

**HAD**

**TAN Area Utility Buildings and  
Structures and Other Non-Nuclear  
Facilities  
Facility Hazard Classification**

**INEEL**

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# 1. INTRODUCTION

This document presents the results of an analysis of potential hazards associated with operations in Test Area North (TAN) Area utility and non-nuclear buildings. The TAN Area includes the Contained Test Facility (CTF), Technical Support Facility (TSF), Initial Engine Test (IET), Specific Manufacturing Capability (SMC), and Water Reactor Research Test Facility (WRRTF). The object of this analysis is to determine the facility hazard classification for non-nuclear facilities and structures not classified in other safety documents. The classification is conducted in accordance with established criteria documented in Company Management Control Procedure 2451 (MCP-2451), *Safety Analysis for Non-Nuclear, Radiological, and Other Industrial Facilities*.<sup>1</sup> The facility hazards are listed and screened and identified relative to those not requiring additional safety analysis (NRASA). The remaining hazards are considered in the hazard classification relative to credible process-related, natural phenomena, or fire hazards that can potentially affect the public, workers, and the environment. Only those having severe consequences of significant chemical releases or multiple injuries are classified as Low hazards.

It is DOE-ID policy that safety documentation be prepared for any activity with potential hazards of a type that are not routinely accepted by the public and that the level of documentation be commensurate with the activity's complexity and level of hazard. One of the first steps to determine the level of safety documentation is facility hazard classification. The Company criteria for determining and assigning hazard classification and whether an activity can be considered as NRASA are provided in MCP-2451 and in the Appendix A of MCP-2451. The hazard classification criteria are based on hazard classification defined in DOE Order 5481.1B,<sup>2</sup> DOE-ID Notice 420.A1,<sup>3</sup> and DOE-EM-STD-5502-94.<sup>4</sup>

This document includes classification of both the TAN utilities and the non-nuclear facilities. The utility systems, as shown in Table 1, include a electrical power distribution system to the various facilities and then for each area the standby electrical generation system, steam distribution, water distribution systems, and the sanitary waste collection system, as provided. A "facility specific" designation means the system is not within the scope of this analysis and is discussed in a separate safety document. The systems for each area are as follows:

**Table 1.** TAN Utilities and Locations.

TAN Area	Electrical Power Distribution Systems	Standby Electrical Generation Systems	Water Distribution Systems	Steam Distribution Systems	Sanitary Waste Collection Systems
TSF	X	X	X	X	X
CTF/SMC	X	(Facility Specific)	X	(Facility Specific)	(Facility Specific)
WRRTF	X		X	X	X
IET	X				

The TAN utilities do not have a radiological inventory except for a few contaminated buildings or areas. Also, TAN utilities do not have special administrative controls nor special design features for supporting nuclear facilities. TAN nuclear facilities using utilities are designed fail-safe, have shut down actions, or have alternate sources upon the failure of the utility systems. All those facilities using TAN

utilities are well within the normal failure and recovery response of the utility systems. Because of the chemical inventory, parts of the systems are further analyzed as potential Low hazards. The rest of the facilities are classified as not requiring additional safety analysis (NRASA). The potentially Low hazard facilities are analyzed relative to credible atmospheric release events and multiple injury events.

The purpose of the TAN utilities is to maintaining normal operations without business interruptions. The hazards are of a routine occupational nature characteristic of industrial utility production and distribution systems. Controls typical of those used in general industry are relied upon. The hazards identified include natural phenomena events that disrupt the supply or distribution, equipment fires or explosions, and chemical burns.

Controls relied upon are the general administrative controls for procedures and codes and standards typical of those used in general industry for occupational safety and health hazards. The analyses indicate the nature of the hazards make operations acceptable. Standard occupational safety and health programs are in place to control the potential routine occupational safety and health hazards present.

The other non-nuclear facilities and structures are generally individual facilities that are not considered as utility support systems to nuclear facilities. These facilities are classified relative to the only the inherent hazards in the facility. These facilities are grouped according to the area of TAN where they are located.

The structures and facilities included in this hazard classification are listed in Table 2 and 3. Table 2 lists the utility related facilities while Table 3 lists the other non-nuclear facilities.

The TAN Area utility and non-nuclear buildings and their facility description are listed and analyzed in Section 2. Those buildings occupied by personnel typically have numbers in the 600's. A few of the 600 numbers and the rest of the buildings are unoccupied. Section 2 also lists and analyzes bulk storage vessels associated with these buildings, including utility fuel storage tanks

- TAN-603, -607, 704, 712, 713, 783, and 792 at TSF
- TAN-1738 at WRRTF

and water storage tanks

- TAN-733 and 748 at CTF
- TAN-701 at TSF
- TAN-728 and 731 at WRRTF.

Other non-nuclear fuel storage tanks include tanks out of service. Any hazardous materials stored in the vessels are considered in the analysis.

**Table 2. TAN Utility Structures and Facilities.**

Number	Description
<b>TAN Electrical Distribution System:</b>	
SMC SUBSTATION (TAN-679)	SMC TRANSFORMER SUBSTATION FOR TAN-679
SMC SUBSTATION (TAN-679-2)	SMC TRANSFORMER SUBSTATION FOR TAN-679 (2)
SMC SUBSTATION (TAN-675)	SMC TRANSFORMER SUBSTATION FOR TAN-675
TAN-605	SUBSTATION CONTROL HOUSE
TAN-708	MAIN ELECTRICAL SUBSTATION YARD
TAN-709	TRANSFORMER STATION
TAN-722	1500kVA SUBSTATION
TAN-729	ELECTRICAL SUBSTATION
TAN-730	ELECTRICAL SUBSTATION
TAN-768	ELECTRICAL SUBSTATION
TAN-776	TRANSFORMER STATION
TAN-795	TAN SUBSTATION
TAN-796	TRANSFORMER STATION
TAN-798	ELECTRICAL SUBSTATION (PREPP)
TAN-1731	SMC SUBSTATION
<b>CTF Water Distribution System:</b>	
TAN-614	WATER PUMP HOUSE
TAN-632	PUMP HOUSE WELL #1
TAN-639	PUMP HOUSE
TAN-665	FIRE WATER PUMP HOUSE
TAN-733	WATER STORAGE TANK
TAN-748	WATER TANK
<b>TSF Water Distribution System:</b>	
TAN-610	WATER PUMP HOUSE
TAN-611	FUEL PUMP HOUSE
TAN-612	DEEP WELL PUMP HOUSE #1
TAN-613	DEEP WELL PUMP HOUSE #2
TAN-701	WATER STORAGE TANK
<b>TSF Steam Distribution System:</b>	
TAN-603	SERVICE BUILDING
TAN-695	HAZARDOUS WASTE STORAGE FACILITY
TAN-704	BOILER FUEL TANK
TAN-778	WATER BLOWDOWN TANK

**Table 2. (continued).**

Number	Description
<b>TSF Sanitary Waste Collection System:</b>	
TAN-623	SEWAGE PUMP HOUSE [TSF-28]
TAN-655	LIQUID WASTE LIFT STATION
TAN-670	CHLORINE TREATMENT BLDG
TAN-711	SEWAGE TREATMENT PLANT
<b>WRRTF Water Distribution System:</b>	
TAN-644	PUMP HOUSE
TAN-652	FIRE PROTECTION PUMPHOUSE
TAN-728	WATER TANK
TAN-731	WATER STORAGE TANK
<b>WRRTF Sanitary Waste Collection System:</b>	
TAN-1743	SEWAGE LIFT STATION
TAN-1744	PROCESS WASTE WATER LIFT STATION
TAN-762	SEWAGE LAGOON [WRRTF-03]
TAN-762A	SEWAGE LAGOON
TAN-762B	PROCESS WASTE WATER POND
<b>WRRTF Steam Distribution System:</b>	
TAN-1738	DIESEL FUEL TANK
TAN-641 (BOILER ROOM)	CONTROL & EQUIPMENT BLDG.
CONDENSATE SHED	CONDENSATE SHED (ATTACHED TO TAN-645)
TAN-754	PROPANE TANK 500 GAL.

**Table 3. TAN Other Non-nuclear Facilities and Structures.**

Number	Description
<b>CTF/SMC Area:</b>	
TAN-678	CAFETERIA #2
TAN-739	SMC/METEOROLOGICAL TOWER
<b>TSF Area:</b>	
TAN-1601	EQUIPMENT AND STORAGE
TAN-1716	SURFACE RUNOFF WELL #2
TAN-1717	SURFACE RUNOFF WELL #1
TAN-1718	SURFACE RUNOFF WELL #4
TAN-1719	SURFACE RUNOFF WELL #3
TAN-1720	SURFACE RUNOFF POND
TAN-601	GUARD HOUSE
TAN-602	ADMINISTRATION BLDG
BULLY BARN	BULLY BARN (Craft Storage south of TAN-610)
GREEN METAL STRUCTURE	GREEN METAL STRUCTURE (Electrical equipment storage south of TAN-610)
GREY METAL STRUCTURES	GREY METAL STRUCTURE (Crane and rigging storage south of TAN-610)
TAN-604	MAINTENANCE SHOP
TAN-609	EQUIPMENT MAINTENANCE SHOP
TAN-617	MONITORING SHELTER
TAN-636	CARPENTER & PAINT SHOP
TAN-638	GUARD HOUSE
TAN-654	SMC/STORAGE SHED NEAR BLDG
TAN-660	MAINTENANCE STAGING AREA
TAN-661	CONTROL HOUSE FOR TURNTABLE
TAN-664	AUTOMOTIVE SVC ATTENDANT BLDG (TSF)
TAN-667	SMALL MACHINE SHOP
TAN-680	BUS FUEL PUMP STATION CONTROL BLDG (TSF)
TAN-686	SMC/OFFICE TRAILER
TAN-687	TAN FIRE STATION
TAN-702	BOILER FUEL TANK
TAN-705	TURNTABLE FOR DOLLY TRACKAGE
TAN-712	PROPANE STORAGE TANK (TSF)
TAN-713	GAS PUMP ISLAND (91)(TSF)

**Table 3. (continued).**

Number	Description
TAN-717	HELICOPTER PAD
TAN-724	BOILER FUEL TANK
TAN-727	COVERED STAIRS
TAN-732	PROPANE STORAGE TANK
TAN-740	LIQUID WASTE DISPOSAL POND
TAN-781	DRAINAGE POND, NORTH
TAN-782	DRAINAGE POND, SOUTH
TAN-783	GASOLINE TANK (TSF)
TAN-784	LUMBER STORAGE
TAN-786	DRAINAGE DISPOSAL WELL
TAN-792	DIESEL TANK (91) (TSF)
TAN-793	BUS FUEL PUMP (TSF)
TAN-GATE 4	GUARDHOUSE
	<b>WRRTF Area:</b>
TAN-1610	HAZARDOUS STORAGE MATERIALS BUILDING
TAN-642	GATEHOUSE
TAN-643	CHLORINATION BLDG

## 2. FACILITY HAZARDS IDENTIFICATION

Hazard identification and screening identifies the hazards in the facility. After the hazards are identified, those that are not clearly addressed by DOE-required occupational safety and health programs are used to identify the hazard classification of the facility. Hazards relevant to hazard classification are identified by finding associated hazards from the following information:

1. Facilities Hazards List
2. Hazardous materials inventory.

Company methods are used to ensure that hazards associated with the operation of facilities are identified and screened. These two lists are updated as living documents as part of the five year periodic review of the derived hazard classification, as specified in DOE-ID Notice 420.A1, due to potential changes of information in these lists. The Facility Hazard List, also known as part of LST-99, was developed in accordance with PRD-5042<sup>5</sup> and configuration controlled in accordance with MCP-2811.<sup>6</sup> The facilities hazard list was summarized in the implementation plan.<sup>7</sup> The hazardous materials inventory was tallied from the electronic Chemical Management System.<sup>8</sup>

ID N 420.A1 specifies the use of DOE-EM-STD-5502-94 guidance for determining which facilities are considered for review under DOE Order 5481.1B. ID N 420.A1 also provides classification criteria for Low, Moderate, and High Hazard classifications but is not specific as to the minimum criteria for a Low Hazard classification. In the following potential Low Hazard facilities, the applicable chemical inventory for each building is determined and compared to the Moderate Hazard classification limits. If less than the Moderate classification it is analyzed relative to potential release to the environment (outside a building) or to the potential release in an occupied area (exposure to workers or the public). Facilities do not require further safety analysis if other national regulations or standards are required and a release does not expose the worker or the environment.

The Company criteria for determining assigning hazard classification and whether an activity can be summarily dismissed as NRASA are provided in MCP-2451 and in the Appendix A of MCP-2451. Table 4 lists the criteria and the Company controls typically applicable to the hazards. To reduce duplication, the controls associated with standard industrial hazards are listed next to any specific type of hazard listed instead of grouping all under the standard industrial hazards heading. Federal regulations associated with industrial hazards are listed for each hazard type at the end of each entry under the Control column.

The hazard identification methods include use of a facility hazard list as included in column four of Table 5. The facility hazards list identifies the hazards associated with TAN Area buildings. Those areas owned by SMC are noted in the third column description. The rest of the facilities are owned by TAN Operations. The table rows are divided into two major parts: Utility Facilities and Other Non-Nuclear Facilities. Within the Utility Facilities the buildings and structures are listed for each utility system. Within the Other Non-Nuclear Facilities the buildings are listed according to the CTF, IET, TSF, and WRRTF areas.

The following section discusses those hazards that are considered NRASA as a result of this identification and screening process. The chemical inventories for specific facilities are contained in Section 3 and are used in the hazard classification of these facilities.

**Table 4. Criteria for Hazards Not Requiring Additional Safety Analysis.**

Hazard Types	Controls
1. Radioactive material Radioactive material at risk quantity is below the 40 CFR 302, Table 302.4, Appendix B Reportable Quantity (RQ) limits.	Manual 15B Radiation Protection Environmental Affairs Manual (MCP-3666 Oil Pollution Act/Spill Prevention Control and Countermeasures Plans)
2. Chemical hazards (spills) Chemical material at risk quantity below the RQ limits in Table 302.4 of 40 CFR 302.	Manual 14A Safety and Health (MCP-2707 Compatible Chemical Storage, MCP-2708 Maintaining Facility Chemical Storage Limits) Environmental Affairs Manual (MCP-3666 Oil Pollution Act/Spill Prevention Control and Countermeasures Plans)
3. Standard industrial hazards Hazards that are controlled in compliance with applicable OSHA regulations and are not initiators for nuclear accidents for the following items: Walking & working surfaces, noise, lifting equipment, welding, and general house keeping. (See additional industrial criteria associated with hazards types 6, 7, 8, 10, 11, and 14.)	Manual 14A Safety and Health (MCP-2713 Walking/Working Surfaces MCP-2711 Ladders MCP-2712 Scaffolding MCP-2709 Aerial Lifts & Elevating Platforms MCP-2718 Welding Cutting and Other Hot Work Manual 14B Safety and Health (MCP-2692 Preventing Ergonomic and Back Disorders MCP-2704 Heat and Cold Stress MCP-2719 Controlling and Monitoring Exposure to Noise MCP-2749 Confined Space MCP-2748 Hazardous Waste Operations and Emergency Response) Walking & Working surfaces controlled in compliance with 29 CFR 1910 Subpart D, noise in compliance with Section 97, lifting equipment in compliance with Subpart N, welding in compliance with Subpart Q.
4. Nuclear criticality hazard Fissionable material less than 15 grams.	Manual 10B Engineering and Research (MCP-2818 Establishing, Maintaining, and Deleting Criticality Control Areas PRD-112 Program Requirements Document for Criticality Safety Program Requirements Manual) PRD-113 Unreviewed Safety Questions
5. Field and low-level fixed X-ray equipment X-ray equipment (field and low level X-ray).	Manual 15B Radiation Protection ANS N537/NBS 123

**Table 4. (continued).**

Hazard Types	Controls
<p>6. Toxic materials (releases)</p> <p>Potential air concentrations of toxic materials from an accident release are less than 5 times the reportable quantity (RQ) values of 40 CFR 302 Table 302.4.</p>	<p>Environmental Affairs Manual (MCP-3670 Emergency Planning and Community Right-to-Know Act Sections 311, 312, and 313 Reporting) Manual 14A Safety and Health (MCP-2716 Personal Protective Equipment) Manual 14B Safety and Health (MCP-2703 Carcinogens MCP-2715 Hazard Communication MCP-2720 Controlling and Monitoring Exposure to Lead MCP-2726 Respiratory Protection MCP-2747 Specialized Ventilation MCP-2859-Posting Asbestos Advisory Signs MCP-2862 Asbestos Management Program Administration)</p> <p>Toxic materials controlled in compliance with 29 CFR 1910 Subpart Z.</p>
<p>7. Flammable materials</p> <p>Flammable materials where the inventory of flammable materials is not more than allowed by identified National Fire Protection Association code for the building occupancy classification.</p>	<p>Manual 14A Safety and Health (MCP-584 Flammable and Combustible Liquid Storage and Handling)</p> <p>Hazardous materials controlled in compliance with 29 CFR 1910.106 through 108.</p>
<p>8. Explosive materials</p> <p>Explosive materials where the inventory is not more than allowed by the applicable uniform fire code for the building occupancy classification, or as established in writing between operations line management and the Company's Explosives Safety Committee, or by DOE Manual 440.1.1.</p>	<p>Manual 14A Safety and Health (MCP-2734 Explosive Safety)</p> <p>ICBO Uniform Fire Code. Explosive materials controlled in compliance with 29 CFR 1910.109.</p>
<p>9. Lasers</p> <p>Lasers which are not Class III (without an enclosed beam) or Class IV.</p>	<p>Manual 14A Safety and Health (MCP-2717 Laser Safety Program)</p> <p>ANSI Z136.1 and ANSI Z136.2</p>
<p>10. Electrical</p> <p>Electrical sources are not more than 600 volts (V) or if more than 600 V, not more than 25 milliamps and not more than 50 joules stored energy.</p>	<p>Manual 14A Safety and Health (MCP-2731 Electrical Safety)</p> <p>Electrical hazards controlled in compliance with 29 CFR 1910 Subpart S.</p>
<p>11. Kinetic energy</p> <p>Machinery with no unusual or unique high kinetic energy systems.</p>	<p>Manual 14A Safety and Health (MCP-2732 Equipment Safety MCP-2738 Machine Guarding)</p> <p>Mechanical hazards controlled in compliance with 29 CFR 1910.211 through 216, 219.</p>

**Table 4. (continued).**

Hazard Types	Controls
12. Pressure Pressured systems that are not more than 3,000 psig.	Manual 14A Safety and Health (MCP-2728 Compressed Gases)  Manual 13C Quality and Requirements Management – Owner-User Pressure Vessel Quality Program  Pressure systems controlled in compliance with ASME B&PV Code.
13. High temperature High Temperature incapable of environmental interaction causing strong overpressure, toxic products, or to initiate a release of toxic or radiological materials.	Manual 14A Safety and Health (MCP-2737 High Temperature Systems) Manual 13C Quality and Requirements Management – Owner-User Pressure Vessel Quality Program  High temperature systems controlled in compliance with ASME B&PV Code.
14. Biohazards Biohazards with no special industrial hygiene controls required (based on review by the Institutional Biosafety Committee).	Manual 14B Safety and Health (MCP-2702 Bloodborne Pathogens MCP-2750 Preventing Hantavirus Infection)  Biohazards controlled in compliance with 29 CFR 1910.150.

**Table References:**

ANS N537/NBS 123: American National Standards for Safe Use of Field and X-ray Equipment.

ANSI Z136.1: American National Standards for Safe Use of Lasers.

ANSI Z136.2: American National Standards for the Safe Use of Optical Fiber Communications Systems Utilizing Laser Diode and LED Sources.

ASME B&amp;PV Code: American Society of Mechanical Engineers Boiler and pressure Vessel code.

ICBO Uniform Fire Code: International Conference of Building Officials Uniform Fire Code.

Environmental Affairs Manual

Company Manual 10B Engineering and Research-Safety Analysis and Criticality Safety

Company Manual 13C Quality and Requirements Management

Company Manual 14A Safety and Health

Company Manual 14B Safety and Health

Company Manual 15B Radiation Protection

29 Code of Federal Regulations (CFR) 1910: Code of Federal Regulations, Title 29, Part 1910, Occupational Safety and Health Standards.

40 CFR 302: Code of Federal Regulations, Title 40, Part 302, Designation, Reportable Quantities, and Notification.

**Table 5. NRASA Screening of Facility Hazards.**

Structure No.	Facility	Description	Hazards Identified
<b>UTILITY FACILITIES</b>			
Electrical Power Distribution System			
	SMC TRANSFORMER SUBSTATION FOR TAN- 675	<b>Owned by SMC.</b> Area: 20 m <sup>2</sup> (220 ft <sup>2</sup> ). Concrete pad. Transformers: US-BA-4. Capacity: 1500 kVA. Voltage: 13.8 kV to 480 V.	NO HAZARD DATA FOUND
	SMC TRANSFORMER SUBSTATION FOR TAN- 679	<b>Owned by SMC.</b> Area: 53 m <sup>2</sup> (580 ft <sup>2</sup> ). Concrete pad. Transformers: US-HA-1. Capacity: 2000 kVA. Voltages: 13.8 kV to 480 V.	NO HAZARD DATA FOUND
	SMC TRANSFORMER SUBSTATION FOR TAN- 679	<b>Owned by SMC.</b> Area: 64 m <sup>2</sup> (680 ft <sup>2</sup> ). Concrete pad. Transformers: US-HA-3, Capacity: 1500 kVA. Voltages: 13.8 kV to 480 V. Transformer: US-HA-4. Capacity: 560 kVA. Voltages: 13.8 kV to 595 V.	NO HAZARD DATA FOUND
TAN-605 (Main)	SUBSTATION CONTROL HOUSE (TSF)	The control house for TAN-708 Main Electrical Substation. Area: 141.2 m <sup>2</sup> (1,520 ft <sup>2</sup> ) Built: 1954 Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: steel trusses and metal deck. Floor: concrete. Utilities: Power greater than 440V. Electric heater. Smoke detection system.	ELECTRICAL SHORT, HYDROGEN (LEAD AC BATTERIES), 13.8 KV PANEL AND CONDUIT
TAN-708	MAIN ELECTRICAL SUBSTATION YARD (TSF)	Located in the southeast area of TSF next to TAN-605. Area: 1880 m <sup>2</sup> (20300 ft <sup>2</sup> ). Transformer: 8T5 2, Capacity: kVA, Voltages: 139 kV to 13.8 kV. Transformer: 8T5-1, Capacity: kVA, Voltages: 139 kV to 13.8 kV.	NO HAZARD DATA FOUND
TAN-709	TRANSFORMER STATION NEAR TAN-602 (TSF)	Fenced concrete pad. Area: 3.3 m <sup>2</sup> (35 ft <sup>2</sup> ). Transformer 6-027. Capacity: 300 KVA., Voltages: 13.8 kV to 480 V.	13.8kV TRANSFORMER
TAN-722	TRANSFORMER SUBSTATION FOR BLDG TAN-606 (TSF)	Located east of TAN-607 embankment. Fenced yard. Area: 35 m <sup>2</sup> (380 ft <sup>2</sup> ). Transformer 5-225. Capacity: 1500 KVA Voltages: 13.8 kV to 480 V.	1.5kVA TRANSFORMER
TAN-729	ELECTRICAL SUBSTATION (WRRTF)	Area: 24 m <sup>2</sup> (260 ft <sup>2</sup> ). Substations. Capacity: KVA. Voltages: 13.8 kV to 480 V.	ELECTRICAL
TAN-730	ELECTRICAL SUBSTATION (WRRTF)	Area: 80 m <sup>2</sup> (860 ft <sup>2</sup> ). Substations. Capacity: KVA. Voltages: 13.8 kV to 480 V.	NO HAZARD DATA FOUND

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-768	ELECTRICAL SUBSTATION, SOUTH (CTF)	Area: 74 m <sup>2</sup> (790 ft <sup>2</sup> ). Fenced yard. Transformer: 5-786, Capacity: 1000 kVA, Voltages: 13.8 kVA to 480 V. Transformer: 5-231, Capacity: 1500 kVA, Voltages 13.8 kV to 480 V.	ELECTRICAL
TAN-776	TRANSFORMER STATION (TSF AREA)	Located next to TAN-609. Area: 24 m <sup>2</sup> (256 ft <sup>2</sup> ). Transformers: 5-226, 5-70. Power Transformers. Capacity: 225 and 300 KVA, Voltages: 13.8 kV to 480 V.	225KVA TRANSFORMER
TAN-795	TAN SUBSTATION, SOUTH OF TAN-607 (TSF)	Fenced concrete pad. Area: 16 m <sup>2</sup> (175 ft <sup>2</sup> ). Transformer 5-141. Capacity: 500 KVA. Voltages: 13.8 kV to 480 V.	SUBSTATION, UNKNOWN VOLTAGE TRANSFORMER
TAN-796	TRANSFORMER STATION AT TAN-653 (TSF)	Located west of TAN-604. Area: 6 m <sup>2</sup> (64 ft <sup>2</sup> ). Transformer: 5-499. Capacity: 500 KVA. Voltages: 13.8 kV to 480 V.	SUBSTATION
TAN-798	ELECTRICAL SUBSTATION (PREPP) (TSF)	Located west side of TAN-607. Area: 7.2 m <sup>2</sup> (77 ft <sup>2</sup> ). Transformer 5-561. Voltage: 13.8 kV to 480 V.	NO DATA FOUND
TAN-1731	SMC SUBSTATION (TSF)	Located west side of TAN-607A. Area: 71 m <sup>2</sup> (760 ft <sup>2</sup> ). Transformer: 5-941, 5-624. Voltage: 13.8 kV to 480 V.	NO DATA FOUND
CTF/SMC Water Distribution System			
TAN-614	WATER PUMP HOUSE (CTF)	Area: 93.92 m <sup>2</sup> (1,011 ft <sup>2</sup> ). Built: 31-DEC-56. Construction Type: Masonry Exterior Walls. Utilities: Power 480 V. Fire sprinkler system.	CONFINED SPACE, ELECTRICAL
TAN-632	PUMP HOUSE WELL #1 (CTF)	Area: 29.8 m <sup>2</sup> (321 ft <sup>2</sup> ). Built: 1954. Construction Type: Masonry Exterior Walls. Building Features: Pumice block walls, removable corrugated metal roof. Utilities: Deep well pump, electrical power, electric heat.	ELECTRICAL, ASBESTOS
TAN-639	PUMP HOUSE Well # 2 (CTF)	Area: 8.7 m <sup>2</sup> (94 ft <sup>2</sup> ). Built: 1954. Construction Type: Masonry Exterior Walls. Building Features: Pumice block walls, removable roof. Utilities: Deep well pump, electrical power, electric heat.	HEATING, ASBESTOS, CHEMICAL, MECHANICAL, ELECTRICAL
TAN-665	FIRE WATER PUMP HOUSE (CTF)	Area: 786 m <sup>2</sup> (846 ft <sup>2</sup> ). Built: 1980. Building Features: Pumice Block walls. Utilities: Diesel tank 300 gal. Fire water pump, electricity, electric heat. Fire sprinkler system.	FIRE PROTECTION AND SUPPRESSION, ELECTRICAL, DIESEL FIREWATER PUMP
TAN-733	WATER STORAGE TANK (CTF)	1900000 L (500000 gal)	WATER
TAN-748	WATER TANK, 250,000 GAL (CTF)	950000 L (250000 gal)	CONTAINMENT TEST FACILITY (CTF) WASTE SYSTEM,

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TSF Standby Power Generation System			
TAN-1734	GENERATOR FUEL TANK, UST, 1,000 GALLON (TSF)	Located outside TAN-603. Underground tank built in 1994. 3800 L (1000 gal) capacity.	NO HAZARDS IDENTIFIED
TSF Water Distribution System			
TAN-610	WATER PUMP HOUSE (TSF)	Area: 128.4 m <sup>2</sup> (1,382 ft <sup>2</sup> ). Built: 1954, Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: built up with steel trusses and metal roof deck. Floor: concrete. Fuel tank 300 gal. Utilities: Power supply 480 V. Steam heat, domestic water. Fire sprinkler system.	FIXED ASBESTOS PRESENT, FUEL LINE TO DIESEL ENGINE, 480V TRANSFORMER, 480V PANEL, CONDUIT, 2000# CRANE, HIGH NOISE DURING COMPRESSOR OPERATION, 200 PSI COMPRESSOR, STEAM AND CONDENSATE PIPING
TAN-611	FUEL PUMP HOUSE (TSF)	Area: 38.9 m <sup>2</sup> (419 ft <sup>2</sup> ). Built: 1954, Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: built up with steel trusses and metal roof deck. Floor: concrete, Utilities: Power 480 V, 120 V, 480 V emergency power, steam heat (UH-01).	FUEL OIL LINE FITTINGS/CONNECTIONS, 48 PANELS & CONDUIT, STEAM PIPE
TAN-612	DEEP WELL PUMP HOUSE #1 (TSF)	Area: 19.3 m <sup>2</sup> (208 ft <sup>2</sup> ). Built: 1954, Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: wood with wood trusses and wood deck. Felt roofing material. Utilities: Power 480 V, water, hand extinguisher, electric heat	480V PANELS & CONDUIT, FIXED ASBESTOS PRESENT IN BLDG MATERIALS, 480 V ELECTRICAL DISTRIBUTION EQUIPMENT (TRANSFORMERS)
TAN-613	DEEP WELL PUMP HOUSE #2 (TSF)	Area: 19.3 m <sup>2</sup> (208 ft <sup>2</sup> ). Built: 1954, Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: wood with wood trusses and wood deck. Felt roofing material. Floor: concrete, Utilities: Power 480 V, water, hand extinguisher, electric heat	480V ELECTRICAL DISTRIBUTION EQUIPMENT (PANELS/CONDUIT), FIXED ASBESTOS PRESENT
TAN-701	WATER STORAGE TANK (TSF)	1900000 L (500,000 gal) capacity.	500,000 GAL TANK, RUPTURE HAZARD

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
<b>TSF Steam Distribution System</b>			
TAN-603	SERVICE BUILDING (TSF)	Area: 933 m <sup>2</sup> (10048 ft <sup>2</sup> ). Built in 1954. Masonry exterior walls building. Building features: One story. Walls are pumice block. Roof is built up with steel trusses and metal deck. Floor is concrete. Ceiling height is .74 m to 1.4 m (8 to 15 ft). Floor load capacity is 2000 psi. Utilities: Power supply 480 V. Emergency power 480 V. Heated by steam. Fire and evacuation alarms. Cooling, ventilation, plant air 100 psi. Sprinkler system, three water softeners. Propane fuel tank 500 gal. Diesel day tank 250 gal.	PROPANE TANK (500 GAL.), FIXED ASBESTOS PRESENT CEILING AND FLOOR TILE AND TRANSITE WALLBOARD, LOOSE ASBESTOS DAMAGED PIPE INSULATION NEAR VEHICLE ACCESS DOOR, 55 GALLON DRUMS RADIOACTIVELY CONTAMINATED (OIL AND WATER), 480 V ELECTRICAL DISTRIBUTION SYSTEM, OXYGEN COMPRESSED GAS CYLINDER, FLAMMABLE MATERIALS (OILS SOLVENTS, ETC.), HIGH NOISE, CONFINED SPACE (DIESEL FUMES), HI PRESSURE STEAM LINE, AIR COMPRESSOR, AMERICOR 1848 ADVANTAGE PLUS 1400, INACTIVE BOILER, GENERATOR, 480V PANEL, FUEL OIL SUPPLY LINE, HOT EQUIPMENT (BOILER/TANKS/PIPE), MEDICAL ROOMS: ASBESTOS - FIXED, TILE BUILDING MATERIALS, COMPRESSED GAS CYLINDERS OF OXYGEN, DROPPING OBJECTS SHELF ITEMS.
TAN-695	HAZARDOUS WASTE STORAGE FACILITY(TSF)	40.1 m <sup>2</sup> (432 ft <sup>2</sup> ) area. Built in 1993. Used for Hazardous/ Flammable Storage. Construction Type: Other. Building Features: One story factory assembled. Utilities: Power. Dry chemical extinguishing system.	FIXED ASBESTOS PRESENT, CHEMICALS, PAINTS, OILS, ETC, CAUSTICS AND ACIDS
TAN-704	BOILER FUEL TANK (TSF)	720000 L (190000 gal) capacity. Berm capacity: 870000 L (230000 gal)	DIESEL FUEL LINES
TAN-778	WATER BLOWDOWN TANK (TSF)	4 ft dia and 12 ft long. Capacity: 4350 L (1150 gal)	BOILER BLOWDOWN TANK
<b>TSF Sanitary Waste Collection System</b>			
TAN-623	SEWAGE PUMP HOUSE (TSF)	Area: 10 m <sup>2</sup> (108 ft <sup>2</sup> ). Built: 1954, Construction Type: Masonry Exterior Walls, Building Features: One story. Walls: pumice block. Roof: wood rafters and deck with felt roofing. Floor: concrete, Utilities: Power: 480V, water, alarm.	RADIOLOGICALLY CONTAMINATED DUST, NOISE, 480V ELECTRICAL DISTRIBUTION EQUIPMENT (TRANSFORMER/PANEL), HOT MACHINERY AND HEATER AT HEAD LEVEL METHANE, RADIOACTIVE MATERIALS (POSSIBLE CONTAMINATION)
TAN-655	LIQUID WASTE LIFT STATION (TSF)	Area: 20.9 m <sup>2</sup> (225 ft <sup>2</sup> ). Built: 1972. Construction Type: Reinforced Concrete. Building Features: One story. Walls: concrete. Roof: concrete. Floor: concrete. Underground concrete sump. Utilities: Power, potable water, alarm panels (level and flow alarm).	SEWER SYSTEM EFFLUENT - RADIATION, 480V TRANSFORMER, 480V PANEL/CONDUIT

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-670	CHLORINE TREATMENT BLDG (TSF)	Area: 4.5 m <sup>2</sup> (48 ft <sup>2</sup> ). Built: 1954. Construction Type: Wood Frame, Siding, Asphalt Roof. Building Features: One story. Walls: wood. Roof: wood. Floor: wood. Utilities: Power, water, electric heat.	NON-FRIABLE ASBESTOS PRESENT
TAN-711	SEWAGE TREATMENT PLANT (TSF)	Area: 45 m <sup>2</sup> (490 ft <sup>2</sup> ). Primary treatment. Capacity: 30000 L/day (8000 gal/day).	SEWAGE
WRRTF Water Distribution System			
TAN-644	PUMP HOUSE (WRRTF)	Deep well pump. Area: 28.9 m <sup>2</sup> (311 ft <sup>2</sup> ). Built: 1957, Construction Type: Masonry Exterior Walls, Building Features: 8-in. pumice concrete block building. One half of the roof is removable and is covered with asphalt. The other half is 4-ply fiberglass and asphalt, insulated with plastic foam on top of roofing Utilities: 6-in. water piping for raw water and firewater	ELECTRICAL
TAN-652	FIRE PROTECTION PUMPHOUSE (WRRTF)	Area: 62.8 m <sup>2</sup> (676 ft <sup>2</sup> ). Built: 1965, Construction Type: Masonry Exterior Walls. Building Features: One story. Masonry exterior walls, steel frame. 4-ply fiberglass and asphalt roof insulated with plastic foam on top. 350 gal diesel tank. Utilities: Power, raw water line from adjacent storage tanks, process drain. Fire sprinkler system.	ELECTRICAL, DIESEL FIRE WATER PUMP, VENTILATION, WATER
TAN-728	WATER TANK (WRRTF)	280000 L (75000 gal) capacity.	WATER
TAN-731	WATER STORAGE TANK (WRRTF)	450000 L (120000 gal) capacity.	POTABLE WATER
WRRTF Sanitary Waste Collection System			
TAN-1743	SEWAGE LIFT STATION SOUTH OF TAN-643 (WRRTF)	Area: 2.6 m <sup>2</sup> (28 ft <sup>2</sup> ). 1.8 m (6 ft) diameter underground manhole lift station.	CONFINED SPACE, ELECTRICAL
TAN-1744	PROCESS WASTE WATER LIFT STATION	Sewage lift station. Capacity: 1 gpm.	NO DATA FOUND
TAN-762	SEWAGE LAGOON (WRRTF)	Area: 280 m <sup>2</sup> (3020 ft <sup>2</sup> ).	CONFINED SPACE
TAN-762A	SEWAGE LAGOON (WRRTF)	Area: 2520 m <sup>2</sup> (27130 ft <sup>2</sup> ).	NO HAZARDS IDENTIFIED
TAN-762B	PROCESS WASTE WATER POND (WRRTF)	Area: 3330 m <sup>2</sup> (35800 ft <sup>2</sup> ).	NO HAZARDS IDENTIFIED

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
<b>WRRTF Steam Distribution System</b>			
TAN-1738	DIESEL FUEL TANK (WRRTF)	Underground tank located outside TAN-641. 23000 L (6000 gal) capacity.	NO HAZARD DATA FOUND
TAN-641 (Boiler Room)	CONTROL & EQUIPMENT BLDG (WRRTF)	1363.4 m <sup>2</sup> (14,675 ft <sup>2</sup> ) area. Built in 1958. Construction Type: Masonry Exterior Walls. Building Features: One story. A portion of the building exterior walls is 8-in. HCB and a portion is high-density concrete. Metal decking, four-ply fiberglass and asphalt roofing with rock surface, Insulate. Concrete floor. Connected to TAN-640. Utilities: Power. Water. Steam. Fire sprinkler system.	STORAGE, PIPING SYSTEM, BOILER/STEAM SYSTEM, ELECTRICAL, WATER, HEATING, CEILING ACCESS
CONDENSATE SHED	CONTROL AND ADMINISTRATION BLDG (WRRTF)	756.8 m <sup>2</sup> (8,146 ft <sup>2</sup> ) area. Built in 1960. Construction Type: Masonry Exterior Walls. Building Features: One story. Masonry exterior walls, steel frame with metal panel interior walls. Metal decking, 4-ply fiberglass and asphalt roofing with rock surface. Insulated. Utilities: Steam heat, incandescent and mercury lighting, power, water sprinkler fire system, sewer, raw water, process drain, demineralized water, air line, fuel oil supply.	ELECTRICAL, HVAC, STEAM, BIOLOGICAL, ASBESTOS, STRUCTURE, HEATING & VENTILATING, STORAGE
TAN-754	PROPANE TANK (WRRTF)	1900 L (500 gal) capacity.	GAS, FLAMMABLE

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**OTHER NON-NUCLEAR FACILITIES**


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<b>CTF Area</b>			
TAN-678	CAFETERIA #2 (CTF AREA)	Area: 708.8 m <sup>2</sup> (7,630 ft <sup>2</sup> ). Built: 1988. Construction Type: Masonry Exterior Walls. Building Features: Masonry exterior. Utilities: Power, water, sewer. Dry chemical extinguishing system.	GAS COMPRESSED, STRUCTURE, WATER, ELECTRICAL
TAN-739	SMC/METEROLOGICAL TOWER (CTF)	46 m (150 ft) weather tower. Area: approx. 9 m <sup>2</sup> (100 ft <sup>2</sup> ). Utilities: 220 V/125 V electrical power.	PLATFORMS AND LADDERS, ELECTRICAL, CHEMICAL
<b>TSF Area</b>			
TAN-1601	EQUIPMENT STORAGE BETWEEN 636 & 660	Area: 52 m <sup>2</sup> (560 ft <sup>2</sup> ). Built: 1958. Construction Type: Steel Framed.	NO HAZARDS IDENTIFIED
TAN-1716	SURFACE RUNOFF WELL #2 (TSF)	South west TSF area.	NO HAZARDS IDENTIFIED

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-1717	SURFACE RUNOFF WELL #1 (TSF)	South east TSF area.	NO HAZARDS IDENTIFIED
TAN-1718	SURFACE RUNOFF WELL #4 (TSF)	North east TSF area.	NO HAZARDS IDENTIFIED
TAN-1719	SURFACE RUNOFF WELL #3 (TSF)	North west of TSF area	NO HAZARDS IDENTIFIED
TAN-1720	SURFACE RUNOFF POND (TSF)	South of TSF gate. Area: 1660 m <sup>2</sup> (17850 ft <sup>2</sup> ). CERCLA Site TSF-07.	NO HAZARDS IDENTIFIED
TAN-601	GUARD HOUSE (TSF)	Area: 271.1 m <sup>2</sup> (2,918 ft <sup>2</sup> ). Built: 1954. Construction Type: Masonry Exterior Walls. Building Features: One story. Walls: pumice block. Roof: built up with steel trusses and metal deck. Floor: concrete. Ceiling height: 3.7 m (12 ft). Utilities: Power supply greater than 440V. Heated by steam. Air-wash cooling. Ventilation. Potable water. Evacuation and fire alarms. Extinguishers on wall. Telephones. Two-way radio.	HOT WATER HEATER, HVAC FAN BELTS, 480 V POWER PANELS, FIXED ASBESTOS PRESENT PIPE INSULATION, SPACE HEATER, 480 V TRANSFORMER
TAN-602	ADMINISTRATION BLDG (TSF)	Area: 4441 m <sup>2</sup> (47,803 ft <sup>2</sup> ). Built: 1954. Construction Type: Masonry Exterior Walls. Building Features: One-story. Walls: pumice block. Roof: built up with wood trusses and deck, other additions are concrete. Attic area insulated. North-east addition. Deck and surface insulation with suspended ceiling. Walls and ceiling insulated with one-side finish insulation. Floor: concrete. Utilities: Power 480V. Some standby power. Potable water, firewater. Evacuation and fire alarms. Extinguishers on wall. Heated by steam. Airwash cooling. Ventilation, telephones.	LOOSE ASBESTOS ABOVE FALSE CEILING, MANHOLE, LOOSE ASBESTOS PRESENT, HAZARDOUS WASTE, 480 V TRANSFORMER, CONFINED SPACE - HVAC (LOW OXYGEN ENVIRONMENT), FALLING OBJECTS (DETERIORATING CEILING), LIGHT FIXTURES, UNANCHORED LOCKERS, ROOM PARTITIONS LEANING AGAINST WALL, COMMUNICATION WIRES, LOW PIPING, TRIPPING/FIRE WATER VALVE COMPONENTS, CLUTTERED STORAGE (PC COMPONENTS AND TOOLS), OILS & VARNISH, COMBUSTIBLES (BOXES AND OLD RECORDS, PAPER PRODUCTS, CARDBOARD, WOOD), FLOOR PANELS REMOVED (NO LIGHTING), HALON FIRE SUPPRESSION, TRIPPING (CLUTTERED STORAGE), RAISED FLOOR ELECTRICAL OUTLETS), LEAD AND PCBS IN PAINT, TRIPPING (LOOSE ELECTRICAL CORDS), DUCT WORK (LOW OVERHEAD CLEARANCE), VALVES (LOW OVERHEAD CLEARANCE)
BULLY BARN	BULLY BARN	Craft Storage south of TAN-610. Area: 6 m <sup>2</sup> (65 ft <sup>2</sup> ). Utilities: None.	NO HAZARD DATA FOUND
GREEN METAL STRUCTURE	GREEN METAL STRUCTURE	Electrical equipment storage south of TAN-610. Area: m <sup>2</sup> ( ft <sup>2</sup> ). Utilities: None.	NO HAZARDS IDENTIFIED
GREY METAL STRUCTURES	GREY METAL STRUCTURE	Crane and hoist rigging storage south of TAN-610. Area: m <sup>2</sup> ( ft <sup>2</sup> ). Utilities: None.	CRANE AND HOIST RIGGING; OUTSIDE LOAD TEST/CALIBRATION INTERVAL

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-604	MAINTENANCE SHOP (TSF)	Area: 1148.7 m <sup>2</sup> (12,364 ft <sup>2</sup> ). Built: 1954. Construction Type: Masonry Exterior Walls. Building Features: One story with mezzanine. Walls: pumice block. Roof: built up with steel trusses and metal deck. Floor: concrete. Ceiling height 4.9 m (16 ft). Utilities: Power supply greater than 440V. Extinguisher. Alarm. Heated by steam. Cooling and ventilation. Some emergency power. Plant air 100psi. Potable water, firewater, telephones, two-way radios. Fire sprinkler system.	LOOSE ASBESTOS PRESENT; ASBESTOS FAL FROM CEILING, 600VA TRANSFORMER, NON FRIABLE ASBESTOS PRESENT, COMPRESSEI GAS CYLINDERS (OXYGEN, HELIUM, NITRO ARGON), FIXED ASBESTOS PRESENT IN BLD MATERIALS, TWO SMALL ELECTRODES, STI PIPE, COMBUSTIBLE AND FLAMMABLE LIQU BATTERY ACID, DRILLS, SANDERS, SAWS, LARGE HOLDING AND REBAKE OVENS (500 DEGREE F MAX TEMP), 480 V ELECTRICAL DISTRIBUTION SYSTEM (TRANSFORMER AN PANELS), ACETYLENE GAS, FIXED ASBESTC PRESENT IN TILES, 480 VAC, 3 PHASE WELD) FIXED ASBESTOS PRESENT IN PIPING INSULATION AND MISC. BLDG MATERIALS, DRILL PRESS, GRINDER, CONVEYOR, HVAC BLADE, 100 PSI STEAM LINE, HOT WATER LI WITH VALVE
TAN-609	EQUIPMENT MAINTENANCE SHOP (TSF)	Area: 268.9 m <sup>2</sup> (2,894 ft <sup>2</sup> ). Built: 1954. Construction Type: Steel Framed. Building Features: One story. Walls: concrete. Roof: built up with steel trusses and metal roof deck. Floor: concrete. Utilities: Power supply greater than 440V. Water, steam heat, fire extinguisher and alarm, telephones.	FIXED ASBESTOS PRESENT, RADIATION-CONTAMINATION (FIXED), GRANULATED CHARCOAL (SIX 1000 LB BAGS), LEAD (STOI IN BOXES)
TAN-617	MONITORING SHELTER	Area: m <sup>2</sup> ( ft <sup>2</sup> ). Utilities: Electrical power.	NO HAZARDS IDENTIFIED
TAN-636	CARPENTER & PAINT SHOP (TSF)	Area: 216.6 m <sup>2</sup> (2,331 ft <sup>2</sup> ). Built: 1967. Construction Type: Steel Framed. Building Features: One story. Light steel structure with finished interiors. 1-ton jib crane and 1/2 ton monorail crane. Floor: concrete. Ceiling height: 3.7 m (12 ft). Utilities: Power supply greater than 440V, water, steam and condensate, sprinkler system, alarm, exhaust fans, sawdust collectors, spray booth fume hood, air conditioning, telephones.	KILL SWITCH, PAINT FUMES (FIRE/EXPLOSI SHED/FLAMMABLE MATERIALS, FIXED ASBESTOS PRESENT, CARCINOGEN, 5 GAL CONTAINERS OF TREMLASTIC, CARCINOGE (BAGS OF REFACTORY CEMENT), STEAM PII POWERED SAWS, COMBUSTIBLES AND FLAMMABLE LIQUIDS (PAPER, WOOD, OILS, ETC.)
TAN-638	GUARD HOUSE (TSF)	Not used. Area: 9.66 m <sup>2</sup> (104 ft <sup>2</sup> ). Built: 1957. Construction Type: Masonry Exterior Walls. Building Features: Unoccupied one story. Walls: pumice block. Roof: metal. Floor: concrete. Utilities: Disconnected.	VACANT, PIGEON EXCREMENT
TAN-654	SMC/STORAGE SHED NEAR TAN-606 BLDG (TSF)	Area: 24.4 m <sup>2</sup> (263 ft <sup>2</sup> ). Built: 1986. Construction Type: Prefabricated/modular. Building Features: One story steel structure. Floor: concrete. Utilities: Power.	FIXED ASBESTOS PRESENT, GAS OPERATED COMPRESSOR

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-660	MAINTENANCE STAGING AREA (TSF)	Area: 141.4 m <sup>2</sup> (1,522 ft <sup>2</sup> ). Built: 1976. Construction Type: Steel Framed. Building Features: One story. Steel frame. Walls: metal panel. Roof: metal. Floor: concrete. Utilities: Power 200V, telephone, electric heat.	CALCIUM HYPOCHLORITE (hypochlorous acid calcium salt), BATTERY, FLAMMABLE CABINE
TAN-661	CONTROL HOUSE FOR TURNTABLE	Area: 1.5 m <sup>2</sup> (16 ft <sup>2</sup> ). Built: 1970. Construction Type: Wood Frame, Siding, Asphalt Roof. Building Features: One story. Walls: wood. Roof: wood. Floor: wood. Utilities: Power.	NO HAZARD DATA FOUND
TAN-664	AUTOMOTIVE SVC ATTENDANT BLDG (TSF)	Area: 13.4 m <sup>2</sup> (144 ft <sup>2</sup> ). Built: 1954. Construction Type: Steel Framed. Building Features: One story. Steel frame. Walls: metal. Roof: metal. Floor: concrete. Utilities: Power 110V.	WINDSHIELD WASHER FLUID
TAN-667	SMALL MACHINE SHOP (TSF)	Area: 172.8 m <sup>2</sup> (1,860 ft <sup>2</sup> ). Built: 1983. Construction Type: Steel Framed. Utilities: Power greater than 440V. Fire sprinkler system.	HIGH PRESSURE AIR LINE, COMBUSTIBLES, FLAMMABLE LIQUIDS, 480V PANEL, 480 VAC TRANSFORMERS
TAN-680	BUS FUEL PUMP STATION CONTROL BLDG (TSF)	Area: 5.0 m <sup>2</sup> (54 ft <sup>2</sup> ). Built: 1985. Construction Type: Wood Frame, Siding, Asphalt Roof. Building Features: One story prefabricated metal building. Utilities: Power 480V, 180V, 240V.	INEEL BUS FUEL CONTROL HOUSE
TAN-686	SMC/OFFICE TRAILER	Area: 278.7 m <sup>2</sup> (3,000 ft <sup>2</sup> ). Built: 1985. Construction Type: Trailer (personal Property). Building Features: Double wide trailer	SHREDDER (REMOVED), BATTERY-UPS, RADIOACTIVE MATERIALS-SOURCES
TAN-687	TAN FIRE STATION (OUTSIDE TSF FENCE)	Area: 868.7 m <sup>2</sup> (9,351 ft <sup>2</sup> ). Built: 1990. Construction Type: Prefabricated/modular. Building Features: One story. Steel frame. Walls: metal panel. Roof: metal. Floor: concrete. Utilities: Power, water, electric heat. Fire sprinkler system.	480V TRANSFORMER, MULTIPLE MANHOLE; DIESEL FUEL, COMPRESSED GAS CYLINDER (OXYGEN/AIR), LINSOED OIL AND GAS-DIES FUEL MIXTURE, BREATHING AIR COMPRES; HOT WATER TANK, 115 PSI AIR COMPRESSO
TAN-702	BOILER FUEL TANK (TSF)	Built in 1956. 384070 L (101460 gal) capacity. Out of service.	NO HAZARDS IDENTIFIED
TAN-705	TURNTABLE FOR DOLLY TRACKAGE	Built in 1976. 27 m (90 ft) diameter	NO HAZARD DATA FOUND
TAN-712	PROPANE STORAGE TANK (TSF)	3800 L (1000 gal) capacity.	PROPANE LEAK
TAN-713	GAS PUMP ISLAND (91)(TSF)	Capacity: 1 EACH	NO HAZARDS IDENTIFIED
TAN-717	HELICOPTER PAD (TSF)	Area: 25.8 m <sup>2</sup> (278 ft <sup>2</sup> ) concrete pad. Utilities: none.	NO HAZARDS IDENTIFIED

**Table 5. (continued).**

Structure No.	Facility	Description	Hazards Identified
TAN-724	BOILER FUEL TANK (TSF)	Built in 1956. 719000 L (190000 gal) capacity. Out of service.	NO HAZARDS IDENTIFIED (out of service)
TAN-727	COVERED STAIRS, EAST OF TAN-607 (TSF)	Area: 56 m <sup>2</sup> (600 ft <sup>2</sup> ). 30 m (100 ft) long concrete steps covered by sheet metal shelter. Utilities: 125 V lighting.	NO HAZARDS IDENTIFIED
TAN-732	PROPANE STORAGE TANK (TSF)	68000 L (18000 gal) capacity. North of Sage Creek Avenue. Out of service.	PROPANE
TAN-740	LIQUID WASTE DISPOSAL POND (TSF)	South west of TSF area. Also know as TSF-07 environmental area. A 35 acre unlined disposal pond. Parts of it with radiological contaminated in counts per minute.	LIQUID SEWAGE WASTE POND, RADIATION
TAN-781	DRAINAGE POND, NORTH (CTF)	North west TSF area. Area: 534 m <sup>2</sup> (5750 ft <sup>2</sup> ).	NO HAZARDS IDENTIFIED
TAN-782	DRAINAGE POND, SOUTH (TSF)	Built in 1960. Area: 6009 m <sup>2</sup> (64680 ft <sup>2</sup> ). Has some potential for radiological contamination [TSF-10]. South west TSF area.	NO HAZARDS IDENTIFIED
TAN-783	GASOLINE TANK (TSF)	North part of TSF area. Tank 01SSW603. 57000 L (15,000 gal) capacity.	NO HAZARDS IDENTIFIED
TAN-784	LUMBER STORAGE, WEST OF TAN-636 (TSF)	Sheet metal storage shed southwest of TAN-636. Area: 28.2 m <sup>2</sup> (304 ft <sup>2</sup> ). Utilities: none.	FIRE HAZARD
TAN-786	DRAINAGE DISPOSAL WELL, USGS SAMPLES (TSF)	South west TSF area.	NO HAZARDS IDENTIFIED
TAN-792	DIESEL TANK (91) (TSF)	East of TSF outside fence. Tank: 01SSW611. 568000 L (150000 gal) capacity.	NO HAZARDS IDENTIFIED
TAN-793	BUS FUEL PUMP (TSF)	East of TSF area.	DIESEL FUEL
TAN-GATE 4	GUARDHOUSE (Highway)	On highway between TAN and the rest of the INEEL site.	COMBUSTIBLES (STRUCTURE), DIESEL FUEL (PIPING UNIONS OR VALVES), HYDROGEN (ACID BATTERIES), DIESEL PUMP AREA, 480V TRANSFORMER, 480 V PANEL AND CONDUIT

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 WRRTF Area

HAD-89 /03-21-01/SA

**Table 5** (continued).

Structure No.	Facility	Description	Hazards Identified
TAN-1610	HAZARDOUS STORAGE MATERIALS BUILDING (WRRTF)	Area: 5.9 m <sup>2</sup> (63 ft <sup>2</sup> ). Construction: Other. Building Features: One story factory assembled metal building. Utilities: Dry chemical extinguishing system.	NO HAZARD DATA FOUND
TAN-642	GATEHOUSE (WRRTF)	Area: 11.9 m <sup>2</sup> (128 ft <sup>2</sup> ). Built: 1957. Construction Type: Masonry Exterior Walls. Building Features: One story. 8-in. concrete block walls. Four-ply asphalt and asbestos roofing with rock surface. Utilities: Power underground, evacuation control system, telephone.	NO HAZARD DATA FOUND
TAN-643	CHLORINATION BLDG (WRRTF)	Not used for chlorination. Area: 5.9 m <sup>2</sup> (64 ft <sup>2</sup> ). Built: 1957, Construction Type: Masonry Exterior Walls, Building Features: One story wood building with wood floor, Utilities: Raw water and electric power.	ENTRY NOT ALLOWED

NA: Not applicable.

NRASA: Not requiring additional safety analysis.

## 2.1 Hazards Not Requiring Additional Safety Analysis

Table 5, columns fifth through last, shows the results of the screening of the TAN Area utility buildings' hazards against the screening criteria. The itemized hazard types 4, 5, 8, and 9 from Table 4 are not listed because these types of hazards are not associated with these facilities. The fourth column contains a summary of the identified facility hazards, as contained in the implementation plan, each hazard is assigned to the column associated with the criteria applicable in Table 4. Cells with a NA indicate that no hazards were identified for the type of hazard. Those hazards that are below the criteria are noted as NRASA. Also comments (not capitalized) have been added to the Hazards Identified description if the hazard has been removed or needs additional explanation. These additional hazards are noted because they are apparent from the facility description. The cells discussed in the following sections relative to hazard classification reference the specific section. For a few structures or facilities, hazards are noted under itemized hazard types that are not listed in the facility hazard list. For example a described fuel tank would have fuel hazards noted under chemical and flammable types of hazards, even though these hazards may not be identified in the facility hazards list.

The TAN hazard classifications are generally NRASA. A few exceptions require further classification including: TAN-610, -632, -639, -644, -704, -783, -792, and -1738 due to chemicals and fuels and TAN-605, -708, -709, -722, -730, -729, -768, -776, -795, -796, -798, 1731, and the three SMC substations due to the electrical distribution voltage. The following sections discuss these exceptions relative to hazardous materials, natural phenomena, fire, and electrical exposures reviewed in selecting the facility hazard categorization.

## 3. FACILITY HAZARD CLASSIFICATION

The hazards requiring additional safety analysis are screened against hazard classification criteria based on vessel inventory and injury potential from natural phenomena, fire, and electrical hazardous events as discussed in the following sections. A facility is classified as a Low Hazard facility relative to the worker hazards:

1. If the chemical inventory has a release potential but does not exceed the 29 CFR 1910.119 threshold quantity (TQ) limits<sup>9</sup> (or, if not listed, the 40 CFR 355 TQ limits<sup>10</sup> or 5 times the RQ value) or
2. if an industrial injury event has the potential five or more injuries from natural phenomena, fire, electrical, or other industrial hazards but the consequences are not severe enough to include five disabling injuries. Industrial injury events with less than five potential injuries (recordable) are classified as NRASA.

The public and environmental criteria of classification are not applicable due to the location of the building and the completely restorable nature of potential environmental spills.

### 3.1 Hazardous Materials Inventory

The hazardous material inventory of the facility is tallied in this section to determine the impact on categorization of the system. The hazardous chemical inventory for chemicals with 40 CFR 302.4 Reportable Quantity (RQ) limits<sup>11</sup> is provided in Table 6. Some of the buildings have an inventory of chemicals but they are not listed because none of the chemicals have RQ. The table lists the chemical name, Chemical Abstract Service registry number, the maximum inventory, the RQ limit, the RQ limit ratio, and the three threshold limits for classification greater than Low hazard.

For each chemical the RQ limit ratio is determined by dividing the maximum quantity allowed in pounds by the RQ value. These ratios are totaled for each building. Those buildings with a cumulative RQ ratio greater than one are potentially Low hazard facilities. As mentioned above, this inventory of chemicals was obtained from the INEEL Chemical Management System. A few corrections have been noted in the table for materials removed from or added to the inventory and for quantities with chemical concentration errors. For the utility buildings, xylene and naphthalene (in the boiler fuel oil), and the hypochlorous acid calcium salt also called calcium hypochlorite (for potable water treatment) exceed the RQ limits requiring a potentially Low hazard classification. For the other non-nuclear facilities, only the gasoline and diesel storage vessels hazardous material inventories exceeded the RQ limits and therefore only these vessels require further hazard classification and analysis as potential Low hazard facilities.

Each potential Low hazard chemical is analyzed relative to potential release hazards. Those chemicals exempt have limited release hazards due to other industrial hazard controls as discussed and those chemicals not appearing in the TQ list are discussed relative to credible release events. The significant quantities of chemicals are stored outside of TAN buildings.

Each chemical is compared to the Moderate hazard criteria to identify chemicals have a sufficient quantity that exceeds the Low hazard classification. If the maximum quantity for each chemical in these potentially Low hazard facilities does not exceed the threshold (TQ) limits in 29 CFR 1910.119 (or the alternate quantities in 40 CFR 355 or five times the RQ value, if no value is listed in 29 CFR 1910.119 TQ list), the facility hazard classification is not increased to a Moderate level. None of the TAN facilities listed had sufficient inventories to be classified greater than Low hazard classification. Only those facility inventory chemicals exceeding the RQ are highlighted as bold in the table and are discussed in the following.

Fuel tanks less than 1250 gal or 4730 L have insufficient hazardous components to be classified above NRASA. Fuel producers do not let the hazardous components of the fuel exceed 1% so they are not governed by additional environmental regulations. For fuel oil and diesel, naphthalene has the most restrictive RQ limit of 100 lb. Calculating the total mass and volume from this 1% constituent, increases the 100 lb limit to a full tank of a total weight of 10000 lbs or 1250 gallons of fuel. For gasoline, p-Xylene has the most restrictive RQ limit of 100 lb. Calculating the total mass and volume from this 1% constituent, again increases the 100 lb limit to a full tank of a total weight of 10000 lbs or 1250 gallons of fuel. As such the fuel tanks and day tanks in facilities that are much smaller than 1250 gallons are screened out as NRASA.

Larger fuel tanks are not classified due to other code required controls that take precedence for fire hazards and the low concentration of release chemicals as constituents. Xylene and naphthalene each are a 1% constituent of the boiler fuel stored in vessels TAN-704, -1738, and -792. Ethyl benzene, o/p/m-xylene, toluene, n-hexane, and cyclohexane each are a 1% constituent of gasoline vehicle fuel stored in vessels TAN-783. These fuel constituents are exempt from the 29 CFR 1910.119 threshold quantity (TQ) limit, as discussed in 29 CFR 1910.119 (a). The 1% constituent concentration also exempts fuel from the 40 CFR 355 TQ limits, as discussed in 40 CFR 355.30 (a). The most significant hazard is associated with fire and is discussed in Section 3.4.

A hazard classification greater than Low hazard is not required because no limits are required in 29 CFR 1910.119 nor 40 CFR 355 threshold quantities tables. This is because hypochlorous acid calcium salt as a solid pellet does not have a credible event and fuels are exempt. Therefore, no further analysis is required for hazard classification relative to chemical releases. However, the fire potential is included in Section 3.4.

**Table 6. Chemical Inventory Comparisons with RQ and TQ Limits.**

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
<b>TAN UTILITIES</b>							
TAN-1734 GENERATOR FUEL TANK, UST, 1,000 GALLON (TSF)							
Xylene	1330-20-7	80 (Added fuel tank)	1000	0.08	(Fuels exempt)	NA	NA
Naphthalene	91-20-3	80 (Added fuel tank)	100	0.80	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				0.88			
TAN-603 SERVICE BUILDING (TSF)							
Potassium hydroxide	1310-58-3	0	1000	0.00	None	None	5000
Sodium hydroxide	1310-73-2	0.25	1000	0.00	None	None	5000
Formaldehyde	50-00-0	0	1000	0.00	1000	500	NA
Ethyl Ether	60-29-7	2.35	100	0.02	None	None	500
Methyl Alcohol	67-56-1	2.23	5000	0.00	None	None	25000
Sodium Phosphate dibasic	7558-79-4	0.4	5000	0.00	None	None	25000
Hydrochloric acid	7647-01-0	2.66	5000	0.00	5000	NA (500 gas only)	NA
Sulfuric acid	7664-93-9	1.14	1000	0.00	NA (1000 lbs for Oleum or fuming sulfuric acid Of 65 to 80% by wt.)	1000	NA
Nitric acid	7697-37-2	0.85	1000	0.00	NA (500 lbs for nitric acid ≥94.5% by wt.)	1000	NA
Xylene	1330-20-7	20	1000	0.02	(Fuels exempt)	NA	NA
Naphthalene	91-20-3	20	100	0.20	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				0.24			
TAN-704 Boiler Fuel Tank (TSF)							
<b>Xylene</b>	<b>1330-20-7</b>	<b>12552.08</b>	<b>1000</b>	<b>12.55</b>	(Fuels exempt)	NA	NA
<b>Naphthalene</b>	<b>91-20-3</b>	<b>12552.14</b>	<b>100</b>	<b>125.52</b>	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				138.07			
TAN-610 WATER PUMP HOUSE (TSF)							
Xylene	1330-20-7	18.92	1000	0.02	(Fuels exempt)	NA	NA
Naphthalene	91-20-3	18.92	100	0.19	(Fuels exempt)	NA	NA
<b>Hypochlorous acid calcium salt</b>	<b>7778-54-3</b>	<b>75</b>	<b>10</b>	<b>7.5</b>	(Not releaseable)	NA	NA
Building Cumulative RQ Ratio:				7.71			
TAN-632 PUMP WELL HOUSE #1 (CTF)							

**Table 6.** (continued).

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
<b>Hypochlorous acid calcium salt</b>	<b>7778-54-3</b>	<b>15</b>	<b>10</b>	<b>1.5</b>	(Not releaseable)	NA	NA
Building Cumulative RQ Ratio:				1.5			
TAN-639 PUMP WELL HOUSE #2 (CTF)							
<b>Hypochlorous acid calcium salt</b>	<b>7778-54-3</b>	<b>15</b>	<b>10</b>	<b>1.5</b>	(Not releaseable)	NA	NA
Building Cumulative RQ Ratio:				1.5			
TAN-644 PUMP HOUSE (WRRTF)							
<b>Hypochlorous acid calcium salt</b>	<b>7778-54-3</b>	<b>15</b>	<b>10</b>	<b>1.5</b>	(Not releaseable)	NA	NA
Building Cumulative RQ Ratio:				1.5			
TAN-652 FIRE PROTECTION PUMPHOUSE (WRRTF)							
Xylene	1330-20-7	28 (Added fuel tank)	1000	0.03	(Fuels exempt)	NA	NA
Naphthalene	91-20-3	28 (Added fuel tank)	100	0.28	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				0.31			
Storage Shed for Water Disinfectant (or TAN-695 if used)							
<b>Hypochlorous acid calcium salt</b>	<b>7778-54-3</b>	<b>200</b>	<b>10</b>	<b>20.0</b>	(Not releaseable)	NA	NA
Building Cumulative RQ Ratio:				20.0			
<b>TAN OTHER NON-NUCLEAR FACILITIES</b>							
TAN-604 Maintenance Shop							
1, 1, 1 Trichloroethane	71-55-6	10.28	1000	0.01	None	None	5000
1-Butanol	71-36-3	3.77	5000	0.00	None	None	25000
Acetaldehyde	75-07-0	0	1000	0.00	2500	None	5000
Acetic acid	64-19-7	0.03	5000	0.00	None	None	25000
Acetone	67-64-1	2.03	5000	0.00	None	None	25000
Acrylic acid	79-10-7	0	5000	0.00	None	None	25000
Ammonium hydroxide	1336-21-6	0.05	1000	0.00	None	None	5000
Benzene	71-36-3	2.48	10	0.25	None	None	50
Bis (2-ethylhexyl) Phthalate	117-81-7	0.1	100	0.00	None	None	500
Butyl benzyl phthalate	85-68-7	0.13	100	0.00	None	None	500
Chromium	7440-47-3	0.00 (Excluding metal pieces)	5000	0.00	None	None	25000

**Table 6.** (continued).

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
Copper	7440-50-8	521.04	5000	0.10	None	None	25000
Cupric sulfate	7758-98-7	0.39	10	0.04	None	None	50
Cyclohexane	110-82-7	0.6	1000	0.00	None	None	5000
Cyclohexanone	108-94-1	0.29	5000	0.00	None	None	25000
Dibutyl phthalaate	84-74-2	0.04	10	0.00	None	None	50
Epichlorohydrin	106-89-8	0	100	0.00	None	1000	NA
Ethyl acetate	141-78-6	0.57	5000	0.00	None	None	25000
Ethyl Benzene	100-41-4	0.4	1000	0.00	None	None	5000
Ethylene oxide	75-21-8	0	10	0.00	5000	1000	NA
Ethylenediaminetetra acetic acid	60-00-4	0.06	5000	0.00	None	None	25000
Formaldehyde	50-00-0	0	100	0.00	1000	500	NA
Hexone	108-10-1	12.83	5000	0.00	None	None	25000
Hydrochloric acid	7647-01-0	25.86	5000	0.01	5000	500	NA
Isobutyl Acetate	110-19-0	1.48	5000	0.00	None	None	25000
Isopropylbenzene hydroperoxide	80-15-9	0	10	0.00	None	None	50
Lead chromate	7758-97-6	0.42	**		None	None	NA
Lead oxide red	1314-41-6	0.12	**		None	None	NA
Manganese	7439-96-5	632.33	**		None	None	NA
Methyl alcohol	67-56-1	65.78	5000	0.01	None	None	25000
Methyl ethyl ketone	78-93-3	4.31	5000	0.00	None	None	25000
Naphthalene	91-20-3	0.07	100	0.00	None	None	500
Nickel	7440-02-0	1128.85	**		None	None	NA
Phosphoric acid	7664-38-2	5.91	5000	0.00	None	None	25000
Potassium Hydroxide	1310-58-3	0.04	1000	0.00	None	None	5000
Saccharin	81-07-2	0	100	0.00	None	None	500
Sodium hydroxide	1310-73-2	9.07	1000	0.01	None	None	5000
Sodium nitrite	7632-00-0	0.06	100	0.00	None	None	500
Styrene	100-42-5	0.54	1000	0.00	None	None	5000
Sulfuric acid	7664-93-9	0.03	1000	0.00	NA (1000 lbs for Oleum or fuming sulfuric acid of 65 to 80% by wt.)	1000	NA
Tetrahydrofuran	109-99-9	1.08	1000	0.00	None	None	5000
Toluene	108-88-3	7.25	1000	0.01	None	None	5000

**Table 6.** (continued).

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
Triethylamine	121-44-8	0.24	5000	0.00	None	None	25000
Vinyl Acetate	108-05-4	0	5000	0.00	None	1000	NA
Xylene	1330-20-7	40.36	100	0.40	None	None	500
Zinc chloride	7646-85-7	1.29	1000	0.00	None	None	5000
Zinc compound		0.15	**		None	None	NA
Zinc Naphthenate	12001-85-3	0.33	**		None	None	NA
Zinc oxide	1314-13-2	0.92	**		None	None	NA
Zinc resinate	9010-69-9	0.94	**		None	None	NA
Ziram	137-30-4	0.13	**		None	None	NA
Building Cumulative RQ Ratio:				0.86			
<b>TAN-636 Carpenter &amp; Paint Shop</b>							
1, 1, 1 Trichloroethane	71-55-6	9.44	1000	0.01	None	None	5000
1, 4-Diethylene dioxide	123-91-1	0	100	0.00	None	None	500
Acetone	67-64-1	30.13	5000	0.01	None	None	25000
Acrylonitrile	107-13-1	0	100	0.00	None	10000	NA
Ammonia	7664-41-7	0.07	100	0.00	10000	500	NA
Ammonium hydroxide	1336-21-6	0.01	1000	0.00	None	None	5000
Arsenic	7440-38-2	0.91(0) (solid slag removed)	1	0.00	None	None	5
Benzene	71-43-2	0.33	10	0.03	None	None	50
Copper	7440-50-8	2.12	5000	0.00	None	None	25000
Cumene	98-82-8	0.79	5000	0.00	None	None	25000
Cyclohexane	110-82-7	3.5	1000	0.00	None	None	5000
Ethyl acrylate	140-88-5	0.01	1000	0.00	None	None	5000
Ethyl benzene	100-41-4	53.12	1000	0.05	None	None	5000
Ethylene dichloride	107-06-2	2.24	100	0.02	None	None	500
Formaldehyde	50-00-0	0	100	0.00	1000	500	NA
Lead	7439-92-1	14.37	**		None	None	NA
Methyl ethyl ketone	78-93-3	1.43	5000	0.00	None	None	25000
Methylene chloride	75-09-2	2.24	1000	0.00	None	None	5000
n-Butyl acetate	123-86-4	0.03	5000	0.00	None	None	25000
Styrene	100-42-5	0.6	1000	0.00	None	None	5000

**Table 6.** (continued).

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
Vinyl acetate	108-05-4	0.05	5000	0.00	None	1000	NA
Xylene	1330-20-7	13.57	100	0.14	None	None	500
Zinc oxide	1314-13-2	0.25	**		None	None	NA
Zinc oxide	7440-66-6	79.43	**		None	None	NA
Building Cumulative RQ Ratio:				0.26			
<b>Metal Storage Shed adjacent to TAN-636 Carpenter &amp; Paint Shop</b>							
Xylene	1330-20-7	157.85(0) (Polyroof 361-590 removed from building)	100	0.00	None	None	500
Building Cumulative RQ Ratio:				0.00			
<b>TAN-660 Maintenance Staging Area</b>							
Hypochlorous acid calcium salt	7778-54-3	0.00 (materials removed)	10	0.00	None	None	50
Building Cumulative RQ Ratio:				0.00			
<b>TAN-664 AUTOMOTIVE SVC ATTENDANT BLDG (TSF)</b>							
Benzene	71-43-2	0	10	0.00	None	None	50
Building Cumulative RQ Ratio:				0.00			
<b>TAN-678 Cafeteria#2</b>							
Sodium hydroxide	1310-73-2	49.84	1000	0.05	None	None	5000
Ammonium hydroxide	1336-21-6	0.21	1000	0.00	None	None	5000
Phosphoric acid	7664-38-2	6.51	5000	0.00	None	None	25000
Sodium hypochlorite	7681-52-9	170 (0.06) (6% Bleach)	100	0.10	None	None	500
Building Cumulative RQ Ratio:				0.10			
<b>TAN 783 GASOLINE TANK (TSF)</b>							
Ethyl benzene	100-41-4	901.30	1000	0.90	(Fuels exempt)	NA	NA
p-Xylene	106-42-3	901.30	100	9.01	(Fuels exempt)	NA	NA
m-Xylene	108-38-3	901.30	1000	0.90	(Fuels exempt)	NA	NA
p-Xylene	95-47-6	901.30	1000	0.90	(Fuels exempt)	NA	NA
Toluene	108-88-3	901.30	1000	0.90	(Fuels exempt)	NA	NA

**Table 6.** (continued).

Chemical Name	Chemical Abstract Service Registry Number	Maximum Inventory (lbs)	40 CFR 302.4 Limit (RQ) (lbs)	RQ Limit Ratio	29 CFR 1910.119 Limits (TQ) (lbs)	40CFR355 Limit (TQ) (lbs)	Five time RQ (lbs)
n-Hexane	110-54-3	901.30	5000	0.18	(Fuels exempt)	NA	NA
Cyclohexane	110-82-7	901.30	1000	0.90	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				13.69			
<b>TAN-687 TAN Fire Station</b>							
Ethyl benzene	100-41-4	0	1000	0.00	None	None	5000
Toluene	108-88-3	0.56	100	0.01	None	None	500
Fumaric acid	110-17-8	0	5000	0.00	None	None	25000
Sodium hydroxide	1310-73-2	61.68	1000	0.06	None	None	5000
Zinc oxide	1314-13-2	0.79	None		None	None	NA
Xylene	1330-20-7	31.61 (Added fuel tank)	100	0.32	(Fuels exempt)	NA	NA
Ammonium hydroxide	1336-21-6	3.83	1000	0.00	None	None	5000
Ethylenediamine tetraacetic acid	60-00-4	0.56	5000	0.00	None	None	25000
Benzene	71-43-2	0.01	10	0.00	None	None	50
Hydrochloric acid	7647-01-0	12.37	5000	0.00	5000	500 (gas)	NA
Sodium hypochlorite	7681-52-9	2.44	1000	0.00	None	None	5000
Sodium tripolyphosphate	7758-29-4	101.25	5000	0.02	None	None	25000
Chlorine	7782-50-5	12 (0.06) (6% Bleach)	10	0.07	1500	100	NA
Naphthalene	91-20-3	31.61	100	0.32	(Fuels exempt)	NA	NA
Building Cumulative RQ Ratio:				0.80			
<b>TAN-792 DIESEL TANK (91) (TSF)</b>							
<b>Xylene</b>	<b>1330-20-7</b>	<b>10500</b>	<b>100</b>	<b>105.0</b>	(Fuels exempt)	None	500
<b>Naphthalene</b>	<b>91-20-3</b>	<b>10500</b>	<b>100</b>	<b>105.0</b>	(Fuels exempt)	None	500
Building Cumulative RQ Ratio:				210.0			
NA: Not applicable due to previous limit None: No limit provided in regulation..							

## 3.2 High Voltage Electrical Hazard

Electrical power without other hazards is considered a routine industrial concern for most facilities. Electrical power hazards as they affect personnel safety are standard occupational hazards and require no specific hazard analysis unless the voltage exceeds 600 volts. Facilities must meet the standard codes of record. However, electrical hazard events with the potential to release hazardous materials or injure workers can influence the hazard classification and are hazards that require further consideration. For these facilities the five or more recordable injuries is the lower threshold for a Low hazard classification.

Electrical power supplied from the transformers to supplied buildings is reduced to 480 volts. These buildings would not require additional safety analysis (NRASA). This would apply to the hazardous material areas at the TAN Area utility buildings. Most of the electrical power has little influence on the classification because of the low voltage and separation of the electrical equipment and the hazardous material storage.

Power supplied from the INEEL grid to the transformers supplying the buildings (TAN-605, -708, -709, -722, -729, -730, -768, -776, -795, -796, -798, 1731, and the three SMC substations) would be a potential Low Hazard classification due to the potential for injury from electrical power distribution because the electrical power distribution has voltages of 13.8 kV that is above 600 volts. However, access to this power involves only those qualified to work on electrical distribution systems. The tasks typically require only one or two linemen and rarely require three linemen. Therefore, less than five persons would be involved in a single event. Because of the limited number of persons exposed to these voltages prevents multiple injuries of five or more, the electrical distribution system is classified as NRASA.

## 3.3 Natural Phenomena Hazard

Natural phenomena without other hazards are routine industrial concerns for most facilities. Natural phenomena hazards as they affect personnel safety are standard occupational hazards and require no specific hazard analysis. Facilities should meet the standard codes of record at the time of construction. Due to the time the building was built, the building design code of record is not expected to meet current natural phenomena criteria. However, natural phenomena events with the potential to release hazardous materials are analyzed if they can influence the hazard classification and are hazards that require further consideration.

For the hazardous materials at TAN Area utility buildings, the natural phenomena have little influence on the classification. Damage to the storage vessels would be limited to a liquid spill with limited consequences.

Safety significant equipment is not identified in safety analyses for NRASA facilities because occupational safety and health controls are adequate. The design criteria for natural phenomena usually results in strong anchoring of items that could fall on personnel in occupied buildings. For the normally unoccupied buildings, anchoring of items is not significant. Generally when containment of radiological or toxic materials is not an issue, the potential cracks in the structure is not significant. Because the fuel and hazardous chemicals are stored outside the building the natural phenomena criteria for the building have no impact on the hazard classification. For the outside storage vessels, environmental regulations requiring a berm or other controls take precedence over natural phenomena concerns.<sup>12,13</sup> Therefore, the facilities do not require hazard classification due to natural phenomena and are NRASA facilities.

### 3.4 Fire Hazard

Fire hazards as they affect personnel safety are standard occupational hazards when governed by federal safety and health codes and national standards and require no specific safety analyses. However, fire with the potential to release hazardous materials is a hazard that may require further analysis. Structures or facilities that present nuclear release or hazardous material release implications are reviewed relative to meeting building code standard codes of record.

Fire damage to fuel storage vessels would not release radiological or toxic materials other than that expected in a fuel fire. Such concerns are already incorporated in the industrial codes and standards imposed on these vessels.<sup>14,15,16</sup> For the fuel tanks, the vessels are outside the building and in an unoccupied bermed area or buried underground.<sup>12,13</sup>

For oxidizer storage, hypochlorous calcium salts does not have a credible chlorine release scenario. It does have requirements for appropriate separation from flammables and combustibles.<sup>17</sup> Hypochlorous acid calcium salt is used to disinfect potable water and is stored in a storage shed. Unlike chlorine gas disinfectant, hypochlorous calcium salt material hazards include a fire scenario instead of a gas release scenario. Hypochlorous calcium salts is a strong oxidizer that accelerates fires but does not release chlorine gas. For example, the following equation represents a simplification of the reaction during a fire. Chlorine ion has a strong ionic affinity for the calcium ion and remains as a salt while oxygen is released. The released oxygen is responsible for the intensity of the fire.



An intense oxidized fire tends to drive all the resultant products to their most stable oxidized form. As such, the residual material and off gases are typically less hazardous and less toxic than by-products from other less intense fires. The off-gases are also less hazardous than a chlorine release.

Because the TAN building inventories are not a hazardous release concern, the code of record requirements for the structure do not require further analysis relative to release due to fire. For the fire hazard potential for TAN buildings, fire has little influence on the classification. Therefore, the building do not require hazard classification due to fire hazards and are all NRASA facilities.

### 3.5 Utility Considerations

These utilities supplying nuclear facilities are considered industrial service equipment and do not have special design for nuclear facilities. The loss of the supply of utilities has an upper bound frequency of either anticipated or routine frequency. Because of the high failure rate, supplied nuclear facilities are designed to be shut down or can tolerate a loss in utility supply without creating a chemical or nuclear release accident.

TAN has a unique consideration in safety analysis relative to loss of a supplied utility to a nuclear facility. The TAN processes and activities are designed to fail safe upon loss of a utility. Emphasis is upon using passive protective systems, where possible, and shut down of activities. Therefore, when a utility is lost, process operations and transfers stop. When the utility is restored, the processes require deliberate actions to start again. A facility is shut down and evacuated upon the total loss of a supplied utility, if necessary due to hazards.

Standby utilities are supplied for some processes to provide a backup utility source to control the impact of situations such as interrupting important operations and restarting important processes. Standby systems are used by facilities to minimize equipment damage and cleanup costs. Control of damage,

cost, and process interruption does not have safety analysis level accident consequences. As such, a standby utility is not considered a safety significant structure, system, or component (SS SSC).

A utility supplied to those systems required for emergency-related continuous function to prevent death to on-site personnel or harm or injury to off-site public is typically designated as an emergency utility supply that may have safety significant designation (SS SSC) or Safety Class requirements. Because facilities posing a hazard within TAN are shut down and evacuated during emergencies, personnel are not required to be present. Therefore, the standby system is not used for emergency-related safety significant or Safety Class equipment. The few utility sources associated with TSR requirements are not part of the TAN utility systems but are either dedicated facility specific systems or qualified emergency systems within specific facilities.

A nuclear facility may specify safety requirements for a utility support system. Under these situations, additional requirements may be necessary. Those nuclear facilities will include in their safety analyses the derivation of any additional safety requirements. Therefore, any utility system additional requirements directly related to utilities supporting nuclear facilities will be completed in the nuclear facility requiring the utility support. Currently, there are no TAN nuclear facilities that have identified additional utility system requirements.

#### **4. INTEGRATED SAFETY MANAGEMENT SYSTEM**

The most significant hazards in these facilities are the occupational safety and health hazards associated with the process and activities. The various occupational safety and health hazards and controls are brought together by the Integrated Safety Management System. The Integrated Safety Management System functions provide the relationship of the hazard identification and the hazard controls and specifies the items that the implementing roll down places in the work control checklists and work orders. The ISMS five functions: (1) Define Scope, (2) Analyze Hazards, (3) Hazard Controls, (4) Perform Work with and within Controls, and (5) Feedback and Process Improvement. The Define Scope function lists each analyzed task. The Analyze Hazards function is key because it identifies the hazards for each task. The Hazard Control function is also important because it identifies the controls associated the hazards and the frequency that the employee must review the controls. Permits, training, certification, medical checks, and exposure assessments are evidence of the appropriate application of these controls identified for each functional task. Review of this information at the work group meeting discussions provides the necessary on-the-job training to maintain the work practices for each functional task. Specific controls are noted on the work orders.

The use of Job Safety Analysis (JSA) is the key methods for identifying occupational safety and health hazards and controls. These are living documents supporting procedures and practices that are updated and developed in accordance with Standard 101<sup>18</sup> and MCP-3562<sup>19</sup> to meet the needs of the facility process and operation in identifying and controlling hazards. Tasks requiring specific controls are identified by the JSA process used to develop the practices used in each task. Additional supporting information for each task JSA is provided by Exposure Assessments, hot work permits, OSHA Matrix, safe work permits, radiation work permits, self assessments, facility hazards lists, standards, and management procedures.

The JSAs are reviewed in accordance with STD-101 and MCP-3562 for each task. The hazards are identified and the controls selected appropriate for proper control of the hazards. The process identifies and controls hazards more efficiently and in more depth than specified in occupational safety and health standards and regulations. Procedures specified for a task identify specific items for employees to accomplish in their tasks. The inspections and surveys provided by the Occupational Safety and Health personnel complete the implementation of the required codes, standards and regulations. Deficiencies are

noted as required for corrective action through this oversight process and the JSAs are updated as living documents with any required changes.

## **5. CONCLUSIONS**

TAN Area utility buildings and surrounding areas associated with these buildings were compared to Company criteria to determine the hazard classification for the facility. The hazard classification of hazards, identified in Section 2 and classified in Section 3, concluded that the hazards presented by the utility operations and the rest of the non-nuclear facilities are all classified as NRASA and do not require further safety analysis. These hazards and their controls are within the scope of the Company Integrated Safety Management System.

## 6. REFERENCES

1. Company Management Control Procedure (MCP-2451), *Safety Analysis for Non-Nuclear, Radiological, and Other Industrial Facilities*.
2. DOE Order 5481.1B, "Safety Analysis and Review System," U. S. Department of Energy.
3. DOE-ID Notice 420.A1, "Safety Basis Review and Approval Process," U. S. Department of Energy, Idaho Field Office.
4. DOE Limited Standard DOE-EM-STD-5502-94, "Hazard Baseline Documentation," U. S. Department of Energy.
5. Company Program Requirement Documents (PRD-5042), *Facility Hazard Identification*.
6. MCP-2811, *Design and Engineering Change Control*.
7. Company Plan (PLN-525), *Utilities and Other Non-Nuclear Facility Implementation Plan*, Rev. 0, July 29, 1999.
8. MCP-457, *Emergency Planning and Community right-to-Know (EPCRA)*.
9. 29 CFR 1910: Code of Federal Regulations, Title 29, Part 1910, "Occupational Safety and Health Standards," (Section 119, "Process Safety Management").
10. 40 CFR 355, "Emergency Planning and Notification," (Appendix A, "The List of Extremely Hazardous Substances and Their Threshold Planning quantities").
11. 40 CFR 302, "Designation, Reportable Quantities, and Notification."
12. 40 CFR 112, "Oil Pollution Prevention."
13. 40 CFR 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System."
14. National Fire Protection Association (NFPA), Standard 70, "National Electric Code."
15. NFPA, Standard 54, "National Fuel Gas Code."
16. American National Standards Institute, Standard B31.3, "Piping Code."
17. NFPA, Standard 43A, "Liquid and Solid Storage of Oxidizing Materials."
18. Company Standard (STD-101), *Integrated Work Control Process*.
19. MCP-3562, *Hazard Identification, Analysis and Control of Operational Activities*.