# FOURTH QUARTER AND ANNUAL TRANSPORTATION REPORT FISCAL YEAR 2019

Waste Shipments to and from the Nevada National Security Site (NNSS), Radioactive Waste Management Complex

This report was prepared for: U.S. Department of Energy, Office of Environmental Management Nevada Program

By:
Mission Support and Test Services, LLC
Las Vegas, Nevada

October 2019









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# **ACRONYMS AND ABBREVIATIONS**

CFR Code of Federal Regulations

CNR Classified Non-Radioactive

CNRH Classified Non-Radioactive Hazardous

DOE U.S. Department of Energy

DOT U.S. Department of Transportation

EM Environmental Management

ft<sup>3</sup> cubic foot (feet)

FY fiscal year

LLW Low-Level Radioactive Waste

MCEP Motor Carrier Evaluation Program

MLLW Mixed Low-Level Radioactive Waste

MSTS Mission Support and Test Services, LLC

NNSA/NFO U.S. Department of Energy, National Nuclear Security Administration, Nevada

Field Office

NNSS Nevada National Security Site

NNSSWAC Nevada National Security Site Waste Acceptance Criteria

RWAP Radioactive Waste Acceptance Program

RWMC Radioactive Waste Management Complex

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#### 1.0 INTRODUCTION

This report satisfies the U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO) commitment to prepare a quarterly summary of waste shipments to the Nevada National Security Site (NNSS) Radioactive Waste Management Complex (RWMC) in Area 3 and Area 5. This report summarizes the fourth quarter of fiscal year (FY) 2019 and serves as an annual report for the following types of shipments:

- Low-Level Radioactive Waste (LLW)
- Mixed Low-Level Radioactive Waste (MLLW)
- Classified Non-Radioactive (CNR) Waste
- Classified Non-Radioactive Hazardous (CNRH) Waste

Tabular summaries are provided that include the following:

- Number and external volume of LLW, MLLW, and CNR/CNRH shipments
- Waste generators for LLW, MLLW, and CNR/CNRH shipments to and on the NNSS
- Carriers for LLW, MLLW, and CNR/CNRH shipments to and on the NNSS
- Waste generator shipments by quarter
- Highway routes used by carriers
- Incident and accident data applicable to LLW, MLLW, and CNR/CNRH shipments

In this report, shipments are accounted for upon arrival at the NNSS, while disposal volumes are accounted for upon waste burial. Volume reports showing cubic feet (ft<sup>3</sup>) generated using the Low-Level Waste Information System may vary slightly due to rounding conventions for conversions from cubic meters to cubic feet.

Commercial motor carriers transporting waste to the NNSS must be identified on the U.S. Department of Energy (DOE) Motor Carrier Evaluation Program (MCEP) Evaluated Carrier List or be evaluated in a manner similar to the MCEP process. DOE contractors who transport waste to the NNSS as private motor carriers have their motor carrier operations evaluated by DOE as part of the Transportation Safety and Operations Compliance Assurance Program. In addition, periodic self-assessments are required per DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management*. Because commercial motor carriers and DOE contractors are commercial entities, their operations are also subject to periodic facility and over-the-road inspection by the U.S. Department of Transportation (DOT).

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# 2.0 SUMMARY OF WASTE SHIPMENTS AND VOLUMES DISPOSED for 4<sup>th</sup> Quarter of FY2019

#### Total LLW and MLLW Received from Offsite Generators

A total of 321,628 ft<sup>3</sup> of LLW and MLLW was disposed at the NNSS by 17 approved radioactive waste generators in 399 shipments. These shipments were transported using nine MCEP-approved motor carriers and government vehicles.

#### Total NNSS Onsite LLW and MLLW

A total of 160 ft<sup>3</sup> of LLW and MLLW was disposed by one approved NNSS onsite radioactive waste generator in five onsite transfers. Onsite government vehicles were used for these transfers. No MLLW was disposed by onsite generators in the fourth quarter of FY 2019.

#### Total CNR/CNRH Received from Offsite Generators

A total of 724 ft<sup>3</sup> of CNR/CNRH waste was disposed at the NNSS by two approved waste generators in two shipments. These shipments were transported using two MCEP-approved motor carriers.

Table 1 provides a summary of radioactive and non-radioactive classified shipments. Table 2 provides a list of approved waste generators that shipped to or on the NNSS in the fourth quarter of FY 2019.

TABLE 1. NNSS INBOUND, ONSITE, AND CLASSIFIED NON-RADIOACTIVE SHIPMENT SUMMARY FOR FOURTH QUARTER OF FY 2019

INBOUND	OFFSITE GENERATORS	NNSS GENERATORS	CARRIERS	SHIPMENTS	VOLUME (FT³)
LLW / MLLW (offsite) <sup>a</sup>	15	2	9	399 <sup>b</sup>	321,628
LLW (onsite) <sup>a</sup>	0	1	N/A	5	160
CNR / CNRH	2	0	2	2 <sup>b</sup>	724

<sup>&</sup>lt;sup>a</sup> Government vehicles were used for two LLNL LLW shipments and five MSTS onsite transfers.

<sup>&</sup>lt;sup>b</sup> The 399 LLW/MLLW and two CNR/CNRH shipments include 10 classified shipments (seven LLW, one MLLW, one CNR, and one CNRH).

TABLE 2. APPROVED GENERATORS SHIPPING TO OR ON THE NNSS IN FOURTH QUARTER OF FY 2019

	GENERATOR NAME	GENERATOR CODE
1	DUF6 Conversion Project	DU
2	Energy Solutions	DR
3	Idaho National Laboratory – Advanced Mixed Waste Treatment Project	AM
4	Idaho National Laboratory – Battelle Energy Alliance	NE
5	Idaho National Laboratory – Fluor Idaho	IN
6	Lawrence Livermore National Laboratory	LL
7	Los Alamos National Laboratory	LA
8	Mission Support and Test Services, LLC	DP
9	Navarro	IT
10	Nuclear Fuel Services	NF
11	Oak Ridge National Laboratory – UT-Battelle	OL
12	Oak Ridge Reservation (UCOR)	OR
13	PermaFix	PF
14	Portsmouth Gaseous Diffusion Plant	PO
15	Sandia National Laboratories	SA
16	TRU Waste Processing Center	FW
17	West Valley	WV

### 2.1 WASTE TRANSPORTERS (MOTOR CARRIERS)

Motor carriers operate in compliance with Title 49 Code of Federal Regulations (CFR), "Transportation," and are selected by the waste generator. Generators often use multiple motor carriers during the year to facilitate their shipments. Table 3 provides a list of the approved carriers used to transport LLW, MLLW, CNR, and CNRH shipments to the NNSS.

TABLE 3. APPROVED MOTOR CARRIERS USED IN FOURTH QUARTER OF FY 2019

	APPROVED MOTOR CARRIER	CARRIER CODE
1	Bennett Secured Transport, LLC	BSTM
2	Buffalo Fuel Corporation	BUFI
3	Cast Transportation	COLO
4	Hittman Transport	HITT
5	Hubbard Trucking	HTAL
6	Interstate Ventures	ITSV
7	M.P. Environmental Services, Inc.	MPES
8	Specialty Transport, Inc.	МАЈН
9	Tri-State Motor Transit	TSMT
	Government Vehicle*	GT+

<sup>\*</sup> Government vehicles transporting waste shipments are fully U.S. Department of Transportation (DOT) compliant

#### 2.2 SHIPMENTS

Table 4 provides a summary of all LLW and MLLW offsite shipments received at the NNSS in FY2019. Table 5 provides a summary of NNSS onsite transfers of LLW and MLLW. Table 6 provides a summary of all CNR and CNRH shipments received at the NNSS in FY 2019. The three tables include a summary for FY 2019 in the "Total" column.

TABLE 4. OFFSITE SHIPMENTS OF LLW AND MLLW TRANSPORTED TO THE NNSS IN FOURTH QUARTER OF FY 2019

OFFSITE INBOUND SHIPMENTS		SHIPMEN	NTS BY (	<b>UARTE</b> I	₹
Generator, State(s)	1 st	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Total
DUF6 Conversion Project, TN	0	2	1	2	5
Energy Solutions, TN	1	3	7	2	13
General Atomics, CA	0	0	4	0	4
Idaho National Laboratory – Advanced Mixed Waste Treatment Project, ID	22	21	26	20	89
Idaho National Laboratory – Battelle Energy Alliance, ID	6	7	5	9	27
Idaho National Laboratory – Fluor Idaho, ID	5	4	9	15	33
Lawrence Livermore National Laboratory, CA	3	4	7	9	23
Los Alamos National Laboratory, NM	14	11	15	9	49
Mission Support and Test Services, NV	0	0	1	2	3
Navarro, NV	175	35	120	128	458
Nuclear Fuel Services, TN	9	1	3	1	14
Oak Ridge National Laboratory – UT-Battelle, TN	3	2	3	2	10
Oak Ridge Reservation (UCOR), TN	15	15	66	51	147
Pantex Plant, TX	0	0	1	0	1
PermaFix, TN, WA, and FL	5	7	4	28	44
Portsmouth Gaseous Diffusion Plant, OH	34	22	42	88	186
Sandia National Laboratory, NM	3	0	3	2	8
TRU Waste Processing Center, TN	7	2	0	3	12
West Valley, NY	20	31	30	28	109
Y-12 National Security Complex, TN	26	44	36	0	106
<b>Total Shipments</b>	348	211	383	399	1,341

TABLE 5. NNSS ONSITE TRANSFERS OF LLW AND MLLW IN FY 2019

Onsite Transfers		SHIPME	NTS BY Q	UARTER	
Generator, State	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Total
Mission Support and Test Services, NV	3	3	5	5	16
Total Shipments	3	3	5	5	16

TABLE 6. CNR AND CNRH SHIPMENTS TRANSPORTED TO THE NNSS IN FY 2019

OFFSITE INBOUND SHIPMENTS		SHIPMENTS BY QUARTER												
Generator, State	1 <sup>st</sup>	2 <sup>nd</sup>	$3^{\rm rd}$	4 <sup>th</sup>	Total									
Idaho National Laboratory - Battelle Energy Alliance, ID	1	0	0	1	2									
Lawrence Livermore National Laboratory, CA	0	0	1	0	1									
Mission Support and Test Services, NV	0	0	1	0	1									
Pantex Plant, TX	0	0	1	0	1									
Sandia National Laboratories, NM	0	0	2	0	2									
PermaFix, TN, WA, and FL	0	0	0	1	1									
<b>Total Shipments</b>	1	0	5	2	8									

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#### 2.3 TRANSPORTATION ROUTE REPORTING

DOE policy is to avoid shipments traveling through the I-15/US-95 interchange. The Nevada National Security Site Waste Acceptance Criteria (NNSSWAC) includes wording requiring generators to notify their carriers to avoid this area and to select approved routes.

Shipments continue to be restricted from travel near the Hoover Dam. The NNSSWAC states, "Waste transportation to the NNSS, regardless of DOT classification, shall avoid the Hoover Dam Bypass Bridge."

Recent quarterly and annual transportation reports may be found on the Internet at <a href="http://www.nnss.gov/pages/programs/RWM/Reports.html">http://www.nnss.gov/pages/programs/RWM/Reports.html</a>.

Older reports may be obtained by contacting the Office of Scientific and Technical Information at <a href="https://www.osti.gov">https://www.osti.gov</a>, or by phone at (865) 576-1188.

Table 7 provides details of waste shipment routes traveled to the NNSS for the fourth quarter of FY 2019. Figure 1 provides a graphic depiction of waste shipment routes traveled to the NNSS for the fourth quarter of FY 2019.

Table 8 provides details of waste shipment routes traveled to the NNSS for FY2019. Figure 2 provides a graphic depiction of waste shipment routes traveled to the NNSS for FY 2019.

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TABLE 7. SHIPMENT ROUTES FOR FOURTH QUARTER OF FY 2019

LOV	LOW-LEVEL, MIXED LOW-LEVEL & CLASSIFIED NON-RADIOACTIVE WASTE SHIPMENTS TO/ON THE NEVADA NATIONAL SECURITY SITE															SEC	URI			
	FOURTH QUA								$\overline{}$					111						
			Origin State>>	CA	ID	ID	ID	NM			NV	NY	ОН	TN, WA, FL	TN	TN	TN	TN	TN	TN
RouteType	Route Description	Route Legend	Total Shipments by Route	Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - Battelle Energy Alliance	Idaho National Laboratory - Fluor Idaho	Los Alamos National Laboratory	Sandia National Laboratory	Mission Support and Test Services	Navarro	West Valley	Portsmouth Gaseous Diffusion Plant	Perma-Fix	DUF6 Conversion Project	Energy Solutions	Nuclear Fuel Services	Oak Ridge Reservation (UCOR)	Oak Ridge National Laboratory - UT Battelle	TRU Waste Processing Center
SOUTHERN	I-40, US-93, AZ-68, NV-163, US-95, NV-164, I-15, NV-160, US-95		149					1	1	2			85	4	2	1	1	50	1	1
SOUTHERN	I-40, US-95, NV-164, I-15, NV-160, US-95		19			1	35	8	1				3	3				1	S5	2
SOUTHERN	I-40, I-15, NV-160, US-95		3	3	93		30				,	101					93		.ce	
SOUTHERN	I-40, I-15, CA-127, NV-373, US-95		24	6										16		1			1	
NORTHERN	US-6, US-95 (TTR)		128								128									
NORTHERN	I-80, US-93-ALT, US-6, US-95	1	32			2	2					28							65	
NORTHERN	US-93, US-6, US-95	•	46		20	7	13					500		6	100		65		20	
ON-SITE	On-Site Shipments	N/A	5							5										
	Total Shipments by Gen	erator>>>	406	9	20	10	15	9	2	7	128	28	88	29	2	2	1	51	2	3
	Total Volume (ft <sup>3</sup> ) by Gen	erator>>>	322,512	8,726	16,491	11,381	13,058	5,486	2,571	1,191	71,057	31,986	92,216	30,325	4,693	257	869	27,742	1,566	3,067
*There we	re no transloaded shipments this quarter																			

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FIGURE 1. GRAPHIC REPRESENTATION OF ROUTES TRAVELLED TO THE NNSS FOR FOURTH QUARTER OF FY 2019



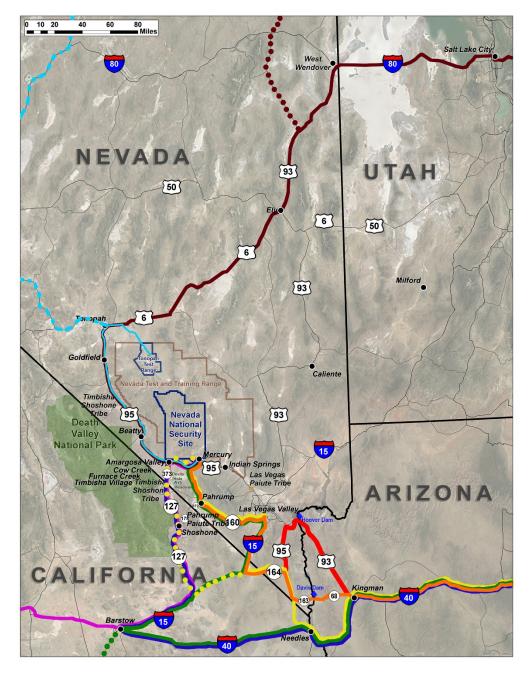
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TABLE 8. SHIPMENT ROUTES FOR FY 2019

	LOW-LEVEL, MIXED LOW-LEVEL & C	1 ASSIEII	FD NON-RA	DIOA	CTIV	F W	ΔSΤΙ	F SHI	PMF	NTS	TO/O	N THE	NEV	ΔΠΔ	ΝΔΤΙ	ΙΔΝΟ	SEC	URIT	y SIT	F		_	
	LOW-LEVEL, MINED EGW-LEVEL W	LAJJII II	LD HOH-KA		SCAI				I IVIL	1113	10/0		IILV	ADA	na ii	ZIIAL	JLO	OILII	1 511				
			Origia State>>	CA	CA	ID	ID	ID	NM	NM	NV	NV	NY	ОН	TN, WA, FL	TN	TN	TN	TN	TN	TN	TN	ТХ
RouteType	Route Description	Route Legend	Total Shipments by Route	General Atomics	Lawrence Livermore National Laboratory	Idaho National Laboratory - AMWTP	Idaho National Laboratory - Battelle Energy Alliance	Idaho National Laboratory - Fluor Idaho	Sandia National Laboratory	Los Alamos National Laboratory	Mission Support and Test Services	Navarro	West Valley	Portsmouth Gaseous Diffusion Plant	Perma-Fix	DUF6 Conversion Project	Energy Solutions	Nuclear Fuel Services	Oak Ridge Reservation (UCOR)	Oak Ridge National Laboratory - UT Battelle	TRU Waste Processing Center	Y-12 National Security Complex	Pantex Plant
	5, CA-127, NV-373, US-95		8	3	4												1						
I-1	10, US-93, AZ-68, NV-163, US-95, NV-164, 15, NV-160, US-95		477				2 6		4	8	4			178	7	5	9	10	145	6	41	60	
SOUTHERN 1-4 (No	10, US-93, US-95, NV-164, I-15, NV-160, US-95 on-Approved)		1																	1	n 2		
SOUTHERN 1-4	10, US-95, NV-164, I-15, NV-160, US-95		86				1		44	2				6	6		2	4	2		5	12	2
SOUTHERN 1-4	0, US-95, NV-164, CA-127, NV-373, US-95		2	1	1																		
SOUTHERN I-1	5, NV-160, US-95		1				2 0				3 0						1				51 93 51 93		
SOUTHERN 1-4	IO, I-15, NV-160, US-95		7	3	1				1					2									
SOUTHERN 1-4	IO, I-15, CA-127, NV-373, US-95		37	9	6		30 S				00 00 07 78				19		1		9 5	2			
NORTHERN US	S-95 (McDermitt)	-	1								62 6				1						. Vi		
NORTHERN US	S-6, US-95 (TTR)		458									458											
NORTHERN 1-8	0, US-93-ALT, US-6, US-95		115			1	4	2			66 C		108								0 30		
	S-93, US-6, US-95	•••	156			88	24	31					1		12								
	n-Site Shipments	N/A	16				S - 1				16								8		9 23 27 - 72	- 8	
	Total Shipments by Gen	erator>>>	1,365	16	12	89	29	33	49	10	20	458	109	186	45	5	14	14	147	9	46	72	2
	Total Volume (ft <sup>3</sup> ) by Gen	erator>>>	1,079,309	2,269	38,548	78,719	23,762	21,569	29,270	6,870	2,126	230,785	110,750	228,194	38,396	11,921	6,397	9,079	88,368	12,279	10,432	129,177	399
_	o transloaded shipments this fiscal year			2,	38	78	23	21	29	9	7,	23(	=	22	38	Ŧ	9	6	88	12	9	12	.,

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FIGURE 2. GRAPHIC REPRESENTATION OF ROUTES TRAVELLED TO THE NNSS FOR FY 2019



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#### 3.0 INCIDENT/ACCIDENT DATA

For the purpose of this report, incidents and accidents are defined as follows:

- **Incident**: Any unintentional release of hazardous material from a package during transportation, load shift, accidents that do not meet the definition of 49 CFR 390.5, or any occurrence during transportation in which any of the circumstances identified in 49 CFR 171.15(b) occurs (ANSI N14.27).
- Accident: An occurrence involving a commercial motor vehicle operating on a highway in interstate or intrastate commerce that results in a fatality; bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; or one or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicles to be transported away from the scene by a tow truck or other motor vehicle (49 CFR 390.5[1]).

The DOE waste generators and carriers are dedicated to ensuring an appropriate response to all offsite transportation events involving DOE radioactive materials. In a memo to EM sites on October 17, 2016, the Director of DOE Office of Packaging and Transportation and the NNSA/NFO Assistant Manager for EM established notification criteria to provide additional clarity to the requirements in the NNSSWAC. This reporting is consistent with DOE M 460.2-1, and will help to ensure the following:

- Receiving timely notification of all offsite transportation events to assure adequate response resources are assigned
- Notifying appropriate field response personnel and/or resources (including field sites, Radiological Assistance Program teams, and state and tribal contacts) if they have not already been engaged
- Having all potentially involved personnel prepared to respond to inquiries from the media, elected officials, or the public

Waste generators are instructed to notify NNSS personnel whenever a discrepancy, non-compliance, or inadequate performance is identified, or if a transportation incident or emergency situation occurs.

Mission Support and Test Services, LLC (MSTS), a contractor to NNSA/NFO, controls NNSS waste receipt and disposal activities and is responsible for notifying appropriate personnel regarding shipping discrepancies, incidents, or accidents.

#### There was one transportation incident or accident in the fourth quarter of FY 2019:

• On July 25, 2019, shipment WVL19089 was involved in a transportation-related incident, a non-reportable traffic accident. While stopped in a construction zone near Erie, PA, the truck was hit by a vehicle. No damage was noted to the transport vehicle or the waste packages. The PA State Police inspected the transport vehicle and approved it to proceed. The shipment was delivered and offloaded as scheduled to the NNSS.

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For the FY 2019 period, two transportation-related incidents and no transportation-related accidents were noted. The incident and accident details are in section 3.0 of the respective FY 2019 quarterly transportation reports and are summarized here:

- DOE/NV/03624--0367, First Quarter Transportation Report FY 2019, had one transportation-related incident, for a shipment with a soft-sided package that had a split seam. There was no breach of containment, and the package was successfully offloaded.
- DOE/NV/03624--0480, Second Quarter Transportation Report FY 2019, had had no transportation-related incidents or accidents.
- DOE/NV/03624--0562, Third Quarter Transportation Report FY 2019, had no transportation-related incidents or accidents.
- DOE/NV/03624--0630, Fourth Quarter Transportation Report FY 2019, had one transportation-related incident, shipment WVL19089 was involved in a non-reportable traffic accident that resulted in no damage to the waste transport vehicle.

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#### 4.0 EVALUATION OF SHIPPING CAMPAIGNS

This section contains a summary of the annual shipping campaigns with respect to the significance of the packaging or transportation incidents or accidents reported in Section 3.0. Waste generators must ensure that waste is packaged and transported in a safe and compliant manner as detailed in the NNSSWAC and DOT regulations. Generators and their contracted shipping carriers must be diligent with regard to all requirements including packaging, routing, and shipping documentation.

The NNSS Radioactive Waste Acceptance Program (RWAP) provides oversight of NNSS waste generators for compliance with DOT regulations and the NNSSWAC, including Section 6.0, Waste Transportation and Receipt Information. All RWAP-identified findings and observations on waste generator performance are tracked and trended.

Findings are issued by RWAP personnel to identify, track, and resolve deficiencies that violate the NNSSWAC, including failure to follow DOT requirements. Observations are also issued by RWAP personnel for conditions that represent a weakness in a waste generator's quality assurance or waste certification program that, if left uncorrected, could result in a condition adverse to quality. For the purposes of this report, only transportation and packaging related Findings are reported.

#### There was one transportation-related finding in the fourth quarter of FY 2019.

• On August 21, 2019, shipment ORL19127 was stopped in Holbrook, AZ where the driver noticed a puddle of liquid (later identified as water) on the trailer floor, under the equipment being transported to the NNSS for disposal. The equipment had been determined by the generator to meet the requirements of an Industrial Package -1 (IP-1) as engineered and prepared and required no additional packaging. The waste generator sent a team to the location to investigate the situation. No contamination was detected, thus not meeting the definition of an incident. As a precaution, the shipment (and two others travelling with it), returned to generator site with no further issues. RWAP issued finding I-2824.

For the FY 2019 period, three transportation-related Findings were issued. The Finding details in Section 4.0 of the respective FY 2019 quarterly transportation reports and are summarized here:

- DOE/NV/03624--0367, First Quarter Transportation Report FY 2019 had Finding I-2620 issued for shipment OLL19002 travelling on an unapproved route.
- DOE/NV/03624--0480, Second Quarter Transportation Report FY 2019 had Finding I-2672 issued for a single drum transported on a flatbed trailer instead of an enclosed trailer.
- DOE/NV/03624--0562, Third Quarter Transportation Report FY 2019 had no Findings issued.
- DOE/NV/03624--0630, Fourth Quarter Transportation Report FY 2019 had Finding I-2824 issued for shipment ORL19127 having industrial equipment leaking liquid.

Overall, the waste generators shipment campaigns are executed adequately with a minimal number of issues noted.

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- U.S. Department of Energy, Office of Packaging and Transportation, 2016. Memo establishing notification criteria. Las Vegas, Nevada. October 2016.

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# POINT OF CONTACT

Please contact the following person with questions regarding waste transportation or waste management:

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