

Hazard Assessment Document

for the

NRASA Facilities at Test Area North (TAN)—TAN-618, TAN-662, TAN-743, and TAN-606



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ACRONYMS

ANSI	American National Standards Institute
CFR	Code of Federal Regulations
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
HAD	Hazard Assessment Document
ICMS	INEEL Chemical Management System
INEEL	Idaho National Environmental and Engineering Laboratory
IWTS	INEEL Waste Tracking System
MAR	material at risk
MCP	management control procedure
NFPA	National Fire Protection Association
NRASA	not requiring additional safety analysis
OSHA	Occupational Safety and Health Administration
PRD	program requirements document
RQ	reportable quantity
SMC	Specific Manufacturing Capability
SNF	Spent Nuclear Fuel
TAN	Test Area North
TANO	Test Area North Operations
WGS	Waste Generator Services

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1. INTRODUCTION

Title 10 Code of Federal Regulations (CFR) Part 830, Subpart B, "Safety Basis Requirements,"¹ DOE Idaho Operations Office (DOE-ID) Order 420.C, "Safety Basis Review and Approval Process,"² and DOE-ID Order 420.D, "Requirements and Guidance for Safety Analysis,"³ require that a hazard assessment be prepared for all activities for which DOE has assumed environmental, safety, and health responsibility. A hazard assessment defines the level of hazard posed by an operation or activity and assumes no mitigating features are available. This Hazard Assessment Document (HAD) assesses several facilities at Test Area North (TAN) that are either being downgraded to the designation of less than Hazard Category 3, not requiring additional safety analysis (NRASA); were not included in HAD-89, "TAN Area Utility Buildings and Structures and Other Non-Nuclear Facilities, Facility Hazard Classification;"⁴ or have recently been returned from Specific Manufacturing Capability (SMC) use to TAN Operations (TANO).

2. FACILITY DESCRIPTION

The TAN facility, located at the north end of the Idaho National Engineering and Environmental Laboratory (INEEL), is a controlled-access area for the management and operation of several nuclear and nonnuclear facilities. It was originally established to support the Aircraft Nuclear Propulsion Program, which was established in the 1950s and terminated in 1961. Since 1961, the TAN facilities have been adapted for use by various other programs, including the Loss-of-Fluid Test experimental program, which ended in 1985, and the SMC program, which is ongoing.

The mission of TANO is to safely examine, test, and monitor spent nuclear fuel (SNF), storage casks, and radioactive materials as deemed necessary by the DOE. TANO also provides interim storage for these items while these items await final storage disposition by DOE.

There are numerous buildings, plus support structures, utilities and disposal installations located within the boundaries of TAN. A more detailed discussion of these buildings and their functions is documented in Report Number INEL-94/0163, "Safety Analysis Report for TANO."⁵

This hazard classification document will address TAN facilities (see Figure 1) that can be downgraded from nuclear facility category, that were not included in HAD-89,⁴ or that have recently been returned from SMC use to TANO. The buildings and structures that are part of this hazard classification are as follows:

- Data collection building (TAN-618)
- Gas cylinder and oil storage (TAN-662 and TAN-743)
- Maintenance building (TAN-606).

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2.1 TANO Nonnuclear Facility Description

2.1.1 Data Collection Building (TAN-618)

The data collection building (TAN-618) was built in 1985, for data collection of instrumentation at or around TAN. The building is a steel frame, with metal wall and roof construction. The building encompasses approximately 134 ft² and presently contains office furniture/equipment.

2.1.2 Gas Cylinder and Oil Storage (TAN-662 and TAN-743)

The gas cylinder and oil storage facility (TAN-662 and TAN-743, respectively) were built in 1978, to provide safe storage for pressurized gas cylinders. TAN-662 is of steel construction and occupies approximately 218 ft². TAN-743 is of steel construction and occupies approximately 100 ft². The gas cylinders usually stored in the TAN-662 building contain oxygen, nitrogen, helium, acetylene, and argon for cutting and welding operations and P-10 gas for use in radiological instrumentation. On average, approximately 20–25 gas cylinders are stored in the building; however, the number varies, depending on use. TAN-743 stores empty gas cylinders. Presently, no oil products are stored in either building.

2.1.3 Maintenance Building (TAN-606)

The maintenance building was constructed in 1954, and used originally as a maintenance shop. The building was last used as a carpentry and paint shop by SMC. The one-story structure is constructed of masonry wall and has a mezzanine and a metal deck. The metal roof has steel trusses and the floor is concrete. The building occupies approximately 5,700 ft². All paint, carpentry and associated materials, and equipment have been removed. The building is presently being used to store nonradioactive/nonhazardous materials and equipment.

The building houses a decommissioned radioactive source deep well. The deep well was filled with sand during the decommissioning activity and presently a wall has been built in front of the well. The location of the deep well is behind the west wall of Room 126.

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3. MATERIAL INVENTORY

To assess the hazards associated with each facility, the inventory of radioactive material and chemicals is identified. The inventory identification process involved discussions with TAN personnel, INEEL Chemical Management System (ICMS) personnel, Waste Generator Services (WGS) personnel, emergency response planning personnel and a walk-down of each building. The inventory identification process also used the INEEL Waste Tracking System (IWTS) and the ICMS.

3.1 TANO Nonnuclear Facilities

The material inventory for the TAN facilities considered in this hazard assessment is described in the following subsections.

3.1.1 Data Collection Building (TAN-618)

No radioactive material or chemical inventory has been identified at the data collection building (TAN-618).

3.1.2 Gas Cylinder and Oil Storage (TAN-662 and TAN-743)

No radioactive material or chemical inventory, other than gas cylinders not listed in Table 302.4 of 40 CFR 302.4, "Designation, Reportable Quantities, and Notification – Designation of Hazardous Substances,"⁶ have been identified at the gas cylinder and storage area (TAN-662 and TAN-743). The gas cylinders mentioned in Section 2.1.2 are stored per the requirements of Program Requirements Document (PRD)-5040, "Handling and Use of Compressed Gases," and there is presently no storage of oil products in the buildings.

3.1.3 Maintenance Building (TAN-606)

No radioactive material or chemical inventory has been identified at the maintenance building (TAN-606).⁷ The building is presently empty, and the future use of the building has not been identified. The maintenance building was previously classified as NRASA, per HAD-90, "SMC Area Utility Buildings and Structures and Other Non-Nuclear Facilities – Facility Hazard Classification."⁸

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4. HAZARD ASSESSMENT

The hazard assessment evaluates radiological hazards, hazardous material hazards, and other hazards. To evaluate the radiological and hazardous material hazards, the material inventory is compared to threshold quantities provided in DOE-STD-1027-92, 40 CFR 302.4,⁶ 29 CFR 1910.119, and 40 CFR 355; however, with the exception of the gas cylinders stored at TAN-662, no radiological or hazardous material hazards have been identified in the buildings and structures covered by this hazard assessment.

Table 1 presents the results of this screening effort. The first and second columns list the specific TANO facilities. The third column lists the current hazard classification from References 5, 9, and 10. The fourth column lists the proposed hazard classification from this study.

Hazards associated with the facilities described in Section 2 are standard industrial hazards. These hazards are mitigated by facility design, use of protective clothing and equipment, adherence to operating procedures, and/or safety training.

MCP-2451, "Safety Analysis for Other Than Nuclear Facilities,"⁹ gives guidance on classifying activities that do not fall under the requirements of 10 CFR 830 Subpart B. A hazard can be determined as an NRASA hazard if: (1) it is determined to be routinely encountered and accepted in the course of everyday living by the vast majority of the general public, and (2) it is determined that no further safety analysis is required. A hazard can be determined to be an NRASA hazard without additional hazard analysis if it is of a type listed in Table 2 and if it has a magnitude that does not exceed the criteria or thresholds in Table 2. None of the Table 2 hazard threshold are exceeded for the buildings specified in this HAD. Therefore, in accordance with INEEL procedures, the facilities described in Section 2 are designated as NRASA.

5. CONCLUSION—CATEGORIZATION/CLASSIFICATION/ DESIGNATION

The facilities described in Section 2 are designated as NRASA, and no additional safety analysis is required.

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Table 1. Hazard classification for TANO facilities.

Bldg	Description	Current Hazard Categorization	Revised Hazard Categorization per this HAD
TAN-618	Data Collection Building	TANO SAR	NRASA
TAN-662 and -743	Gas Cylinder and Oil Storage Facility	TANO SAR	NRASA
TAN-606	Maintenance Building	NRASA (HAD-90 for SMC)	NRASA (for TANO)

Table 2. Comparison of NRASA criteria to hazards at the facilities discussed in Section 2.

Hazard Type	Criteria or Threshold Limits	Criteria or Threshold Exceeded?	Explanation
Standard industrial hazards	Applicable OSHA regulations.	No	The standard industrial hazards at any of the facilities described in Section 2 are similar to hazards found in common industrial facilities.
Radioactive material	The MAR quantity of radioactive material, determined in accordance with DOE-STD-1027-92 methodology, is below the 40 CFR 302, Appendix B RQ limits.	No	No radioactive materials are present in any of the facilities described in Section 2.
Chemical hazards	The MAR quantity of chemical hazards is below the RQ limits in Table 302.4 of 40 CFR 302.	No	No chemical inventory is present at any of the facilities described in Section 2.
Nuclear criticality hazard	The inventory of fissionable material is less than 15 g of U-233, U-235, Pu-239, and Pu-241 in any area.	No	No fissile material is present at any of the facilities described in Section 2.
Field and low-level fixed x-ray equipment	The field and low-level x-ray equipment meets ANSI x-ray standards.	No	X-ray equipment is not used at any of the facilities or structures described in Section 2.
Toxic materials	Potential air concentrations of toxic materials are less than the Emergency Response Planning Guideline limit or its equivalent for substances exceeding 5 times the RQ values of 40 CFR 302.	No	No unique sources of toxic materials exist at any of the facilities described in Section 2.
Flammable material	The inventory of flammable materials is not more than allowed by the NFPA code for building occupancy classification.	No	The inventory of flammable materials at any of the facilities or structures described in Section 2 is managed in accordance with NFPA 30.

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Table 2. (continued).

Hazard Type	Criteria or Threshold Limits	Criteria or Threshold Exceeded?	Explanation
Explosive materials	The inventory of explosive materials is not more than allowed by the applicable Uniform Fire Code.	No	No explosive materials exist at any of the facilities or structures described in Section 2.
Lasers	The laser is ANSI Z136.1 Class I or II or Class III with an enclosed beam.	No	No lasers are located at any of the facilities or structures described in Section 2.
Electrical	Electrical sources are not more than 600 V, or if more than 600 V, not more than 25 mA, and not more than 50 J stored energy.	No	Electrical sources of more than 600 V are not used at any of the facilities described in Section 2.
Kinetic energy	There are no unusual or unique high-kinetic energy systems.	No	No unusual or unique high-kinetic energy systems are used at any of the facilities or structures described in Section 2.
Pressure	The pressure-stored energy is no more than 0.1-lb TNT equivalent if the pressure is more than 3,000 psig.	No	Compressed gas cylinders containing nitrogen, helium, argon, etc. will be stored at TAN-662 and TAN-743 and may be used in the other facilities in accordance with INEEL procedures (particularly PRD-5040).
Extreme temperatures	The temperature is incapable of environmental interaction to cause strong overpressure, toxic products, or to initiate a release of hazardous materials.	No	No high- or low-temperature systems are present at any of the facilities described in Section 2. Temperature extremes due to weather may be encountered and proper precautions will be taken.
Biohazards	Special industrial hygiene controls are not required.	No	There is no evidence of biohazards other than those expected in a high desert environment, such as hantavirus, and/or snake and insect bites. Pigeon excrement may be present (Histoplasmosis) in some of the buildings.

ANSI	American National Standards Institute
MAR	material at risk
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PRD	program requirements document
RQ	reportable quantity

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6. REFERENCES

1. 10 CFR 830, Subpart B, "Safety Basis Requirements." *Code of Federal Regulations*, Office of the Federal Register, January 2001.
2. DOE-ID Order 420.C, "Safety Basis Review and Approval Process." U.S. Department of Energy Idaho Operations Office, Rev. 0, July 17, 2000.
3. DOE-ID Order 420.D, "Requirements and Guidance for Safety Analysis." U.S. Department of Energy Idaho Operations Office, Rev. 0, July 17, 2000.
4. HAD-89, "TAN Area Utility Buildings and Structures and Other Non-Nuclear Facilities--Facility Hazard Classification," Rev. 0, March 2000.
5. *Safety Analysis Report for Test Area North Operations at the Idaho National Engineering and Environmental Laboratory*, INEL-94/0163, Rev. 16, November 2002.
6. 40 CFR 302.4, "Designation of Hazardous Substances," *Code of Federal Regulations*, Office of the Federal Register, September 9, 2002.
7. SMC-PLN-070, "Radiological Characterization of TAN-606 Facility," Rev. 0, September 24, 2002.
8. HAD-90, "SMC Area Utility Buildings and Structures and Other Non-Nuclear Facilities - Facility Hazard Classification," Rev. 0, April 2000.
9. MCP-2451, "Safety Analysis for Other Than Nuclear Facilities." Rev. 2, April 5, 2001.