY2001, with the exception of the water, sanitary sewer, natural gas, and electrical capacities, which are equal to one-fourth of the cited annual SWEIS expanded operations alternative data.

**Table C-1. Site-Wide Environmental Issues by Resource Area for Q4 CY2001**

| Resource Area | Units | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October – December 2001) |
|---|---|---|---|
| **Land Use** | | | |
| SNL/NM Land Use w/in KAFB | ac (ha) | 8,574 (3,470)/8,574 (3,470)[a] | 8,574 (3,470) |
| DOE Buffer Zones | | 2,750 (1,113)/2,750 (1,113)[a] | 2,750 (1,113) |
| **Infrastructure** | | | |
| Facilities (Floor Space) | $ft^2$ ($m^2$) | 5.27M (0.49M)/5.27M (0.49M)[a] | 5.27M (0.49M) |
| Utilities (Annual Basis) | | | |
| Water Use | gal (ℓ) | 342M (1.29B)/85.5M (0.32B) | 93.1M (0.35B) |
| Water Capacity | gal (ℓ) | 2.0B (7.6B)/0.5B (1.9B) | 0.5B (1.9B) |
| Sanitary Sewer Discharge | gal (ℓ) | 274M[b] (1.04B)/68.5M (0.26B) | 82.8M (0.31B) |
| Sanitary Sewer Capacity | gal (ℓ) | 850M (3.22B)/212M (0.81B) | 212M (0.81B) |
| Natural Gas Use | scf (ℓ) | 471M (13.3B)[c]/118M (3.3B) | 167M (4.7B) |
| Natural Gas Capacity | scf (ℓ) | 2.3B (65B)/0.58B (16.3B) | 0.58B (16.3B) |
| Electrical Use | MWh | 207,000/51,750 | 50,560 |
| Electrical Capacity | MWh | 1.1M/0.28M | 0.28M |
| **Geology and Soils** | | | |
| Potential Soil/Subsurface Contamination Sites Identified | | 268[d]/268[a] | 268 |
| Active Environmental Restoration Sites | ER Sites | 5[e]/5[a] | 5 |
| No Further Action (NFA) Approvals | | 107[f]/107[a] | 137 |
| **Water Resources and Hydrology** | | | |
| SNL/NM 10-Year Projected Groundwater Use (SWEIS Projections vs. Actual Withdrawal for 2001)[g] | $ft^3$/yr (ℓ/yr) | 45.7M (1.3B)/NA | NA |
| Developed Area (for Runoff Projections) | $mi^2$ ($km^2$) | 0.72[h] (1.8)/0.72 (1.8)[a] | 0.72 (1.8) |
| **Biological/Ecological Resources** | | | |
| Change in Habitat Area | NA | No Change[j] | No Change[j] |
| **Cultural Resources** | | | |
| Cultural Resources Located in All Areas of Potential Effect | Number of Sites | 284[j]/284[a] | Not Reported |

**Table C-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October – December 2001) |
|---|---|---|---|
| **Air Quality** | | | |
| Nonradioactive Emissions[k] | | | |
| Nitrogen Oxides | tons/yr | 29.0/NA | NA |
| Carbon Monoxide (CO) | | | |
| Stationary Sources | | 25.4/NA | NA |
| Mobile Sources | | 3,837/NA | NA |
| Construction Activities | | 132/NA | NA |
| Lurance Canyon Burn Site | | 1.8/NA | NA |
| Total CO | | 3,996/NA | NA |
| Particulate Matter | | 2.5/NA | NA |
| Sulfur Dioxide | | 4.7[l]/NA | NA |
| Radioactive Emissions (8 Primary Locations)[m] | | | |
| Argon-41 | Ci/yr | 16.2/NA | NA |
| Tritium | | 4.50/NA | NA |
| Nitrogen-13[n] | | 0/NA | NA |
| Oxygen-15[n] | | 0/NA | NA |
| Iodine-131[o] | | 0/NA | NA |
| Iodine-132[o] | | 0/NA | NA |
| Iodine-133[o] | | 0/NA | NA |
| Iodine-134[o] | | 0/NA | NA |
| Iodine-135[o] | | 0/NA | NA |
| Krypton-83m[o] | | 0/NA | NA |
| Krypton-85[o] | | 0/NA | NA |
| Krypton-85m[o] | | 0/NA | NA |
| Krypton-87[o] | | 0/NA | NA |
| Krypton-88[o] | | 0/NA | NA |
| Xenon-131m[o] | | 0/NA | NA |
| Xenon-133[o] | | 0/NA | NA |
| Xenon-133m[o] | | 0/NA | NA |
| Xenon-135[o] | | 0/NA | NA |
| Xenon-135m[o] | | 0/NA | NA |
| Americium-241[p] | | $3.07 \times 10^{-7}$/NA | NA |
| Strontium-90[p] | | $3.83 \times 10^{-7}$/NA | NA |
| Cesium-137[p] | | $6.19 \times 10^{-8}$/NA | NA |
| Cobalt-60[p] | | $1.69 \times 10^{-8}$/NA | NA |
| Thorium-232[p] | | $3.99 \times 10^{-6}$/NA | NA |
| Radium-228[p] | | $3.74 \times 10^{-6}$/NA | NA |
| Thorium-228[p] | | $9.03 \times 10^{-7}$/NA | NA |
| Actinium-228[p] | | $3.80 \times 10^{-6}$/NA | NA |
| Radium-224[p] | | $1.09 \times 10^{-6}$/NA | NA |

**Table C-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October – December 2001) |
|---|---|---|---|
| Radioactive Emissions (8 Primary Locations)[m] (Continued) | | | |
| Lead-212[p] | Ci/yr | $3.86x10^{-6}$/NA | NA |
| Bismuth-212[p] | | $1.16x10^{-6}$/NA | NA |
| Thallium-208[p] | | $9.08x10^{-7}$/NA | NA |
| Radium-226[p] | | $4.12x10^{-6}$/NA | NA |
| Lead-214[p] | | $3.37x10^{-6}$/NA | NA |
| Bismuth-214[p] | | $7.15x10^{-7}$/NA | NA |
| Cesium-144[p] | | $4.41x10^{-8}$/NA | NA |
| Chromium-51[p] | | $5.29x10^{-8}$/NA | NA |
| Iron-59[p] | | $5.61x10^{-8}$/NA | NA |
| Thorium-234[p] | | $7.03x10^{-7}$/NA | NA |
| Ruthenium-106[p] | | $5.13x10^{-8}$/NA | NA |
| Cesium-134[p] | | $1.19x10^{-8}$/NA | NA |
| Ruthenium-103[p] | | $1.06x10^{-8}$/NA | NA |
| Zirconium-95[p] | | $5.08x10^{-8}$/NA | NA |
| Yttrium-88[p] | | $3.19x10^{-8}$/NA | NA |
| Potassium-40[p] | | $8.89x10^{-5}$/NA | NA |
| Uranium-234[p] | | $2.05x10^{-7}$/NA | NA |
| Uranium-235[p] | | $1.23x10^{-7}$/NA | NA |
| Uranium-238[p] | | $8.10x10^{-7}$/NA | NA |
| Chemicals Purchased[q] | | | |
| Hazardous Air Pollutants (HAPs) | tons/yr | 3.5/NA | NA |
| Toxic Air Pollutants (TAPs) | | 20.1/NA | NA |
| Volatile Organic Compounds (VOCs) | | 12.95/NA | NA |
| **Human Health and Worker Safety** | | | |
| Annual Collective Dose | Person-rem/yr | 3.7 (80 workers)/0.93 (20 workers) | 1.8 (56 workers) |
| Average TEDE | mrem/yr | 43.5/10.9 | 33 |
| Injury/Illness Rate | cases/yr | 397/99.3 | 41[r] |
| **Transportation** | | | |
| SNL/NM Commuters | Vehicles | 14,940[s]/14,940[a] | 14,940 |

**Table C-1. Site-Wide Environmental Issues by Resource Area (Continued)**

| Resource Area | Units | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October – December 2001) |
|---|---|---|---|
| **Waste Generation (Selected Facilities plus Balance of Operations)** | | | |
| Radioactive Waste | | | |
| Low-Level Waste | $ft^3$ ($m^3$) | 1,376 (39.0)/344 (10) | 323 (9) |
| Low-Level Mixed Waste | | 76 (2.2)/19 (0.6) | 35 (1) |
| Transuranic Waste | | 0 (0)/0 (0) | 0 (0) |
| Mixed Transuranic Waste | | 0 (0)/0 (0) | 0 (0) |
| Total Radioactive Waste | | 1,452 (41.1)/363 (11) | 358 (10) |
| Chemical Waste | | | |
| RCRA Hazardous Waste | kg (lb) | 25,717 (56,577)/6,429 (14,144) | 6,091 (13,425) |
| TSCA (PCBs and Asbestos) | | 146 (321)/37 (80) | 2,174 (4,793)[t] |
| Non-RCRA Chemicals | | 27,224 (59,893)/6,806 (14,973) | 3,486 (7,683) |
| Biohazardous | | 302 (666)/76 (167) | 340 (749) |
| Recyclable Materials (Hazardous) | | 55,500 (122,322)/13,875 (30,581)[u] | 7,900 (17,412)[u] |
| Total Chemical Waste | | 108,889 (240,100)/27,222 (60,025) | 19,991 (44,062) |
| Solid Waste[v] | kg (lb) | 3.0M (6.6M)/0.8M (1.7M) | 338,770 (746,649) |
| | $m^3$ ($yd^3$) | 10,110 (13,223)/2,528 (3,306) | 1,141 (1,492) |
| Solid Waste Recyclable[v] | kg (lb) | 638,000 (1.4M)/159,500 (3.5) | 345,160 (760,733) |
| **Noise and Vibration** | | | |
| SNL/NM Estimated Number of Noise/Vibration-Producing Tests | Tests/ day | 1.2/1.2[a] | 1.7[w] |
| **Socioeconomics** | | | |
| Employment | FTEs | 7,465/7,465[a] | 6,443[x] |
| Payroll | Dollars | 490M/123M | Not Reported |
| Expenditures | Dollars | 1.463B/366M | Not Reported |

[a] **Quarterly Average**—A quarterly average was not calculated for these values, which remained constant over the time interval.
[b] **Sanitary Sewer Discharge**—Based on an estimated average daily usage of ~750,000 gal.
[c] **Natural Gas Use**—Correction to values reported in SWEIS Annual Review – FY2001.
[d] **Potential Soil/Subsurface Contamination Sites Identified**—Includes 61 Areas of Concern (previously non-ER Project septic systems) related to the *Hazardous and Solid Waste Amendments* permit.
[e] **Active ER Sites**—Sites that are not currently scheduled for NFAs due to ongoing activities, per the definition of "Active Environmental Restoration Sites" negotiated with the New Mexico Environment Department (NMED).
[f] **NFA Approvals**—The final approval for 30 sites was received in November 2001, although the majority of the process was completed in FY2001; therefore, the total reported in the SWEIS Annual Review FY2001 (137) has been corrected.
[g] **SNL/NM 10-Year Projected Groundwater Use**—The SWEIS included annual and total projections of SNL/NM groundwater withdrawal over a 10-year period from 1998 through 2007. The projections incorporated gradual accomplishment of a 30-percent water conservation factor by SNL/NM by 2004.
[h] **Developed Area (for Runoff Projections)**—Estimate based on no changes to undeveloped land.
[i] **Change in Habitat Area**—No change compared to the SWEIS baseline.

[j] **Cultural Resources Located in All Areas of Potential Effect**—Correction to the number of sites reported in Table 2-1 of the SWEIS Annual Review – FY2001.
[k] **Nonradioactive Emissions**—Data given in the SWEIS Annual Review – FY2001 for nonradioactive emissions were actually for CY2001; Q4 CY2001 data were already included.
[l] **Sulfur Dioxide—**Quantity was high due to natural gas prices in the winter of FY2001; more diesel oil was burned at the Steam Plant than in previous years.
[m] **Radioactive Emissions—**In FY2001, there were eight primary radionuclide air emissions sources at SNL/NM that were used to calculate dose estimated to the public, as opposed to the original 10 that were used in the SWEIS. All data for radioactive emissions are for CY2001; Q4 CY2001 data were already included in the SWEIS Annual Review – FY2001.
[n] **Nitrogen-13, etc.—**The zero value is due to HERMES III being dropped from the primary source list.
[o] **Iodine-131, etc. —**Original SWEIS estimate was based on Mo-99 production occurring at the ACRR; the production of Mo-99 is currently in suspension.
[p] **Americium-241, etc. —**Radionuclide was not analyzed in the SWEIS; CY2001 emission value is based on a conservatively high estimate of the release fraction at the Chemical Waste Landfill (CWL).
[q] **Chemicals Purchased—**For reporting purposes, chemical purchases are assumed to equal emissions. The screening process groups chemical purchases into three categories. Quantities reported include emission factor corrections (see Appendix D of the SWEIS). Data given in the SWEIS Annual Review - FY2001 for chemicals purchased were actually for CY2001. Values did not match those given in Appendix B, which include only chemicals analyzed in the SWEIS; these data include all chemicals used. data for chemical purchases for Q4 CY2001 were already included in the SWEIS Annual Review – FY2001.
[r] **Injury/Illness Rate**—Number represents data for Sandians only. In CY2002, the Occupational Safety & Health (OSHA) Log was changed to include Sandians and Staff Augmentation contractors; for Q4 CY2001, this number was 48.
[s] **SNL/NM Commuters—**SNL/NM employee population estimated for FY2001 (6,812) indicates that associated traffic activities would remain within the SWEIS population (8,417) and traffic-related activities included in the expanded operations alternative.
[t] **TSCA (PCBs & Asbestos)**—Quantities represent any material with "asbestos" or "PCB" in its name that was processed through the Hazardous Waste Management Facility.
[u] **Recyclable Materials (Hazardous)**—Correction to the amounts reported in the SWEIS Annual Review – FY2001.
[v] **Solid Waste/Solid Waste Recyclable—**Solid Waste Transfer Facility reports annual rates; correction to the amounts reported in the SWEIS Annual Review – FY2001.
[w] **SNL/NM Estimated Number of Noise/Vibration-Producing Tests—**In Q4 CY2002, a total of 110 tests (at Selected Facilities) were completed. A work-year is based on 2,080 hours; a quarter of a work-year equals ~65 8-hour workdays, which translates to an average of 1.7 tests/day for Q4 CY2002.
[x] **Employment**—Number of full-time employees at end of CY2001. Employment numbers at SNL/NM are snapshots in time; actual number of employees may vary continuously.

**Sources:** Aragon, 2003; Castillo, 2003a, 2003b; Conaway, 2003; DeLaurentis, 2003; DOE, 1999; du Mond, 2003; Eckstein, 2003; Gonzales, 2003; Marley, 2003; Potter, 2003; SNL, 2002, 2003a, 2003b, 2003c; Vigil, 2003; Wrons, 2003.

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Advanced Manufacturing Processes Lab (AMPL) (TA-I) (Section 4.1.1)** | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Materials, Ceramics/Glass Electronics, Processes, and Systems | Operational Hours | 312,000/78,000 | 136,557 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | kg | 0/0 | 0 |
| | Mixed Waste | LLMW | kg | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 12,635/3,159 | 2,047 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | M $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 175/175[a] | 170 |
| | Expenditures | NA | M dollars | 26/6.5 | 6.5 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Explosive Components Facility (ECF, near TA-II) (Section 4.1.2)** | | | | | |
| Major Facility Activities | Test Activities | Neutron Generator Tests | Tests | NAPD | NA<br>PD |
| | | Explosive Testing | Tests | 600/150 | 150 |
| | | Chemical Analysis | Analyses | 900/225 | 220 |
| | | Battery Tests | Tests | 55/14 | 14 |
| Material Inventories[b] | Nuclear Material Inventory | Tritium | Ci | 49/12 | 49 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 110/27 | 25 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | kg | 1,000/250 | 250 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 400/100 | 100 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | $1x10^{-3}/2.5x10^{-5}$ | $2.5x10^{-5}$ |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 5.4/1.35 | 1.5 |
| | Water Consumption | NA | M gal | 6.1/1.5 | 1.5 |
| | Electricity Consumption | NA | kWh | 2,900,000/725,000 | 600,000 |
| | Boiler Energy | Natural gas | M $ft^3$ | 24/6 | 6 |
| | Facility Personnel | NA | FTEs | 88/88[a] | 88 [a] |
| | Expenditures | NA | M Dollars | 2.1/0.5 | 0.5 |
| Major Facility Activities | Other | Research and Development of Materials | Operational Hours | Not Reported/NA | 500 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Integrated Materials Research Laboratory (IMRL) (TA-I) (Section 4.1.3)** | | | | | |
| Material Inventories | Nuclear Material Inventory | Depleted Uranium | µCi | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | kg | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 2,372/593 | 1,900 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 220/220[a] | 230 |
| | Expenditures | NA | M Dollars | 45/11.25 | 10.5 |
| **Microelectronics Development Laboratory (MDL) (TA-I) (Section 4.1.4)** | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Microelectronic Devices and Systems | Wafers | 5,000/1,250 | 1,200 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Microelectronics Development Laboratory (TA-I) (Section 4.1.4) (Cont'd.)** | | | | | |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | kg | 0/0 | 0 |
| | Transuranic Waste | NA | kg | 0/0 | 0 |
| | Mixed Waste | LLMW | kg | 0/0 | 0 |
| | | Mixed TRU | kg | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 4,816/1,204 | 885 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 46.7/11.7 | 11.5 |
| | Water Consumption | NA | M gal | 91/22.8 | 22.8 |
| | Electricity Consumption | NA | kWh | 26,534,000/6,633,500 | 6,612,054 |
| | Boiler Energy | Natural gas | $ft^3$ | 26,136,000/6,534,000 | 6,051,000 |
| | Facility Personnel | NA | FTEs | 140/140[a] | 126 |
| | Expenditures | NA | M Dollars | 37/9.25 | 7.25 |
| **Neutron Generator Production Facility (NGPF) (TA-I) (Section 4.1.5)** | | | | | |
| Major Facility Activities | Development or Production of Devices, Processes, and Systems | Neutron Generators | Neutron Generators | NAPD | NAPD |
| Material Inventories | Nuclear Material Inventory | Tritium | Ci | NAPD | NAPD |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | Tritium | Ci | NAPD | NAPD |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Neutron Generator Facility (NGF) (TA-I) (Section 4.1.5) (Cont'd.)** | | | | | |
| Waste Generation | Low-Level Waste | NA | kg | 780/195 | 100 |
| | Transuranic Waste | NA | kg | 0/0 | 0 |
| | Mixed Waste | LLMW | kg | 31/7.8 | 4 |
| | | Mixed TRU | kg | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 2,800/700 | 700 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 27/6.8 | 0.39 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 2.9/0.73 | 0.750 |
| | Water Consumption | NA | M gal | 2.9/0.73 | 0.750 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 273/273[a] | 320 |
| | Expenditures | NA | M Dollars | 33/8.3 | 7.9 |
| **Centrifuge Complex (TA-III) (Section 4.2.1)** | | | | | |
| Major Facility Activities | Test Activities | Centrifuge | Tests | 21/5.3 | 7 |
| | | Impact | Tests | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 3/0.75 | 1 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Centrifuge Complex (TA-III) (Section 4.2.1) (Cont'd.)** | | | | | |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2/2[a] | 2[a] |
| | Expenditures | NA | M Dollars | 0.2/0.05 | 0 |
| **Drop/Impact Complex (TA-III) (Section 4.2.2)** | | | | | |
| Major Facility Activities | Test Activities | Drop Test | Tests | 3/0.75 | 1 |
| | | Water Impact | Tests | 0/0 | 0 |
| | | Submersion | Tests | 0/0 | 0 |
| | | Underwater Blast | Tests | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | Minimal/ Minimal | Minimal |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Drop/Impact Complex (TA-III) (Section 4.2.2) (Cont'd.)** | | | | | |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2/2[a] | 2[a] |
| | Expenditures | NA | Dollars | 52,000/13,000 | 0 |
| **Sled Track Complex (TA-III) (Section 4.2.3)** | | | | | |
| Major Facility Activities | Test Activities | Rocket Sled Test | Tests | 12/3 | 4 |
| | | Explosive Testing | Tests | 10/2.5 | 3 |
| | | Rocket Launcher | Tests | 3/0.75 | 0 |
| | | Free-Flight Launch | Tests | 22/5.5 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 12/3 | 3 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | Explosives | kg | NAPD | NAPD |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Sled Track Complex (TA-III) (Section 4.2.3) (Cont'd.)** | | | | | |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 3.3/0.83 | 3.3 |
| | Boiler Energy | Natural gas | $ft^3$ | 0.4/0.1 | 0.4 |
| | Facility Personnel | NA | FTEs | 10/10[a] | 10[a] |
| | Expenditures | NA | M Dollars | 0.400/0.1 | 0 |
| **Terminal Ballistics Facility (TA-III) (Section 4.2.4)** | | | | | |
| Major Facility Activities | Test Activities | Projectile Impact Testing | Tests | 50/12.5 | 14 |
| | | Propellant Testing | Tests | 25/6.25 | 8 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.2 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0.2/0.05 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Terminal Ballistics Facility (TA-III) (Section 4.2.4) (Cont'd.)** | | | | | |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2/2[a] | 2 [a] |
| | Expenditures | NA | dollars | 14,000/3,500 | 4,000 |
| **APPRM (TA-IV) (Section 4.3.1)** | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | Shots | 300/75 | 250 |
| Material Inventories | Nuclear Material Inventory | NA | μg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 164,000/164,000[a] | 225,000[a] |
| Material Consumption | Nuclear Material Consumption | NA | μg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 100/25 | 195 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 9.5/9.5[a] | 9.5[a] |
| | Expenditures | NA | M Dollars | 2/0.5 | 0.8 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **HERMES III (TA-IV) (Section 4.3.2)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 288/72 | 40 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 160,000/160,000[a] | 160,000[a] |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0.25/0.06 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 549/137.3 | 0 |
| Emissions | Radioactive Air Emissions | Nitrogen-3 | Ci | $3.4x10^{-4}$/ $8.5x10^{-5}$ | $4.49x10^{-5}$ |
| | | Oxygen-15 | Ci | $3.4x10^{-5}$/ $8.5x10^{-6}$ | $4.49x10^{-6}$ |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 4/4[a] | 4[a] |
| | Expenditures | NA | M Dollars | 1.2/0.3 | 0.39 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **RITS (TA-IV) (Section 4.3.3)** | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | Shots | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | µg | 0/0 | 0 |
| | Radioactive Material Inventory | Hardware | kg | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | kg | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | Nitrogen-13 | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0/0 | 0 |
| | Expenditures | NA | M Dollars | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **RHEPP I (TA-IV) (Section 4.3.4)** | | | | | |
| Major Facility Activities | Test Activities | Accelerator Tests | Tests | 2,494/623.5 | 1,184 |
| Material Inventories | Nuclear Material Inventory | Depleted Uranium | µg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 6,000/6,000[a] | 6,000[a] |
| Material Consumption | Nuclear Material Consumption | Depleted Uranium | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 1/0.25 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2.5/2.5[a] | 2.5[a] |
| | Expenditures | NA | M Dollars | 1.3/0.33 | 0.4 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **RHEPP II (TA-IV) (Section 4.3.5)** | | | | | |
| Major Facility Activities | Test Activities | Radiation Production | Tests | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | µg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 5,000/5,000[a] | 5,000[a] |
| | | Food Products | lb | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0.25/0.25[a] | 0.25[a] |
| | Expenditures | NA | M Dollars | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **SABRE (TA-IV) (Section 4.3.6)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 150/37.5 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | µg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 30,000/30,000[a] | 0 |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 3/3[a] | 0 |
| | Expenditures | NA | M Dollars | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Saturn (TA-IV) (Section 4.3.7)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 111/27.8 | 18 |
| Material Inventories | Nuclear Material Inventory | NA | Ci | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 300,000/300,000[a] | 300,000[a] |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 193.74/48.44 | 19.46 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 14/14[a] | 14[a] |
| | Expenditures | NA | M Dollars | 2.8/0.7 | 0.75 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **SPHINX (TA-IV) (Section 4.3.8)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation of Components or Materials | Shots | 1,599/399.8 | 73 |
| Material Inventories | Nuclear Material Inventory | NA | µg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 1,000/1,000[a] | 1,000[a] |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 35/8.8 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0/0 | 1 |
| | Expenditures | NA | M Dollars | 0.4/0.1 | 0.15 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October through December 2001) |
|---|---|---|---|---|---|
| **TESLA (TA-IV) (Section 4.3.9)** | | | | | |
| Major Facility Activities | Test Activities | Accelerator Shots | shots | 50/12.5 | 25 |
| Material Inventories | Nuclear Material Inventory | NA | µg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 20,000/20,000[a] | 20,000[a] |
| Material Consumption | Nuclear Material Consumption | NA | µg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 100/25 | 100 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2.5/2.5[a] | 2 |
| | Expenditures | NA | M Dollars | 0.5/0.13 | 0.125 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Z Accelerator (TA-IV) (Section 4.3.10)** | | | | | |
| Major Facility Activities | Test Activities | Tritium | Shots | 0/0 | 0 |
| | | Deuterium | Shots | 6/1.5 | 2 |
| | | Plutonium-239 | Shots | 0/0 | 0 |
| | | Depleted Uranium | Shots | 4/1 | 1 |
| | | Other | Shots | 152/38 | 39 |
| | | NA | Total Shots | 162/40.5 | 42 |
| Material Inventories | Nuclear Material Inventory | Tritium | Ci | 0/0 | 0 |
| | | Deuterium | ℓ | 350/87.5 | 100 |
| | | Plutonium-239 | mg | NAPD | NAPD |
| | | Depleted Uranium | mg | NAPD | NAPD |
| | Radioactive Material Inventory | Activated Hardware | kg | 2,000/500 | 500 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Insulator Oil | gal | 700,000/700,000[a] | 700,000[a] |
| Material Consumption | Nuclear Material Consumption | Tritium | Ci | 0/0 | 0 |
| | | Deuterium | ℓ | 350/87.5 | 100 |
| | | Plutonium-239 | mg | 0/0 | 0 |
| | | Depleted Uranium | mg | 8,224/2,056 | 600 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 10/2.5 | 28 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 1,233/308.3 | 379.21 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 55/55[a] | 55[a] |
| | Expenditures | NA | M Dollars | 1.82/0.46 | 0.34 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **ACRR Pulse Mode (TA-V) (Section 4.4.1)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation Tests | Test Series | 5/1.25 | 1 |
| Material Inventories[c] | Nuclear Material Inventory | Enriched Uranium | kg | NAPD | NAPD |
| | | Plutonium-239 | g | NAPD | NAPD |
| | Radioactive Material Inventory | Cobalt-60 | Ci | 33.6/8.4 | |
| | | Radioisotopes (Tritium) | Ci | 20,000[d] /20,000[a] | 20,000[a] |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | Enriched Uranium | g | NAPD | NAPD |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 5/1.25 | 1 |
| | Mixed Waste | LLMW | $ft^3$ | 5/1.25 | 1 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 14/3.5 | 5 |
| Emissions | Radioactive Air Emissions | Argon-41 | Ci | 39/9.8 | 10 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 50,000/12,500 | 10,000 |
| | Water Consumption | NA | M gal | 100,000/25,000 | 25,000 |
| | Electricity Consumption | NA | kWh | 1,000/250 | NR |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 4/4[a] | 4[a] |
| | Expenditures | NA | M Dollars | 4/1 | 1 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **GIF (TA-V) (Section 4.4.3)** | | | | | |
| Major Facility Activities | Test Activities | Tests | Hours | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0[d]/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0/0 | 0 |
| | Expenditures | NA | M Dollars | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Hot Cell Facility (TA-V) (Section 4.4.4)** | | | | | |
| Major Facility Activities | Test Activities | Processing | Targets | 0/0 | 0 |
| Material Inventories[c] | Nuclear Material Inventory | Enriched Uranium | g | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | Spent Fuel | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | Enriched Uranium | kg | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | 0/0 | 0 |
| | | Argon-41 | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0/0 | 0 |
| | Expenditures | NA | M Dollars | 0/0 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **New GIF (TA-V) (Section 4.4.5)** | | | | | |
| Major Facility Activities | Test Activities | Tests | hrs | 0/0 | ~130 |
| Material Inventories[c] | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | Cobalt-60 | Ci | NAPD | NAPD |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 2/0.5 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 1/0.25 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 200,000/50,000 | 50,000 |
| | Electricity Consumption | NA | kWh | 20/5 | 5 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 2/2[a] | 2[a] |
| | Expenditures | NA | M Dollars | 1/0.25 | 0.125 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Sandia Pulsed Reactor (SPR) (TA-V) (Section 4.4.6)** | | | | | |
| Major Facility Activities | Test Activities | Irradiation Tests | Tests | 0/0 | 0 |
| Material Inventories[c] | Nuclear Material Inventory | Plutonium-239 | g | NAPD | NAPD |
| | | Enriched Uranium | kg | 0/0 | NAPD |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | Ci | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | kg | 10/2.5 | 2.5 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | $ft^3$ | 1/0.25 | 0.25 |
| Emissions | Radioactive Air Emissions | Argon-41 | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 4/4[a] | 4[a] |
| | Expenditures | NA | M Dollars | 4/1 | 1 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Aerial Cable Facility Complex (Sol Se Mete Canyon) (Section 4.5.1)** | | | | | |
| Major Facility Activities | Test Activities | Drop/Pull-Down | Tests | 5/1.25 | 4 |
| | | Aerial Target | Tests | 0/0 | 2 |
| | | Scoring System Tests | Series | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | kg | NAPD | NAPD |
| | | Bare UNO 1.3 (Rocket Motors) | kg | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 4/1 | 4.3 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 8/8[a] | 8[a] |
| | Expenditures | NA | M Dollars | 0.18/0.05 | 0.0 |

Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **CTTF-West (in Coyote Test Field) (Section 4.5.2)** | | | | | |
| Major Facility Activities | Survivability Testing | Test Series | Test Series | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Sealed Source Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Adhesives | g | 500/125 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | g | 100/25 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 4/4[a] | 0 |
| | Expenditures | NA | M Dollars | 3/0.75 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Explosives Applications Laboratory (in Coyote Test Field) (Section 4.5.3)** | | | | | |
| Major Facility Activities | Explosive Testing | Tests | Tests | 180/45 | 59 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | | Bare UNO 1.2 | g | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Film Developer/Fixer | gal | 30/7.5 | 7 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | Bare UNO 1.1 | g | NAPD | NAPD |
| | | Bare UNO 1.2 | g | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD |
| | | Bare UNO 1.4 | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 1.5/0.38 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 5/5[a] | 5[a] |
| | Expenditures | NA | M Dollars | 0.81/0.2 | 0.20 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|---|
| **Lurance Canyon Burn Site (Section 4.5.4)** | | | | | | |
| Major Facility Activities | Test Activities | Certification | Tests | 8/2 | | 2 |
| | | Model Validation | Tests | 45/11.3 | | 9 |
| | | User Testing | Tests | 20/5 | | 4 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | | 0 |
| | Explosives Inventory | NA | g | NAPD | | NAPD |
| | Other Hazardous Material Inventory | NA | kg | 0/0 | | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | | 0 |
| | Explosives Consumption | NA | kg | NAPD | | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | | 0 |
| | Hazardous Waste | NA | kg | 900/225 | | 200 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | | 0 |
| | Open Burning | JP-8 Fuel | gal/burn | 25,000/65 | 6,250/16.25 | 16/5,000 |
| | | Wood | kg/burn | 1,000/2 | 250/0.5 | 1/1,000 |
| | | Rocket Propellant | kg/burn | 0/0 | 0/0 | 0/0 |
| Process Support | Wastewater Effluent | NA | gal | 25,000/6,250 | | 8,000 |
| | Water Consumption | NA | gal | 10,000/2,500 | | 2,500 |
| | Electricity Consumption | NA | kWh | 0/0 | | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | | 0 |
| | Facility Personnel | NA | FTEs | 4.5/4.5[a] | | 0.5 |
| | Expenditures | NA | M Dollars | 0.25/0.06 | | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Thunder Range Complex (in Coyote Test Field) (Section 4.5.5)** | | | | | |
| Major Facility Activities | Other | Equipment Disassembly And Evaluation | Days | 5/1.25 | 0 |
| | Other | Ground Truthing Tests | Test Series | 1/1[a] | 0 |
| Material Inventories[c] | Nuclear Material Inventory | Plutonium-238 | Ci | NAPD | NAPD |
| | | Plutonium-239 | Ci | NAPD | NAPD |
| | | Americium-241 | Ci | NAPD | NAPD |
| | | Americium-243 | Ci | NAPD | NAPD |
| | | Normal Uranium | Ci | ≤ 4.2/1.05 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | NA | NA | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | g | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0.8/0.8[a] | 0 |
| | Expenditures | NA | dollars | 10,000/2,500 | 0 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **HWMF (South of TA-I) (Section 4.6.1)** | | | | | |
| Major Facility Activities | Infrastructure | Collection, Packaging, Handling, and Short-Term Storage of Hazardous and Other Toxic Waste | kg | 66,559/16,640 | 6,928 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Sealed Source Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | lb | 900/225 | 300 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 1,045/261.3 | 56 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 13/13[a] | 10 |
| | Expenditures | NA | M Dollars | 1.97/0.49 | 0.477 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **RMWMF (TA-III) (Section 4.6.2)** | | | | | |
| Major Facility Activities | Infrastructure | Receipt, Packaging, and Shipping of Radioactive Waste | lb | 1.9M/0.48M | 0.75M |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.2 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | gal | 6,630/6,630[a] | 6,630[a] |
| | | Liquid Nitrogen | ℓ | 8,320/8,320[a] | 8,320[a] |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 10,202/2,551 | 3,770 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 364/91 | 13 |
| | | Mixed TRU | $ft^3$ | 1/0.25 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | Tritium | Ci | $6.43x10^{-2}$/ $1.61x10^{-2}$ | $1.61x10^{-2}$ |
| | | Sr-90 | Ci | $3.83x10^{-7}$/ $9.58x10^{-8}$ | $9.58x10^{-8}$ |
| | | Am-241 | Ci | $2.52x10^{-7}$/ $6.30x10^{-8}$ | $6.30x10^{-8}$ |
| | | Cs-137 | Ci | $1.06x10^{-8}$/ $2.65x10^{-9}$ | $2.65x10^{-9}$ |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 39/39[a] | 40 |
| | Expenditures | NA | M Dollars | 8/2 | 2 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Steam Plant (TA-I) (Section 4.6.3)** | | | | | |
| Major Facility Activities | Infrastructure | Generate and Distribute Steam to DOE, TA-I, KAFB East, Coronado Club | lb | 529M/132.3M | 742M |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | NA | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Diesel Fuel | M gal | 0.75/0.19 | 0 |
| | | Propane | gal | 300/75 | 100 |
| | | Water Treatment Chemicals | gal | 1,752/438 | 2,522 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 9/2.3 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | NA | gal/burn | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 5.7 |
| | Electricity Consumption | NA | kWh | 1.2M/0.3M | 0.180M |
| | Boiler Energy | Natural gas | $ft^3$ | 806M/201.5M | 0.180M |
| | Facility Personnel | NA | FTEs | 16/16[a] | 16[a] |
| | Expenditures | NA | M dollars | 2.8/0.7 | 0.7 |

**Table C-2. Summary of Q4 CY2001 Operational Data from Selected Facilities (Continued)**

| Category | Description | Activity Type or Material | Units (per Year) | FY2001 Annual Total/Quarterly Average | Q4 CY2001 (October - December 2001) |
|---|---|---|---|---|---|
| **Thermal Treatment Facility (TTF) (TA-III) (Section 4.6.4)** | | | | | |
| Major Facility Activities | Infrastructure | Treatment of Waste | lb | 0/0 | 0 |
| Material Inventories | Nuclear Material Inventory | NA | kg | 0/0 | 0 |
| | Radioactive Material Inventory | NA | Ci | 0/0 | 0 |
| | Spent Fuel Inventory | NA | kg | 0/0 | 0 |
| | Explosives Inventory | Bare UNO 1.1 | g | NAPD | NAPD |
| | | Bare UNO 1.3 | g | NAPD | NAPD |
| | Other Hazardous Material Inventory | Propane | gal | 0/0 | 0 |
| Material Consumption | Nuclear Material Consumption | NA | g | 0/0 | 0 |
| | Radioactive Material Consumption | NA | Ci | 0/0 | 0 |
| | Explosives Consumption | NA | kg | NAPD | NAPD |
| Waste Generation | Low-Level Waste | NA | $ft^3$ | 0/0 | 0 |
| | Transuranic Waste | NA | $ft^3$ | 0/0 | 0 |
| | Mixed Waste | LLMW | $ft^3$ | 0/0 | 0 |
| | | Mixed TRU | $ft^3$ | 0/0 | 0 |
| | Hazardous Waste | NA | kg | 0/0 | 0 |
| Emissions | Radioactive Air Emissions | NA | Ci | 0/0 | 0 |
| | Open Burning | Propane | gal | 0/0 | 0 |
| Process Support | Wastewater Effluent | NA | M gal | 0/0 | 0 |
| | Water Consumption | NA | M gal | 0/0 | 0 |
| | Electricity Consumption | NA | kWh | 0/0 | 0 |
| | Boiler Energy | Natural gas | $ft^3$ | 0/0 | 0 |
| | Facility Personnel | NA | FTEs | 0.1/0.1[a] | 0.1[a] |
| | Expenditures | NA | Dollars | 0/0 | 0 |

[a]A quarterly average was not calculated, because the value remained constant over the time interval.
[b]The average annual inventory of test articles stored at the ECF.
[c]Nuclear and radioactive material inventories listed here are bounding quantities for facility accident analysis and do not represent actual quantities in inventory at a facility. In addition, material inventories are not necessarily stored in facilities where they are used.
[d]Correction to values reported in SWEIS Annual Review – FY2001.

ac = acre; Ci = curie, $ft^2$ = square foot; $ft^3$ = cubic foot; FTE = full-time equivalent, g = gram, gal = gallon, kg = kilogram, $km^2$ = square kilometer; kWh = kilowatt-hour, ℓ = liter; LLMW = low-level mixed waste, M = million, µg = microgram, mg = milligram, $mi^2$ = square mile; MWh = megawatt-hour; NA = not applicable, NAPD = not available for public distribution, NR =

not reported, rem = r(oentgen) e(quivalent in) m(an); scf = standard cubic feet; TRU = transuranic; UNO = United Nations Organization (explosives categories); yr = year.

Source: SNL, 2003a, 2003b; Talley, 2003; Walker, 2003.

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