

**Overview of Nevada Test Site Radioactive and Mixed
Waste Disposal Operations - 9117**

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ABSTRACT

The U.S. Department of Energy (DOE), National Nuclear Security Administration Nevada Site Office Environmental Management Program is responsible for carrying out the disposal of on-site and off-site generated low-level radioactive waste (LLW) and low-level radioactive mixed waste (MW) at the Nevada Test Site (NTS). Core elements of this mission are ensuring safe and cost-effective disposal while protecting workers, the public, and the environment.

This paper focuses on the impacts of new policies, processes, and opportunities at the NTS related to LLW and MW. Covered topics include: the first year of direct funding for NTS waste disposal operations; zero tolerance policy for non-compliant packages; the suspension of mixed waste disposal; waste acceptance changes; DOE Consolidated Audit Program (DOECAP) auditing; the 92-Acre Area closure plan; new eligibility requirements for generators; and operational successes with unusual waste streams.

INTRODUCTION

The U.S. Department of Energy (DOE), National Nuclear Security Administration Nevada Site Office (NNSA/NSO) Environmental Management (EM) Program is responsible for the disposal of onsite and offsite low-level radioactive waste (LLW) and low-level radioactive mixed waste (MW) at the Nevada Test Site (NTS). The core mission is to ensure safe, cost-effective disposal while protecting workers, the public, and the environment.

Over the last year, the LLW Sub-Project (which is also responsible for MW) experienced several changes. However, no changes impacted the primary mission of accepting and disposing DOE LLW and MW. This overview discusses the new funding process, disposal operations, new waste acceptance criteria, forecast updates, and new and exciting capabilities at the NTS.

DIRECT FUNDING

Past and Present

Prior to Fiscal Year (FY) 2008, NNSA/NSO requested waste disposal volume forecasts from all approved generators and assessed disposal fees based upon the forecasted volumes. Forecasts were revised at the time an agency budget appropriation was approved. Forecast changes during the FY were allowed based upon negotiated funding transfers.

In FY 2008, the DOE EM Headquarters (EM/HQ) provided total direct funding for NTS disposal operations, and no disposal fees were assessed to DOE generators. Non-EM programs (NNSA [NA], Nuclear Energy [NE], and the Office of Science [SC]) were not required to provide funds for waste disposal during the FY. However, it was anticipated that in FY 2009 they would supply funding based on forecasted volumes. This funding would be provided at a Headquarters program level and would not be assessed to the generators.

DOE began FY 2009 under an extended Continuing Budget Resolution (CR) through March 6, 2009. Under the CR, it was assumed EM would receive, on an incremental basis proportional to the length of the CR, funding comparable to that received in FY 2008. Therefore, it is projected there will be no need for non-EM programs to provide direct funding during the period of the CR. However, if a final appropriation is passed for FY 2009 resulting in EM direct funding for NTS that is less than the required amount or if CR funding proves inadequate, non-EM programs will be required to fund their share of the costs to make up any shortfall, based on the same volume percentages that were calculated previously assuming a full-year appropriation without any CR.

It is not anticipated DOE sites will receive billing notices in FY 2009. However, for planning and life-cycle cost purposes, sites have been provided a planning rate of \$14.51 per cubic foot (\$512.43 per cubic meter) to be used for cost comparison with other disposal alternatives. Although NTS disposal costs will be provided by EM/HQ through the CR period, it is possible that non-EM programs may have to share the cost for any FY 2009 budgetary shortfall at the following levels of participation: EM-65%, NA-31.7%, NE-2.3%, SC-1%. Work for Others customers will be charged the planning rate plus any applicable DOE adders.

Direct funding supports one disposal operations crew able to handle up to 1.5 million cubic feet (42,475 cubic meters) annually. This is a maximum capacity of 125,000 cubic feet (3,540 cubic meters) per month. Disposal volume allocations have been made to DOE generators covered by direct funding. Receipt of wastes from non-DOE locations (e.g., Work for Others) are handled on a case-by-case basis, and assessment notices are sent to cover the full cost of disposal – including any appropriate DOE adders.

Costs associated with special handling requirements or additional equipment needed to receive and process particular waste streams will be added to those shipments as surcharges. These additional costs may be passed on as surcharges to the field element requiring such services.

Weekly Status

Starting in FY 2008, weekly conference calls were initiated between NNSA/NSO and EM/HQ to evaluate the status of waste disposal activities, support HQ configuration management objectives, and determine the adequacy of funding levels. These calls include a discussion of compliance activities, accuracy of waste forecasts, determination of adequate disposal operations staffing levels, and review of disposal performance to date.

Forecast Change Control

During FY 2008, NTS disposal forecasts were updated on a quarterly basis using revised projections supplied by the approved DOE generators. Performance against forecasts was reviewed on a monthly basis to determine the adequacy of forecast information and to identify factors leading to deviation from those forecasts. This activity, in conjunction with the weekly teleconferences, is being continued throughout FY 2009.

POLICY ON COMPLIANCE WITH RADIOACTIVE WASTE ACCEPTANCE REQUIREMENTS

In March 2007 a non-compliant MW cargo container was received at the NTS from Generator A. The container had a hole in the top that allowed rainwater inside while being transported and was leaking on arrival. The water was analyzed and found to be non-hazardous and non-radioactive. Based on the analytical results, the Management and Operations contractor, National Security Technologies, LLC, (NSTec), was directed to drain the container and then dispose of it in the Mixed Waste Disposal Unit. However, due to sampling turnaround time, continued leaking and the cease order discussed below, the container was sent back to Generator A in August 2007.

Based on a Cease Order issued by the Nevada Division of Environmental Protection (as described in the next section), the DOE Assistant Secretary for Environmental Management issued the *Policy on Compliance with Radioactive Waste Acceptance Requirements* on September 12, 2007.[1] The NNSA Associate Administrator for Infrastructure and Environment directed NNSA sites to implement the policy on September 25, 2007.[2] The policy explicitly directs DOE storage, treatment, and disposal sites to expeditiously return any non-compliant shipments to the violating generator at the generator's expense. The policy identified that DOE receiving sites have, in the past, attempted to work to accommodate non-compliant containers to minimize additional transport and waste handling, but determined that such efforts were not in the best interest of the DOE.

The policy was first implemented on June 12, 2008 when a cargo container was received at the NTS with a puncture. The generator quickly retrieved the non-compliant container and investigated the root cause of the puncture. The investigation discovered several waste loading, packaging, and shipping concerns that led directly to the non-compliance. After correcting the problems the generator restarted the shipping campaign and, as expected, the issue did not reoccur.

THE MIXED WASTE CEASE ORDER

In addition to the MW container described above, two more MW problems were identified in the spring of 2007. Generator B self-identified a transuranic (TRU) waste drum had been inadvertently macro-encapsulated with MW drums due to an inventory control error and then shipped to the NTS. Another generator waste inventory control issue was discovered by Radioactive Waste Acceptance Program (RWAP) auditors, which would have resulted in Generator C comingling non-DOE waste with DOE wastes streams and shipping both waste streams to the NTS. Fortunately, Generator C was still processing the waste and none had been shipped.

Cease Order

Based on the three incidents, the NDEP issued a Cease Order on August 27, 2007.[3] The Order required all MW shipments by the three generators cease as of August 24, 2007. Any additional MW profile reviews for these generators also ceased.

EM/HQ and NNSA/NSO Actions

The RWAP program issued Corrective Action Requests (CAR) to the generators. EM/HQ and the NNSA/NSO conducted facility evaluations of the generator's waste disposal programs. One of the evaluations included NDEP and the Ohio Division of Environmental Protection participation. NDEP agreed to the following:[4]

1. The Order could be lifted individually for each generator
2. NNSA/NSO would forward data packages to the NDEP containing:
 - a. RWAP issued CAR
 - b. Generator's Corrective Action Plan (CAP)
 - c. RWAP's closure of the CAR
 - e. EM/HQ assessment report and any other CAR(s) issued
 - f. Generator's CAP(s) in response to EM/HQ's Assessment
 - g. EM/HQ's closure of any CAR(s)
3. EM/HQ must give written approval of the CAR or assessment closure to NNSA/NSO prior to requesting lifting the Order.

Impact

Generator A cease order was lifted on March 13, 2008, twelve months after the incident. Generator B cease order was lifted on December 7, 2007, a delay of six months. Generator C cease order was lifted on October 15, 2007 after three months of non-shipping.

NEW MIXED WASTE STEAM SUSPENSIONS

Due to a request from the Nevada Attorney General (AG), as of August 2008 the NTS is not processing any new profiles for MW streams or revisions to approved MW profiles.[5] This request, transmitted in an August 12, 2008 letter, is based on the terms of the *State of Nevada v. O'Leary* Settlement Agreement.[6] The AG is concerned with an ongoing NTS land withdrawal issue and the adequacy of the 1996 Site-wide Environmental Impact Statement. EM/HQ requested NNSA/NSO comply with the request until meetings with the AG are completed. A meeting is expected to be scheduled by the end of 2008 or first quarter in 2009. It should be noted that the NNSA/NSO has not violated any portion of the Resource Conservation and Recovery Act (RCRA) MW disposal permit.

NEVADA TEST SITE WASTE ACCEPTANCE CRITERIA (NTSWAC) CHANGES

The NTSWAC provides the requirements, terms, and conditions under which LLW and MW is accepted for disposal. The NTSWAC includes requirements for waste certification programs, characterization, traceability, waste form, packaging, and transportation. The criteria apply to radioactive and mixed waste received at the NTS Area 3 and Area 5 Radioactive Waste Management Complex.

Revision 7 of the NTSWAC was issued and became effective October 1, 2008.[7] The bulk of the changes involved clarification of requirements. The major changes include document processing, Greater-Than-Class C waste, Polychlorinated Biphenyl (PCB) waste and packaging.

Generators can now submit documentation directly to NSTec RWAP Manager with copies going to NNSA/NSO.

References to Greater-Than-Class C (GTCC) waste were removed from the NTSWAC. Since GTCC is generated by U.S. Nuclear Regulatory Commission (NRC) licensees and the NTS can only accept DOE-owned wastes, the GTCC terminology does not apply.

LLW containing PCBs requiring disposal in a permitted hazardous waste landfill are now required to be segregated, packaged, and profiled separately from other waste streams. Since these LLWs require disposal in the permitted MW cell, the MW requirements for no free liquids, non-biodegradable sorbents, compatibility, and void space must also be met. Notification requirements of Title 40 Code of Federal Regulations (CFR) 761.61 for PCB remediation waste were also added to the NTSWAC.

A new section regarding waste containers and shipping configurations was added. All packages must meet Industrial Package One (IP-1) packaging requirements (49 CFR 173.410 and 173.411), at a minimum. All drums 55 gallons or less must be palletized, banded and shipped in a closed transport vehicle. Alternative shipping containers will be approved on a case-by-case basis with consent from the NNSA/NSO Waste Management Federal Project Director.

DEPARTMENT OF ENERGY CONSOLIDATED AUDIT PROGRAM (DOECAP)

The NTSWAC states if MW is treated by a commercial facility, that facility shall have a current DOECAP audit, or equivalent.[8]

The DOECAP provides annual qualification audits of commercial waste treatment, storage and disposal facilities (TSDFs) and environmental analytical laboratories. Beginning with analytical laboratories in the mid-1990s and adding commercial TSDFs in 2004 the program eliminates redundant audits previously conducted numerous DOE field element sites. The DOECAP standardized the audit processes, methods, and procedures. Each year over thirty audits are conducted at commercial analytical laboratories and seven audits at commercial TSDFs accepting DOE LLW and MW. Within the program there are defined qualification standards, procedures, and processes for auditors supporting the program. The DOECAP evaluation checklists are well developed and the audit reports and corrective action plans are standardized.

The NNSA/NSO has five laboratory auditors and four TSDF auditors supporting the DOECAP Program; in FY 2008 support included thirteen laboratory audits and five TSDF audits. The DOECAP is an efficient and effective use of funding resources and ensures confidence in data results and accountability for LLW and MW being handled at TSDFs. The program verifies compliance with DOE Order 435.1 and applicable Federal and State laws and regulations.

RWAP RESULTS

The RWAP consists of NSTec personnel assigned to the NNSA/NSO. The objective and goal of the RWAP is to ensure LLW and MW complies with the NTSWAC; Title 40, CFR; the Resource Conservation and Recovery Act (RCRA); 10 CFR, Part 835, "Occupational Radiation Protection"; DOE Order 435.1, "Radioactive Waste Management"; State of Nevada Administrative Codes (NAC) and Revised Statutes; and applicable U.S. Department of Transportation regulations.

RWAP is responsible for conducting facility evaluations (FEs) of generators which consist of audits, surveillances, and mixed waste verifications. An audit systematically and independently examines and evaluates objective evidence verifying that the waste generator's program documents contain the

necessary elements and are adequately implemented. The audit scope includes on-site evaluation of the characterization, quality assurance, and waste traceability program elements. Audits are both programmatic and performance-based. Scheduled or unscheduled surveillances are also performed to evaluate specific program elements, new waste streams, and verify implementation of corrective actions. Mixed waste verifications are processes in which MW is physically and/or chemically examined to confirm the waste is compliant with the waste profile and NTSWAC. During FY 2008, RWAP performed 34 FEs.

The RWAP Manager chairs the Waste Acceptance Review Panel (WARP). The WARP is a technical resource designated to: review and recommend approval of waste profiles; recommend the percent verification rate for MLLW profiles; initiate development of position papers; review generator documents; and provide recommendations on related technical issues to NNSA/NSO. The WARP consists of RWAP, disposal operations, NDEP, and NNSA/NSO personnel.

During FY 2008 the WARP reviewed and recommended for approval 166 waste profiles and 23 Pre-Treatment Notification Forms. Recently RWAP changed from biennial audits of each generator to conducting impromptu (unscheduled) surveillances. Impromptu surveillances have increased the yearly facility evaluations conducted. For example, in FY 2006 twenty-four biannual audits were conducted, but in FY 2007 thirty facility evaluations were conducted for the same funded dollars. Similarly in FY 2008 thirty-four facility evaluations were completed. Impromptu Surveillances are conducted over shorter periods of time and use fewer auditors. They provide the RWAP with a real-time evaluation of a generator's ability to maintain compliance with the NTSWAC.

RWAP has also implemented a limited review process for waste profiles revisions. The process allows for non-technical changes to be reviewed and accepted by a designated review lead, at a minimum, as opposed to a full WARP review. The limited review process allows profile revisions to be reviewed and approved in an expedited timeframe.

92-ACRE AREA CLOSURE

The NTS Area 5 Radioactive Waste Management Complex covers 732 acres with the southeast and northeast quadrants actively used to dispose radioactive waste. Most of the disposal cells in the southeast quadrant (known as the "92-Acre Area") are operationally closed or nearing capacity. The Northeast quadrant (known as the "Expansion Area") has active cells and room for future development. See Figure 1. NNSA/NSO is planning to close the 92-Acre Area in 2011. Closure requires meeting a wide range of regulatory requirements for the numerous waste types and disposal configurations.

The 92-Acre Area contains 25 shallow excavated pits and trenches and 13 Greater Confinement Disposal (GCD) boreholes. The pits and trenches (hereafter referred to as "cells") range in depth from 4.6 to 14.6 m (15 to 48 ft). A small quantity of classified TRU waste was inadvertently buried in one cell in 1986. The GCD boreholes are intermediate depth disposal units, 3 to 3.7 m (10 to 12 ft) in diameter and about 36 m (120 ft) deep. GCD boreholes include high-specific-activity low-level, TRU, and mixed TRU (MTRU) wastes. One other cell (the permitted MWDU) remains active within the 92-Acre Area, but is expected to be operationally closed on or before November 30, 2010. The rest of the cells are operationally covered with native soil approximately 2.4 m (8 ft) thick.

The 38 disposal cells divide into five different regulatory closure regimens, listed below:

1. Federal Facility Agreement and Consent Order (FFACO)
2. RCRA
3. Title 40 CFR 191
4. DOE Order 435.1, Radioactive Waste Management

5. NAC 444.6891, Class III Solid Waste Asbestos Disposal (permit SW 1300001)

The Pit P03U MWDU operates under RCRA and must end operation by November 30, 2010 and thus drives the 92-Acre Area closure schedule.

Ten cells are collectively listed in the FFACO as Corrective Action Unit (CAU) 111 and in the RCRA Part B permit as "historical mixed waste pits and trenches." The cells were operationally closed prior to the promulgation of the RCRA and are known or suspected to contain hazardous constituents. These cells must be closed under RCRA permit and FFACO closure processes.

Pit P07U (operationally closed) and the upper tier of P06U (active) dispose of regulated asbestos waste under State of Nevada Solid Waste Disposal Site Permit SW 1300001 (NDEP, 2000) and will be closed under the solid waste permit and NAC 444.6891. Pit P06U was originally excavated to a deeper depth (26 to 30 ft) for disposal of thorium waste and therefore will also meet the DOE O 435.1 closure requirements. Pit P06U will likely be operationally closed before Pit P03U completes operations.

Seven of the 13 GCD boreholes are full of waste to approximately 21.3 m (70 ft) depth and are operationally closed with 21.3 m (70 ft) of native soil cover to grade. Two of the boreholes are partially filled with waste, but are inactive and the remaining four boreholes are empty. Because some of the boreholes contain TRU waste, 40 CFR 191 closure requirements must be met, along with 40 CFR 265, NAC 444.743, and RCRA requirements as incorporated into NAC 444.8632 because of the known or suspected presence of hazardous constituents. The TRU waste inadvertently buried in cell T04C also requires closure under 40 CFR 191.

The rest of the cells contain only low-level waste and will be closed under DOE Order 435.1. See Table 1.

In March 2007 a closure strategy was developed for the 92-Acre area [9] which identified the different regulatory requirements and the closure approval authorities. This strategy, plus discussions with the NDEP, DOE headquarters, and NNSA/NSO evolved into a three-step closure process, similar to those used under the FFACO, documented in a Closure Plan.[10] The plan calls for: a Data Quality Objectives (DQO) document; Corrective Action Decision Document and Corrective Action Plan (CADD/CAP); and a final Closure Report. By involving all regulatory authorities in the closure planning process a single agreed upon strategy was produced.

Figure 1: The NTS Area 5 RWMC showing the boundary of the 92-Acre Area and Expansion Area

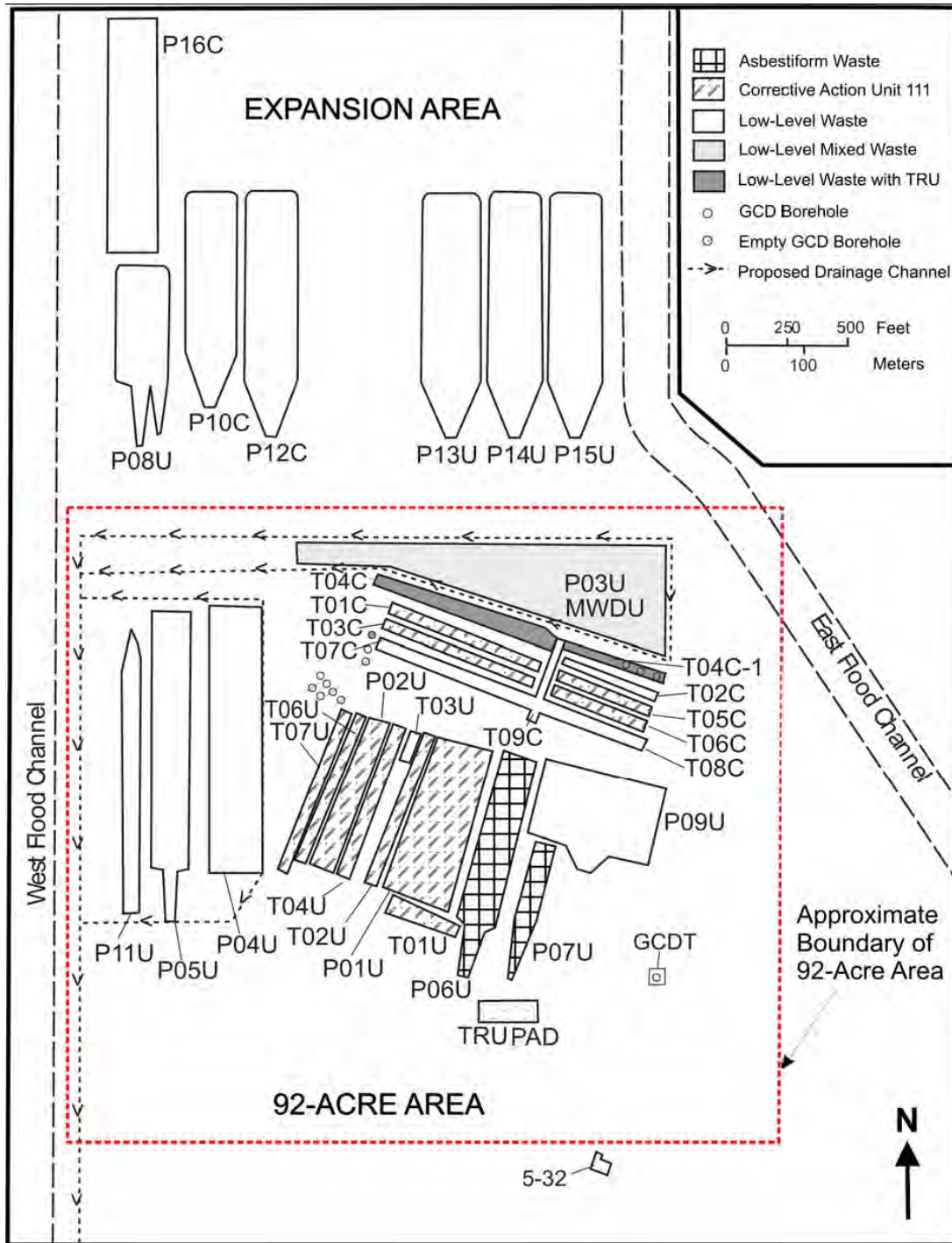


Table 1: Regulatory Regimes

CLOSURE UNIT	WASTE UNIT	STATUS OF OPERATION	WASTE TYPE	CLOSURE REGULATIONS	APPROVAL AUTHORITY
LLW Unit	P09U	Operationally Closed	LLW	DOE O 435.1	NNSA/NSO
	T03U	Operationally Closed			
	T04C-1	Operationally Closed			
	T02C	Operationally Closed			
	T07C	Operationally Closed			
	T08C	Operationally Closed			
	T09C	Operationally Closed			
	GCDT	Operationally Closed			
	GCD-05	Operationally Closed			
	GCD-06	Open, full			
	GCD-07	Open, full			
	GCD-08	Open, empty			
	GCD-09	Open, empty			
	GCD-10	Operationally Closed			
	GCD-11	Open, empty			
	GCD-12	Open, empty			
	P04U	Operationally Closed			
	P05U	Operationally Closed			
P11U	Operationally Closed				
CAU 111 Unit	P01U	Operationally Closed	MW	FFACO, RCRA PART B PERMIT, CFR 265.310	NDEP
	P02U	Operationally Closed			
	T01U	Operationally Closed			
	T02U	Operationally Closed			
	T04U	Operationally Closed			
	T06U	Operationally Closed			
	T07U	Operationally Closed			
	T01C	Operationally Closed			
	T03C	Operationally Closed			
	T05C	Operationally Closed			
	T06C	Operationally Closed			
Regulated Asbestos	P06U	Active	LLW with regulated asbestos	NV Solid Waste Disposal permit	NDEP
	P07U	Operationally Closed			
Pit 3 MWDU	P03U	Active	MW	RCRA Part B permit	NDEP
TRU GCD Borehole Unit	GCD-01C	Operationally Closed	TRU, MTRU	40 CFR 191 CFR 265.310	DOE/HQ (TRU Federal Review Group)
	GCD-02C		TRU, MTRU		
	GCD-03C		TRU, MTRU		
	GCD-04C		LLW, MW, TRU, MTRU		
TRU Trench Unit	T04C	Operationally Closed	LLW, TRU, MTRU	40 CFR 191 CFR 265.310	DOE/HQ (TRU Federal Review)

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ELIGIBILITY DETERMINATIONS FOR NTS DISPOSAL

The lack of available commercial disposal capability and capacity has stimulated increased interest in the NTS as a disposal option for certain types of wastes – including higher-activity radioactive and mixed wastes from a wide variety of locations, some of which are not currently operated by DOE or its contractors. In addition, the closure of the Barnwell Facility in June 2008 to out-of-compact generators has increased concern regarding availability of commercial disposal capability for Class B and C wastes in the near future.

Although the NTS has made eligibility determinations before, it became necessary to formalize the process to ensure standard and consistent implementation. Therefore, the NNSA/NSO, in consultation with EM/HQ developed the NTS Eligibility Protocol.[11] The Protocol provides a consistent mechanism through which pertinent information is collected and evaluated against established criteria to arrive at a determination of eligibility for NTS disposal. All determinations for eligibility are made by NNSA/NSO on a case-by-case basis using the criteria described in the Protocol. DOE reserves the right to refuse eligibility for disposal of any waste stream at its disposal facilities.

The NTS Eligibility Protocol provides guidance for acceptance of wastes from facilities that are not clearly owned and/or operated by DOE. Decisions regarding the eligibility for disposal of LLW and MW at the NTS must be made based upon a clear and unambiguous connection (nexus) between the waste stream and a DOE-funded project, DOE-performed operation, DOE-owned material/waste, or project whose waste disposition is directed by Statute. In addition, the NTS is authorized to accept classified low-level radioactive waste from Department of Defense (DoD) sites.

This process defines a consistent mechanism by which decisions regarding the presence or absence of a DOE nexus can be made based upon adequate process knowledge and/or documentation regarding the waste stream. It is applicable to all facilities that are not owned and/or operated by DOE or its direct contractors and that generate LLW or MW – including Work for Others projects involving other Federal agencies, their direct contractors, or private organizations.

Generators who desire a decision regarding the eligibility of specific wastes for NTS disposal submit an inquiry and appropriate documentation to support the decision-making criteria to the NNSA/NSO. This documentation must support the rationale for a clear DOE nexus with the waste and must demonstrate this nexus, as applicable, through shipment records, process descriptions, regulatory documents, Congressional statements or other suitable means.

Following a satisfactory review by the NNSA/NSO EM organization, the information package is forwarded to the NNSA/NSO Legal Counsel and EM/HQ for final concurrence. Such concurrence (or non-concurrence) will be documented in writing and a record placed in the official file. Legal Counsel may request other pertinent information that is deemed necessary and appropriate to the final determination of eligibility.

Case Studies and Appropriate Documentation

- DOE accepted for NTS disposal depleted uranium waste from a commercial site in Oklahoma that is completing an NRC-directed decommissioning process. Congress directed the DoD to dispose of this waste in a short time frame, and DoD requested NTS eligibility. A suitable DOE nexus was established based on documentation that showed the source material had been provided from the Paducah Gaseous Diffusion Plant and that DOE maintained title to the uranium.
- DOE accepted for NTS disposal un-irradiated control rods from a NASA facility that is undergoing decommissioning. A suitable DOE nexus was established based upon documents showing that the reactor had been designed and built for a project jointly sponsored by NASA and the Atomic Energy Commission (pre-cursor to the DOE).
- DOE accepted for NTS disposal reactor base plates that had been irradiated in a Tennessee Valley Authority facility. The DOE nexus was established based upon record indicating the base plates were supplied from a DOE facility and that the irradiation had been performed at DOE's request under a DOE-sponsored project.

NTS DISPOSAL OPERATIONS

Forecasted vs. Actual Volume Received

During FY 2008, the actual volumes of waste arriving at the NTS varied considerably from month to month and did not always compare favorably with the volumes forecasted by the generator sites. The NTS disposal operations activity was budgeted and planned at an annual capacity of 1.5 million cubic feet (42,475 cubic meters) for the FY, which equates to an average monthly total volume of 125,000 cubic feet (3,540 cubic meters). In September 2008, the actual volume received exceeded 318,000 cubic feet (9,005 cubic meters); two and one-half times the nominal capacity, without the need for overtime or weekend work. This efficiency was achieved through forward planning and frequent contact with the generating sites – including voluntary re-scheduling of shipments from selected sites in order to avoid over-congestion on dates where high volumes had been projected in advance.

Receipt of higher-activity and Unique Waste Streams

As additional DOE sites have closed and the waste footprint at others has been significantly reduced, the NTS has disposed of more higher-activity and unique LLW and MW streams. During FY 2008, this trend was particularly noticeable, as evidenced by the following waste streams:

- Twenty shipments of un-irradiated light water breeder reactor fuel rods from the Idaho National Laboratory which required special cask extraction fixtures and segregation at the time of burial
- Multiple shipments of over 30 former DoD-utilized radioisotope thermal generators with a total activity of over 637,000 Curies from several field locations which required certification by Lawrence Livermore National Laboratory and segregation at the time of burial
- Sixty-five shipments of calorimeter assemblies containing depleted uranium that were recovered from the Hadron-Electron Ring Accelerator facility near Hamburg, Germany, which required certification upon entry to the U.S. at the Port of Houston and special crane off-loading at the NTS
- Disposal of high-activity DOE-owned reactor base plates irradiated at the TVA Watts Bar reactor in Tennessee, which required special handling due to potential personnel exposure

- Burial of four WWII-era Patton battle tanks used for target practice at the Nevada Test and Training Range, which required special packaging and transportation requirements prior to disposal
- Burial of over 375 Co-60 sealed sources recovered from multiple locations and shipped by Lawrence Livermore National Laboratory in Type B casks

FUTURE CHANGES AND NEEDS

The NTS is working to become designated as a Classified Waste disposal Facility under DOE Order 435.1, Radioactive Waste Management. Once this designation is complete, it will allow the NSO to accept radioactive classified low-level and mixed wastes for permanent burial without sanitization.

Preliminary MW forecasts show the potential for over 147,000 cubic feet (4,163 cubic meters) coming to the NTS after 2010 (mandatory date for closure of Pit 3 MWDU). An extension of current permit regarding use of Pit 3 is not an option, but EM/HQ and NNSA/NSO are initiating investigation of a new MWDU at the NTS. Development of a new MWDU is contingent on approval by Nevada of a new RCRA Part B Permit and construction of a fully-compliant lined disposal unit. NNSA/NSO will continue to work with EM/HQ throughout the Critical Decision processes.

CONCLUSION

The NNSA/NSO strives to meet the needs of the DOE Complex for LLW and MW disposal. Along with the NNSA/NSO, NSTec, EM/HQ and NDEP, the approval process and disposal operations continue to be refined and made more efficient, without losing the mission of providing safe disposal in a manner that protects the co-worker, the Public, and the environment.

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