PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION J – LIST OF ATTACHMENTS

ATTACHMENT J-17: CH-TRU WASTE STREAM QUANTITIES AND DETAILS

The following waste streams are applicable to this Contract:

1. Above Ground Drums Remediation

ABOVE GROUND CH-TRU WASTE INVENTORY

Description	Volume	MAR (PE-Ci)	Count
Sludge Drums	90	380	317
Debris Drums	106	3,154	382
Drums with Cemented Monoliths	86	7,028	349
Drums with Cemented Cans	240	14,549	759
Drums with Inorganics	2	141	11
10-100 MLLW	396	200	1,269
SWBs	346	3,242	303
Fiberglass-Reinforced Plywood/Crates/Metal Boxes	8	1	1
"Bolas Grandes" Spheres	40	96	33
Off-site Source Recovery Program Pipe-Overpack Containers	9	503	43
Other Containers	12	324	51
Totals	**1,335**	**29,618**	**3,518**

2. Overview of Below Ground CH-TRU Wastes Categories

TABLE 1
Overview of Below-Ground CH-TRU Waste Categories

Category	General Description	Approximate Volume (m^3)	Percentage Total Volume	Approximate MAR (PS-01)	Percentage Total MAR
Trenches A-D	Approx. 710 30-gal. drums split between 4 trenches	80.6	3.7%	93,866	84.5%
Pit 9	Approx. 3,882 55-gal., 30-gal. and 85-gal. drums, 191 fiberglass-reinforced plywood boxes, and 6 other containers	1,586	73.0%	6,377	5.7%
Corrugated Metal Pipes (CMPs) above Pit 29	158 CMP, each ~ 30 in. diameter x 20 ft. long	439	20.2%	10,778	9.7%
Hot Cell Liners (RH Waste)	5 Shafts with glovebox liners from hot cells, each in a steel box 6 ft. x 6 ft. x 10 ft. long (Shafts 302-306)	51	2.8%	0.6	0.001
Tritium Packages	4 tritium packages, each containing 3 55-gal. drums, and one tritium tank that is 20 ft. long (Shafts 262-266)	6.7	0.3	8	0.01
Total		**2,163**	**100%**	**111,030**	**100%**

3. Trenches A-D details are in accordance with "*Trenches A-D Category of Transuranic Waste Stored Below Ground within Area G*," EP2013-5179, LA-UR-13-29513, November 2013.

TABLE 3
Results of Visual Examination of PU-238 Waste Packaged in 1974, 1980, and 1983

1974 Pu-238 Drums			1980 Pu-238 Drums			1983 Pu-238 Drums		
Drum No.	Package Description	Waste Form Description	Drum N0.	Packaging Description	Waste Form Description	Drum No.	Packaging Description	Waste Form Description
BFB 234	Four plastic begged metal containers	Bag-out full of small sealed cans. Cans of wet material that breached can and involved two other cans. This was Pu-238 materials of pH3.	BFB B12	Double-plastic bagged metal can. Zones where rust penetrated can creating pinholes	Partially burned cheesecloth and filter paper in can. Second plastic bag contained rags, cheesecloth, drill bits, wrenches, paper, broken glass, gloves.	BFB 92	Ice-cream carton within a metal can. Carton in a plastic bag-out bag.	Al2O3 inside one ice cream carton. Others contained cheesecloth, lead-wrapped vials, graphite solids
BFB2 35	A leverpak inside of drum	28 crushed rusty cans. 26 crushed one-gallon cans. Al foil. Two 2"pipe nipples, capped on both ends. One-gallon filled with empty cans.	BFB 14	Double plastic bagged trash from room cleanup.	Empty alcohol bottle, HF bottle, gloves, rags, cheesecloth.	BFB 96	A bucket and 3 metal containers, all in plastic bags.	Lead lined gloves, cheesecloth, plastic bag-out bags.
BFB2 37	Plastic-wrapped leverpak inside drum	Rusty vises, sieves, pipe, rods, hammers, screw-drivers, cans, hand tools, garden hose	BFB 19	Bagged metal cans.	Inside can, bagged metal can containing alundum. 2nd can gaskets, 3rd can,, hot press dies, 4th can, glassware & some red dust.	BFB 97	Metal containers holding bag-out metal containers.	Ziploc containers, Al foil, rusty cans. Deteriorated cheesecloth, hacksaw blade, small pressure vessel, paint brushes, pliers inside bagged-out cans.
BFB2 38	Leverpak inside a plastic bag-out	10 rusty containers,5 pressure vessels, stainless door frame and gasket, empty plastic bag-out stubs, 8 transfer cans, misc. pices of rusty metal	BFB 20	Plastic bags in 30 gal drum	two bag-out bags, each filled with plastic sleeves	BFB 101	metal cans holding inner bagged-out metal cans	Plastic Ziploc sample vials, gaskets, cheesecloth, sand paper.
BFB2 39	Plastic-wrapped metal cans with a variety of wastes.	Plastics, metals, glass tubes, glass bottles, broken glass, metal tools	BFB 26	Plastic gagged trash.	Empty nitric acid and HF bottle. Al foil, gloves, plastics, empty gallon jar, and cheesecloth.	BFB 102	Double plastic wrapped metal cans with bagged-out metal cans	Punctured WD-40 can, another empty metal can, cheesecloth, pieces of metal, crushed Al foil.
BFB 240	Double bagged leverpak with approx. 150 ml water between bags. Leverpak saturated	die, desiccator, empty glass containers, power hose for furnace, rusty cans and metal objects.	BFB 27	A single plastic bag of waste	A single plastic bag of paper, surgeon's gloves, cheesecloth, plastic.	BFB 103	Double-plastic wrapped metal containers.	Bagged-out cans with vials, glass jars, cheesecloth, Ziploc bags.

TABLE 4

Summary of Radiological Characteristics of Waste in Trenches A-D

	Number of waste packages	Number of Casks with Waste Drums	Range , PE-Ci per Cask	Number of Waste Drums	Range PE-Ci per Drum	Total PE-Ci	Range, Pu-239 FGE per Cask	Total Pu-239 FGE	Range, Radiation Dose (mR/hr)	
									Contact	1 m
Trench A	125	120	3 to 1,183	240	2 to 608	32,500	<0.1 to 9	215	1 to 19	0 to 10
Trench B	104	99	<1 to 1,247	197	<1 to 622	29,678	0.1 to ≥ 200	4,178	1 to 250*	1 to 20
Trench C	200	101**	28 to 955	200	10 to 526	26,872	0.5 to 64	628	1 to 150	0 to 11
Trench D	73	37	17 to 313	73	8 to 474	4,815	0.4 to 8	78	1 to 40	0to 5
Total Trenches A-D	502	357	<1 to 1,247	710	<1 to 622	93,866	<0.1 to ≥200	5,099	1 to 150	1 to 11

*** In Trench B, contact dose available only for packages with U-233 waste**

**** Both Disposal Log Book and RSWD forms show Cask 54 I Trench C filled with drums two times**

4. Pit 9 Waste details are in accordance with "*Pit 9 Category of Transuranic Waste Stored Below Ground within Area G*," EP2013-5180, LA-UR-14-20119, December 2013.

TABLE 2
Waste Content and Types of Containers in Pit 9

Container Type	Waste Code	Waste Material Description	Number of Containers	Gross Weight (lbs/container)	Total Volume (m^3)
TRU Waste					
55-Gallon Steel Drum	A10	Graphite	1	155	0.2
	A15	Mixed Cellulosics	219	49-71	45.6
	A16	Plastic Materials	19	80-156	4.0
	A18	Mixed Paper, Plastic, Rubber, etc.	132	85-187	27.4
	A19	Mixed Combustible / Non-Combustible Trash	68	75-185	14.1
	A20	Hydrocarbon Oils	8	265-450	1.7
	A21	Silicon Based Oils	3	501	0.6
	A25	Leached Process Residues	216	33-448	44.9
	A30	PN* Equipment	182	39-415	37.9
	A31	Non-PN Equipment	1	172	0.2
	A50	Metal Crucibles, Scrap, Dies	133	0-263	27.7
	A52	Scrap Metals	23	110-298	4.8
	A55	Filter Media	6	399	1.2
	A56	Filter Media Residues	3	90-112	0.6
	A60	Other Combustibles	863	55-386	179.5
	A61	Other Non-Combustibles	987	51-416	205.3
	A70	Chemical Waste	4	113-154	0.8
	A75	Chemical Treatment Sludge	300	260-898	62.4
	A76	Cement Paste	133	350-706	27.7
	A90	Contaminated Soil	46	150-450	9.6
	A95	Glass	11	77-185	2.3
	A99	Unidentified Material	5	97-122	1.0
Total 55-Gallon Steel Drums			**3,363**		**700** [1]
30-Gallon Drum	A15	Mixed Cellulosics	127	23-135	12.8
	A16	Plastic Materials	8	60-108	1.0
	A18	Mixed Paper, Plastic, Rubber, etc.	10	44-143	1.1
	A19	Mixed Combustible / Non-Combustible Trash	38	48-119	4.3
	A21	Silicon Based Oils	1	273	0.1
	A25	Leached Process Residues	232	31-612	25.9
	A30	PN Equipment	10	67-164	1.0
	A46	Skull and Oxide	1	105	0.1

* PN – Properly Numbered
[1] Number is different than source 699.5. Source was incorrect.

TABLE 2, continued
Waste Content and Types of Containers in Pit 9

Container Type	Waste Code	Waste Material Description	Number of Containers	Gross Weight (lbs/container)	Total Volume (m^3)
TRU Waste, continued					
30-Gallon Drum, continued	A50	Metal Crucibles, Scrap, Dies	45	42-248	4.5
	A52	Scrap Metals	1	54	0.1
	A55	Filter Media	1	47	0.1
	A60	Other Combustibles	2	70-74	0.2
	A61	Other Non-Combustibles	33	52-124	3.8
	A70	Chemical Waste	2	105-114	0.2
	A76	Cement Paste	133	350-706	15.0
	A95	Glass	2	50-117	0.2
	A99	Unidentified Material	2	85-86	0.2
Total 30-Gallon Steel Drums			**517**		**56.0**
85-Gallon Steel Drum	A60	Other Combustibles	2	86-162	0.6
Total 85-Gallon Steel Drums			**2**		**0.6**
Other (XLG Drum)	A30	PN Equipment	3	2000	5.4
	A31	Non-PN Equipment	2	2000	2.4
	A36	Non-Combustible Building debris	1	4001	2.1
Total Other Containers			**6**		**9.9**
FRP Boxes (Crates)	A19	Mixed Combustible / Non-Combustible Trash	4	403-600	13.6
	A30	PN Equipment	42	88-4001	142.7
	A31	Non-PN Equipment	112	500-5,401	515.1
	A36	Non-Combustible Building debris	1	1965	15.9
	A55	Filter Media	25	673-684	85.6
	A90	Contaminated Soil	6	2000-4001	19.0
	A99	Unidentified Material	1	732	3.6
Total FRP Boxes			**191**		**795.4**
Total TRU Waste Containers			**4,079**		**1,581.4**
Low-Level Waste					
One-Gallon Can		Cell 13 trash cans 1892-1858	1	Not Available	0.0076
Unknown Item		No Description	1	Not Available	1.4
Box		Two Section Glovebox	1	Not Available	3.4
Total Low-Level Waste Containers			**3**		**4.8**
Total All Containers			**4,083**		**1,586.2**[2]

[2] Number is different than source 1,588.5. Source was incorrect.

TABLE 3
Summary of Radiological Characteristics of Waste in Pit 9

Type of Container	Number of Containers	Average* PE-CI per Container (Range)	Number of Containers ≥ 80 PE-CI	Total PE-CI	Average* Pu-239 FGE per Container (Range)	Number of Containers ≥ 200 Pu-239 FGE	Total Pu-239 FGE	Average* Radiation Dose at Contact, mR/hr (Range)
30-Gal Drum	517	1.6 (0 - 13.4)	0	644.7	12.6 (0 – 147.8)	0	6,839.7	3.7 (0 – 100)
55-Gal Drum	3,363	2.1 (0 – 137.7)	1	5,292.1	2.1 (0 - >200)	3	27,757.0	3.1 (0 – 250)
85-Gal Drum	2	2.6 (00.3 – 5.2)	0	5.2	18.1 (0.3 – 36.9)	0	36.2	3.6 (0 – 7)
Other (XLG Drum)	6	0 (0 – 0)	0	0	0 (0 – 0)	0	0	(0 – 0)
FRP Box	191	6.1 (0 – 234.1)	2	435.4	12.6 (0 - >200)	1	910.6	29.6 (0 – 70)
TOTALS, PIT 9	**4,079**	**2.1 (0 – 234.1)**	**3**	**6,377.40**	**2.1 (0 - >200)**	**4**	**35,543.50***	**3.2 (0 – 250)**

*Average of containers with values above zero

5. Corrugated Metal Pipes (CMP) details are in accordance with "*CMP Category of Transuranic Waste Stored Below Ground within Area G*," EP2013-5171, LA-UR-13-26921, August 2013.

Radiological Characteristics of the CMPs

Package ID Number	Original CMP ID Number	Total Curies	Am-241 (Curies)	Pu-238 (Curies)	Pu-239 (Curies	PE-Ci	Fissile Grams	Dose at Surface (mR/hr)
S863429	1150	11.12	10.16	0.06	0.90	11.31	14.33	3
S863430	1151	11.12	10.16	0.06	0.90	11.31	14.33	1
S863431	1157	10.82	10.51	0.05	0.26	11.02	4.14	2
S863432	1158	10.82	10.51	0.05	0.26	11.02	4.14	3
S863433	1159	10.82	10.51	0.05	0.26	11.02	4.14	0
S863434	1152	20.35	19.54	0.04	0.77	20.73	12.31	1
S863435	1153	33.51	32.70	0.04	0.77	34.15	12.38	1
S863436	1154	14.51	13.70	0.04	0.77	14.78	12.27	1
S863437	1155	14.51	13.70	0.04	0.77	14.78	12.27	2
S863438	1156	14.50	13.70	0.04	0.75	14.76	12.07	2
S863439	1163	10.31	9.82	0.04	0.45	10.50	7.22	2
S863440	1164	10.31	9.82	0.04	0.45	10.50	7.22	3
S863441	1165	10.31	9.82	0.04	0.45	10.50	7.22	3
S863442	1169	12.07	11.21	0.11	0.75	12.28	12.06	1
S863443	1173	16.68	16.10	0.06	0.52	16.99	8.37	1
S863444	1174	16.68	16.10	0.06	0.52	16.99	8.37	1
S863445	1160	10.82	10.51	0.05	0.26	11.02	4.14	1
S863446	1161	10.82	10.51	0.05	0.26	11.02	4.14	3
S863447	1162	10.82	10.51	0.05	0.26	11.02	4.14	2
S863448	1166	12.07	11.21	0.11	0.75	12.28	12.06	1
S863449	1167	12.07	11.21	0.11	0.75	12.28	12.06	1
S863450	1168	12.07	11.21	0.11	0.75	12.28	12.06	1
S863451	1170	12.07	11.21	0.11	0.75	12.28	12.06	1
S863452	1171	12.07	11.21	0.11	0.75	12.28	12.06	4
S863453	1175	16.68	16.10	0.06	0.52	16.99	8.37	2
S863454	1178	11.81	11.45	0.33	0.02	12.00	0.42	1
S863455	1177	11.81	11.45	0.33	0.02	12.00	0.42	1
S863456	1176	11.81	11.45	0.33	0.02	12.00	0.42	1
S863457	1179	10.36	10.03	0.03	0.30	10.56	4.81	3
S863458	1180	10.36	10.03	0.03	0.30	10.56	4.81	3
S863459	1181	10.36	10.03	0.03	0.30	10.56	4.81	4
S863460	1182	10.36	10.03	0.03	0.30	10.56	4.81	4
S863461	1183	10.36	10.03	0.03	0.30	10.56	4.81	3
S863462	1184	10.36	10.03	0.03	0.30	10.56	4.81	3
S863463	1185	10.36	10.03	0.03	0.30	10.56	4.81	3
S863464	1187	17.37	16.97	0.05	0.36	17.70	5.76	4
S863465	1188	17.37	16.97	0.05	0.36	17.70	5.76	4
S863466	1186	17.37	16.97	0.05	0.36	17.70	5.76	3
S863467	1172	16.68	16.10	0.06	0.52	16.99	8.37	1
S863468	1198	13.45	11.80	0.98	0.67	13.58	10.77	7
S863469	1189	23.12	22.21	0.36	0.55	23.51	8.82	3
S863470	1190	23.12	22.21	0.36	0.55	23.51	8.82	2
S863471	1191	23.12	22.21	0.36	0.55	23.51	8.82	12
S863472	1192	23.12	22.21	0.36	0.55	23.51	8.82	4
S863473	1193	23.12	22.21	0.36	0.55	23.51	8.82	4

Radiological Characteristics of the CMPs

Package ID Number	Original CMP ID Number	Total Curies	Am-241 (Curies)	Pu-238 (Curies)	Pu-239 (Curies	PE-Ci	Fissile Grams	Dose at Surface (mR/hr)
S863474	1194	23.12	22.21	0.36	0.55	23.51	8.82	4
S863475	1195	13.45	11.80	0.98	0.67	13.58	10.77	7
S863476	1196	13.45	11.80	0.98	0.67	13.58	10.77	7
S863477	1197	13.45	11.80	0.98	0.67	13.58	10.77	7
S863478	1199	13.45	11.80	0.98	0.67	13.58	10.77	7
S863479	1200	13.45	11.80	0.98	0.67	13.58	10.77	1
S863480	1201	13.45	11.80	0.98	0.67	13.58	10.77	1
S863481	1202	13.45	11.80	0.98	0.67	13.58	10.77	4
S863482	1203	13.45	11.80	0.98	0.67	13.58	10.77	1
S863483	1207	9.53	9.02	0.11	0.39	9.69	405.50	12
S863484	1205	9.53	9.02	0.11	0.39	9.69	405.50	1
S863485	1204	9.53	9.02	0.11	0.39	9.69	405.50	1
S863486	1206	9.53	9.02	0.11	0.39	9.69	405.50	1
S863487	1210	38.57	38.52	0.01	0.04	39.33	0.89	2
S863488	1209	38.57	38.52	0.01	0.04	39.33	0.89	7
S863489	1208	38.57	38.52	0.01	0.04	39.33	0.89	12
S863490	1211	69.28	69.05	0.03	0.18	70.62	3.27	2
S863491	1212	69.28	69.05	0.03	0.18	70.62	3.27	12
S863492	1213	69.28	69.05	0.03	0.18	70.62	3.27	12
S863493	1214	69.28	69.05	0.03	0.18	70.62	3.27	12
S863494	1257	160.65	160.00	0.45	0.20	163.74	7.90	20
S863495	1258	160.65	160.00	0.45	0.20	163.74	4.04	30
S863496	1259	160.65	160.00	0.45	0.20	163.74	4.04	30
S863497	1254	160.65	160.00	0.45	0.20	163.74	4.04	20
S863498	1255	160.65	160.00	0.45	0.20	163.74	4.04	20
S863499	1245	134.73	134.30	0.07	0.36	137.35	6.59	23
S863500	1246	134.73	134.30	0.07	0.36	137.35	6.59	20
S863501	1247	134.73	134.30	0.07	0.36	137.35	6.59	20
S863502	1248	134.73	134.30	0.07	0.36	137.35	6.59	25
S863503	1249	135.03	134.30	0.07	0.66	137.65	11.36	20
S863504	1252	93.58	93.20	0.29	0.10	95.38	2.01	18
S863505	1253	93.58	93.20	0.29	0.10	95.38	2.01	20
S863506	1250	93.58	93.20	0.29	0.10	95.38	2.01	25
S863507	1251	93.58	93.20	0.29	0.10	95.38	2.01	20
S863508	1256	160.65	160.00	0.45	0.20	163.74	4.04	20
S863509	1240	186.63	186.10	0.21	0.32	190.26	115.40	23
S863510	1239	186.63	186.10	0.21	0.32	190.26	115.40	25
S863511	1236	186.63	186.10	0.21	0.32	190.26	115.40	4
S863512	1241	134.73	134.30	0.07	0.36	137.35	6.59	35
S863513	1233	86.55	86.30	0.05	0.20	88.23	3.65	15
S863514	1231	86.55	86.30	0.05	0.20	88.23	3.65	12
S863515	1232	86.55	86.30	0.05	0.20	88.23	3.65	26
S863516	1234	97.40	96.75	0.21	0.44	99.28	265.36	20
S863517	1235	97.40	96.75	0.21	0.44	99.28	265.36	18
S863518	1237	97.40	96.75	0.21	0.44	99.28	265.36	26

Radiological Characteristics of the CMPs

Package ID Number	Original CMP ID Number	Total Curies	Am-241 (Curies)	Pu-238 (Curies)	Pu-239 (Curies	PE-Ci	Fissile Grams	Dose at Surface (mR/hr)
S863519	1238	97.40	96.75	0.21	0.44	99.28	265.36	20
S863520	1242	134.73	134.30	0.07	0.36	137.35	6.59	35
S863521	1243	134.73	134.30	0.07	0.36	137.35	6.59	23
S863522	1244	134.73	134.30	0.07	0.36	137.35	6.59	35
S863523	1225	72.48	72.00	0.17	0.30	73.87	177.80	4
S863524	1226	72.48	72.00	0.17	0.30	73.87	177.80	4
S863525	1227	72.48	72.00	0.17	0.30	73.87	177.80	10
S863526	1228	72.48	72.00	0.17	0.30	73.87	177.80	10
S863527	1229	72.48	72.00	0.17	0.30	73.87	177.80	10
S863528	1230	72.48	72.00	0.17	0.30	73.87	177.80	12
S863529	1217	69.99	69.75	0.02	0.22	71.36	518.28	15
S863530	1216	69.99	69.75	0.02	0.22	71.36	518.28	15
S863531	1215	69.99	69.75	0.02	0.22	71.36	518.28	10
S863532	1222	72.48	72.00	0.17	0.30	73.87	177.80	26
S863533	1223	72.48	72.00	0.17	0.30	73.87	177.80	15
S863534	1218	36.12	36.09	0.01	0.02	36.82	13.38	12
S863535	1219	36.12	36.09	0.01	0.02	36.82	13.38	10
S863536	1220	36.12	36.09	0.01	0.02	36.82	13.38	10
S863537	1221	72.48	72.00	0.17	0.30	73.87	177.80	15
S863538	1224	72.48	72.00	0.17	0.30	73.87	177.80	15
S863539	1262	175.37	174.30	0.64	0.42	178.72	7.64	25
S863540	1263	175.37	174.30	0.64	0.42	178.72	7.64	25
S863541	1264	175.37	174.30	0.64	0.42	178.72	7.64	25
S863542	1265	175.37	174.30	0.64	0.42	178.72	7.64	25
S863543	1266	175.37	174.30	0.64	0.42	178.72	7.64	25
S863544	1260	175.37	174.30	0.64	0.42	178.72	8.29	20
S863545	1261	175.37	174.30	0.64	0.42	178.72	7.64	25
S863546	3305	35.51	35.35	0.12	0.03	36.18	0.63	4
S863547	3306	35.51	35.35	0.12	0.03	36.18	0.63	5
S863548	3307	35.51	35.35	0.12	0.03	36.18	0.63	4
S863549	3308	35.51	35.35	0.12	0.03	36.18	0.63	5
S863550	1280	98.41	97.50	0.09	0.82	100.31	13.52	50
S863551	1281	98.41	97.50	0.09	0.82	100.31	13.52	50
S863552	1282	98.41	97.50	0.09	0.82	100.31	13.52	50
S863553	1283	91.37	90.96	0.21	0.20	93.13	6.90	100
S863554	1284	91.37	90.96	0.21	0.20	93.13	6.90	100
S863555	1285	91.37	90.96	0.21	0.20	93.13	6.90	100
S863556	1286	91.37	90.96	0.21	0.20	93.13	6.90	80
S863557	1287	91.37	90.96	0.21	0.20	93.13	6.90	30
S863558	1288	91.37	90.96	0.21	0.20	93.13	6.90	40
S863559	1289	91.37	90.96	0.21	0.20	93.13	6.90	20
S863560	1267	157.59	156.80	0.07	0.72	160.65	12.25	20
S863561	1268	157.58	156.80	0.07	0.72	160.65	12.25	18
S863562	1269	157.58	156.80	0.07	0.72	160.65	12.25	20
S863563	1270	157.58	156.80	0.07	0.72	160.65	12.25	20

Radiological Characteristics of the CMPs

Package ID Number	Original CMP ID Number	Total Curies	Am-241 (Curies)	Pu-238 (Curies)	Pu-239 (Curies	PE-Ci	Fissile Grams	Dose at Surface (mR/hr)
S863564	1271	157.58	156.80	0.07	0.72	160.65	12.25	18
S863565	1272	157.58	156.80	0.07	0.72	160.65	12.25	30
S863566	1273	157.58	156.80	0.07	0.72	160.65	12.25	18
S863567	1274	157.58	156.80	0.07	0.72	160.65	12.25	20
S863568	1275	98.41	97.50	0.09	0.82	100.31	13.52	18
S863569	1276	98.41	97.50	0.09	0.82	100.31	13.52	20
S863570	1277	98.41	97.50	0.09	0.82	100.31	13.52	15
S863571	1278	98.41	97.50	0.09	0.82	100.31	13.52	15
S863572	1279	98.41	97.50	0.09	0.82	100.31	13.52	15
S863573	1290	37.03	36.73	0.19	0.10	37.73	9.71	50
S863574	1291	37.03	36.73	0.19	0.10	37.73	9.71	50
S863575	1292	37.03	36.73	0.19	0.10	37.73	9.71	50
S863576	1293	37.03	36.73	0.19	0.10	37.73	9.71	30
S863577	1294	37.03	36.73	0.19	0.10	37.73	9.71	80
S863578	1295	37.03	36.73	0.19	0.10	37.73	9.71	80
S863579	1296	37.03	36.73	0.19	0.10	37.73	9.71	5
S863580	1297	35.83	35.69	0.07	0.06	36.51	1.08	5
S863581	1298	35.83	35.69	0.07	0.06	36.51	1.08	30
S863582	1299	35.83	35.69	0.07	0.06	36.51	1.08	5
S863583	3301	35.83	35.69	0.07	0.06	36.51	1.08	40
S863584	3302	35.83	35.69	0.07	0.06	36.51	1.08	40
S863585	3303	35.83	35.69	0.07	0.06	36.51	1.08	4
S863586	3304	35.83	35.69	0.07	0.06	36.51	1.08	5
TOTALS		10,575.90	10,483.36	31.97	60.10	10,777.85	7,360.79	
Average (Mean)		66.94	66.35	0.20	0.38	68.21	46.59	16

6. Other Retrievals Hot Cell Liners Waste Description

This waste consists of five glovebox hot cell liners from the hot cells in Wing 9 of the Chemical and Metallurgy Research (CMR) facility. Typical liners are 1.68m by 3.35m by 4.18m long weighing approximately 1135 kilograms (kg) (2500 pounds [lb]). Operations conducted within the liners consist of nondestructive and destructive examination of irradiated fuel pins composed of mixed U-Pu oxides and carbides. The hot cells were contaminated with mixed fission products as a result of research studies of high active materials. The contamination is fixed on the surfaces of the hot cell liners making the hot cell liners themselves waste. The presence of mixed U-Pu isotopes of these materials and the results of some required examinations produced high beta-gamma and alpha contamination within the liner making them remote handled (RH) waste. Information supplied by the waste generator indicates the four of the five hot cell liners may have concentrations of TRU isotopes less than 100 nCi/g and may not be properly classified as TRU waste. Ongoing analysis indicates the Hot Cell Liners are less than 100 nCi/g and therefore, should be classified as LLW or mixed LLW and does not require excavation. The Contractor shall complete this analysis and obtain a disposition decision resolution from EM-LA.

Each hot cell liner was placed into a steel box measuring 1.83m (6ft) by 1.83m (6ft) by 3.05m (10ft). The boxes containing the hot cell liners were placed in retrievable storage in shafts 302 – 306.

Since this waste could be re-characterized as LLW or mixed LLW, (less than 100 nCi/g) the Hot Cell Liners may not be required to be removed. However, should the decision be made to excavate the hot cell liners, the excavation alternative shall consider removal of the buried waste from the shafts through a combination of conventional remote excavation techniques.

7. Tritium Packages

Five shafts containing the Tritium Packages were constructed to contain torpedo-shaped waste containers. Four of the torpedoes contain three 55-gallon drums each, and the fifth torpedo contains a 20-foot-long tritium tank. This waste was generated from a decommissioning project at TA-55 and was emplaced in the shafts between 1995 and 1997.

The waste consists primarily of scrap metal (valves, fittings, piping, vessels, pumps, and other equipment) and some combustibles. The combustibles and non-combustibles were not segregated. The waste was bagged out of the glovebox, or, in the case of the processing tank system, disassembled and bagged. The bags were sealed by the twist and tape closure method and placed inside 55-gallon drums that were painted on the inside with asphalt as a barrier to tritium permeation. The drums were also identified with a red “T.” The bungs were replaced with a carbon composite filter just prior to their being loaded into the stainless steel torpedoes. Possibly, a molecular sieve material was placed in the annular void spaces between the drums and torpedo walls to absorb tritium dioxide escaping through the carbon filter. The vessel heads were welded in place. At the top of the torpedo, a penetration hole was drilled for attachment of a valve, pressure gauge, pressure relief valve, and quick connect to allow for future sampling. The torpedo was flushed with helium to leak test the closure weld.

The table below lists the reported minimum and maximum Pu-239, U-235, and tritium (H-3) activity and initial and decayed surface dose rates for all of the canisters.

Summary Data for the Tritium Torpedoes

Item	Units	Minimum	Maximum
Pu-239	Curies	8.32E-02	1.70E+00
Pu-241	Curies	2.93E-01	6.61E+00
H-3	Curies	3.20E-02	2.72E+03
Dose rate (surface) initial	mrem/hr	0.1	3.0
	Hazardous Waste Codes		**Constituents**
Chemical codes	None		None

As expected, the dose rates for the tritium torpedoes do not qualify this waste as RH-TRU waste. The tritium torpedoes do not list any hazardous materials. The documentation reviewed indicated that hydrogen getters were to be placed inside the waste containers to absorb hydrogen generated due to alpha radiolysis for a period of 20 years. There is no indication that hydrogen getters were ever used.