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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 SWEIS[1]. 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*.

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[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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Table of Contents

Chapter 1 Introduction and Purpose and Need for Agency Action 1-1

1.1 Introduction 1-1

The Importance of SNL's National Security Role 1-1

The DOE Mission Statement 1-1

1.2 Purpose and Need for Agency Action 1-3

SWEIS Terminology 1-3

1.3 Proposed Action and Alternatives 1-4

1.3.1 No Action Alternative 1-4

1.3.2 Expanded Operations Alternative 1-4

1.3.3 Reduced Operations Alternative 1-4

1.3.4 Preferred Alternative 1-5

1.4 Objective of the SWEIS 1-5

1.5 Decisions to be Supported by the SWEIS 1-5

1.6 Projects Under Consideration 1-6

1.7 Public Participation 1-6

1.7.1 Scoping Process 1-7

1.7.2 Summary of Scoping Issues and Concerns 1-7

1.7.3 Public Comment Process 1-7

1.7.4 Summary of Comments and Responses 1-7

1.7.5 Changes to the Draft SWEIS 1-17

1.7.6 Next Steps 1-18

1.8 Related NEPA Documents 1-18

1.8.1 Stockpile Stewardship and Management Programmatic Environmental Impact Statement (DOE/EIS-0236-F) 1-18

1.8.2 Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200-F) .. 1-18

1.8.3 Medical Isotopes Production Project Environmental Impact Statement (DOE/EIS-0249-F) .. 1-19

1.8.4 Nonnuclear Consolidation Environmental Assessment (DOE/EA-0792) 1-19

1.8.5 Environmental Assessment of the Environmental Restoration Project at SNL/NM (DOE/EA-1140) 1-19

1.8.6 Rapid Reactivation Project Environmental Assessment (DOE/EA-1264) 1-19

1.8.7 Environmental Assessment of the Radioactive and Mixed Waste Management Facility (DOE/EA-0466) 1-19

1.8.8 Environmental Assessment for Operations, Upgrades, and Modifications in SNL/NM Technical Area-IV (DOE/EA-1153) 1-19

1.8.9 Environmental Assessment for the Processing and Environmental Technology Laboratory (PETL) (DOE/EA-0945) 1-20

1.8.10 Neutron Generator/Switch Tube Prototyping Relocation Environmental Assessment (DOE/EA-0879) 1-20

1.9 Cooperating Agencies 1-20

1.10 Other DOE Operations at KAFB 1-20

Chapter 2 Sandia National Laboratories/New Mexico Operations 2-1

2.1 SNL/NM Support for DOE Mission lines 2-1

2.1.1 SNL/NM Support for DOE's National Security Mission Line 2-3

2.1.2 SNL/NM Support for DOE's Energy Resources Mission Line 2-3

2.1.3 SNL/NM Support for DOE's Environmental Quality Mission Line 2-6
2.1.4 SNL/NM Support for DOE's Science and Technology Mission Line 2-6
2.2 Reimbursable Work for Others 2-6
2.3 SNL/NM Facilities: A Framework for Impacts Analysis 2-7
2.3.1 Facility Screening Process 2-7
2.3.2 Framework for Analysis 2-9
2.3.3 Technical Areas 2-9
2.3.4 Selected SWEIS Facilities 2-9
2.3.5 Activities Common to All Alternatives 2-14
2.3.6 Selected Facilities 2-18

Facility Descriptions FD-1

Chapter 3 Alternatives for Continuing Operations at SNL/NM 3-1
3.1 Introduction 3-1
3.2 No Action Alternative 3-3
3.2.1 Basis for Current Planned Operations 3-3
3.2.2 Selected Facilities in Technical Areas-I and -II 3-11
3.2.3 Physical Testing and Simulation Facilities 3-12
3.2.4 Accelerator Facilities 3-12
3.2.5 Reactor Facilities 3-13
3.2.6 Outdoor Test Facilities 3-15
3.2.7 Infrastructure Facilities 3-15
3.3 Expanded Operations Alternative – The DOE's Preferred Alternative 3-16
3.3.1 Selected Facilities in Technical Areas-I and -II 3-16
3.3.2 Physical Testing and Simulation Facilities 3-17
3.3.3 Accelerator Facilities 3-18
3.3.4 Reactor Facilities 3-18
3.3.5 Outdoor Test Facilities 3-19
3.3.6 Infrastructure Facilities 3-20
3.4 Reduced Operations Alternative 3-20
3.4.1 Selected Facilities in Technical Areas-I and -II 3-21
3.4.2 Physical Testing and Simulation Facilities 3-21
3.4.3 Accelerator Facilities 3-21
3.4.4 Reactor Facilities 3-22
3.4.5 Outdoor Test Facilities 3-22
3.4.6 Infrastructure Facilities 3-23
3.5 Alternatives that were Considered but Eliminated from Detailed Analysis 3-23
3.5.1 Shutdown of Sandia National Laboratories/New Mexico 3-23
3.5.2 Expansion of Nonweapons Environmental and Renewable Energy Research 3-24
3.5.3 Returning Withdrawn Forest Service Land to Public Use 3-24
3.6 Comparison of Environmental Consequences Among Alternatives 3-25
3.6.1 Land Use and Visual Resources 3-25
3.6.2 Infrastructure 3-25
3.6.3 Geology and Soils 3-54
3.6.4 Water Resources and Hydrology 3-54
3.6.5 Biological and Ecological Resources 3-54
3.6.6 Cultural Resources 3-55
3.6.7 Air Quality 3-55
3.6.8 Human Health 3-56

3.6.9 Transportation 3-56
3.6.10 Waste Generation 3-57
3.6.11 Noise and Vibration 3-57
3.6.12 Socioeconomics 3-58
3.6.13 Environmental Justice 3-58
3.6.14 Accidents 3-58

Chapter 4 Affected Environment 4-1
4.1 Introduction 4-1
4.2 General Location 4-2
4.3 Land Use and Visual Resources 4-2
4.3.1 Land Use 4-2
4.3.2 Visual Resources 4-15
4.4 Infrastructure 4-18
4.4.1 Definition of Resource 4-18
4.4.2 Region of Influence 4-18
4.4.3 Affected Environment 4-18
4.5 Geology and Soils 4-25
4.5.1 Definition of Resource 4-25
4.5.2 Region of Influence 4-25
4.5.3 Affected Environment 4-25
4.6 Water Resources and Hydrology 4-30
4.6.1 Groundwater 4-30
4.6.2 Surface Water 4-38
4.7 Biological and Ecological Resources 4-45
4.7.1 Definition of Resource 4-45
4.7.2 Region of Influence 4-45
4.7.3 Affected Environment 4-45
4.8 Cultural Resources 4-51
4.8.1 Definition of Resource 4-51
4.8.2 Region of Influence 4-52
4.8.3 Affected Environment 4-52
4.9 Air Quality 4-57
4.9.1 Nonradiological Air Quality 4-57
4.9.2 Radiological Air Quality 4-65
4.10 Human Health and Worker Safety 4-74
4.10.1 Definition of Resource 4-74
4.10.2 Region of Influence 4-74
4.10.3 Affected Environment 4-74
4.11 Transportation 4-84
4.11.1 Definition of Resource 4-84
4.11.2 Region of Influence 4-84
4.11.3 Affected Environment 4-84
4.12 Waste Generation 4-93
4.12.1 Definition of Resource 4-93
4.12.2 Region of Influence 4-93
4.12.3 Affected Environment 4-93
4.13 Noise and Vibration 4-107
4.13.1 Definition of Resource 4-107
4.13.2 Region of Influence 4-107

4.13.3 Affected Environment 4-107
4.14 Socioeconomics 4-110
4.14.1 Definition of Resource 4-110
4.14.2 Region of Influence 4-110
4.14.3 Affected Environment 4-110
4.15 Environmental Justice 4-119
4.15.1 Definition of Resource 4-119
4.15.2 Region of Influence 4-119
4.15.3 Affected Environment 4-119

Chapter 5 Environmental Consequences 5-1
5.1 Introduction 5-1
5.2 Methodology 5-3
5.2.1 Land Use and Visual Resources 5-3
5.2.2 Infrastructure 5-3
5.2.3 Geology and Soils 5-3
5.2.4 Water Resources and Hydrology 5-3
5.2.5 Biological and Ecological Resources 5-4
5.2.6 Cultural Resources 5-5
5.2.7 Air Quality 5-5
5.2.8 Human Health and Worker Safety 5-7
5.2.9 Accident Analysis 5-9
5.2.10 Transportation 5-10
5.2.11 Waste Generation 5-10
5.2.12 Noise and Vibration 5-11
5.2.13 Socioeconomics 5-11
5.2.14 Environmental Justice 5-11
5.3 No Action Alternative 5-12
5.3.1 Land Use and Visual Resources 5-12
5.3.2 Infrastructure 5-13
5.3.3 Geology and Soils 5-16
5.3.4 Water Resources and Hydrology 5-22
5.3.5 Biological and Ecological Resources 5-32
5.3.6 Cultural Resources 5-34
5.3.7 Air Quality 5-36
5.3.8 Human Health and Worker Safety 5-52
5.3.9 Transportation 5-75
5.3.10 Waste Generation 5-88
5.3.11 Noise and Vibration 5-97
5.3.12 Socioeconomics 5-102
5.3.13 Environmental Justice 5-104
5.4 Expanded Operations Alternative and Preferred Alternative 5-107
5.4.1 Land Use and Visual Resources 5-107
5.4.2 Infrastructure 5-107
5.4.3 Geology and Soils 5-108
5.4.4 Water Resources and Hydrology 5-111
5.4.5 Biological and Ecological Resources 5-112
5.4.6 Cultural Resources 5-113
5.4.7 Air Quality 5-113
5.4.8 Human Health and Worker Safety 5-121
5.4.9 Transportation 5-139

5.4.10 Waste Generation 5-151
5.4.11 Noise and Vibration 5-156
5.4.12 Socioeconomics 5-156
5.4.13 Environmental Justice 5-158
5.5 Reduced Operations Alternative 5-161
5.5.1 Land Use and Visual Resources 5-161
5.5.2 Infrastructure 5-161
5.5.3 Geology and Soils 5-163
5.5.4 Water Resources and Hydrology 5-164
5.5.5 Biological and Ecological Resources 5-165
5.5.6 Cultural Resources 5-165
5.5.7 Air Quality 5-166
5.5.8 Human Health and Worker Safety 5-171
5.5.9 Transportation 5-186
5.5.10 Waste Generation 5-199
5.5.11 Noise and Vibration 5-203
5.5.12 Socioeconomics 5-203
5.5.13 Environmental Justice 5-205
5.6 Mitigation Measures 5-208
5.6.1 Resource-Specific Mitigation Measures 5-208
5.6.2 Land Use and Visual Resources 5-208
5.6.3 Infrastructure 5-209
5.6.4 Geology and Soils 5-209
5.6.5 Water Resources and Hydrology 5-209
5.6.6 Biological and Ecological Resources 5-209
5.6.7 Cultural Resources 5-209
5.6.8 Air Quality 5-210
5.6.9 Human Health and Worker Safety 5-210
5.6.10 Transportation 5-211
5.6.11 Waste Generation 5-211
5.6.12 Noise and Vibration 5-213
5.6.13 Socioeconomics 5-213
5.6.14 Environmental Justice 5-213
5.7 Unavoidable Adverse Effects 5-214
5.8 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity 5-214
5.9 Irreversible and Irretrievable Effects 5-214
5.9.1 Water 5-215
5.9.2 Land 5-215
5.9.3 Material 5-215
5.9.4 Energy 5-215

Chapter 6 Cumulative Effects Analysis 6-1
6.1 Methods of Analysis 6-1
6.2 DOE Facilities/DoD Activities 6-1
6.2.1 Albuquerque Operations Office 6-4
6.2.2 Energy Training Center 6-4
6.2.3 Transportation Safeguards Division 6-4
6.2.4 Nonproliferation and National Security Institute 6-5
6.2.5 Ross Aviation, Inc. 6-6
6.2.6 Lovelace Respiratory Research Institute 6-7

6.2.7 Federal Manufacturing & Technology/New Mexico (AlliedSignal) ... 6-8
6.2.8 U.S. Department of Defense Activities ... 6-9
6.3 Other Activities in the Region of Influence ... 6-11
6.3.1 Land Development ... 6-14
6.4 Cumulative Effects by Resource Area ... 6-14
6.4.1 Land Use ... 6-14
6.4.2 Infrastructure ... 6-18
6.4.3 Soils ... 6-20
6.4.4 Water Resources and Hydrology ... 6-20
6.4.5 Biological and Ecological Resources ... 6-22
6.4.6 Cultural Resources ... 6-22
6.4.7 Air Quality ... 6-22
6.4.8 Human Health and Worker Safety ... 6-26
6.4.9 Transportation ... 6-28
6.4.10 Waste Generation ... 6-28
6.4.11 Noise and Vibration ... 6-29
6.4.12 Socioeconomics ... 6-29
6.4.13 Environmental Justice ... 6-30

Chapter 7 Applicable Laws, Regulations, and Other Requirements ... 7-1
7.1 Introduction ... 7-1
7.2 General Environment, Health, Safety Laws, Regulations, and Other Requirements ... 7-1
7.2.1 Atomic Energy Act of 1954 (42 U.S.C. §2011) ... 7-1
7.2.2 National Environmental Policy Act of 1969, as Amended (42 U.S.C. §4321) ... 7-1
7.2.3 Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508) ... 7-2
7.2.4 National Environmental Policy Act Implementing Procedures (10 CFR Part 1021) ... 7-2
7.2.5 Protection and Enhancement of Environmental Quality (EO 11514) ... 7-2
7.2.6 Federal Compliance with Pollution Control Standards (EO 12088) ... 7-2
7.2.7 DOE O 451.1A, National Environmental Policy Act Compliance Program ... 7-2
7.2.8 DOE 5400.1, General Environmental Protection Program ... 7-2
7.2.9 New Mexico Environmental Oversight and Monitoring Agreement ... 7-3
7.3 Environment, Health, and Safety Laws, Regulations, and Other Requirements for Each Resource Area ... 7-3
7.3.1 Land Use and Visual Resources ... 7-3
7.3.2 Infrastructure ... 7-4
7.3.3 Geology and Soils ... 7-5
7.3.4 Water Resources and Hydrology ... 7-5
7.3.5 Biological and Ecological Resources ... 7-7
7.3.6 Cultural Resources ... 7-8
7.3.7 Air Quality ... 7-9
7.3.8 Human Health and Worker Safety (Including Accidents) ... 7-12
7.3.9 Transportation ... 7-16
7.3.10 Waste Generation ... 7-17
7.3.11 Noise and Vibration ... 7-21

Chapter 8 References ... 8-1

Chapter 9 Conflict of Interest Statements ... 9-1

Chapter 10 **List of Preparers** **10-1**

Chapter 11 **List of Agencies, Organizations, Individuals to Whom Copies of this SWEIS were Sent** **11-1**

Chapter 12 **List of Agencies and People Contacted** **12-1**

Chapter 13 **Glossary** **13-1**

Chapter 14 **Notice of Intent** **14-1**

Chapter 15 **Index** **15-1**

List of Figures

Figure 1.1–1 SNL/NM, KAFB, and Surrounding Region 1-2

Figure 1.10–1 Seven Additional DOE Facilities at KAFB 1-21

Figure 2.1–1 SNL Funding Sources by Major Program 2-2

Figure 2.1–2 Flow of DOE Funding by Mission Line to SNL/NM 2-4

Figure 2.3–1 SWEIS Analysis of SNL/NM Facilities 2-8

Figure 2.3–2 Locations of Technical Areas and Outdoor Test Facilities on Kirtland Air Force Base 2-10

Figure 4.2–1 General Location of KAFB 4-3

Figure 4.3–1 KAFB Land Ownership 4-4

Figure 4.3–2 KAFB Land Use 4-6

Figure 4.3–3 Technical Areas-I, -II, and –IV 4-8

Figure 4.3–4 Technical Areas-III and -V 4-10

Figure 4.3–5 Coyote Test Field and the Withdrawn Area 4-11

Figure 4.3–6 Generalized Land Use Adjacent to KAFB 4-13

Figure 4.3–7 DOE Leased Buffer Zones 4-14

Figure 4.3–8 KAFB Scenic Classes 4-17

Figure 4.4–1 General Area Road Network in KAFB 4-20

Figure 4.4–2 Waste Management Facilities 4-23

Figure 4.4-3 Conceptual Illustration of Material Movement at SNL/NM 4-24

Figure 4.5–1 Location and Extent of the Albuquerque-Belen Basin 4-26

Figure 4.5–2 Regional Faults at KAFB 4-27

Figure 4.5–3 Locations of SNL/NM Environmental Restoration Sites 4-29

Figure 4.6–1 Conceptual Diagram of Groundwater System Underlying KAFB 4-31

Figure 4.6–2 Locations of Hydrogeologic Regions at KAFB 4-32

Figure 4.6–3 Locations of Groundwater Monitoring and Supply Wells 4-33

Figure 4.6–4 SNL/NM Known or Potential Groundwater Contamination Sites 4-35

Figure 4.6–5 Decline in Water Levels from 1985 through 1996 4-37

Figure 4.6–6 Arroyos, Floodplains, and Springs at KAFB 4-39

Figure 4.6–7 Locations of Surface Water Samples Collected During 1994 and 1995 4-42

Figure 4.7–1 Major Vegetation Associations at KAFB 4-46

Figure 4.8–1 Areas Inventoried for Cultural Resources in KAFB and the DOE Buffer Zones 4-53

Figure 4.8–2 Areas With a Concentration of Archaeological Sites on KAFB and the DOE Buffer Zone 4-55

Figure 4.9–1 Air Quality Region of Influence 4-59

Figure 4.9–2 Locations of Offsite Criteria Pollutant Monitoring Stations 4-61

Figure 4.9–3 Locations of Onsite Criteria Pollutant Monitoring Stations 4-62

Figure 4.9–4 SNL/NM Radionuclide-Releasing Facilities 4-69

Figure 4.10–1 Transport and Exposure Pathways 4-75

Figure 4.10–2 Major Sources and Levels of Background Radiation Exposure in the SNL/NM Vicinity 4-76

Figure 4.10–3 Comparison of Nonfatal Occupational Injury/Illness Rates (1992 through 1996). 4-80

Figure 4.10–4 Comparison of Lost Workday Case Rates (1992 through 1996) 4-81

Figure 4.11–1 Major Albuquerque Transportation Routes 4-91

Figure 4.11–2 KAFB Transportation Routes 4-92

Figure 4.12–1 Projected Low-Level Waste Inventory, Fiscal Years 1999 through 2007 4-98

Figure 4.12–2 Projected Low-Level Mixed Waste Inventory, Fiscal Years 1999 through 2005 4-99

Figure 4.12–3 Projected Transuranic and Mixed Transuranic Waste Inventory, Fiscal Years 1999 through 2005 4-100

Figure 4.12–4 RCRA Hazardous Waste Generation 4-102

Figure 4.12–5 Asbestos Waste Generation 4-102

Figure 4.12–6 Polychlorinated Biphenyls (PCB) Waste Generation 4-103

Figure 4.12–7 SNL Recycling in 1997 4-104

Figure 4.12–8 Annual Recycling Trends, 1993 through 1997 4-105

Figure 4.12–9 Proportions of Recycled Materials, 1993 through 1997 4-106

Figure 4.13–1 Comparing Noise Levels to Events Within Range of Human Hearing 4-108

Figure 4.14–1 Four-County ROI Population 4-111

Figure 4.14–2 Population Estimates and Projections to 2010 4-113

Figure 4.14–3 Total Operating and Capital Budget at SNL 4-114

Figure 4.14–4 1995 Employment in Four-County Region of Influence 4-116

Figure 4.15–1 Minority Population 4-120

Figure 4.15–2 Low-Income Population 4-121

Figure 4.15–3 Environmental Justice Areas 4-122

Figure 5.1–1 Data and Analytical Contributions to the SNL/NM Site-Wide Environmental Impact Statement 5-2

Figure 5.2.8–1 The Health Risk Assessment Process 5-8

Figure 5.3.2–1 Selected Infrastructure Facilities/Facility Groups 5-17

Figure 5.3.3–1 SNL/NM Facilities Near 10 Percent or Greater Slopes 5-20

Figure 5.3.4–1 Sites with Potential or Known Groundwater Contamination 5-23

Figure 5.3.4–2 Projected Extent of Chemical Waste Landfill Trichloroethene Contamination Above Maximum Contaminant Level 5-25

Figure 5.3.4–3 Projected Decline in Albuquerque-Belen Basin Groundwater Levels 5-28

Figure 5.3.4–4 Surface Water Sampling Locations at Tijeras Arroyo 5-30

Figure 5.3.7–1 Locations of Meteorological Towers Used for Criteria Pollutant Modeling 5-38

Figure 5.3.7–2 Major Chemical-Emitting Facilities at SNL/NM 5-44

Figure 5.3.7–3 Locations of Radionuclide-Releasing Facilities at SNL/NM 5-48

Figure 5.3.7–4 Normal Operational Onsite and Core Receptor Locations 5-49

Figure 5.3.8–1 Primary and Secondary Complete Exposure Pathways Associated with SNL/NM Normal Operations 5-53

Figure 5.3.8–2 Receptor Locations in the SNL/NM Vicinity Assessed for Human Health Impacts 5-55

Figure 5.3.8–3 Areas Above Emergency Response Planning Guideline Level 2 from a Site-Wide Earthquake Under the No Action Alternative 5-63

Figure 5.3.8–4 Projected Extent of Emergency Response Planning Guideline Level 2 from Accidental Release of Arsine (Bldg. 893) and Chlorine (Bldg. 858) 5-74

Figure 5.3.11–1 Noise Contours Produced by SNL/NM Test Facilities 5-101

Figure 5.4.8–1 Areas Above Emergency Response Planning Guideline 2 from a Site-Wide Earthquake Under the Expanded Operations Alternative without the Microsystems and Engineering Sciences Applications Complex 5-127

Figure 5.4.8–2 Areas Above Emergency Response Planning Guideline Level 2 from a Site-Wide Earthquake Under the Expanded Operations Alternative with the Microsystems and Engineering Sciences Applications Complex 5-128

Figure 5.4.8–3 Areas Above Emergency Response Planning Guideline 2 from Accidental Release of Arsine (Building 893) and Chlorine (Building 858) 5-137

Figure 5.4.8–4 Areas Above Emergency Response Planning Guideline 2 from Accidental Release of Arsine (Microsystems and Engineering Sciences Application Complex) and Chlorine (Building 858) 5-138

Figure 5.5.8–1 Areas Above Emergency Response Planning Guideline 2 from a Site-Wide Earthquake Under the Reduced Operations Alternative 5-177

Figure 5.5.8–2 Areas above Emergency Response Planning Guideline 2 from Accidental Releases of Arsine (Building 893) and Chlorine (Building 858) 5-185

Figure 6.2–1 Additional DOE Facilities at KAFB 6-2

Figure 6.3–1 Additional Activities Near KAFB 6-12

List of Tables

Table 1.7–1 Summary Public Scoping Comments 1-8

Table 2.1–1 DOE Mission Lines and DOE Office Mission Statements 2-5

Table 2.3–1 Facilities/Facility Groups Selected for Analyzing SNL/NM Operations 2-9

Table 3.1–1 Summary of Facility Activity Levels Used as the Basis of Alternatives Analysis 3-4

Table 3.6–1 Comparison of Activity Levels at 10 Selected Facilities/Facility Groups Under the No Action, Expanded Operations, and Reduced Operations Alternatives 3-26

Table 3.6–2 Comparison of Parameters Used to Analyze Selected Facilities Under the No Action, Expanded Operations, and Reduced Operations Alternatives 3-42

Table 3.6–3 Comparison of Potential Consequences of Continued Operations at SNL/NM 3-47

Table 3.6–4 Comparison of Potential High Consequences (condensed version) for Accident Scenarios at SNL/NM 3-52

Table 4.3–1 KAFB Land Ownership 4-5

Table 4.3–2 KAFB Land Use 4-5

Table 4.3–3 DOE-Owned Land on KAFB 4-7

Table 4.4–1 Utility Capacities and Quantities Used by SNL/NM and KAFB 4-18

Table 4.4–2 Summary of SNL/NM Buildings and Their Square Footage 4-19

Table 4.6–1 Maximum Recorded Levels of Suspected Groundwater Contamination at SNL/NM 4-36

Table 4.6–2 Summary of Surface Water Quality Data Collected by the Site-Wide Hydrogeologic Characterization Project (1994 and 1995) 4-43

Table 4.7–1 Selected Plant Species Common in the Vegetation Associations Occurring on KAFB 4-47

Table 4.7–2 Selected Common Animal Species and Habitats on KAFB 4-48

Table 4.7–3 Threatened, Endangered, and Sensitive Species and their Habitats on KAFB 4-50

Table 4.9–1 Comparison of 1996 Maximum Ambient Air Concentrations With Applicable National and New Mexico Ambient Air Quality Standards (ppm) 4-63

Table 4.9–2 Estimated Air Emissions from Stationary Sources at SNL/NM, 1992 through 1996 (tons/year) 4-64

Table 4.9–3 1996 Criteria Pollutant Concentrations from the Criteria Pollutant Monitoring Station with Applicable National and New Mexico Ambient Air Quality Standards 4-66

Table 4.9–4 Maximum Ambient Concentrations of Volatile Organic Compounds from Onsite Monitors for 1996 4-67

Table 4.9–5 Summary of Radionuclides Released from SNL/NM Operations from 1993 through 1996 4-70

Table 4.9–6 Summary of Dose Estimates to SNL/NM Public from Radioactive Air Emissions (1993 to 1996) Modeled Effective Dose Equivalent (mrem/yr) to SNL/NM MEI and (person-rem) to Population 4-73

Table 4.10–1 Radiation-Badged Worker Doses (TEDE) at SNL/NM (1992-1996) 4-79

Table 4.10–2 Comparison of Nonfatal Occupational Injury/Illness Rates (1992 through 1996) 4-80

Table 4.10–4 Comparison of Total Fatal Occupational Injuries (1992-1996) 4-82

Table 4.10–5 SNL/NM Safety and Security Occurrences by Reporting Category (1993-1996) 4-83

Table 4.10–6 SNL/NM Industrial Hygiene Investigation Reports Summary (1992-1996) 4-83

Table 4.11–1 Annual Receipts, Shipments, and Transfers of Hazardous Material at SNL/NM 4-85

Table 4.11–2 Most Common Origins/Destinations of SNL/NM Materials and Waste Receipts and Shipments 4-87

Table 4.11–3 SNL/NM Transportation Incidents, 1994 to 1998 4-89

Table 4.11–4 Traffic Accidents Involving SNL/NM Vehicles 4-90

Table 4.12–1 Process Design Capacity for Radioactive Waste Storage Units at SNL/NM 4-94

Table 4.12–2 Mixed Waste Treatments, Quantity Limits, and Amounts Treated Onsite in 1996 4-96

Table 4.12–3 Radioactive Waste Generated from 1992 through 1995 4-96

Table 4.12–4 1996 Radioactive Waste Generation by Major Contributors and Special Projects 4-97

Table 4.12–5 Hazardous Waste Generated During Normal Operations from 1992 through 1995 4-97

Table 4.12–6 Major Hazardous Waste (RCRA and TSCA) Generators in Calendar Year 1995 4-101

Table 4.12–7 1996 Solid Waste Generation (Partial-Year Information) 4-104

Table 4.14–1 Demographic Profile of the Population in the Four-County Region of Influence 4-112

Table 4.14–2 Employment and Income Profile in the Four-County Region of Influence 4-115

Table 4.14–3 Housing and Community Services in the Four-County Region of Influence 4-118

Table 5.3.2–1 Annual SNL/NM Utility Usage and Capacities Under the No Action Alternative 5-14

Table 5.3.2–2 Annual Throughput and Capacities Under the No Action Alternative for the Infrastructure Facility Group 5-15

Table 5.3.4–1 Estimated Concentrations of Concentrations of Vapor-Phase Trichloroethene and Chromium in the Aquifer Beneath the Chemical Waste Landfill 5-26

Table 5.3.4–2 Projected Groundwater Use and Water Level Declines in the Vicinity of KAFB 5-27

Table 5.3.4–3 Tijeras Arroyo Storm Water Sampling Results Near Downstream Boundary of KAFB 5-31

Table 5.3.7–1 Criteria Pollutant Concentrations from SNL/NM Stationary Sources and Background with Applicable National and New Mexico Ambient Air Quality Standards Under the No Action Alternative 5-39

Table 5.3.7–2 Incremental Criteria Pollutant Concentrations from SNL/NM Stationary Sources with Applicable National and New Mexico Ambient Air Quality Standards 5-40

Table 5.3.7–3 Carbon Monoxide Emissions from SNL/NM Under the No Action Alternative 5-41

Table 5.3.7–4 Criteria Pollutant Concentrations from the Lurance Canyon Burn Site with Applicable National and New Mexico Ambient Air Quality Standards Under the No Action Alternative 5-42

Table 5.3.7–5 SNL/NM Facilities from which Chemical Emissions were Modeled 5-43

Table 5.3.7–6 Annual Carcinogenic Chemical Concentrations from Facility Emissions Under the No Action Alternative 5-45

Table 5.3.7–7 Radiological Emissions from Sources at SNL/NM Under the No Action Alternative 5-47

Table 5.3.7–8 Summary of Dose Estimates from Radioactive Air Emissions to the SNL/NM Public Under the No Action Alternative 5-50

Table 5.3.7–9 Summary of Dose Estimates from Radioactive Air Emissions to 38 Onsite and Offsite Receptors Under the No Action Alternative 5-50

Table 5.3.8–2 Human Health Impacts in the SNL/NM Vicinity from Radiological Air Emissions Under the No Action Alternative 5-58

Table 5.3.8–3 Radiation Doses (TEDE) and Health Impacts to Workers from SNL/NM Operations Under the No Action Alternative 5-61

Table 5.3.8–4 Site-Wide Earthquake Radiological Impacts Under the No Action Alternative 5-64

Table 5.3.8–5 Impacts of an Explosion Accident Under the No Action Alternative 5-65

Table 5.3.8–6 Potential Impacts of Radiological Facility Accidents Under the No Action Alternative 5-67

Table 5.3.8–7 Potential Impacts of Chemical Accidents Under the No Action Alternative 5-72

Table 5.3.8–8 Maximum Impacts of Chemical Accidents on Individuals Within KAFB Under the No Action Alternative 5-73

Table 5.3.9–1 SNL/NM Annual Material Receipts/Shipments Under the No Action Alternative 5-76

Table 5.3.9–2 Annual (Summary) Waste Shipments from Normal Operations Under the No Action Alternative 5-76

Table 5.3.9–3 24-Hour Placarded Material and Waste Truck Traffic Counts Under the No Action Alternative . 5-78

Table 5.3.9–4 KAFB Daily Traffic Projections Under the No Action Alternative 5-79

Table 5.3.9–5 Total KAFB Gate Traffic Under the No Action Alternative 5-80

Table 5.3.9–6 Albuquerque Daily Traffic Counts Under the No Action Alternative 5-81

Table 5.3.9–7 Truck Traffic Bounding Case Distances 5-83

Table 5.3.9–8 No Action Alternative Incident-Free Exposure: Truck Emissions 5-84

Table 5.3.9–9 Doses to Crew and Public Under the No Action Alternative 5-86

Table 5.3.9–10 Truck Transportation Traffic Fatalities Under the No Action Alternative 5-87

Table 5.3.9–11 Dose Risk to Population Due to Transportation Radiological Accident, Maximum Annual Radiological Accident Risk for Highway Shipments 5-89

Table 5.3.10–1 Total Waste Generation Under the No Action Alternative 5-90

Table 5.3.10–2 Estimated Volumes of Environmental Restoration Project Waste Generated From 1996 through 2000 5-93

Table 5.3.10–3 SNL/NM Construction and Debris Waste Volumes Managed at KAFB 5-96

Table 5.3.11–1 Typical Noise Levels from Construction and Industrial Equipment 5-97

Table 5.3.11–2 Short-Term Noise Impacts of SNL/NM Test Activities (dB) 5-99

Table 5.3.12–1 SNL/NM's Impact on Central New Mexico's Economy if Operations Were to Increase 5 Percent 5-103

Table 5.3.13–1 Summary of Potential Environmental Justice Impacts Under the No Action Alternative..... 5-105

Table 5.4.2–1 Annual SNL/NM Utility Usage (Plus 10%) and Capacities Under the Expanded Operations Alternative 109

Table 5.4.2–2 Selected (Infrastructure) Facility Annual Throughput and Capacities Under the Expanded Operations Alternative 5-110

Table 5.4.7–1 Carbon Monoxide Emissions (tons per year) from SNL/NM under the Expanded Operations Alternative 5-114

Table 5.4.7–2 Criteria Pollutant Concentrations from Lurance Canyon Burn Site with Applicable National and New Mexico Ambient Air Quality Standards Under the Expanded Operations Alternative 5-115

Table 5.4.7–3 Annual Carcinogenic Chemical Concentrations from Facility Emissions Under the Expanded Operations Alternative 5-116

Table 5.4.7–4 Radiological Emissions from Sources at SNL/NM Under the Expanded Operations Alternative 5-117

Table 5.4.7–5 Summary of Dose Estimates from Radioactive Air Emissions to the SNL/NM Public Under the Expanded Operations Alternative 5-119

Table 5.4.7–6 Summary of Dose Estimates from Radioactive Air Emissions to 38 Onsite and Offsite Receptors Under the Expanded Operations Alternative 5-120

Table 5.4.8–1 Human Health Impacts in the SNL/NM Vicinity from Chemical Air Emissions Under the Expanded Operations Alternative 5-122

Table 5.4.8–2 Human Health Impacts in the SNL/NM Vicinity from Radiological Air Emissions Under the Expanded Operations Alternative 5-124

Table 5.4.8–3 Radiation Doses (TEDE) and Health Impacts to Workers from SNL/NM Operations Under the Expanded Operations Alternative 5-125

Table 5.4.8–4 Site-Wide Earthquake Radiological Impacts Under the Expanded Operations Alternative 5-129

Table 5.4.8–5 Impacts of an Explosion Accident Under the Expanded Operations Alternative 5-131

Table 5.4.8–6 Potential Impacts of Radiological Facility Accidents Under the Expanded Operations Alternative 5-132

Table 5.4.8–7 Potential Impacts of Chemical Accidents Under the Expanded Operations Alternative 5-135

Table 5.4.8–8 Maximum Impacts of Chemical Accidents on Individuals Within the KAFB Under the Expanded Operations Alternative 5-136

Table 5.4.9–1 SNL/NM Annual Material Shipments Under the Expanded Operations Alternative 5-141

Table 5.4.9–2 Annual Waste Shipments from Normal Operations Under the Expanded Operations Alternative 5-141

Table 5.4.9–3 24-Hour Placarded Material and Waste Truck Traffic Counts Under the Expanded Operations Alternative 5-142

Table 5.4.9–4 KAFB Daily Traffic Projections Under the Expanded Operations Alternative 5-143

Table 5.4.9–5 Total KAFB Gate Traffic Under the Expanded Operations Alternative 5-143

Table 5.4.9–6 Albuquerque Daily Traffic Counts Under the Expanded Operations Alternative 5-144

Table 5.4.9–7 Expanded Operations Alternative Incident-Free Exposure: Truck Emissions 5-146

Table 5.4.9–8 Doses to Crew and Public Under the Expanded Operations Alternative 5-148

Table 5.4.9–9 Truck Transportation Traffic Fatalities Under the Expanded Operations Alternative 5-149

Table 5.4.9–10 Dose Risk to Population Due to Transportation Radiological Accident, Maximum Annual Radiological Accident Risk for Highway Shipments 5-150

Table 5.4.10–1 Waste Generation for Existing Selected SNL/NM Facilities Under the Expanded Operations Alternative 5-152

Table 5.4.12–1 SNL/NM's Impact on Central New Mexico's Economy if Operations Were to Increase by 10 Percent 5-157

Table 5.4.13–1 Summary of Potential Environmental Justice Impacts Under the Expanded Operations Alternative 5-159

Table 5.5.2–1 Annual SNL/NM Utility Usage and Capacities Under the Reduced Operations Alternative 5-162

Table 5.5.2–2 Selected (Infrastructure) Facility Annual Throughput and Capacities Under the Reduced Operations Alternative 5-163

Table 5.5.7–1 Radiological Emissions from Sources at SNL/NM Under the Reduced Operations Alternative 5-168

Table 5.5.7–2 Summary of Dose Estimates to SNL/NM Public Under the Reduced Operations Alternative from Radioactive Air Emissions 5-169

Table 5.5.7–3 Summary of Dose Estimates From Radioactive Air Emissions to 38 Onsite and Offsite Receptors Under the Reduced Operations Alternative 5-170

Table 5.5.8–1 Human Health Impacts in the Vicinity of SNL/NM from Chemical Air Emissions Under the Reduced Operations Alternative 5-173

Table 5.5.8–2 Human Health Impacts in the SNL/NM Vicinity from Radiological Air Emissions Under the Reduced Operations Alternative 5-174

Table 5.5.8–3 Radiation Doses (TEDE) and Health Impacts to Workers from SNL/NM Operations Under the Reduced Operations Alternative 5-175

Table 5.5.8–4 Site-Wide Earthquake Radiological Impacts Under the Reduced Operations Alternative 5-178

Table 5.5.8–5 Impacts of an Explosion Accident Under the Reduced Operations Alternative 5-179

Table 5.5.8–6 Potential Impacts of Radiological Facility Accidents Under the Reduced Operations Alternative 5-180

Table 5.5.8–7 Potential Impacts of Chemical Accidents Under the Reduced Operations Alternative 5-183

Table 5.5.8–8 Impacts of Chemical Accidents on Individuals Within KAFB 5-184

Table 5.5.9–1 SNL/NM Annual Material Shipments Under the Reduced Operations Alternative 5-188

Table 5.5.9–2 Annual Waste Shipments Under the Reduced Operations Alternative 5-188

Table 5.5.9–3 24-Hour Placarded Material and Waste Traffic Counts Under the Reduced Operations Alternative 5-188

Table 5.5.9–4 KAFB Daily Traffic Projections Under the Reduced Operations Alternative 5-189

Table 5.5.9–5 Total KAFB Gate Traffic Under the Reduced Operations Alternative 5-189

Table 5.5.9–6 Albuquerque Daily Traffic Counts Under the Reduced Operations Alternative 5-191

Table 5.5.9–7 Reduced Operations Alternative Incident-Free Exposure: Truck Emissions 5-192

Table 5.5.9–7 Reduced Operations Alternative Incident-Free Exposure: Truck Emissions (concluded) 5-193

Table 5.5.9–8 Doses to Crew and Public Under the Reduced Operations Alternative 5-194

Table 5.5.9–9 Truck Transportation Traffic Fatalities Under the Reduced Operations Alternative 5-196

Table 5.5.9–10 Risks to Population Due to Transportation Radiological Accident, Maximum Annual Radiological Accident Risk for Highway Shipments 5-198

Table 5.5.10–1 Total Waste Generation for Facilities Under the Reduced Operations Alternative 5-200

Table 5.5.12–1 SNL/NM's Impact on Central New Mexico's Economy if Operations Were to Decrease by 3 Percent 5-204

Table 5.5.13–1 Summary of Potential Environmental Justice Impacts Under the Reduced Operations Alternative 5-206

Table 6.2–1 Summary of Parameters and Activities of Additional DOE Facilities at KAFB 6-3

Table 6.4–1 Parameters for SNL/NM, DOE, and KAFB Activities 6-15

Table 6.4–2 Utility Usage and Utility Capacity 6-19

Table 6.4–3 1985 through 1996 Groundwater Withdrawal in the Albuquerque-Belen Basin 6-21

Table 6.4–4 Cumulative Criteria Pollutant Concentrations from Incremental SNL/NM Stationary Sources, Background Monitoring Data, and Cobisa Power Station with Applicable National and New Mexico Ambient Air Quality Standards 6-24

Table 6.4–5 Summary of Annual Cumulative Radiological Dose Estimates to the Public from All Sources on KAFB 6-26

Table 6.4–6 Cumulative Human Health Impacts Based on 1996 SNL/NM Onsite Ambient Volatile Organic Compound Air Monitoring 6-27

Table 6.4–7 Summary of Annual Cumulative Health Impacts from all Radiological Emission Sources at KAFB 6-27

Table 6.4–8 Impact on Central New Mexico's Economy if SNL/NM Operations Increased by 10 Percent 6-31

Acronyms

58th SOW	58th Special Operations Wing
A/BC AQCB	Albuquerque/Bernalillo County Air Quality Control Board
ACGIH	American Conference of Governmental Industrial Hygienists
ACPR	Annular Core Pulsed Reactor
ACRR	Annular Core Research Reactor
ACE	Atomic Energy Commission
ACS	American Cancer Society
AEA	*Atomic Energy Act*
AEHD	Albuquerque Environmental Health Department
AEI	average exposed individual
AFRL	Air Force Research Laboratory
AFSC	Air Force Safety Center
AHF	Advanced Hydrotest Facility
AL	Albuquerque Operations Office
ALARA	as low as reasonably achievable
ALOHA	*Areal Locations of Hazardous Atmospheres*
AMPL	Advanced Manufacturing Processes Laboratory
ANSI	American National Standards Institute
APPRM	Advanced Pulsed Power Research Module
AQCR	Air Quality Control Region
AQD	Air Quality Division
ARF	airborne release fraction
AT&T	American Telephone and Telegraph
BEA	Bureau of Economic Analysis
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
C&D	construction and demolition
CAA	*Clean Air Act*
CAB	Citizens Advisory Board
CAIRS	*Computerized Accident/Incident Reporting System*

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

CAMP	Capital Assets Management Process
CAMU	Corrective Action Management Unit
CAP88-PC	*Clean Air Assessment Package*
CAS	Chemical Abstract Service
CDG	Campus Design Guideline
CDI	chronic daily intake
CEQ	Council on Environmental Quality
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act*
CFR	*Code of Federal Regulations*
CHEST	Conventional High Explosives and Simulation Test
CIS	Chemical Information System
COC	chemical 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
CTBT	Comprehensive Test Ban Treaty
CTTF	Containment Technology Test Facility
CWA	*Clean Water Act*
CWL	Chemical Waste Landfill
CY	calendar year
D&D	decontamination and decommissioning
DARHT	dual-axis radiographic hydrotest
DDT	dichloro-diphenyl-trichloroethane
DEAR	Department of Energy Acquisitions Regulations
DF	decontamination factor, dispersion factor
DFG	Deutsche Forschungemeinschaft
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	*Executive Order*
EOD	explosive ordnance disposal
EPA	U.S. Environmental Protection Agency
EPCRA	*Emergency Planning and Community Right-to-Know Act*
ER	Environmental Restoration (Project)
ERA	*Energy Reorganization Act*
ERPG	emergency response planning guideline
ES&H	Environment, Safety, and Health
ETC	Energy Training Center
FAA	Federal Aviation Administration
FCDSWA	Field Command, Defense Special Weapons Agency
FFCA	*Federal Facilities Compliance Act*
FM&T/NM	Federal Manufacturing & Technology/New Mexico
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FSID	*Facilities and Safety Information Document*
FTE	full-time equivalent
FWE	*Fish and Wildlife Plan*
FY	fiscal year
GHA	ground hazard area
GIF	Gamma Irradiation Facility

GIS	geographic information system
GRABS	Giant Reusable Air Blast Simulator
GWPMPP	*Groundwater Protection Management Program Plan*
HA	hazards assessment
HAP	hazardous air pollutant
HBWSF	High Bay Waste Storage Facility
HCF	Hot Cell Facility
HCPI	Hazardous Chemicals Purchased 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	headquarters
HR	hydrogeologic region
HSWA	*Hazardous and Solid Waste Amendments*
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
INEEL	Idaho National Engineering and Environmental Laboratory
INRMP	*Integrated Natural Resources Management Plan*
IPDP	Isotopes Production and Distribution Program
IPS	Integrated Procurement System
IRIS	Integrated Risk Information System

IRP	Installation Restoration Program
ISC	industrial source complex
ISCST3	*Industrial Source Complex Short-Term Model, Version 3*
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
LPF	leak path factor
LSA	low specific activity
LSF	Lightning Simulation Facility
LWDS	Liquid Waste Disposal System
LX	press-moldable explosives
M&O	management and operations
MAC	maximum allowable concentration
MACCS2	*MELCOR Accident Consequence Code System, Version 2*
MAR	material-at-risk
MBTA	*Migratory Bird Treaty Act*
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	*Mobile Source Emission Factor (model)*
MOU	Memorandum of Understanding
MSDS	material safety data sheet
MTRU	mixed transuranic waste
M.W.	molecular weight (in grams)
MWL	Mixed Waste Landfill
NA	not available/not applicable
NAAQS	*National Ambient Air Quality Standards*
NAGPRA	*Native American Graves Protection and Repatriation Act*
NASA	National Aeronautics and Space Administration
NCA	*Noise Control Act*
NCEA	National Center for Environment Assessment
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NEPA	*National Environmental Policy Act*
NESHAP	*National Emissions Standards for Hazardous Air Pollutants*
NEW	net explosive weight
NF	not found
NFA	no further action
NFPA	National Fire Protection Association
NGF	Neutron Generator Facility
NGIF	New Gamma Irradiation Facility
NG/ST	Neutron Generator/Switch Tube
NHPA	*National Historic Preservation Act*
NIOSH	National Institute of Occupational Safety and Health
NMAAQS	*New Mexico Ambient Air Quality Standards*
NMAC	*New Mexico Administrative Code*
NMED	New Mexico Environment Department
NMEIA	New Mexico Environmental Improvement Agency
NMEIB	New Mexico Environmental Improvement Board
NMFRCD	New Mexico Forestry and Resource Conservation Division

NMGFD	New Mexico Game and Fish Department
NMSA	*New Mexico Statutes Annotated*
NMSLO	New Mexico State Land Office
NMSU	New Mexico State University
NMWQCC	New Mexico Water Quality Control Commission
NNSI	Nonproliferation and National Security Institute
NOI	Notice of Intent
NOVA	North Vault
NPDES	National Pollutant Discharge Elimination System
NPR	Nuclear Posture Review
NPS	National Park Service
NPT	Nuclear Nonproliferation Treaty
NR	not reported
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NTS	Nevada Test Site
NWSM	Nuclear Weapons Stockpile Memorandum
OBODM	*Open Burn/Open Detonation Model*
OEL	occupational exposure limit
OLM	ozone limiting method
ORPD	Occupational Radiation Protection Division
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration/Occupational Safety and Health Act
PBCA	Particle Bed Critical Assembly
PBFA	Particle Beam Fusion Accelerator
PBX	plastic-bonded explosive
PCB	polychlorinated biphenyl
PDD	Presidential Decision Directive
PDFL	Photovoltiac Device Fabrication Laboratory
PDL	Power Development Laboratory
PEIS	Programmatic Environmental Impact Statement
PEL	permissible exposure limit
PETL	Processing and Environmental Technology Laboratory

PHS	primary hazards screening
PL	*Public Law*
$PM_{2.5}$	particulate matter smaller than 2.5 microns in diameter
PM_{10}	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
R&D	research & development
RAD	radiological
RCRA	*Resource Conservation and Recovery Act*
REL	recommended exposure limit
REMS	Radiation Exposure Monitoring System
RESRAD	*Residual Radioactivity* (model)
RF	respirable fraction
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
SANDOS	Sandia Dosimetry System
SAR	Safety Analysis Report
SARA	*Superfund Amendments and Reauthorization Act*
SDWA	*Safe Drinking Water Act*
SECOM	Secure Communication Center

SHPO	State Historic Preservation Officer (NM)
SIP	State Implementation Plan
SLEP	Stockpile Life Extension Program
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
SSM	stockpile stewardship and management
SST	safe, secure transport
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 pollutant
TBF	Terminal Ballistics Facility
TCE	trichloroethene
TCP	traditional cultural property
TEDE	total effective dose equivalent
TESLA	Tera-Electron Volt Semiconducting Linear Accelerator
TEV	threshold emission value

TLV	threshold limit value
TNT	trinitrotoluene
TREAT	Transient Reactor Test Facility
TRU	transuranic
TSCA	*Toxic Substances Control Act*
TSD	Transportation Safety Division
TSP	total suspended particulates
TTF	Thermal Treatment Facility
TWA	time-weighted average
UBC	Uniform Building Code
UNM	University of New Mexico
UPS	United Parcel Service
USAF	U.S. Air Force
U.S.	United States
U.S.C.	*United States Code*
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tan
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	µCi
microcuries per gram	µCi/g
microgram	µg
micrograms per cubic meter	$\mu g/m^3$
micrograms per kilogram	µg/kg
micrograms per liter	µg/L
micron or micrometer	µm
microohms per centimeter	µohms/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

UNIT OF MEASURE	ABBREVIATION
part per billion	ppb
part per billion by volume	ppbv
part per million	ppm
particulate matter of aerodynamic diameter less than 10 micrometers	PM_{10}
particulate matter of aerodynamic diameter less than 25 micrometers	PM_{25}
pascal	Pa
picocurie	pCi
picocuries per gram	pCi/g
picocuries per liter	pCi/L
pound	lb
pounds mass	lbm
pounds per square inch	psi
pounds per year	lb/yr
quart	qt
Roentgen equivalent, man	rem[a]
second	sec
square feet	ft^2
square kilometers	km^2
square meters	m^2

[a] Although not used in the SWEIS, the sievert is a common unit of measure for dose and equivalent to 100 rems.

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**
Length					
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
Area					
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
Volume					
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
Weight					
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
Temperature					
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	EXPONENT CONVERTED TO WHOLE NUMBERS	PREFIX	EXPONENT CONVERTED TO WHOLE NUMBERS
atto-	10^{-18} = 0. 000,000,000,000,000,001	**dekta-**	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			

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