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Cover Sheet, Table of Contents, List of Figures,
List of Tables, Acronyms, Units of Measure,
Metric Conversion Chart, Metric Prefixes

COVER SHEET

RESPONSIBLE AGENCY: U.S. DEPARTMENT OF ENERGY (DOE)

COOPERATING AGENCY: U.S. AIR FORCE

TITLE: Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico (DOE/EIS-0281)

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Abstract: The DOE proposes to continue operating the Sandia National Laboratories/New Mexico (SNL/NM) located in central New Mexico. The DOE has identified and assessed three alternatives for the operation of SNL/NM: (1) No Action, (2) Expanded Operations, and (3) Reduced Operations. The Expanded Operations Alternative is the DOE's preferred alternative (exclusive of the Microsystems and Engineering Sciences Applications Complex configuration). Under the No Action Alternative, the DOE would continue the historical mission support activities SNL/NM has conducted at planned operational levels. Under the Expanded Operations Alternative, the DOE would operate SNL/NM at the highest reasonable levels of activity currently foreseeable. Under the Reduced Operations Alternative, the DOE would operate SNL/NM at the minimum levels of activity necessary to maintain the capabilities to support the DOE mission in the near term. Under all of the alternatives, the affected environment is primarily within 50 miles (80 kilometers) of SNL/NM. Analyses indicate little difference in the environmental impacts among alternatives.

Public Comments: The Draft SWEIS was released to the public for review and comment on April 16, 1999. The comment period ended on June 15, 1999, although late comments were accepted to the extent practicable. All comments were considered in preparation of the Final SWEIS¹. The DOE will use the analysis in this Final SWEIS and prepare a Record of Decision on the level of continued operation of SNL/NM. This decision will be made no sooner than 30 days after the Notice of Availability of the Final SWEIS appears in the *Federal Register*.

¹ Changes made to this SWEIS since publication of the Draft SWEIS are marked with a vertical bar to the right or left of the text.

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Acronyms

58th SOW	58 th Special Operations Wing
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
ACGIH	American Conference of Governmental Industrial Hygienists
ACPR II	Annular Core Pulsed Reactor II
ACRR	Annular Core Research Reactor
ACS	American Cancer Society
AEA	<i>Atomic Energy Act</i>
AEHD	Albuquerque Environmental Health Department
AEI	average exposed individual
AFRL	Air Force Research Laboratory
AFSC	Air Force Safety Center
AL	Albuquerque Operations Office
ALARA	as low as reasonably achievable
ALOHA	<i>Areal Locations of Hazardous Atmospheres</i>
AMPL	Advanced Manufacturing Processes Laboratory
ANSI	American National Standards Institute
APCD	Air Pollution Control Division
APPRM	Advanced Pulsed Power Research Module
AQCR	Air Quality Control Region
ARF	airborne release fraction
AT	averaging time
AT&T	American Telephone and Telegraph
BEA	Bureau of Economic Analysis
BEIR	Biological Effects of Ionizing Radiation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
C&D	construction and demolition
CAA	<i>Clean Air Act</i>
CAB	Citizens Advisory Board
CAMP	Capital Assets Management Process
CAMU	Corrective Action Management Unit

Note: Italics are used to denote formal names or titles of acts, published documents, or computer models.

CAP88-PC	<i>Clean Air Assessment Package</i>
CAS	Chemical Abstract Service
CDG	Campus Design Guideline
CDI	chronic daily intake
CEDE	committed effective dose equivalent
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CFR	<i>Code of Federal Regulations</i>
CHEST	Conventional High Explosives and Simulation Test
CIS	Chemical Information System
COC	chemicals of concern
CPMS	Criteria Pollutant Monitoring Station
CRMP	Cultural Resource Management Plan
CSF	cancer slope factor
CSRL	Compound Semiconductor Research Laboratory
CTA	Central Training Academy
CTTF	Containment Technology Test Facility
CWA	<i>Clean Water Act</i>
CWL	Chemical Waste Landfill
CY	calendar year
D&D	decontamination and decommissioning
DARHT	dual-axis radiographic hydrotest
DEAR	Department of Energy Acquisitions Regulations
DF	decontamination factor, dispersion factor
DFG	Deutsche Forschungsgemeinschaft
DNL	day-night average noise level
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
DP	Defense Programs
DR	damage ratio
DU	depleted uranium

EA	environmental assessment
EAL	Explosives Applications Laboratory
ECF	Explosive Components Facility
EDE	effective dose equivalent
EF	emission factor
EID	environmental information document
EIS	environmental impact statement
ELCR	excess lifetime cancer risk
EM	Office of Environmental Management
EMP	electromagnetic pulse
EO	<i>Executive Order</i>
EOD	explosive ordinance disposal
EPA	U.S. Environmental Protection Agency
EPCRA	<i>Emergency Planning and Community Right-to-Know Act</i>
ER	emission rate
ER	Environmental Restoration (Project)
ERPG	emergency response planning guideline
ES&H	Environment, Safety, and Health
ET	exposure time
ETC	Energy Training Center
FAA	Federal Aviation Administration
FCDSWA	Field Command, Defense Special Weapons Agency
FFCA	<i>Federal Facilities Compliance Act</i>
FM&T/NM	Federal Manufacturing & Technology/New Mexico
FONSI	Finding of No Significant Impact
FR	<i>Federal Register</i>
FSID	<i>Facilities and Safety Information Document</i>
FTE	full-time equivalent
FY	fiscal year
GHA	ground hazard area
GIF	Gamma Irradiation Facility
GIS	geographic information system
GRABS	Giant Reusable Air Blast Simulator
GWPMPP	<i>Groundwater Protection Management Program Plan</i>

HA	hazards assessment
HAP	hazardous air pollutants
HBWSF	High Bay Waste Storage Facility
HCF	Hot Cell Facility
HCPI	Hazardous Chemical Purchases Inventory
HEAST	Health Effects Assessment Summary Tables
HEPA	high efficiency particulate arrestance
HERMES	High-Energy Radiation Megavolt Electron Source
HERTF	High-Energy Research Test Facility
HI	hazard index
HLW	high-level radioactive waste
HPML	High Power Microwave Laboratory
HQ	hazard quotient
HQ	headquarters
HR	hydrogeologic region
HSWA	<i>Hazardous and Solid Waste Amendments</i>
HVAR	high velocity aircraft rocket
HWMF	Hazardous Waste Management Facility
IBMRL	Ion Beam Materials Research Laboratories
ICF	inertial confinement fusion
ICRP	International Commission on Radiological Protection
IDLH	immediately dangerous to life and health
IH	industrial hygiene
IHE	insensitive high explosives
IHIL	Industrial Hygiene Instrumentation Laboratory
IHIR	Industrial Hygiene Investigation Report
IMRL	Integrated Materials Research Laboratory
IPS	Integrated Procurement System
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
ISC	industrial source complex
ISCST3	<i>Industrial Source Complex Short-Term Model, Version 3</i>
ISS	interim storage site
JIT	just-in-time

JP	jet propulsion
KAFB	Kirtland Air Force Base
KAO	Kirtland Area Office
KUMMSC	Kirtland Underground Munitions and Maintenance Storage Complex
L90	the A-weighted background sound pressure level that is exceeded 90 percent of the time, based on a maximum of a 1-hour period
LADD	lifetime average daily dose
LANL	Los Alamos National Laboratory
LANMAS	Local Area Network Nuclear Material Accountability System
LBERI	Lovelace Biomedical and Environmental Research Institute, Inc.
LCF	latent cancer fatality
LLMW	low-level mixed waste
LLNL	Lawrence Livermore National Laboratory
LLW	low-level waste
 LOAEL	lowest observed adverse effect level
LPF	leak path factor
LSA	low specific activity
LSF	Lightning Simulation Facility
LWDS	Liquid Waste Disposal System
M&O	management and operations
M.W.	molecular weight (in grams)
MAC	maximum allowable concentration
MACCS2	<i>MELCOR Accident Consequence Code System, Version 2</i>
MAR	material-at-risk
MBTA	<i>Migratory Bird Treaty Act</i>
MCL	maximum contaminant level
MDL	Microelectronics Development Laboratory
MEI	maximally exposed individual
MEMF	Mobile Electronic Maintenance Facility
MEPAS	Multimedia Environmental Pollutant Assessment System
 MESA	Microsystems and Engineering Sciences Applications
MIPP	Medical Isotopes Production Project
MOBILE 5a	<i>Mobile Source Emission Factor (model)</i>
MOU	Memorandum of Understanding

Mo-99	molybdenum-99
MSDS	material safety data sheet
MTRU	mixed transuranic waste
MWL	Mixed Waste Landfill
NA	not applicable
NA	not available
NAAQS	<i>National Ambient Air Quality Standards</i>
NAGPRA	<i>Native American Graves Protection and Repatriation Act</i>
NASA	National Aeronautics and Space Administration
NCA	<i>Noise Control Act</i>
NCEA	National Center for Environment Assessment
NRC	Nuclear Regulatory Commission
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NEPA	<i>National Environmental Policy Act</i>
NESHAP	<i>National Emissions Standards for Hazardous Air Pollutants</i>
NEW	net explosive weight
NF	not found
NGF	Neutron Generator Facility
NGIF	New Gamma Irradiation Facility
NHPA	<i>National Historic Preservation Act</i>
NRHP	National Register of Historic Places
NIOSH	National Institute of Occupational Safety and Health
NMAAQs	<i>New Mexico Ambient Air Quality Standards</i>
NMAC	<i>New Mexico Administrative Code</i>
NMED	New Mexico Environment Department
NMEIB	New Mexico Environmental Improvement Board
NMFRCD	New Mexico Forestry and Resource Conservation Division
NMDGF	New Mexico Department of Game and Fish
NMSA	<i>New Mexico Statutes Annotated</i>
NMSU	New Mexico State University
NMWQCC	New Mexico Water Quality Control Commission
NNSI	Nonproliferation and National Security Institute
NOAEL	no observed adverse effect level

NOI	Notice of Intent
NOVA	North Vault
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NR	not reported
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NTS	Nevada Test Site
OBODM	<i>Open Burn/Open Detonation Model</i>
OBS	observations
OEL	occupational exposure limits
OLM	ozone limiting method
ORPD	Occupational Radiation Protection Division
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PBCA	Particle Bed Critical Assembly
PBFA	Particle Beam Fusion Accelerator
PCB	polychlorinated biphenyl
PDFL	Photovoltaic Device Fabrication Laboratory
PDL	Power Development Laboratory
PEIS	Programmatic Environmental Impact Statement
PEL	permissible exposure limit
PHS	Process Hazard Survey
PL	<i>Public Law</i>
PM_{2.5}	particulate matter smaller than 2.5 microns in diameter
PM₁₀	particulate matter smaller than 10 microns in diameter
PNM	Public Service Company of New Mexico
PPE	personal protective equipment
PSD	prevention of significant deterioration
PSL	Production Primary Standards Laboratory
PT	product tester
PVC	polyvinyl chloride
R&D	research & development
RCRA	<i>Resource Conservation and Recovery Act</i>

REL	recommended exposure limit
REMS	Radiation Exposure Monitoring System
RF	respirable fraction
RfD	reference dose
RHEPP	Repetitive High Energy Pulsed Power
RHI	risk hazard index
RITS	Radiographic Integrated Test Stand
RME	reasonable maximum exposure
RMMA	Radioactive Materials Management Area
RMP	Risk Management Plan
RMSEL	Robotic Manufacturing Science Engineering Laboratory
RMWMF	Radioactive and Mixed Waste Management Facility
ROD	Record of Decision
ROI	region of influence
RV	reentry vehicle
SA	safety assessment
SABRE	Sandia Accelerator & Beam Research Experiment
SAR	Safety Analysis Report
SARA	<i>Superfund Amendments and Reauthorization Act</i>
SCAPA	Subcommittee on Consequence Assessment and Protective Actions
SDWA	<i>Safe Drinking Water Act</i>
SECOM	Secure Communication Center
SHPO	State Historic Preservation Officer (NM)
SIP	State Implementation Plan
SMERF	Smoke Emission Reduction Facility
SMS	Scenery Management System
SNAP	Systems for Nuclear Auxiliary Power
SNL/CA	Sandia National Laboratories/California
SNL/HI	Sandia National Laboratories/Hawaii
SNL/NM	Sandia National Laboratories/New Mexico
SNL/NV	Sandia National Laboratories/Nevada
SNM	special nuclear material
SPA	sawdust-propellant-acetone
SPHINX	Short-Pulse High Intensity Nanosecond X-Radiator

SPR	Sandia Pulsed Reactor
SRS	Savannah River Site
SSM	stockpile stewardship and management
SST	safe, secure transport
STAR	stability array
START	Strategic Arms Reduction Treaty
STEL	short-term exposure limit
STL	Simulation Technology Laboratory
STP	standard temperature and pressure
SVOC	semivolatile organic compound
SWEIS	Site-Wide Environmental Impact Statement
SWISH	Small Wind Shielded Facility
SWMU	solid waste management unit
SWTF	Solid Waste Transfer Facility
TA	technical area
TAP	toxic air pollutants
TBF	Terminal Ballistics Facility
TCE	trichloroethylene
TCP	traditional cultural property
TEDE	total effective dose equivalent
TEEL	temporary emergency exposure limits
TESLA	Tera-Electron Volt Semiconducting Linear Accelerator
TEV	threshold emission value
TI	transport index
TLV	threshold limit value
TNT	trinitrotoluene
TRU	transuranic
TSCA	<i>Toxic Substances Control Act</i>
TSD	Transportation Safety Division
TSP	total suspended particulates
TTF	Thermal Treatment Facility
TtNUS	Tetra Tech NUS, Inc.
TWA	time weighted average
U.S.	United States

U.S.C.	<i>United States Code</i>
UBC	Uniform Building Code
UNM	University of New Mexico
UNO	United Nations Organization
UPS	United Parcel Service
USAF	U.S. Air Force
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTM	Universal Transverse Mercator
VDL	vacuum diode load
VHI	vapor hazard index
VHR	vapor hazard ratio
VMF	vehicle maintenance facility
VOC	volatile organic compound
WARE	Worksite Accident Reduction Expert
WFO	work for others
WIPP	Waste Isolation Pilot Plant
WM	Waste Management

UNIT OF MEASURE	ABBREVIATION
acre	ac
billion gallons per year	BGY
centimeters	cm
cubic feet	ft ³
cubic feet per second	ft ³ /s
cubic meters	m ³
cubic yards	yd ³
Curie	Ci
decibel	dB
degrees Celsius	°C
degrees Fahrenheit	°F
feet	ft
gallon	gal
gallons per day	gpd
gram	g
grams per second	g/sec
gravity	g
hectare	ha
Hertz	Hz
hour	hr
kelvin	K
kilogram	kg
kilojoule	kJ
kilometer	km
kilometer per hour	km/hr
kilovolt	kV
kilovoltampere	kVA
kilowatt	kW
kilowatt hour	kWh
liter	L
megajoule	MJ
megavolt-ampere	MVA

UNIT OF MEASURE	ABBREVIATION
megawatt	MW
megawatt hour	MWh
megawatt-electric	MWe
megawatt-thermal	MWt
meter	m
meters per second	m/sec
microcurie	μ Ci
microcuries per gram	μ Ci/g
microgram	μ g
micrograms per cubic meter	μ g/m ³
micrograms per kilogram	μ g/kg
micrograms per liter	μ g/L
micron or micrometer	μ m
microohms per centimeter	μ ohms/cm
micropascal	mPa
mile	mi
miles per hour	mph
millicurie	mCi
millicurie per gram	mCi/g
millicurie per millimeter	mCi/ml
milligram	mg
milligram per liter	mg/L
milliliter	ml
millimeters of mercury	mmHg
million	M
million electron volts	MeV
million gallons per day	MGD
million gallons per year	MGY
millirem	mrem
millirem per year	mrem/yr
nanocurie	nCi
nanocuries per gram	nCi/g

^aAlthough not used in the SWEIS, the sievert is a common unit of measure for dose and equivalent to 100cm.

Metric Conversion Chart					
TO CONVERT FROM U.S. CUSTOMARY INTO METRIC			TO CONVERT FROM METRIC INTO U.S. CUSTOMARY		
If you know	Multiply by	To get	If you know	Multiply by	To get
<i>Length</i>					
inches	2.540	centimeters	centimeters	0.3937	inches
feet	30.48	centimeters	centimeters	0.03281	feet
feet	0.3048	meters	meters	3.281	feet
yards	0.9144	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.6214	miles
<i>Area</i>					
square inches	6.452	square centimeters	square centimeters	0.1550	square inches
square feet	0.09290	square meters	square meters	10.76	square feet
square yards	0.8361	square meters	square meters	1.196	square yards
acres	0.4047	hectares	hectares	2.471	acres
square miles	2.590	square kilometers	square kilometers	0.3861	square miles
<i>Volume</i>					
fluid ounces	29.57	milliliters	milliliters	0.03381	fluid ounces
gallons	3.785	liters	liters	0.2642	gallons
cubic feet	0.02832	cubic meters	cubic meters	35.31	cubic feet
cubic yards	0.7646	cubic meters	cubic meters	1.308	cubic yards
<i>Weight</i>					
ounces	28.35	grams	grams	0.03527	ounces
pounds	0.4536	kilograms	kilograms	2.205	pounds
short tons	0.9072	metric tons	metric tons	1.102	short tons
<i>Temperature</i>					
Fahrenheit (°F)	subtract 32, then multiply by 5/9	Celsius (°C)	Celsius (°C)	multiply by 9/5, then add 32	Fahrenheit (°F)
kelvin (°k)	subtract 273.15	Celsius (°C)	kelvin (°k)	Multiply by 9/5, then add 306.15	Fahrenheit (°F)
Note: 1 sievert = 100 rems					

Metric Prefixes			
PREFIX	EXONENT CONVERTED TO WHOLE NUMBERS	PREFIX	EXONENT CONVERTED TO WHOLE NUMBERS
atto-	$10^{-18} = 0.000,000,000,000,000,001$	deka-	$10^1 = 10$
femto-	$10^{-15} = 0.000,000,000,000,001$	hecto-	$10^2 = 100$
pico	$10^{-12} = 0.000,000,000,001$	kilo-	$10^3 = 1,000$
nano-	$10^{-9} = 0.000,000,001$	mega-	$10^6 = 1,000,000$
micro-	$10^{-6} = 0.000,001$	giga-	$10^9 = 1,000,000,000$
milli	$10^{-3} = 0.001$	tetra-	$10^{12} = 1,000,000,000,000$
centi	$10^{-2} = 0.01$	peta-	$10^{15} = 1,000,000,000,000,000$
deci-	$10^{-1} = 0.1$	exa-	$10^{18} = 1,000,000,000,000,000,000$
Note: $10^0 = 1$			