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ANNUAL REPORT - FY 2004

Radioactive Waste Shipments To and From the Nevada Test Site (NTS)

January 2005

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, Nevada Operations 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 U.S. Department of Energy, 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 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) 2004. In addition, this document provides shipment, volume, and route information on transuranic (TRU) waste shipped from the NTS to the Waste Isolation Pilot Plant in Carlsbad, New Mexico. This outbound shipping campaign commenced in FY 2004.

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

2.0 SUMMARY OF WASTE SHIPMENTS (FY 2004)

In FY 2004, disposal of LLW/MLLW at the two NTS RWMSs consisted of 2,434 inbound shipments, from 24 approved generators. These shipments were transported on 21 different approved motor carriers. A total of 3,743,572 ft^3 of LLW/MLLW was disposed of at the NTS in FY 2004.

Two outbound shipments (271 ft^3) of MLLW (Lead and Polychlorinated-Biphenyl remediation) were made from Bechtel Nevada to Envirocare in Utah. Thirteen shipments of TRU waste (3,814 ft^3) were made from the NTS in FY 2004. Tabular information for these shipments is included in this report.

Table 1 provides a summary of inbound and outbound shipments for FY 2004. Names and codes for approved generators and carriers used in this report are located in Tables 2 and 3, respectively.

Table 1. FY 2004 NTS Inbound and Outbound Waste Shipment Summary Information

Inbound	Offsite Generators	Onsite Generators	Carriers	Shipments	Volume ft^3
LLW (offsite)	22	0	21	2,418	3,731,122
LLW (onsite)	0	3 1/	1 1/	16	12,450
MLLW	0	0	0	0	0
Outbound	**Offsite Generators**	**Onsite Generators**	**Carriers**	**Shipments**	**Volume ft^3**
LLW	0	0	0	0	0
MLLW	0	1	2 2/	2	271
TRU	0	1	1 3/	13	3,814

1/ Lawrence Livermore National Laboratory was also an offsite LLW generator in FY 2004, Bechtel Nevada and Stoller-Navarro Joint Venture were onsite LLW generators only. Transportation via government vehicle (approved carrier).
2/ Triad Transport and CAST Transportation were utilized for these Bechtel Nevada shipments.
3/ Tri-State Motor Transit was utilized for these Bechtel Nevada shipments.

Table 2. List of Approved Generators Shipping To The NTS In FY 2004

APPROVED GENERATOR, STATE	GENERATOR CODE
ARGONNE NATIONAL LABORATORY, IL	AE
BECHTEL NEVADA, NV	DP
BECHTEL JACOBS, TN	OR
BOEING ROCKETDYNE, CA	BN
BRITISH NUCLEAR FUEL LIMITED, TN	ET
BWXT-Y12, TN	BW
DEFENSE LOGISTICS AGENCY, MD	TH
FLUOR FERNALD, OH	WM
GENERAL ATOMICS, CA	BG
HONEYWELL, KS	AS
IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LAB, ID	IN
STOLLER – NAVARRO JOINT VENTURE, NV	IT
KAISER HILL (ROCKY FLATS), CO	RF
LAWRENCE LIVERMORE NATIONAL LAB, CA	LL
MIAMISBURG ENVIRONMENTAL MANAGEMENT PROJECT, OH	MD
PADUCAH GASEOUS DIFFUSION PLANT, KY	PD
PANTEX PLANT, TX	PX
PRINCETON PLASMA PHYSICS LABORATORY (NJ)	PL
PORTSMOUTH GASEOUS DIFFUSION PLANT, OH	PO
SANDIA NATIONAL LAB-CA, CA	SL
SANDIA NATIONAL LAB-NM, NM	SA
TT FOSTER WHEELER, TN	FW
WESTINGHOUSE SAVANNAH RIVER, SC	SR
WEST VALLEY DEMONSTRATION PROJECT, NY	WV

Table 3. List of Approved Motor Carriers Utilized in FY 2004

APPROVED MOTOR CARRIER	CARRIER CODE
BUFFALO FUEL COMPANY	BFUI
CAST TRANSPORTATION	COLO
DAVIS TRUCKING	DAVS
FEDEX CUSTOM CRITICAL	FEDX
FLUID TRANSPORTS	FLUD
GOVERNMENT VEHICLE	GOVT
HITTMAN TRANSPORT	HITT
LANDSTAR EXPRESS AMERICA	LEAM
LANDSTAR GEMINI	GEMI
LANDSTAR INWAY	LDWY
LANDSTAR LIGON	LIGS
LANDSTAR RANGER	LRGR
A.J. METLER	MEAJ
MP ENVIRONMENTAL	MPES
R & R TRUCKING	RRUK
RSB LOGISTICS	RSBI
SOUTHERN FREIGHT LOGISTICS	SFLG
SLT EXPRESS	SLXL
SPECIALTY TRANSPORT	SPCN
TAG TRANSPORT	TAGT
TRIAD TRANSPORT	TDTO
TRI-STATE MOTOR TRANSPORT	TSMT

2.1 Waste Transporters (Motor Carriers)

Generators often use more than one motor carrier to facilitate their shipments. Table 4 identifies each generator and the corresponding carrier(s) utilized for transport of LLW, MLLW, and TRU to and from the NTS. Motor carriers operate in compliance with regulations located in Title 49 Code of Federal Regulations, "Transportation," and are selected by the generator.

Table 4. Waste Transporters Utilized by Generator For Inbound and Outbound Shipments

GENERATOR CODE	BFUI	COLO	DAVS	FEDX	FLUD	GOVT	HITT	LEAM	GEMI	LDWY	LIGS	LRGR	MEAJ	MPES	RRUK	RSBI	SFLG	SLXL	SPCN	TAGT	TDTO	TSMT
AE																						1
AS																						1
BG														48								13
BN														69								
BW													25									11
DP		1 1/				9															1 1/	13 2/
ET													68						11	151		
FW							32													59		
IN																						62
IT						4																
LL						7					5	1		43	3							2
MD					1				2	15	3	95	1									
OR			35									3	60			1	2			12		
PD							4			19	7	133								9		74
PL																						1
PO												13										
PX					2																	
RF		1,096													11							1
SA					11																	1
SL														1								
SR				4				1		17	6	34		1								
TH																				8		
WM					29							43			15			7				23
WV	8																					

1/ Two outbound shipments of MLLW were shipped from NTS to Envirocare, UT. One via Triad Transport and the other via CAST Transportation
2/ Thirteen shipments of Transuranic Waste were shipped from NTS to WIPP, NM via CAST Specialty Transport

2.2 Shipments and Volume

Table 5 provides a summary of all LLW and MLLW shipments, including volume, to and from the NTS during FY 2004.

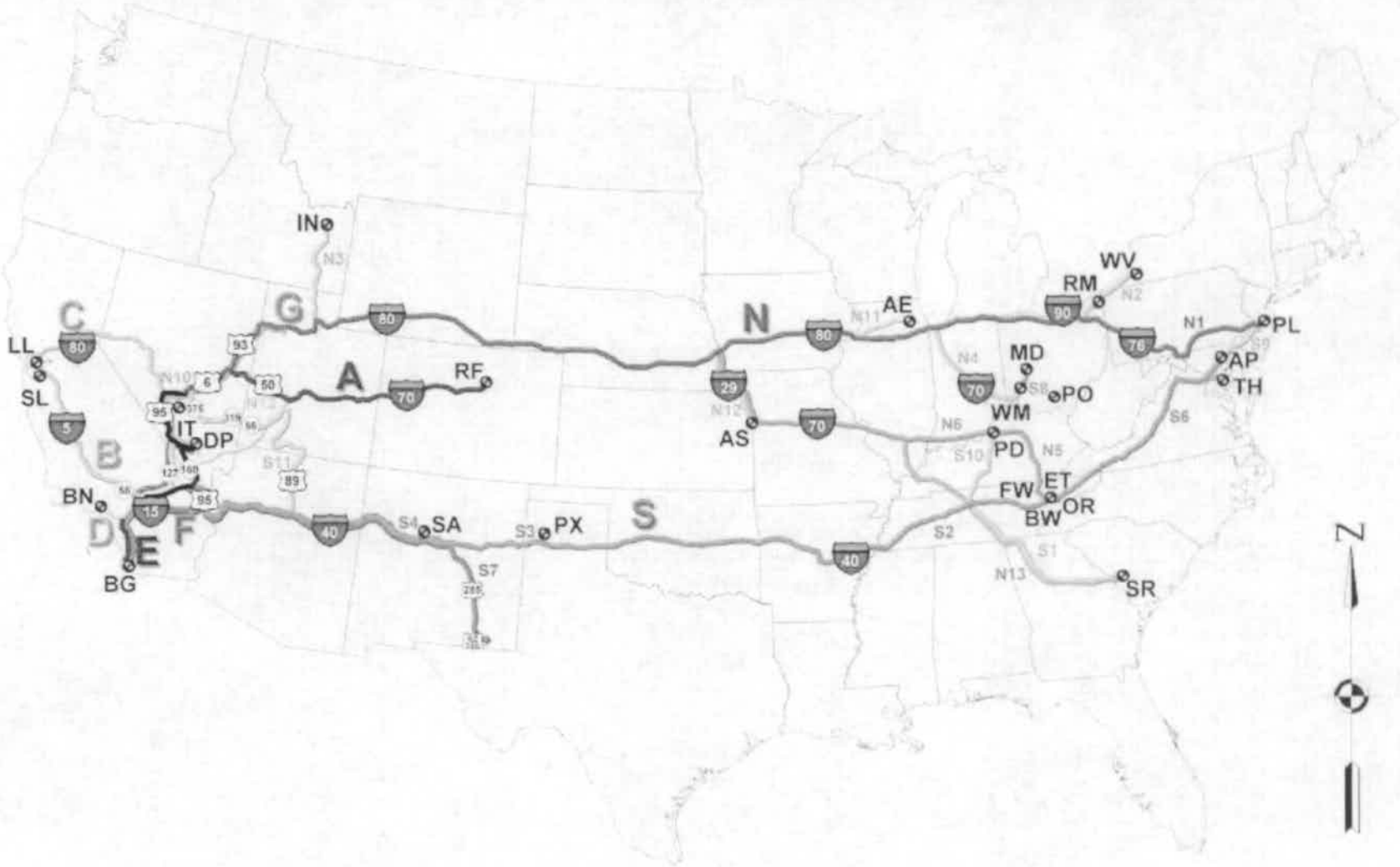
Table 5. Shipments and Volumes of Waste Sent To and From the NTS (FY 2004)

Offsite Inbound Low Level Waste Shipments	Shipments By Quarter					Volume
Generator Code	1st	2nd	3rd	4th	Total	(ft3)
AE		1			1	612
AS		1			1	1,280
BG	3	12	45	1	61	39,282
BN	43	3	4	19	69	30,969
BW		2	10	24	36	25,656
ET	68	76	66	20	230	414,558
FW		34	22	35	91	23,074
IN		1	32	29	62	23,425
LL	7	3	23	25	58	27,099
MD	23	51	7	36	117	180,458
OR	22	44	32	15	113	123,252
PD	4	70	123	49	246	277,175
PL				1	1	595
PO	13				13	8,906
PX			1	1	2	931
RF	255	303	335	215	1108	2,445,540
SA	2		3	7	12	18,824
SL		1			1	407
SR	3	18	14	28	63	46,906
TH				8	8	10,880
WM	100	8	6	3	117	21,750
WV	3	4		1	8	9,543
Totals	546	632	723	517	2,418	3,731,122
Onsite Low Level Waste Shipments	Shipments By Quarter					Volume
Generator Code	1st	2nd	3rd	4th	Total	(ft3)
DP	1	2	1	5	9	7,812
IT		1	1	2	4	603
LL		3			3	4,035
Total	1	6	2	7	16	12,450
Outbound Mixed Low Level Waste Shipments	Shipments By Quarter					Volume
Generator Code	1st	2nd	3rd	4th	Total	(ft3)
DP	1			1	2	271
Total	1			1	2	271
Outbound Transuranic Waste Shipments	Shipments By Quarter					Volume
Generator Code	1st	2nd	3rd	4th	Total	(ft3)
DP	7			6	13	3,814
Total	7			6	13	3,814

2.3 Transportation Routes

Twenty-two out-of-state generators shipped LLW to the NTS for disposal in FY 2004. General cross country transportation routes are displayed in Figure 1. More specific entry routes are displayed in Figure 2. Route identifier codes, route legends, and their corridor states are listed in Table 6. A listing of routes utilized by each generator and the number of shipments can be found in Table 7.

Figure 1
FY 2004 National Low-Level Waste Transportation Routes



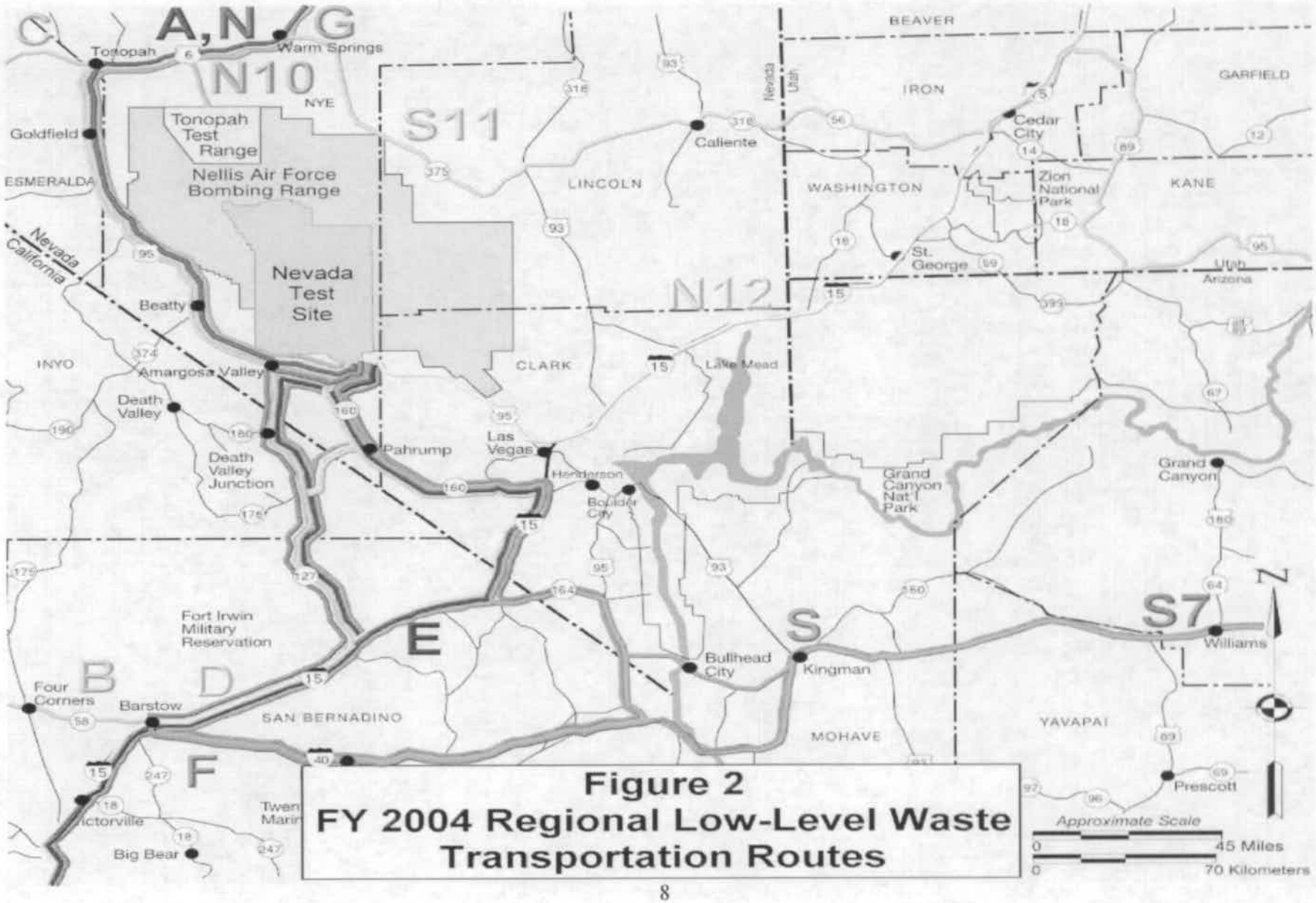


Figure 2
FY 2004 Regional Low-Level Waste Transportation Routes

Table 6. Transportation Route Identification

Route "N" represents the Northern route (I-80) running from East to West. The Northern ancillary routes (N1-13) are feeder routes from generator sites to the main Northern route.

Route "S" represents the Southern route (I-40) running East to West. The Southern ancillary routes (S1-11) are feeder routes from generator sites to the main Southern route.

Route "A" represents the Central route utilized by Kaiser Hill (Rocky Flats).

Routes "B"-"F" represent routes utilized by California generators for shipments to the NTS.

Route "G" represents the route by which outbound LLW was transported to Envirocare.

Route	Corridor States
N	Northern Route, I-80 Corridor
N1	NJ, PA, OH, IN, IL, IA, NE, WY, UT, NV
N2	NY, OH, IN, IL, IA, NE, WY, UT, NV
N3	ID, UT, NV
N4	OH, IN, IL, IA, NE, WY, UT, NV
N5	TN, KY, IL, MO, IA, NE, WY, UT, NV
N6	KY, IL, MO, IA, NE, WY, UT, NV
N10	NV (TTR)
N11	IL, IA, NE, WY, UT, NV
N12	MO, IA, NE, WY, UT, NV
N13	SC, TN, KY, IN, IL, IA, NE, WY, UT, NV
S	Southern Route, I-40 Corridor
S1	SC, GA, TN, AR, OK, TX, NM, AZ, CA, NV
S2	TN, AR, OK, TX, NM, AZ, CA, NV
S3	TX, NM, AZ, CA, NV
S4	NM, AZ, CA, NV
S6	MD, VA, TN, AR, OK, TX, NM, AZ, CA, NV
S7	NV, CA, AZ, NM (Outbound WIPP Route)
S8	OH, IN, IL, MO, OK, TX, NM, AZ, CA, NV
S9	NJ, DE, MD, VA, TN, AR, OK, TX, NM, AZ, CA, NV
S10	KY, TN, AR, OK, TX, NM, AZ, CA, NV
S11	NJ, DE, MD, VA, TN, AR, OK, TX, NM, AZ, UT, NV
A	CO, UT, NV
B	CA, NV
C	CA, NV
D	CA, NV
E	CA, NV
F	CA, NV
G	NV, UT

Table 7. Transportation Routes Utilized by Generator

Inbound LLW																													
Route >>> Generator	N	N1	N2	N3	N4	N5	N6	N10	N11	N12	N13	S	S1	S2	S3	S4	S6	S7	S8	S9	S10	S11	A	B	C	D	E	F	G
AE									X																				
AS										X																			
BG																										X	X	X	
BN																										X			
BW												X		X															
ET												X		X															
FW												X		X															
IN	X			X																									
IT																													
LL																								X					
MD	X				X							X							X										
OR	X					X						X		X															
PD												X									X	X	X[2/]						
PL	X	X																											
PO																							X[2/]						
PX												X			X														
RF																							X						
SA												X				X													
SL																								X					
SR	X										X	X	X												X[1/]				
TH												X					X												
WM	X				X							X							X										
WV	X		X																										
Outbound LLW																													
DP																													X
Outbound Transuranic																													
DP																		X											

1/ --2 Savannah River Site shipments originated from San Diego, CA.

2/ --13 Portsmouth Gaseous Diffusion Plant and 91 Paducah Gaseous Diffusion Plant shipments originated at the Cisco, UT intermodal facility.

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 US-95 Interchange ("Spaghetti Bowl") and across Hoover Dam have substantially decreased since FY 2000.

Due to the events of September 11, 2001, tractor trailers are no longer allowed to travel across Hoover Dam. The U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) continues to engage in discussions with the generators regarding the avoidance of the Spaghetti Bowl.

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/programs/xportmgt/QuarterlyReport.htm .

Three shipments of LLW were approved by the State of Nevada to be transported through the Spaghetti Bowl in FY 2004. The approval was given by the Nevada Highway Patrol due to over dimensional characteristics of the loads. Two additional shipments were transported on unauthorized routes, but did not travel through the Spaghetti Bowl. Both of these unique events were attributed to the use of new carriers that were not fully aware of the routing suggestions being offered by the generators. The two generators were immediately notified, resulting in no further occurrences.

Use of intermodal transportation for shipments of LLW continued in FY 2004 with 104 shipments tendered by Portsmouth Gaseous Diffusion Plant and Paducah Gaseous Diffusion Plants. Intermodal transfer facilities in Cisco, Utah continued to be used for trans-loading of shipments. Table 8 identifies specific routes utilized by generators to transport LLW to the NTS.

Table 8. Shipment Summary of Offsite Inbound and Outbound Regional Routes for FY 2004

DESCRIPTION	AE	AS	BG	BN	BW	DP	ET	FW	IN	LL	MD	OR	PD	PL	PO	PX	RF	SA	SL	SR	TH	WM	WV	Total
I-15 (MESQUITE), I-215, US-95 (NORTH BELTWAY NON APPROVED)		1																						1
I-15, CA-127, CA-178, NV-372, NV-160, US-95			10	69						51									1					131
I-15, CA-127, NV-373, US-95			13							6														19
I-15, NV-160, US-95			38							1														39
I-40, I-15, CA-127, NV-373, US-95								1					8											9
I-40, I-15, NV-160, US-95											1													1
I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, CA-127, NV-373, US-95							1																	1
I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95					10		158				5	13	67							3				256
I-40, US-93, AZ-68, NV-163, US-95, US-93, I-515, I-215, NV-146, I-15, NV-160, US-95 (SOUTH BELTWAY NON-APPROVED)																				1				1
I-40, US-93, AZ-68, NV-163, US-95, US-93, I-515, US-95 (SPAGHETTI BOWL - APPROVED)													3											3
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								90			4	2								3		23		122
I-40, US-95, NV-164, I-15, NV-160, US-95					26		71				102	63	76			2		12		52	8	38		450
I-80, US-93-ALT, US-6, US-95	1								61		5	35		1						1		56	8	168
I-80, US-95 (RENO)																				2				2
US-50, US-6/50, US-6, US-95													91		13		1,108							1,212
US-93, US-6, US-95									1															1
UT-56, NV-319, US-93, NV-375, US-6, US-95													1											1
US-95, NV-373, CA-127, I-15, I-40, US-285, US-70/285, NM-200, US-180/62						13																		13
US-95, US-6, ALT US-93, I-80						2																		2

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 shall 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.

Bechtel Nevada 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. Bechtel Nevada personnel also immediately notify generators in the event of any shipping paper discrepancies.

Two transportation incidents occurred in FY 2004. In October, 2003 an intermodal shipment from Portsmouth Gaseous Diffusion Plant traveling South on US-95 near Beatty, Nevada was sideswiped by another commercial motor vehicle. The contents of the sealand container remained intact. However, as a result of the damage incurred by the tractor and trailer the container was transported to the NTS on another carrier vehicle. The driver was transported to a Las Vegas, Nevada area hospital and then released. The driver of the other commercial motor vehicle was cited for several safety infractions and continued on to his destination. Despite this incident, the shipment arrived on the originally scheduled delivery date.

In January 2004, a British Nuclear Fuels shipment from Oak Ridge, Tennessee was involved in single vehicle accident on I-40 near mile marker 80 in Arkansas. The package was not breached and the shipment was returned to origin and inspected prior to transportation recommencing.

Below is a list of issues observed during unloading operations during FY 2004. These issues are reported to the generators who then implement appropriate corrective actions to prevent recurrence.

- Four delivery vehicles/packages were found to be contaminated. The contaminated parts were removed from the trailers and buried with the shipments.
- One drum was found to have a loose lid. No breach or contamination was detected.
- A single 55-gallon drum was observed with three holes in the drum lid. No radioactive contamination nor unexpected radioactive dose, no personnel injuries, and no damage to equipment or structures resulted from this event. The event was caused by the use of inappropriate drum moving equipment at the generator site.
- A waste box was knocked off a trailer during offloading. No damage to the box resulted, and no contamination was detected.
- A wooden box was found to be in very poor condition and not in compliance with the NTS Waste Acceptance Criteria. The package did not breach and was not leaking at the time it arrived at NTS.
- A Paducah waste stream was suspended due to difficulties offloading intermodals.

Additional clerical errors were also observed and reported to generators.

A non-transportation related incident involved the possibility that non-conforming items were included in shipments to the NTS. In September 2004, Paducah Gaseous Diffusion Plant notified NNSA/NSO of potential non-conforming items that may have been included in some of their FY 2004 LLW shipments. Discussions between Paducah and NNSA/NSO are ongoing and this issue has not been resolved as of this date.

4.0 EVALUATION OF SHIPPING CAMPAIGNS

Two of the 2,433 off site inbound/outbound shipments experienced incidents while in transit to the NTS. All generator shipping campaigns were considered successful.

5.0 REFERENCES

The primary sources of shipment information in this report were records kept by the Bechtel Nevada 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 Bechtel Nevada and NNSA/NSO correspondence and through personal communication with NNSA/NSO managers, Bechtel Nevada management and program personnel, representatives from the waste generator facilities, and carrier personnel. Route information was 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 (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

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 DiSanza, Director
U.S. Department of Energy
National Nuclear Security Administration
Nevada Site Office
Waste Management Division
P.O. Box 98518
Las Vegas, NV 89193-8518
(702) 295-5855

7.0 ACRONYM LIST

ft^3	Cubic Feet
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
dpm	Disintegrations per minute
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
LLW	Low-level radioactive waste
MLLW	Mixed Low-Level Radioactive Waste
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
NRC	U.S. Nuclear Regulatory Commission
NTS	Nevada Test Site
PCB	Polychlorinated Biphenyls
RWMSs	Radioactive Waste Management Sites
WMD	Waste Management Division

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