



DOE/NV--1363

Annual Transportation Report for Radioactive Waste Shipments to and from the Nevada Test Site



Fiscal Year 2009

February 2010

U.S. Department of Energy
National Nuclear Security Administration
Nevada Site Office

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ANNUAL TRANSPORTATION REPORT FY 2009

**Radioactive Waste Shipments
to and from the Nevada Test Site (NTS)**

February 2010

**United States Department of Energy
National Nuclear Security Administration
Nevada Site Office
Las Vegas, Nevada**

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1.0 INTRODUCTION

In February 1997, the U.S. Department of Energy (DOE), Nevada Operations Office (now known as the Nevada Site Office) issued the Mitigation Action Plan which addressed potential impacts described in the “Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada” (DOE/EIS 0243). The DOE, Nevada Operations Office committed to several actions, including the preparation of an annual report, which summarizes waste shipments to and from the Nevada Test Site (NTS) Radioactive Waste Management Site (RWMS) at Area 5 and Area 3. Since 2006, the Area 3 RWMS has been in cold stand-by.

This document satisfies requirements regarding low-level radioactive waste (LLW) and mixed low-level radioactive waste (MLLW) transported to and from the NTS during FY 2009.

In addition, this document provides shipment, volume, and route information on transuranic (TRU) waste shipped from the NTS to the Idaho National Laboratory, near Idaho Falls, Idaho.

This report has been prepared in accordance with the specifications contained in Section 4.1.1 (Commitments) of the “NTS Environmental Impact Statement, Mitigation Action Plan” (February 1997). Tabular summaries are provided which include the following data:

- Sources of and carriers for LLW, MLLW, and TRU shipments to/and or from the NTS;
- Number and external volume of LLW, MLLW, and TRU shipments;
- Identification of highway routes used by carriers; and
- Incident/accident data applicable to LLW, MLLW, and TRU shipments.

2.0 SUMMARY OF WASTE SHIPMENTS (FY 2009)

Inbound/Off-site LLW

A total of 1,147,630 cubic feet(ft³) of LLW was disposed at the NTS in FY 2009, consisting of 1,329 inbound/off-site shipments, from 20 approved generators. These shipments were transported on 15 approved motor carriers (including government vehicles).

Inbound/Off-site MLLW

A total of 69,792 ft³ of MLLW was received at the NTS in 121 inbound/off-site shipments in FY 2009, from 7 approved generators. These shipments were transported on 8 approved motor carriers.

Total Inbound/Off-site LLW and MLLW

A total of 1,217,422 ft³ of LLW was disposed at the NTS in FY 2009 by 20 approved off-site generators in 1,450 shipments, transported on 16 approved motor carriers.

On-site LLW

Two approved on-site generators disposed 48,694 ft³ of LLW in 54 on-site transfers. Government (contractor) vehicles were used for these transfers.

On-site MLLW

One on-site generator made 11 on-site transfers that accounted for 7,352 ft³ of MLLW being disposed of at the NTS. Government (contractor) vehicles were used for these transfers.

Total On-site LLW/MLLW

A total of 65 on-site transfers of LLW/MLLW, accounting for 56,046 ft³ were made by two on-site generators.

Outbound/Off-site LLW

No outbound/off-site shipments of LLW were made by NTS tenants.

Outbound/Off-site MLLW

Three outbound shipments containing 1,263 ft³ of MLLW were made from the NTS to Permafrix Northwest in Richland, WA. These shipments were transported by an approved carrier (Cast Transportation).

Outbound/Off-site Transuranic (TRU) Waste

Seventeen TRU waste shipments, consisting of 6,115 ft³ were made from the NTS to the Idaho National Laboratory in FY 2009. Cast Transportation and Tri-State Motor Transit were the carriers for these shipments.

Table 1 provides a summary of inbound, outbound, and on-site shipments for FY 2009. Names and codes for approved generators and carriers used in this report are located in Tables 2 and 3, respectively.

Table 1. FY 2009 NTS Inbound, Outbound and On-site Summary Information

Inbound	Off-site Generators	NTS Generators	Approved Carriers	Shipments	Volume ft³
LLW (off-site)	19	1	15	1,329	1,147,630
MLLW (off-site)	7	0	8	121	69,792
LLW (on-site)	0	2	1	54	48,694
MLLW (on-site)	0	1	1	11	7,352
Outbound	Off-site Generators	NTS Generators	Approved Carriers	Shipments	Volume ft³
LLW	0	0	0	0	0
MLLW ^{1/}	1	0	1	3	1,263
TRU	0	1	2	17	6,115

^{1/} Three MLLW shipments were returned to the generator. For more information see Section 3.0.

Table 2. List of Approved Generators Shipping To/From/On the NTS

	APPROVED GENERATOR, STATE	GENERATOR CODE
1	ADVANCED MIXED WASTE TREATMENT PROJECT, ID	AM
2	ARGONNE NATIONAL LABORATORY, IL	AE
3	BECHTEL JACOBS OAK RIDGE, TN	OR
4	BOEING ROCKETDYNE, CA	BN
5	BROOKHAVEN NATIONAL LABORATORY, NY	BR
6	BWXT Y-12 PLANT, TN	BW
7	DURATEK, OAK RIDGE, TN	DR
8	ENERGX, TN	FW
9	IDAHO NATIONAL LABORATORY, ID	IN
10	LAWRENCE LIVERMORE NATIONAL LABORATORY, CA	LL
11	NATIONAL SECURITY TECHNOLOGIES, NV	DP
12	NAVARRO NEVADA ENVIRONMENTAL SERVICES	IT
13	NUCLEAR FUEL SERVICES, TN	NF
14	PADUCAH GASEOUS DIFFUSION PLANT, KY	PD
15	PANTEX PLANT, TX	PX
16	PERMAFIX (M&EC), TN, WA, CA	PF
17	PORTSMOUTH GASEOUS DIFFUSION PLANT, OH	PO
18	SANDIA NATIONAL LABORATORIES, NM	SA
19	SAVANNAH RIVER NUCLEAR SOLUTIONS, SC	SR
20	UT-BATTELLE, TN	OL
21	WEST VALLEY ENVIRONMENTAL SERVICES, NY	WV

Table 3. List of Approved Motor Carriers Utilized in FY 2009

	APPROVED MOTOR CARRIER	CARRIER CODE
1	AJ METLER	MAJH
2	BUFFALO FUEL CORPORATION	BFUI
3	CAST TRANSPORTATION	COLO
4	FLUID TRANSPORTS	FLAI
5	GOVERNMENT VEHICLE	GT+
6	HITTMAN TRANSPORT	HITT
7	HUBBARD TRUCKING	HUB+
8	INTERSTATE VENTURES	ITSV
9	LANDSTAR RANGER	LRGR
10	MP ENVIRONMENTAL	MPES
11	R & R TRUCKING	RRUK
12	RSB LOGISTICS	RSBI
13	SAVAGE LOGISTICS, LLC	SVGH
14	SOUTHERN FREIGHT LOGISITICS	SFLG
15	TRIAD TRANSPORT	TDTO
16	TRI-STATE MOTOR TRANSIT	TSMT

2.1 Waste Transporters (Motor Carriers)

Generators often use more than one motor carrier to facilitate their shipments. Table 4 (a.-b.) identifies each generator and the corresponding carrier(s) utilized for transport of NTS inbound, off-site LLW and MLLW shipments. Table 5 identifies each generator and the corresponding carrier(s) utilized for transport of outbound, off-site shipments of LLW and MLLW. Table 6 identifies each generator and the corresponding carrier(s) utilized for transport of on-site transfers of LLW and MLLW. Motor carriers operate in compliance with regulations located in Title 49 Code of Federal Regulations (CFR), "Transportation," and are selected by the generator.

A total of 48 NTS inbound LLW shipments were transported intermodally (rail/highway) in FY 2009. These shipments were first transported from their origination point at Nuclear Fuel Services via rail to a rail siding in Parker, Arizona where they were then offloaded and transported via approved motor carriers (COLO and TSMT) to the NTS.

Table 4a. Waste Transporters Utilized by Generators for Inbound LLW Shipments (number of shipments)

	AE	AM	BN	BR	BW	DP	DR	FW	IN	LL	NF	OL	OR	PD	PF	PO	PX	SA	SR	WV	TOTAL	
MAJH					198						15		197	161	1	5						577
BFUI																				21		21
COLO											16	1			120							137
FLAI																13	7	8				28
GT+										5												5
HITT				12	11		9			1					12	1						46
HUB+																35						35
ITSV				8				2														10
LRGR				1																99		100
MPES			2			1																3
RRUK													14		2	41						57
RSBI				11																		11
SVGH															4							4
SFLG											24											24
TSMT	23	19			63		4		92	25	36		9									271
	23	19	2	32	272	1	13	2	92	31	91	1	220	161	139	95	7	8	99	21	1,329	

Table 4b. Waste Transporters Utilized by Generators for Inbound MLLW Shipments (number of shipments)

	DP	DR	FW	IN	PF	SA	SR	TOTAL
COLO					33			33
FLAI						3		3
HITT		10			13		21	44
ITSV			2					2
RRUK					5			5
SVGH					21			21
TDTO	2							2
TSMT				11				11
	2	10	2	11	72	3	21	121

Table 5. Carriers Utilized by NTS Approved Generators for Outbound Shipments

	PF
COLO	3

2 Permafrix shipments PFM09013, PFM09014 and PFM09015 were returned to the generator. For more information see Section 3.0..

Table 6. Waste Transporters Utilized by NTS Generators for On-site Transfers

	DP	IT
GT+	63	2

2.2 Shipments and Volume

Table 7 (a.-g.) provides a summary of all LLW, MLLW, and TRU waste shipments, including volume, to and from the NTS during FY 2009.

Table 7a. Shipments and Volumes of LLW Transported to the NTS (FY 2009)

Off-site Inbound LLW Shipments Generator Code	Shipments by Quarter					Volume (ft3)
	1st	2nd	3rd	4 th	Total	
AE	7	11	3	2	23	18,439
AM	0	1	6	12	19	23,591
BN	0	0	2	0	2	478
BR	6	3	6	17	32	17,559
BW	78	60	42	92	272	363,413
DP	0	1	0	0	1	1,035
DR	8	3	0	2	13	11,048
FW	0	1	0	1	2	5,119
IN	11	14	25	42	92	56,099
LL	7	12	5	7	31	34,255
NF	15	26	18	32	91	94,152
OL	0	0	0	1	1	1,854
OR	27	75	93	25	220	115,354
PD	29	32	93	7	161	106,645
PF	2	9	11	117	139	56,155
PO	74	3	10	8	95	81,252
PX	0	1	5	1	7	8,886
SA	2	1	0	5	8	3,541
SR	98	0	1	0	99	132,044
WV	0	5	10	6	21	16,711
Total Shipments	364	258	330	377	1,329	1,147,630

Table 7b. Shipments and Volumes of MLLW Transported to the NTS (FY 2009)

Off-site Inbound MLLW Shipments Generator Code	Shipments by Quarter					Volume (ft3)
	1st	2nd	3rd	4 th	Total	
DP	2	0	0	0	2	717
DR	0	0	0	10	10	20,853
FW	0	0	1	1	2	3,390
IN	6	1	0	4	11	4,374
PF	8	10	25	29	72	27,669
SA	0	1	0	2	3	307
SR	0	0	0	21	21	12,482
Total Shipments	16	12	26	67	121	69,792

Table 7c. Transfers and Volumes of LLW Transported on the NTS (FY 2009)

On-site LLW Transfers	Shipments by Quarter					Volume (ft3)
Generator Code	1st	2nd	3rd	4 th	Total	
DP	5	9	18	20	52	48,310
IT	0	0	2	0	2	384
Total	5	9	20	20	54	48,694

Table 7d. Transfers and Volumes of MLLW Transported on the NTS (FY 2009)

On-site MLLW Transfers	Shipments by Quarter					Volume (ft3)
Generator Code	1st	2nd	3 rd	4 th	Total	
DP	0	2	3	6	11	7,352
Total	0	2	3	6	11	7,352

Table 7e. Shipments and Volumes of LLW Transported from the NTS (FY 2009)

Outbound LLW Shipments	Shipments by Quarter					Volume (ft3)
Generator Code	1st	2nd	3rd	4 th	Total	
Total	0	0	0	0	0	0

Table 7f. Shipments and Volumes of MLLW Transported from the NTS (FY 2009)

Outbound MLLW Shipments	Shipments by Quarter					Volume (ft3)
Generator Code	1st	2nd	3rd	4 th	Total	
PF	3	0	0	0	3	1,263
Total	3	0	0	0	3	1,263

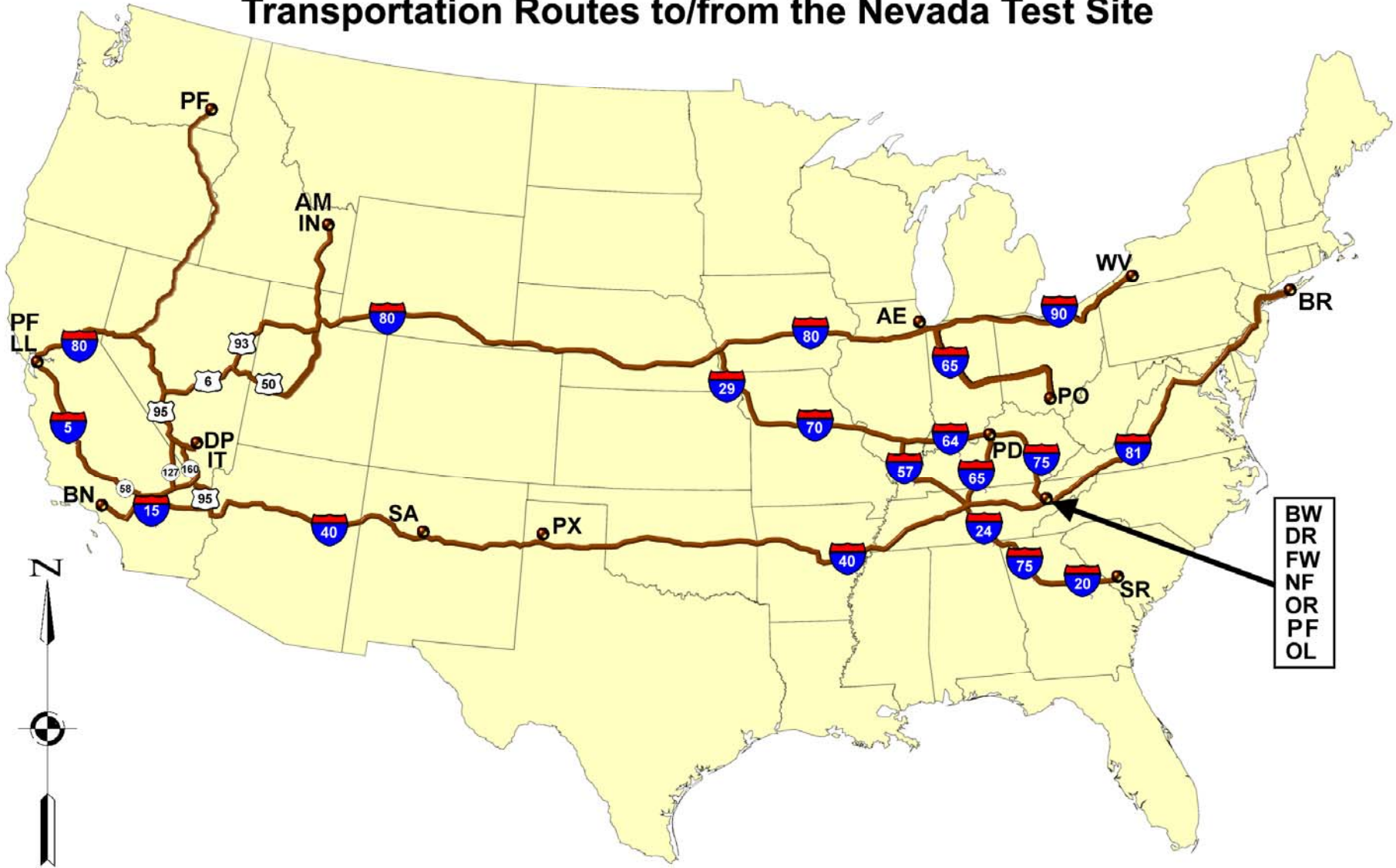
Table 7g. Shipments and Volumes of TRU Transported from the NTS (FY 2009)

Outbound TRU Waste Shipments	Shipments by Quarter					Volume (ft3)
Generator Code	1st	2nd	3rd	4 th	Total	
DP	4	7	5	1	17	6,115
Total	4	7	5	1	17	6,115

2.3 Transportation Routes

Twenty out-of-state approved generators shipped LLW and MLLW to the NTS for disposal in FY 2009. Table 8 provides specific routes utilized by each generator and the number of shipments in FY 2009. Figures 1 and 2 provide graphical interpretations of the general cross country and regional transportation routes, respectively.

**Figure 1 - FY 2009 National
Low-Level, Mixed Low-Level, and Transuranic Waste General
Transportation Routes to/from the Nevada Test Site**



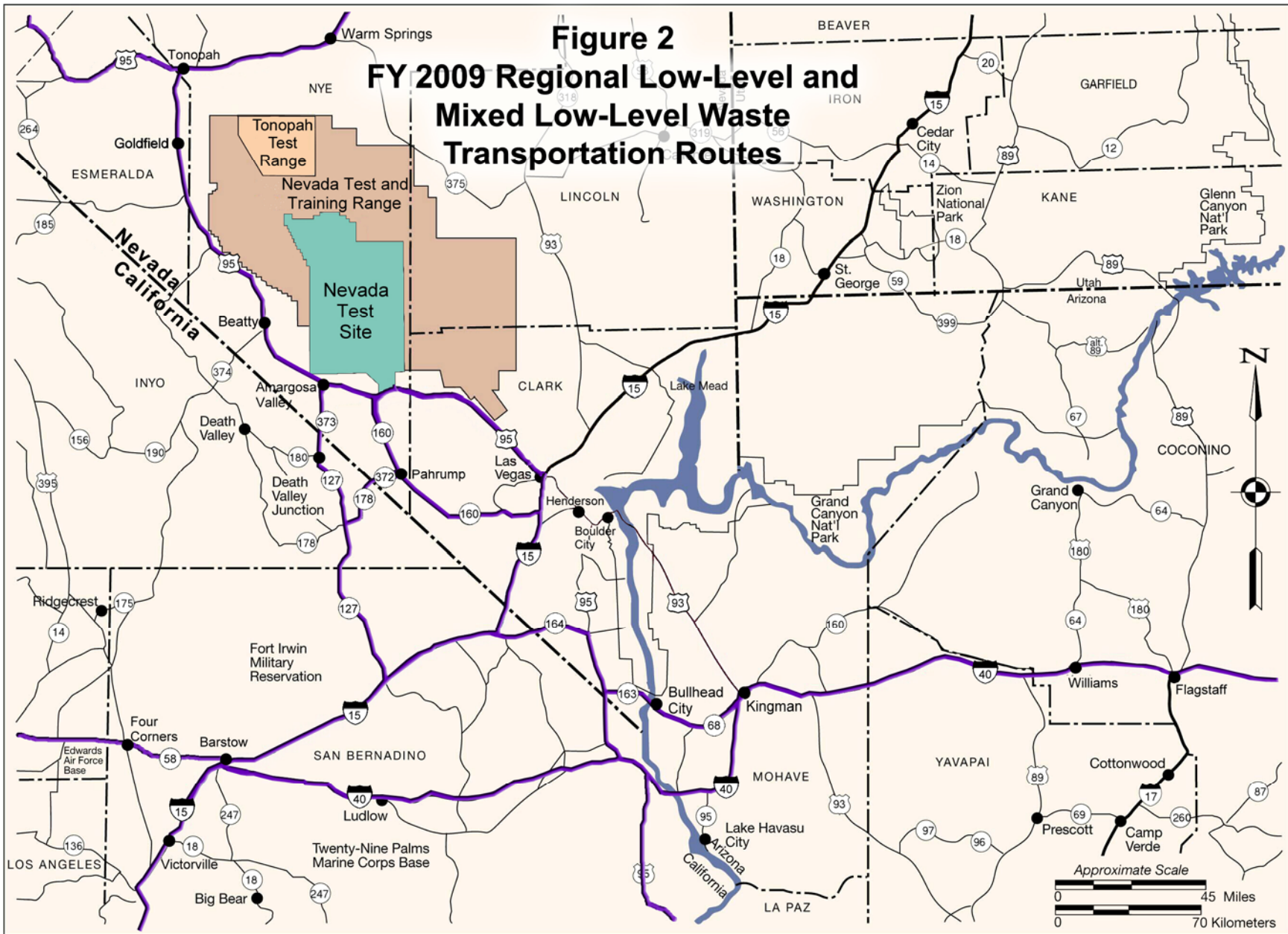


Table 8. Shipment Summary of Off-site, Inbound Regional Routes for FY 2009

DESCRIPTION	AE	AM	BN	BR	BW	DP	DR	FW	IN	LL	NF*	OL	OR	PD	PF	PO	PX	SA	SR	WV		
I-15, CA-127, CA-178, NV-372, NV-160, US-95			2												51							53
I-15, CA-127, NV-373, US-95										29					19							48
I-15, NV-160, US-95															34							34
I-40, I-15, NV-160, US-95													1						1			2
I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95				1	9			1					2	16			3	2	6			40
I-40, US-95, NV-164, I-15, CA-127, CA-178, NV-372, NV-160, US-95											1											1
I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95				1		1	4													1		7
I-40, US-95, NV-164, I-15, NV-160, US-95	11			12	263	2	19	3	25	2	90		217	145	61	95	4	9	112			1,070
I-40, US-95, NV-164, I-15, US-95 (LVI NON APPROVED)				1																		1
I-80, US-93-ALT, US-6, US-95	9	12		8					59			1			42						21	152
I-80, US-95 (WINNEMUCCA)									6						4							10
US-50, US-6/50, US-6, US-95	3			9																		12
US-93, I-80, US-93-ALT, US-93, US-6, US-95		1																				1
US-93, US-6, US-95		6							13													19
	23	19	2	32	272	3	23	4	103	31	91	1	220	161	211	95	7	11	120	21		1,450

* 48 shipments were shipped via rail to Parker, AZ then transported via motor carrier to the NTS.

2.4 Transportation Route Reporting

As a result of obligations made by former DOE Secretary Richardson, the transportation of NTS inbound LLW shipments through the Las Vegas I-15 and US-95 Interchange (Spaghetti Bowl) has substantially decreased since FY 2000.

The DOE, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) continues to engage in discussions with the generators regarding avoidance of the Spaghetti Bowl. The NTS Waste Acceptance Criteria includes wording requiring generators to notify their carriers to avoid this area.

One LLW/MLLW shipment was transported through the Spaghetti Bowl during FY 2009. Upon notification the generator was suspended, a Corrective Action Request was then submitted to the generator. A Corrective Action Plan was submitted and approved by the Radioactive Waste Acceptance Program and then enacted by the generator to ensure that this incident did not reoccur.

Due to the events of September 11, 2001, tractor trailers continue to be restricted from travel across Hoover Dam.

NNSA/NSO continues to honor an additional obligation made by former Secretary Richardson, and endorsed by the current administration, by preparing quarterly reports disclosing which routes transporters used to reach the NTS. These reports may be found on the Internet at <http://www.nv.doe.gov/emprograms/environment/wastemanagement/quarterlyreports.aspx>.

3.0 INCIDENT/ACCIDENT DATA

For the purpose of this report, an incident is defined as a traffic-related accident, a load shift, or a reported leaking/breached package which occurs during transportation.

Generators are instructed to notify the NNSA/NSO Assistant Manager of Environmental Management whenever a discrepancy, non-compliance, or inadequate performance is identified; or if a transportation incident or emergency situation occurs. There were no U.S. Department of Transportation reportable transportation incidents involving LLW or MLLW being transported to the NTS in FY 2009.

National Security Technologies (NSTec) personnel control NNSA/NSO waste receipt and disposal activities at the NTS and are responsible for notifying appropriate personnel regarding any non-compliant or refused radioactive waste shipments. NSTec personnel also immediately notify generators in the event of any shipping paper discrepancies.

Below is a summary of issues observed during waste receipt and disposal activities in FY 2009. These issues are reported to the generators who then implement appropriate corrective actions to prevent recurrence.

- Radioactive contamination was discovered on the floor of a trailer. The contamination was determined to be cobalt-60 with an activity level of 260,000 disintegrations per minute (dpm) per 100 cm². Packages in shipment were not contaminated. The generator was notified and a Corrective Action Request issued. Waste packages were placed into disposal cell.
- A shipping manifest listed Radioactive Yellow II with a Transport Index (TI) of greater than 1.0. A TI of greater than 1.0 would require a Yellow-III designation. The generator was contacted and stated that there was an error in the placement of the decimal point for the TI. Per the generator's instructions, a pen and ink change was made to the shipping manifest to change the TI to 0.1.
- A shipment arrived with packages marked as Reportable Quantity on the Bill of Lading, but the packages were not marked as Reportable Quantity on the Nuclear Regulatory Commission (NRC) NRC-540 form nor marked as Reportable Quantity on the packages. The generator was notified and the appropriate documentation was completed.
- The radiological receipt surveys on three associated shipments indicated contamination was detected on various packages. Multiple packages were contaminated. The generator was notified, a Corrective Action Request issued, and all three shipments were returned to the generator after the packages were appropriately covered and compliant for shipment.
- No Package, Storage, and Disposal Requests (PSDR) arrived with two on-site transfers. No "Fissile Excepted" notations were on the shipping papers, and no Reportable Quantity markings were on the packages. The shipping papers also indicated a White I Label; however, there were no White I labels on the packages. The generator was notified and PSDRs were provided and issues corrected.

4.0 EVALUATION OF SHIPPING CAMPAIGNS

None of the 1,450 off-site NTS inbound and none of the 20 off-site outbound shipments experienced incidents while in transit to/from the NTS. None of the 65 on-site transfers experienced incidents while being transported on the NTS.

5.0 REFERENCES

The primary sources of shipment information in this report are records kept by the NSTec Waste Management Program, who manages the NTS RWMS at Area 3 and Area 5. These records provide detailed information on each shipment of LLW and MLLW (dates received, generators, number and type of waste packages, volumes, weight, carrier, and final disposition of shipments). In addition, incident

and accident information is gathered by reviewing other NSTec and NNSA/NSO correspondence and through personal communication with NNSA/NSO managers, NSTec management and program personnel, representatives from the waste generator facilities, and carrier personnel. Route information is gathered from quarterly routing reports generated by NNSA/NSO.

The following source documents are incorporated by reference:

- U.S. Department of Energy, Nevada Operations Office, "Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada" DOE/EIS 0243, Las Vegas, Nevada, August 1996.
- U.S. Department of Energy, Nevada Operations Office, "Mitigation Action Plan - Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada" DOE/EIS 0243, Las Vegas, Nevada, February 1997.
- U.S. Department of Transportation Regulations, 49 CFR, "Transportation," *Code of Federal Regulations*, Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office, Washington, DC, 1998

6.0 POINTS OF CONTACT

Please contact the following personnel for questions concerning the transportation of radioactive waste at the NTS or for requests for information relating to waste management and NNSA/NSO operations.

WASTE MANAGEMENT

E. Frank Di Sanza, Federal Project Director

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National Nuclear Security Administration
Nevada Site Office
Waste Management Project
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7.0 ACRONYM LIST

ft³	Cubic Feet
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
dpm	Disintegrations per minute
FY	Fiscal Year
LLW	Low-Level Radioactive Waste
LVI	Las Vegas Interchange
MLLW	Mixed Low-Level Radioactive Waste
NNSA/NSO	National Nuclear Security Administration Nevada Site Office
NRC	U.S. Nuclear Regulatory Commission
NSTec	National Security Technologies, LLC
NTS	Nevada Test Site
PSDR	Package, Storage, and Disposal Request
RWMS	Radioactive Waste Management Sites
TI	Transport Index
TRU	Transuranic Waste

A list of generator and carrier codes can be found on page 3.

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