

TTR NESHAPs Report (2008)
(SNL)

Section I. Facility Information

"SANDNESHAP2008"

Site Description

Sandia National Laboratories, Nevada (SNL/NV) is based at the Tonopah Test Range (TTR). The TTR is operated by Sandia National Laboratories, New Mexico (SNL/NM), for the U.S. Department of Energy (DOE) nuclear ordnance programs. The TTR was used as a bombing range during World War II. SNL/NV activities at TTR date from 1957 when TTR came into limited use after similar facilities at Salton Sea Test Base, California, and at Yucca Mountain on the Nevada Test Range became inadequate. The TTR was originally designed and equipped to gather raw data on aircraft-delivered inert test vehicles coming under Atomic Energy Commission (AEC) purview. Over the years the facilities at TTR and the capabilities of SNL/NV have been expanded to accommodate tests related to AEC (later, the DOE) weapons development programs, varying from simple tests or hardware components to rocket launches or air drops of test vehicles.

The TTR is located about 140 miles (225 km) northwest of Las Vegas, Nevada, covering 624 square miles (1,616 km²) within the boundaries of the Nellis Air Force Range Complex. The nearest population centers are Goldfield (population 659) located about 25 miles (40 km) west of the TTR, and Tonopah (population 4,400) located 30 miles (48 km) northwest of the TTR.

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Point Radiological Sources

SNL/NV does not currently have any facilities or other stack emission points that generate airborne radionuclide releases.

Diffuse Radiological Sources

During the early 1960's, three dispersal tests involving plutonium were conducted at TTR. These tests were conducted at Clean Slates 1, 2, and 3. A total of approximately 4,122 grams of plutonium is estimated to have been used in the three dispersal tests. The total area of contamination due to the three dispersal tests was estimated to be approximately 20 million square meters as documented in an aerial survey of the three Clean Slate sites (EG&G, 1979). Limited remediation of these sites has been conducted in the past. Diffuse source locations are shown in Figure 1.

U.S. Department of Energy
National Nuclear Security Administration
Air Emission Annual Report
(Under 40 CFR 61.94, Subpart H)
Calendar Year 2008

Site Name: Sandia National Laboratories, Nevada

Site Office Information

Office: Sandia Site Office (SSO)

Address: Pennsylvania and H Street

Albuquerque, New Mexico 87185-5400

Contact: Susan Lacy/SSO Phone: 505/845-5542

Site Information

Operator: Sandia National Laboratories, New Mexico

Address: P.O. Box 5800

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Contact: Terry Cooper/Dept. 10333 Phone: 505/284-1831



National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400



Mr. Allen Biaggi, Director
State of Nevada
Department of Conservation and Natural Resources
901 S. Stewart Street, Suite 5001
Carson City, Nevada 89701

Dear Mr. Biaggi:

Enclosed is the 2008 Annual Report for the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for the Department of Energy, National Nuclear Security Administration's (DOE/NNSA) Sandia National Laboratories, Nevada (SNL/NV), Tonopah Test Range (TTR). This report is being submitted as required by the Class II Air Quality Operating Permit (Permit No. AP8733-0680.01, Facility ID No. A0025) Section IV (D) NESHAP Requirements (40 CFR §61.94, Subpart H, *National Emission Standard for Emissions of Radionuclides Other than Radon from Department of Energy Facilities*). As indicated in past reports, continuous air monitoring was conducted at the TTR in 1996 and 1997 at the site of the Maximally Exposed Individual (MEI) location for the Clean Slate environmental restoration sites. Based on the measured air concentrations, the Effective Dose Equivalent (EDE) to the MEI was calculated to be 0.024 mrem/yr. According to the regulations, air monitoring is not required for any source with an EDE to the MEI of less than 0.1 mrem/yr. Currently there are no other sources on site with the potential to produce airborne radionuclide emissions.

The April 5, 1995 Memorandum of Agreement between the Department of Energy (DOE) and the Environmental Protection Agency and the approved NESHAP Monitoring Plan for TTR described a phase approach for future NESHAP compliance activities at TTR based on the results of one year of continuous monitoring. The results of the one year monitoring are an EDE to the MEI of less than 0.05 mrem/yr, and based on the MOA, no further air monitoring is required. This approved Monitoring Plan is referenced in the Permit. During 2008 there were no new or modified radiological sources at the DOE/NNSA SNL/NV Facilities. Annual NESHAPs reports will continue to be submitted to EPA, and new sources will be evaluated for NESHAPs applicability. Any modification of the existing Clean Slate environmental restoration sites will be reviewed under the NESHAPs regulations. If you have any questions and/or comments please contact Susan Lacy of my staff at (505) 845-5542.

Sincerely,

Kimberly Davis
Acting Manager

Enclosure

Mr. Biaggi

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cc w/o enclosure:

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U. S. Department of Energy

NESHAP ANNUAL REPORT FOR CY 2008

SANDIA NATIONAL LABORATORIES, NEVADA

Sandia National Laboratories

Albuquerque, New Mexico

U.S. Department of Energy
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Introduction

This National Emission Standards for Hazardous Air Pollutants (NESHAP) Annual Report has been prepared in a format to comply with the reporting requirements of 40 CFR 61.94 and the April 5, 1995 Memorandum of Agreement (MOA) between DOE and EPA.

According to the EPA approved NESHAP Monitoring Plan for the Tonopah Test Range (TTR), 40 CFR 61, subpart H, and the MOA, no additional monitoring or measurements are required at TTR in order to demonstrate compliance with the NESHAP regulation.

Section I. Facility Information

Site Description

Sandia National Laboratories, Nevada (SNL/NV) is based at the Tonopah Test Range (TTR). The TTR is operated by Sandia National Laboratories, New Mexico (SNL/NM), for the U.S. Department of Energy (DOE) nuclear ordnance programs. The TTR was used as a bombing range during World War II. SNL/NV activities at TTR date from 1957 when TTR came into limited use after similar facilities at Salton Sea Test Base, California, and at Yucca Mountain on the Nevada Test Range became inadequate. The TTR was originally designed and equipped to gather raw data on aircraft-delivered inert test vehicles coming under Atomic Energy Commission (AEC) purview. Over the years the facilities at TTR and the capabilities of SNL/NV have been expanded to accommodate tests related to AEC (later, the DOE) weapons development programs, varying from simple tests or hardware components to rocket launches or air drops of test vehicles.

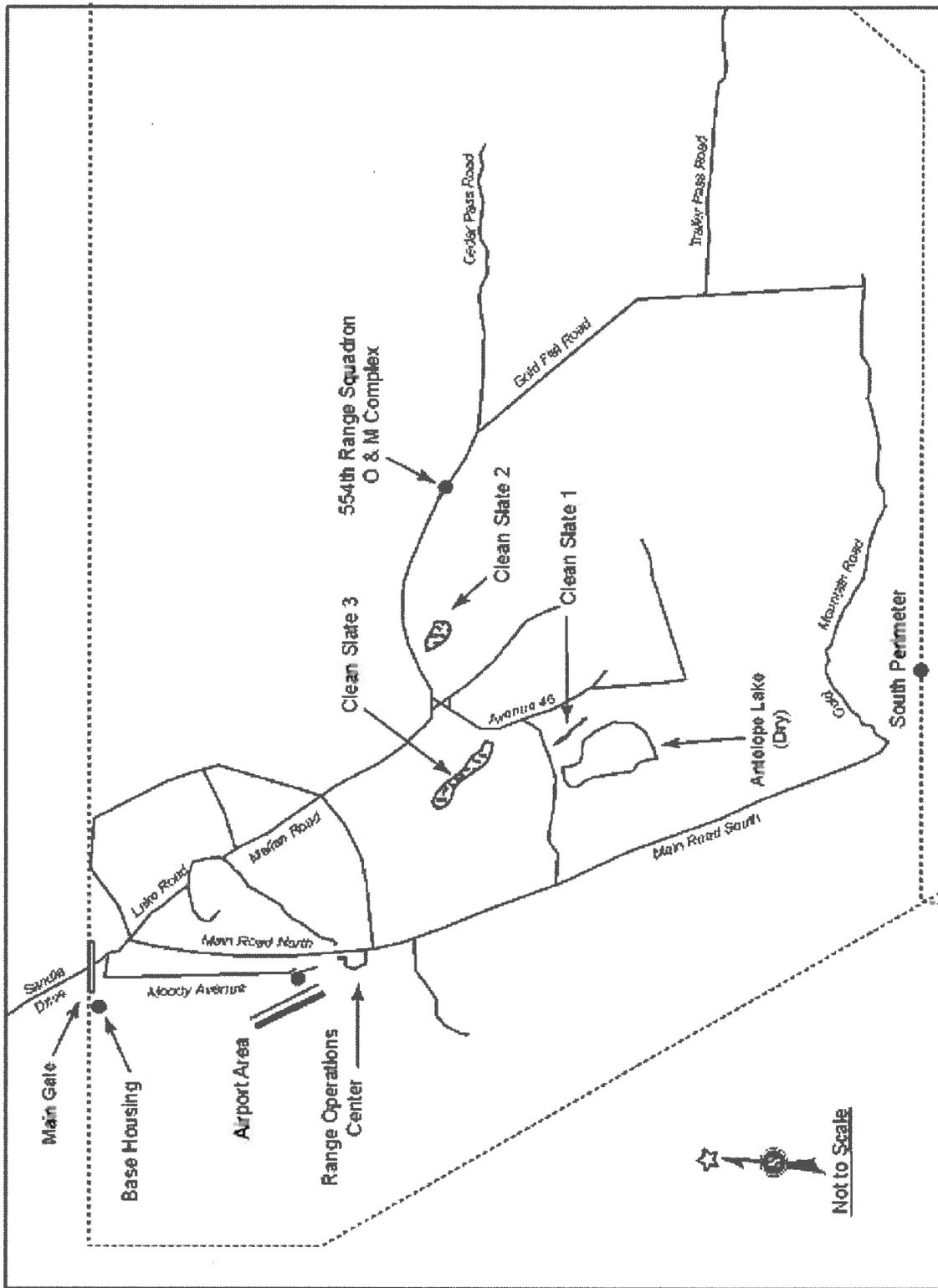
The TTR is located about 140 miles (225 km) northwest of Las Vegas, Nevada, covering 624 square miles (1,616 km²) within the boundaries of the Nellis Air Force Range Complex. The nearest population centers are Goldfield (population 659) located about 25 miles (40 km) west of the TTR, and Tonopah (population 4,400) located 30 miles (48 km) northwest of the TTR.

Point Radiological Sources

SNL/NV does not currently have any facilities or other stack emission points that generate airborne radionuclide releases.

Diffuse Radiological Sources

During the early 1960's, three dispersal tests involving plutonium were conducted at TTR. These tests were conducted at Clean Slates 1, 2, and 3. A total of approximately 4,122 grams of plutonium is estimated to have been used in the three dispersal tests. The total area of contamination due to the three dispersal tests was estimated to be approximately 20 million square meters as documented in an aerial survey of the three Clean Slate sites (EG&G, 1979). Limited remediation of these sites has been conducted in the past. Diffuse source locations are shown in Figure 1.



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Figure 1. Diffuse Source On-Site Receptor Locations

Section II. Air Emission Data

Radiological Releases During 2008

During 2008, no new radiological air emissions sources were identified. The only sources of airborne radionuclide emissions at TTR were from diffuse sources of plutonium and americium associated with the original Clean Slate dispersal tests. The radionuclide emissions are uncontrolled and are the result of wind resuspension of contaminated surface soil particulates.

Environmental Surveillance Program

In February of 1977, the EG&G Energy Measurement Group performed an aerial radiological survey at TTR. The surveyed areas included Clean Slates 1, 2, and 3. This radiological survey indicated the presence of transuranic contamination outside the Clean Slate access control fences and in the predominant downwind direction. An additional aerial survey was conducted in 1993. The results of the 1993 survey confirmed the general shape delineated by the 1977 survey.

Routine environmental surveillance activities were begun by SNL/NM at TTR in 1992. Included in these activities are soil and air sampling. The objective of the soil sampling and analysis has been to provide data identifying the extent of soil contamination in areas that were either known or suspected of being contaminated. Results from soil sampling have confirmed the presence of plutonium and americium in the prevailing downwind directions of Clean Slates 1, 2, and 3. The results also confirmed the general shape and activity concentrations indicated by both EG&G surveys.

All routine environmental surveillance data for TTR are included in the annual Site Environmental Report for Tonopah Test Range. These reports, and the information contained in the reports, are part of SNL's environmental compliance activities related to DOE Order 450.1A, *Environmental Protection Program* (DOE 2008).

Initial NESHAP dose assessments at TTR were based on environmental surveillance data, and release estimates from contaminated soil areas, which led to continuous air monitoring in 1996 and 1997. Since that time, NESHAP dose estimates have been based on the results of the continuous air monitoring effort.

Section III. Dose Assessment

Receptor Location

Current guidance from both DOE and EPA requires addressing the dose impact of diffuse sources (MOA, April 5, 1995). One-year continuous air monitoring (February 22, 1996 through February 25, 1997) was performed at the TTR Airport Area, the location of the maximally exposed individual (MEI) (SNL, 1997b). For the purpose of compliance modeling, the concept of "receptor" was conservatively assumed to include members of the military, military contractors, and other non-SNL personnel who work at locations on TTR, over whom SNL has little or no operational control. This definition is consistent with current DOE guidance and EPA regulation. Off-site receptor doses were also evaluated.

Dose To the Maximum Exposed Individual

The effective dose equivalent (EDE) to the MEI was determined based on measured air concentrations for Am-241, Pu-238, and Pu-239/240, and the dose conversion factors from Federal Guidance Report 11, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors For Inhalation, Submersion, and Ingestion. The EDE to the MEI was calculated to be 0.024 mrem/yr based on measured data.

SNL NEVADA AUTHORIZED CERTIFICATION

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (See 18 U.S.C. 1001.)

M. Patty Wagner Manager, Sandia Site Office (SSO)
Name Title

Signature: _____
M. Patty Wagner
DOE/NNSA/SSO

Date: _____

Section IV. Other NESHAP Compliance Criteria

New or Modified Radiological Sources

During 2008, there were no new or modified radiological sources at SNL/NV facilities.

NESHAP Subparts Q and T

During 2008, no radon emissions occurred from any of the SNL/NV facilities.

Unplanned Radiological Releases

During 2008, there were no unplanned or accidental radiological releases from any of the SNL/NV facilities.

NESHAP History at TTR

The original NESHAP compliance activities at TTR consisted of CAP88 dose calculations based on resuspension calculations of the Clean Slate source term. The resuspension calculations were conservative and demonstrated the need for continuous air monitoring of the Clean Slate sites (1.1mrem/yr EDE to the MEI).

According to 40 CFR 61, subpart H, air monitoring is not required for any source with an EDE to the MEI of less than 0.1 mrem/yr. In addition, emissions from sources with less than 0.1 mrem/yr EDE to the MEI are not required for input to calculations performed for the purpose of demonstrating compliance with the regulation. However, these sources are required to be listed in the annual NESHAP report.

To satisfy the requirements of 40 CFR 61, Subpart H a document entitled National Emission Standard for Emissions of Hazardous Air Pollutants (NESHAP) Monitoring Plan for the Tonopah Test Range (SNL 1995) was submitted to and approved by EPA Region IX. This Plan outlined the technical approach for conducting continuous air monitoring for one year at the MEI location for Clean Slate emissions. The plan included a phased approach for determining future monitoring requirements, based on the results of the one-year monitoring program:

- EDE >0.1 mrem/year – continuous monitoring at the MEI location, until a one-year period less than 0.1 mrem/year was established;
- EDE ≤0.1 mrem/year, but >0.05 mrem/year – periodic confirmatory monitoring at the MEI location;
- EDE ≤0.05 mrem/year – no further air monitoring required.

Based on the results of the one-year continuous air-monitoring program, the EDE to the MEI was determined to be 0.024 mrem/yr (SNL 1997c). These results demonstrate compliance with 40 CFR 61, subpart H. In accordance with the approved monitoring plan, no additional air sampling is required, since the EDE to the MEI was below 0.05 mrem/yr.

Future NESHAP Activities

SNL will continue to prepare Annual NESHAP Reports according to guidance provided by EPA and DOE. In addition, new sources will be evaluated for NESHAP applicability and modifications to the existing sources will be evaluated for NESHAP applicability.

REFERENCES

- DOE 2008; U.S. Department of Energy (DOE), DOE Order 450.1A, *Environmental Protection Program*, Washington, DC (DOE 2008).
- EG&G 1979; *An Aerial Radiological Survey of Clean Slates 1, 2, and 3, and Double Track, Tonopah Test Range*. EGG-1183-1737, Energy Measurement Group, EG&G, Las Vegas, NV, (1979).
- SNL 1995; Sandia National Laboratories, *National Emission Standards for Hazardous Air Pollutants (NESHAP) Monitoring Plan for the Tonopah Test Range*. Sandia National Laboratories, Albuquerque, NM, (1995).
- SNL 1997a; Sandia National Laboratories, *Radiological Dose Calculations and Supplemental Dose Assessment Data for NESHAP Compliance for SNL, Nevada Facilities*. Sandia National Laboratories, Albuquerque, NM, (1997).
- SNL 1997b; Sandia National Laboratories, *National Emission Standards for Hazardous Air Pollutants (NESHAP) Annual Report for 1996, Sandia National Laboratories, Nevada*, Sandia National Laboratories, Albuquerque, NM, (1997).
- SNL 1997c; Sandia National Laboratories, *Results of Continuous Air Monitoring at the Tonopah Test Range: February 22, 1996 to February 25, 1997*. Sandia National Laboratories, Albuquerque, NM, (1997).