

ANNUAL REPORT - FY 2001

Radioactive Waste Shipments To And From The Nevada Test Site (NTS)

February 2002

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

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1.0 INTRODUCTION

In February 1997, the U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office (NNSA/NV) 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). NNSA/NV 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 Sites (RWMSs) at Area 3 and Area 5. This document satisfies requirements with regard to low-level radioactive waste (LLW) and mixed low-level radioactive waste (MLLW) transported to or from the NTS during fiscal year (FY) 2001.

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:

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

2.0 SUMMARY OF WASTE SHIPMENTS (FY 2001)

In FY 2001, disposal of LLW/MLLW at the 2 NTS RWMSs consisted of 931 inbound shipments, from 18 generator sites, totaling 1,230,147 cubic feet (ft³). One onsite (shipment from a NTS generator) accounted for 32 ft³ of MLLW.

One inbound shipment was involved in a packaging related incident during FY 2001. A brief summary of the incident is located in Section 3.0 of this report.

A total of 3 outbound shipments were made from the NTS to various destinations. One shipment of Polychlorinated Biphenyl contaminated (PCB) LLW was sent to a treatment facility in Oak Ridge, TN, one shipment of MLLW to a treatment facility in Richland, Washington, and one shipment of LLW was returned to a generator in South Carolina. All outbound shipments arrived at their intended destinations incident free.

No outbound shipments of treated MLLW or PCB LLW were returned to the NTS in FY 2001.

2.1 Waste Transporters (Motor Carriers)

Generators often use more than one motor carrier. Table 1 identifies each generator and the corresponding carrier(s) selected for transport of LLW and MLLW to the NTS.

Motor carriers operate in compliance with regulations found in Title 49 Code of Federal Regulations, “Transportation”, and are selected by the generator.

Table 1. Waste Transporters

GENERATOR	MOTOR CARRIER(S) USED
Aberdeen Proving Ground Aberdeen, MD	Tri-State Motor Transport
Bechtel Jacobs Oak Ridge, TN	Hitman, A. J. Metler, Kindrick Trucking Company
Bechtel Nevada (NTS), NV	Bechtel Nevada
Bechtel Nevada – MLLW	Fluid Transport, Inc.
Bechtel Nevada – PCB Waste	Triad Transport, Inc.
Boeing North American-Rocketdyne Canoga Park, CA	M P Environmental
British Nuclear Fuels Limited, Inc. Oak Ridge, TN	A.J. Metler, Lakeway Trucking, TAG Transport
Earthline Technologies Ashtabula, OH	Landstar Ranger
Fernald Environmental Management Project Cincinnati, OH	Tri-State Motor Transport, Landstar Ranger, Fluid Transport Inc., R&R Trucking Incorporated
General Atomics San Diego, CA	Tri-State Motor Transport, M. P. Environmental
International Technology Las Vegas, NV	Bechtel Nevada
Lawrence Livermore National Laboratory Livermore, CA	Landstar Ligon, M. P. Environmental, U. S. Government
Lovelace Respiratory Research Institute Albuquerque, NM	Fluid Transport Inc.
Mound Plant Miamisburg, OH	Landstar Ranger, A. J. Metler
Pantex Plant Amarillo, TX	Fluid Transport Inc.
Rocky Flats Environmental Technology Site Golden, CO	Colorado/Cast Transportation, Inc., R&R Trucking Incorporated, A. J. Metler
Sandia National Laboratories (CA) Livermore, CA	Tri-State Motor Transport
Sandia National Laboratories (NM) Albuquerque, NM	Tri-State Motor Transport
Savannah River Site Aiken, SC	A. J. Metler
West Valley Demonstration Project West Valley, NY	International Waste Removal

2.2 Shipments and Volume

Table 2 provides a summary of all LLW, MLLW, and PCB shipments to and from the NTS during FY 2001.

Table 2. Shipments and Volumes of Waste Sent To and From the NTS (FY 2001)

GENERATOR	SHIPMENTS BY QUARTER				TOTAL SHIPMENTS	TOTAL VOLUME (ft ³)
	1st	2nd	3rd	4th		
Inbound Shipments						
Aberdeen Proving Ground	0	0	3	9	12	8,034
Bechtel Jacobs	0	0	26	13	39	12,704
Bechtel Nevada	5	0	4	8	17	13,352
British Nuclear Fuels Limited, Inc.	0	0	24	128	152	240,147
Earthline Technologies	2	1	1	2	6	5,775
Boeing North American-Rocketdyne	1	0	0	2	3	2,946
Fernald Environmental Management Project	30	40	49	41	160	255,284
General Atomics	15	37	76	7	135	74,914
International Technology	1	0	0	2	3	200
International Technology – MLLW	1	0	0	0	1	32
Lawrence Livermore National Laboratory	8	5	7	62	82	47,665
Lovelace Respiratory Research Institute	0	0	0	2	2	2,452
Mound Plant	11	5	8	6	30	58,601
Pantex Plant	0	0	1	2	3	3,858
Rocky Flats Environmental Technology Site	66	58	67	71	262	490,528
Sandia National Laboratories (CA)	0	0	0	5	5	2,265
Sandia National Laboratories (NM)	4	2	2	9	17	10,687
Savannah River Site	0	0	0	1	1*	0
West Valley Demonstration Project	0	0	0	1	1	703
Subtotal Total (all inbound shipments)	144	148	268	371	931	1,230,147
Outbound Shipments	1st	2nd	3rd	4th		
Bechtel Nevada-MLLW (shipped to Richland, WA)	1	0	0	0	1	8
Bechtel Nevada - PCB Waste (shipped to Oak Ridge, TN)	0	0	0	1	1	8
Savannah River Site	0	0	0	1	1*	0
TOTAL (all in/outbound shipments)	145	148	268	373	934	1,230,163

* Savannah River Site had one shipment of waste shipped to the NTS and that material was later retrieved by them, accounting for 2 shipments and no volume.

2.3 Transportation Routes

Sixteen out-of-state generators shipped waste to the NTS for disposal in FY 2001. Transportation routes utilized by out-of-state generators are identified in Figure 1. Motor carriers select routes in compliance with requirements found in applicable sections of 49 CFR 397.101. BN and IT LLW and MLLW shipments, usually generated on the NTS, are transported onsite (on highways that are not accessible to the general public).

However, IT had one shipment from Las Vegas and took the route listed in Table 4.

As a result of geographical considerations, the routes used by selected generators may overlap to a substantial degree (e.g., the routes used by the FEMP, Earthline, and MEMP, all three located in Ohio, are essentially the same). Generators that use the same route as another generator with a point of origin farther from the NTS are identified as using the same Route ID as indicated in Table 3.

BN made one outbound shipment of PCB contaminated LLW during FY 2001 to Oak Ridge, TN for incineration. The total volume of the PCB LLW shipped to Tennessee was approximately 8 ft³. BN also made one outbound shipment of MLLW to a treatment facility in Richland, WA. The volume of MLLW was also 8 ft³. Savannah River Site also retrieved one shipment of waste and returned it to South Carolina. Routes selected for these shipments are identified in Figure 1 (routes D, E and M). Figures 1 and 2 provide national and regional views of transportation routes used.

**Figure 1
National Low-Level Waste Transportation Routes**



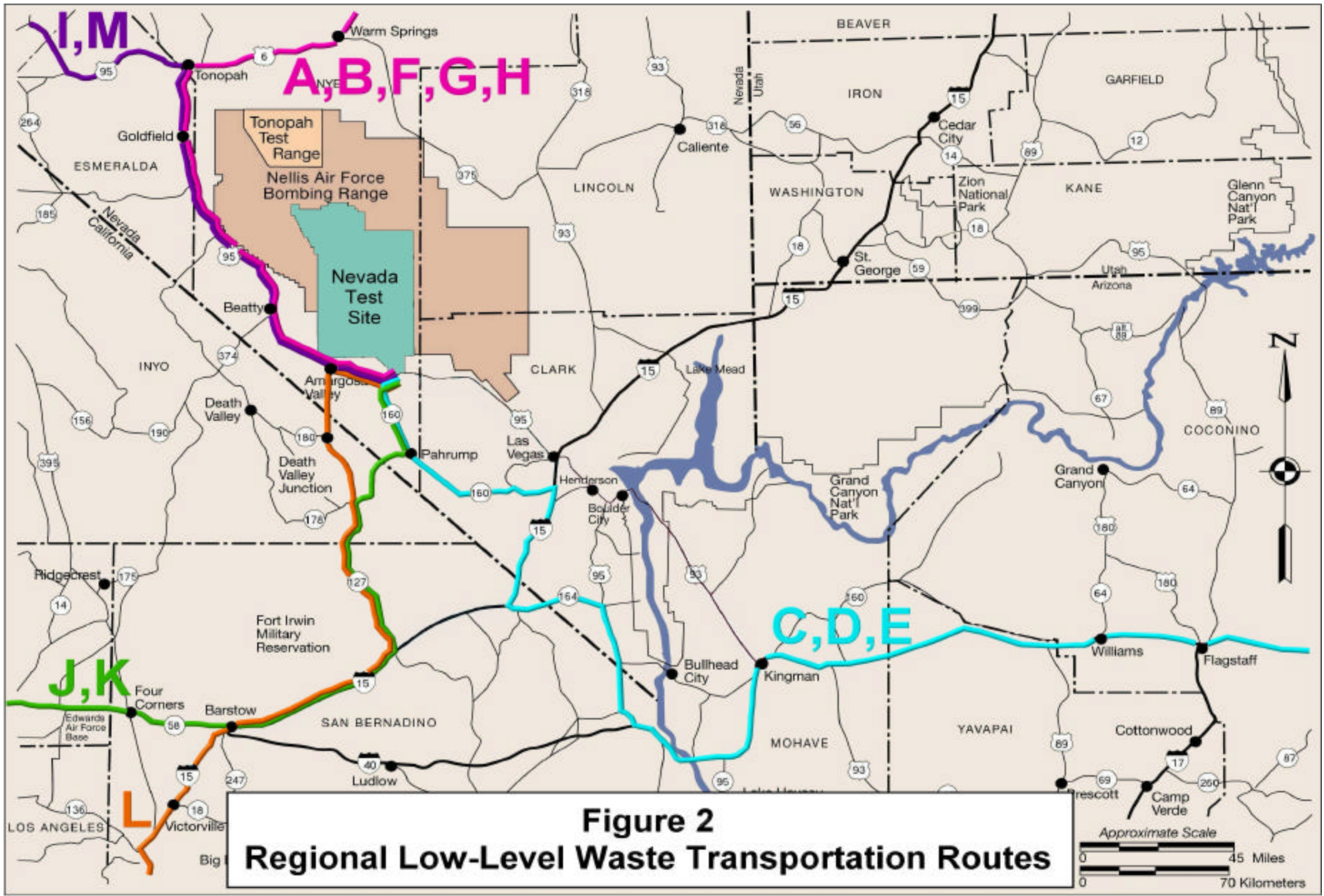


Figure 2
Regional Low-Level Waste Transportation Routes

Table 3. Transportation Route Identification and Corridor States

GENERATOR	ROUTE ID	CORRIDOR STATES
Aberdeen Proving Grounds	B H	MD, PA, OH, IN, IL, IA, NE, WY, UT, NV ID, NV
Bechtel Jacobs	F E	TN, KY, IL, MO, IA, NE, WY, UT, NV TN, AR, OK, TX, NM, AZ, CA, NV
Bechtel Nevada - (Las Vegas to NTS)		NV
Bechtel Nevada – (MLLW to Richland, WA)	M	NV, UT, ID, OR, WA
Bechtel Nevada - (PCBs to Oak Ridge, TN)	E	NV, CA, AZ, NM, TX, OK, AR, TN
British Nuclear Fuels Limited, Inc.	E	TN, AR, OK, TX, NM, AZ, CA, NV
Earthline Technolgies	A C	OH, IN, IL, IA, NE, WY, UT, NV OH, IN, IL, MO, OK, TX, NM, AZ, CA, NV
Boeing North American-Rocketdyne	K	CA, NV
Fernald Environmental Management Project	A C	OH,IN,IL,IA,NE,WY,UT,NV OH, IN, IL, MO, OK, TX, NM, AZ, CA, NV
General Atomics	L	CA, NV
International Technologies - (Las Vegas to NTS)	C	NV
Lawrence Livermore National Laboratory	I J	CA, NV CA, NV
Lovelace Respiratory Research Institute	C	NM, AZ, CA, NV
Mound Plant	A C	OH, IN, IL, IA, NE, WY, UT, NV OH, IN, IL, MO, OK, TX, NM, AZ, CA, NV
Pantex Plant	C	TX, NM, AZ, CA, NV
Rocky Flats Environmental Technology Site	G A	CO, UT, NV CO, WY,UT,NV
Sandia National Laboratories (CA)	I J	CA, NV CA, NV
Sandia National Laboratories (NM)	C	NM, AZ, CA, NV
Savannah River Site	D	SC, GA, TN, AR, OK, TX, NM, AZ, CA, NV
West Valley Demonstration Project	A	NY, OH, IN, IL, IA, NE, WY, UT, NV

2.4 Transportation Route Reporting

As a result of obligations made by former DOE Secretary Richardson, the transportation of inbound LLW shipments through the Las Vegas I-15 and I-95 Interchange (“Spaghetti Bowl”) and across Hoover Dam, was substantially decreased in FY 2000 and again in FY 2001. One tenth of 1% (1 shipment) of all inbound shipments of LLW were transported across Hoover Dam, occurring in the first quarter of the year. One percent (10 shipments) were transported through the “Spaghetti Bowl”, in FY 2001. These routing issues decreased throughout the year with 8 occurring in the first quarter, 1 in the second, 1 in the third, and none occurring in the fourth quarter.

NNSA/NV continues to engage in extensive discussions with the generators regarding the avoidance of these two transportation corridors.

NNSA/NV continues to honor an additional obligation made by former Secretary Richardson by preparing quarterly reports disclosing which routes transporters used to reach the NTS.

In summary, these reporting mechanisms and agreements by DOE management to avoid certain geographic and urban areas have continued a major shift in the overall routing of inbound LLW to the NTS. Table 4 provides a summary of routes utilized by each generator/carrier for inbound shipments during FY 2001, by quarter. Please note that shipment totals will be smaller (906 shipments) since onsite and outbound routes are not reported in this table.

Table 4. Shipment Summary of Inbound and Outbound Routes by Quarter for FY 2001

GENERATOR	1st	2nd	3rd	4th	ROUTES
Aberdeen Proving Grounds	0	0	8	4	Northern Route (I-80, US-93, US-6, US-95)
Bechtel Jacobs	0	0	31	4	Northern Route (I-80, US-93, US-6, US-95)
	0	0	2	0	Southern Route (I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95)
	0	0	0	2	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
British Nuclear Fuels Limited	0	0	5	10	Southern Route (I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95)
	0	0	29	103	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
	0	0	1	1	Southern Route (I-40, US-95, NV-164, I-15, CA-127, CA-178, NV-372, NV-160, US-95)
	0	0	1	2	Southern Route (I-40, US-95, NV-164, I-15, NV-160, NV-372, CA-178, CA-127, NV-373, US-95)
Earthline Technologies	1	0	0	0	Northern Route (I-80, I-15, US-93, US-95 thru Las Vegas Spaghetti Bowl)
	1	2	0	2	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
Boeing North American-Rocketdyne	1	0	0	2	Southern Route (I-15, CA-127, NV-373, US-95)
Fernald Environmental Management Project	29	42	18	0	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95; or I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95)
	1	0	35	35	Northern Route (I-80, US-93, US-6, US-95)
General Atomics	15	39	0	0	Southern Route (I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95 or Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
	0	8	35	0	Southern Route (I-15, CA-127, CA-178, NV-372, NV-160, US-95)
	0	0	30	7	Southern Route (I-15, CA-127, NV-373, US-95)
	0	0	1	0	Southern Route (I-15, NV-160, US-95)
International Technology	0	0	0	1	Southern Route (INTRASTATE I-15, NV-160, US-95)
Lawrence Livermore National Laboratory	0	0	0	0	Northern Route (I-580, I-205, I-15, I-80, US-95)
	0	1	0	9	Northern Route (I-580, I-5, I-80, US-95)
	0	1	0	24	Northern Route (I-580, CA-132, I-5, I-80, US-50, US-95)
	1	0	0	0	Northern Route (I-580, I-205, CA-99, CA-58, I-15, US-95) thru Las Vegas Spaghetti Bowl
	0	0	0	1	I-80, US-50, CA-99, CA-88, US-95, CA-208, ALT-95, US-95
	6	2	0	0	Southern Route (I-15, CA-127, NV-373, US-95)
	0	0	0	20	I-80, ALT-50, US-95

	0	3	1	0	Southern Route (I-15, CA-127, CA-178, NV-372, NV-160, US-95)
	0	0	4	6	Southern Route (I-580, I-5, CA-46, CA-99, CA-58, I-15, CA-127, CA-178, NV-372, NV-160, US-95)
	0	0	0	0	Southern Route (I-580, I-5, CA-46, CA-99, CA-58, I-15, CA-127, NV-373, US-95)
Lovelace Respiratory Research Institute	0	0	0	1	Southern Route (I-40, US-68, US-95, NV-164, I-15, NV-160, US-95)
	0	0	0	1	Southern Route (I-40, US-68, US-95, NV-164, I-15, CA-127, NV-373, US-95)
Mound Environmental Management Project	2	1	2	3	Northern Route (I-80, US-93, US-6, US -95)
	8	4	5	3	Southern Route (I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95) or I-40, US-95, NV-164, I-15, NV-160, US-95)
	1	0	0	0	Southern Route (I-40, US-93, US-95, over Hoover Dam and Thru Las Vegas Spaghetti Bowl)
	0	0	1	0	Southern Route (I-40, US-89, UT-20, I-15, UT-56, NV-319, US-93, NV-375, US-6, US-95)
Pantex Plant	0	0	1	2	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
Rocky Flats Environmental Technology Site	13	0	0	0	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
	5	1	0	0	Las Vegas Route (I-15, US-95) thru Las Vegas Spaghetti Bowl
	46	0	0	0	Northern Route (I-80, US-93, US-6, US -95)
	0	62	68	65	Central Route (I-70, US-50, I-15, US 6-50, US 6, US-95)
Sandia National Laboratory (CA)	0	0	1	0	Southern Route (I-580, I-5, CA-99, CA-58, I-15, US-95 thru Las Vegas Spaghetti Bowl)
Sandia National Laboratory (NM)	0	1	0	0	Southern Route (I-40, US-89, UT-20, I-15, UT-56, NV-319, US-93, NV-375, US-6, US-95)
	4	0	2	11	Southern Route (I-40, US-95, NV-164, I-15, NV-160, US-95)
	0	0	0	2	Southern Route (I-40, US-95, NV-164, I-15, CA-127, NV-373, US-95)
	0	1	0	0	Southern Route (I-40, US-95, NV-164, I-15, CA-127, CA-178, NV- 372, NV-160, US-95)
Savannah River Site	0	0	0	1	Southern Route (I-20, I-75, I-24, I-40, US-95, NV-164, I-15, NV-160, US-95)
West Valley Demonstration Project	0	0	0	1	Northern Route (I-80, US-93, US-6, US -95)
TOTALS	134	168	281	323	

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 leaking/breached package occurring during transportation. During FY 2001, there were no carrier vehicular accidents and one incident associated with radioactive waste shipments. That incident occurred on a shipment from the West Valley Demonstration Project, which experienced a breached package in transit. No radioactive material was released as a result of this incident. The breached package was returned to the generator at the point of discovery of the breach. The rest of the shipment continued to the NTS without further incident.

All LLW and MLLW shipments are made in accordance with applicable DOE, Nuclear Regulatory Commission (NRC), United States Department of Transportation (DOT), Environmental Protection Agency, state and local regulations and requirements. Generators are responsible for evaluating and selecting motor carriers used for transportation of radioactive waste. Generators are also requested to notify the NNSA/NV Assistant Manager of Environmental Management whenever a discrepancy, non-compliance, or inadequate performance is identified; or if a transportation incident or emergency situation occurs. BN personnel control waste receipt and disposal activities at the NTS and are responsible for notifying appropriate DOE personnel regarding any non-compliant or refused radioactive waste shipments. BN personnel also immediately notify generators in the event of any shipping paper discrepancies.

4.0 EVALUATION OF SHIPPING CAMPAIGNS

Only one of the 934 total (inbound or outbound) shipments experienced an incident (West Valley). No carrier vehicular accidents were reported. All other generator-shipping campaigns were considered successful.

5.0 REFERENCES

The primary sources of shipment information in this report were records kept by the BN Waste Management Program, who manages the NTS RWMSs at Area 3 and Area 5. These records provided 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 was gathered by reviewing other BN and NNSA/NV correspondence and through personal communication with NNSA/NV managers, BN management and program personnel, representatives from the waste generator facilities, and carrier personnel. Route information was gathered from quarterly routing reports generated by NNSA/NV.

The following source documents are incorporated by reference:

- C 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.
- C 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.
- C U.S. Department of Transportation (DOT) 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

The following are points of contact for questions concerning the transportation of radioactive waste at the NTS or for requests for information relating to waste management and NNSA/NV operations.

WASTE MANAGEMENT

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7.0 ACRONYM LIST

BJ	Bechtel Jacobs
BN	Bechtel Nevada
BNFL	British Nuclear Fuels Limited, Inc.
ft³	Cubic Feet
CFR	Code Of Federal Regulations
DOE	Department of Energy
DOT	United States Department of Transportation
dpm	Disintegrations per minute
ETEC	Boeing North American-Rocketdyne
EPA	United States Environmental Protection Agency
FEMP	Fernald Environmental Management Project
FY	Fiscal Year
GA	General Atomics
LLNL	Lawrence Livermore National Laboratory
LLW	Low-level radioactive waste
LRRR	Lovelace Respiratory Research Institute
MEMP	Mound Plant
MLLW	Mixed Low-Level Radioactive Waste
NNSA/NV	National Nuclear Security Administration Nevada Operations Office
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
OR	Oak Ridge
PCB	Polychlorinated Biphenyls
PP	Pantex Plant
RFETS	Rocky Flats Environmental Technology Site
RWMSs	Radioactive Waste Management Sites
SNL/CA	Sandia National Laboratories/California
SNL/NM	Sandia National Laboratories/New Mexico
TTR	Tonopah Test Range
WMD	Waste Management Division
WVDP	West Valley Demonstration Project

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