

**FACILITY DECONTAMINATION AND  
DECOMMISSIONING PROGRAM**

**SURVEILLANCE AND MAINTENANCE PLAN**

**NEVADA NATIONAL SECURITY SITE, NEVADA**

**Revision: 2**

**September 2013**

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**SURVEILLANCE AND MAINTENANCE PLAN**

**NEVADA NATIONAL SECURITY SITE, NEVADA**

**National Security Technologies, LLC  
Environmental Restoration Program**

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**NEVADA NATIONAL SECURITY SITE, NEVADA**

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## ACRONYMS AND ABBREVIATIONS

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AB	Authorization Basis
CAS	Corrective Action Sites
CAU	Corrective Action Unit
CFR	Code of Federal Regulations
D&D	decontamination and decommissioning
D&R	dismantlement and removal
DOE	U.S. Department of Energy
EMAD	Engine Maintenance, Assembly, and Disassembly
ER	Environmental Restoration
EMO	Environmental Management Operations
FFACO	<i>Federal Facility Agreement and Consent Order</i>
FY	fiscal year
HASP	Health and Safety Plan
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
NSTec	National Security Technologies, LLC
PCB	polychlorinated biphenyl
PM	Project Manager
REOP	Real Estate/Operations Permit
S&M	surveillance and maintenance
TAP	Task Agreement Plan
TCC	Test Cell C

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## EXECUTIVE SUMMARY

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This Surveillance and Maintenance (S&M) Plan describes the activities performed between deactivation and final decommissioning of the following facilities located on the Nevada National Security Site, as documented in the *Federal Facility Agreement and Consent Order* under the Industrial Sites program as decontamination and decommissioning sites:

- Engine Maintenance, Assembly, and Disassembly (EMAD) Facility:
  - EMAD Building (Building 25-3900)
  - Locomotive Storage Shed (Building 25-3901)
- Test Cell C (TCC) Facility:
  - Equipment Building (Building 25-3220)
  - Motor Drive Building (Building 25-3230)
  - Pump Shop (Building 25-3231)
  - Cryogenic Lab (Building 25-3232)
  - Ancillary Structures (e.g., dewars, water tower, piping, tanks)

These facilities have been declared excess and are in various stages of deactivation (low-risk, long-term stewardship disposition state). This S&M Plan establishes and implements a solid, cost-effective, and balanced S&M program consistent with federal, state, and regulatory requirements. A graded approach is used to plan and conduct S&M activities. The goal is to maintain the facilities in a safe condition in a cost-effective manner until their final end state is achieved. This plan accomplishes the following:

- Establishes S&M objectives and framework
- Identifies programmatic guidance for S&M activities to be conducted by National Security Technologies, LLC, for the U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO)
- Provides present facility condition information and identifies hazards
- Identifies facility-specific S&M activities to be performed and their frequency
- Identifies regulatory drivers, NNSA/NFO policies and procedures, and best management practices that necessitate implementation of S&M activities
- Provides criteria and frequencies for revisions and updates
- Establishes the process for identifying and dispositioning a condition that has not been previously identified or documented
- Provides instructions for implementing annual S&M inspections and activities

The following facilities that were included in Revision 1 of this plan have reached final disposition and are no longer in the S&M program:

- Reactor Maintenance, Assembly, and Disassembly Facility, Building 25-3110
- Test Cell A Facility, Building 25-3113
- TCC Facility, Building 25-3210
- Pluto Disassembly Facility, Building 26-2201
- Super Kukla Facility, Building 27-5400

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## 1.0 INTRODUCTION

### 1.1 PURPOSE

This Surveillance and Maintenance (S&M) Plan describes the S&M activities to be performed, their frequency, and regulatory drivers during the period between deactivation and final decommissioning of the facilities listed in Table 1. These facilities are identified in the *Federal Facility Agreement and Consent Order (FFACO)* under the Industrial Sites program as decontamination and decommissioning (D&D) sites.

**TABLE 1. FACILITY INFORMATION**

CAU	FACILITY	BUILDING	AREA (SQUARE FEET)	HAZARD CATEGORY	AREA	PROPOSED FINAL END STATE	STATUS
114	EMAD	25-3900, EMAD Building	90,000	4	25	Demolition	Non-operational*
572	EMAD	25-3901, Locomotive Storage Shed	6,000	4	25	Demolition	Non-operational
572	TCC	25-3220, Equipment Building	6,800	4	25	Demolition	Non-operational*
572	TCC	25-3230, Motor Drive Building	3,900	4	25	Demolition	Non-operational*
572	TCC	25-3231, Pump Shop	750	10	25	Demolition	Non-operational*
572	TCC	25-3232, Cryogenic Lab	1,700	4	25	Demolition	Non-operational*
572	TCC	Ancillary Structures	-	10	25	Demolition	Non-operational

\*Occasionally used for counterterrorism training operations.

CAU: Corrective Action Unit

EMAD: Engine Maintenance, Assembly, and Disassembly

TCC: Test Cell C

Under the FFACO, the facilities listed in Table 1 have been included in Corrective Action Units (CAUs). Each CAU contains one or more Corrective Action Sites (CASs). This plan covers only the excess facilities (i.e., CAUs) and their associated CASs listed in Table 2. Long-term monitoring activities associated with other CAUs and CASs within the facility compound or in close proximity are not addressed in this plan.

**TABLE 2. FFAO CAU AND CAS DESCRIPTIONS**

CAU	CAS
CAU 114: Area 25 EMAD Facility	25-41-03: EMAD Facility
CAU 572: Test Cell C Ancillary Building and Structures	25-33-01: Building 3220, Equipment Building
	25-33-02: Building 3230, Motor Drive Building
	25-33-03: Building 3231, Pump House
	25-33-04: Building 3232, Cryogenic Evaluation Lab
	25-33-05: Building 3901, Engine Transport System Maintenance Building*
	25-99-22: Ancillary Facilities

\* Located in the EMAD compound

CAU: Corrective Action Unit

CAS: Corrective Action Site

### 1.1.1 Framework

The U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO) has a trilateral agreement with the State of Nevada and the U.S. Department of Defense. The FFAO provides the framework for each Nevada National Security Site (NNS) CAU, including characterization, remediation, and corrective action/closure. The FFAO is a living document and is subject to change.

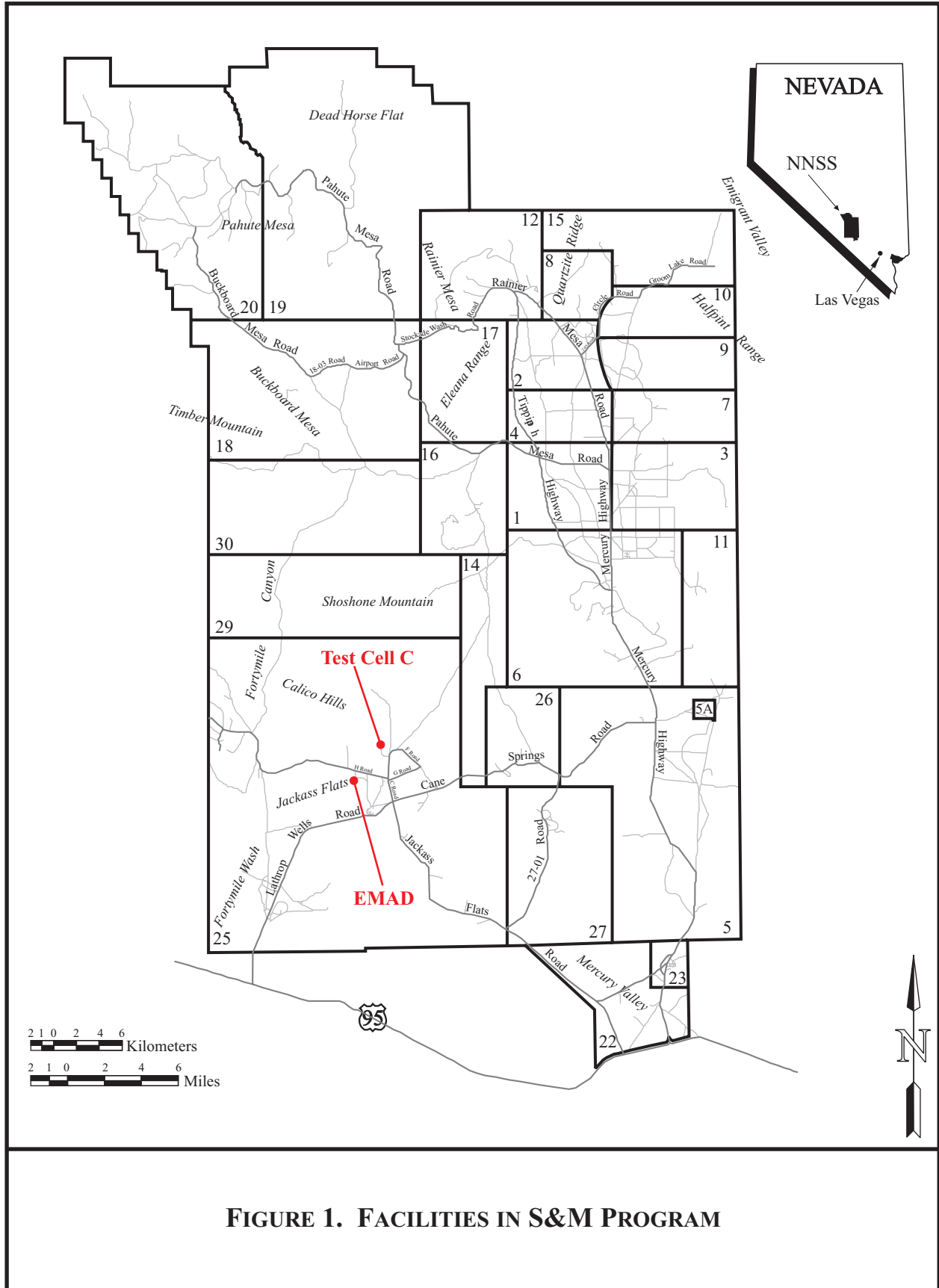
### 1.1.2 Applicability

This plan applies to S&M activities and processes to be conducted by NSTec for NNSA/NFO Environmental Management Operations (EMO) for the excess facilities listed in the FFAO and located at the NNS. A graded approach is used to plan and conduct S&M activities. The requirements of U.S. Department of Energy (DOE) Order DOE O 430.1B, "Real Property Asset Management," Change 2, apply to the S&M activities for excess facilities contaminated with radioactive or hazardous substances.

## 1.2 LOCATION AND HISTORY

The facilities addressed in this S&M Plan were constructed and operated under nuclear-related research and development programs. Test Cell C (TCC) and the Engine Maintenance, Assembly, and Disassembly (EMAD) Facility were constructed and utilized for the Nuclear Rocket Development Program. The locations of these facilities are shown in Figure 1.

The operational mission of the excess facilities was completed prior to the initial 1979 issuance of the DOE O 5480 series of documents that established requirements for a controlled transition of operating facilities through the various phases (i.e., D&D) to reach a predetermined end state.



**FIGURE 1. FACILITIES IN S&M PROGRAM**

### **1.2.1 Surveillance and Maintenance History**

Limited S&M activities have been conducted since 1997 to identify hazards and establish safety and security controls. The following primary S&M activities have been performed:

- Controlled access was established at all excess facilities identified in this plan at the compound boundaries and, in some cases, at the physical structure.
- Radiological surveys were conducted at TCC and EMAD.
- General housekeeping activities were performed around the exterior perimeter of facilities.
- Additional activities at EMAD Building 3900 include:
  - Roof repairs were conducted twice on isolated sections of the roof. In 1999, repairs were conducted to maintain protection for electrical equipment that was needed to keep the lighting and other equipment operations functional, as this equipment was subjected to leakage from rainfall. In 2012, repairs were conducted to cover sections of exposed metal roof decking and prevent further deterioration of the roofing materials.
  - Structural and general facility inspections have been performed routinely since 1997.
  - Breaches to the exterior walls have been repaired.

### **1.2.2 Current Facility Hazards and Conditions**

The facilities listed in Table 1 are currently in an unoccupied, secured state. The following actions were completed at all of the facilities, except where specifically noted:

- Water sources were isolated from the facilities at the primary underground water mains located outside the facility boundaries.
- Miscellaneous wall penetrations, including heating, ventilation, and air conditioning; floor drains; and sanitary sewer systems, were sealed. However, these sealed penetrations may have deteriorated over time and could potentially provide pathways for airflow and/or rodents. Accessible penetrations may require preventive maintenance. Sumps and floor drains were either plugged or grouted in EMAD Building 3900 only.
- Electrical power was disconnected at all facilities.
- Facility compounds are secured using locks on security fencing and gates. Routine security inspections of the compound boundaries are conducted by the security contractor (WSI).

All facilities may contain the following general facility hazards and conditions:

- Beryllium
- Mercury-bearing instrumentation
- Polychlorinated biphenyls (PCBs) in hydraulic oil reservoirs, ballasts, and painted surfaces
- Hantavirus hazards
- Slip, trip, and fall hazards
- Low-lighting conditions
- Asbestos in floor tiles, transite paneling, galbestos exterior paneling, thermal system insulation, and painted surfaces and skim coats
- Biological hazards



The following sections describe the conditions unique to each facility.

### **1.2.2.1 EMAD Building 3900**

Figure 2 shows the current facility layout and conditions for EMAD Building 3900. The following general facility hazards and conditions are unique to EMAD:

- Several radiological areas exist in the hotbay complex, the first floor operation gallery, and the ventilation stacks. Three postmortem cells and the pass-through make up the High Contamination Area, and the remainder of the hotbay complex is a Contamination Area. Radiological Material Areas exist in the former TV Parts and Repair Shop, Room 250, and in both ventilation stacks.
- A secured pass-through inside a postmortem cell door contains a potentially radioactive item.
- A 110-ton interior shield door is damaged, prohibiting access to the west process cell, Room 127, in the hotbay complex.
- Widespread roof leaks are present throughout “cold” portions of the building.
- Piping and equipment systems were drained and verified empty, except for inaccessible crane reservoirs and residual recyclable mineral oil in some of the leaded glass shield windows.
- Underground pits and vaults were investigated and confirmed empty.
- Significant sanitary housekeeping and debris removal was performed in the building.
- Low-level waste materials and equipment were characterized, removed, and disposed from most of the radiologically contaminated hotbay complex.
- The building is scheduled for decommissioning after fiscal year (FY) 2017.

### **1.2.2.2 Locomotive Storage Shed Building 3901**

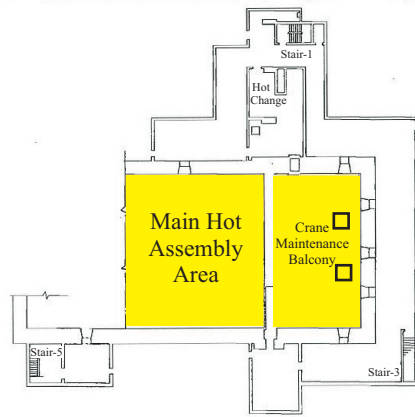
Figure 3 shows the current facility layout and conditions for the Locomotive Storage Shed. The following general facility hazards and conditions are unique to this building:

- The Locomotive Storage Shed is a Contamination Area.
- The building contains radiologically contaminated equipment and soil
- Piping and equipment systems have not been verified empty.
- The building is scheduled for decommissioning after FY 2015.

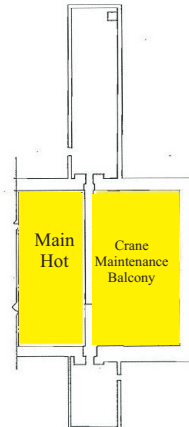
### **1.2.2.3 TCC Facility**

Figure 4 shows the current facility layout and conditions for the TCC Facility. The following general facility hazards and conditions are unique to the TCC Facility:

- The TCC complex is occasionally used for counterterrorism training operations.
- Piping and equipment systems have not been verified empty.
- The roof of Building 3220 is in poor condition.
- Open pits and vaults exist in buildings and on dewars.

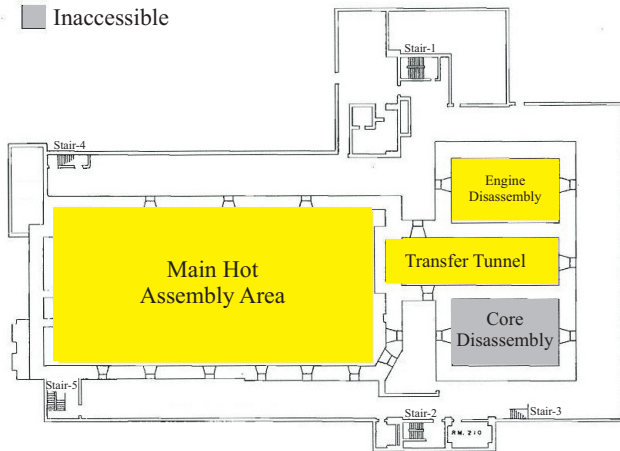


3<sup>rd</sup> Floor Plan

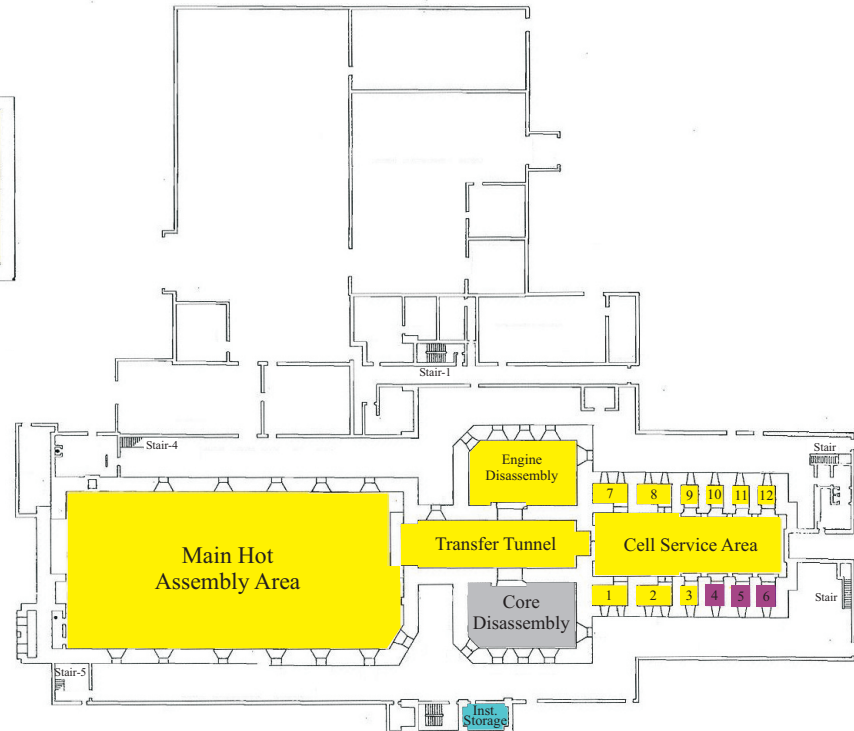


4<sup>th</sup> Floor Plan

- Radiological Contamination Area
- Radiological High Contamination Area
- Radioactive Material Area
- Inaccessible



2<sup>nd</sup> Floor Plan



1<sup>st</sup> Floor Plan



**FIGURE 2. EMAD BUILDING FLOOR PLANS**

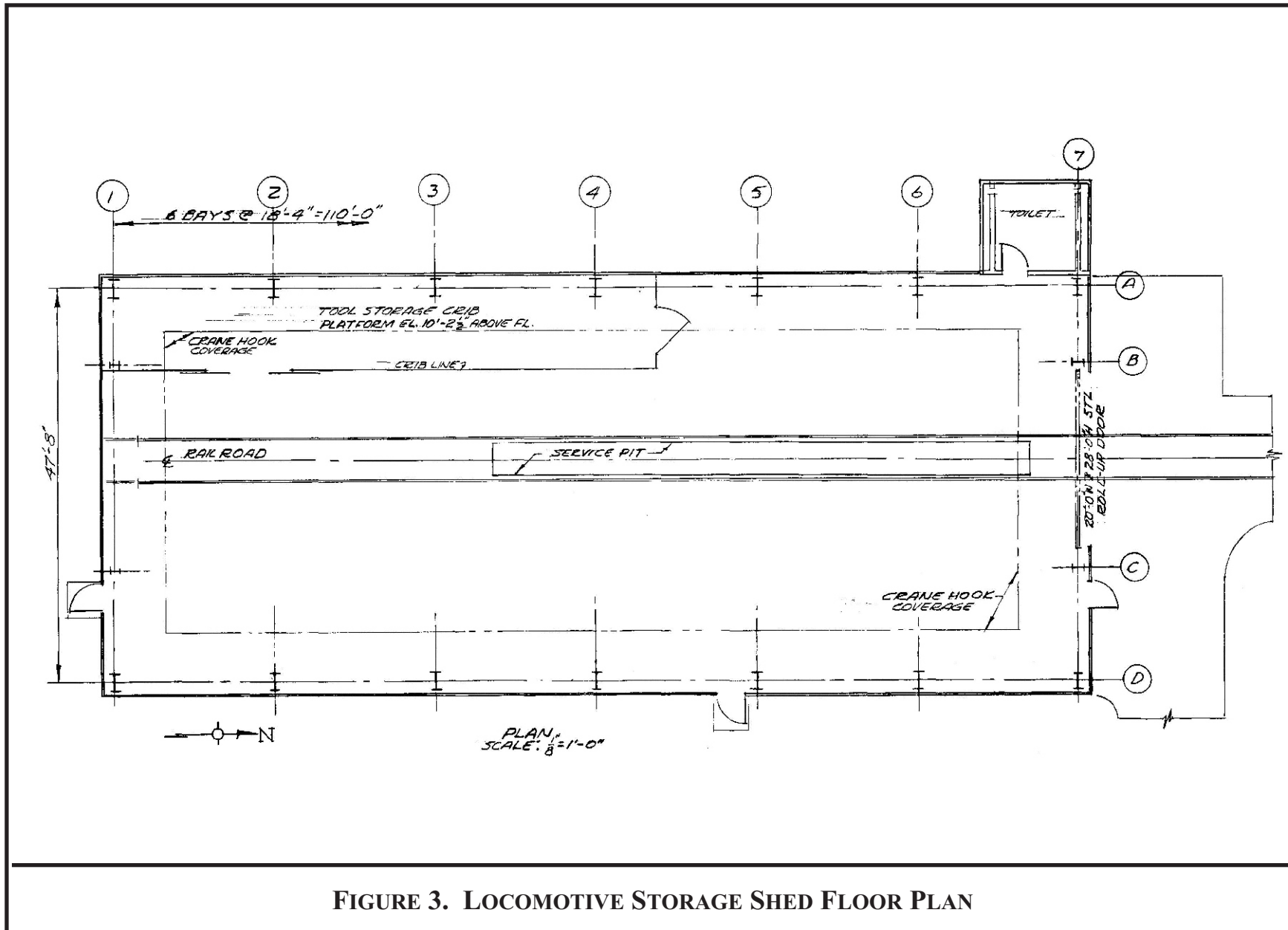


FIGURE 3. LOCOMOTIVE STORAGE SHED FLOOR PLAN



### 1.2.3 Facility Condition Updates

General facility conditions will be updated in future revisions of this plan as conditions are documented during annual facility inspections. Facility layouts and site plans will be updated with current boundaries and locations of hazards. As walkdowns and inspections are performed, or as new discoveries are documented and dispositioned, facility layouts and hazards will be updated in the project files. Updated facility layouts will be available from the Environmental Restoration (ER) Project Manager (PM) and included in subsequent revisions of this plan when one of the revision criteria is met. Although current conditions will be updated on these layouts, it is not anticipated that they will necessitate a revision to this document outside of the normal criteria/process. Additional S&M activities may be added based on these conditions.

### 1.2.4 Safety Authorization Basis

The documented safety Authorization Basis (AB) for S&M activities covered under this plan is contained in the Real Estate/Operations Permit (REOP) for each facility. The applicable REOPs and facilities are listed in Table 3.

**TABLE 3. FACILITY REAL ESTATE/OPERATIONS PERMITS**

REOP	BUILDING
NSTEC-0247, Test Cell C Facility (Primary)	Building 25-3220, Equipment Building
	Building 25-3230, Motor Drive Building
	Building 25-3231, Pump Shop
	Building 25-3232, Cryogenic Lab
	TCC Ancillary Structures
NSTEC-0141, EMAD (CAU114) (Primary)	Building 25-3900, EMAD Building
	Building 25-3901, Locomotive Storage Shed

The primary S&M activities covered in the REOPs are listed in the following bullets. Other facility-specific activities included in this S&M Plan will be addressed in the S&M Health and Safety Plan (HASP).

- Surveillance, inspections, and tours
- Facility walkdowns
- Radiological and Industrial Hygiene surveys
- Limited general housekeeping
- Equipment and building maintenance (as budgeted and approved by PM)
- Hantavirus cleanup

REOPs are updated when facility conditions change. Revisions to job hazard analyses and work packages (including pre- and post-job briefings), as appropriate for the type of S&M activity, serve as the safety AB for performing those tasks and do not require a revision to the REOP. Access to the facilities is obtained by contacting the ER D&D PM.

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## **2.0 SURVEILLANCE AND MAINTENANCE ACTIVITIES**

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### **2.1 OBJECTIVES**

The S&M program consists of two elements: (1) surveillance and (2) maintenance. Surveillance includes scheduled periodic inspections of facilities, equipment, or structures required under this plan. The purpose of surveillance is to demonstrate compliance, identify problems requiring corrective action, and determine or verify environmental, radiological, and physical conditions. Surveillance includes activities performed to monitor radiological conditions, check safety-related items, provide for facility security controls, and assess facility structural integrity. Maintenance includes activities required to sustain property in a condition suitable for its designated purpose. Maintenance includes predictive, preventive, and corrective maintenance.

The primary objectives of the S&M program are:

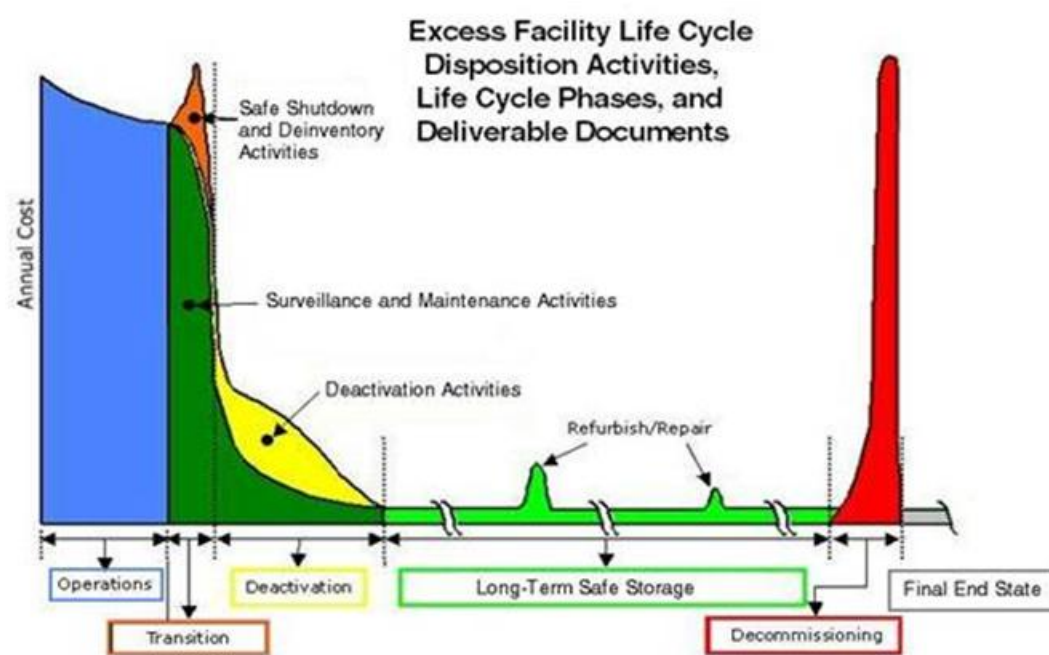
- Ensure adequate containment of contamination.
- Provide physical safety and security.
- Inspect and maintain facilities in a manner that will eliminate or mitigate hazards to workers, the public, and the environment.
- Inspect and maintain selected systems and equipment essential for disposition activities, the safety and health of individuals performing these activities, and/or potential future use.
- Provide a mechanism for identifying and complying with applicable environmental, safety and health, and safeguard and security requirements.
- Integrate safety management into all levels of S&M activities to ensure the protection of workers, the public, and the environment.

This S&M Plan will achieve these objectives and ensure through periodic verification and use of the graded approach that contamination control, physical security, hazard isolation, preservation of existing assets, and maintenance activities are in compliance with the requirements and good practices in DOE O 430.1B, Change 2, as outlined in DOE Guide DOE G 430.1-2, “Implementation Guide for Surveillance and Maintenance during Facility Transition and Disposition.”

### **2.2 FRAMEWORK**

S&M activities are performed when operations cease and transition begins and continue through deactivation, long-term storage, and decommissioning until the final end state of the facility is achieved. This plan describes the S&M program from the time that deactivation was initiated to the beginning of decommissioning. Figure 5 depicts the facility life cycle disposition phases.

Personnel access to the facilities is kept to a minimum during S&M activities to minimize health and safety risks as well as the cost of maintaining the facilities and the cost of the S&M program. Personnel who access the facilities must have the appropriate training (Section 2.3.1) and comply with the current National Security Technologies, LLC (NSTec), health and safety requirements specified in procedures and/or work packages for S&M activities.



**FIGURE 5. FACILITY LIFE CYCLE DISPOSITION**

S&M activities are conducted as a function of decommissioning throughout the facility disposition phase and adjusted during the facility life cycle as deactivation and decommissioning activities are completed. Changes in a facility status that necessitate a revision to this plan are discussed in Section 3.8. Post-closure monitoring of use restricted sites is not considered an S&M activity and will be conducted separately in accordance with regulatory requirements.

The final end state may affect the current S&M activities. When the final end state for a facility is established, S&M scope for that facility is reevaluated to ensure that the scope is appropriate for planned actions.

### **2.3 INTEGRATED SAFETY MANAGEMENT SYSTEM**

NSTec Core Company Directive CCD-QA05.001, “NSTec Integrated Work Control Process,” ensures that accepted standards, including DOE O 430.1B, Change 2; DOE Policy DOE P 450.4A, “Integrated Safety Management Policy,” and DOE Standard DOE-STD-1120-2005, “Integration of Environment, Safety, and Health into Facility Disposition Activities,” Volumes 1 and 2, have been integrated into all levels of management and work practices in accordance with established work control procedures. Worker involvement in all levels of safety and hazards analysis is included in the planning of a facility’s disposition.

This S&M Plan incorporates the Integrated Safety Management System by conducting annual inspections that identify health and safety hazards. Changes in facility conditions are documented and addressed as discussed in Section 3.10. NSTec procedures govern performance of S&M activities. Planning, walkdowns, hazard identification checklists, pre- and post-job briefings, and the work package process emphasize the importance of controls and worker safety.



### 2.3.1 Training Requirements

Minimum training requirements for S&M activities, including inspections, walkdowns, and tours, are listed in Table 4. Training is specific to the type of activity and level of exposure to facility hazards and conditions. Training is verified prior to initiation of any S&M activity.

Tour guides with the required training must escort visitors through the facility at all times. Surveillance activities require an additional level of training consistent with site requirements; however, these activities are non-contact work tasks. Maintenance activities, depending on the skill level, hazards, and locations, require additional training. Training required for these activities are reviewed on a case-by-case basis. The HASP for S&M Facilities will determine the specific training requirements and controls for activities with specific hazards.

**TABLE 4. SURVEILLANCE AND MAINTENANCE TRAINING REQUIREMENTS**

TRAINING	TOUR GUIDES	INSPECTION/WALKDOWNS	S&M ACTIVITIES (CONTACT WORK)
General Employee Radiological Training	✓	✓	✓
Hantavirus	✓	✓	✓
Hazard Recognition	✓	✓	✓
CPR*	✓	✓	✓
First Aid*	✓	✓	✓
PPE	✓	✓	✓
Electrical Safety Awareness	✓	✓	✓
Fire Extinguisher	✓	✓	✓
40-Hour HAZWOPER**	✓	✓	✓
Current 8-hour Refresher**	✓	✓	✓
Ladder Safety		✓	✓
Hazard Communication		✓	✓
Beryllium Awareness		✓	✓
Asbestos Awareness		✓	✓
Lead Awareness		✓	✓
Toxic Metals Awareness			✓
Bloodborne Pathogens			✓
Activity Level Work Performance			✓
Unexploded Ordnance Briefing			✓
Field or Facility-Specific***			✓
Radiological Worker II****			✓
Respirator Fit****			✓

\* One person for non-remote areas; two people for remote areas

\*\* For work within the boundaries of a HAZWOPER site

\*\*\* Included in tailgate safety pre- and post-job briefings; includes emergency response

\*\*\*\*For entries or work in radiologically posted area and as required by work control documents

### 2.4 FACILITY-SPECIFIC ACTIVITIES

Certain S&M activities are common to all facilities. Facility inspections and an assessment of radiological conditions are required for all facilities on an annual basis.

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## **3.0 IMPLEMENTATION**

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The S&M process consists of the following six steps:

- 1) Continue ongoing S&M
- 2) Identify need to evaluate/reevaluate S&M baseline
- 3) Collect baseline data
- 4) Evaluate baseline data
- 5) Develop/revise S&M Plan
- 6) Implement the S&M program

The following sections describe how each step of the S&M program is implemented.

### **3.1 STEP 1: CONTINUE ONGOING SURVEILLANCE AND MAINTENANCE**

S&M activities are conducted according to this plan until the facility's final end state is achieved. S&M activities continue while the S&M program is being reviewed and updated (Steps 2 through 6) to ensure at a minimum that contamination is adequately contained, facilities are secured, and that potential hazards to workers, the public, and the environment are minimized.

### **3.2 STEP 2: IDENTIFY NEED TO EVALUATE/REEVALUATE SURVEILLANCE AND MAINTENANCE BASELINE**

In some cases, S&M activities are performed until conditions change such that an activity is no longer required or must be altered to meet a new condition. Completing these transition activities may shut down or remove systems or equipment, or otherwise change conditions that directly affect the requirement to continue with a specific S&M activity.

As discussed in Step 6, evaluation and feedback from prior S&M activities may indicate a need to enhance or improve the S&M program. Additionally, a change in the schedule (e.g., if decommissioning planned for 3 years in the future is extended to 6 years) or a change in the ultimate disposition objective could affect S&M activities. In these cases, the need to evaluate the S&M schedule baseline will be identified, and the S&M program will be adjusted accordingly. This S&M Plan identifies the current known conditions of each facility; it also outlines the criteria that trigger a re-evaluation of the facility baseline data. S&M activities will proceed until final disposition of the facility, at which time the facility will be removed from the S&M program, and S&M activities for that facility will cease.

### **3.3 STEP 3: COLLECT BASELINE DATA**

One of the purposes of the S&M program is collecting baseline data (i.e., condition information) from each facility to identify hazards and determine the risk posed by the hazards to workers, the public, and the environment. The status and condition of existing equipment used to mitigate or eliminate hazards are also identified. In addition, the baseline data are used to assess structures, systems, and components as they relate to the work to be performed in the facilities (e.g., decommissioning). The rigor to which these actions are performed is commensurate with the risks, known conditions, and operating history of the facilities.

The facilities under this S&M program are in a low-risk, long-term stewardship, deactivation, or decommissioning disposition state as described in DOE G 430.1-5, "Transition Implementation Guide." Section 3.3.1 provides a general overview of sources of baseline data used in determining the status and condition of facilities.

Historical facility information has been researched and catalogued. Facility baseline data are captured through annual inspections, new discovery documentation, and the disposition process defined in Section 3.10. Documentation and records generated from implementation of this S&M Plan are maintained in accordance with Section 3.11.

### **3.3.1 Data Sources**

Facility condition identification begins with defining the facility's boundaries, as shown in the facility layouts (Figures 2 through 4). Historical information and data obtained from operating histories, facility walkdowns, and Preliminary Assessments were used in the preparation of this S&M Plan. Information from these data sources is summarized in this plan and used in the determination of S&M activities. Details of each structure and known associated hazards are included in the project files.

If it is determined that existing data do not adequately document the facility conditions or provide a clear understanding of the existing hazards to maintain the safety of the facility or prevent structure hazards, a facility walkdown is conducted to identify immediate hazards or potential releases of hazardous material and required immediate corrective actions. Subject matter experts and knowledgeable individuals from various technical disciplines (e.g., structural analysis, electrical engineering, industrial safety, industrial hygiene, radiation safety, and environmental safety) attend these walkdowns when appropriate.

The focus of the walkdowns is to identify facility conditions that represent a credible threat to human health and safety or potential releases to the environment, or to provide further information for decommissioning planning. Appropriate, physical, chemical, and radiological data are collected to support a facility's characterization baseline. The results of walkdowns are documented and maintained in the project files. Photographs are taken when applicable during walkdowns to provide additional facility documentation. Photographs are catalogued in the project files for each facility.

## **3.4 STEP 4: EVALUATE BASELINE DATA**

Baseline data are evaluated annually. The data serve as the framework for development and subsequent revision of the S&M program. Information regarding the potential use of personal protective equipment and engineering or administrative controls is evaluated to allow for the safe, cost-effective inspection and maintenance of the facilities throughout each phase of the life cycle (Figure 5).

The evaluation of baseline data for each facility addresses the following items:

- Radiological inventory and associated uncertainties, including material form, distribution information, and survey data to identify the radiological working conditions for the facility
- Hazardous material, hazardous waste, chemical inventories, and any associated uncertainty, including form and distribution information

- Ongoing S&M activities, particularly with regard to the current hazards, AB, and commitments
- Occupational hazards associated with the facility, particularly fixed hazards
- General facility conditions, particularly structures, existing protective barriers, and systems installed to prevent migration of both hazardous and radioactive contamination to the environment and to ensure the safety of workers, the public, and the environment
- Applicable permits (i.e., REOPs), licenses, and agreements associated with the facility as well as commitments to regulatory authorities, stakeholders, and NNSA/NFO that apply to disposition

Once facility status and condition are determined, the identified hazards and mitigation options are evaluated against the safety and health standards that apply to those hazards and the work to be performed. This determination and evaluation of the hazards form the basis for developing, implementing, and maintaining a continuous S&M program (updated as disposition activities are completed), which is required throughout the remainder of the facility's life cycle. Developing and revising the S&M Plan (Step 5) and implementing the S&M Plan (Step 6), which are core components of the S&M program, rely on this evaluation so that S&M is performed in a safe and hazard-free manner.

The following sections address aspects of the facilities used to develop the S&M Plan.

### **3.4.1 Facility Aspects**

Evaluation of baseline data focuses on maintaining the facilities in a safe, environmentally secure state in an as low-hazard as economically achievable manner. Therefore, maintenance measures will include only those necessary to keep safety controls and containments in a satisfactory condition. Maintenance features may be both preventive and predictive but will avoid unnecessary costs, such as repairing a building scheduled for demolition in a few years. Required support needs (e.g., monitoring equipment, systems, or electrical power) will be provided as portable systems to reduce cost.

The S&M program minimizes the need for facility entry based on established facility safety perimeter controls, low value of some facilities or structures, and lack of classified material or security measures that require more frequent access.

### **3.4.2 Conduct of Operations**

The applicability of DOE O 422.1, "Conduct of Operations," was evaluated for the facilities covered by this S&M Plan. Conduct of Operations is applicable to hazard category 1, 2, and 3 facilities and for NNS facilities and activities designated by NNSA/NFO per NSTec Policy PY-NOPS.002, "Conduct of Operations." The facilities covered by this S&M Plan are deactivated excess facilities, not operating under their original mission or purpose, classified as hazard category 4 or 10, and not among facilities or activities designated by PY-NOPS.002.

### **3.4.3 Facility Operations**

Throughout the S&M program, the facilities comply with applicable sections of DOE O 430.1B as evaluated by this S&M Plan. All operating equipment in the facilities has been shut down, and the current condition was established under a limited deactivation. Facility activities are limited to required environmental monitoring, FFAO CAU closure, and/or S&M activities.

#### **3.4.4 Facility Maintenance**

Maintenance activities (predictive, preventive, or corrective) are implemented in accordance with approved NSTec work packages. The primary maintenance that may be required is housekeeping of the exterior of the facility (inside the facility compound) that impacts access or safety. The need for general housekeeping is evaluated on an annual basis. Maintenance concerns are documented on an as-needed basis or as annual entries on the inspection forms (Appendix B).

Facilities are maintained in their current state. No significant maintenance activities are currently anticipated to be performed outside of the performance baseline. Corrective actions identified during the discovery process are evaluated and dispositioned using the S&M program objectives and graded approach.

#### **3.4.5 Surveillance and Inspections**

Annual surveillance of the facilities typically consists of walkdowns to assess the current conditions, document facility deterioration, and identify safety hazards. Structural defects, roof deterioration, radiological or control posting deficiencies, water intrusion, animal or insect intrusion, hazardous conditions, or unlabeled containers are identified. Inspections are documented on the inspection form in Appendix B.

Inspections for structural integrity and deterioration are assessed by a structural engineer during the annual scheduled surveillance. Roof inspections are conducted as follows:

- Inspection frequency for concrete structures with a concrete roof is every 5 years.
- Inspection frequency for metal structures and/or metal roofs on concrete structures is every third year. The next anticipated roof inspection is in 2016.

Based on current conditions and decommissioning schedule, roof repairs are not anticipated; however, personnel access to some roof areas will be restricted. Building demolition will be evaluated as an alternative to roof repairs. General maintenance housekeeping activities, including removal of tumbleweeds and other debris around the structures or access points, may be required.

#### **3.4.6 Quality Assurance**

A graded approach is implemented to comply with Title 10 Code of Federal Regulations (CFR) Part 830, Subpart A, "Quality Assurance Requirements," DOE O 414.1D, "Quality Assurance," and NSTec Program Description PD-0001.002, "Quality Assurance Program."

#### **3.4.7 Radiological Controls**

Activities are planned, evaluated, conducted, and documented in compliance with applicable sections of 10 CFR 835, "Occupational Radiation Protection," as described in the *Nevada National Security Site Radiological Control Manual*. Radiological control is implemented during the long-term, low-risk, deactivated phase of decommissioning.

If S&M activities are conducted in radiologically posted areas, a Radiological Work Permit is prepared for entry, if required. As low as reasonably achievable practices are implemented during S&M activities. During surveillance, most conditions can be documented visually without entry into radiologically posted areas.

S&M operations that include radiological work are evaluated for external and internal radiation exposure control, dosimetry, radiological monitoring, radiological contamination control, and radiological boundaries and postings.

Radiological boundaries have been posted for known radiologically impacted areas and are controlled in compliance with the *Nevada National Security Site Radiological Control Manual*. The postings and controls are evaluated during scheduled surveillance.

### **3.4.8 Hazard Material Protection**

The majority of hazardous waste has been removed from the facilities. Additional hazardous waste may be removed following a new discovery if it presents a significant health and safety hazard. The following hazardous materials present no significant health and safety hazard in their current condition unless disturbed and will remain at the facilities during the long-term, low-risk deactivation phase until decommissioning:

- Mercury switches
- Lead or silver solder in electrical controls, switchgear, and other locations
- Mercury vapor lamps and fluorescent lamps
- Cadmium in foil and painted surfaces
- PCB ballasts in remaining light fixtures and support equipment lubricants
- Asbestos on piping, floor and ceiling tile, wall coverings, building siding, and vessels
- Beryllium present in dust
- Embedded lead plugs and shot, plates, and counter weights on equipment

### **3.4.9 Emergency Preparedness**

The NSTec emergency preparedness process complies with DOE O 151.1C, “Comprehensive Emergency Management System,” and all DOE Necessary and Sufficient Process files.

### **3.4.10 Safeguards and Security**

Safeguards and security consist of access control and routine patrols from the security services contractor (currently WSI). Access is controlled administratively and physically. Gates to the facilities are secured and locked. NSTec ER must be contacted to arrange for access to the facilities.

## **3.5 STEP 5: DEVELOP/REVISE SURVEILLANCE AND MAINTENANCE PLAN**

The baseline data evaluated in Step 4 form the basis for the S&M Plan. The execution of this plan implements an S&M program that ensures that the facilities included in this plan are maintained in a safe, environmentally secure, and cost-effective manner. The plan is revised as necessary based on an evaluation of changes to facilities.

Using the baseline data evaluated in Step 4, as applicable to each facility and subject to the graded approach, specific elements of performing S&M work are provided in detailed work packages as described in Section 3.7.

### **3.6 STEP 6: IMPLEMENT THE SURVEILLANCE AND MAINTENANCE PROGRAM**

Implementation of the S&M program supports the process occurring over the facility life cycle. It is probable that the number and type of S&M tasks may change during the disposition phases of the life cycle, depending on the facility end state and condition. As a result, implementation of the S&M program will be reviewed as described in Section 3.8 to ensure that tasks are properly monitored and the current condition, equipment, and safety levels are maintained.

After facility deactivation is complete, implementation of S&M tasks continues to ensure protection of the worker, the public, and the environment. Continued radiological surveillance, roof inspections (including possible repairs), and maintenance of building equipment and systems, as applicable, are examples of activities that may be required during this phase. S&M activities for each facility are reassessed after D&D is completed.

The safety AB of the facilities and phased implementation of the S&M program are updated to reflect S&M activity changes that warrant a revision of the plan and are outside the current AB. Costs can be reduced as the hazards and safety concerns are minimized.

When a facility is placed in long-term monitoring status after decommissioning activities are complete, S&M tasks are implemented to provide for the physical safety and security of the facility and to ensure compliance with restricted end conditions established for the facility. This is typically a low-cost program that could continue over many years. The determination of a facility's final end state or disposition is critical to the long-term S&M requirements.

### **3.7 WORK EXECUTION**

Facility-specific S&M activities may change as the excess facility transitions to its final end state. Activities may be added, changed, or eliminated to meet the objectives of the current S&M program. The S&M program identifies these objectives and the specific requirements and constraints to the organization responsible for the planning and performance of work activities.

NSTec ER is responsible for implementing this plan to ensure that the facilities' current conditions are maintained and that the worker, the public, and the environment are adequately protected. These criteria are met by developing specific implementing work control documents.

The majority of S&M work includes routine surveillance (e.g., radiological surveys, roof and structure condition surveillance) and is conducted at established frequencies or as special needs are identified. Other S&M tasks (i.e., maintenance) are conducted as conditions warrant. Work controls are in place for scheduling, planning, and implementing work in a safe manner. Detailed work packages outline the scope of work to be accomplished, the frequency intervals (if applicable), and the process for conducting work safely and efficiently.

Annual (routine) surveillance assesses the facility for changes in the following:

- Radiological conditions
- Safety hazards (e.g., biological, physical)
- Structural degradation
- Security/access controls
- Chemical contamination



### **3.7.1 Work Control**

Work packages provide the structure to sufficiently inform all involved parties of the work to be accomplished and their potential impact on other activities scheduled in the same area. This documentation ensures that impacts, including health and safety, have been identified and that controls consistent with identified hazards are established prior to proceeding with the work.

Following the development of a work package according to NSTec CCD-QA05.001-005, “Work Package Process,” the S&M activity is performed in accordance with the work package. Provisions in HASPs are adhered to during S&M activities to ensure that field activities adequately protect workers, the public, and the environment.

Pre-job briefings are conducted prior to physical (i.e., contact) work being performed to review the known hazards and controls, provide an overview of the related emergency procedures, consider additional activities ongoing in the facility, and ensure that workers satisfy training requirements. Waste generated during S&M activities is managed in compliance with applicable NSTec and regulatory requirements.

Post-job briefings serve to evaluate work performance. Pre- and post-job briefings are required per NSTec CCD-QA05.001-003, “Activity Level Hazard Analysis Process.” Lessons learned during execution improve planning of future work, thereby resulting in enhanced safety or improved efficiency of future work.

As tasks are executed, project personnel ensure that the planned S&M activities are sufficient to meet the objectives of the S&M program. Proper preventive and predictive maintenance of the facilities, systems, and equipment keep the facilities in an acceptable condition. Information gathered during execution of the plan is provided to the planning organization to assess the need for additional S&M or decreased S&M as a result of lower risks in the facility.

## **3.8 UPDATES AND REVISIONS**

A graded approach was used to determine the conditions that merit a revision to this S&M Plan. A revision to this plan is required if one or more of the following criteria or conditions are met:

- A new discovery is identified with hazards that are significantly different from those hazards previously identified and/or covered in this plan.
- A new facility is included in the S&M program.
- A facility hazard category is upgraded.
- A significant amount of accumulated updates from the list below are identified.

The S&M Plan is reviewed annually by the PM. Revisions or updates to the plan will only be required if one or more of the above-listed criteria are met. The following do not constitute a revision to this plan, unless outside the existing safety AB. These changes are made during subsequent revisions or updates.

- Removal of a facility from the S&M program based on decommissioning being complete or long-term S&M no longer being required
- Decontamination of an existing radiological area noted during annual inspections
- Adjusted radiological areas noted during annual inspections

- Downgrade in facility hazard category or facility conditions
- Structural degradation noted
- Maintenance activities require documentation on facility layouts

### **3.9 EVALUATION AND FEEDBACK**

Through implementation of the S&M program, continued evaluation and feedback ensure that adequate monitoring and preventive, predictive, or corrective maintenance activities are planned and executed throughout the life cycle of the facility to provide for the safety of the worker, the public, and the environment. The annual inspection form (Appendix B) is used to document facility conditions and new discoveries. New discoveries provide feedback and document conditions that have not previously been identified.

### **3.10 NEW DISCOVERY PROCESS**

S&M team members document new discoveries and newly identified conditions that are considered a potential hazard to workers, the public, and/or the environment. These conditions include gross deterioration that may impact the long-term, low-maintenance stability of the safety envelope of the existing facility or structure. The new discovery process facilitates a communication mechanism between the S&M team and the PM to track open action items through disposition and to increase the level of management of S&M baseline data.

#### **3.10.1 Documentation and Disposition**

The PM reviews new discoveries and recommendations, evaluates the cost and benefit based on the S&M objectives and decommissioning schedule (using the graded approach), and, if necessary, provides a written rationale for the selected disposition alternative.

Some new discoveries may not require physical disposition. New discoveries requiring no action are identified and filed by the PM. Some discoveries may be noted and further evaluated during facility inspections or corrected at a later date. After evaluation, if a new discovery requires corrective action or preventive maintenance and is covered in approved scope, the request will be made to the performing organization, a work package will be prepared, approval will be received, and work will be performed. Upon closure of a new discovery, documentation is maintained in the facility records.

New discoveries do not constitute authorization of physical work to be performed at a D&D facility. S&M work is accomplished under appropriate NNSA/NFO and NSTec procedures.

NNSA/NFO is notified of significant discoveries. Corrective actions for new discoveries and recommendations are evaluated against the approved scope, available funding, S&M objectives, and benefit received.

### **3.11 RECORDKEEPING**

Records of S&M and facility disposition activities are collected and maintained readily accessible throughout the facility life cycle. Original records are maintained in the project files. Updated facility layouts are transmitted to the NSTec Directives and Documents Department for inclusion on the Optix Server.

The following records are maintained:

- Annual S&M inspections
- Updated facility layouts
- Radiological survey data
- Field photographs
- Historical and/or baseline data, documentation, or information

S&M documentation is maintained in accordance with NSTec CCD-QA04.003, "Records Management." Work packages for S&M activities are maintained with the ER work package files in accordance with CCD-QA05.001.

### **3.12 FACILITY MANAGEMENT**

The management and maintenance of NNSS facilities is governed by NSTec Company Directive CD-G610.010, "Facility Space and Move Management." The roles and responsibilities of facility custodians and owners are provided in NSTec CD-G610.002, "Facility Manager Program." The current facility owner(s) are identified in the REOPs.

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## **4.0 COST AND SCHEDULE**

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### **4.1 ANNUAL SURVEILLANCE AND MAINTENANCE COSTS**

The total baseline estimated cost for S&M facilities for all facilities in the S&M program is provided in the Near Term Life Cycle Baseline Task Agreement Plan (TAP), and cost estimates are prepared and provided on an FY basis. The baseline activities and assumptions for this cost estimate are provided in the TAP. Cost and activity assumptions developed for the TAP are provided in Appendix C.

The S&M estimated costs cover activities as identified in this S&M Plan. Cost savings and reductions can be realized over time with the achievement of the final facility end state. Through selection of the demolition end state, long-term S&M costs and liabilities can be eliminated for each facility as it is decommissioned.

S&M cost estimates assume that the following activities will be performed in support of this S&M Plan:

- Annual facility inspections
- Structural and roof inspections
- Facility walkdowns
- Radiological surveys
- Hantavirus cleanup
- Housekeeping debris removal
- Recordkeeping
- Facility layout updates
- S&M program support
- S&M program management

### **4.2 SCHEDULE**

The frequency of specific S&M activities is defined in the preceding sections of this document. Most activities are performed on an annual basis. Specific S&M activities are outlined in the baseline schedule, as included in the TAP.

Schedules will be adjusted based on resources and availability; however, the established frequencies will be maintained. Scheduled surveillances for D&D facilities will be conducted during each FY as specified. Facility inspections and radiological conditions assessments are required annually. Any exception to the annual schedule, including scope, schedule, and funding deviations, will be driven by management authority.

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## 5.0 REFERENCES

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- Code of Federal Regulations. Title 10, Part 830, Subpart A, “Quality Assurance Requirements,” 2001. Washington, D.C.
- Code of Federal Regulations. Title 10, Part 835, “Occupational Radiation Protection,” 2013. Washington, D.C.
- Federal Facility Agreement and Consent Order*, 1996 (as amended). Agreed to by the State of Nevada; the U.S. Department of Energy, Environmental Management; the U.S. Department of Defense; and the U.S. Department of Energy, Legacy Management.
- National Security Technologies, LLC. Company Directive CD-G610.002, “Facility Manager Program,” June 18, 2012. Las Vegas, NV.
- National Security Technologies, LLC. Company Directive CD-G610.010, “Facility Space and Move Management,” February 14, 2011. Las Vegas, NV.
- National Security Technologies, LLC. Core Company Directive CCD-QA04.003, “Records Management,” March 21, 2013. Las Vegas, NV.
- National Security Technologies, LLC. Core Company Directive CCD-QA05.001, “NSTec Integrated Work Control Process,” February 4, 2013. Las Vegas, NV.
- National Security Technologies, LLC. Core Company Directive CCD-QA05.001-003, “Activity Level Hazard Analysis Process,” September 28, 2011. Las Vegas, NV.
- National Security Technologies, LLC. Core Company Directive CCD-QA05.001-005, “Work Package Process,” May 24, 2012. Las Vegas, NV.
- National Security Technologies, LLC. Policy PY-NOPS.002, “Conduct of Operations,” September 30, 2011. Las Vegas, NV.
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- Radiological Control Managers’ Council, 2012. *Nevada National Security Site Radiological Control Manual*, DOE/NV/25946--801 Revision 2. March 2012. Las Vegas, NV.
- U.S. Department of Energy Guide DOE G 430.1-2, “Implementation Guide for Surveillance and Maintenance during Facility Transition and Disposition,” 1999. Washington, D.C.
- U.S. Department of Energy Guide DOE G 430.1-5, “Transition Implementation Guide,” 2001. Washington, D.C.

- U.S. Department of Energy Order DOE O 151.1C, “Comprehensive Emergency Management System,” 2005. Washington, D.C.
- U.S. Department of Energy Order DOE O 414.1D, “Quality Assurance,” 2011. Washington, D.C.
- U.S. Department of Energy Order DOE O 422.1, “Conduct of Operations,” 2010. Washington, D.C.
- U.S. Department of Energy Order DOE O 430.1B, “Real Property Asset Management,” Change 2, 2003. Washington, D.C.
- U.S. Department of Energy Policy DOE P 450.4A, “Integrated Safety Management Policy,” 2011. Washington, D.C.
- U.S. Department of Energy Standard DOE-STD-1120-2005, “Integration of Environment, Safety, and Health into Facility Disposition Activities,” Volumes 1 and 2, 2005. Washington, D.C.



**APPENDIX A: HISTORICAL S&M SURVEILLANCE  
PERFORMED AT CURRENT S&M FACILITIES**

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<b>DATE</b>	<b>TYPE OF ASSESSMENT</b>	<b>CONDUCTED BY</b>	<b>NEW DISCOVERIES</b>
02/1997	Annual D&D Facilities S&M Assessment	NSTec/PEER Consultants, Inc.	Numerous issues, development of S&M baseline
03/1998	Annual D&D Facilities S&M Assessment	NSTec/PEER Consultants, Inc.	Excessive debris/trash
08/1999	Annual D&D Facilities S&M Assessment, Structural Inspection	NSTec/PEER Consultants, Inc.	Flammable materials, missing plugs on shield wall penetrations
06/1999	D&D Facilities Radioactive Scrap Metals Inventory Survey	NSTec/PEER Consultants, Inc.	Data collection
07/2000	D&D Facilities Salvage Assessment	PEER Consultants, Inc.	Metal types/volume by facility/structure
04/2001	Fixed Ladders & Stairways	NSTec Engineering	Foot traffic usage to gain access to roof
08/2001	Annual D&D Facility S&M Assessment, Structural Inspection	NSTec/PEER Consultants, Inc.	
05/2002	Annual D&D Facility S&M Assessment, Structural Inspection	NSTec/PEER Consultants, Inc.	
2003	Annual D&D Facility S&M Assessment, Structural Inspection	NSTec/PEER Consultants, Inc.	
2004	Annual D&D Facility S&M Structural Inspection	NSTec/PEER Consultants, Inc.	Wooden deck deterioration. Loose materials on roofs. Leaks from rail cars.
2005	Annual D&D Facility S&M Structural Inspection	NSTec/PEER Consultants, Inc.	
2006	Annual D&D Facility S&M Structural Inspection	NSTec/PEER Consultants, Inc.	Siding repair issues.
2007	Annual D&D Facility S&M Structural Inspection	NSTec/PEER Consultants, Inc.	
2008	Annual D&D Facility S&M Structural Inspection	NSTec/PEER Consultants, Inc.	
2009	Annual D&D Facility S&M Structural Inspection	NSTec Engineering	Areas of bare roof decking
	Surveillance Walkdowns	NSTec ER	Damaged shield door to west processing cell
2010	Annual D&D Facility S&M Structural Inspection	NSTec Engineering	Missing railing on roofs, loose flashing and siding, masonry cracks, missing bolts on structures
	Surveillance Walkdowns	NSTec ER	

<b>DATE</b>	<b>TYPE OF ASSESSMENT</b>	<b>CONDUCTED BY</b>	<b>NEW DISCOVERIES</b>
2011	Annual D&D Facility S&M Structural Inspection	NSTec Engineering	
	Surveillance Walkdowns	NSTec ER	
2012	Annual D&D Facility S&M Structural Inspection	NSTec Engineering	Wind damage to exterior siding
	Surveillance Walkdowns	NSTec ER	

*D&D: decontamination and decommissioning*

*ER: Environmental Restoration*

*NSTec: National Security Technologies, LLC*

*S&M: surveillance and maintenance*

**APPENDIX B: S&M ANNUAL INSPECTION FORM  
AND  
FACILITY CONDITION CHECKLIST**

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<b>SURVEILLANCE &amp; MAINTENANCE (S&amp;M) ANNUAL INSPECTION FORM</b>	
<b>Facility/Site:</b> <b>CAU No.:</b> <b>Other Site CAUs:</b>  <b>Prepared by:</b>	<b>Start Date:</b> <b>Finish Date:</b> <b>Sketch updated:</b>
<b>1.0 Public Health and Safety:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	
<b>2.0 Regulatory Compliance Issues:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	
<b>3.0 Worker Health and Safety Issues:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	
<b>4.0 Access Control Issues:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	
<b>5.0 Contaminants of Concern:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	
<b>6.0 Structural and Physical Hazards:</b>  <b>Observation:</b>  <b>Maintenance Recommendation:</b>	

**SURVEILLANCE & MAINTENANCE (S&M)  
ANNUAL INSPECTION FORM**

**7.0 Electrical/Mechanical Hazards:**

**Observation:**

**Maintenance Recommendation:**

**8.0 Fire Protection Hazards:**

**Observation:**

**Maintenance Recommendation:**

**9.0 General:**

**Observation:**

**Maintenance Recommendation:**



## Facility Condition Surveillance Checklist

**Facility:** \_\_\_\_\_

	Location	Condition Observed	Condition Suspected	Satisfactory	N/A
<b>EXTERIOR STRUCTURE</b>					
<i>Facility Access Points</i>					
Damaged fencing					
Doors not operating properly					
<i>Footings and Slabs on Grade Integral to Structure</i>					
Uneven settling or surface cracking					
<i>Foundation Walls, Retaining Walls, Exterior Walls</i>					
Cracking, buckling, deformation, damage					
Transite siding crumbling, cracked, broken, or loose					
Windows broken or missing					
<i>Beams, Columns, Bracing (Steel, Wood, Concrete) – Exterior</i>					
Structural cracks, damage					
Loose or missing connections or damaged welds					
<i>Roofing</i>					
Decking or penetrations corroded, deteriorated, or leaking					
Ceiling tiles soaked and bulging, indicating roof leaks					
Protective coatings peeling due to leakage					
Concrete ceiling spalling and dripping water					
Loose or missing connectors					
Damaged welds					
Parapets crumbling or missing					
Ducts corroded through					
Roof leaks					
Drainage impaired (scuppers, drains, standing water, etc.)					
Plant or algae growth					
Roof inspection never completed or overdue					
<i>Access Ways/Stairs – Exterior</i>					
Stairs, walkways, or steps deformed, buckling, or cracking					
Ladders damaged or loose					
Handrails damaged, loose, or missing					
Buckled and degraded floor gratings					
<i>Valve Boxes, Pits, and Crawl Spaces</i>					
Ground water seepage in the basement					
Standing water accumulates after rains					
<i>Manholes and Drains</i>					
Drains blocked or grouted					
<i>Other Exterior Issues</i>					
Outside tanks or transfer piping corroded or deteriorated					
<b>INTERIOR STRUCTURE</b>					
<i>Interior Floors (including sumps)</i>					
Floor damage					
Floor drainage blocked					
<i>Interior Walls (including vaults, process cells, and hot cells)</i>					
Walls damaged, cracked, buckling, or molding					
Floor finishing or coverings torn or mildewed					
<i>Interior Structures, Mezzanines, and Cat Walks</i>					
Cracking, buckling, deformation, or decay					
Stairs, ladders, handrails damaged, missing, or loose					
Beams, columns, bracing damaged or corroded					

	Location	Condition Observed	Condition Suspected	Satisfactory	N/A
Damage or deterioration of hoist, crane, elevator support structure, or connections					
<b>Ceilings</b>					
Suspended ceilings loose or not properly suspended; sections missing or damaged					
Low overhead clearance ("head knockers")					
<b>General Interior Appearance and Conditions</b>					
Housekeeping issues					
Signage loose or down					
Access Control – Facility Custodian not identified and posted					
<b>ENVIRONMENTAL COMPLIANCE</b>					
<b>Chemical Management</b>					
Materials stored in the building not on known facility inventory list					
MSDS not available for all chemicals					
<b>Regulatory</b>					
Permitted Area boundary not properly posted					
Spill(s) and/or release(s) requires reporting					
<b>Liquid and Gaseous Effluents</b>					
Liquid or Gaseous Discharge Point not isolated					
Fugitive emission sources exists					
Storm water not properly managed					
<b>GENERAL SAFETY</b>					
<b>Slips, Trips, Impacts, and Falls</b>					
Unguarded floor openings					
Low floor obstructions, pipe, or other components in walkways ("ankle biters")					
Inadequate lighting levels in areas routinely traveled					
<b>Respiratory Hazards</b>					
Confined spaces not marked, barricaded, or inventoried per OSHA requirements					
Bird excrement inside the facility					
Rodents droppings inside the facility					
<b>Living organisms</b>					
Animals can freely enter and leave					
Infestation by vegetation					
Infestation by spiders, snakes, other vermin, or wild animals					
<b>Hazardous Energy</b>					
Stored mechanical energy (springs, counterweights, flywheels, etc.)					
Exposed electrical conductors					
Gas cylinders (acetylene, argon, nitrogen, etc.) improperly stowed or secured					
Tank or sump overflowing					
<b>FIRE PROTECTION</b>					
<b>Fire Detection Systems</b>					
Fire detection and suppression system removed or non-functioning					
<b>Fire Alarms</b>					
Alarm system removed or non-functioning					
<b>Fire Suppression Systems</b>					
Fire hydrants damaged or not operable					
<b>Fire Safety</b>					
Two means of egress not provided from all spaces					
Egress paths obstructed or not clearly marked					
Combustibles stored in various parts of the building					

	Location	Condition Observed	Condition Suspected	Satisfactory	N/A
<b>HAZARDOUS MATERIAL AND HAZARDOUS WASTE</b>					
<b>Acids/Caustics/Lab Reagents</b>					
<b>Asbestos</b>					
Asbestos or potential asbestos in floor tiles mastic, gaskets, firewall, or insulation					
Transite crumbling due to exposure to environment					
<b>Mercury</b>					
Control devices have mercury switches					
Liquid mercury observed or suspected from process history					
Fluorescent light bulbs stored in facility					
<b>Polychlorinated biphenyls (PCBs)</b>					
Age of facility indicates potential PCBs in paint, insulation, equipment, or components					
<b>Solvents or Thinners</b>					
<b>Paints, Sealants, or Adhesives</b>					
<b>Beryllium</b>					
<b>Lead</b>					
Age of facility indicates potential lead in paint					
Wet cell batteries still in facility					
Brass components					
Lead (bricks, wool, etc.) stored in building					
<b>Battery acid</b>					
Battery-powered emergency light units (not maintained) are located throughout the facility					
<b>Cadmium</b>					
Components containing cadmium present in facility					
<b>Freon</b>					
A/C units contain or may contain Freon					
<b>Other RCRA hazardous chemicals present</b>					
<b>Hazardous Waste</b>					
Waste is not package properly					
Waste stored in satellite accumulation area that is not being managed					
Storage and shipping records are not being retained properly					
<b>RADIOACTIVE CONTAMINATION AND WASTE</b>					
<b>Evidence of Radiological Concerns</b>					
Radiological postings and/or labels missing, unreadable, or inconsistent with facility conditions documents					
Evidence or concern that contaminated material or waste is outside of a properly posted radiological area					
Evidence or concern that condition of contaminated material or waste is deteriorating to the point where contamination spread is a concern					
<b>PROGRAMMATIC ISSUES</b>					
<b>Surveillance and Maintenance</b>					
No maintenance program for essential equipment					
Equipment not protected from dust, water, or pilfering					
<b>Safety and Authorization Basis</b>					
Safety basis documentation nonexistent or outdated					
Conditions in safety basis not being observed and verified					

Notes from Checklist Items:

1)

2)

3)

Closeout Actions

1. Describe any new discoveries:

2. Do facility layouts, facility conditions documents, S&M Plan, or S&M HASP need to be updated based on this surveillance?

\_\_\_\_\_ Yes (provide detail)

\_\_\_\_\_ No

3. Are there any recommendations for adding or removing specific surveillance items/issues?

\_\_\_\_\_  
Surveillance personnel

\_\_\_\_\_  
Date

## **APPENDIX C: S&M PROGRAM ESTIMATE ASSUMPTIONS**

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## **KEY ASSUMPTIONS FOR S&M PROGRAM COST ESTIMATES**

- 1) Surveillance and maintenance (S&M) activities will be conducted at the following facilities: Engine Maintenance, Assembly, and Disassembly Facility and Test Cell C.
- 2) Structural Assessment will be performed annually and a report prepared.
- 3) Radiological Surveys will be conducted annually and radiological postings updated as necessary.
- 4) Hantavirus cleanup will be performed annually, determined by the amount of rodent feces present and the need to enter the facility during the course of the fiscal year.
- 5) Project personnel will perform S&M activities.
- 6) Two minor (up to \$25,000 each) maintenance/repair activities will be required per year.

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## **APPENDIX D: DEFINITIONS**

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## DEFINITIONS

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**Asset:** DOE-owned or DOE-used and -controlled land, land improvements, structures, utilities motor vehicles, equipment, and components.

**Authorization Basis:** Safety documentation supporting the decision to allow a process or facility to operate. Included are corporate operational and environmental requirements as found in regulations and specific permits and, for specific activities, work packages or job hazard analyses.

**Contaminated Facility:** DOE facility that has structural components and/or systems contaminated with hazardous chemical and/or radioactive substances, including radionuclides. This definition excludes facilities that contain no residual hazardous substances other than those present in building materials and components, such as asbestos-containing material, lead-based paint, or PCB-containing equipment. This definition excludes facilities in which bulk or containerized hazardous substances, including radionuclides, have been used or managed if no contaminants remain in or on the structural components and/or systems.

**Corrective Action:** Task or activity performed at a facility to reduce or eliminate the consequences of a hazard.

**Deactivation:** Process of placing a shutdown facility into a safe and stable condition by the elimination or reduction of residual hazards. Deactivation protects the health and safety of workers, the public, and the environment and minimizes the long-term cost of surveillance and maintenance.

**Decommissioning:** Typically the final stage for a facility when the residual hazards are permanently eliminated. A range of possible alternative end states is evaluated, and the best one is chosen. The possible alternatives might include cleanout and conversion for another use, decontamination and demolition, or another alternative.

**Decontamination:** Removal or reduction of residual radioactive and hazardous materials by mechanical, chemical, or other techniques to achieve a stated objective or end condition.

**Dismantlement:** Disassembly or demolition and removal of any structure, system, or component during decommissioning and satisfactory interim or long-term disposal of the residue from a facility or portions of a facility.

**Disposition:** Activities that follow completion of program mission, including, but not limited to, transition, deactivation, decontamination, decommissioning, long-term safe storage, and removal of equipment for reuse or sale.

**End State:** Overall status of a facility after deactivation or decommissioning (e.g., Post-Deactivation End State or Post-Decommissioning End State). The desired end state identifies when the project is complete.

## DEFINITIONS, continued

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**End Point:** Detailed specification of changes to be made by system and by space within the facility. End points are justified against a specific project objective as necessary to achieve the planned end state. End point specifications are also used to verify that each end point has been satisfactorily completed.

**Excess:** An item of government property that is no longer required for an operational purpose. Government property is considered excess when a formal Declaration of Excess Form and/or Adjustment of Capital Equipment are completed by an Asset Management Specialist and submitted to Asset Management. Asset Management submits the property through a Government Screening process for reuse across the DOE complex and other federal agencies. Once the Government Screening process is complete, the property is declared surplus to the federal government and is available to state agencies, universities, and public auction.

**Facility:** Buildings, utilities, structures, and other land improvements associated with an operation or service and dedicated to a common function. A facility can be contained inside a single building or portion of a building, or it can encompass several related buildings or other structures.

**Graded Approach:** An approach to requirements whereby the depth of detail and the magnitude of resources expended for a particular management element are tailored to be commensurate with the element's relative importance to safety, environmental compliance, safeguards, and security, programmatic importance, magnitude of the hazard, financial impact, or other facility-specific requirements.

**Hazard:** Material condition at a facility that poses a potential threat of some harmful consequence. A hazard can be reduced or eliminated by conducting a corrective action.

**Inactive Facility:** A facility or portion of a facility that has ceased or discontinued its authorized mission. Inactive facilities are included on the site's Master Inactive Facility List.

**Life Cycle:** Life of an asset from planning through acquisition, maintenance, operation, and disposition. For facilities, the disposition stage of the life cycle is further broken down into the following phases: transition from operations, deactivation, safe storage awaiting decommissioning, decommissioning, and post-decommissioning end state.

**Long-Term Stewardship:** Physical controls, institutions, information, and other mechanisms needed to ensure protection of people and the environment at sites where DOE has completed or plans to complete cleanup (e.g., landfill closures, remedial actions, removal actions, and facility stabilization). This concept includes land-use controls, monitoring, maintenance, and information management.

**Predictive Maintenance:** Activities involving continuous or periodic monitoring and diagnosis to forecast component degradation so that "as needed" maintenance can be scheduled.

## **DEFINITIONS, continued**

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**Preventive Maintenance:** Periodic and planned actions taken to maintain a piece of equipment within design operating conditions and extend its life and performed before equipment failure or to prevent equipment failure.

**Safe Storage:** The stage after deactivation and before decommissioning when a facility is in a passively safe and stable condition awaiting decommissioning. During this period, which may span decades, surveillance and maintenance and planning for decommissioning are the only activities.

**Salvage or Market Value:** Value as determined through competitive bids.

**Salvage Value Credit:** Credit or adjustment given by a subcontractor against the dismantlement and removal (D&R) costs to complete the scope of work. The Salvage Value Credit is part of the competitive pricing formula:  $D\&R\ Costs - Salvage\ Value\ Credit = Final\ Cost$ .

**Surplus Assets:** Government property that has been formally declared excess through Asset Management and has completed all government screenings for reuse within the DOE complex and other federal agencies.

**Surveillance and Maintenance:** A program established during transition from operations and continuing until phased out during decommissioning to provide in a cost-effective manner for satisfactory containment of contamination, physical safety and security controls, and maintenance of the facility in a manner that is protective of workers, the public, and the environment. Surveillance and maintenance activities are performed in accordance with a written Surveillance and Maintenance Plan, which is adjusted as necessary to reflect changes in the facility status and condition.

**Transition from Operations:** First phase of disposition for excess facilities, whereby the facility is acknowledged to be excess, shut down safely, and transferred into the excess facility disposition program.

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