DOE/NV--1193

FY 2008 NNSA/NSO Ten-Year Site Plan

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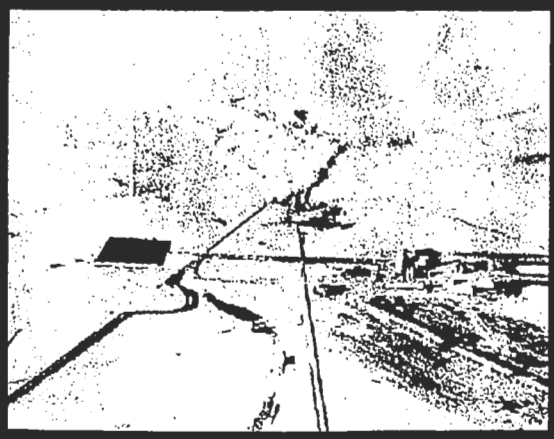
Device Assembly Facility

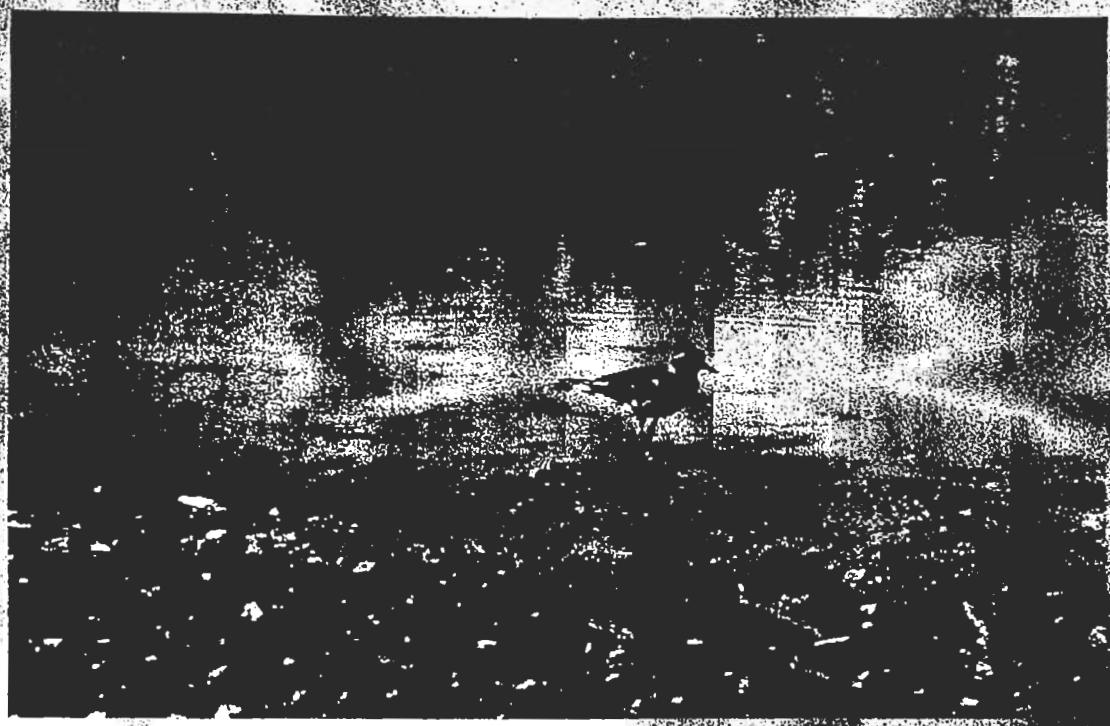


Nonproliferation Test and Evaluation Complex

View from Oak Spring Butte Looking South Over Yucca Flat at the Nevada Test Site

National Security Technologies LLC

FY 2008 NNSA/NSO Ten-Year Site Plan



A killdeer at one of the Frenchman Playa Ponds

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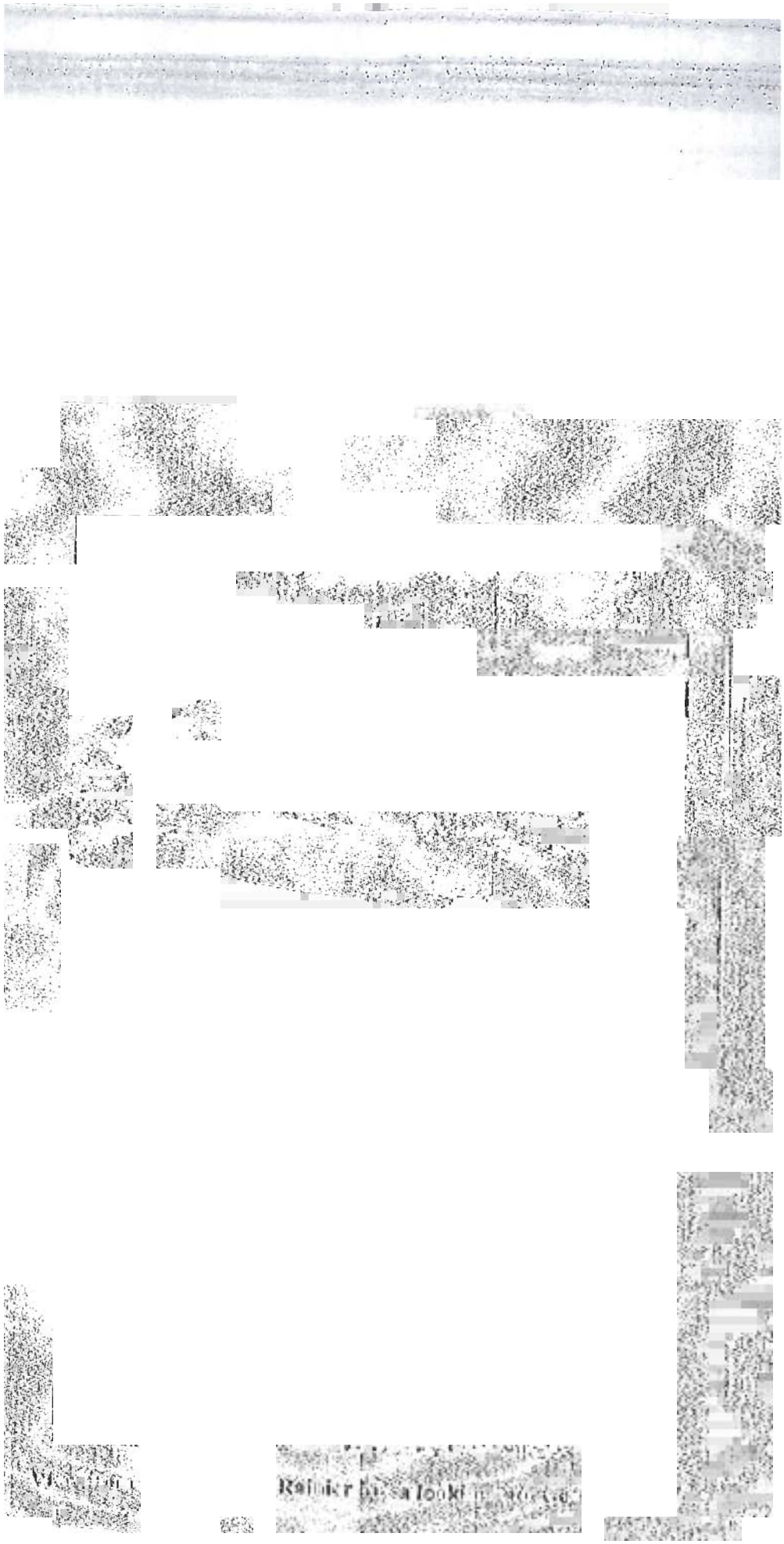

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[illegible] Younger, National Security [illegible]
[illegible] and General Manager [illegible] July 5, 20[illegible]

Executive Summary

Introduction

The Nevada Test Site (NTS) is a national asset for conducting high-hazard operations, testing, and training in support of the U.S. Department of Energy, National Nuclear Security Administration (NNSA), the U.S. Department of Defense, and other federal agencies. As landlord, NNSA Defense Programs Stockpile Stewardship considers the NTS and its infrastructure as an integral part of the Program that is primarily focused on achievement of milestones in Campaigns and Directed Stockpile Work, as well as ensuring that the United States can return to underground nuclear testing should the President deem it necessary. The NTS and associated activities draw together a unique team comprised of the NNSA/Nevada Site Of ce (NSO); National Security Technologies, LLC (NSTec); Lawrence Livermore National Laboratory; Los Alamos National Laboratory; Sandia National Laboratories; Wackenhut Services, Inc.; Defense Threat Reduction Agency; and Stoller-Navarro Joint Venture to support Stockpile Stewardship and related multi-program activities for the NNSA while maintaining the ability to resume underground nuclear testing. The NNSA/NSO provides the direction and oversight to execute the complex coordination in support of the mission requirements among all the organizations. This plan details that direction and oversight.

The National Weapons Laboratories are the principal implementers of the nuclear weapons programs executed for Defense Programs at the NTS as well as the critical organizations sponsoring that work. As the Management and Operating contractor, NSTec is the organization that is accountable for the successful execution of the work scope that is laid out in this plan to manage the resources, facilities, and infrastructure that make up the NTS and the other supporting sites in California, Nevada, New Mexico, and Washington, D.C. NSTec is responsible for providing much of the programmatic infrastructure, personnel, testbed, and diagnostics needed to enable successful execution of the programmatic work at the NTS.

The NTS and its seven auxiliary sites (Cheyenne Facility, Livermore Operations, Los Alamos Operations, North Las Vegas Facility, Remote Sensing Laboratory-Andrews, Remote Sensing Laboratory-Nellis, and Special Technologies Laboratory) continually strive to leverage existing assets to enhance the NTS as a Defense Programs site for weapons experimentation and nuclear test readiness. Efforts are focused on creating a sustainable future by developing a broad and varied project base that complements Stockpile Stewardship capabilities. NTS Program efforts fall under three major programs:

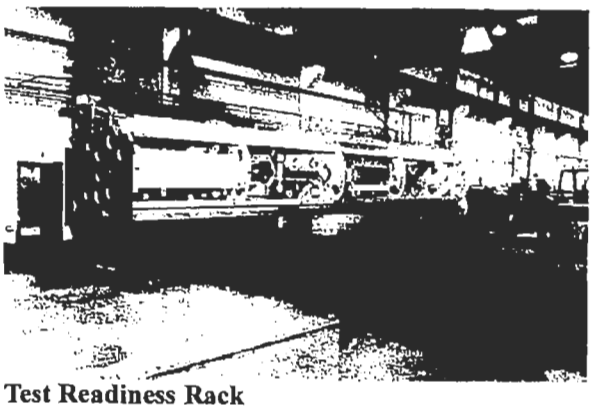
- Stockpile Stewardship
- Homeland Security and Defense Applications
- Environmental Management

The *Fiscal Year (FY) 2008 Ten-Year Site Plan (TYSP)* provides a foundation for facilities and infrastructure strategic planning in support of these programs. It also serves as the cornerstone of the initiative to restore, revitalize, and sustain the Defense Programs mission-critical facilities and infrastructure at the NTS. Speci cally, the *TYSP*: (1) focuses management action on current and future facility and infrastructure needs at each site in support of Readiness in Technical Base and Facilities, Directed Stockpile Work, and campaign programmatic requirements; (2) provides a strategic plan for making operational and maintenance decisions and establishing future priorities to support the primary missions of the NTS; (3) presents a resource-constrained plan with site-speci c funding pro les that are consistent with the Future Years National Security Program; and (4) presents a longer-term vision for facility and infrastructure improvements needed to meet future technical requirements to support outyear planning activities for the Complex 2030 Plan.

The Nevada Test Site Today

A unique national resource, the NTS is a massive, remote, and secure outdoor laboratory and national high-hazard experimental center that cannot be replicated. Larger than the state of Rhode Island, the NTS is approximately 1,375 square miles, making it one of the largest restricted access areas in the United States. The remote site is surrounded by thousands of additional square miles of land withdrawn from the public domain for use as a protected wildlife range and an Air Force test range, creating an unpopulated land area comprising some 5,470 square miles.

Mission, Programs, and Activities



Test Readiness Rack

The primary mission of the NTS falls under the Stockpile Stewardship Program. This primary mission includes conducting high-hazard experiments and operations in support of the NNSA Nuclear Weapons Complex and other national security missions, ensuring readiness to conduct underground nuclear tests and maintaining the materials and facilities for nuclear assemblies.

The enduring stockpile of nuclear weapons used to preserve the nation's security must be maintained as safe and reliable. To meet this requirement within the constraints on nuclear testing in agreements and treaties, the National Weapons Laboratories use special nuclear material in a series of calculations and experiments. The most dynamic of the experiments are conducted at the NTS and complement Nuclear Test Readiness by keeping personnel skills and knowledge up to date, and taking advantage of the NTS's remoteness and security. These include the subcritical experiments, which measure dynamic properties of special nuclear material in temperature and pressure regimes unachievable elsewhere in the complex.

Another vital program at the NTS is the Homeland Security and Defense Applications Program. This program is a key component of NNSA's emergency response, nuclear nonproliferation, and counter terrorism technologies. Homeland Security and Defense Applications provides project management and execution support for activities in consequence management, crisis response, nonproliferation technology test and evaluation, information and communication technologies test and evaluation, and controlled releases of hazardous chemicals and biological stimulants for the purpose of hazardous materials research, development, testing, and training.

The events of September 11, 2001, underscored the need for a synergistic training program, which includes federal, state, and local organizations in an environment similar to real-world scenarios that might be encountered by emergency responders and U. S. Department of Defense personnel. One example of our response to this escalating need is the NTS's Counter Terrorism Operations Support Program, which continues to signi cantly expand weapons of mass destruction prevention and response training for the U.S. Department of Homeland Security as well as other government agencies including the U.S. Department of Defense. The Counter Terrorism Operations Support Program at the NTS serves as a leading operation in the nation responding to terrorism.

The Environmental Management Program at the NTS is separate from NNSA, but remains a part of and reports to the U.S. Department of Energy. Activities under this program include legacy environmental cleanup under the *Federal Facility Agreement and Consent Order* with the state of Nevada, ground water radionuclide migration studies associated with underground nuclear testing, environmental compliance, and environmental waste functions, which support the U.S. Department of Energy complex and the U.S. Department

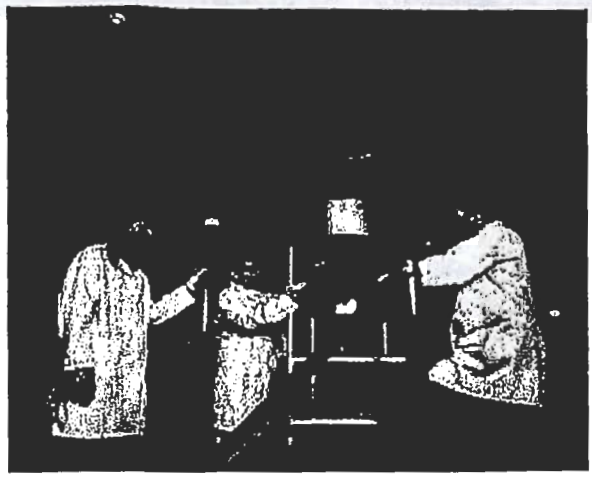
of Defense through radioactive waste disposal, handling, and storage. Waste activities are static and expected to decline over the next ve years.

Work for Others activities at the NTS (e.g., U.S. Department of Defense and U.S. Department of Homeland Security programs, etc.) have expanded signi cantly since September 11, 2001, to the point that further growth may impact the existing facility and infrastructure limits. Power and water resources are improving due to Facilities and Infrastructure Recapitalization Program projects completed in FY 2005 and FY 2006. However, the impacts of Work for Others may require further improvements to the mission dependent, not critical "backbone" and speci c infrastructure systems. These improvements will be primarily borne by the Work for Others customer. Although Work for Others funding has increased, the total impact to infrastructure capacity and capabilities at the NTS is being closely evaluated through master planning and con guration management.

Work for Others customers are direct funded. These customers help offset base costs, such as electric power and other indirect recovery pools that would otherwise be borne solely by the Stockpile Stewardship Program. As Work for Others customers build permanent facilities on the NTS, they will be required to include costs for "offsite" improvements, such as NTS water, sewer, power, roads, and communication systems upgrades, to ensure basic infrastructure is not impacted.

There are many synergies between Work for Others and the Stockpile Stewardship Program. The Defense Threat Reduction Agency is the oldest Work for Others customer, with a history dating back to atmospheric nuclear testing on the NTS, and provides valuable test readiness experience and resources. Other U.S. Department of Defense Work for Others customers share the increasing inventory of special nuclear materials at the NTS to combat terrorism, such as the U. S. Customs and Border Protection entry portal screening stations. Additionally, training venues offer improved security and response capability for special nuclear materials at the NTS.

Facilities and Infrastructure



Workers in the Criticality Experiment Facility

NTS facilities and infrastructure support mission-critical activities related to Readiness in Technical Base and Facilities, Directed Stockpile Work, and Stockpile Stewardship Campaigns, as well as other activities for mission support and tenant facilities. Current high-hazard operations for the NNSA are carried out in a mix of expendable and permanent facilities. These facilities include the U1a underground experiment complex, the Joint Actinide Shock Physics Experimental Research gas gun facility, the Atlas Pulsed-Power Facility, the Nonproliferation Test and Evaluation Complex, and the Device Assembly Facility. Based on current programmatic requirements, each of these facilities is expected to operate into the foreseeable future. Key support facilities for collecting, categorizing, handling, storing, and disposing of radioactive waste are located in Areas 3 and 5.

Currently, there are 542 NNSA/NSO buildings and trailers that total more than 3,308,153 gross square feet at the NTS and auxiliary sites listed in the Facility Information Management System (as of FY 2006 end of scal year accounting). Of this, 266 buildings and facilities totaling 1,390,674 square feet are over 30 years old. The NNSA/NSO mission critical and mission dependent, not critical facilities and infrastructure require on-going investment, i.e., Readiness in Technical Base and Facilities and Facilities and Infrastructure Recapitalization Program funding, to meet the NNSA Headquarters requirement of an annual maintenance investment of 2 percent replacement plant value and the goal to

reduce deferred maintenance of all mission critical facilities and infrastructure to less than 5 percent of replacement plant value by FY 2009.

To prioritize our facilities and infrastructure projects that will support mission requirements, the land area of the NTS has been categorized into mission critical, mission dependent, not critical and not mission dependent land use zones (see ***Figure 4-4***). The mission critical "corridor" is about one-third the size of the NTS and contains all of the current Stockpile Stewardship missions and can accommodate additional mission growth. By consolidating our mission critical missions into a smaller land area, we have reduced the size of the power, roads, and water systems necessary to support the site.

The key support areas within the Mission Critical Corridor are Mercury and the Control Point complex, about 30 miles north of Mercury. Both areas provide of ce space and emergency services. Mercury also provides housing, with food and lodging. Due to the growth in Homeland Security and Defense Applications and other programs, both areas have a critical need for new and/or upgraded facilities. Existing Mercury of ce space is currently near 100 percent occupancy, and the need for additional facilities is expected. To avoid converting dormitories or other buildings to of ces, and to meet this critical need, the NTS is developing a Critical Decision (CD)-0 package for the recon guration of Mercury.

The Nevada Test Site Future State

The *2005 NNSA Strategic Planning Guidance for Fiscal Years 2007-2011* de nes three goals:

- Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U.S. Nuclear Weapons Stockpile.
- Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.
- Provide the U.S. Navy with safe militarily effective nuclear propulsion plants, and ensure their continued safe and reliable operation.

The focus of the NTS for the next ten years is to provide, in a secure environment, unmatched support for high-risk, high-hazard, complex experimental and operational activities that are required to support the rst two goals. Defense Programs is expected to continue as the single largest supporter of the NTS infrastructure. Other missions at the NTS involve the U.S. Department of Homeland Security and U.S. Department of Defense.

Sustaining viable facilities and infrastructure at the NTS not only facilitates achieving these goals, but also provides the foundation for accomplishing current and future primary NTS missions. In that regard, the NTS of the future will achieve the additional NNSA Corporate goals of Facility and Infrastructure sustainment, recapitalization, and deferred maintenance reduction to include:

- Establish and fund an integrated maintenance program that meets NNSA Headquarters' requirement to maintain facilities and infrastructure at 2 to 4 percent of replacement plant value annually.
- Aggressively reduce deferred maintenance for all mission critical and mission dependent, not critical facilities and infrastructure to within industry standards by the end of FY 2009.

Emergency Operations Center U1a Exercise

In FY 2006, NNSA Headquarters shifted the Nuclear Test Readiness posture from 18 to 24 months. The $5 million cut from an expected Readiness and technical Base Facilities budget of $25 million necessitated the longer readiness posture while reducing the following scope:

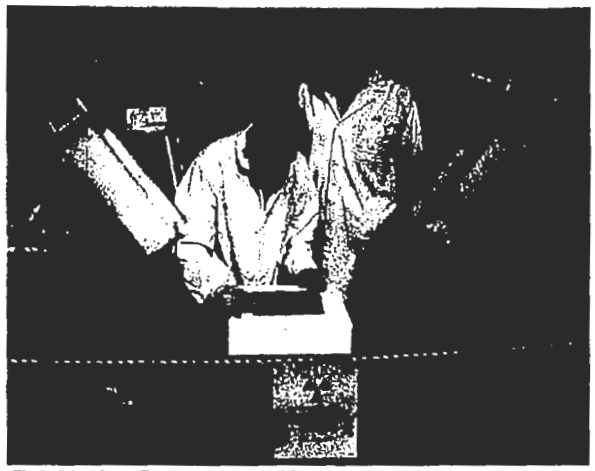
- Eliminated funding for reestablishing Captain/ Threx Experiment production capability.
- Delayed the nuclear explosive safety studies for device transfer insertion, emplacement, stemming, arming, and ring operations, which will now be done within the 24-month posture.
- Reduced equipment tracking of maintenance at the NTS.

In FY 2006, the U.S. Department of Homeland Security began construction associated with a new security mission for the NTS. The mission will fund the preparation and construction of four training venues including a sensor test track, an active interrogation facility, a paved test area, and a vehicle choke point. A test support building will be part of the construction. The structures will be used to train agents to detect nuclear materials being smuggled into this country using powerful sensing equipment as part of border protection. Details of the new mission are contained in the *Environmental Assessment Statement for Radiological Nuclear Countermeasures Test and Evaluation Complex*, issued August 2004. This effort underscores an expanding homeland security role for the NTS beyond its historical mission of developing and evaluating the nuclear weapons stockpile.

In addition to new missions and activities, the NTS will experience signi cant changes in facility square footage. The addition of square footage from construction of two new re stations (30,960 square feet) by FY 2008 and the Radiological/Nuclear Countermeasures Test and Evaluation Complex (11,500 square feet) by the end of FY 2007 totals 42,460 gross square feet. The total space reduction between FY 2002 and FY 2006 is 568,144 gross square feet. This does not include 200,000 gross square feet of building space which was transferred to Sandia National Laboratories in 2003. Demolition of facilities from FY 2007 through FY 2010 is projected to reduce the footprint by an additional 34,043 gross square feet.

Achieving the Vision

Facilities and Infrastructure Projects



Criticality Experiment Facility Activities

To ensure that the NTS will continue to meet current and future multi-program needs, facilities and infrastructure must remain cost effective and suf ciently exible to accept new experiments and/or missions over the next ten years. Focusing on experimental, support, and training activities in permanent facilities, within the Mission Critical Corridor on the NTS (see ***Figure 4-4***), provides NSTec with the opportunity to plan infrastructure improvements within the funding available in a holistic manner based on the programmatic needs, facility condition, and funding available.

All indications are that Readiness in Technical Base and Facilities funding will increase in FY 2009 and beyond. The addition of new missions will expand the indirect support base, but the loss of Facilities and Infrastructure Recapitalization Program funding in 2013 must be offset by additional funding and/ or site-generated revenue to ensure facilities and infrastructure are maintained at the industry standard of 2 to 4 percent of replacement plant value.

In FY 2005, the Secretary of Energy Advisory Board completed its report on the future of the Nuclear Weapons Complex. The Secretary of Energy Advisory Board had several recommendations for consolidation of the Nuclear Weapons Complex. These were echoed in the NNSA Administrator

Thomas D'Agostino's brie ng to Congress in April 2006. The NTS is one site that possesses all the necessary characteristics of remoteness, security, safety, size, and access to support such consolidation. The transfer of the Los Alamos Criticality Experiments Facility operations to the Device Assembly Facility is one indicator of this consolidation. The in ux of new Readiness and Technical Base Facilities and activities, such as the U.S. Department of Homeland Security and Counter Terrorism underscore the synergies that can be created at the NTS. The evolving requirements and the Nuclear Test Readiness mission, to carry out a possible underground test within 24 months, require a strategic vision and analysis of infrastructure and services to support planned and anticipated missions. The analysis of these needs is dependent on the Record of Decision in the *Complex 2030 Programmatic Environmental Impact Statement.*

Project Prioritization

In preparation to achieve the Complex 2030 vision, the Facilities and Infrastructure Recapitalization Program projects scheduled for FY 2007 through FY 2011 are being reprioritized to maximize support of missions in the Mission Critical Corridor. Deferred maintenance projects for mission critical facilities and infrastructure have the highest priority, followed by deferred maintenance projects on mission dependent, not critical facilities and infrastructure, then deferred maintenance projects on not mission dependent facilities and infrastructure. This will be followed by non-deferred maintenance projects on mission critical facilities and infrastructure and so on.

To aid project prioritization, NSO uses NSTec's Facility and Infrastructure Recapitalization Rating priority matrix as an added indicator of a project's importance. NSTec has also established a multilevel project prioritization process, which includes the Facilities and Infrastructure Recapitalization rating methodology as the nal step in prioritizing a project's ranking in the overall project list.

The Facilities and Infrastructure Recapitalization Program was projected to provide NNSA/NSO with over $220 million through FY 2013 to address non-Readiness and Technical Base Facilities infrastructure and facility issues. Between 2003 and 2007, various cuts have reduced this amount to $190 million. The majority of the effort will be devoted to recapitalization projects in the Mission Critical Corridor such as:

- Repairing/upgrading the NTS water systems
- Replacing surface laid power cable with permanent power distribution lines
- Replacing/upgrading the electrical transmission system, the ber-optic backbone, and the microwave system
- Replacing/repairing numerous roads
- Correcting building de ciencies

In addition to the reprioritization of projects, NSTec is prioritizing maintenance work for mission critical and mission dependent, not critical facilities and infrastructure ahead of non-mission dependent facilities and infrastructure.

Maintenance Management

NTS Road Maintenance Activities

NSTec has established the key components for a comprehensive approach to assist maintenance managers in effectively using resources to provide maintenance support for facility managers. Management provides a guide for maintenance activities over a ve-year period, sets maintenance priorities, and employs a method for prioritization to enable the maintenance program to progress in a proactive rather than a reactive mode. The results of

Facility and Infrastructure Assessments, prior-year performance, future requirements, and projections are combined by maintenance managers to form a site-wide vision for maintenance. Forging this common vision for facilities ensures a coordinated and cost-effective application of maintenance for the NTS. This shared vision is leading to a more balanced planning approach for both facilities and infrastructure.

The maintenance management approach is predicated on several efforts:

- Increasing planned and preventative maintenance as a percentage of all maintenance. Due to age of existing facilities and infrastructure on the NTS, a large percentage of maintenance is corrective (repair). Studies have shown that increasing preventative maintenance increases useful maintenance and reduces overall maintenance cost.

- NSTec is leading the way in the Nuclear Weapons Complex by developing a data warehouse for facilities software into a currently complex system of various software platforms, i.e., nancial data (Oracle), facility information data (Facility Information Management System), and maintenance data (MAXIMO) that currently do not share data. The goal is to be able to retrieve data from the various platforms and perform real-time, accurate updates and reports as work requests are generated and maintenance activities are completed.

- Knowledge of the preventative maintenance to be performed is required to perform increased preventative maintenance. NSTec has established a Condition Assessment Information System-based hierarchy of facility and infrastructure elements contained in MAXIMO, and is currently using Condition Assessment Survey inspectors to increase the population of preventative maintenance items at each elements' level.

- Once completed and validated, the results of this overall effort will have a signi cant and positive impact on maintenance management across the nuclear weapons complex.

Condition Assessments

One of the goals for NNSA/NSO is to provide economic and ef cient facilities and infrastructure to its customers. To achieve that goal, the current condition of facilities and infrastructure must be fully understood. To facilitate this understanding, NSTec developed a methodology to provide more accurate, complete assessments for all infrastructure and facilities. The rst full cycle of facility and infrastructure assessments conducted by certi ed International Code Council Inspectors was completed in 2006.

Overall, the new condition assessment process enables management to improve reinvestment decisions and to identify the current physical de ciencies of their assets. The results of the assessments are also used to develop the necessary maintenance, repair, or replacement projects to ensure the continuing viability of the facilities and infrastructure assessed. In addition, the data are used to determine if facilities or infrastructure elements should be excessed and disposed or decommissioned.

Excess Facilities Disposal Program

Demolition of Building 06-607

NNSA/NSO's goal to dispose of 50 percent of all non-contaminated real property determined to be excess to all NNSA mission requirements by FY 2006 has been exceeded. Since 2002 until end of FY 2006, 225 buildings and 568,021 gross

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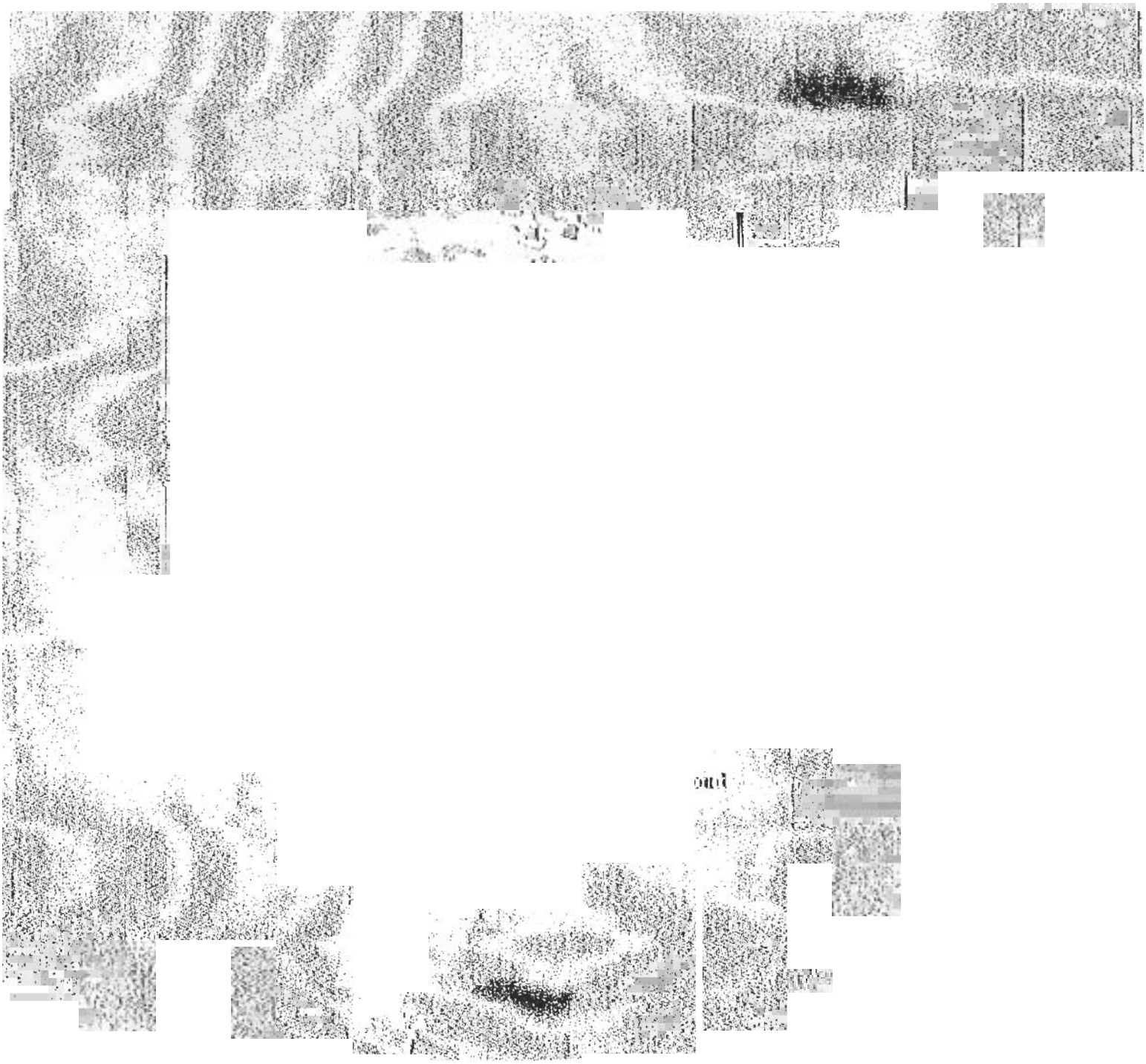

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1.0 Introduction

1.1 Overview

The U.S. Department of Energy, National Nuclear Security Administration Nevada Site Of ce (NNSA/NSO) directs the management and operation of the multiprogram Nevada Test Site (NTS) and its auxiliary sites across the nation. Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Sandia National Laboratories act as the principal implementers of the nuclear weapon programs executed for Defense Programs at the NTS and are also the critical organizations that sponsor that work. NNSA/NSO provides direction and oversight for National Security Technologies, LLC (NSTec), the Management and Operating contractor, who is accountable for the successful execution of the work scope outlined in this plan to manage the resources, facilities, and infrastructure that make up the sites in Nevada, California, New Mexico, and Washington, D.C. NSTec is also responsible for providing much of the programmatic infrastructure, personnel, testbed, and diagnostics needed to enable successful execution of the programmatic work conducted by the National Weapons Laboratories to aid the NNSA/NSO in realizing the vision de ned in the *NNSA Strategic Plan* (U.S. Department of Energy [DOE]/NA--0010).

The Nevada Test Site is a unique national asset for safely conducting high-hazard operations, testing, and training in support of NNSA, U.S. Department of Defense, and other federal agencies. The NTS is an integral part of the Stockpile Stewardship Program and provides the U.S. Government with the capability to return to underground nuclear testing should the President deem it necessary.

Sustaining viable facilities and infrastructure is critical in achieving this vision and provides the foundation for accomplishing NNSA/NSO's primary mission to support Stockpile Stewardship and related multi-program activities for the NNSA while maintaining the ability to resume underground nuclear testing. To ensure that NNSA/NSO will meet current and future multi-program needs, facilities and infrastructure at the NTS and its auxiliary sites must remain cost effective and suf ciently exible to accept new experiments and/or missions. The auxiliary sites do not require maintenance of utility infrastructure, i.e., roads, power, and water, as those services are provided by the community in which they reside. However, due to remoteness and size, the NTS must maintain its own utility infrastructure.

Chapter Overview

- Discusses foundation upon which the NNSA/NSO long-range facilities and infrastructure process is built
- Details assumptions about anticipated use, policies, regulations, and mandates that may affect operations over the next ten years
- Presents current situation
- Lists changes to this plan from last year

Maintaining the aging facilities and infrastructure of the NTS grows increasingly dif cult as maintenance expenses continue to increase. Although the preventive maintenance program at the NTS is making strides, limits on available funding have forced NSTec to defer end-of-life-cycle replacements of most facilities, including mission-critical facilities. Resolved to reverse this trend, NSTec implemented a Facility and Infrastructure Assessment Program in accordance with DOE Order 430.1B, *Real Property Asset Management*. Through this program, three distinctive data points are obtained: 1) current, detailed physical condition of facilities and infrastructure; 2) a basis for current or continued use; and 3) a de nitive documentation of work required to reestablish and maintain the facility in a good or better condition. This information, in turn, enables management to improve reinvestment decisions. This information, in addition to adequate funding, will enable NSTec to meet NNSA/NSO's commitment to reduce deferred maintenance of

all mission-critical facilities and infrastructure to less than 5 percent of replacement plant value by FY 2009.

As new missions are added to the NTS, planning to maximize ef cient utilization of existing facilities and infrastructure becomes essential. To meet this challenge, NSO Assistant Manager for Site Operations developed the strategic planning process and initiatives to restore, revitalize, and rebuild NTS facilities and infrastructure. The established planning process aids in developing and planning for ongoing future needs by linking projected experiments and known mission changes to facilities and infrastructure improvements. An assessment of the operational facilities and infrastructure, completed in FY 2003, provided a starting point for quantifying requirements and useful life to meet projected mission-critical needs. This assessment complements the NTS Infrastructure Management Plans. Infrastructure Management Plans completed in FY 2003 have been updated to the FY 2007 Infrastructure Master Plan which provides technical analyses of present and proposed needs and requirements to support Readiness in Technical Base and Facilities, Directed Stockpile Work, Campaigns, and other programs.

The *Ten-Year Site Plan* (*TYSP*) is the facility and infrastructure planning document supported by the Comprehensive Project List, Readiness in Technical Base and Facilities Site Execution Plan, Infrastructure Master Plan, assessments, and various other site planning documents. As such, the *TYSP* focuses management action on current and future facility and infrastructure needs at each site by Readiness in Technical Base and Facilities in support of Directed Stockpile Work, Campaigns, and other programmatic requirements. The *TYSP* also provides a strategic plan for making operational decisions and establishing future priorities to support the primary missions of the NNSA/NSO.

As the foundation for these plans, the *TYSP* includes a prioritized list of facilities and infrastructure projects for maintaining and improving the sites managed by NSTec (see Appendix A, Attachment A-4). The TYSP is also used by NNSA to support budget and resource decision-making, including obtaining support from Congress and the Of ce of Management and Budget Evaluation.

The *FY 2008 TYSP* supports the FY 2008-2012 Planning, Programming, Budgeting, and Evaluation cycle and covers the FY 2008-2017 time frame. It is based on information available from close of FY 2006 accounting. This document provides a resource-constrained plan with site-speci c funding pro les that are consistent with the Future-Years National Security Program. The plan also presents a longer-term vision for improving real property asset management and for improvements needed to meet future technical requirements. Near-term information presented in this plan is based on detailed data while less certain, out-year information is based on higher-level planning assumptions.

The NNSA budget categories that fund facilities and infrastructure at the multi-program sites are: Defense Programs' Readiness in Technical Base and Facilities operations, Line Item construction, the Facilities and Infrastructure Recapitalization Program, and indirect funds. The *TYSP* covers both direct- and indirect-funded NNSA facilities and infrastructure activities. The indirect-funded facilities and infrastructure activities include areas such as the maintenance of real and personal property, space management, and general purpose equipment.

The organization and information contained in the *FY 2008 TYSP* is based on *NNSA TYSP Guidance* (December 2006). In accordance with the guidance, Chapter 1 provides an overview of how the planning process has evolved for NTS's long-range facilities and infrastructure upon which the development of the *TYSP* is built.

Repairing the Backbone at Hill 200

- Suf cient potable water will be available to support operations.
- Suf cient non-potable water will be available for custodial, mining, drilling, and construction.
- The state of Nevada will certify the public water supply and distribution systems on the NTS.
- The land in undeveloped mountainous areas will remain fallow.
- The annual infrastructure assessments will identify and validate deferred maintenance requirements and excess facility candidates.
- The condition of operational facilities will be assessed on a three-year cycle. Facilities in operational standby status will be assessed on a ve-year cycle. Infrastructure will be assessed on a ve-year cycle.
- Disposition of facilities will be scheduled once it has been determined that the facility will no longer be used to support the mission. Buildings typically exceed their design life and run to fail prior to disposition.
- Excess facility disposition data have been included for FY 2002 through FY 2009.

1.2.2 Programmatic Assumptions

- NNSA Defense Programs will continue as landlord of the NTS. No actions will be taken and no projects will be planned or executed that preclude or impede the continued use of the site by the Stockpile Stewardship Program, up to and including resuming underground nuclear weapons testing. The NNSA will maintain and enhance facilities and infrastructure to meet the needs of its programs. The NTS will play a large role in the Secretary of Energy Advisory Board's responsive infrastructure vision for FY 2030.
- NNSA/NSO has government, laboratory, and contractor personnel located at various sites. While a small group of NSO personnel provide NNSA oversight, the greater part of the laboratory personnel are managed and reported through each laboratory's personnel function. The majority of personnel at NNSA/NSO's sites are NSTec personnel. NSTec provides technical, scienti c, project management, and labor support via associated administrative and management personnel.

  Hiring and retaining the unique blend of personnel required to support the various laboratories' technical and construction requirements and manage the facilities and infrastructure systems across an approximate 1,375 square-mile site are challenging and dif cult tasks. Compounding these tasks are the recent world events that have increased the need for Counter Terrorism Operations Support requirements at the NTS. The abrupt in ux of requirements and personnel in support of this program has increased the complexity of NSTec's workforce pro le and increased the need for facilities to house personnel. Projects like the Criticality Experiments Facility and the Radiological/Nuclear Counter-Measures Test Evaluation Complex are expected to increase personnel growth by 1 percent per year for a total of 10 percent.

  Voluntary turnover and retirements are both strongly in uenced by factors outside NSTec, such as the job market, the economy, and the stock market's performance as it relates to 401(k) accounts. Over the next ten years, the aging workforce at NSTec will be replaced as many experienced personnel retire and as the workforce pro le changes to meet the needs of the programs. This too will create a signi cant change from the current workforce pro le.
- The Stockpile Stewardship Program will experience a down turn in the near term from its present level with some form of ongoing

Lower Angel Peak Communication Site

Chapter 2 presents an overview of each site that addresses location, capabilities, requirements, and concerns. The primary focus of this chapter is on the NTS. Supporting graphs, maps, and photographs are also included to further illustrate the points presented in this chapter.

Chapter 3 de nes the site's mission and related programs and workloads for both NNSA and non-NNSA programs. The emphasis is on current and future changes to program missions that could impact workload and, consequently, the associated facility and/or infrastructure activities or requirements. This chapter also discusses mission-critical facilities.

Chapter 4 portrays NSTec's plans to operate and maintain a safe, secure, compliant, and appropriately-sized complex of facilities and infrastructure to meet current and future NNSA mission, program, and workload requirements within scal constraints. This chapter also provides an overview of each site's facilities and infrastructure, an assessment of the condition of the facilities and infrastructure and their utilization, identi cation of excess facilities, and plans for improvement. This chapter discusses deferred maintenance — where it was, where it is, and what our plans are to reduce it to an acceptable level. This chapter also summarizes Environment, Safety and Health, and Safeguards and Security requirements.

Finally, Chapter 5 provides a discussion of the forecast for facilities and infrastructure projects and activities, and the associated cost pro le for the ten-year planning horizon. This chapter also includes an overview of the prioritization process for facilities and infrastructure activities.

1.2 Assumptions

Decisions made by NNSA/NSO are based on a number of assumptions regarding site operations, test programs, customers, and facility needs. These assumptions anticipate site use, policies, regulations, and agency mandates that may affect operation over the next ten years.

The following key planning and programmatic assumptions guide NNSA/NSO planning activities and were used to develop this *TYSP*.

Unicorn Centaur Crane

1.2.1 Planning Assumptions

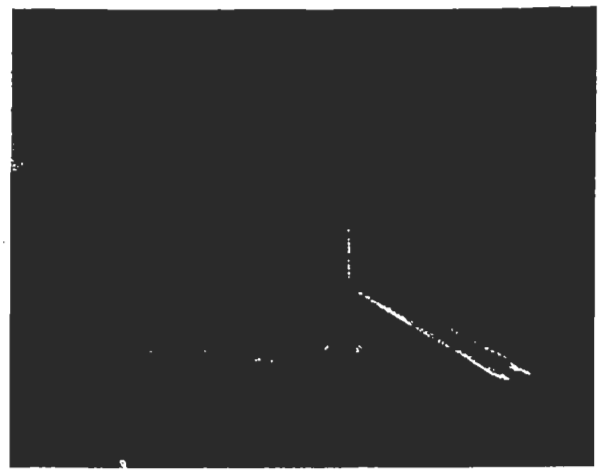
- Institutional control of the NTS will continue inde nitely. Federal control of the site is considered an obligation of the federal government and will be maintained. Offsite subsurface restrictions (institutional control) will be maintained to prevent access to radioactive contamination or contaminated groundwater.
- Federal lands surrounding the NTS will remain under federal control, including the Air Force's Nevada Test and Training Range, previously known as the Nellis Air Force Range.
- NNSA/NSO will continue to manage the air space over the NTS through a Memorandum of Agreement with the U.S. Air Force.
- The capability to restart underground nuclear testing will be maintained at 24 months.
- Facilities, infrastructure, and equipment will be maintained to the level necessary to support the resumption of underground nuclear testing on the NTS, if directed by the President.
- Mission-critical facilities and infrastructure will be maintained in good or better condition.
- Proposed activities at the NTS will undergo an appropriate level of analysis and documentation pursuant to *National Environmental Policy Act* and will comply with all applicable laws and regulations for protection of the environment.
- Suf cient electrical power will be available.

subcritical and/or other special nuclear material experimentation to support Stockpile Stewardship Project plans and to maintain the technical skills of the personnel responsible for design, testing, and diagnostics.

- Infrastructure maintenance and upgrades on the Defense Programs-related portions of the NTS will continue.
- Public proximity to some National Weapons Laboratories and defense facilities could result in the transfer of some high-hazard experiments and activities (such as Criticality Experiments Facility) to the NTS.
- The NTS will maintain the capability to conduct underground nuclear explosive operations.
- The U.S. Department of Defense and other agencies will continue to use the NTS for national programs that require the unique geology, remoteness, technical capabilities, and security that the NTS provides.
- Site boundaries are expected to change as a result of land withdrawal by the Yucca Mountain Project. This will be delayed until the Yucca Mountain Project receives authorization to begin construction.
- The operating footprint will experience a small net increase based on planned facility disposition and new facility construction to support an expanding work scope.
- Security assumptions in terms of the level of protection of the site include:
  - NTS will meet the increased design basis threat guidance.
  - NTS will continue to increase/enhance the security posture during times of increased threat levels.
  - NSO will update the Site Safeguards and Security Plan to capture the current security program requirements as needed.

1.2.3 Budget Assumptions

The projects presented in the TYSP will be performed within the budget constraints of the Future-Years National Security Program (fund). Workload requirements are expected to increase, and so are corresponding workforce levels.



Testing Site

1.3 Current Situation

The NTS facilities and infrastructure support mission-critical activities related to Readiness in Technical Base and Facilities, Directed Stockpile Work, and Science Campaigns, as well as other program activities for tenant facilities. While many mission-critical facilities have been well maintained, some face serious system life-cycle issues. Examples include water tanks at the Device Assembly Facility and Joint Actinide Shock Physics Experimental Research Facility.

Of great concern are many of the mission-critical and mission-dependent buildings and infrastructure that have been cycled in and out of operational status and have reached or exceeded the end of their designed life expectancy. The age of these buildings and infrastructure has led to deteriorating conditions. Many of these buildings and infrastructure provide support to mission-critical buildings, including the C-1 building at the North Las Vegas Facility that houses computer operations. The infrastructure necessary for each building to operate effectively has been identi ed and linked to the building on the NSTec database. To continue cost-effective support of NTS missions, these buildings and infrastructure now require major rehabilitation and upgrade.

The infrastructure requirements at the NTS are signi cantly in uenced by both the isolated location of mission-critical facilities and continued support to currently underutilized areas of the site. The decision to operate in the remote areas of the site signi cantly expands the infrastructure system and

maintenance requirements necessary to maintain safe and reliable service. However, the Project Review Committee has established stricter zoning requirements on the NTS, which will limit mission-critical assets, to include base services to a corridor for more ef cient utilization of mission-critical assets *(see **Figure 4-4**)*. Non-defense programs NTS users will have to pay separately for upgrades and maintenance of utilities and roads or other base services they require outside of the corridor.

Sewer assessments completed in FY 2003 noted several system defects and deviations from as-built drawings. Information was entered into the Geographic Information System.

Currently, Facilities and Infrastructure Recapitalization Program funds are being structured to maximize the buy down of deferred maintenance from the FY 2003 baseline, excluding Readiness and Technical Base Facilities. Funding for maintaining facilities and infrastructure elements is being accomplished through both the use of operating expense funds and indirect funding.

Permanent federal government facilities and infrastructure are generally designed for a life expectancy of 50 years for U.S. Department of Energy facilities and 67 years for U.S. Department of Defense facilities. However, maintaining any facility at an economically functional level requires regular infusion of recapitalization funds, especially if the facilities and infrastructure are kept in operation beyond their design life. Such is the case at the NTS.

The rate of building deterioration at the NTS is exacerbated by the large number of buildings that have been in operation well beyond their design life. As shown in ***Figure 1-1***, 2,161,634 square feet (70 percent) of buildings (shown in the Facility Information Management System as a 501 asset type) are over 30 years old; 30 percent of buildings are less than 20 years old. The mean age of NTS buildings is 30 years.

In addition to the buildings on the NTS, NNSA/NSO owns or leases buildings at the North Las Vegas Facility, the Remote Sensing Laboratory-Nellis, and the Remote Sensing Laboratory-Andrews.

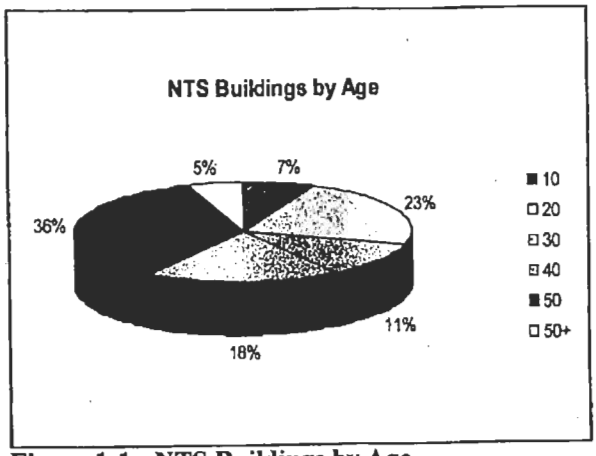


Figure 1-1: NTS Buildings by Age

Figure 1-2 compares these offsite facilities (buildings shown in the Facility Information Management System as a 501 asset type) by age. Forty-six percent of these facilities are over 30 years old and 54 percent are less than 30 years old. NNSA/NSO leases facilities for NSTec at the Las Vegas Cheyenne Facility, and for Livermore Operations, Los Alamos Operations, and a hangar for Andrews Operations. The respective owners of these leased facilities are responsible for all facilities and infrastructure repairs. Buildings leased at the Special Technologies Laboratory are maintained by NSTec.

The primary focus of this *TYSP* is on the maintenance and recapitalization of mission-critical facilities and infrastructure at the NTS as well as the auxiliary sites.

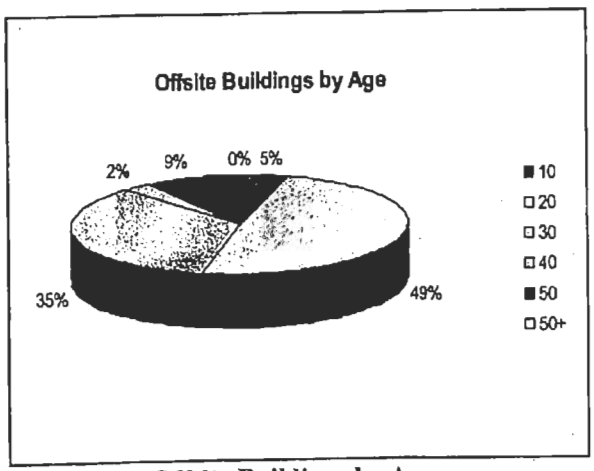


Figure 1-2: Offsite Buildings by Age

Maintaining the infrastructure of the NTS is a challenging issue. A recent assessment of the NTS infrastructure included studies of the Power Distribution and Transmission System, Water System, Roads System, and Communication System. Based on data from this study, the replacement plant value of all NTS infrastructure re ected in the Facility Information Management System was estimated at a total of $2.4 billion. ***Table 1-1*** compares current NTS deferred maintenance to replacement plant value and shows the percent of deferred maintenance and each system. Currently, over two thirds of scheduled deferred maintenance activities are related to infrastructure (i.e., utilities, roads, communication). The majority of deferred maintenance reduction over the next ten years will continue to focus on infrastructure improvements that support mission-critical facilities.

Table 1-1: Percent Deferred Maintenance of Replacement Plant Value by System

System	Number of Systems	RPV	DM	FCI
Water	67	189,266,963	14,408,438	7.6%
Road	112	339,149,776	60,662,999	17.9%
Power	246	384,382,592	31,187,738	8.1%
Communication	144	173,539,612	23,293,360	13.4%
Airfield	7	37,591,354	2,090,571	5.6%

Corrective actions are underway to alleviate signi cant problems, concerns, and challenges related to mission-critical facilities and infrastructure. Data from facilities and infrastructure assessments are being recorded, analyzed, and re ected as potential projects. The assessment results and potential project lists are returned to the Facility Manager/Facility Owner for their review. Facility Managers/Facility Owners independently rank the projects according to mission risk level and probability of having an institutional impact (failure). These two elements are combined to develop an overall priority and, ultimately, a priority ranking of all the projects. Based on the project priority ranking, a preliminary project criteria form is created to proceed to the Infrastructure Planning Process. This process takes these projects, as well as other projects generated from Programs/Operations, and establishes an overall needs and requirements priority for projects by using the Facilities and Infrastructure Recapitalization Rating required by NNSA/NSO.

Through the continued use of the Facility and Infrastructure Assessment Program, management can focus on an improved investment strategy for the critical operations in need of repair, upgrade, or replacement. This focus is key to ensuring that facilities and infrastructure are operating at an optimum level and that they continue to meet user's needs.

1.4 Changes from the Prior Year *TYSP*

Changes from last year's *TYSP* include minor modi cations to the document's format and content, as speci ed in *NNSA TYSP Guidance* (December 2006). Project changes have occurred since last year due to redirection from NNSA through the Integrated Construction Program Plan.

- General
  - Comments received about the *FY 2007 TYSP* were reviewed and portions of the *FY 2008 TYSP* changed to more closely mirror *NNSA TYSP Guidance* requirements.
  - Point of contact was added.
  - Clari cations in the *NNSA TYSP Guidance* regarding prioritizing Facilities and Infrastructure Recapitalization Program projects to meet deferred maintenance goals and support missions-critical facilities and infrastructure requirements has caused a signi cant change in prioritization of Facilities and Infrastructure Recapitalization Program projects. This will be reevaluated each year to ensure that NNSA's goals are met.
- Chapter 2
  - Tables from Appendix B were included in this chapter.
- Chapter 3
  - Section 3.3, Production Readiness/Plant Capacity, was deleted.
  - Figure 3.1 was changed to re ect signi cant organizational changes

Site Description

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Chapter Overview

buildings totaling 25,533 gross square feet have been identi ed as potential candidates for demolition in FY 2010.

In addition to the constant need to recapitalize or replace severely aging buildings and infrastructure, additional requirements to move the NTS towards Complex 2030 mission requirements will require close coordination between the National Weapons Laboratories and NNSA/NSO. Currently identi ed requirements in this *TYSP* have been included in Appendix A, Attachment A-2 Cost Projection Spreadsheet for consideration by the Integrated Construction Program Plan this fall.

Maintenance Activities at Valley Substation Facility

2.1.1.1 NTS Power Distribution and Transmission System

The NTS owns, operates, and maintains the majority of the 138-kV transmission loop on the site. There are currently two power sources for this 138-kV transmission system. One source, the Nevada Power Company, connects to the NTS 138-kV transmission loop at the Mercury Switching Center. The Nevada Power Company owns the portion of the 138-kV loop running from the Mercury Switching Center to the Jackass Flats Substation where the second power source, Valley Electric Association, connects to the NTS 138-kV transmission loop.

The entire 138-kV transmission system loop consists of eight transmission substations and one switching center connected by approximately 100 miles of 138-kV transmission line. ***Figure 2-12*** (located at end of chapter), shows the existing site-wide power system and identi es the portions of the system that are mission dependent not critical. The transmission line and substation facilities are between 30 and 40 years old. The switching center and more than one-half of the major 138-kV substations have been upgraded over the past ve years with modern equipment, including a supervisory control and data acquisition system. The remaining major substations, however, have critical and vital components such as transformers, switches, breakers, and relays that are more likely to fail. To compound the problems, manufacturers no longer support much of the equipment or stock parts. Mercury Distribution, Valley, and Jackass Flats Substations have been modernized, and Castle Rock Substation is scheduled for modernization through use of Facilities and Infrastructure Recapitalization Project funds in FY 2007.

The 138-kV transmission lines from the Nevada Power Company and Valley Electric Association also feed loads not associated with the NTS. The transmission line from Nevada Power Company's Northwest Substation serve additional loads such as the State Correctional Facilities and Indian Springs. Valley Electric Association's line serves additional loads including Pahrump, Lathrop Wells, Beatty, and others. Although these loads are not associated with the NTS, they have a signi cant impact on the maximum power capacity available to the site. These outside utility loads have been increasing at a high rate over the past decade and, as a result, the spare capacity of the 138-kV transmission system available for NTS loads has decreased. Additional loads at the Yucca Mountain Project, which is scheduled to be serviced by Valley Electric Association's 138-kV system, coupled with the growth of Valley Electric Association's loads may require signi cant upgrades to the current 138-kV system capacity within the next four or ve years.

Currently, the entire onsite transmission system capacity is limited to 36 megawatts due to voltage impacts. Although the onsite and offsite transmission systems can support approximately 72 megawatts (based on the thermal limits of the smallest conductor), outside utilities can only furnish 36 megawatts because of system voltage constraints. NSTec planning studies show the controlling factor determining this minimum capacity is the voltage

level at the NTS Valley Substation. Voltage levels must be maintained above 95 percent of nominal (Industrial Standards in accordance with American National Standards Institute/Institute of Electrical and Electronics Engineers Standards 141 and American National Standards Institute C 84.1) on the entire 138-kV system at all times and at all substations to allow adequate secondary voltage levels. NTS system loads are anticipated to exceed 37 megawatts, the NTS would need to negotiate with outside utilities for increased capacity. Current plans for the Yucca Mountain Project to obtain power directly from Valley Electric Association's 138-kV system to support their projected new loads may reduce the available power to the NTS to less than 36 megawatts if no further improvements to the outside 138-kV system are made.

2.1.1.2 Water

The NTS water system consists of 8 water systems; 3 of the water systems are permitted by the state of Nevada, 2 are Non-Transient Non-Community Public Water Systems and 1 is a Transient Non-Community Public Water System. Five of the water systems are non-permit required systems. The NTS water system includes 9 operating wells, 25 operating water storage tanks, 10 booster pump stations and approximately 140 miles of distribution pipeline. ***Figure 2-13*** (located at end of chapter) shows the existing site-wide water system and identifies those portions deemed mission dependent, not critical.

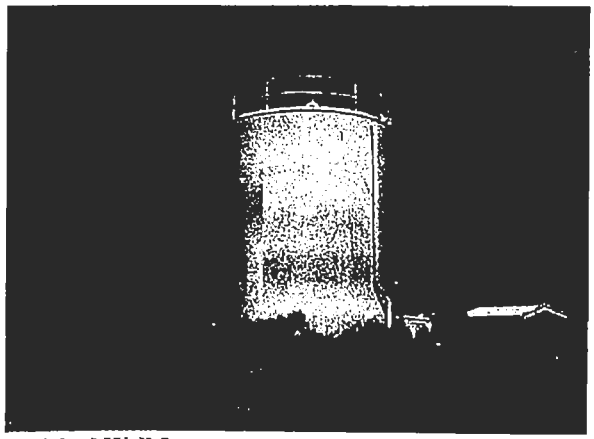
The NTS water systems require immediate attention to address regulatory, deterioration, and reconfiguration requirements. Maintaining these systems is critical to the mission-critical facilities and execution of the Defense Program missions at the NTS. The systems provide essential health, sanitation, testing, construction, fire protection, and wildlife preservation services that cannot otherwise be efficiently obtained on the sprawling expanse of the NTS.

The public water systems are permitted by the state of Nevada, the regulatory authority for the *Safe Drinking Water Act*. A recently approved *Safe Drinking Water Act* ruling lowers the allowable level of arsenic in drinking water to 10 parts per billion maximum for public water systems. Two wells serving the public water systems in Area 25 at the NTS currently exceed this limit. At the NTS, a graded approach to upgrade the systems to current public water system standards is under development. Either a point-of-use treatment application or a reverse osmosis system was used to remove excess arsenic and maintain compliance to the *Safe Drinking Water Act* arsenic standard that became effective in January 2006.

The NTS water systems are in the final stages of their life expectancy. Assessments of the water systems conducted from FY 2002 through FY 2004 show a status of less than adequate to poor condition for wells, tanks, booster stations, and pipelines, i.e., all elements of the systems. Maintenance has only been able to keep the systems functional through regular breakdown repair, bypass operations, and labor-intensive actions.

An added complication in rehabilitating the NTS water systems is the reconfiguration required to meet current programmatic needs. The systems currently support a diverse mix of fixed Defense Program operations with fixed populations supporting research and development and testing activities. In addition to the fixed operations and populations, additional exercise and training activities introduce large transient populations and, therefore, require reconfiguration actions to adequately address health, safety, and support issues.

The NTS water systems require recapitalization efforts to meet long-term deterioration issues. Long-term solutions in the form of new wells, storage tanks, and potential treatment facilities are under consideration.



Finished Well 8

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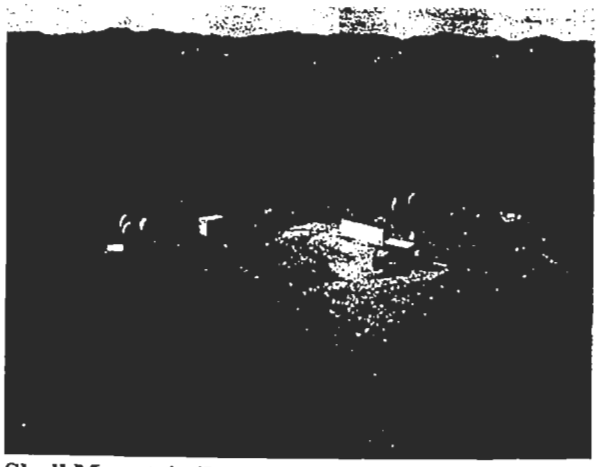
Localized telecommunications/information technology infrastructure requirements on specialized project sites (such as U1a, the Nonproliferation Test and Evaluation Complex, and Counter Terrorism Operations Support) continue to grow in capability and complexity in order to meet National Weapons Laboratory and other federal agency mission requirements. However, the telecommunications/information technology backbone infrastructure at the NTS lags behind evolving requirements. Scientific and operational information is being generated and gathered using the latest technologies at each site. The NTS backbone infrastructure uses dated (≈10 years) technology. The physical media that makes up the backbone is beginning to show signs of degredation in a few locations due to age and the harsh desert environments.

These deficiencies in the backbone infrastructure represent a potential impediment to exploiting the full potential of the NTS. The Stockpile Stewardship, Homeland Security and Defense Applications, and Counter Terrorism Operations Support Programs are most constrained by current backbone infrastructure limitations.



Skull Mountain Repeater

2.1.1.5 Historic Facilities

Human habitation of the NTS area began at least as early as 10,000 years ago. Various indigenous cultures occupied the region in prehistoric times. The survey of less than 5 percent of the NTS area has located more than 2,000 archaeological sites, which contain the only information available concerning the prehistoric inhabitants. The site types identified include rock quarries, tool-manufacturing areas, plant-processing locations, hunting locales, rock art, temporary camps, and permanent villages. While major springs provided perennial water, the prehistoric people developed strategies to take advantage of intermittent fresh water sources in this arid region. In the nineteenth century, at the time of initial contact, the area was occupied by Paiute and Shoshone Indians. Prior to 1940, the historic occupation consisted of ranchers, miners, and Native Americans. Several natural springs were able to sustain livestock, ranchers, and miners. Stone cabins, corrals, and fencing stand today as testaments to these early settlers. The mining activities included two large mines: one at Wahmonie, the other at Climax Mine. Prospector claim markers are found in these and other parts of the NTS.

Native Americans coexisted with the settlers and miners, utilizing the natural resources of the region and, in some cases, working for the new arrivals. They also maintained a connection with the land, especially areas important to them for religious and historical reasons. These locations continue to be significant to the Paiute and Shoshone Indians.

The *National Historic Preservation Act* of 1966, the Archeological Resources Protection Act of 1979, and the regulations related to these laws direct federal agencies to identify, inventory, and manage the cultural resources under their stewardship. The *National Historic Preservation Act* also requires consultation with interested parties, especially Native Americans, in regard to historic preservation activities and proposed decisions affecting cultural resources. Cultural resources surveys are conducted at the NTS to meet the requirements of the *National Historic Preservation Act* and the *Archeological Resources Protection Act.* The surveys are completed prior to proposed projects that may disturb or otherwise alter the environment. In cases when project activities will adversely affect properties eligible for inclusion in the National Register of Historic Places, actions to mitigate the effects are required by law.

The U.S. Department of Energy Order 450.1, "*Environmental Protection Program*," requires cultural resources compliance and monitoring for activities and programs conducted at the NTS. The Cultural Resources Management Program

has been established and is implemented by the Desert Research Institute on the Nevada Test Site to meet this requirement. The Cultural Resources Management Program is designed to:

- Ensure compliance with all regulations pertaining to cultural resources on the NTS.
- Inventory and manage cultural resources on the NTS.
- Provide information that can be used to evaluate the potential impacts of proposed projects and programs to cultural resources on the NTS.

The geographical scope of a project is determined before surveys, inventories, or historical evaluations proceed.

The NTS Archaeological Collection contains over 400,000 artifacts and is curated in accordance with *Title 36 Code of Federal Regulations Part 79*. For the past decade these materials and the associated records have been housed in a remote facility. In FY 2003, the artifacts were moved into the newly constructed Frank H. Rogers Science and Technology Building in Las Vegas, that provides additional security and environmental controls for the collection. Archaeologists, American Indians, NNSA/NSO personnel, and facilities staff worked on the move from the remote facility to the new building. The boxes of artifacts were logged in and out of the facilities and the move was accomplished without incident. Following the relocation of the artifacts, a draft of new curation procedures was completed and distributed for review.

In 2005, six surveys were conducted: Fire Station No. 2 Project, Fire Break for a Fiber Optic Line Project, the Truck Parking Area, the Revegetation of Two Study Plots, the Area 22 Borrow Pit and Access Road, and the Area 6 Borrow Pit Expansion. The only cultural resources identified within these project areas were two isolated artifacts found by the survey of the revegetation study plots. The Area 6 Borrow Pit Expansion area was adjacent to two fenced locations that contain wooden benches that had been used for viewing atmospheric nuclear tests and determined eligible to the National Register of Historic Places. As a result, it was recommended that the project area be modified to avoid any potential impact to the bench locations.

One cultural resources inventory was conducted for the sets of benches from which atmospheric nuclear tests were observed at the NTS between 1951 and 1962. Six sets of benches were examined. Three sets had previously been determined eligible to the National Register of Historic Places; two are part of the Frenchman Flat Historic District and the other one is at News Nob. These benches were recorded in more detail than during previous efforts. Three other sets of benches were also documented. One set is on the west side of Frenchman Flat and two sets are at the southwest end of Yucca Flat. All three of these sets are now eligible to the National Register of Historic Places. The benches are constructed of wood and consist of a seat, support posts, and bracing. They are set up in parallel rows.

One historical evaluation was conducted in 2005 for the buildings within the Pluto Control Facility in Area 26. The Pluto Control Facility was one of three facilities in the Pluto Complex. The facility was in operation from 1958 to 1964 to develop and test nuclear reactors for ramjets to be used in long-range, low-altitude missiles for the U.S. Department of Defense. The building numbers and names include: 2101, the Control Building; 2102, the Assembly and Shop Building; 2103, the Critical Assembly Building (also known as the Hot Critical Experiment Building or the Hot Box); 2106, an open interior warehouse; and 2107, the Delta Reduction Building. A total of 173.9 acres was examined during cultural resources surveys, inventories, and historical evaluations. No prehistoric or historic archaeological sites were determined to be eligible for nomination to the National Register of Historic Places. Four nuclear testing-related structures were documented and their determinations are pending.

Historic Viewing Location for Atmospheric Test

U.S. 6

U.S. 35
Boulder Highway

Number of Buildings	Number of Trailers	Gross Sq. Foot	Acres	Ownership	Employee Population

2.1.2.5 Livermore Operations

Livermore Operations

Livermore Operations provides resources for experiments in high-energy density physics and hydrodynamics in support of the Stockpile Stewardship Program. Livermore Operations supports the NTS and the National Weapons Laboratories through the development and fabrication of key diagnostics. Livermore Operations, located in Livermore, California, occupies a 35,687-square-foot, leased facility, with utilities provided by local utility companies. Facility maintenance is provided by the facility owner who maintains the facilities in good or better condition.

Table 2-6 provides an overview of the buildings at Livermore Operations. After analyzing the mission requirements, there are no requirements for additional building space or land acquisition in this planning period.

Table 2-6: Livermore Operations Overview

Number of Buildings	Number of Trailers	Gross Sq. Foot	Acres	Ownership	Employee Population
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	0	35,687	N/A	Lease	[illegible]

2.1.2.6 Los Alamos Operations

Los Alamos Operations provides resources for material dynamic and hydrodynamic experimental programs in support of the Stockpile Stewardship Program. Los Alamos Operations also supports the NTS by developing the diagnostic designs proposed by physicists from the Los Alamos National Laboratory. This support ranges from concept development to field demonstrations to data interpretation. Los Alamos Operations is located atop the Pajarito Plateau in north-central New Mexico near Los Alamos. The Los Alamos Operations facility is a leased facility, with utilities

Los Alamos Operations

provided by local utility companies. Facility maintenance is provided by the facility owner who maintains the facilities in good or better condition.

Los Alamos Operations also has a satellite location supporting Sandia National Laboratories in Albuquerque, New Mexico at Sandia National Laboratories' Technical Area IV location on Kirtland Air Force Base. Approximately 16 NSTec permanent residents in Albuquerque and 6-10 additional visiting experimentalists are currently located in two double-wide mobile offices owned by NSTec (24' x 60' each, with 2,490 sq ft of usable office and laboratory space).

Table 2-7 provides an overview of the buildings at the Los Alamos Operations. This does not reflect satellite location facilities and personnel. After analyzing the mission requirements, there are no requirements for additional land acquisition in this planning period.

Table 2-7: Los Alamos Operations Overview

Number of Buildings	Number of Trailers	Gross Sq. Foot	Acres	Ownership	Employee Population
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	0	50,6[illegible]	[illegible]	Lease	84

2.1.2.7 Special Technologies Laboratory

The Special Technologies Laboratory provides specialized expertise in radiation detection and spectroscopy, applied physics, software and firmware, and compact low-power electronics. The Special Technologies Laboratory is located in Santa Barbara, California, near the campus of the University of California at Santa Barbara. Utilities are provided by local utility companies. Facility maintenance is provided by the facility owner.

Table 2-3 provides an overvi
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analyzing the mission
Technologies Laborat
7,000–10,000 square f
current mission in this
buildings and three trailers are curre
that leased land. NSTec is responsib
maintenance.

Table 2-3: Special Technologies L
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Nuclear

Homeland

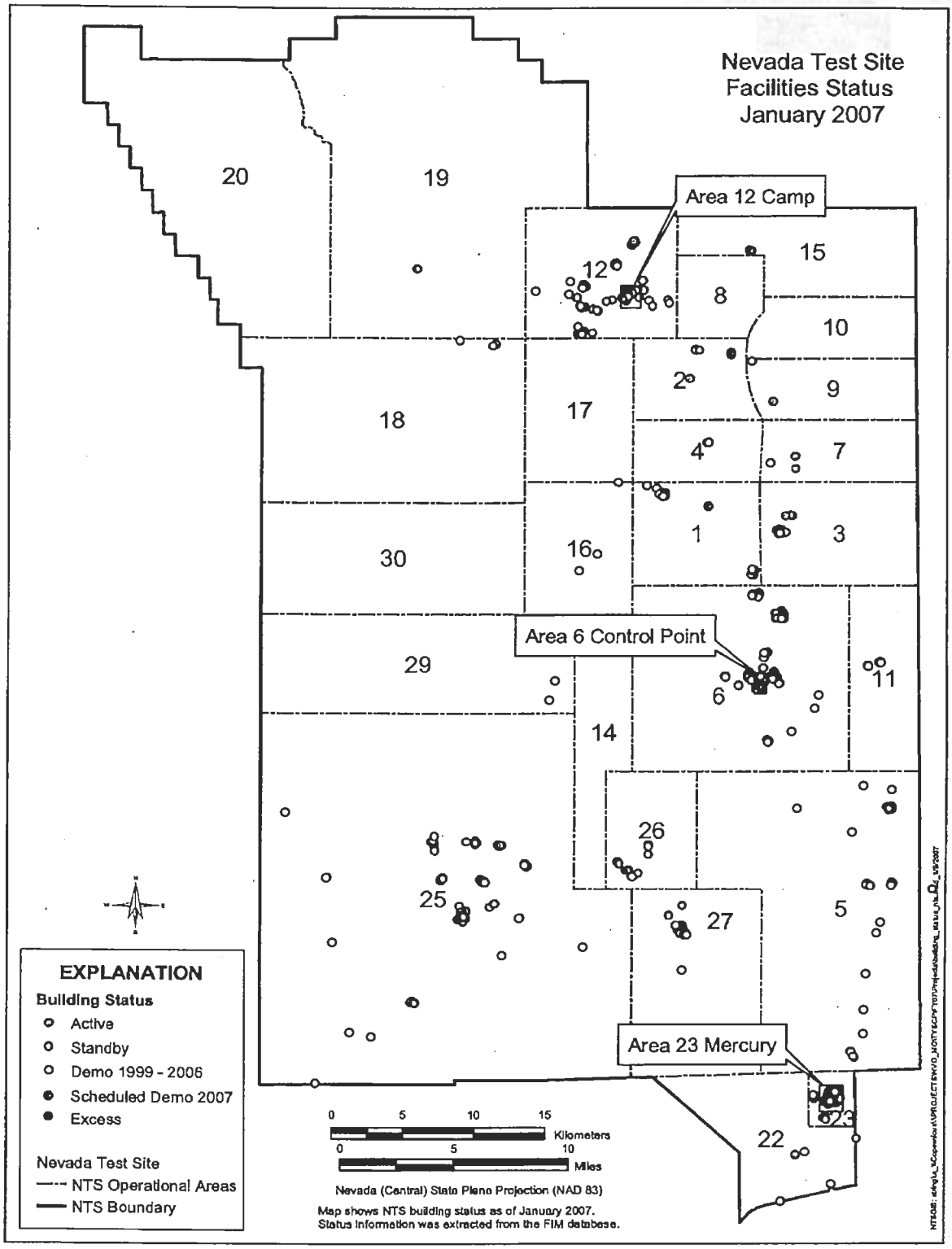

Figure 2-3: Nevada Test Site Building Status Overview

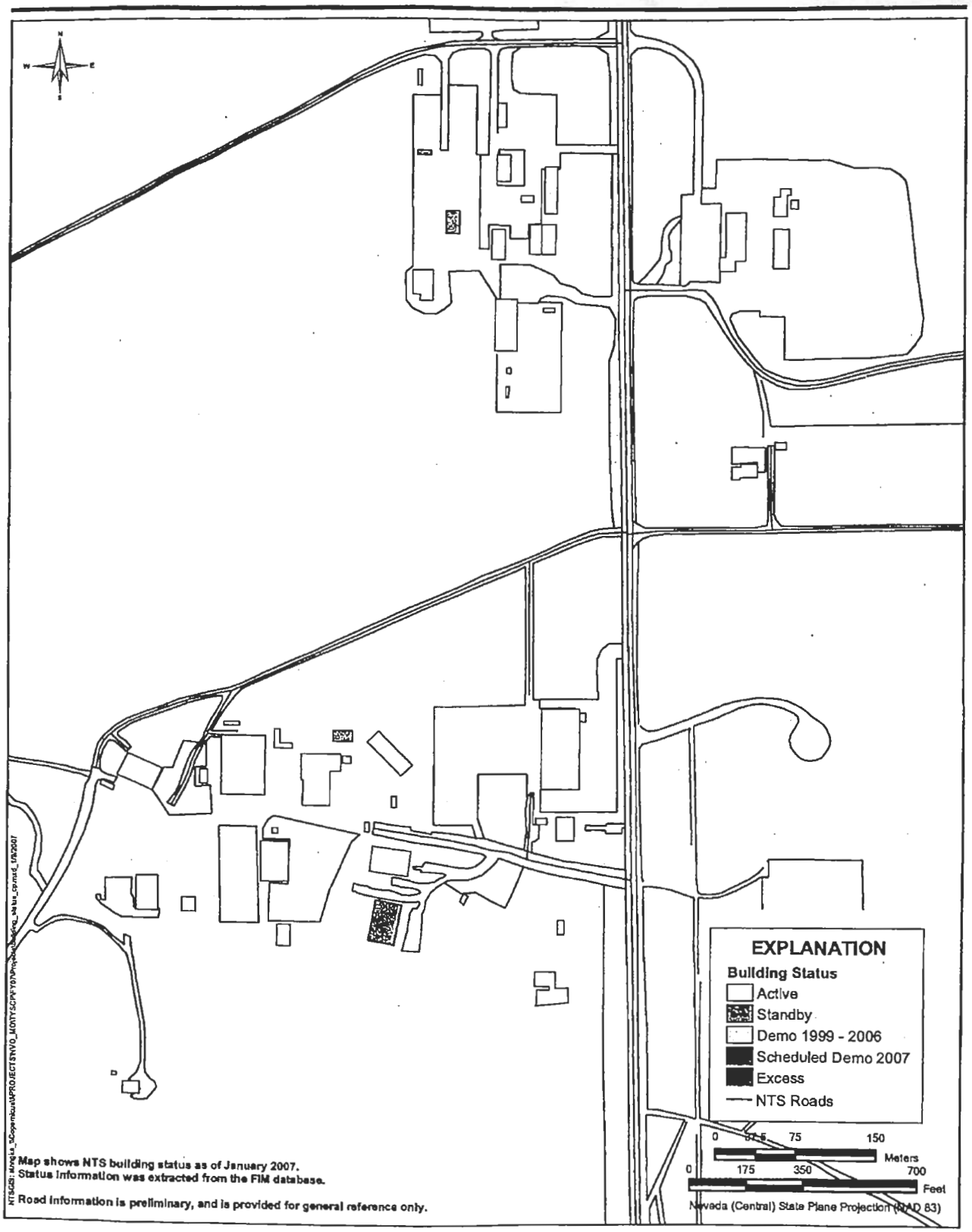

Figure 2-5: Area 6 (Control Point) Building Status

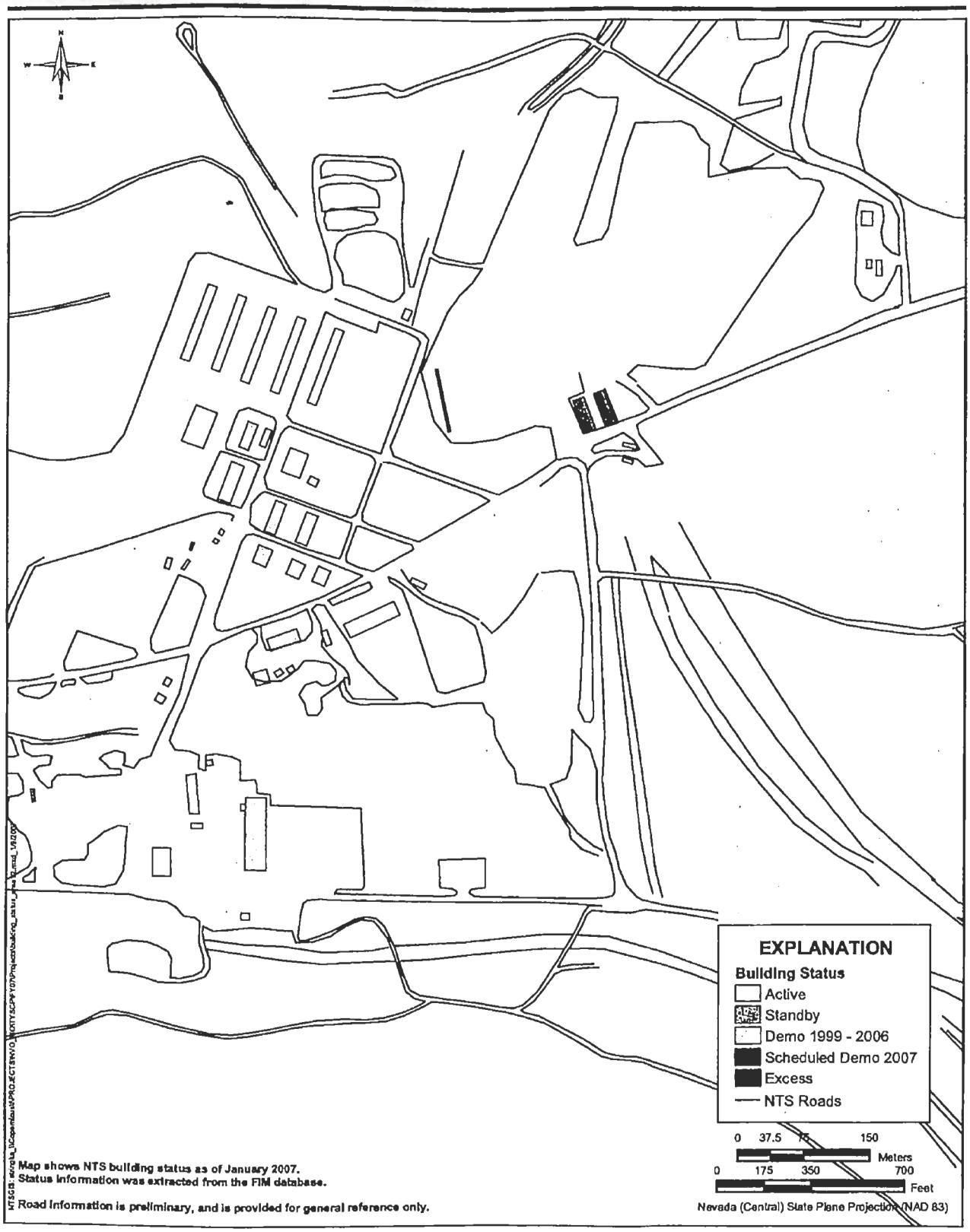

Figure 2-6: Area 12 Camp Building Status

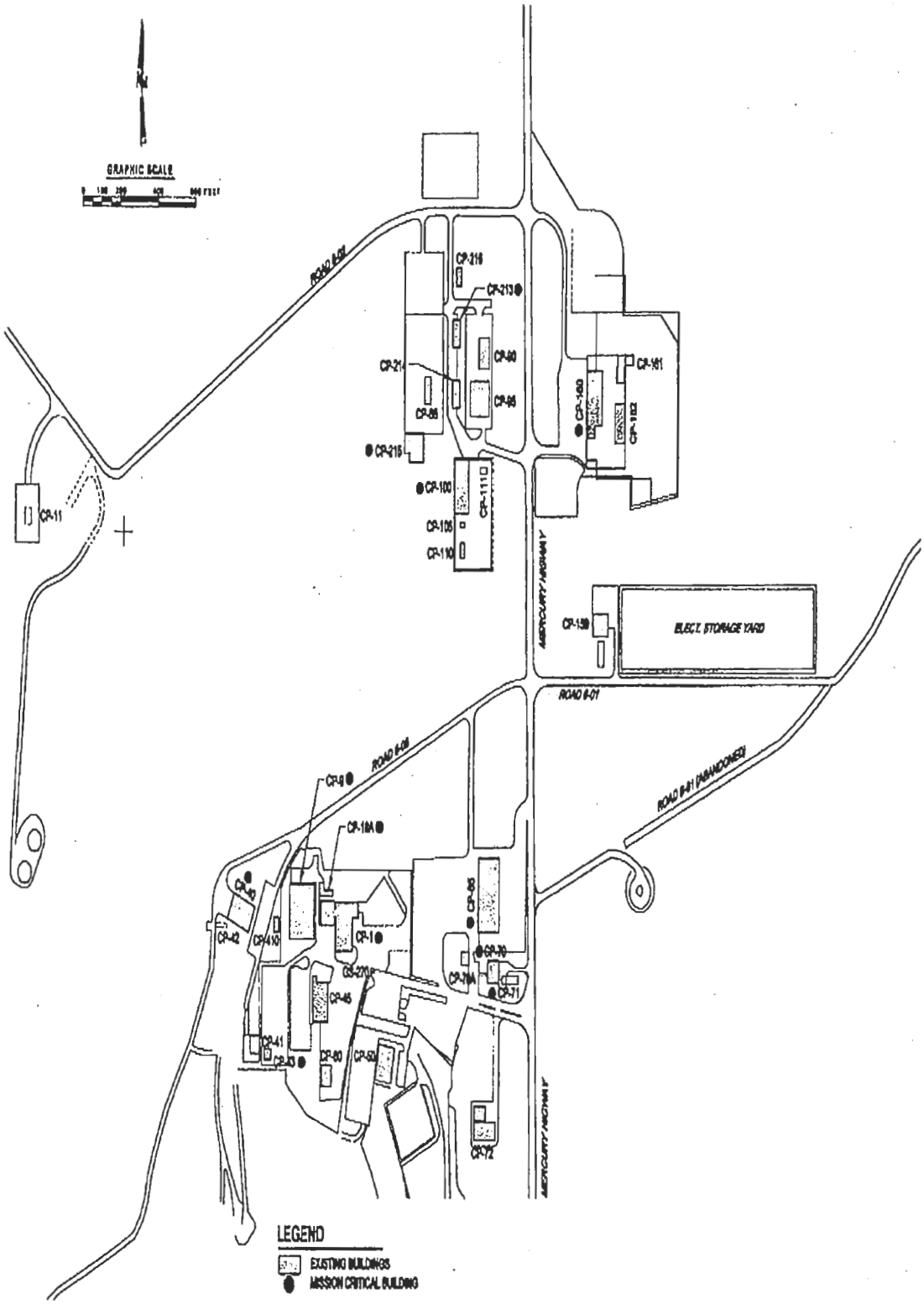

Figure 2-9: Area 6 (Control Point) Existing Site Plan

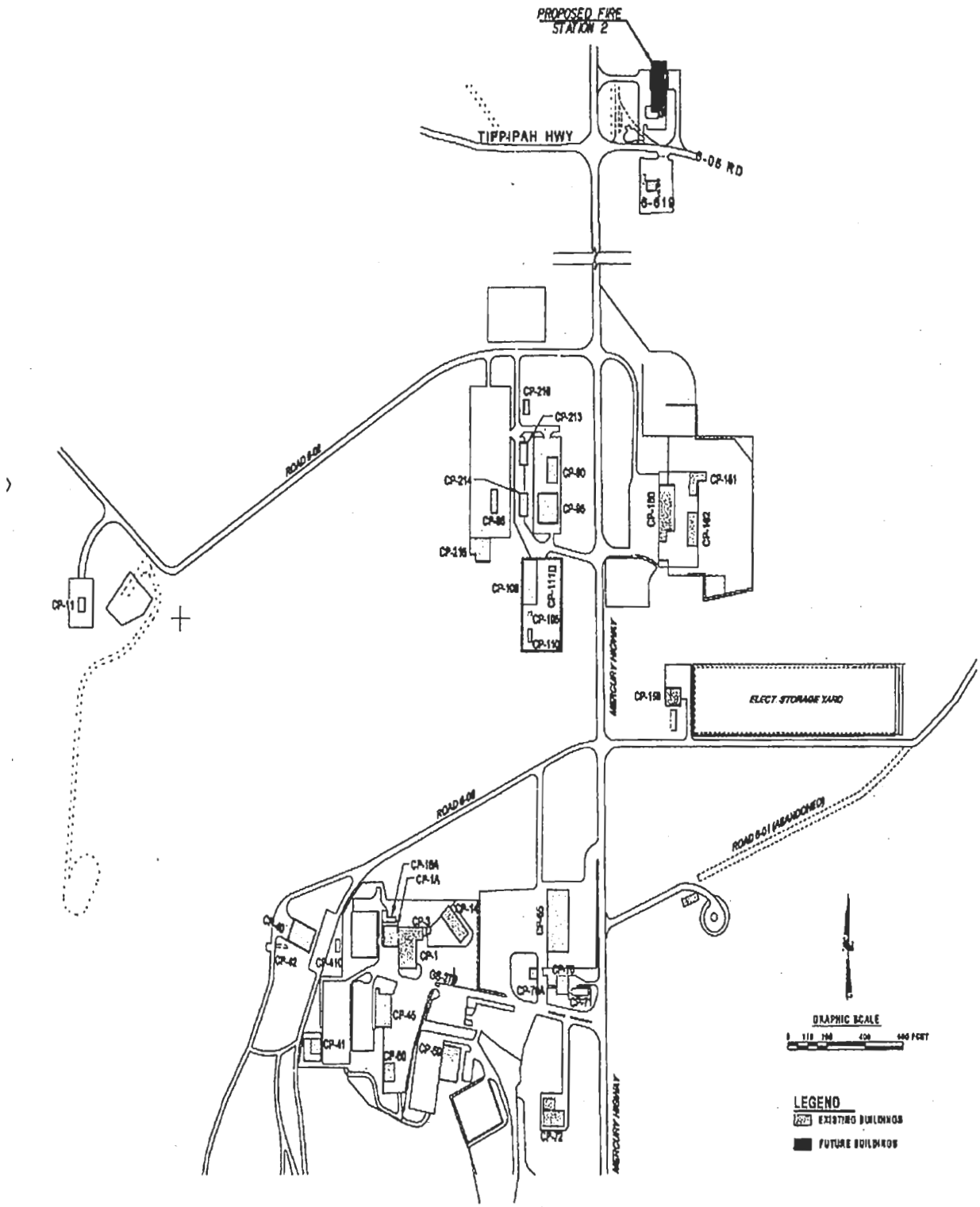

Figure 2-10: Area 6 (Control Point) Future Site Plan

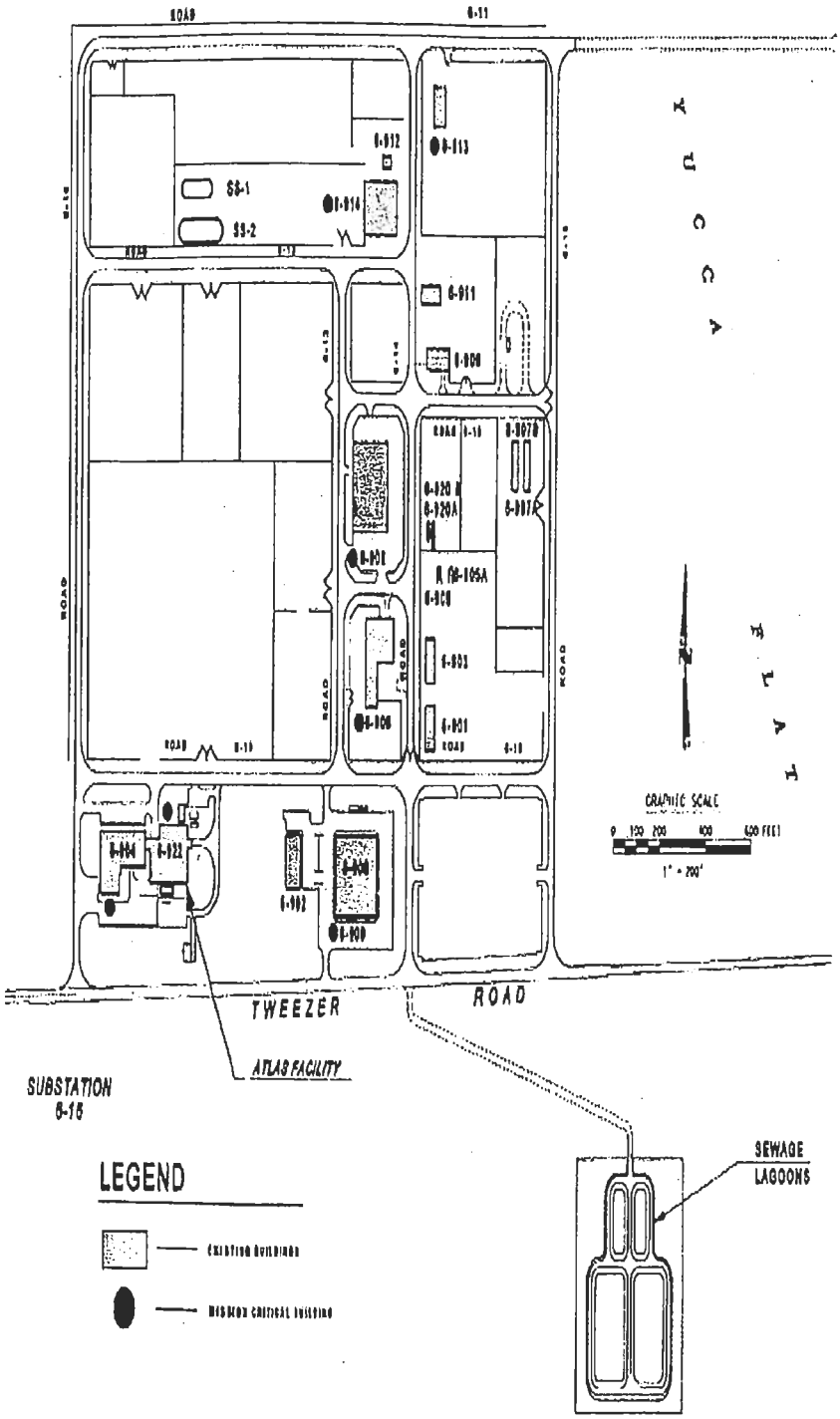

Figure 2-11: Area 6 Future

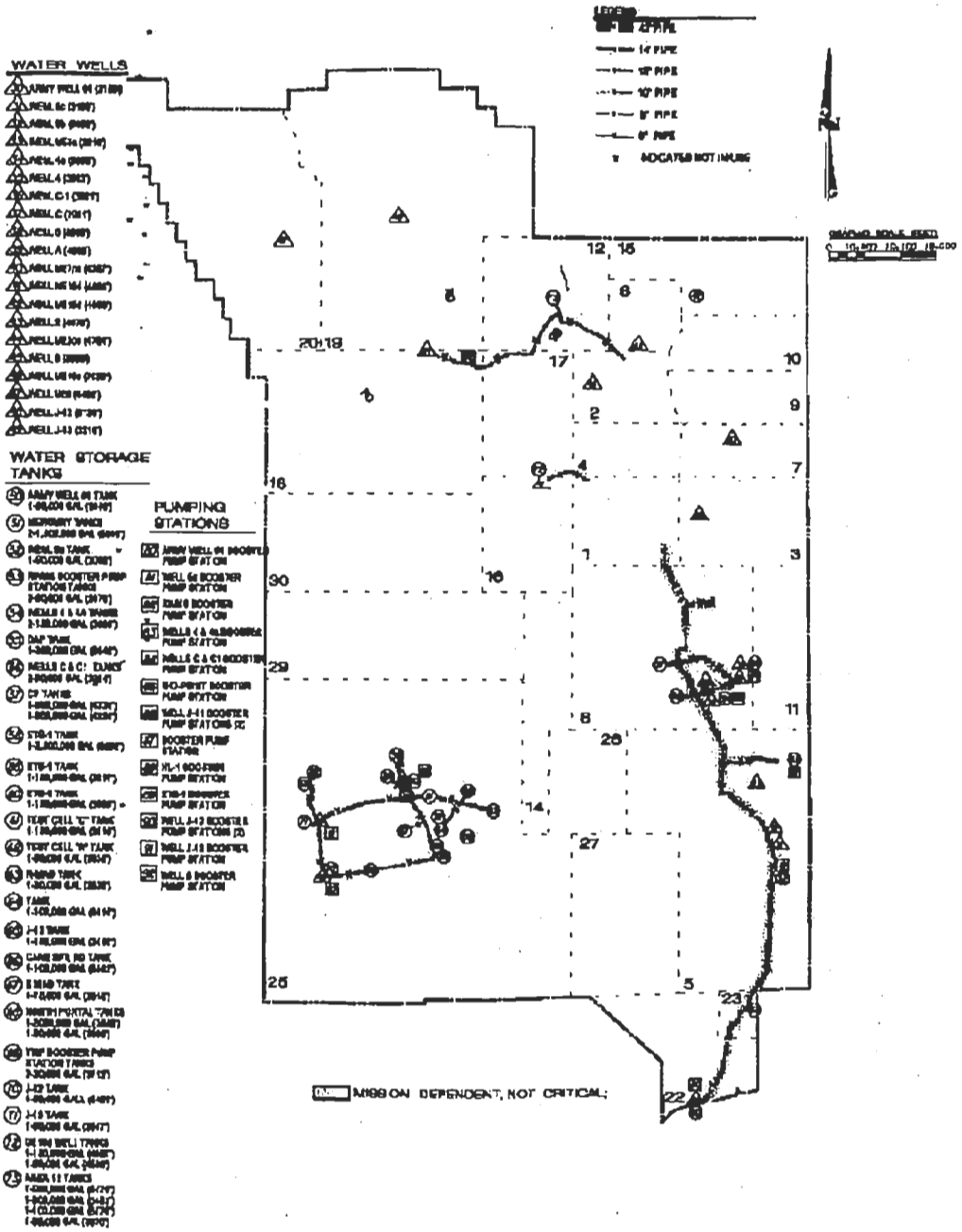

Figure 2-13: Nevada Test Site Water Systems

This map is OUO
Exemption 2

Figure 2-14: Nevada Test Site Paved Road System

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Exemption 2

Figure 2-15: Nevada Test Site Fiber Optic System

This map is OUO
Exemption 2

Figure 2-16: Nevada Test Site Microwave System

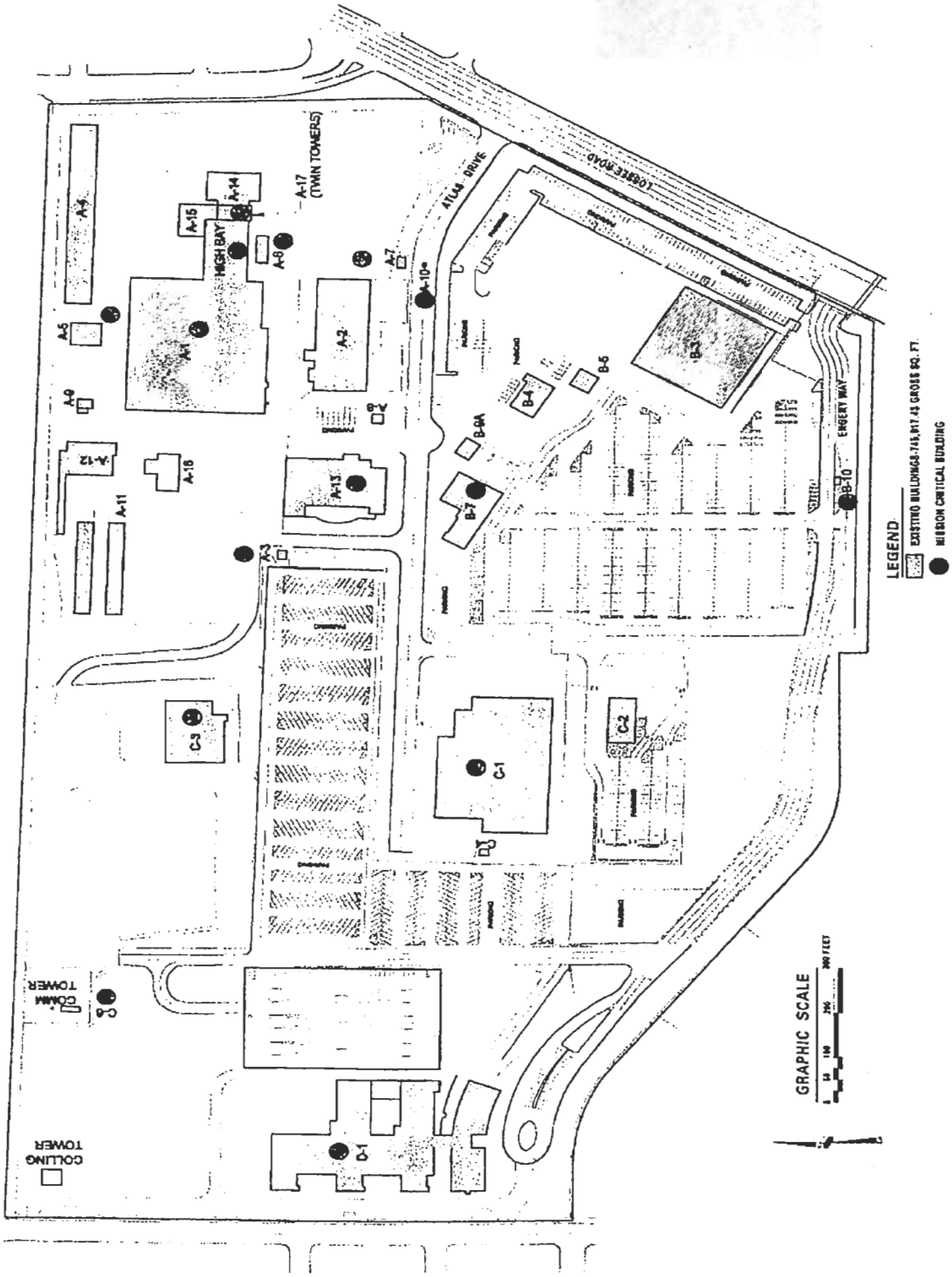


Figure 2-18: North Las Vegas Facility Existing Site Plan

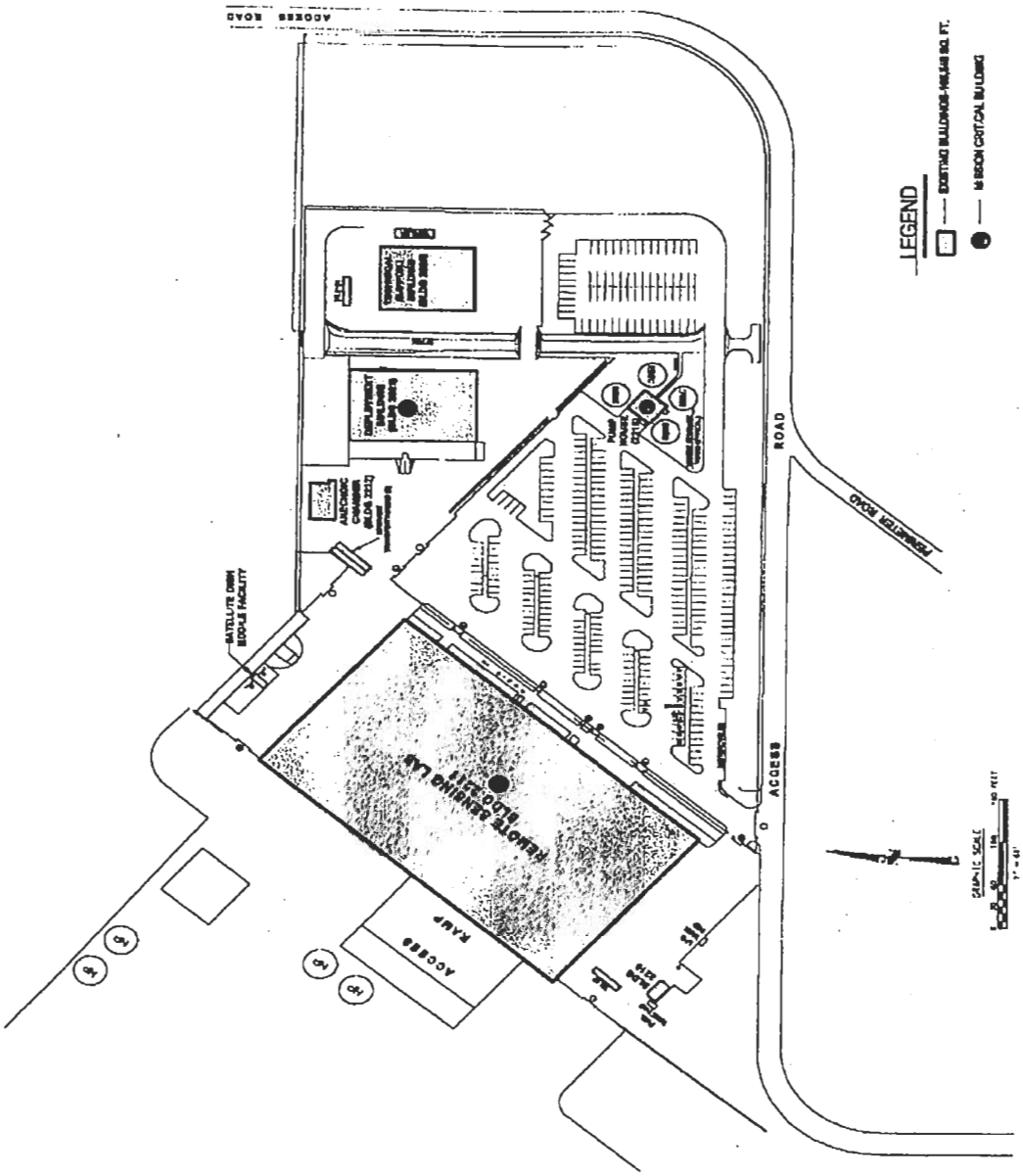
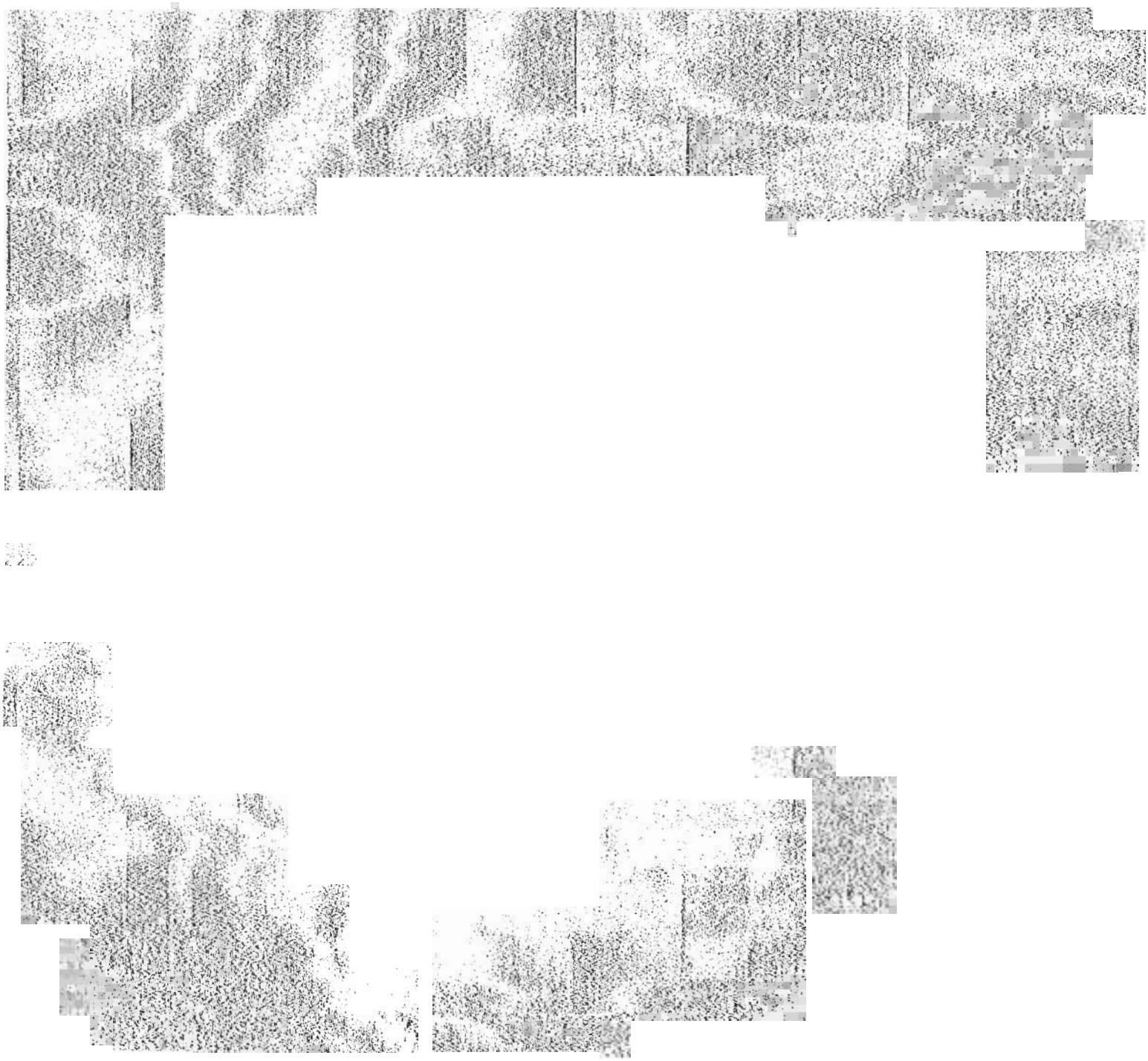
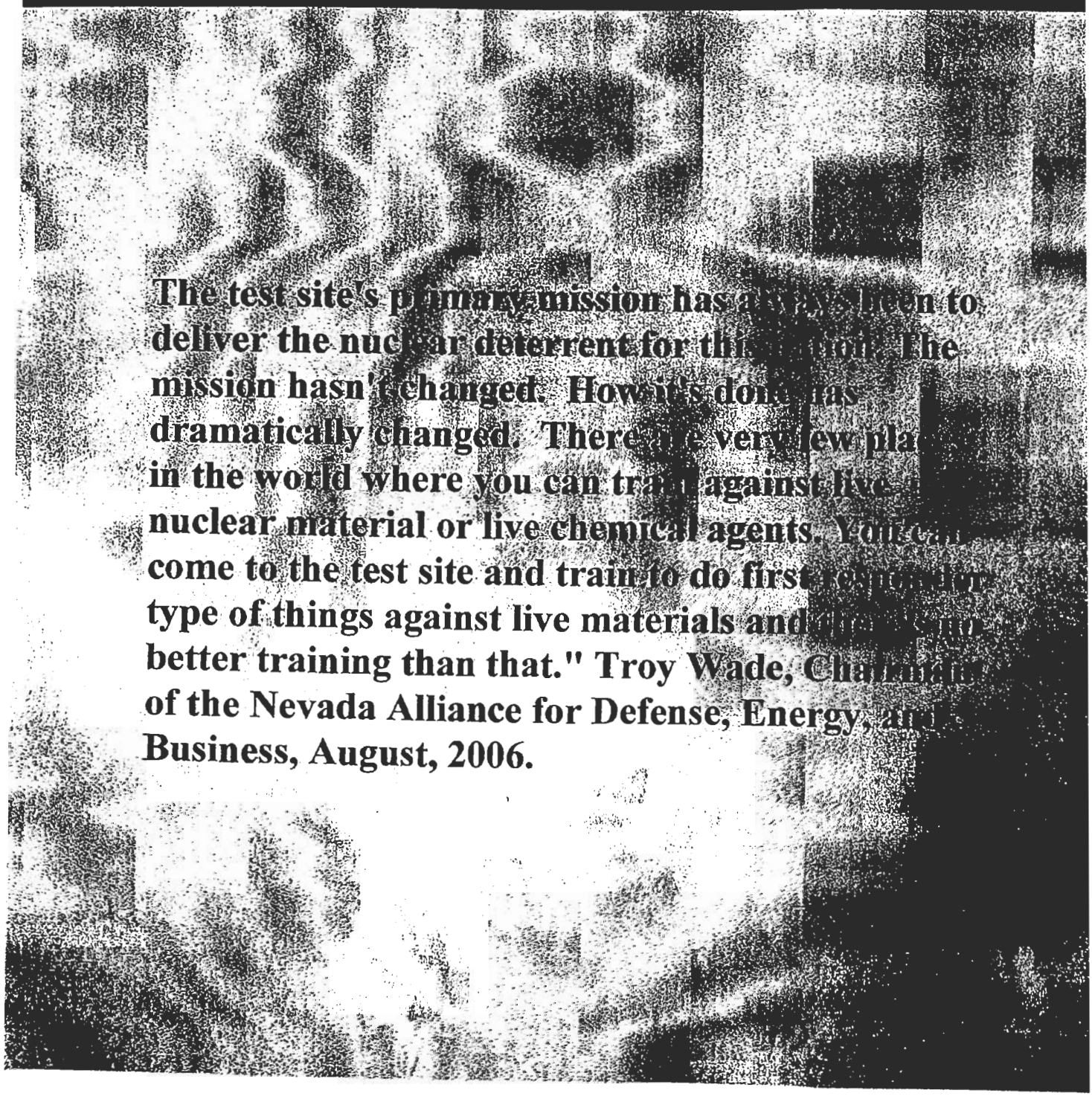


Figure 2-19: Remote Sensing Laboratory-Nellis Existing Site Plan



FY 2008 NNSA/NSO
Ten-Year Site Plan



The test site's primary mission has always been to deliver the nuclear deterrent for this nation. The mission hasn't changed. How it's done has dramatically changed. There are very few places in the world where you can train against live nuclear material or live chemical agents. You can come to the test site and train to do first responder type of things against live materials and there's no better training than that." Troy Wade, Chairman of the Nevada Alliance for Defense, Energy, and Business, August, 2006.

3.0 Mission Needs/Program Description

3.1 Current Mission, Programs, and Workload

Chapter Overview

- Discusses National Stockpile Stewardship Program with campaign details
- Describes Readiness in Technical Base and Facilities with facility details
- Discusses Homeland Security and Defense Applications Program with focus area and facility details
- Discusses Environmental Management Projects and support facilities
- De nes mission-critical facility linkages to Infrastructure mission needs
- Presents projected future programs and missions impacts

The Nevada Test Site (NTS) and associated activities draw together a unique team comprised of the U.S. Department of Energy (DOE), National Nuclear Security Administration/Nevada Site Of ce (NNSA/NSO), National Security Technologies, LLC (NSTec), Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories to support Stockpile Stewardship and related multi-program activities for the NNSA while maintaining the ability to resume underground nuclear testing. The primary NNSA/NSO National Security mission is to support the Stockpile Stewardship Program for the NNSA in the execution of subcritical and other weapons physics experiments, nuclear test readiness, emergency response training and demonstration for defense systems, advanced high-hazard operations, and national security experimental programs. The NNSA/NSO provides the direction and oversight to execute the complex coordination to support the mission requirements between all the organizations. NSTec is responsible for providing much of the programmatic infrastructure, personnel, testbed, and diagnostics needed to execute the programmatic work. NSTec manages the resources, facilities, and infrastructure that make up the NTS and the other supporting sites in California, Nevada, New Mexico, and Washington, D.C.

The work performed by NSTec is grouped into two major programs: Stockpile Stewardship Programs and Operations and Homeland Security and Defense Applications As shown in ***Figure 3-1***, multiple projects and activities are performed under each of these programs to support mission accomplishments.

The NNSA Defense Program scope of work for the NTS is derived from the NNSA Strategic Plan, the Future Years National Security Program and the Science Campaigns, Directed Stockpile Work and Readiness in Technical Base and Facilities plans. These plans written by the laboratories, plants, and the NTS re ect the strategic and tactical objectives of the NNSA in maintaining the nuclear stockpile. NSTec and the National Weapons Laboratories re ne the scope of work and areas of responsibility between one another to execute the NTS experiments in support of the NNSA plans.

NSTec's facility and infrastructure planning activities ensure that the NTS maintain appropriate project locations and necessary facilities, services, and infrastructure. These support and enhance existing and planned work activities to enhance the NTS as a Defense Program site for weapons experimentation and nuclear test readiness. NSTec efforts also are focused on creating a sustainable future by developing a broad and varied project base that complements Stockpile Stewardship mission capabilities.

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Stockpile Stew[illegible]

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imulation codes.

for subcritical and high-explosive pulsed-power experiments and provides test bed construction development and design, and procurement and operation of diagnostics systems. Also included are diagnostic development activities required to support future experiments, including control systems, data acquisition, and data analysis.

Lawrence Livermore National Laboratory Program

The Lawrence Livermore National Laboratory subcritical experiments program provides unique data on the material properties of plutonium when shocked by a high-explosive detonation. The experiments are conducted in sealed chambers or con nement vessels speci cally designed to contain the expended plutonium during and after the detonation. Diagnostics are tailored to the speci c experiments.

The Lawrence Livermore National Laboratory subcritical experiments program plan switched to a series of high-explosive pulsed-power experiments. The High-Explosives Pulsed-Power program is designed to measure the equation-of-state of plutonium over a pressure range of interest. Samples of special nuclear materials are immersed in a high magnetic eld which, in turn, lead to magnetic pressure in the sample. To reach the pressures of interest, electrical currents of many mega-amperes are required. Lawrence Livermore National Laboratory uses a high-explosives pulsed-power generator to generate the required current pulses.

Outyear scope is expected to include the following:

- FY 2007: Three full function experiments at the Big Explosives Experimental Facility.
- FY 2008: Three full function experiments at the Big Explosives Experimental Facility.
- FY 2009: Three full function experiments at the Big Explosives Experimental Facility.
- FY 2010: Tunnel activity - one electromagnetic pulse experiment, one full function experiment, one plutonium experiment.
- FY 2011: Tunnel activity - two plutonium experiments.

Los Alamos National Laboratory Program

Subcritical Experiments

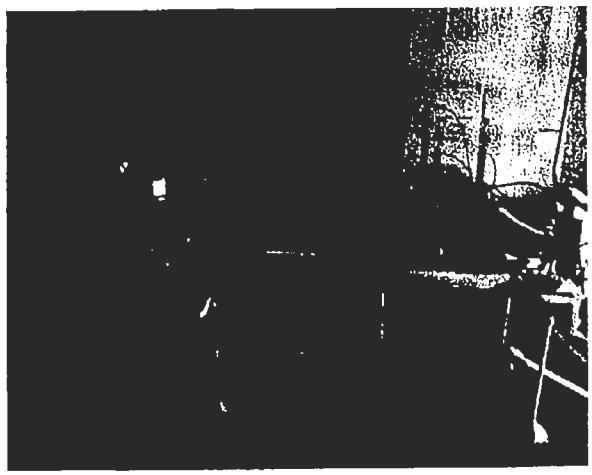
- Support the Los Alamos National Laboratory's joint milestone for developing the equation of state for plutonium.
- Refurbish the Cygnus machines in the U1a .05 drift.
- Prepare the .05 drift diagnostic area for a series of subcritical experiments to be conducted in vessels behind the Armando barrier in FY 2007.
- Support the Los Alamos National Laboratory's effort to develop and eld large bore powder guns.

Subcritical Experiment Research and Development

- Develop new pulsed-power based radiographic technologies to meet the evolving radiography source requirements of Stockpile Stewardship.
- Assist Los Alamos National Laboratory with the development of a Dense Plasma Focus neutron source of suf cient energy to measure the reactivity of special nuclear materials.

Diagnostic Development

- Support Los Alamos National Laboratory by developing and providing a variety of instrumentation, sensors, data acquisition systems, and data analysis techniques for experiments conducted at the National Weapons Laboratories and the NTS.

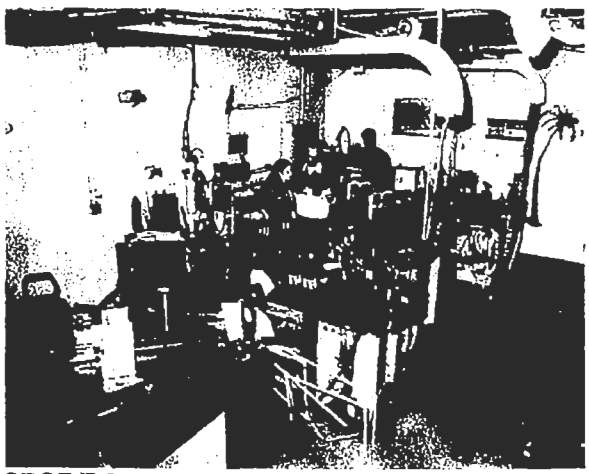


Dense Plasma Focus

Sandia National Laboratories Program

Sandia National Laboratories has Stockpile Systems responsibilities for all nine weapons in the enduring stockpiles, and Stockpile Services responsibilities for Research and Development Certi cation and Safety, Research and Development Support and Advanced Studies including Reliable Replacement Warhead, Responsive Infrastructure, and Robust Nuclear Earth Penetrator, if funded. In concert with Sandia National Laboratories, the NTS support program's effort is to provide NTS technical capability in Arming and Firing technology; pulsed-power component development for advanced radiation sources; and war reserve component testing in hostile environments, as part of Sandia National Laboratories' non-nuclear weapon certi cation, weapons effects, and stockpile surveillance missions. Work elements include:

- Advanced subcritical experiments diagnostic development support, including Velocity Interferometer System for Any Re ector for curved surfaces and complex shapes, and continuing efforts in pyrometry.
- Containment and other U1a instrumentation supporting subcritical experiments.
- Other component experiments/arming, fusing, and ring.
- Arming and ring.
- Pulsed power component testing.
- Linear transformer design source development.
- Gas gun diagnostics and experiments.



OBOE Fabry Tables in the Drift Diagnostics Room

3.1.1.1.2 Campaigns

NSTec actively supports three NNSA Campaigns: (1) Science Campaign, (2) Inertial Con nement Fusion and High Yield Campaign, and (3) Pit Certi cation and Manufacturing Campaign. These campaigns focus on scienti c and technical efforts to develop and maintain capabilities critical for continued certi cation of the weapons stockpile. These campaigns are technically challenging, multifunctional efforts that involve de nitive milestones, speci c work plans, and speci c end dates. Following are brief discussions of each of the three campaigns.

Science Campaign Subprograms

Science Campaign Subprogram 1 - Primary Assessment Technology

The Primary Assessment Technology Campaign will contribute to ful llment of the following goals and objectives of the Science Campaign Program Plan:

(1) Develop knowledge, tools, and methods to assess, with con dence, the performance of a nuclear weapon without further underground testing.

- Develop capabilities and understanding necessary to apply Quantitative Margins and Uncertainties as the certi cation methodology for the nuclear explosive package.
- Assess uncertainties in the prediction of weapons performance as the basis for priorities for further improvements in models and physical research.
- Develop and experimentally validate models of physical properties and processes to improve the delity of Accelerated Strategic Computer Initiative codes.
- Develop improved capabilities to model weapon outputs.
- Develop an assessment of the lifetime of pits for each system in the stockpile.

(2) Develop and maintain essential scienti c capabilities and infrastructure in nuclear weapons unique technologies.

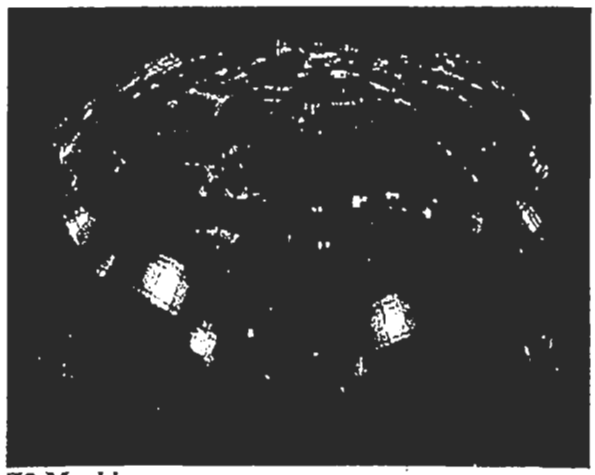
Science Campaign Subprogram 2 - Dynamic Materials Properties

The Dynamic Materials Properties Campaign will provide physics-based, experimentally validated data and models required to guide and benchmark the development of models for all stockpile materials at the level of accuracy required by the Primary, Secondary, and Engineering Certi cation Campaigns. The measurement of fundamental materials properties is essential to establish suf cient con dence in the materials models used in next-generation simulations codes so that such simulations can provide predictive relationships between materials processing and properties and stockpile performance, safety, and reliability. The Dynamic Materials Properties Campaign provides the experimental data necessary for development of models and physical databases for stockpile and other relevant materials in support of the Primary and Secondary Assessment Campaigns (Campaigns 1 and 4), Directed Stockpile Work programs, the Advanced Simulation and Computing Campaign (Campaign 11), and the Inertial Con nement Fusion Campaign. These data lead to well-validated physics-based, predictive descriptions of materials performance and properties; both guiding and benchmarking the development of such models and databases. Critical to these activities is the characterization of materials, as well as predictability and control in their manufacture. Campaign 2 continues to develop new capabilities and experimental techniques to meet the challenges of its mission, as de ned by the needs of Campaign 1 and Campaign 4 for quanti cation of margins and uncertainties. Campaign 2, in this regard, frequently exploits the facilities and techniques developed in other campaigns; for example, the use of Inertial Con nement Fusion Campaign's high-energy-density facilities to study materials properties at extreme conditions.

NSTec and NNSA/NSO provide resources for diagnostics development, experiment execution, and data acquisition/analysis to Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Sandia National Laboratories with principal impact to MTEs 2.1, 2.2, and collateral contributions to other MTEs, Science Campaigns, and Directed Stockpile Work.

Plutonium (MTE 2.1)

Activities in MTE 2.1 are focused on obtaining the necessary thermodynamic data (equation-of-state, phase diagram, melt, etc.) for plutonium to a level of accuracy as required to support the goals of the Primary and Secondary Assessment Campaigns, Pit Certi cation, Directed Stockpile Work programs and Advanced Simulation and Computing. MTE 2.1 work scope includes Joint Actinide Shock Physics Experimental Research experiments (at the NTS) supporting Lawrence Livermore National Laboratory and diagnostic development and shock physics experiments on the Z and Z Refurbishment Machine (at Sandia National Laboratories) as part of Sandia National Laboratories Science Campaign activity (Sandia National Laboratories above ground experimental project). Joint Actinide Shock Physics Experimental Research work entails procurement and fabrication of consumable experiment parts (Primary Target Chambers, ultra-fast closure valves, etc.) and execution/data acquisition of special nuclear materials and surrogate materials experiments utilizing a variety of diagnostics such as positive interlayered negative and Velocity Interferometer System for any re ector. Sandia National Laboratories Science Campaign work in support of Isentropic Compression Experiments involves fast velocity interferometer system for any re ector diagnostics development and elding, developing a preheat capability for liquid metal sample equation-of-state experiments, containment studies for hazardous materials and special nuclear materials equation-of-state experiments, and advanced dynamic materials diagnostic development such as X-radiography and X-ray diffraction.



Z2 Machine

Uranium and Other Metals/Surrogates (MTE 2.2)

Activities in MTE 2.2 focus on the determination of the dynamic mechanical properties of stockpile materials, with an emphasis on metals including actinides, surrogates, and other materials. These properties include yield strength, plastic ow, and failure through spallation and ejecta from shocked surfaces. Nowhere are conditions more challenging than in the implosion dynamics of nuclear weapons where materials are subjected to the most extreme conditions (large strain, high strain rates, and high temperatures). MTE 2.2 work scope includes Atlas experiments supporting Los Alamos National Laboratory, diagnostic development, and gas gun experiments (at Los Alamos National Laboratory) as part of Los Alamos National Laboratory Science Campaign activity. Atlas work entails support to hydrodynamic experiment execution such as spall, friction, strength, and Raleigh-Taylor Instabilities series, and diagnostics development (advanced radiography, current and magnetic eld measurement, visible imaging, Velocity Interferometer System for Any Re ector, and ber optic sensors). Los Alamos National Laboratory Science Campaign work involves diagnostics development for the study of equation-of-state, constitutive properties, and phase states of shocked materials, elding these systems, and collecting data at single and two-stage gas guns and explosive facilities at Los Alamos National Laboratory, NSTec's Special Technologies Laboratory, and Joint Actinide Shock Physics Experimental Research, ultimately migrating these diagnostics to Los Alamos National Laboratory sub-critical experiments.

Lawrence Livermore National Laboratory Program (MTE 2.2)

- Joint Actinide Shock Physics Experimental Research Experiments: Experiments will continue into subsequent years, including fabrication and procurement services for consumables to support events, such as Primary Target Chambers and ancillary expended apparatus such as the Ultra-fast Closure Valve, gate valves, and VAT ® valves.
- Phase II Diagnostics: support the development and integration of diagnostics required for future experiments such as Velocity Interferometer System for Any Re ector, Photonic Doppler Velocimetry, and Thermal equation-of-state (High T/low Rho) experiments.

Los Alamos National Laboratory Program

Los Alamos National Laboratory Dynamic Shock Experiments

- Build Photonic Doppler Velocimetry for gas gun experiments.
- Use re ectometer on tin gas gun shots.
- Build compact Velocity Interferometer System for Any Re ector for Brookhaven National Laboratory experiments.

Atlas Pulsed-Power Facility

The Atlas Pulsed-Power Facility was placed in standby mode at the end of the third quarter of FY 2006 as directed by Los Alamos National Laboratory. The capability to restart the Atlas Pulsed-Power Facility on short notice is to be maintained, considering both facility availability and personnel issues.

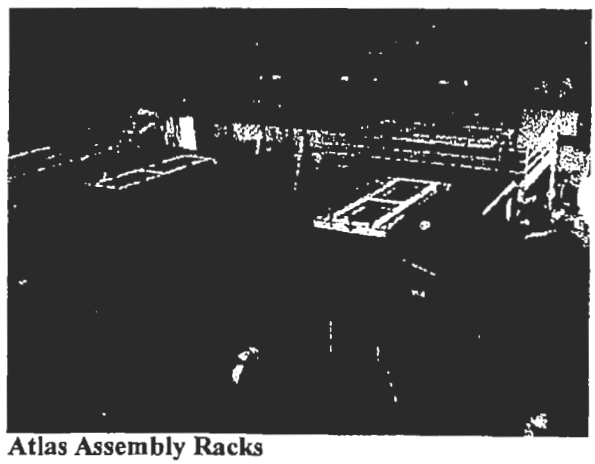
Joint Actinide Shock Physics Experimental Research

Los Alamos National Laboratory has expressed a desire to conduct additional experiments in outyears.

Large Bore Powder Gun

Discussions are underway with Los Alamos National Laboratory to support the development of large bore powder guns at the Los Alamos Ancho Canyon site.

In FY 2007, NSTec will assist Los Alamos National Laboratory by preparing a subcritical test bed at U1a to conduct subcritical experiments in



Atlas Assembly Racks

FY 2008. Later experiments, likely to occur in the existing 03 Krakatau drift to capitalize on existing infrastructure, will be multiple powder guns red simultaneously to obtain data from a variety of experiments in a short time.

Sandia National Laboratories Program

Scope elements

- Fast Velocity Interferometer System for Any Re ector Design.
- Z Preheat (High and Low Temperature) Heating.
- Experiment Chamber Containment.
- Dynamic X-ray Diffraction.
- Linear Transformer Design Isentropic Compression Experiments Small Pulser Development.
- Fast Pyrometry.
- Velocity Interferometer System for Any Re ector Data Analysis.

Outyear scope includes supporting Sandia National Laboratories for the following reasons:

- Perform Isentropic Compression Experiments and Hugoniot Experiments on Z-Refurbishment Machine to greater than 8 megabar pressures, and extend deuterium and H-D mixtures to greater than 2 megabar.
- Determine the strength of high-impedance materials under Isentropic Compression Experiments and shock loading.

VITO Cable Disassembly

- Measure the strength and material structure of dynamically re-frozen high impedance materials.

Science Campaign Subprogram 3 - Advanced Radiography

The Advanced Radiography Campaign supports the following goals and objectives of the science campaigns:

(1) Develop tools and methods to assess with con dence the performance of a nuclear weapon without further underground testing.

- Develop capabilities and understanding necessary to apply Quantitative Margins and Uncertainties as the certi cation methodology for the nuclear explosive package.
- Develop the ability to certify any aged or rebuilt stockpile primary to within +/- x kilotons.
- Develop and experimentally validate models of physical properties and processes to improve the delity of Accelerated Strategic Computer Initiative codes.

(2) Maintain the readiness of the National Nuclear Security Administration to conduct nuclear testing as directed by the President.

- Execute a program of work at the National Weapons Laboratories that maintains capabilities in technical specialties relevant to the design and preparation of devices and diagnostics for underground testing and the analysis of diagnostic data.

(3) Develop and maintain essential scienti c capabilities and infrastructure in nuclear weapons unique technologies.

- Operate a national hydrotest program and supporting facilities and infrastructure including Dual Axis Radiographic Hydrodynamic Test, Lawrence Livermore National Laboratory Site 300, and U1a.
- Maintain capabilities to support understanding of the properties of the dynamic behavior of nuclear weapons materials including Joint Actinide Shock Physics Experimental Research, High-Explosive Application Facility, and small scale investigations.

- Conduct relevant scienti c investigations at the National Weapons Laboratories in understanding physical properties and processes required to support the goals of stockpile stewardship.
- Establish and maintain scienti c collaborations and exchanges in areas supportive of the National Nuclear Security Administration mission with the U.S. Department of Energy National Weapons Laboratories, and other national and international scienti c institutions, including foreign entities with whom National Nuclear Security Administration has mutual defense agreements.

This is accomplished in the following ve major tasks (MTEs): MTE 3.1 is Dual Axis Radiographic Hydrodynamic Test Optimization, MTE 3.2 is Radiographic Simulation and Analysis, MTE 3.3 is Surrogate Materials Program, MTE 3.4 is Advanced Radiographic System Requirements and Technologies, and MTE 3.5 is Vessel Development and Certi cation.

Los Alamos National Laboratory Program

Dual Axis Radiographic Hydrodynamic Test II (MTE 3.1)

- NSTec will provide accelerator diagnostics as Dual Axis Radiographic Hydrodynamic Test II activities focus on the new commissioning plans for the scaled accelerator and cell refurbishment project.

Proton Radiography (MTE 3.4)

- Personnel supported experiments at Line C during the 2005-2006 run cycle by providing troubleshooting support during the experiments, image analysis, and reporting.

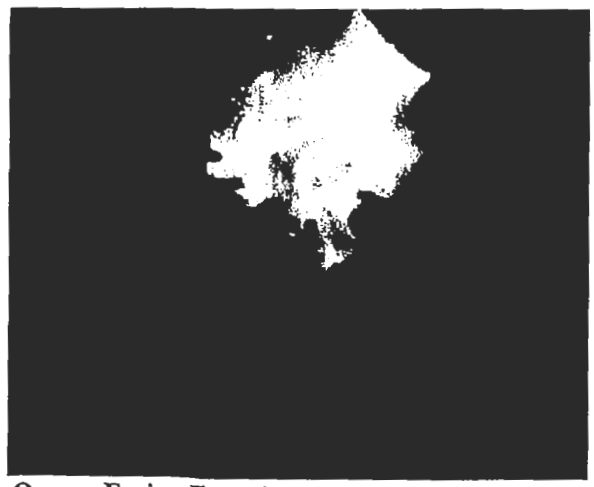
Science Campaign Subprogram 4 - Secondary Assessment Technology

The goal of the Secondary Assessment Technologies Campaign is to advance secondary assessment through development of modern tools and analysis required for identi cation of performance margins and resolution of uncertainties. Efforts in this campaign are organized by key elements of the sequence of events leading to secondary explosion and output, these elements being:

- Radiation emission from the primary (supported by MTE 4.1).
- Effects of case performance (MTE 4.2).
- Radiation ow to the secondary (MTE 4.3).
- Secondary implosion (MTE 4.4).
- System output through the emission of radiation and debris kinetic energy (MTE 4.6).
- Stewardship Grants Program (MTE 4.5).

Radiation Flow (MTE 4.3)

The purpose of this MTE is to determine other (i.e., in concert with MTE 1) effects of energy ow; including a validated predictive model capability for energy ow associated with primary explosion through to secondary explosion. Design and activation of calibration facilities and advanced diagnostics development for above ground experimental applications supporting High Energy Density science are a primary contribution of the NTS. NSTec supports both Sandia National Laboratories and Lawrence Livermore National Laboratory High Energy Density experiments. Major focus of the Lawrence Livermore National Laboratory effort is in (1) providing Lawrence Livermore National Laboratory High Energy Density experiment support to eld experiment diagnostics and perform shot-day technical services, and (2) developing High Energy Density diagnostics and maintaining core calibration facilities that support Lawrence Livermore National Laboratory above ground experiments. Major focus of the Sandia National Laboratories effort is in Z-pinch radiation and neutron diagnostic development and calibration.



Omega Fusion Experiment

Lawrence Livermore National Laboratory Program

Lawrence Livermore National Laboratory Secondary Assessment Technology:

- The Experiment Support subproject works with Lawrence Livermore National Laboratory Defense Nuclear Technology to conduct code veri cation and validate shot-day technical services are provided at the Omega Laser Facility at Rochester, New York.
- The Advanced Diagnostics subproject builds and calibrates high-resolution diagnostics for laser experiments.
- The Calibration Facilities subproject builds, operates, and maintains the core calibration facilities for Stockpile Stewardship Secondary Assessment as an element of Campaign 4.3.
- The Testing and Calibration Services subproject provides technical services to systemize, test, characterize, and calibrate diagnostics systems for use on laser weapons experiments.

Outyear scope includes:

- Develop diagnostics and calibration techniques to match progression of the National Ignition Plan.
- Perform continuous activation and upgrades of laboratories to match the needs of the National Ignition Plan.
- Complete initial National Institute of Standards and Technology Certi cation reviews of critical methods and procedures.
- Standardize laboratory control, data, and reporting systems.
- Design, build, and activate a neutron calibration source with Lawrence Livermore National Laboratory/Sandia National Laboratories participation.
- Complete activation of the suite of calibration facilities at NSTec Livermore Operation, Lawrence Livermore National Laboratory, North Las Vegas, Special Technologies Laboratory, and Brookhaven. Calibration laboratories will be accessible throughout the Stockpile Stewardship Program Complex.

Short Laser Pulse Laboratory

Sandia National Laboratories Program

The Sandia National Laboratories Diagnostics/ Above Ground Experimental Project goal is to partner with Sandia National Laboratories to achieve pulsed-power contributions to the Stockpile program in (1) Diagnostics development and calibration for high-energy density environments (principally for radiation and secondaries, but also of bene t to Inertial Con nement Fusion); (2) Experiment support in application of Z and Z-Refurbishment machine sources to weapon physics; (3) Radiation and hydrodynamic advanced source development; and (4) Maintaining core skills and personnel in high-speed diagnostics in underground test-like environments for underground nuclear test readiness.

Principle scope areas include (1) Z pinch radiation diagnostic development (X-ray spectrometers; X-ray calibration capabilities; neutron detectors, sources, and imaging capabilities; charge-coupled device readouts for time-resolved detectors currently employing lm; maintenance of a "core radiation" diagnostics suite for optical, X-ray, neutron detectors, and calibration capabilities); and (2) NSTec provides design, engineering, fabrication, experiment elding, and data acquisition/analysis support for Sandia National Laboratories activities on the Z and Z-Refurbishment machines.

Initiatives include:

- Optical Diagnostic Development
- X-ray Diagnostic Development
- Neutron Diagnostic Development
- Detector Calibration Support
- Improvements in Data Analysis Capability

Outyear scope includes:

- 10 x improvements in temporal resolution of X-ray diagnostics.
- 10 x improvements in spatial resolution of X-ray imaging and spectral diagnostics.
- Support Los Alamos National Laboratory experiments in MTE 4.4.
- Continue development of a high yield Dense Plasma Focus necessary to provide a deuterium-deuterium and deuterium-tritium neutron source for neutron diagnostic development.
- Support Sandia National Laboratories in developing strategy for radiation, neutron, and Electromagnetic pulse shielding of National Ignition Facility diagnostics and mitigating the X-ray generated debris produced by National Ignition Facility diagnostics.
- Support Sandia National Laboratories in executing beryllium melt experiments to validate capsule modeling for National Ignition Facility ignition experiments.

Campaign 5 - Nuclear Test Readiness
NNSA/NSO implemented the Nuclear Test Readiness Program at the National Weapons Laboratories and the NTS to maintain the capabilities (technologies, staff skills, equipment, and infrastructure) to resume underground nuclear weapons testing within 24-36 months of receiving Presidential direction to do so. A transition to an 18-month nuclear test readiness posture began in FY 2003. The end of FY 2006 planned the transition for completion. A 40 percent budget reduction in FY 2006 has pushed the resumption date back to 24 months. Future budget cuts could move the time to execute the next nuclear test to 36 months or beyond. Nuclear Test Readiness was carried as a key component of Science Campaign 1 in FY 2005 and was moved to Science Campaign 5 as a separate entity in FY 2006.

Numerical Control Machining during Experimental Support

This Nuclear Test Readiness activity is subdivided into ve MTEs. Nuclear Test Readiness includes activities to be executed by the National Weapons Laboratories and NSTec for NNSA/NSO. The following discussions of the ve MTEs describe only NSTec activities.

Planning (MTE 1) provides for veri cation of program activities against continuously re ned requirements. The approach is to develop potential test plans for the current weapons in the active stockpile, validate test scenarios consistent with annual certi cation reviews, maintain the Decision Support System for detailed planning, implement project controls, and ensure that necessary test resources are available. NSTec provides support to the MTE 1 group through subject matter experts, and the development and maintenance of detailed project schedules.

Authorization Basis (MTE 2) provides documentation and systems to allow project-speci c authorization basis documents to be developed within the period between noti cation to test and test execution. NSTec is supporting the analysis of requirements and development of NNSA/NSO expectations for the underground nuclear testing authorization basis.

Diagnostics and Training (MTE 3) includes activities that have the goal of transitioning to a shorter nuclear test readiness posture. In order to support the needs of future underground experiments, diagnostic systems and capabilities will be reviewed and improved where needed to meet this goal. NSTec supports this effort by participating with the National Weapons Laboratories in this review and renewal process. In order to preserve the knowledge and skills necessary to maintain a nuclear test readiness capability, a program of systematic training is being developed by NSTec. The program of systematic training includes activities to update diagnostic and recording equipment that has become nearly obsolete; develop and implement

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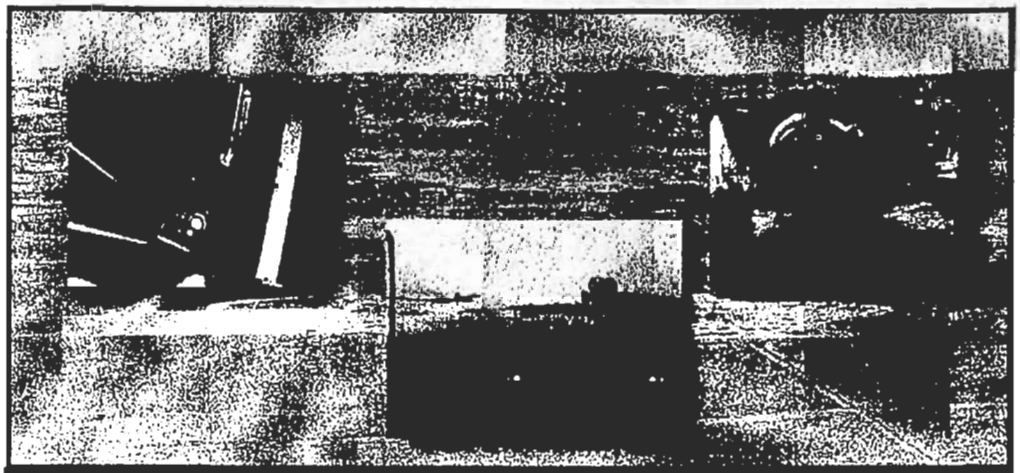
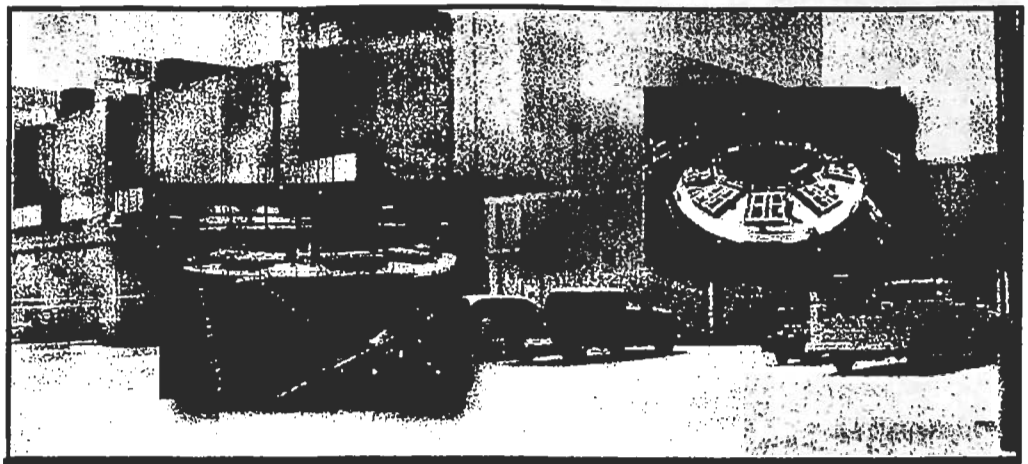


U1a Complex, Nevada Test Site

U1a Complex. The U1a Complex, managed for NSO by Los Alamos National Laboratory, is comprised of 33 surface support buildings and trailers, and an extensive series of underground drifts and experiment alcoves mined in alluvium 965 feet beneath the NTS. The underground complex, where the experiments with high explosives and special nuclear materials are conducted, is accessed by the U1a shaft and the newly constructed U1h shaft. This category of experiment is termed "subcritical" because these experiments do not produce self-sustaining nuclear reactions. Although the principal purpose of these experiments is to provide data on the behavior and properties of materials in a dynamic environment, their execution now is an essential part of ongoing nuclear test readiness by exercising portions of various nuclear test readiness functional areas. The primary operational objectives under Readiness in Technical Base Facilities are to operate and maintain the U1a experimental complex in support of Stockpile Stewardship subcritical experiments. U1a directly supports Campaigns 1, 12, and Directed Stockpile Work Stockpile Research and Development, and is a Readiness in Technical Base and Facilities direct funded mission-critical facility.

Subcritical experiments are designed to elicit a greater understanding of high explosives properties, material response, and primary and re ected shock structure, and to examine the effects of such engineering features as welds and surface nish on weapon performance. Subcritical experiments also help ll gaps in empirical data on plutonium's high-pressure behavior and measure its high-pressure equation of state values, strength properties, and response to shock. In addition, such experiments are necessary for certi cation of nuclear weapons, without testing, by collecting data to upgrade and validate computational models. Model validation using subcritical data is essential since computational models are also subject to uncertainties from incomplete physics, uncertainties in material properties, computational symmetry assumptions, and the effects of calculations using discrete elements.



Atlas Pulsed-Power Facility, Nevada Test Site

Atlas Pulsed-Power Facility. The Atlas Pulsed-Power Facility is maintained for supporting experiments elded on the Atlas machine. Atlas is a pulsed-power machine for conducting materials properties studies. This machine is designed to meet a broad range of needs in providing High-Energy Density hydrodynamics data for assisting in the validation of nuclear weapons codes as part of the Stockpile Stewardship Program, and for conducting dynamic materials experiments in the scienti c community at large. This machine was relocated from Los Alamos National Laboratory.

The facility that houses Atlas at the NTS began construction in FY 2002 in Area 6 and was ready for hardware relocation later that same year. The Atlas Pulsed-Power Facility is scheduled to go cold standby. Recommissioning was delayed by the Los Alamos National Laboratory shutdown. Atlas is operational following successful completion of phase IV machine characterization experiments, successful elding of the LD-101 and LD-102 experiments and the resolution of Readiness Assessment and Findings, if any. Physics experiments began in the last quarter of FY 2005. The last experiments were conducted in March 2006, after which the facility was maintained in a readiness state.

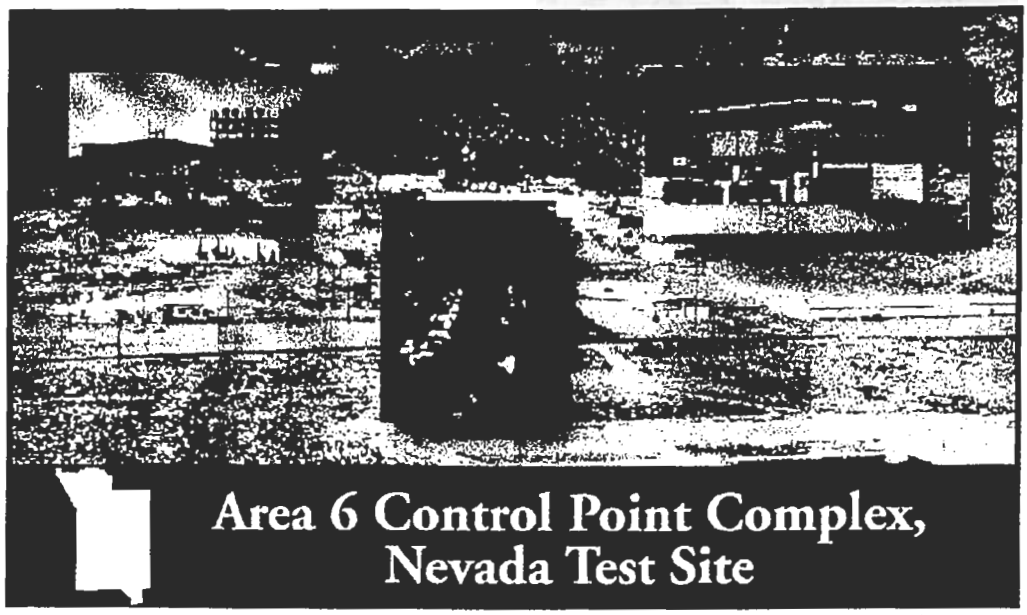
Readiness in Technical Base and Facilities funds the activities necessary to support the Atlas Pulsed-Power Facility operations and facility warm standby as well as acquisition of operational spares and diagnostics. Also included are operational support, existing facility modi cation, facility warm standby, and acquisition of pulsed-power technology personnel to support experimentation and modi cation of hardware. The Atlas Pulsed-Power Facility has directly supported Campaigns 1, 2, 4, and Directed Stockpile Work Stockpile Research and Development.

> The Atlas machine is designed to meet a broad range of needs in providing high-energy density physics data for assisting in the validation of weapons codes as part of the Stockpile Stewardship Program, and for conducting dynamic materials experiments in the scienti c community at large.

High Explosives Facilities. The Big Explosives Experimental Facility, located in Area 4, is an aboveground high-explosives test bed for weapons physics experiments, shaped charge development, and render-safe technologies. The Big Explosives Experimental Facility is uniquely certi ed to handle high explosive loads, up to 70,000 pounds, and is currently authorized to conduct advanced high explosive experiments with such hazardous materials as depleted uranium. The facility is comprised of three buildings, which include a ring table, a camera bunker, a control/diagnostic bunker, and other support facilities.

In FY 2005, the diagnostics for the Big Explosives Experimental Facility were upgraded in anticipation of a series of Phoenix-related experiments in support of Directed Stockpile Work.

The Baker Site Facility, managed and operated by Lawrence Livermore National Laboratory for NSO, is located in Area 27 of the NTS and is an explosives staging and storage area used to support high-explosive experiments at the Joint Actinide Shock Physics Experimental Research Facility. The Baker Site Facility provides the capability to receive shipments, safely store explosive materials, assemble or otherwise prepare materials, and transport them to the Joint Actinide Shock Physics Experimental Research Facility. The Baker Site Facility also supports other programmatic requirements. The Baker Site directly supports Campaigns 1, 2, and 12, and Directed Stockpile Work Stockpile Services and is a Readiness in Technical Base and Facilities direct funded mission-critical facility maintained in a mission capable status.



Area 6 Control Point Complex. The Control Point (CP) Complex is located in the saddle of the ridge between Yucca Flat and Frenchman Flat. The Control Point Complex consists of numerous facilities that support forward area testing and experiments. Speci cally, the Control Point Complex supports operations in timing and ring, data gathering, warehousing, emergency facilities, administrative and human services, and crafts shops.

The experiment control room facilities (CP-1 and CP-9) are deemed mission-critical facilities and are directly funded by Readiness in Technical Base and Facilities. The CP-1 and CP-9 facilities also house light laboratory and readiness and experiment assets. The light laboratories support the development and calibration of diagnostics for subcritical experiments and other NTS-based National Weapon Laboratories experiments. The experiment and readiness assets are the command and control for execution and remote recording of subcritical experiments if the President requested a nuclear test underground. Readiness in Technical Base and Facilities funds the management, operations, and utilities (power) of the facilities. The Control Point Complex directly supports Campaigns 1 and 12, and Directed Stockpile Work Stockpile Research and Development.

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3.1.1.2.2 Program Readiness

Program Readiness includes select activities that support more than one facility, campaign, or Directed Stockpile Work activity, but are essential to achieving the objectives of the Stockpile Stewardship Program.

Logistics
This program includes a wide range of support de ned by each National Weapons Laboratory's Resident Manager. These requirements typically include providing equipment such as vehicles, telephones, radios, computers, and other commodities. In addition, Logistics provides administrative, institutional support staff, technical, photo, computer services, and the manual craft staff necessary to support the National Weapons Laboratory's staff assigned to Nevada.

Other Federal Agencies
This program provides funding to other federal agencies to maintain NNSA's ability to resume nuclear testing at the NTS, in compliance with the Presidential Directive and NNSA performance measures. These agencies support the NTS through weather modeling and prediction, monitoring of downwind communities, and geology/hydrology support.

Program Operations
This Readiness and Technical Base Facility program of ce provides funding for program management, miscellaneous equipment, and operating expenses of the NTS Stockpile Stewardship Program. This support is essential for the execution of Science Campaign activities and Directed Stockpile Work.

Program Operations include the following activities:

- Seismic monitoring and recording of all natural seismic events greater than 3.5 on the Richter scale, experimental explosions greater than 50 pounds, and all subcritical experiments
- Closed-circuit television recording of subcritical experiments

Borehole Closures
There are ongoing efforts to properly close past test and experiment boreholes, in order to be in compliance with Nevada state statutes (regulatory drivers include the Nevada Water Pollution Control statute). Four hundred sixty-nine boreholes were plugged and abandoned from 2000 through 2006 and 100 are planned to be plugged and abandoned during FY 2007. This leaves approximately 260 unused wells and boreholes to be plugged and abandoned at the NTS. All of these wells and boreholes need to be properly plugged and abandoned to ensure compliance with federal and state regulations. If closure activities are not conducted, NNSA/NSO could be in violation of federal and state regulations.

NTS Legacy Compliance
This program addresses environmental issues that resulted from more than 40 years of nuclear testing activities at the NTS. These issues include items that are required by regulatory agencies as well as those that represent "good faith efforts" to avoid potential compliance orders. Failure to complete regulatory required activities (as scheduled) may invoke stipulated penalties or other regulatory action. NTS legacy compliance activities include the following:

- Remediation and containment of legacy issues from past Defense Programs nuclear experiments (regulatory drivers include a *Federal Facility Agreement and Consent Order* with Nevada)
- Demarcation efforts to fence and post radiologically contaminated surface areas at the NTS (regulatory drivers include Title 10 Code of Federal Regulations 835)

Back lling Tanks during Remediation of Corrective Action Unit 219

3.1.1.3 d Infrastructure Plann rojects

NSTec's S

3.1.1.4.2 Key Support Facilities

Table 3-1 illustrates the relationship between the Stockpile Stewardship Program Readiness and Technical Base Facilities projects and Science Campaigns and key support facilities and infrastructure Systems. Appendix A, Attachment G speci es the facilities that are designated as mission-critical.

3.1.2 Homeland Security and Defense Applications

Homeland Security & Defense Applications supports the DOE and NNSA programs and projects that assist the nation to meet national security challenges through the application of scienti c and technical capabilities and infrastructure. To accomplish this mission, projects are executed that use assets at the NTS, as well as two operational centers of excellence. Homeland Security and Defense Applications is organized to perform activities related to the following four key divisions:

- Homeland Security Technologies
- Counter Terrorism Operations Support
- Remote Sensing Laboratories
- Special Technologies Laboratory

Homeland Security and Defense Applications programs encompass emergency response assets, nonproliferation technologies, non-stockpile related test and evaluation, and counter terrorism activities. Homeland Security and Defense Applications objectives are as follows:

- Increase the use of emergency response assets.
- Provide emergency communications systems, capabilities, and databases to additional national and international agencies.
- Provide and expand services and support for nonproliferation technology.
- Provide facilities and capabilities to test and evaluate technology in support of national security technology-related development.
- Provide facilities and capabilities for training and exercises to support national security issues and rst responders.
- Provide an active program to maintain and expand NTS infrastructure to support counterterrorism activities.
- Design, fabricate, and eld rapid/rugged prototype capabilities to support emergency response in counter terrorism.

3.1.2.1 Homeland Security Technologies

The Homeland Security Technologies Division provides technology development and operational test and evaluation support principally in the areas

Table 3-1: Key Readiness in Technical Base and Facilities and Infrastructure Support for Stockpile Stewardship Projects and Activities

		Stockpile Stewardship Program - Readiness in Technical Base and Facilities						
	Key RTBF Support Facilities	Directed Stockpile Work	Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5	Campaign 12
Supporting Infrastructure: Power systems, roads, water/sewer systems, communication sys-, fire, emergency service facil-, ities, security/secure facilities site, planning, protective force facilities, maintenance/construction shops, administrative/technical facilities, and test/support/storage facilities	DAF	●	●	●			●	●
	U1a Complex	●	●				●	●
	JASPER		●	●			●	
	High Explosives Facilities (BEEF & Baker)	●	●	●			●	
	North Las Vegas Facility Complex	●	●	●	●	●	●	●
	Control Point Complex	●	●				●	●
	Atlas Pulsed-Power Facility	●	●	●		●	●	
	Los Alamos Critical Experiments Facility	●	●	●				●

of chemical, biological, nuclear/radiological, and high explosives countermeasures. The Homeland Security Technologies Division's objectives include:

- Provide training and technology to support U.S. Government activities related to nonproliferation technologies.
- Develop technology to support the U.S. Government in counter terrorism activities.
- Provide capabilities, infrastructure, facility, equipment, and diagnostics to support high-hazard, high-security testing and evaluation for DOE and other government agencies.

The Homeland Security Technologies Division consists of six focus areas for achievement of the speci c Homeland Security and Defense Applications objectives: Hard Buried Targets Program, National Aeronautics and Space Administration Test and Evaluation Program, Test and Evaluation – Radiological/Nuclear Counter-Measures Test and Evaluation Complex Program, Special Activities Support, the "G" Tunnel Program, and the Nonproliferation Test and Evaluation Program that are discussed below.

Hard Buried Targets Program

This focus area provides project planning, engineering, construction, and diagnostic services to determine better means of detecting, defeating, and/or neutralizing hard/buried/critical target facilities.

National Aeronautics and Space Administration Test and Evaluation Program

The President of the United States has called on the National Aeronautics and Space Administration for a bold new initiative to put people back on the moon in the near term and eventually to Mars. A necessary precursor to sustained human presence on the lunar surface is the development of infrastructure, power, and water to support them. An initiative to provide these services is by the use of telerobotic construction methods. A lunar analog is highly desirable to test and evaluate telerobotic cap abilities and construction methodologies. Because of the many surface subsidence craters on the NTS, National Aeronautics and Space Administration believes this will be an excellent analog for that test and evaluation program. In addition, several commercial companies have shown an interest in the NTS to test and evaluate promising methods of precision landing and obstacle avoidance systems for lunar landers.

Test and Evaluation – Radiological/Nuclear Counter-Measures Test and Evaluation Complex Program

Technical and operational test and evaluation of radiological and nuclear sensor systems for several government agencies, such as the U.S. Department of Homeland Security, the Defense Threat Reduction Agency and the DOE is performed through this program. This test and evaluation support is conducted on the NTS and at operational test beds throughout the country. Support includes:

- Evaluating system performance against technical standards
- Evaluating system performance from an operational perspective
- Developing test plans, procedures, and protocols
- Analyzing data and developing reports

NTS test and evaluation activities can include using materials up to DOE Safeguards and Security Category I and II at indoor and outdoor testing venues, including special nuclear materials and threat-based devices. Test and evaluation of sensor system performance can be conducted according to requestor speci cations or against national standards utilizing National Institute of Standards and Technology traceable radiological sources.

Emergency Responder Training

in Remote Sensing, Nuclear Emergency Response, Nuclear Nonproliferation, and Security Systems Technologies.

The Remote Sensing Laboratory provides proven, leading edge technical solutions and response capabilities to DOE/NNSA and work for others customers to combat terrorism, prevent and mitigate a nuclear or radiological event, and address challenges in support of national security. Capabilities include radiological emergency response; radiological and image data collection and analysis; aviation platforms and support; Geographic Information Systems; highly specialized and unique engineering research and development; technical training; and component and prototype development and testing.

Laboratory operations include high-power lasers; physics; electronics; microelectronics; sensor testing; aerial and still photography services; an anechoic chamber, and environmental simulation, as well as centers for rapid prototyping and intrusion sensors. In order to perform the diversi ed projects that are requested, these laboratories have a highly trained and experienced staff of scientists, engineers, technicians, and support personnel.

Radiological Emergency Response

Since 1974, the Remote Sensing Laboratory has responded to national and international nuclear emergencies and readiness exercises. Personnel provide search and render safe operations support for domestic or foreign nuclear material, weapons, or devices. They provide on-scene scienti c and technical advisory services, support the resolution of domestic and international nuclear and radiological incidents, and perform advanced surveys to look for radiological anomalies in survey areas. Consequence Management personnel provide expertise and technical resources to the DOE/NNSA in response to radiological emergencies involving dispersal of radioactive materials. Consequence management teams provide on-scene scienti c and technological advisory services to assess and resolve or mitigate a nuclear-radiological incident, emergency, or terrorist attack.

Aerial Measuring System

The Aerial Measuring System is based and operated out of the Remote Sensing Laboratory at Nellis with additional capability at Andrews. The Aerial Measuring System aircraft carry automatic navigations systems which are used in synchronization with radiological data acquisition systems that provide real-time measurements of extremely low levels of ground and airborne contamination. Multispectral scanner systems are used in acquiring a wide range of environmental data. The Remote Sensing Laboratory uses image analysis of spectral imagery and applies the technology to monitoring environmental conditions, assessing vegetation stress, and detecting hard/ deeply buried objects, etc.

Radiological Sensor Development and Testing

The Remote Sensing Laboratory provides integrated scienti c and technical products, highly-specialized and unique engineering research and development for radiation detection; component and prototype development; and tests state-of-the-art instruments and standard-setting technologies.

Andrews Operations

The operations at Andrews Air Force Base focus on emergency response in the National Capitol Region for both crisis response and consequence management. Andrews provides specialized support including facility operations, scienti c services, engineering and technical services, project operations support, and aviation operations support. The Radiological Assistance Program, Region 0, is centered at Andrews. Customers include NNSA and other federal agencies.

Aerial Measurement Systems Hurricane Katrina Response

Operator Monitoring a Plume during Flyover

Security Systems Technologies
A key problem for responders to a terrorist situation is gaining access to a physical location. Security Systems Technologies develop and deploy novel systems for access. The Remote Sensing Laboratory also provides realistic training to many government agencies on security sensor systems, specialized tools, and access techniques.

Nuclear Nonproliferation: The Remote Sensing Laboratory works to help prevent the proliferation of radiological Weapons of Mass Destruction through the recovery of radiological materials in Russian Federation and the van and portal monitor maintenance program in various countries.

Information and Communication Technologies
Remote Sensing Laboratory personnel support the design, operation, and maintenance of local, wide area, and satellite communication networks that provide voice, data, and video (live and digitally recorded). These networks are capable of supporting both classi ed and unclassi ed voice, data, and video services in response to emergency operations or exercises. The Remote Sensing Laboratory has also developed a state-of-the-art mobile communication package to provide data, video, and voice communications to emergency response teams anywhere in the world.

Facilities
The Remote Sensing Laboratory-Nellis complex is comprised of 35 secured acres on the Nellis Air Force Base. The land, which belongs to the Air Force, is under lease to the NNSA. Being adjacent to the Nellis Air Force Base runway is particularly advantageous for accommodating NNSA/NSO's nuclear emergency response activities. The complex has six permanent buildings, one structure (Satellite Communications), and three portable trailers. The Remote Sensing Laboratory-Andrews complex is comprised of one main building and a hangar complex.

3.1.2.4 Special Technologies Laboratory

Special Technologies Laboratory is located in Santa Barbara, California, and its focus is to meet emerging national security needs in the areas of Stockpile Stewardship and Homeland Security and Defense Applications.

Special Technologies Laboratory supports the Stockpile Stewardship and Readiness Programs with development and elding of optical and radiation diagnostics systems to measure properties of shocked materials, plasmas, and nuclear radiation. The technical staff possesses a wide range of capabilities in areas such as classical optical design, ber optics, high-power lasers, imaging systems, high-bandwidth measurements, nuclear and plasma diagnostics, and accelerator systems and experiments. Work is well-balanced among all three National Weapons Laboratories, and Special Technologies Laboratory staff routinely eld their diagnostics systems and acquire data from the large-scale physics facilities at the National Weapons Laboratories.

There is a strong technology overlap and sharing of resources between the Stockpile Stewardship and Homeland Security and Defense Applications at Special Technologies Laboratory, particularly in such areas as optical imaging, optical remote sensing, and radiation detection technology. Most Stockpile Stewardship Program personnel are also active in Homeland Security and Defense Applications projects, and the Stockpile Stewardship and Readiness Program projects bene t greatly from the electronics, software, and systems expertise of the Special Technologies Laboratory National Security Response personnel.

In the Homeland Security and Defense Applications areas, the Special Technologies Laboratory provides services for the design, rapid prototyping, and deployment of advanced sensor and detection

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NTS Mock Facilities

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Existing crater U3ax/bl is lled and has been closed in accordance with an approved closure plan. Waste disposal services are expected to continue at Area 3 as long as required by the DOE.

Transuranic Pad and the Transuranic Pad Cover Building

The Transuranic Pad and Transuranic Pad Cover Building are used to store and characterize transuranic and mixed transuranic waste before being shipped to the Waste Isolation Pilot Plant. The Transuranic Pad and the Transuranic Pad Cover Building are located within the Area 5 Radioactive Waste Management Complex. The Transuranic Pad is an asphalt pad, and is operated as a storage facility for mixed waste. The Transuranic Pad Cover Building is a large tent structure for storing drums and boxes before shipment to the Waste Isolation Pilot Plant in New Mexico. Joint Actinide Shock Physics Experimental Research waste will be stored and characterized at the Transuranic pad.

Waste Examination Facility

This facility is located just south of the Area 5 Radioactive Waste Management Site, and consists of the Visual Examination and Repacking Building and an area of gravel pads for mobile vendors. Waste characterization and repackaging are conducted at the Waste Examination Facility in preparation for shipment of waste for disposal at the Waste Isolation Pilot Plant.

3.2 Mission-Critical Facilities and Infrastructure/Linkages Between Facilities and Infrastructure and Mission Needs

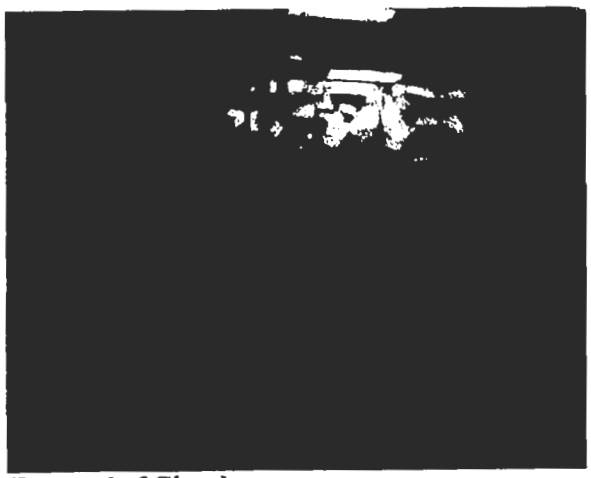
The NNSA has de ned mission-critical as follows:

> *Without constructed asset or parcel of land, mission is compromised. Land or constructed assets deemed necessary to perform the primary missions. This includes any facility or infrastructure predominantly used to perform scientific, production, environmental restoration or stockpile stewardship and without which, operations would be disrupted or placed at risk.*

Based on a guidance document from the Federal Real Property Council, changes were implemented in the Facilities Information Management System to change reporting of mission-essential infrastructure to three new categories: mission critical; mission dependent, not critical; and not mission dependent. This recast to the Facilities Information Management System was made in FY 2006.

Examples of mission-critical facilities include Device Assembly Facility and Joint Actinide Shock Physics Experimental Research.

Appendix A, Attachment G contains a detailed listing of mission-critical facilities. The NNSA/NSO mission-critical list was baselined using all facilities included on the Readiness in Technical Base and Facilities mission-critical list, and those facilities determined as mission critical to support security measures, and mission-critical facilities supporting Nuclear Weapons Incident Response. The list was then reviewed to include all facilities required to ensure operation of Readiness in Technical Base and Facilities, to support Nuclear Test Readiness, and to support the Stockpile Stewardship missions. The nal list was provided to the Project Review Committee. The Readiness and Technical Facilities list of mission-critical facilities has been reviewed and is under formal change control at the NA-10 level.



Removal of Glovebox

support, NSTec programs will require signi cant improvements and upgrades to the existing facilities and infrastructure. In response to the improvement requirements, Stockpile Stewardship Readiness in Technical Base and Facilities has 10-year investment plans for the U1a Complex, Control Point, Device Assembly Facility, and the Joint Actinide Shock Physics Experimental Research Facilities. Additionally, planning is underway to move Los Alamos Critical Experiments Facility operations from the Los Alamos National Laboratory to the Device Assembly Facility. Additional missions are also expected for the Remote Sensing Laboratories.

In addition to the growth of missions in the Device Assembly Facility due to security concerns and the move of the Critical Experiments Facility, other activities from the Nuclear Weapons Council have been proposed for the Device Assembly Facility. It is anticipated that these activities will continue to increase the Device Assembly Facility workload. Some may impact points of the infrastructure. New experiment technologies are also anticipated in the Stockpile Stewardship program. The Phoenix High-Explosive Pulsed-Power experiments are anticipated to rejuvenate the Big Explosives Experimental Facility and may lead to the development of another underground testbed.

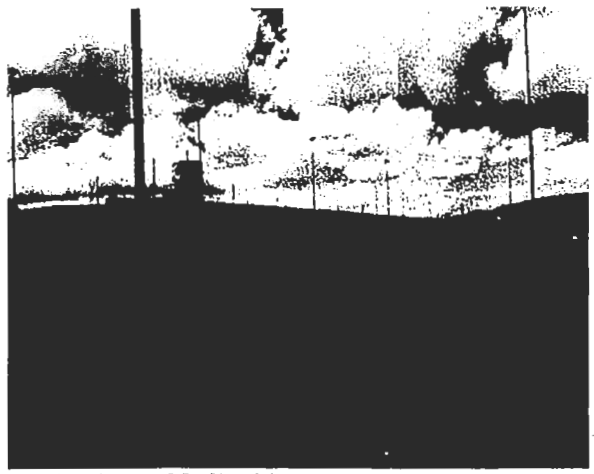
3.4 Future Non-NNSA Mission, Programs, Workload, and Impacts

Signi cant changes are expected overall in the Homeland Security and Defense Applications Program. NSTec expects the National Center for Combating Terrorism will continue to grow its capability, both in student capacity and the types of training offered. However, the funds for the growth are currently over existing targets for that program.

Work within the Homeland Security Science and Technology project and National Center for Combating Terrorism will impact aging infrastructure elements. Infrastructure elements will accelerate towards decline as they support the additional workload and stress for new work as well as support current missions. The U.S. Department of Homeland Security Science and Technology Director has identi ed $10 million a year for the operation and maintenance of the Radiological/ Nuclear Counter Measures Test and Evaluation Complex through FY 2009. This type of funding is expected to remain constant throughout the lifetime of the facility.

According to the Radiological/Nuclear Counter Measures Test and Evaluation Complex, Nevada Test Site Final Environmental Assessment, August 2004, the Radiological/Nuclear Countermeasures Test and Evaluation Complex requires 1 mile of paved roads and additional paved parking areas. The facility will consume 1,000,000 kilowatt hours per year. A new 100,000-gallon water tank, an 8-inch water line from well 4, and two septic tanks will need to be installed. Approximately 2,800 gallons per day of water will be used. Power and communication lines will need to extend from the Mercury Highway to the facility.

A factor impacting power system capacity is the continued growth of the surrounding municipalities. Las Vegas has been the fastest growing city in the nation, according to the latest census, with a 10-year growth rate of 82 percent. The town of Pahrump, in Valley Electric Association's coverage area, is currently growing at about 6 percent a year, which is impacting available capacity from the surrounding utilities supplying power to the NTS. This is a limiting factor to load increases at the site until offsite transmission capacity is upgraded. Onsite load increases need to be coordinated with the utilities supplying power to the NTS to allow suf cient planning for upgrades that may be required.



Device Assembly Facility

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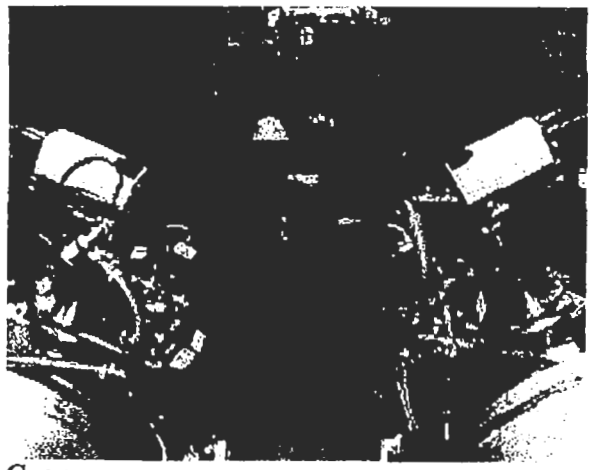
3.6 Facilities and Infrastructure Impact in Support of Information Technology

The NSTec Technology Needs Assessment for Stockpile Stewardship and Readiness serves as a tool for helping identify speci c technologies and capabilities that are likely to be of value to the successful execution of mission objectives over the next decade. Today, the NTS supports such diverse activities as subcritical experiments in the U1a complex, proton radiography, National Ignition Facility, the analysis of underground testing data, pulsed-power facility operation, and a host of other science-based stockpile stewardship endeavors. These activities require diagnostic systems with a wide variety of bandwidths and sensitivities.

The approach adopted for identifying the speci c technologies and capabilities needed for continued successful execution of NTS missions was to work backwards from high-level planning documents, through program and implementation plans, to reach an understanding of the drivers for technology development. The various drivers provided talking points for tabletop discussions with representatives from the National Weapons Laboratories and teams comprised of NSTec technical staff and managers on anticipated diagnostic requirements with their associated challenges and issues that led nally to a list of identi ed technology needs.

Most of the NNSA/NSO facilities have an outdated communications infrastructure for supporting local area networks because the cost to modernize is signi cant. Modernizing local area networks is frequently not possible until failures occur due to resource limitations and high replacement costs. The estimated cost of replacing wiring for local area networks in selected facilities exceeds $2,500 per network drop or up to $2 million per building. A new process is being evaluated as part of Six Sigma to determine if improvements in the wiring for local area networks could provide a nancial bene t. As a part of this evaluation, a pilot is underway. The estimated savings for using wireless technology in lieu of wiring replacement costs (at 10 percent) equates to a cost savings of $2,646,000. Savings would be realized by reducing the average cost for installation to support local area networks. NTS mission strategy would be enhanced in terms of execution and engineering by improving network bandwidth capabilities (speed). If wireless technology is determined to be feasible, the plan to replace local area networks will be revised to re ect replacements over the next 10 years based on de ned requirements for use of computing resources.



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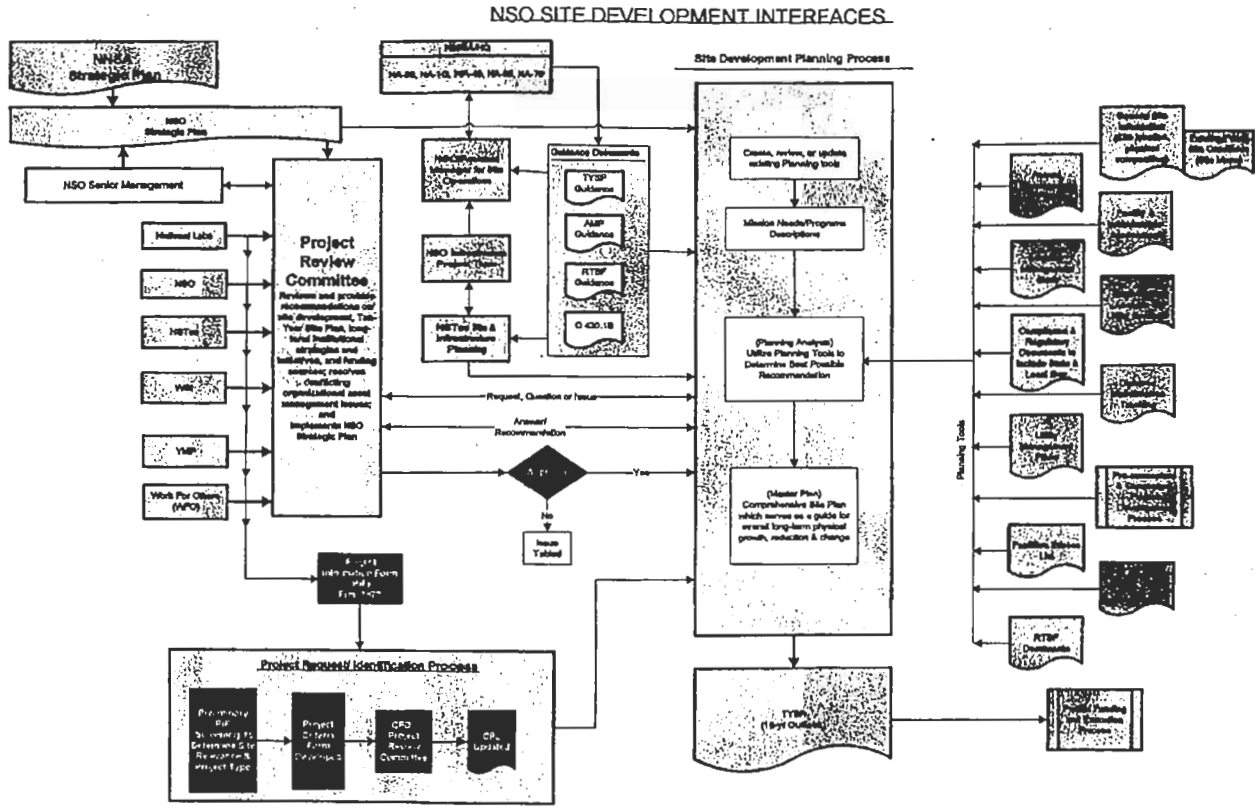


Figure 4-1: NNSA/NSO Planning Process

4.1.1 Facilities and Infrastructure Overview

4.1.1.1 Nevada Test Site Facilities and Infrastructure

The NTS is, by far, the largest and most extensive of NNSA/NSO's sites in terms of the complexity of its facilities, buildings, infrastructure, and land area. The remoteness and expanse of the NTS has enabled it to serve as the host of extremely hazardous operations and research and development activities for 50 years. These activities, dispersed throughout the approximately 1,375 square miles of the NTS, support the National Weapons Laboratories and the U.S. Department of Defense, Desert Research Institute, and various Work for Others customers. While many existing facilities and buildings on the NTS provide critical support for current activities, many aged facility and infrastructure elements make it dif cult, at best, to provide the world-class support required for mission-critical activities, campaigns, and Directed Stockpile Work.

4.1.1.1.1 Buildings

NSTec is innovative in the adaptive reuse of buildings. However, many of these buildings have now reached the end of their useful lives, both structurally and technologically. Despite the vigorous program to excess aged unusable buildings, the Facilities and Infrastructure Management System indicates 63 percent of the NTS building square footage is over 30 years old, and the average building age is over 32 years. This situation is exacerbated by a large number of temporary buildings that have been kept in operation for decades beyond their expected life.

The Facility Condition Assessment Surveys, reported from FY 2002 through FY 2006, determined that 35 percent of the NTS buildings are in excellent or good condition. The Facility and Infrastructure Assessments assessed the suitability of the buildings for their current missions and the life-cycle stage of their component systems. Data from these assessments will be combined, summarized, and used to update the Facility Information Management System in September of each year. This update will resolve inconsistencies between the Facility Information Management System and the current conditions and deferred maintenance requirements.

Skull Mountain Transmitter Site Repairs

4.1.1.1.2 Communication System

In FY 2003, a Communication System Management Plan was completed. Condition assessments showed that the majority of the communication systems at the NTS were in poor condition. Much has been accomplished since this report was issued.

The radio-frequency paging system and mobile radio systems have been replaced although they are now more than half way through their life expectancy. Their replacement needs to be addressed in the next planning horizon.

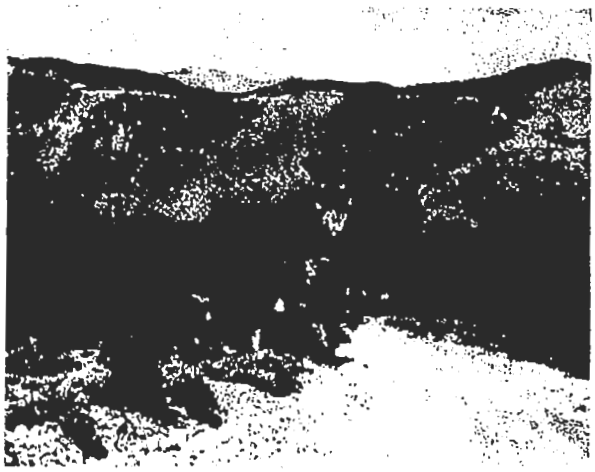
Much of the ber-optic and microwave backbone has been replaced. With the exception of a few spurs that are scheduled for funding next year, these critical systems are in good enough shape to last well beyond this planning horizon. Some augmentation should be expected to keep pace with the fast moving technical changes and bandwith demands so prevalent in today's telecommunications industry.

Modern reliable communication systems are needed to meet current mission demands. Some elements of the communication systems at the NTS have not kept pace with technology and, in those cases, cannot support (or are not compatible with) the capabilities of the National Weapons Laboratories or other users.

Some older communications equipment (exclusive of the above) cannot be recon gured to meet critical mission requirements. Signi cant sections of the copper cable plant and legacy portions of the local area network systems are in poor to failed condition and are in need of repair/replacement.

History has shown that computer based electronics and telecommunication systems are extremely susceptible to rapid obsolescence. User demands for more and more bandwith are ever present in the quest to perform day to day work.

Major replacements/upgrades to the local area networks and telephone plant are required. These projects are included in the Facilities and Infrastructure Recapitalization Program project list in Appendix A, Attachment A-4. However, NNSA Headquarters Facilities and Infrastructure Recapitalization Program is unclear about whether to allow these repair and management projects.



Road to Shoshone Transmitter

4.1.1.1.3 Roads

The NTS has 640 miles of roadways, 340 miles of paved roads, and 300 miles of unpaved roads. The NTS Roads Management Plan serves as the basis for projects listed on the comprehensive project list for maintenance of the road system that supports mission-critical requirements.

Road shoulders need to be maintained to control the excess growth of grass and shrubs that may create an extreme re hazard.

In FY 2003, a Roads Management Plan was completed. The following information is taken from the management plan and the condition assessment of the roads systems. These condition assessments showed numerous poor and failed areas.
The extensive area and diverse locations of NTS operations have a signi cant impact on the mileage of paved roads that need to be maintained. Age and accelerated deterioration have left the NTS road system in need of signi cant reinvestment. Paved roads are mainly chip-and-seal types and are maintained regularly under a Five-Year Road Maintenance Plan. Heavily traf cked roads are losing their subbase and base, which require major repair or replacement. The mission-critical and other high priority road projects have been included in this plan and are shown on the project list in Appendix A, Attachment A-3.

4.1.1.2 North Las Vegas Facilities and Infrastructure

4.1.1.2.1 Buildings

The North Las Vegas Facility consists of 29 buildings and 1 trailer that provide support for NTS activities. Three of these facilities and/or buildings are designated as mission-critical. The NNSA/NSO support facility is colocated with the North Las Vegas Facility.

If regularly maintained, these facilities and buildings should remain fully functional to support current missions during the TYSP planning period. Due to the age of some facilities and buildings, major system replacements will be required during the plan period out years.

The deferred maintenance values used are derived from the Facility Information Management System. The deferred maintenance values are updated only once a year in the Facility Information Management System from the Condition Assessment Information System.

4.1.1.2.2 Communication System

The North Las Vegas Facility telephone communication systems equipment was installed over 20 years ago. It has exceeded 90 percent

of its useful life and is less than adequate, but functional. Some major software upgrades have been subsequently installed to permit continued use of the host telephone system supporting all of NNSA/NSO. The existing copper cable plant is in good condition and should not require replacement during this planning horizon. In conjunction with NTS operations, the radio-frequency paging and mobile radio systems was replaced six years ago. These radio systems are more than half way through their useful life and need to be addressed during the next planning horizon. Data subsystem upgrades have not kept pace with evolving communications standards. Therefore, there is an ongoing backlog of required equipment change-out required to keep up with today's broad band network technology.

Projects are currently underway to modernize the system. For example, the Local Area Network system has invested approximately $4 million to meet today's data movement needs. A method of control and monitoring of the various telecommunications and data elements is essential to uphold the technical integrity of this major investment.

Allied with communications is the interconnection of facility re detection systems. Replacement of the North Las Vegas Facility re alarms began in FY 2003. Two re alarm projects were completed in FY 2004. A project to replace re alarms in the remaining six buildings is currently unfunded and unscheduled.

4.1.1.2.3 Roads

All paved roads and parking lots are deteriorating and will require replacement or rehabilitation. Parking lots will be resealed in FY 2008 through maintenance and repair projects. Expense funded projects will be used to replace road surfaces at both entrances into the North Las Vegas Facility during the planning period. Plans for a freeway yover in the vicinity of the North Las Vegas Facility is under consideration by the county. Once a nal plan is announced, impacts to the North Las Vegas Facility will be determined.

4.1.1.3 Remote Sensing Laboratory-Nellis Facilities and Infrastructure

4.1.1.3.1 Facilities and Buildings

Remote Sensing Laboratory-Nellis

The Remote Sensing Laboratory-Nellis occupies 6 buildings on approximately 35 secured acres on the Nellis Air Force Base in Las Vegas, Nevada.

A combination of inadequate investments since the rst building was initially occupied in 1989 and issues revolving around landlord responsibilities have caused the infrastructure at the Remote Sensing Laboratory-Nellis to deteriorate. Limited maintenance funding and an aggressive Preventative Maintenance Program have only served to slow aging of the infrastructure but not provide the recapitalization that would normally be expected had suf cient funding been available. As landlord, tenant, and program issues are identi ed and resolved over the next several years, the infrastructure systems will bene t from increased funding and wider reaching project development.

In order to support current program requirements, a 56,000 square-foot Support Facility is required. In the short term, three modular of ce buildings have been installed to house the personnel necessary to accomplish today's missions. Additionally, an approximately 18,000 square-foot Operations Support Facility is required to house expanding deployment operations. This will require considerable site development to ll a detention

basin and divert storm drainage around the Remote Sensing Laboratory-Nellis compound. Additionally, the security access system for the compound was completed in FY 2003.

4.1.1.3.2 Communication System

The Remote Sensing Laboratory-Nellis telephone communication systems equipment was installed over ten years ago. It is a subset of the old telephone switch based at North Las Vegas.

The Remote Sensing Laboratory-Nellis has recently undergone extensive ber optic communications and Local Area Network systems upgrades, bringing these facilities up to technological standards. These upgrades should keep the Remote Sensing Laboratory-Nellis functioning at peak ef ciency during this planning horizon.

4.1.1.4 Remote Sensing Laboratory-Andrews Facilities and Infrastructure Overview

4.1.1.4.1 Buildings

The Remote Sensing Laboratory-Andrews has two buildings. Both are considered to be in good to excellent condition. The major building is new and has been occupied since July 1999. The second building is a leased hangar.

Utilities are provided by Andrews Air Force Base utility systems, which are supplied by local utility companies. NNSA/NSO only maintains utility connections to the existing base infrastructure. Currently, these connections are relatively new and in good condition, so no major repair or replacements are needed.

4.1.1.4.2 Roads

The roads are maintained by Andrews Air Force Base.

4.1.1.5 Livermore Operations Facilities and Infrastructure Overview

There are no external facility and infrastructure requirements at this location.

4.1.1.5.1 Buildings

Livermore Operations is located in a building under a lease agreement. NSTec provides maintenance for the building interior. Currently, this building is maintained in excellent condition.

4.1.1.6 Los Alamos Operations Facilities and Infrastructure Overview

Los Alamos Operations Secure Computing

There are no external facility and infrastructure requirements at this location.

4.1.1.6.1 Buildings

The Los Alamos Operations is located in a building under a lease agreement. NSTec provides maintenance for the building interior. Currently, this building is maintained in good condition.

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North Las Vegas Local Area Network Survey

Having a full understanding of the current condition of its facilities and infrastructure enables NSTec's management to direct reinvestment decisions to accomplish the deferred maintenance goals. The traditional building assessment process consisted of the Condition Assessment Survey, which provided for inspection of the building's physical condition and determination of de ciencies and repair costs through the Conditional Assessment Information System. A building's true assessment involves more than just the physical condition. During FY 2002 through FY 2004, an enhanced methodology for facility and infrastructure assessments, based on Lawrence Livermore National Laboratory's Facility Assessment and Ranking System was developed. NSTec expanded the assessment process to include all infrastructure elements, which provided a unique methodology to identify the basic infrastructure elements, and to evaluate their condition.

The current Facility and Infrastructure Assessment Process provides a more complete assessment of facility and infrastructure elements by addressing facility and infrastructure suitability issues in relation to their programmatic needs through the use of the Lawrence Livermore National Laboratory model and by combining the asset's physical condition reported in the Condition Assessment Information System. This combined process results in a complete assessment which recommends improvements agreed to by program managers, facility managers, and facility owners. This process has developed into a methodology to more accurately provide assessments that:

- Provide management with a comprehensive facility and infrastructure evaluation, based on physical, programmatic, owner, and operator needs.
- Provide NNSA/NSO and the National Weapons Laboratories with functional, effective, ef cient, and up-to-date facility and infrastructure condition information.
- Provide a facility and infrastructure ranking methodology, which allows annual review of priorities with assessments updated over a three-year cycle.
- Are used to identify, develop, and support proposals for facility and infrastructure projects (i.e., General Plant projects, Line Item projects, Expense Funded projects, and Maintenance Reinvestment projects).

The Federal Real Property Council developed de nitions for facility categories. Under the new de nitions, the active facilities and the key elements of the infrastructure were categorized. ***Table 4-1*** depicts the facility category de nitions. It does not re ect the additional Readiness and Technical Base requirements for replacing mission critical and mission critical, not dependent facilities within ve days.

In FY 2004, more detailed assessments began that involved removing electrical panel covers, load tests, ow tests, etc. This will provide the best database possible for input into the Facility Information Management System and for the development of projects to reduce the de ciencies. It will also stabilize the size of NNSA/NSO's deferred facility maintenance.

With the implementation of the Facility and Infrastructure Assessment Process, NSTec and NNSA/NSO management have acquired a powerful tool to use in making reinvestment decisions for the site. The details of the assessment process and its interface with the Condition Assessment Survey process are included in Appendix C.

Through the continued use of this Facility and Infrastructure Assessment program, projects and maintenance actions will be identi ed to aim management toward an improved priority-based investment strategy for the mission-critical facilities and infrastructure most in need of repairs, upgrades, or replacements. The result will provide a site that has reached a target condition which can be maintained at optimum levels and will then function at optimum levels.

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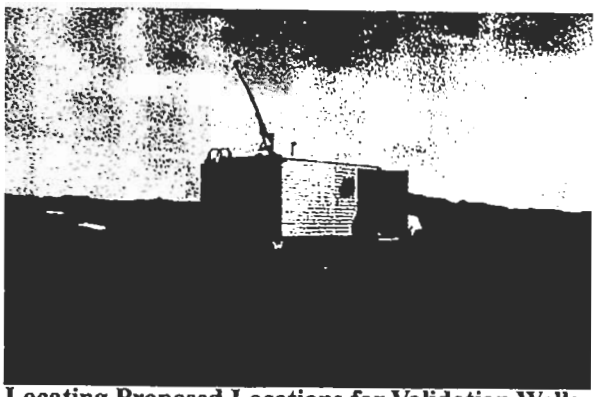
support ranges from concept development to eld demonstrations to data interpretation. Los Alamos Operations also has a satellite location supporting Sandia National Laboratories in Albuquerque, New Mexico at Sandia National Laboratories' Technical Area IV location on Kirtland Air Force Base.

The Special Technologies Laboratory is located in three leased buildings in Santa Barbara, California, near the campus of the University of California at Santa Barbara. The Special Technologies Laboratory provides specialized expertise in radiation detection and spectroscopy, applied physics, software and rmware, and compact low-power electronics.

Leased facilities at auxiliary sites are necessary to ensure the support team is located where the work in support of the missions is conducted. These leases are expected to continue into the foreseeable future.



Locating Proposed Locations for Validation Wells

4.1.2.5 Land-Use Planning

4.1.2.5.1 Long-Term Stewardship

The NNSA's Hydrologic Resources Management Program's primary responsibility is to acquire hydrologic data and information of groundwater supplies to support ongoing activities and to assist in planning new uses for the NTS. The main objective of this program is to provide a sound technical basis for NTS groundwater use decisions regarding the quality and quantity of water resources available on and around the NTS on a long-term scale. A major element is the protection and long-term stewardship of NTS groundwater resources. A range of activities including monitoring of groundwater levels, quality and consumption, monitoring well evaluation, and maintaining a wellhead protection program are conducted to accomplish this element. The program supports groundwater ow model development for both the Death Valley Region, which includes the NTS, and for the NTS itself, and will continue to support re nement of these models. Based upon hydrologic investigations and modeling, proposed new groundwater uses are evaluated (on and near the NTS) for their potential impacts on NTS groundwater reserves, quality, ow paths, and radionuclide migration.

The physical controls needed to ensure the protection of people and the environment from exposure to contaminated sites at the NTS will depend on future land-use policies, remediation, and closure activities. All environmental restoration activities at the NTS and Tonopah Test Range (remediation and closure of historically contaminated sites) address chemically and radiologically contaminated soil and waste materials at corrective action sites. These corrective action sites may be either clean closed or closed in place. If a site is closed in place, it may still contain contamination and may be use restricted, depending on risk and expected future use of the site. Remediation of environmental restoration sites at the NTS takes place under the *1996 Federal Facilities Agreement and Consent Order* between the U.S. Department of Energy, the state of Nevada, and the U.S. Department of Defense. The *Federal Facility Agreement and Consent Order* de nes a Resource Conservation and Recovery Act-like process for remediation and closure of these sites and requires the state of Nevada review and approval of all corrective actions.

The results of the restoration activities associated with the environmental restoration sites (including underground test areas, industrial, and soil sites) need to be reviewed. The overall result of the review will be a determination of whether any changes are needed to ensure the continued adequacy of the physical controls with respect to radionuclide releases from sources of residual radioactive materials other than the waste disposal sites. The review will also identify data gaps and uncertainties associated with sources of residual radioactive material.

Future land use is another key element, and changes in land use must be considered in annual determinations of adequacy. The review of land use is to be based on a review of documentation

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CERCLA; they are instead regulated under the Resource Conservation and Recovery Act. The only requirements of CERCLA applicable to NTS operations pertain to an emergency response program for hazardous substance releases to the environment. Federal, state, and local emergency planning authorities must be provided information regarding the presence and storage of hazardous substances and their planned and unplanned environmental releases, including provisions and plans for responding to emergency situations involving hazardous materials. In addition, federal compliance with right-to-know and pollution prevention requirements requires all federal facilities to comply with the provisions of the *Emergency Planning and Community Right-to-Know Act* including the requirement that the local emergency planning committee and state emergency response agencies be noti ed immediately of accidental or unplanned releases of an extremely hazardous substance to the environment. Also, the national response center must be noti ed if the release exceeds the CERCLA reportable quantity for the particular hazardous substance.

4.1.2.5.4 Assigned Use Areas

Figure 4.4 depicts the current layout and area division of the NTS. It also depicts the proposed 2030 Complex corridor that de nes the primary area of activity for defense programs at the NTS. As shown, most mission-critical facilities and infrastructure on the NTS are located within this proposed 2030 Complex corridor. The majority of maintenance, support, and development activities will be directed towards improving facilities and infrastructure in this proposed 2030 Complex corridor.

The NTS has consolidated most of the NNSA experimental facilities along a central proposed 2030 Complex corridor parallel to the Mercury Highway. This allows the high-hazard experiments to occur in a fairly cost-effective manner and the focus to remain on the mission-critical elements of the NTS. It also allows maintenance to be reduced for the majority of the site, where the area is approximately 1,375 square miles. Mission-critical buildings and infrastructure are identi ed by users through the Project Review Committee and Readiness and Technical Base Facilities efforts.

Krakatau being Lowered into an Emplacement

Roads that provide access to the mission-critical buildings are located along, or in near proximity to, the Mercury Highway, the main thoroughfare on the NTS. The roads outside the designated proposed 2030 Complex corridor are not maintained unless paid for by a speci c program.

Several infrastructure elements within the NTS have replaced single function structures with a multifunction structure. Examples of this are power and telephone lines which are carried on the same poles and the 138-kV high-voltage lines and ber-optic cables that are supported by common structures. Communication towers support a variety of communication media including microwave, two-way radio, and pagers.

The efforts that result in consolidation, improved safety and security, and economies of scale advantages have enhanced the capabilities necessary to maintain the Stockpile Stewardship Program, as well as, meet the national security technology needs of other federal agencies and other funding sponsors that choose to locate their projects and activities at the NTS.

4.1.3 Site Footprint Management

After more than 40 years of testing, the NTS has had various groupings of buildings and other structures onsite. Since the cessation of the nuclear testing in 1992, and the subsequent creation of the Stockpile Stewardship Program, NNSA/NSO and NSTec have consolidated working environments and disposed of many excess facilities.

Planning and preparation for the disposition of excess facilities has been a high priority at the NTS since 2001 when an aggressive and effective program, sponsored by the Facilities and Recapitalization Initiative, to dispose of buildings that were no longer needed was established.

The process in place is to identify buildings that no longer support NNSA/NSO's missions, programs, or requirements and dispose of those excess buildings. Disposing of such buildings results in signi cant cost and/or risk reductions. The data reported in the TYSP re ect the current and projected NNSA excess buildings elimination and new construction at the site. Identi cation of sources to fund disposition of excess buildings is ongoing.

4.1.3.1 Excess Facilities Footprint Elimination

Demolition of Building 6-6p

Disposition of excess buildings has been identi ed for FY 2007 through FY 2010 and totals 39,680 gross square feet. Thirteen buildings totaling 47,955 gross square feet were demolished in FY 2006. Two buildings totaling 5,300 gross square feet are scheduled for disposition in FY 2007. Plans for FY 2008 include the demolition of two buildings totaling 3,210 gross square feet. Fourteen buildings totaling 25,533 gross square feet have been identi ed as potential candidates for demolition in FY 2010. Excess building demolition is supported by the Facilities and Infrastructure Recapitalization Program funding and is executed by the prioritized list provided in this TYSP (Appendix A, Attachment E-1). NSTec has scheduled disposal of uncontaminated buildings on the disposal list through FY 2010. Because the FY 2004-2005 demolition program ful lls NNSA/NSO's requirement to dispose of 50 percent of all non-contaminated real property determined to be excess to all NNSA mission requirements, the requirements have been exceeded.

4.1.3.2 New Construction Footprint Added

A summary of new construction footprint added since the FY 2003 baseline is summarized in Appendix A, Attachment E-2. The new construction scheduled for FY 2008 and beyond is primarily funded by other government agencies (U.S. Department of Defense), work for Others (U.S. Department of Homeland Security), and Readiness in Technical Base Facilities Line Item (Fire Stations 1 and 2). Several projects that were included in previous plans were reduced in scope or eliminated due to funding constraints.

4.1.3.3 Grandfathered Footprint Added

A total of 23,282 gross square feet of grandfathered footprint was added by the Atlas Pulsed-Power Facility (22,457 gross square feet) and the Atlas Site (875 gross square feet). This is re ected in Appendix A, Attachment E-3, Grandfathered Footprint Added.

4.1.3.4 Site Footprint Reduction Analysis

The Facilities Disposition Plan is contained in Appendix A, Attachment E-1. The New Construction Added spreadsheet (Appendix A, Attachment E-2) is included as requested by the guidance. This information is summarized in graphic representations (Appendix A, Attachments E-4a and E-4b) of gross square feet of space eliminated and space added between FY 2002 and FY 2010.

4.1.3.5 Waiver and Transfer

To date, 200,000 gross square feet has been transferred to Sandia National Laboratories. This is re ected in Appendix A, Attachment E-5, Waiver/Transfer Log.

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Sanding a Door in Preparation for Painting

In the next 5 years, deferred maintenance and corrective maintenance is projected to shrink as baseline maintenance funding grows to 2-4 percent of replacement value.

The total deferred maintenance in the FY 2003 baseline was identi ed at $330 million. The total amount of deferred maintenance expressed in dollars grew because of a much more thorough and accurate condition assessment of all facilities and infrastructure. The required maintenance total re ects the planned increase of maintenance projects derived from the condition assessment program. These projects support the increase requested to meet deferred maintenance reduction targets. In FY 2003, the rigorous condition assessments were internally audited to ensure consistent identi cation of de ciencies. In FY 2004, Sandia National Laboratories conducted an independent audit of the FY 2003 condition assessments. In FY 2005, the rst full cycle of facility and infrastructure assessments conducted by certi ed Condition Assessment Information System inspectors was completed. In addition to the stronger assessment process now in use, development of maintenance projects by NSTec's Infrastructure Department increased deferred maintenance at a level that will provide the baseline for achieving NNSA corporate goal reductions.

Facilities and Infrastructure Recapitalization Program and Readiness in Technical Base and Facilities direct funds will assist in achieving the desired level of deferred maintenance reduction. Indirect maintenance funding remains insuf cient to maintain the deferred maintenance goals in mission-critical facilities in the long-term. As a consequence, achieving the desired deferred maintenance reductions will require additional direct and indirect funding identi ed in the *NSTec FY 2007 Annual Maintenance Plan.*

For the past four years, the required maintenance reported in the Facility Information Management System has declined. This reduction in projected requirements was based on the method of calculation used for required maintenance per the NSTec cost model. The estimate was based only on the cost of preventive maintenance and predictive maintenance craft hours applied during the previous year. With the advent of a more exible computerized maintenance management system, maintenance managers have been able to perform a more accurate job of segregating preventive maintenance and predictive maintenance from other work. Beginning in FY 2001, the reduction in reported completion rates was caused by cost model changes that shifted overhead charges out of recharge pools. However, there was no actual reduction in preventive maintenance workload. The apparent decline from FY 1999 to FY 2002 was not due to a reduction in hours applied to preventive maintenance (an historical average of 45,841), but a reduction in the burdened cost of labor applied. With development of the *FY 2006 Annual Maintenance Plan,* a consolidated site-wide plan, required maintenance shown in the Facility Information Management System will track consistently with the TYSP projections and will be sorted by mission-critical versus other facilities and infrastructure.

Three factors affect this:

(1) A revised comprehensive presentation of need (direct maintenance, indirect maintenance, Facilities and Infrastructure Recapitalization Program and Maintenance Reinvestment projects, and the planned maintenance identi ed for accomplishment).

(2) Realignment with the TYSP strategy for deferred maintenance reduction.

(3) A total picture of the amount of funding required for maintenance was provided for the rst time in FY 2003. Prior to FY 2003, the Facility Information Management System estimates of required maintenance did not include authorized planned maintenance.

In FY 2007, required maintenance numbers continued to increase as projected in FY 2006, re ecting the expectations expressed in the deferred maintenance reduction commitments. However, it is unknown at this time whether budgeted maintenance will increase. Deferred maintenance reduction will experience heightened activity in the next few years. To achieve a decrease in deferred maintenance, the NNSA must rst maintain maintenance funding (required maintenance) at approximately 2 percent of replacement plant value and establish a recapitalization funding pro le at approximately the same level. Providing an accurate required-maintenance estimate is one component of the solution to enable budgeting forecasts to cover maintenance needs in out years. Institutional General Plant Projects and Line Item projects are also necessary components to reduce deferred maintenance to within industry standards.

4.1.6 Identification of Replacement-in-Kind Requirements

Replacement of Well C-1 Pipeline

Replacement-in-kind is an evolving program coming from NNSA/NA-10. Replacement-in-kind is conceptually designed to provide for key recapitalization needs as the Facilities and Infrastructure Recapitalization Program concludes. Replacement-in-kind is designed to provide a funding mechanism for replacement of large facility or infrastructure systems at NNSA sites for projects exceeding $500,000.

During development of the FY 2003 deferred maintenance baseline, requirements were established to forecast the replacement dates for facility and infrastructure subsystems based on expected physical lives. Replacement information may be modi ed after periodic condition assessments. Speci c replacement-in-kind projects are identi ed in Appendix A, Attachment F-6, and include only replacement-in-kind needs associated with non-programmatic real property assets.

Projects were developed utilizing the projects module of the Condition Assessment Information Survey software and include deferred maintenance identi ed as part of the FY 2003 deferred maintenance baseline and deferred maintenance identi ed during roof assessments.

4.1.7 Utilities

4.1.7.1 NTS Utilities

The FY 2005 Facility Infrastructure Surveys revealed that 44 percent of the utilities' infrastructure elements need major rehabilitation or replacement. Many elements in the electrical, water, and communications areas were rated as poor. These components are discussed in the following subsections.

4.1.7.1.1 Electrical Power

Most of the NTS power system is over 30 years old. Three Line Item projects over the past ve years, coupled with aggressive maintenance, have stemmed the tide of transmission system failures. However, the age of the power system components and the lack of spare parts on the market leave a substantial amount of work to bring the power system to a future safe and reliable service status required to support all Defense Program activities at the NTS. In FY 2003, a Power Transmission System Management Plan was completed. The following information is taken from the condition assessments and the management plan.

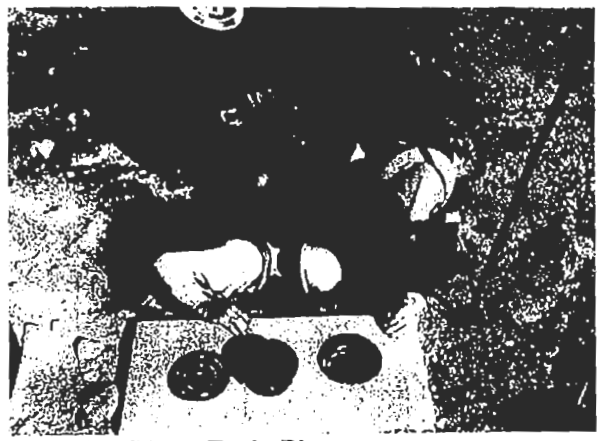
The 138-kV Substation Modernization Project (completed in FY 2002) and the Bus Upgrades Project (completed in FY 2005), along with other projects, have made progress in upgrading the

NTS's aging power system. The replacement of transmission and distribution components during this 10-year period will bring these components into fair to adequate condition, which is still short of the goal of good condition. These components consist of power lines, substations, oil fused cutouts, oil circuit reclosers, oil circuit breakers, vacuum circuit breakers, and transformers. The replacement of failing oil-based protective interrupting devices, valued at over $30 million, will be accomplished over a 5-year period that started in FY 2005. These devices are integral to the reliable and safe operation of the NTS's electrical transmission and distribution systems. Also, the repair of 60 miles of transmission lines with failing poles and cross-arms will be necessary in the last half of the 10-year period. One 12.5-kV distribution system is in poor condition, and needs to be replaced in the next 10 years. The replacement and upgrade of the Supervisory Control and Data Acquisition system for the 138-kV electrical transmission system are also required during the planning period. Without these projects, maintenance personnel will lose remote control capability of the switching for the system. Labor and maintenance costs to keep the system functioning will increase as a result. Projects to correct these potential areas of failure are shown in Appendix A, Attachments A-3 and A-5.

The capacity of the NTS power system is adequate for the current loads and projected loads; however, the system's capacity is becoming more strained as the surrounding utilities continue to grow at a record pace. Exeter and Associates performed a load study for the NTS in FY 2001, which predicted a modest growth in loads over the next several years. Based on that projection, the NTS is expected to increase its loads to a possible 40+MW by FY 2008. At this load level, combined with projected utility growth, the 138-kV transmission system will be at peak capacity. The utilities serving the NTS are planning upgrades that will increase total system capacity and NSTec has informed power suppliers of our expected loads to allow proper planning.

Power requirements at the NTS have changed signi cantly since last year, when the TYSP reported a requirement for the Yucca Mountain Project of 52 MW. Since then, the current plan for the Yucca Mountain Project is to purchase power directly from a local utility while using 10 MW from the NTS during construction. Once the Yucca Mountain Project is directly serviced by the Valley Electric Association, it may have a signi cant impact on the maximum power capacity available to the NTS. Over the next several years, Work For Others Clients at the NTS will require several mega-watts of power in addition to the new power requirements for Critical Experiment Facility (formerly Technical Area 18) as they go into full operation. Even though it appears at this time that the NTS has adequate power for these new loads as well as the existing Defense Programs loads, the available power at the NTS may approach full capacity during this planning period.

4.1.7.1.2 Water Supply System



Installing Water Resin Pipe

In FY 2003, a Water System Management Plan was completed. Although the estimates are not complete on all 57 potential projects identi ed in the plan, the projects estimated so far exceed $50 million.

In addition to the data in the management plan, the FY 2002 and 2003 condition assessment of the entire water system showed numerous poor areas. Major repair or replacement of some water system elements that provide programmatic support is required beyond that which routine maintenance can correct. As with other systems, age and accelerated deterioration due to numerous microquakes, make major repair or replacement an operational issue. The *Safe Drinking Water Act* ruling that lowered the allowable level of arsenic in drinking water to 10 ppb maximum was complied with by January 2006. Projects are proposed for two booster pump stations, ve storage tanks, approximately 10 miles of underground pipeline, and mitigation of tank corrosion and structural issues. Also, the installation

of back ow prevention devices on the domestic water and re sprinkler supply lines to facilities is necessary.

4.1.7.1.3 Sanitary Waste Disposal System

The Sanitary Waste Disposal System is in fair to adequate condition. A full investigation and video analysis to determine the actual condition of buried lines was completed in FY 2003. This analysis revealed that some of the lines were blocked, particularly the lines in Area 12. Maintenance crews cleared the blocked lines as necessary for systems still in use.

Existing sewage lagoons have not had suf cient ow to stay in compliance with Nevada state requirements. Therefore, seven septic systems were installed allowing the lagoons to be bypassed. With the installation of these septic systems, the NTS both complies with state regulations and meets current requirements.

In addition, the existing septic system for Building 5-08 at the Area 5 Radioactive Waste Management Complex was replaced with a new 1,500 gallon tank and a new leach eld in FY 2003.

4.1.7.2 North Las Vegas Utilities

Workers Install a Well at the North Las Vegas Facility

All of the utility service lines on the North Las Vegas Facility Complex (i.e., power, water, sewage, and natural gas) are owned by NNSA/NSO and maintained by NSTec. Responsibilities for power, water, and gas lines begin at the supply service cutoff while responsibility for the sewage outfall lines begins at the property site line. Overall, the current condition of all North Las Vegas Facility Complex utilities infrastructure is good with only minor repairs required periodically. No major repairs or replacements are anticipated, and with the replacement of a section of failed gas line in FY 2003, current capacities of equipment and lines are suf cient for existing loads.

4.1.7.3 Remote Sensing Laboratory-Nellis Utilities

Utility support to the Remote Sensing Laboratory -Nellis is through the Nellis Air Force Base utility systems, which in turn, are supported by local utility companies. NNSA/NSO maintains utility connections to the existing base infrastructure. These connections are relatively new and in good condition. The electrical system to the Remote Sensing Laboratory-Nellis compound is adequate to provide an additional 2 MW of power. However, the ability to move that power through the Remote Sensing Laboratory-Nellis compound is nonexistent, since the existing electrical distribution system is only capable of supporting present demands.

The water system suffers from constant low pressure, which continues to endanger the Remote Sensing Laboratory-Nellis mission by shutting down the water-cooled condensers that allow the air conditioning system to function. Also, no expansion or addition of water-consuming facilities can be made until a new water source can be installed. Nellis Air Force Base has announced a water loop project in the next ve years and has invited NNSA/NSO to participate. In the interim, Nellis has offered to allow NNSA/NSO to tap into the water line running to Area 2 and to extend a line approximately 4,000 feet from the perimeter road to the compound. Eventually, this interim line could be capped and the same connection used on the new loop that would be adjacent to the property. The most economical new source is approximately 1 mile east of the

compound and belongs to the Southern Nevada Water Authority. NSTec is working with Nellis Air Force Base to solve the water problem.

4.1.7.4 Remote Sensing Laboratory-Andrews Utilities

Utilities are provided by Andrews Air Force Base utility systems, which are supplied by local utility companies. NNSA/NSO only maintains utility connections to the existing base infrastructure. Currently, these connections are relatively new and in good condition, so no major repair or replacements are needed.

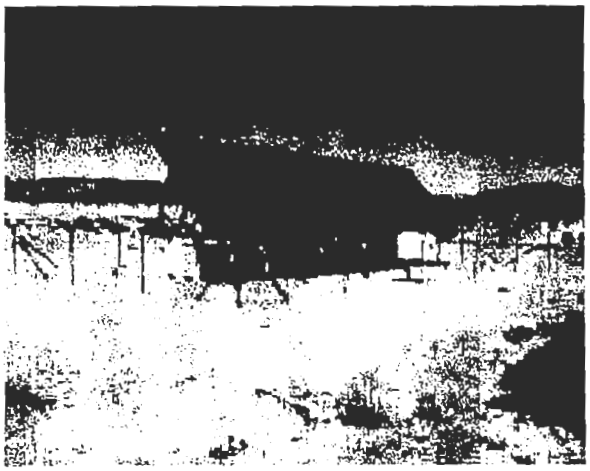
4.1.7.5 Livermore Operations Utilities

All utilities are provided by local utility companies.

4.1.7.6 Special Technologies Laboratory Utilities

All utilities are provided by local utility companies.

4.1.8 Energy Management



Solar Powered Low-Volume Continuous Air Sampling Station near Sedan Crater on the NTS

The NSTec Energy Management Program mission is to implement the energy Policy Act of 2005 through reducing the use and cost of energy in NNSA/NSO facilities by advancing energy ef ciency, water conservation, and the use of solar and other renewable energy sources.

NNSA/NSO currently utilizes electricity, fuel oil, natural gas, liquid petroleum gas, and steam in their facilities. Vehicles and equipment are powered by automobile gasoline, diesel, aviation gasoline, and jet fuel.

Historical energy use has steadily declined since FY 1985, the year established by NNSA/ Headquarters as the base year for energy consumption. By FY 2003, NNSA/NSO sites had achieved a 57 percent reduction in energy consumption from the baseline. Recent increases in activities have reduced the reduction to 37 percent which is still above the previous Presidential Directive to reduce energy by 35 percent by FY 2010. One of the current energy goals is to reduce the greenhouse gas emissions that results from building energy use by 30 percent below FY 1990 levels by FY 2010. Energy use in terms of British Thermal Units was 216 x 10^9 or FY 1985 and 136 x 10^9 for FY 2005, a decrease of 36.9 percent for that time period. Petroleum-based fuel usage in NTS buildings totaled 318,852 gallons in FY 1985 and 137,392 gallons in FY 2005, a reduction of 56.9 percent for that time period.

Prior years' accomplishments in energy savings quali ed for In-house Energy Management funding to perform energy savings projects. The projects included retro tting lighting for the Remote Sensing Laboratory -Nellis, and NTS buildings 23-117 and 23-132; installing programmable thermostats for 100 buildings; installing electrical meters at NTS; and an Energy Savings Performance Contract was expected to retro t lighting at all North Las Vegas buildings and the Remote Sensing Laboratory-Nellis hangar. All North Las Vegas Facility buildings are managed by an energy system which controls lighting and heating, ventilation, and air conditioning during off hours and weekends. Most of the facility was desert landscaped to reduce water consumption.

Existing site-wide energy management programs include a policy statement and procedure for no cost/low cost energy conservation opportunities. In addition, maintenance personnel developed a facility condition inspection program to prevent

additional deterioration and to minimize the impact of system failure on operations within the facility. The inspection program ensures that facilities and installed equipment are maintained in an energy-ef cient condition that adequately supports the present mission and long-range planning requirements associated with the structures, systems, and components. A total of 300,000 square feet of existing facilities were audited for energy consumption.

Currently, two utility companies have demand-side management programs available in which NNSA/NSO participates: the Express Ef ciency Rebate Program from Paci c Gas and Electric Company and Sierra Paci c Power Company. The rebates from Paci c Gas and Electric Company and Sierra Paci c Power Company offer NNSA/NSO reduced savings on the utility bill when ef cient products, such as lighting and programmable thermostats, are installed.

NSTec implemented a company procedure to de ne internal energy controls for new buildings and building alterations. Beginning with the Conceptual Design Phase, and prior to actual construction, new buildings will automatically be evaluated for life cycle cost-effective energy-ef cient technologies. New building commissioning principles will be used in all new design and construction projects. Recently, NSTec evaluated a potential Energy Savings Performance Contract at the NTS. NNSA/NSO is actively responding to newest Presidential request to reduce energy by 10 percent compared to new FY 2004 baseline. NNSA/NSO utilizes energy star computer systems, copiers, and printers and, in conjunction with NSTec Procurement, has set forth requirements to purchase products within the 25 percent energy ef ciency barrier from vendors who provide such products. Over 50 percent of the energy-consuming products purchased by NSTec meet the Federal Energy Management Program's criteria for energy ef ciency. In FY 2000, Building 177 and Building 132 at the NTS were labeled Energy Star Buildings. These were the rst two facilities in the DOE complex to receive an Energy Star rating. NSTec established an energy-savings process improvement project to sponsor a contest for employees to provide ideas and look for energy and costs savings opportunities. It determined that the best no cost energy-saving efforts will be to increase awareness. This would involve employees and provide incentives to save energy. It would also include sponsoring activities to ensure that thermostat temperatures are moderated; lights are turned off when not in use, and other energy-saving actions. A NSTec website was established to link to federal and local sites which promote energy saving ideas. An employee incentive energy-savings suggestion program was launched in FY 2006. The results of the suggestions implemented through this program and progress towards a 10 percent energy savings goal are tracked and reported.

Additional signi cant future savings can be accomplished. Current efforts include obtaining support for the renovation of Mercury Base Camp at the NTS, shown to achieve signi cant energy savings. Over 60 billion British Thermal Units per year can be saved through new energy-ef cient facilities after Phase II is complete.

A Mobile Detection Vehicle being Tested at the NTS

4.2 Security

As a result of the events of September 11, 2001, several programmatic initiatives were implemented to strengthen the safety and security at all facilities in the DOE/NNSA complex. They include: permanent implementation of an increased security posture that corresponds to the third of the ve levels of national security conditions; several cumulative increases in de ned adversary capabilities as re ected in the revisions to the Design Basis Threat; and mandated implementation of a Security Police Of cer-III/Special Response Team program at NNSA/NSO. A formal vulnerability analysis was

conducted to evaluate the impact of these changes on the security of NTS facilities, coupled with the transition of the Device Assembly Facility to a full time Category I Special Nuclear Material facility. This analysis is reflected in the updated Site Safeguards and Security Plan. This plan, the required security enhancements and corresponding increases in funding have been coordinated with site Federal Security Staff and approved by the Federal Site Manager. One new requirement under the enhanced security posture is a screening guard station located on the access road to the Device Assembly Facility, just off Mercury Highway, where all vehicles approaching the Device Assembly Facility will be examined prior to their approach to the Device Assembly Facility. A temporary facility is currently serving this function until funding for a permanent implementation is available. Several other security upgrades are also required within the Device Assembly Facility to meet these requirements, several of which are currently underway.

Due to Design Basis Threat-related security initiatives implemented at the NTS over the past year, including a more than doubling of the size of the protective force, and increasing their armament, existing facilities are inadequate. The impact of these enhancements is seen in dramatic increases in basic daily requirements such as expanded locker space for protective force personnel, along with increased space for equipment storage and weapons armory capacity. Hiring and training the additional required protective force personnel has placed extreme demands on limited classroom space at the NTS which has been temporarily addressed through the installation of trailers at the Wackenhut Services, Incorporated Training facility. Implementation of the Security Police Officer-III/Special Response Team program and its extensive training regimen cannot be effectively accomplished with existing facilities. The training regimen needs to include an elevated shooting platform, which is currently in the procurement chain, and room for a modern Firearms Training System. A new Live Fire Shoot House that was necessary to meet Order requirement is nearing completion. The additional requirements 2005 Design Basis Threat will be satisfied primarily through the use of technologies such as barriers and enhanced weaponry rather than additional Security Police Officers, minimizing the pressure for additional temporary facilities.

Construction of Shoot House

4.2.1 Security Infrastructure

Wackenhut Services, Incorporated has requested funding in an immediate effort to expand current operational facilities at the NTS in order to accommodate additional personnel and support increased operational requirements. At the NTS, three buildings (1000, 1001, and 1002) make up a small complex adjacent to the NTS main entrance. In Area 6, Building 625, CP-41, and CP-43 support security activities in the forward areas.

OUO Exemption 2

Due to the rapidly increasing size of the protective force, especially, the male population, additional male locker room space was imperative, as was expanding the size of the fitness facility to accommodate more users. The NTS badging office was moved from Building 1000 to 1002. This move provided the space for expansion, in Building 1000, of the fitness facility and male security police force locker room and allowed the renovation of the badging office area rest room facilities into the female security police officer locker room. Building 1001 housed the Assessment/Oversight and Operations Divisions. Both Divisions received additional personnel. The Assessment/Oversight Division exceeded its current available space, therefore, the Division moved from Building 1001 to 1002. Subsequently, the move of the Assessment/ Oversight Division allowed the Operations Division to expand within Building 1001 to include

converting the facility into a general limited access area, which better supports its security activities. Building 1002 now houses the NTS Badging and Assessment/Oversight Division functions.

OUO Exemption 2

This complex will require significant facility renovation and new construction efforts in order to properly train, test, and evaluate protective force personnel, including Special Response Team. A new Training Facility conceptual design has been submitted as a proposed Line Item. In the interim, Building 1103 has required expansion of the administrative office area to support the expanded training cadre and new curriculum developers. The addition of two general instruction classrooms are required to accommodate an increased security police officer force and expansion of the existing armory. The installation of a new shoot house for Special Response Team training was completed in December 2006; a new Elevated Shoot Tower is planned for 2007; a Special Response Team obstacle course and installation of a facility to store and conduct Electronic Simulation Systems equipment and training is also required. As a temporary measure, a modular classroom and two double-wide trailers for use as administrative offices have been installed adjacent to Building 1103. Building 625, in Area 6, is the Wackenhut Fitness Facility. Selected operations will be moved from Building 1000, Mercury, into Building 625, Area 6, in order to provide better management of increasing security activities in the forward area.

OUO Exemption 2

Interior renovation that is needed prior to occupying the facility is expected to be completed spring 2007; however, this is a minimal renovation and a second proposed line item for a facility to meet the response requirements for nuclear facilities in the forward areas would replace this facility if approved. The two Proposed Line Item projects are included in Attachment A-2.

Highlight

Federal Bureau of Investigation agents, U.S. Marshals, Wackenhut Services, Inc. personnel and other paramilitary specialists encounter routine calls upon their ability to transform the chaotic into the manageable, or to turn a nearly-tragic end into a save. For two days in February 2006, those law enforcement professionals and the NTS Fire and Rescue personnel added skills in the form of tactical casualty care. Organized as a two-day lecture and practical exercise, the Tactical Casualty Care Course is a pilot program more than 18 months in the making. The course was borne out of the scarcity of emergency medical experience among security professionals at the NTS.

The security professionals who guard our country's assets everyday also may be among the first to respond to a mass casualty incident. It is in the best interest of the security personnel on-scene, the injured, and the medical professionals who later will attend to the injured, to have first-responders as informed as possible when it comes to providing emergency medical assistance. Law enforcement usually does not get this kind of training. There are relatively few who have tactical medical training or experience.

The special nature of the course allows participants to practice using gear they do not typically have a reason to use.

Agencies are establishing tactical medical programs and using courses like this to bridge the gap between civil emergency medicine and tactical medicine. The course is a pilot program sure to evolve and improve over time.

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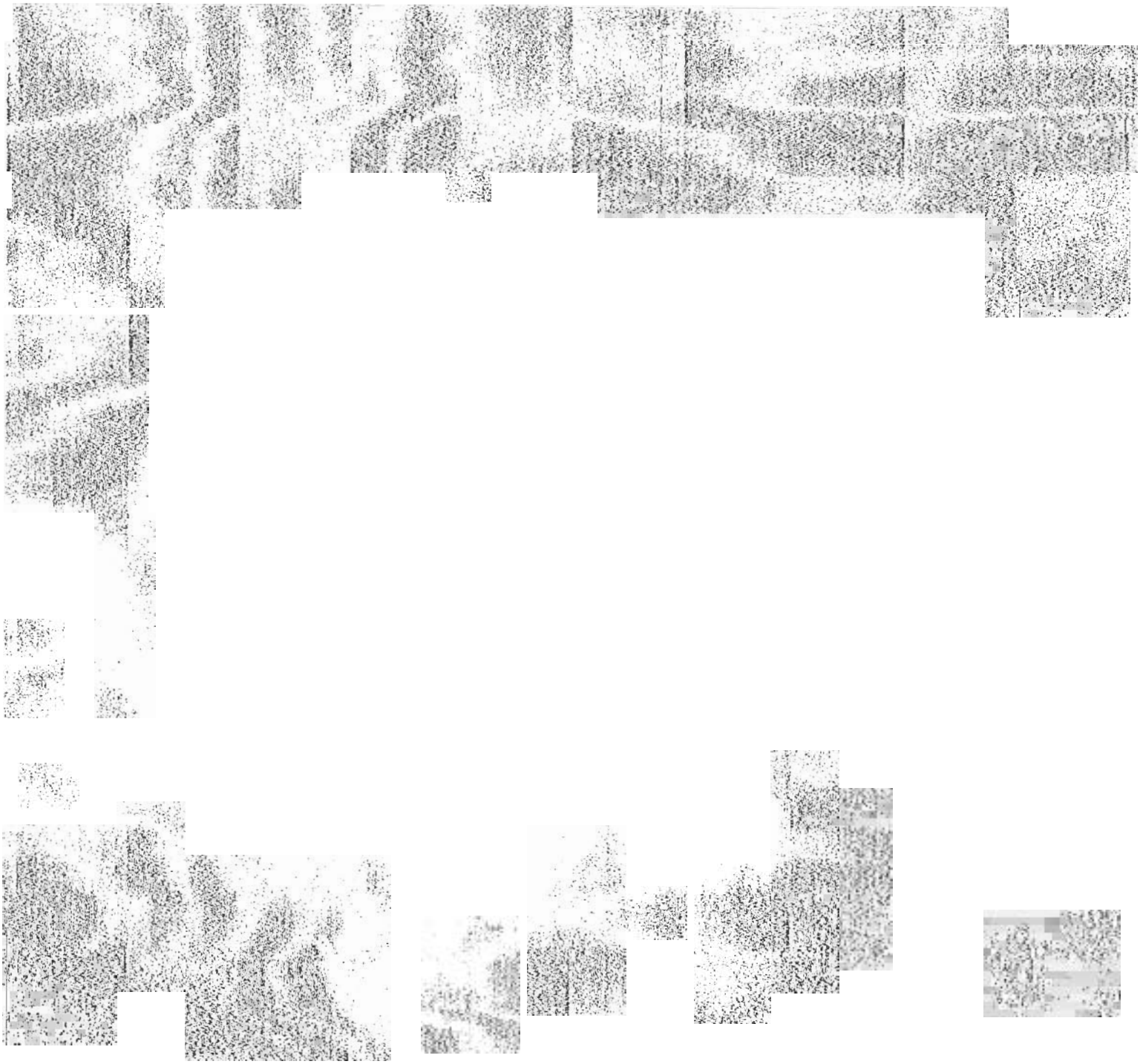
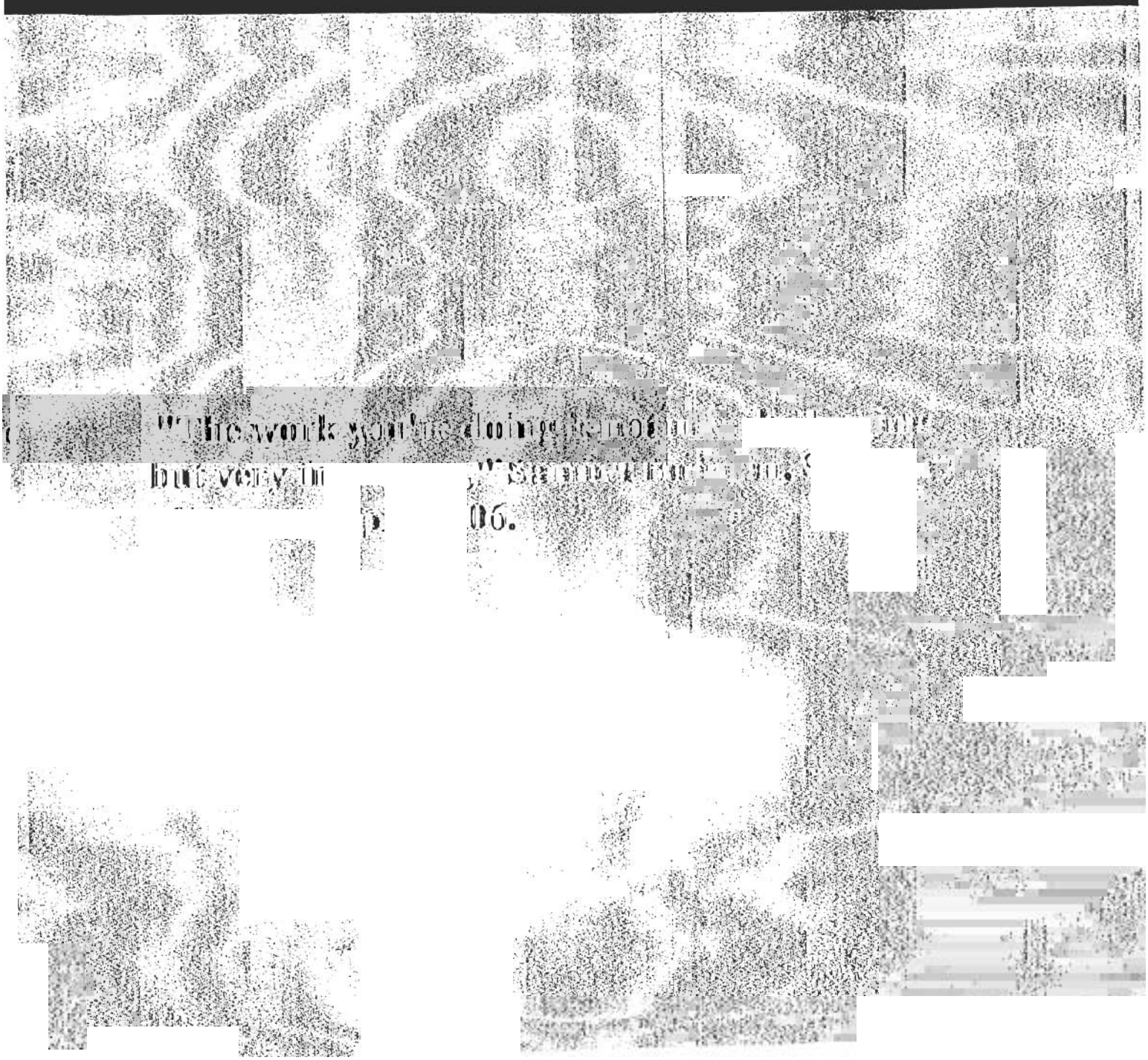


FY 2008 NNSA/NSO Ten-Year Site Plan



5.0 Facilities and Infrastructure Projects/Activities and Cost Profile

5.1 Overview of Site Project Prioritization and Cost Profile

NSTec has established a multilevel prioritization process to rank projects within each year in the overall project list. Projects are grouped into the following order of priority based on the current emphasis to reduce deferred maintenance and improve mission-critical facilities and infrastructure to good or excellent condition:

- Maintenance for mission-critical and mission dependent, not critical facilities and infrastructure are ahead of non-mission-dependent facilities and infrastructure.
- Deferred maintenance projects for mission-critical facilities have the highest priority, followed by deferred maintenance projects on mission dependent, not critical facilities and infrastructure, then deferred maintenance projects on not mission dependent facilities and infrastructure, then non-deferred maintenance projects on mission-critical facilities, non-deferred maintenance projects on mission dependent, not critical and infrastructure and lastly, non-deferred maintenance projects on buildings and infrastructure that are not mission dependent.
- The Lawrence Livermore National Laboratory priority matrix is used as an added indicator of a project's importance.
- Finally, the Facilities and Infrastructure Recapitalization Rating methodology is the nal step in prioritizing a project's ranking in the overall project list.

Chapter Overview

- Provides a discussion of the project prioritization process
- Lists signi cant project deletions and additions
- Introduces spreadsheets

Projects are assigned to each year during the planning period within the Future Years National Security Program budget constraints and are approved by NSTec and the U.S. Department of Energy, National Nuclear Security Administration, Nevada Site Of ce management. This management oversight allows some intervention to the prioritization process to ensure that critical projects, where compliance issues and safety issues may become the dominant priority, are funded and completed in the necessary time frame.

All projects in this plan have been prioritized by the described methodology and are shown in Appendix A, Attachment A-4, Facilities and Infrastructure Recapitalization Program Nevada Site Of ce.

5.2 Significant Project Deletions and Additions

The nal changes within Facility Information Management System that recast all mission essential facilities and infrastructure and non-mission essential as mission critical, mission dependent not critical, and not mission dependent, have realigned deferred maintenance values as re ected in the FY 2008 *TYSP*. The recast and resulting modi ed mix and budget cuts have put meeting the FY 2009 goals at risk. The effects of the recasting are presented in Appendix A, Attachments F-1 thorough F-5.

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Highlight

"The achievements [illegible]
as a team are what make the [illegible]
[illegible] cessful. NASA is
[illegible] here in Nevada."
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Appendix A: Attachments A-B and E-G

Attachment A: Facilities and Infrastructure Cost Projection Spreadsheets

The following cost projection spreadsheets provide an understanding and overview of the forecasts for all the NNSA/NSO facilities and infrastructure projects and other activities for FY 2006-2015. A general overview of each spreadsheet attachment follows.

Attachment A-1: Facilities and Infrastructure Cost Projection Spreadsheet Line Item Projects for Nevada Test Site. Line Item projects listed represent approved Line Items in coordination with the Integrated Construction Program Plan adopted by NA-10. All Line Items shown on this attachment are mission-critical and all but Atlas have deferred maintenance buy-down elements. In addition, all non-NNSA Line Items projects are listed, but are segregated from NNSA Line Items.

Attachment A-2: Facilities and Infrastructure Cost Projection Spreadsheet Proposed Line Item Projects for Nevada Site Office. This attachment was allowed to show Line Items which are badly needed but are not currently funded. These projects require line item funding but are either utility type projects or housing projects, which are not currently being approved by the Integrated Construction Program Plan.

Attachment A-3: NNSA Facilities and Infrastructure Cost Projection Spreadsheet RTBF/Operations of Facilities for Nevada Test Site. This spreadsheet includes all Expense projects and General Plant projects not funded through the Facilities and Infrastructure Recapitalization Program and speci cally includes the supplemental funding and projects for the National Center for Combating Terrorism. Safeguard and Securities projects are also shown on this spreadsheet. This spreadsheet also shows the Operations of Facilities operations and maintenance budgets and breakout by Readiness in Technical Base and Facilities.

Attachment A-4: NNSA Facilities and Infrastructure Cost Projection Spreadsheet Facilities and Infrastructure Recapitalization Program (FIRP) for Nevada Test Site. This spreadsheet shows facility and infrastructure projects on an integrated, complex-wide prioritized list which includes General Plant Project and Expense-type projects. Total funding shown on this spreadsheet is within the Future Years National Security Program funding limitations. All projects with deferred maintenance have been scheduled before FY 2012 since Facilities and Infrastructure Recapitalization Program funding is scheduled to end after FY 2011. Projects scheduled after FY 2011 are assumed to be completed with another funding source but remain on the list to show needed projects during the entire planning period. This spreadsheet also shows Facilities and Infrastructure Recapitalization Program funding for planning, design, and facility disposition.

Attachment A-5: Other Facilities and Infrastructure Cost Projection Spreadsheet for Nevada Test Site. This spreadsheet shows facilities and infrastructure projects associated with non-NNSA tenant programs and activities. This spreadsheet was completed consistent with scal planning guidance provided by applicable tenant programs or activities.

Attachments A-6 (a-b): NNSA Facilities and Infrastructure Cost Projection Spreadsheet Currently Funded Security Infrastructure Projects for Nevada Test Site. Attachment 6a spreadsheets crosswalks security infrastructure projects currently accepted for execution for FY 2007 and planning for FY 2008 and FY 2009. Attachment 6b lists the planned unfunded projects for FY 2008 and FY 2009 only, using the Security Infrastructure Rating Matrix.

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Attachment A-4
NNSA Facilities and Infrastructure Cost Project Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for Nevada Test Site

FIRS Priority (1)	Year (2)	Project Name (3)	FIRS Score (4)	Project Number (5)	Deferred Maintenance Identifier (5a)	Mission Dependency (6)	Mission Dependency Program (6a)	FY03 Baseline Deferred Maintenance Reduction (8)	DOE Added or Deleted (9)	Funding Type (7)	Total (8)	Prior Years Funding (9)	FY 2006 (10)	FY 2007 (11)	FY 2008 FYNSP (12)	FY 2009 FYNSP (13)	FY 2010 FYNSP (14)	FY 2011 FYNSP (15)	FY 2012 FYNSP (16)	FY 2013 (17)
67	2013	NLV ME A-01 Mechanical & Electrical Replacements	40	NV-DM-NLV2	NV-DM-NLV2	MD	RTBF	2,750	-	GPP	3,819									3,819
68	2013	NTS CP-1 Electrical/Mechanical Improvements	40	NV-DM-NTS3	NV-DM-NTS3	MD	RTBF	1,327	-	E	3,334									3,334
70	2013	NTS Area 6 Facility Repairs	40	NV-DNM-NTS2	NV-DNM-NTS2	MD	RTBF	2,200	-	E	4,900									4,900
71	2013	NTS Area 6 CP Facility Repairs	40	NV-DNM-NTS3	NV-DNM-NTS3	NMO	OTHER	2,580	-	E	4,900									4,900
72	2013	NTS Area 23 Miscellaneous External Repairs	35	NV-DNM-NTS4	NV-DNM-NTS4	MD	RTBF	3,032	-	E	4,900									4,900
73	2013	NTS Repairs Road 16-03/Airport Rd (Pahute Mesa Rd to Buckboard Mesa Rd)	35	NTS-03-060	NTS-03-060	MD	RTBF	700		GPP	1,759									1,759
74	2013	NTS Replace Copper Cabling Lathrop Wells to Gate 510, Area 26	35	NTS-02-111	NTS-02-111	MD	RTBF	700		GPP	1,759									1,759
75	2013	NTS Area 23 Interior Finishes	35	NV-DNM-NTS5	NV-DNM-NTS5	MD	RTBF	2,732		E	4,200									4,200
		[illegible]								Total PRP NO	-	-	-	-	-	-	-	-	-	-
										Total PRP MD		13,888	9,331	6,112	9,113	14,442	17,319	9,222	12,617	24,671
										Total PRP NMD		455	745	3,798	3,625	[illegible]	[illegible]	19,904	15,249	4,900
										Total TBC		14,343	10,076	9,868	14,738	16,642	26,707	28,126	28,786	29,571
										Construction Funding Required			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
										Planning Funding Required			1,100	1,634	3,986	3,968	4,574	4,723	4,969	4,976
										DSD Funding Required			1,269	94	29	-				-
										Line Item PRP					7,800	8,000				
										TOTAL		[illegible]	[illegible]	[illegible]	26,096	26,421	29,843	32,168	[illegible]	[illegible]
										FYNSP			12,000	9,868	26,400	26,550	29,800	32,300	32,800	33,900

Attachment A-6(a) - FY 2007 – FY 2009
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Currently Funded Security Infrastructure Projects for Nevada Test Site ($000s)

Priority (1)	Project Name (2)	Site Specific Project Number (3)	Mission Dependency (4)	Mission Dependency Program (4a)	Estimated Total Project Cost (8)	Planned Funding Source				
						Line Item A-1,2	RTBF A-3	FIRP A-4	Other A-5	DBT Related? Y or N
	List FY 07 Projects									
1	DAF Roof Hardening	TBD	MC	S&S	818				X	Y
2	WSI CP-50 Renovation for SRT	TBD	MD	S&S	400				X	N
3	WSI Motomesh Wireless Data Network (DAF)	TBD	MD	S&S	1,411				X	N
4	WSI Live Fire Shoot Tower	NTS-03-028	MC	S&S	500				X	Y
TOTAL					3,129					

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Attachment B
Site's Asset Utilization Index

(FIMS 093)

U. S. Department of Energy
Facilities Information Management System
Asset Utilization Index by FRPC Categories

Page 2 of 3
1/31/2007

Program Office: NNSA

Site: Las Vegas

Site Wide AUI: 69.01% **

Measures	AUI	FRPC Guidelines	OECM Guidelines	Operating Gross Sqft*	Operating No of Bldgs*
Office	54.65%	70 - 95%	85%	368,373	8
Laboratory	79.73%	60 - 85%	90%	265,941	4
Warehouse	87.46%	50 - 85%	89%	46,495	5
All Other Categories	85.82%	N/A	N/A	64,776	15
			Las Vegas Site Totals*	745,585	32

* These numbers do not reflect the total gross square footage and number of buildings. They represent operating buildings only.

** Site Wide AUI includes all DOE Owned Building assets

Attachment B
Site's Asset Utilization Index

(FIMS 093)

U. S. Department of Energy
Facilities Information Management System
Asset Utilization Index by FRPC Categories

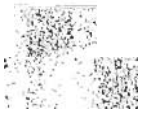
Page 1 of 3
1/31/2007

Program Office: NNSA

Site: Andrews Afb

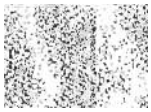
Site Wide AUI: 100.00% **

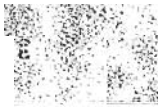
Measures	AUI	FRPC Guidelines	OECM Guidelines	Operating Gross Sqft*	Operating No of Bldgs*
Office	100.00%	70 - 95%	95%	23,600	1
			Andrews Afb Site Totals*	23,600	1



Attachment E-1
Facilities Disposition Plan

Funding Source (1)	Facility Identification Number (FIMS) (2)	Facility Name (3)	Mission Dependency Program (4)	Priority Score (5)	Priority Rank (6)	Gross Square Footage (gsf) (7)	FIMS Excess Indicator (8)	Excess Year (9)	Planned Disposition Year (10)	TEC to Disposition ($000s) (11)	FY2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s) (12)	Yearly S&M Costs ($000s) (13)	Candidate for Transfer (14)	Contaminated (Yes or No) (15)	Notes (16)
FIRP	12-201805	MULTIPURPOSE (E)			N/A	4,000		2003	2003	-	-	-		NO	
FIRP	12-201885	SPLICE HOUSE			N/A	1,600		2003	2003	-	-	-		NO	
FIRP	12-201911	WALKER SHACK (T)			N/A	588		2003	2003	-	-	-		NO	
FIRP	12-201912	STORAGE (E)			N/A	432		2003	2003	-	-	-		NO	
FIRP	12-201940	STORAGE			N/A	576		2003	2003	-	-	-		NO	
FIRP	12-202027	STORAGE (C)			N/A	500		2003	2003	-	-	-	Yes	NO	
FIRP	12-202028	STORAGE (C)			N/A	500		2003	2003	-	-	-	Yes	NO	
FIRP	12-202113	WALKER SHACK (N)			N/A	1,011		2003	2003	-	-	-		NO	
FIRP	12-202115	N-TUNNEL OFFICE (N)			N/A	2,070		2003	2003	-	-	-		NO	
FIRP	12-202136	MONITOR BUILDING (T)			N/A	222		2003	2003	-	-	-		NO	
FIRP	12-21	TSC-2 FACILITY (C)			N/A	3,000		2003	2003	-	-	-		NO	
FIRP	12-22	TSC-1 FACILITY (C)			N/A	3,000		2003	2003	-	-	-		NO	
FIRP	12-25	TSC 3 TEST COMPOUND (C)			N/A	3,000		2003	2003	-	-	-		NO	
FIRP	12-29	DRY STORAGE/CABLE TESTING			N/A	1,260		2003	2003	-	-	-	Yes	NO	
FIRP	12-301	CONCRETE BUNKER (E)			N/A	2,000		2003	2003	-	-	-		NO	
FIRP	12-354	E-TUNNEL SUPP BLDG (E)			N/A	144		2003	2003	-	-	-		NO	
FIRP	12-42	RACK STORAGE			N/A	2,000		2003	2003	-	-	-	Yes	NO	
FIRP	12-43	MINERS CHANGE HOUSE (C)			N/A	1,520		2003	2003	-	-	-	Yes	NO	
FIRP	12-855	PIPE FITTERS SHOP (N)			N/A	2,520		2003	2003	-	-	-		NO	
FIRP	12-879	PORTAL RECORD BLDG (N)			N/A	1,200		2003	2003	-	-	-		NO	
FIRP	12-885	MINER STORAGE (N)			N/A	1,260		2003	2003	-	-	-		NO	
FIRP	12-887	MECHANICS SHOP (T)			N/A	1,200		2003	2003	-	-	-		NO	
FIRP	12-891	N-TUNNEL OFFICE (N)			N/A	2,501		2003	2003	-	-	-		NO	
FIRP	12-892	STORAGE FACILITY (N)			N/A	1,260		2003	2003	-	-	-		NO	
FIRP	12-893	RCMC (N)			N/A	200		2003	2003	-	-	-		NO	
FIRP	12-897	TEST EQUIPMENT BLDG. (T)			N/A	1,200		2003	2003	-	-	-		NO	
FIRP	12-898	T- TUNNEL OFFICE (T)			N/A	1,248		2003	2003	-	-	-		NO	
FIRP	12-899	RUPPS REPAIR FACILITY (T)			N/A	1,220		2003	2003	-	-	-		NO	
FIRP	12-900	RUPPS STORAGE (N)			N/A	1,260		2003	2003	-	-	-		NO	
FIRP	12-902-T	SANDIA ASSEMBLY BLDG. (T)			N/A	1,320		2003	2003	-	-	-		NO	
FIRP	12-903	DRY STORAGE (T)			N/A	1,220		2003	2003	-	-	-		NO	
FIRP	12-905-N	SANDIA ASSEMBLY BLDG. (N)			N/A	1,320		2003	2003	-	-	-		NO	
FIRP	12-906	MECHANICS SHOP/STORAGE (N)			N/A	1,260		2003	2003	-	-	-		NO	
FIRP	12-907	DRY STORAGE (N)			N/A	2,050		2003	2003	-	-	-		NO	
FIRP	12-917	LOCKHEED MISSILE WHSE (C)			N/A	2,000		2003	2003	-	-	-	Yes	NO	
FIRP	12-921	TUNNEL SUPPORT (N)			N/A	1,200		2003	2003	-	-	-		NO	
FIRP	12-923	RECORDING STATION			N/A	1,254		2003	2003	-	-	-	Yes	NO	
FIRP	12-932	PORTAL ACCESS BLDG. (N)			N/A	2,100		2003	2003	-	-	-		NO	
FIRP	12-998688	MULTIPURPOSE ASSEMBLY			N/A	6,080		2003	2003	-	-	-		NO	
FIRP	23-100	SHERIFF OFFICE			N/A	1,365		2003	2003	-	-	-		NO	
FIRP	23-115	STEAM PLANT			N/A	4,197		2003	2003	-	-	-		NO	
FIRP	23-125	MERCURY AUDITORIUM			N/A	4,052		2003	2003	-	-	-		NO	
FIRP	23-790A	GREENHOUSE			N/A	1,228		2003	2003	-	-	-	Yes	NO	
FY 2003 Facility Disposition Sub-total						109,260						-			





Attachment E-1
Facilities Disposition Plan

Funding Source	Facility	Facility Name (2)	Mission Dependency Program (4)	Priority Score (5)	Priority Rank (6)	Gross Square Footage (sqft) (7)	PMS Excess Indicator (8)	Excess Year (9)	Planned Disposition Year (10)	TEC to Disposition ($000s) (11)	FY2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s) (12)	Yearly S&M Costs ($000s) (13)	Candidate for Transfer (14)	Contaminated (Yes or No) (15)	Notes (16)
FY 2008 Facilities															
FIRP	25-4314	YMP CONTRUCTION MANAGEMENT	Other	50	3	2,240	NONE	2008	2008	22	102	-		NO	
FIRP	27-5410	SUPER KUKLA MECHICAL BUILDING	Other	50	4	970	NONE	2008	2008	1	1	-		NO	
FY 2008 Facility Disposition Sub-total						3,210				23	103				
FY 2010 Facilities															
FIRP	01-300	UNDERGROUND INSTRUMENT HOUSE	RTBF	TBD	5	1,920	TBD	TBD	2010	207	211			YES	
FIRP	02-300	BUNKER	RTBF	TBD	6	1,920	TBD	TBD	2010	207	78			YES	
FIRP	06-CP-20	MONITORING/PLAYBACK	RTBF	TBD	7	1,199	TBD	TBD	2010	29	48			YES	
FIRP	06-CP-50	TECHNICAL SERVICES BUILDING	RTBF	TBD	8	9,368	TBD	TBD	2010	212	375			YES	
FIRP	06-CP-70	FIRE STATION NO. 1	RTBF	55	9	5,022	NONE	2009	2010	TBD	4,301			NO	
FIRP	07-300	BUNKER	RTBF	TBD	10	1,250	TBD	TBD	2010	135	138			YES	
FIRP	09-300	UNDERGROUND DETECTION	RTBF	TBD	11	990	TBD	TBD	2010	107	109			YES	
FIRP	12-025014	TEAMSTERS OFFICE	RTBF	TBD	12	TBD	TBD	TBD	2010	TBD	12			YES	
FIRP	15-202510	WINCH AND CONTROL ROOM	RTBF	TBD	13	432	TBD	TBD	2010	TBD	0			YES	
FIRP	15-202538	HOIST SE	RTBF	TBD	14	2,440	TBD	TBD	2010	TBD	0			YES	
FIRP	15-910841	WALKER SHACK	RTBF	TBD	15	96	TBD	TBD	2010	TBD	10			YES	
FIRP	25-3231	PUMP SHOP	RTBF	TBD	16	816	TBD	TBD	2010	TBD	TBD			YES	
FIRP	25-3902	SECURITY GUARD POST	S&S	TBD	17	80	TBD	TBD	2010	TBD	9			YES	
FIRP	26-185129	AREA 26 EMERGENCY OPERATIONS CENTER	RTBF	TBD	18	TBD	TBD	TBD	2010	TBD	31			YES	
FY 2010 Facility Disposition Sub-total						25,533				897	5,321				
					Total	628,279				2,271	5,773	-			

erred Maintenance column represent a project less than 500K.

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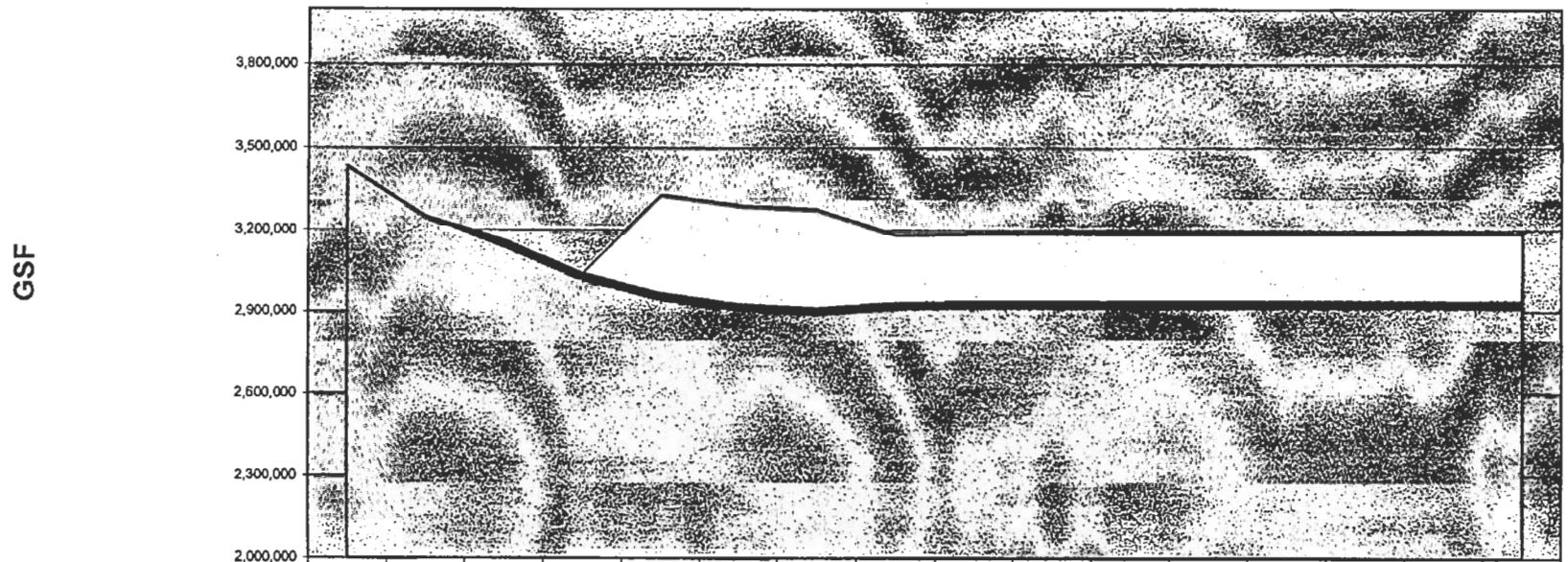
Attachment E-3
Grandfathered Footprint Added

Funding Source (1)	Project Number (2)	Facility Name (3)	Mission Dependency Program (4)	Funding Type (LI, GPP, IGPP) (5)	Project Area (GSF) (6)	Year of Beneficial Occupancy (7)	Notes (8)
RTBF	01-D-107	Atlas Pulsed Power Facility	RTBF	LI	22,407	2003	
RTBF	XXX-X-XXX	Atlas Site	RTBF	LI	875	2003	
Total							

Attachment E-4(a)
FOOTPRINT TRACKING SUMMARY SPREADSHEET
Nevada Test Site Footprint Tracking Summary - NNSA

Fiscal Year (1)	Beginning Site Footprint (gsf) (2)	Excess Facilities Footprint Elimination (gsf) (3)	New Construction/ Footprint Added (gsf) (4)	Site Footprint Reduction by FY (gsf) (5)	Footprint "Banked" (gsf) (6)	Waiver/ Transfer (gsf) (7)	"Grandfathered" Footprint Added (gsf) (8)	Cumulative "Grandfathered" Footprint Added (gsf) (8a)	NNSA Site Total Footprint (gsf) (9)	NNSA Leased Space (10)
FY 2002 Actual	3,435,035	-185,224	0	3,249,811	-185,224		-	0	3,249,811	
FY 2003 Actual	3,249,811	-109,250	0	3,140,561	-294,474		-	0	3,140,561	
FY 2004 Actual	3,140,561	-147,977	24,234	3,016,818	-418,217	200,000	23,282	23,282	3,040,100	
FY 2005 Actual	3,016,818	-77,748	4,596	2,943,666	-491,369		-	23,282	2,966,948	
FY 2006 Actual	2,943,666	-39,662	0	2,904,004	-531,031		-	23,282	2,927,286	362,615
FY 2007	2,904,004	-14,260	0	2,889,744	-545,291		-	23,282	2,913,026	362,615
FY 2008	2,889,744	0	19,940	2,909,684	-525,351		-	23,282	2,932,966	362,615
FY 2009	2,909,684	-5,022	10,000	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2010	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2011	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2012	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2013	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2014	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2015	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2016	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236
FY 2017	2,914,662	0	0	2,914,662	-520,373		-	23,282	2,937,944	249,236

ATTACHMENT E-4(a)
Nevada Test Site Space Tracking Summary - NNSA



	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
NNSA Leased Space (10)					362,615	362,615	362,615	249,236	249,236	249,236	249,236	249,236	249,238	249,236	249,238	249,238
Cumulative "Grandfathered" Footprint Added (gsf) (8a)	0	0	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282
Beginning Site Footprint (gsf) (2)	3,435,035	3,249,811	3,140,581	3,016,818	2,943,686	2,904,004	2,889,744	2,909,684	2,914,662	2,914,662	2,914,662	2,914,662	2,914,662	2,914,662	2,914,662	2,914,662

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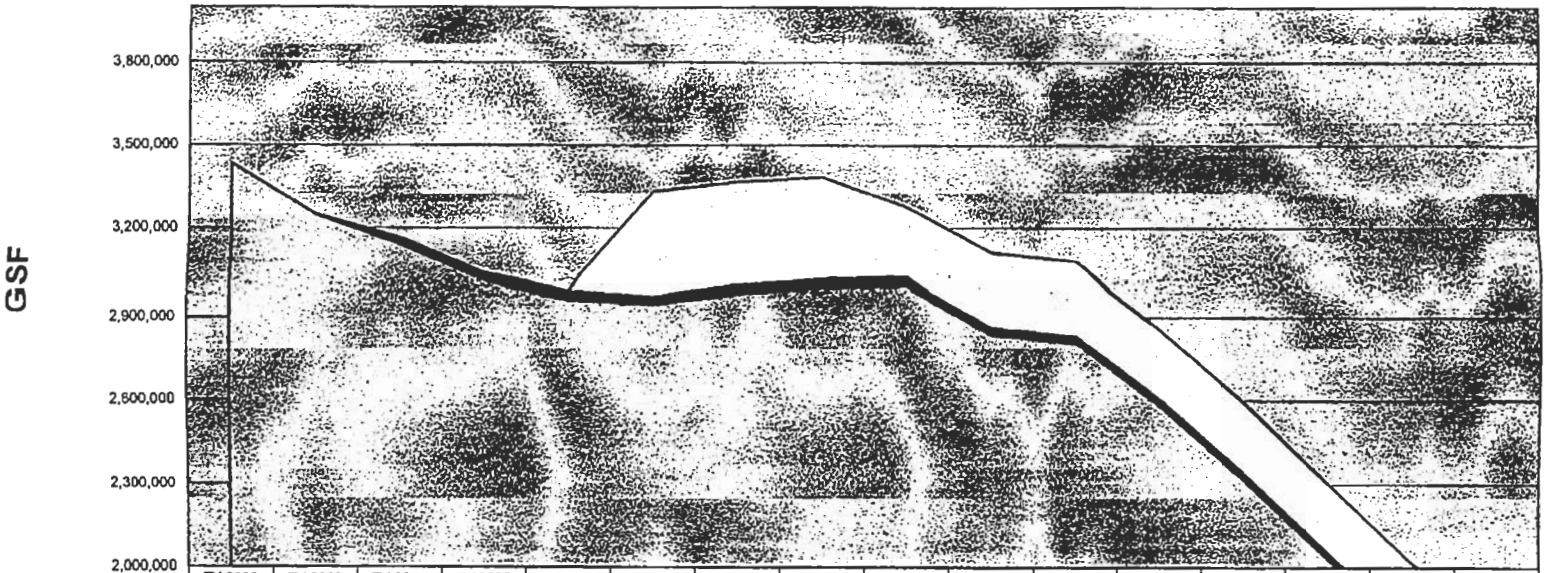
ATTACHMENT E-4(b)
Nevada Test Site Wide Footprint Tracking Summary - SITE WIDE (Multi-Program)



	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY2014	FY2015	FY 2016	FY 2017
Leased Space (10)						362,615	362,615	362,615	249,236	249,236	249,236	249,236	249,236	249,236	249,236	249,238
Cumulative Grandfathered Footprint Added (gsf) (8a)	0	0	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282	23,282
Beginning Site Footprint (gsf) (2)	3,435,035	3,249,811	3,140,561	3,018,498	2,961,346	2,947,377	2,981,640	3,000,140	3,006,818	2,838,379	2,808,543	2,583,034	2,320,511	2,031,982	1,743,453	1,518,453

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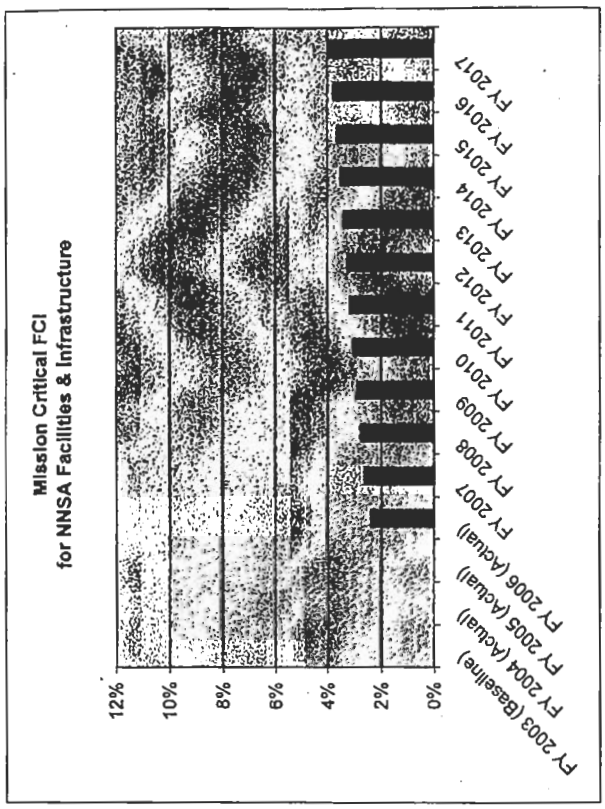
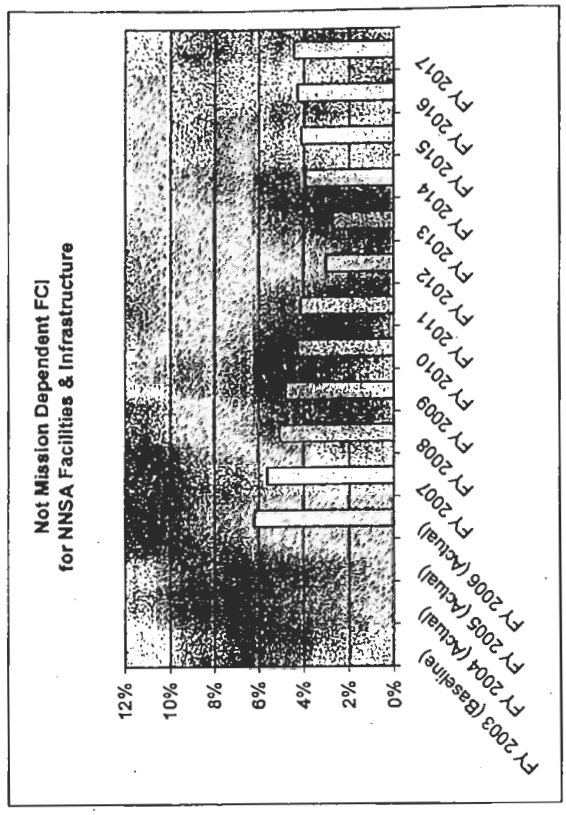
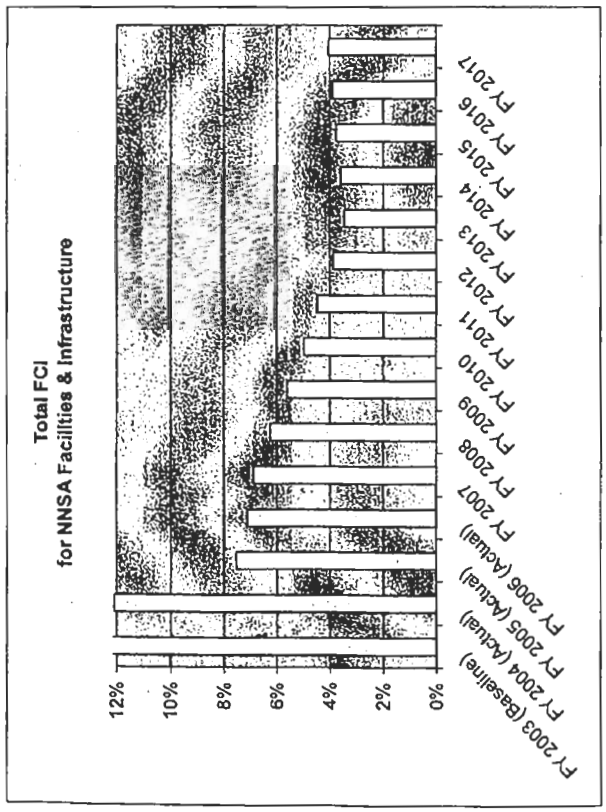
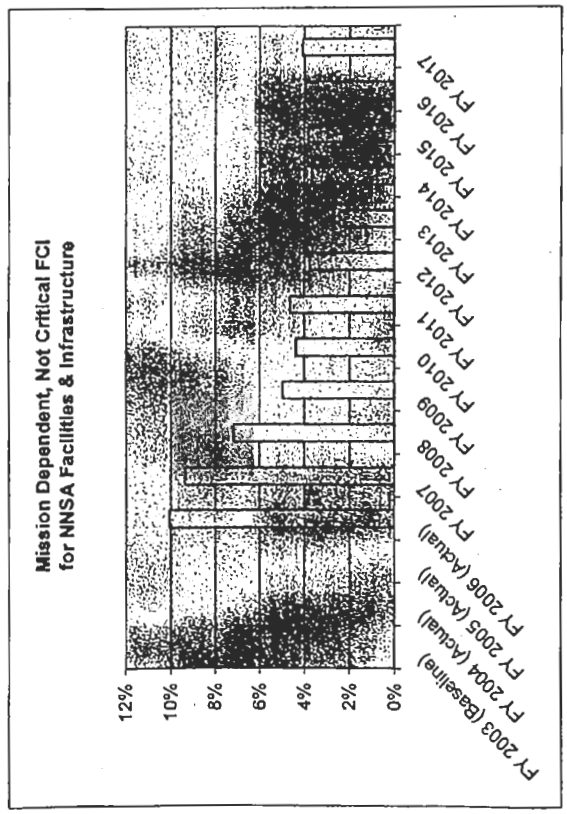
ATTACHMENT F-4: Nevada Test Site's Facility Condition Index (FCI) for NNSA F&I









Attachment F-5
Replacement-in-Kind Projects Over $500K

Optimum Year for Funding (1)	Project Name (2)	Facility ID (FIMS) (3)	Mission Dependency (4)	Description of Deficient Subsystems for Replacement-in-Kind (5)	Funding Source (6)	Planned Funding Year for Replacement (7)	Identified in FY 2003 Baseline (Y or N) (8)	Within Current FYNSP Construction (Y or N) (9)	Projected Cost ($K) (10)
2006	NLV Roof Replacement 2006	N/A	MC	N/A	N/A	2006	N	N	584
2006	NTS Roof Replacement 2006	N/A	MC	N/A	N/A	2006	N	N	2,703
2006	NTS Replace Oil-Based PIDSs-A5	06P-S-1 06P-S-9 05P-S-15 06P-S-4160	MC	Replaces 4-34.5kV O-PIDs & 16-4.16kV O-PIDs in Area 6 substations	FIRP	2006	Y	Y	4,700
2006	NTS Replace Oil-Fired Boiler, Bldg. 23-111	Bldg. 23-111	MC	Replace 25 year old oil fired boiler installed in 1979	FIRP	2006	Y	Y	850
2006	NTS Surface Laid Cable Gate 700 Substation	------	MC		FIRP	2006	Y	Y	1,408
2006	NTS Replace Oil-Fired Boiler, Building 23-156	Bldg. 23-156	MD	Replace 44 year old oil fired boiler installed in 1960	FIRP	2006	Y	Y	526
2006	NTS Surface Laid Cable Shoshone Transmitter	29C-AT-SHO 29C-TR-SHO 29C-MS-SHO 29C-PS-SHO	MC		FIRP	2006	Y	Y	992
2006	NTS Replace Copper Comm. Cable, Mercury to Spotted Range	90C-CC-NTSC	MC	Site-wide copper cabling network	FIRP	2006	Y	Y	500
2007	NTS Roof Replacement 2007	N/A	MC		N/A	2007	N	N	8,710
2007	NTS Replace Castle Rock Substation	19P-S-CR	MC	Replace Castle Rock Substation	FIRP	2007	Y	Y	4,500
2007	NTS Replace Oil-Based PIDs- A12 North, A18, A19	12P-S-RA 18P-S-SW 19P-S-PM	MC	Replace O-PIDs in the Rainier Mesa, Pahute Mesa and stockade Wash substations	FIRP	2007	Y	Y	4,500
2007	NTS Replace LAN Connection to 23-160	23C-LE-160 23-C-LANC	MC	Replace the copper comm. cable and end LAN equipment in 23-160 and in 23-117, the point of origin	FIRP	2007	Y	Y	900
2007	NTS Replace Oil-Based PIDs-A12 West	12P-S-4160	MD	Replace 33 O-PIDs in 4.16kV substations in Area 12	FIRP	2007	Y	Y	4,650
2007	NTS Replace Well 5c/NTS Replace Army Well No.1	56W-WW-5c 2223W-WW-A	MC	Well 5c in Area 5/Army Well#1	FIRP	2007	Y	Y	3,600
2007	NLV LAN Switch Replacements	24C-LD-A1 24C-LD-C1 24C-LE-A1 24C-LE-C1	MC	Replace the LAN data centers and end equipment in NLV bldgs A-1 & C-1	FIRP	2007	Y	Y	4,304
2007	NTS Replace/Install New Microwave System, CP-18 to Echo Peak	06C-MS-CP18 19C-MS-ECHO	MC	Area 6 CP-18 microwave and Area 19 Echo Peak microwave systems	FIRP	2007	Y	Y	508
2008	NTS Replace Oil-Fired Boiler, Mercury Café (Bldg. 23-754)	Bldg.23-754	MC	Replace Mercury Cafeteria oil fired hot water and steam boilers	FIRP	2008	Y	Y	2,800
2008	NTS Roof Replacement 2008	N/A	MC		N/A	2008	N	N	2,297
2008	NTS Surface Laid Cable ARL Primary	25-202495	NMD		FIRP	2008	Y	Y	1,900
2008	NTS Surface Laid Cable Substation 5-12	------	MD		FIRP	2008	Y	Y	1,208
2008	NTS Replace Oil-Based PIDs. A12 East & SW X-Fmr	12P-S-4160 18P-S-SW	MD	Repl oil based transformer in Canyon Substation (Area 18) and 16 O-PIDs on the 12-11 substation circuits	FIRP	2008	Y	Y	3,600
2009	NTS Replace A-27 Water Tank, Controls and Distribution System	27W-ST-1 27W-BS-2 27W-DPL	MC	Replace Area 27 steel water storage tank, fill booster pump stastion & controls, and the water distribution pipes	FIRP	2009	Y	Y	2,510
2009	NLV Roof Replacement 2009	N/A	MC		N/A	2009	N	N	616
2009	NTS Roof Replacement 2009	N/A	MC		N/A	2009	N	N	1,916
2009	NTS Replace Oil Based PIDs Areas 6 & 25	06P-S-9 25P-S-CA & 25P-S-16	MC	Repl four O-PIDs in substn. 6-9, four O-PIDs in Canyon Substn & one OCB in substn 25-16	FIRP	2009	Y	Y	4,000
2010	NTS Replace Two A-25 Metal Booster Stations	Bldgs 25-3121 & 25-3122	MD	J-11 Main Booster House & the RCP Booster House	FIRP	2010	Y	Y	800
2010	NLV Roof Replacement 2010	N/A	MC		N/A	2010	N	N	822
2010	NTS Roof Replacement 2010	N/A	MC		N/A	2010	N	N	1,110
2010	NTS Replace Copper Cabling, Area 16 Tunnels to Shaker Plant Subdock	90C-CC-NTSC	MD	Site-wide copper cabling network	FIRP	2010	Y	Y	1,500
2010	NTS Reconstruct Road 4-04 (Mercury Hwy to BEEF) (07)	04R-404	MC	Road 4-04 from Mercury Hwy to BEEF	FIRP	2010	Y	Y	1,560
2011	NLV Roof Replacement 2011	N/A	MC		N/A	2011	N	N	2,028
2011	NTS Roof Replacement 2011	N/A	MC		N/A	2011	N	N	1,398
2012	NLV Roof Replacement 2012	N/A	MC		N/A	2012	N	N	2,042
2012	NTS Roof Replacement 2012	N/A	MC		N/A	2012	N	N	1,560
2013	NTS Roof Replacement 2013	N/A	MC		N/A	2013	N	N	670
2014	NLV Roof Replacement 2014	N/A	MC		N/A	2014	N	N	1,489

Attachment G
List of NSTec's Mission Critical Facilities and Infrastructure

Program Office: NNSA

Site: Nevada Test Site

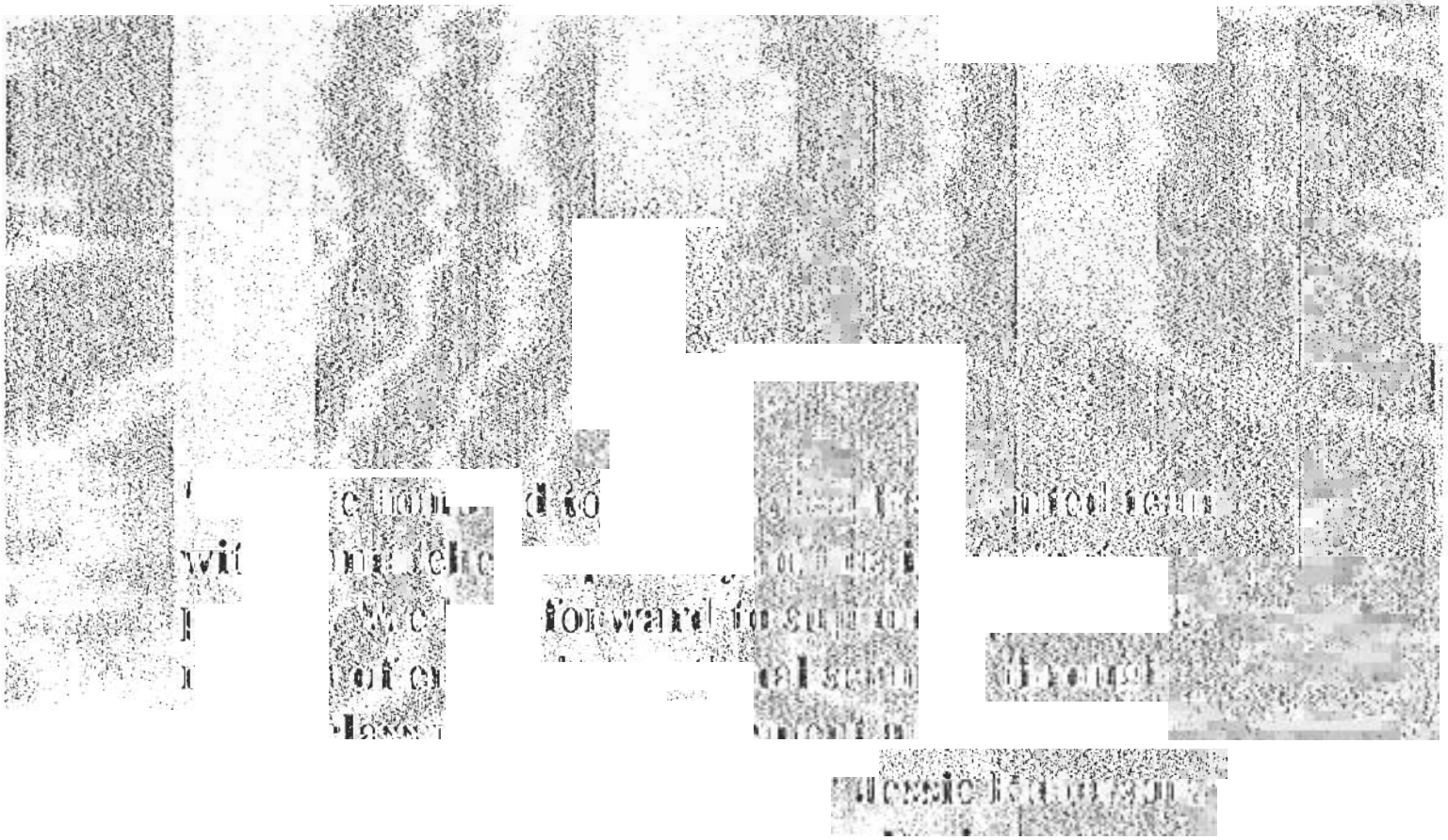
Property ID	Property Name	Mission Dependency	Building RPV	Deferred Maintenance	Summary Condition*	MD Pgm Off	Gross Square Ft	Util %
998651	04-300	Mission Critical	$901,569	$20,065	Good	RTBF	1,387	100%
999948	27-5318	Mission Critical	$588,358	$28,514	Good	RTBF	416	100%
996840	23-701	Mission Critical	$1,692,609	$576,469	Poor	DNS	6,382	100%
		Mission Critical Totals:	$334,222,196	$3,626,647			246,244	

*Summary Condition: Excellent (DM <2% of RPV); Good (DM is 2 - <5% of RPV); Adequate (DM is 5 - <10% of RPV); Fair (DM is 10 - < 25%); Poor (DM is 25 - <60% of RPV); Fail (DM is > 59% of RPV); Not Applicable (Bldg falls into one of the following Status Categories: Shutdown Pending Transfer, Shutdown Pending D and D, D and D in Progress, Shutdown Pending Disposal, Deactivation)

Attachment G
List of NSTec's Mission Critical Facilities and Infrastructure

Other Structures and Facilities

PROP_SITE_NUMBER	PROP_AREA_NUMBER	PROP_NAME	PROP_NAME_ALT	PROP_PROPERTY_ID	PROP_MISSION_CRITICAL
09003	001	01-U1A	U1A COMPLEX	T00034	1
09003	001	01-U1H	U1H COMPLEX	T00035	1
09003	001	01-U1G	U1G COMPLEX	T00036	1



Appendix B: Facility and Infrastructure Assessments

The Facility and Infrastructure Assessment process established a condition-reporting system in which facilities and infrastructure elements, i.e., power, water, roads, communication and sewer, were evaluated, categorized, and reported. It involved the coordination of Site and Infrastructure Planning Personnel, Condition Assessment Survey Personnel, and Subject Matter Experts conducting assessments of facility/infrastructure systems. Incorporating new condition assessment data and Facility Manager/ Facility Owner surveys into one procedure results in development of a versatile management tool that provides an overall indicator of facility and infrastructure disposition and assessment issues for strategic reinvestment. An overall summary of this process and its results are discussed in the following sections.

Facility/Infrastructure Assessment Process and Results

The Facility and Infrastructure Assessments involve the combined use of a condition assessment program, the completion of a survey and the use of an internal prioritization process. The results are reported annually in a Facility and Infrastructure Assessment Report. A detailed owchart of this process is illustrated in ***Figure B-1.***

Condition Assessment Program

The Facility and Infrastructure Assessment program uses two unique methods to evaluate facilities and infrastructure. The facility assessments use the established U.S. Department of Energy Condition Assessment Survey program which uses surveys conducted by International Code Council Inspectors. This process provides a current physical condition of a facility based on de ciencies and their associated deferred maintenance costs. An assessor is assigned to each discipline, e.g., architectural, mechanical, and electrical, where they are tasked to record the de ciency found on the date of the assessment. These data are then recorded into the Condition Assessment Information System database. Once entered, these de ciencies are compared to a Condition Assessment Information System model type which helps to determine the percent of de ciencies to the replacement plant value, which in turn, generates an overall condition. ***Table B-1*** presents the Condition Assessment Information System condition de nitions and the Facility and Infrastructure Assessments color codes for facilities.

Table B-1: Condition Assessment Information System definitions and color codes for facilities

CAC	CONDITION CODES: A & B
	Excellent: only minimal routine maintenance required at cost <2% of replacement value **Good:** routine maintenance or minor repair required at cost <5% of replacement value
CAC	CONDITION CODE: C
	Adequate: some corrective repair and/or preventiive maintenance required at cost <10% of replacement value
CAC	CONDITION CODE: D
	Fair: extensive corrective maintenace and repair required at cost <25% of replacement value
CAC	CONDITION CODES: E & F
	Poor: major corrective repair or overhaul required at cost 60% of replacement value **Fail:** replacement required because repair cost is >60% of replacement cost

Due to the absence of Condition Assessment Information System model types for infrastructure elements in the DOE Condition Assessment Survey program, specialized Subject Matter Experts developed an assessment method to evaluate the current condition of infrastructure

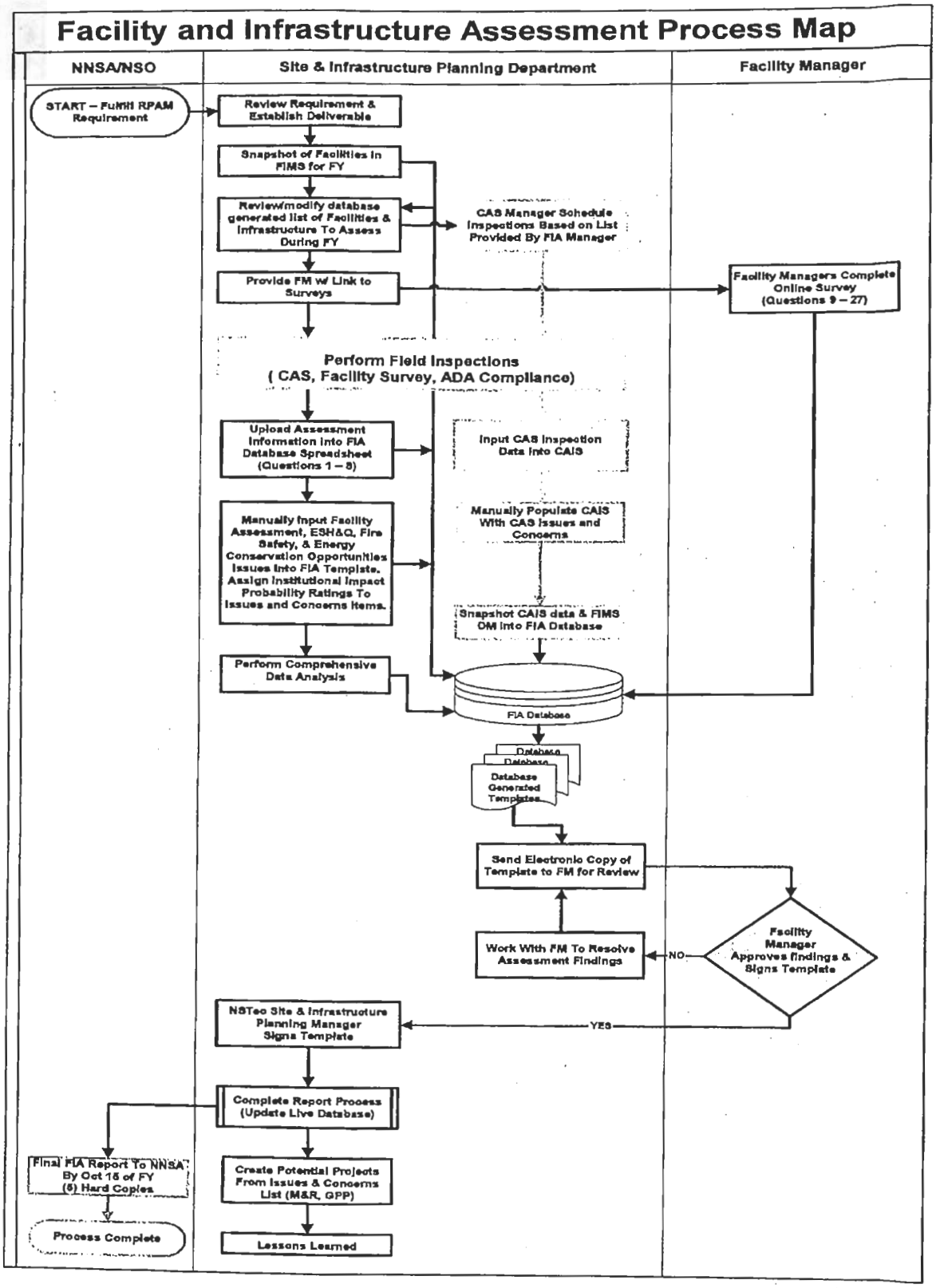


Figure B-1: Facility and Infrastructure Assessment Process Map

Table B-3: Facility Condition by Area

Location	No. of Facilities	Total GSF	Excellent	Good	Adequate	Fair	Poor	Fail
Area 1	25	32,225	7,077 (4)	11,535 (4)	10,729 (8)	480 (1)	760 (3)	1,644 (5)
Area 3	2	1,901	0	0	484 (1)	1,417 (1)	0	0
Area 4	3	2,672	1,387 (1)	285 (1)	1,000 (1)	0	0	0
Area 5	30	49,943	4,936 (3)	10,752 (5)	630 (1)	7,512 (5)	23,949 (9)	2,164 (7)
Area 6	86	618,168	316,823 (23)	66,044 (13)	93,775 (14)	87,042 (19)	35,129 (6)	19,355 (11)
Area 7	1	72	0	0	72 (1)	0	0	0
Area 11	3	6,267	0	0	1,474 (1)	4,793 (2)	0	0
Area 12	19	112,722	72,610 (10)	11,931 (2)	4,428 (1)	22,895 (4)	858 (2)	0
Area 18	2	888	0	0	0	0	576 (1)	312 (1)
Area 22	3	3,169	0	0	0	2,069 (2)	0	1,100 (1)
Area 23	133	785,617	91,414 (17)	186,539 (15)	112,245 (27)	305,388 (46)	65,864 (19)	24,167 (9)
Area 25	37	236,141	83,893 (4)	12,720 (2)	56,419 (5)	50,427 (11)	32,626 (14)	56 (1)
Area 27	33	34,990	5,223 (7)	2,075 (4)	11,436 (9)	14,948 (9)	1,020 (2)	288 (2)
RSL- Nellis	6	161,528	33,149 (5)	128,379 (1)	0	0	0	0
RSL- Andrews	2	29,939	29,939 (2)	0	0	0	0	0
NLV	29	589,876	140,252(15)	28,396 (5)	106,047 (1)	188,693 (4)	126,488 (4)	0
Los Alamos	1	50,492	50,492 (1)					
Total	415	2,716,610	837,195 SF	458,656 SF	398,739 SF	685,664 SF	287,270 SF	49,086 SF

Table B-4: Infrastructure Condition by System

Power		**Poor:** System/equipment is becoming obsolete; age of equipment a major factor in replacement of parts; consistent substandard performance; requires greater than normal amounts of attention; No signi cant failures expected less than 3 years
Water		**Poor:** Equipment/material has reached the end of expected life and is nearing failure
Roads		**Accelerated Maintenance:** Base and surface repair
Communications		**Poor:** Equipment/material has reached the end of expected life and is nearing failure; failures are disruptive and costly
Solid Waste		**Fair:** Equipment/material is less than adequate, but functional

Table B-7: Definition of Consequence (Risk Level)

Rating Number	Category	Criteria
1	Mission Shutdown	Impact of deferral or failure will shut down a mission function or have major sponsor impact, or cause major ES&H, security, cost, employee, or community issues. May be a critical "domino" in a series of projects that would result in an inability to implement the series if not implemented immediately. Deferral would result in a future mission shutdown condition.
2	Significant mission delay	Impact of deferral or failure will significantly reduce ability to perform mission or may result in serous sponsor, community, or employee reaction, or serious ES&H/security issues. Deferral would result in a significant mission delay.
3	Moderate mission delay	Impact of deferral or failure will reduce efficiency in mission performance or increase operating costs. May result in sponsor community, or employee concerns, or in ES& H/security issues. Reduces image and external perception.
4	Minor mission delay	Impact of deferral or failure will have only minor or local impact on mission performance, ES&H, security, or employee/community satisfaction. May be deferred within current mission requirements. Typically only requires repair if fails.
5	No mission delay	No perceivable impact of deferral or failure. No impact on mission performance, sponsor, ES&H, security, community, or employee satisfaction. Can be deferred indefinitely under current mission requirements. Generally run to failure and don't repair.

Table B-8: Institutional Impact Probability Rating

Rating Number	Category	Criteria
1	High	Institutional impact imminent. Action required, immediate solution required or needs to be submitted as a project list as soon as possible
2	Medium	Institutional impact will be near term. Negative impacts are beginning now. Action required in the near term.
3	Low	Institutional impact timing uncertain, longer term if at all. Impact limited to single organization.

Table B-9: Facility and Infrastructure Assessment Report Template

29. 23-650 OCCUPATIONAL MEDICINE		YEAR BUILT: 1964	GSQFT: 30243
GENERAL	User: BN	Department: Occupational Medicine	
	Asset ID #: 997002	Function: Hospital – Medical Clinics	
	Mission Category: ME		Risk Level: 3
	FIMS Deferred Maintenance: $1,990.275		
CAIS CONDITION	Fair	Year of CAS Inspection: 12/17/03	
FIS RATING	Status 3	Year of FIS: 11/3/03	
FACILITY INFORMATION	[redacted]	Description: Concrete CMU shear wall building designed to provide medical treatment, process dosimeters, analysis of environmental restoration samples, admin support, and house information services computer equipment.	Program Requirements: Mission essential, but replaceable; long-range - unrestricted requirement.

PROJECT LIST

Scheduled

Fiscal Year	Project #	Project Name	DM%	TEC (k)	MP
2006	NTS-99-072	Replace HVAC, Bldg. 650		0.02	
2009	NTS-99-086	NTS Building 650 Modifications		1.20	

Assessment Issues

Issue/Concern	MP
Removed unused equipment in building. (oxygen system, vacuum pumps, etc.), 23-650 (3)	E
Interior Paint, 23-650 (3)	E
Upgrade Lighting, 23-650 (2)	D
Interior Replacement/Repairs, 23-650 (2)	D
Electrical Components Replacement (Life Cycle), 23-650 (1)	C

COMMENTS

Site & Infrastructure Planning Recommendation/Comments:

Renovate (Recommend analysis for new facility versus renovation)

Fire Inspection Report:
(7/3/03) All applicable NFPA codes are in compliance. Complete checklist/report available at the NTS Fire & Rescue Department.

ESH&Q:
Characterized for beryllium; facility cleared by ES&H for intended use per applicable REOP

Facility Manager/Facility Owner Comments:

- Stacks in rooms # 2, 3, 37, 38 potentially contaminated from previous experiments; should be removed
- Exterior foam siding recently replaced.
- Facility requires the following upgrades: ventilation system, exit lighting, lighting system, and interior paint
- Systems not in use should be removed; vacuum pumps, oxygen supply, and vacuum system
- Parking bumpers needed
- Medical section of facility does not meet Medical Privacy Act Standards
- Facility is being remodeled to meet current needs; requires routine maintenance Remodel completed on medical portion of facility 4-5 years ago

Appendix C: Miscellaneous

The following is a list of information contained in this appendix:

- President's Budget FY 2006 – 2010 Integrated Construction Program Plan for NA-10, NA-50, and NA-70
- Future-Years Nuclear Security Program (FYNSP) Constrained Site Funding Pro les for Future-Years Nuclear Security Program Constrained Site Funding Pro les for Readiness in Technical Base Facilities/Operations of Facilities and Facilities and Infrastructure Recapitalization Program.

Future-Years Nuclear Security Program (FYNSP) Constrained Site Funding Profiles for Readiness in Technical Base Facilities (RTBF) /Safety and Security (S&S)/Operations of Facilities and Facilities and Infrastructure Recapitalization Program (FIRP) ($000s)								
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	Total
FIRP			7,800	8,000				15,800
S&S								0
RTBF	24,041	13,919	6,719					44,679

	(1) Excellent		(2) Good		(3) Adequate		(4) Fair		(5) Poor		(6) Fa
	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP
[illegible]	11.3%	7.7%	0.6%	1.0%	2.8%	2.9%	5.0%	4.2%	10.2%	2.9%	[illegible]
[illegible]	3.4%	8.8%	0.4%	1.5%	0.1%	1.3%	5.1%	4.4%	5.0%	3.5%	[illegible]
[illegible]	13.2%	7.3%	2.3%	2.1%	3.1%	3.1%	1.2%	2.3%	0.5%	1.9%	[illegible]
[illegible]	2.8%	4.6%	5.8%	1.5%	0.3%	0.4%	5.2%	1.3%	0.0%	0.2%	[illegible]
[illegible]	4.1%	6.0%	3.1%	1.0%	0.3%	2.1%	2.0%	4.0%	0.2%	1.5%	[illegible]
[illegible]	4.1%	5.0%	1.3%	2.1%	0.8%	3.5%	1.7%	5.4%	1.4%	0.4%	[illegible]
[illegible]	38.7%	40.4%	13.5%	9.2%	7.4%	13.3%	20.2%	21.6%	17.3%	10.2%	[illegible]

Projected Sitewide Facility Condition Index (FCI) = 0.09

[1] Service Buildings DO NOT include service structures (structures that provide service support function that is close to the point of consumption, for example, gasoline pumps)

	(1) Excellent		(2) Good		(3) Adequate		(4) Fair		(5) Poor		(6) Fa
	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP	FY 2007 TYSP	FY 2006 TYCSP
[illegible]	11.6%	7.8%	0.6%	1.1%	2.4%	2.9%	4.9%	4.2%	9.9%	2.9%	0.1%
[illegible]	3.5%	8.8%	0.4%	1.5%	0.1%	1.3%	5.0%	4.0%	4.8%	2.9%	1.4%
[illegible]	14.0%	7.4%	2.2%	2.1%	3.0%	3.2%	1.2%	2.3%	0.5%	1.9%	0.0%
[illegible]	2.9%	4.6%	5.8%	1.5%	0.3%	0.4%	5.1%	1.3%	0.0%	0.2%	0.2%
[illegible]	6.1%	6.1%	3.0%	1.1%	0.3%	2.1%	2.0%	4.0%	0.2%	1.5%	0.3%
[illegible]	4.0%	6.1%	1.3%	2.1%	0.8%	3.8%	1.6%	5.5%	1.4%	0.2%	0.1%
[illegible]	41.1%	40.8%	13.1%	9.4%	6.9%	13.5%	19.8%	21.3%	16.9%	9.6%	2.1%

Projected Sitewide Facility Condition Index (FCI) = 0.09

[1] Service Buildings DO NOT include service structures (structures that provide service support function that is close to the point of consumption, for example, gasoline pumps)

Summary of Projected Facility Condition Ratings for Oak Ridge National Laboratory