N-ESR-G-00001

HIGH LEVEL WASTE EMERGENCY RESPONSE DATA AND WASTE TANK DATA

Page	Table	Description
1		Title and Contents
2		Approval Signatures
3		Revisions
		Emergency Response Section
4	*Table E-1*	*Airborne/Liquid Dose Concentrations based on ICRP 68/72 Values*
5	Table E-1A	Airborne/Liquid Dose Concentrations based on ICRP 68/72 Values
6	Table E-2	Influent Waste Streams Dose Concentrations based on ICRP 68/72 Values
6	Table E-2A	MCU Airborne/Liquid Dose Concentration based on ICRP 68/72 Values
7	Table E-3	Ancillary Equipment Fill Volumes
8	Table E-4	Miscellaneous Information
		Tank Farm Limits Section
9	Table L-1	Waste Tank Flammability Control Data and Limits
10	Table L-2	Quiescent Times
11	Table L-3A	Tank 7 Adjusted Quiescent Times
12	Table L-3B	Tank 40 Adjusted Quiescent Times
13	Table L-3C	Tank 51 Adjusted Quiescent Times
14	Table L-4	Salt Tank Gas Release Mode Evaluation
15	Table L-5	Waste Tank Data and Limits
16	Table L-6	Time for Vapor Space Turnovers in Waste Tanks
17	Table L-7	Time for Twelve Vapor Space Turnovers in Other Tank Farm Facilities
18	Table L-8	Tank 48 Hydroxide Concentration
		General Information
19	Table G-1	Waste Acceptance Program Approved Liquid Waste Streams
20	Table G-1	Waste Acceptance Program Approved Liquid Waste Streams (Continuation)
21	Table G-2	Waste Streams from F/H Tank Farms to Other Facilities
22	Table G-3	Evaporator Enrichment Monitoring & Evaporator Feed Qualification
23	Table G-3A	ARP/MCU Batch Feed Qualification
24	Table G-4	Waste Tanks Requiring Compensatory Measures for 2F and 3H Evaporator Feed
25	Table G-6	Waste Tanks In or Beyond Sampling and Characterization Phase Requiring Applicability Determination for Unreviewed Waste Management Question (UWMQ)
25	Table G-7	Waste Tanks declared as “Bulk Waste Removal Efforts” (BWRE) Complete

ERD Prepared by: Fred Williams Date 4-25-16

ERD Verifier/Checker: N Lao Pasalen Date 4/25/16

ERD Approved by: [illegible] Date 4/25/16

Table Verifier/Checker:

[illegible] for (J. Arnold) 4/25/16
Verifier/Checker for Tables E-2, G-1 and G-2 Date:

Fred Williams for (Hilary Bui) no change 4-25-16
Verifier/Checker for Tables L-1, L-2, L-3A, L-3B, L-3C and L-4 Date:

Andrea A. Bridges 4/25/16
Verifier/Checker for Tables L-5 Date:

Fred Williams for (Hilary Bui) no change 4-25-16
Verifier/Checker for Tables G-3 Date:

Fred Williams for (Celia Aponte) per telecon 4-25-16
Verifier/Checker for Tables G-3A Date:

Fred Williams for (Hilary Bui) no change 4-25-16
Verifier/Checker for Tables G-4 Date:

Fred Williams for (Christie Sudduth) no change 4-25-16
Verifier/Checker for Table G-6, G-7 Date:

Rev	Date	Description	BY	CHK	APP
768	4/21/16	The main purpose of this ERD is to update Table G-1. Updated Table G-1;(Changed Waste Stream HCAN-RW-03 from Unapproved to Approved); Updated Table G-3A; Updated Table L-5; (Tk 48 Sample Frequency from 90 to 180); Updated Table L-8	FLW	NRP	CBS
767	4/12/16	The main purpose of this ERD is to update Table G-1. Updated Table G-1;(Changed Waste Stream HCAN-RW-03 from Approved to Unapproved); Updated Table L-5; (Tk 38 Supernate Temperature from 40 to100, Sludge Salt Temperature from 75 to 100, Wall or Bottom Temperature from 70 to 95)	FLW	NRP	HPB
766	4/5/16	The main purpose of this ERD is to raise the Tank 15 HLLCP Set Point. Updated Table L-1; (Tk 15 HLLCP set point from 100.13 to 150.00, Required number of turnovers from 24 to 22, Tk 30 Seismic Time to LFL from Yes to Null, Priority Status from Priority 1 to Null, Tk 32 Seismic Time to LFL from Yes to Null, Priority Status from Priority 2 to Null, Tk 37 Seismic Time to LFL from Yes to Null, Priority Status from Priority 2 to Null);Updated Table L-5; (Tk 26 Sample Frequency from 90 to 180, Tk 29 Supernate Temperature from 33 to 70, Sludge Salt Temperature from 75 to 115, Wall or Bottom Temperature from 70 to 110, Sample Frequency from 90 to 180); Updated Table G-1; Updated Table G-3, Updated Table G-4	FLW	NRP	CBS
765	3/8/16	The main purpose of this ERD is to update Table G-3. Updated Table G-3;(Removed Tank 32 as a qualified Waste Stream for the 3H Evaporator System); Updated Table G-4;(Added Tank 32 to the list of waste tanks requiring EFQ Evaluation prior to transfer to the Evaporator System).	FLW	NRP	HPB
764	3/3/16	The main purpose of this ERD is to lower the Tank 8 HLLCP Set Point. Updated Table L-1; (Tk 8 HLLCP set point from 244.25 to 234.00, Tk 40 Required number of turnovers from 19 to 22); Updated Table L-2; (Tk 40 Frequency to Run Slurry Pumps to Stay Out of GRM to 36, Pump Run Q-Time w/o Controls to 56, Seismic Q-Time 113);Updated Table L-3B; Updated Table E-1, and E-1A	FLW	NRP	HPB
763	3/2/16	The main purpose of this ERD is to update Tk 4 Supernate Temperature data. Updated Table L-5; (Tk 4 Supernate Temperature from 38 to 37).	FLW	NRP	HPB
762	2/11/16	The main purpose of this ERD is to raise the Tank 22 HLLCP Set Point. Updated Table L-1; (Tk 22 HLLCP set point from 290.07 to 311.00); Updated Table G-1; (Waste Streams DWPF-RW-01, DWPF-RW-03, and DWPF-IW-01 transfers batches allowed from 87 to 33); Updated Table L-5; (Change the Corrosion Tank Status of Tk 11 from Active to Inactive, Sample Frequency from 90 to 180).	FLW	CBS	NRP
761	2/2/16	The main purpose of this ERD is to update Tk 38 Flammability status. Updated Table L-1;(Tk 38 Flammability Status from Slow to Rapid); Updated Table E-1, and E-1A; Updated Table E-2; Updated Table L-5 (note to extend Tk 40 Supernate Temperature limit to 5/2/16).	FLW	CBS	NRP

*** All Tables that are unchanged were reviewed against previous ERD revision.**
*** All Document Identification (ID) numbers listed in the ERD are the latest approved revisions.**

Table E-1 Airborne/Liquid Dose Concentrations (Based on ICRP 68/72 Values)

Tank	Supernate* Alpha Dose Concentration (Ci Pu-238 equiv./gal)[1]	Supernate* Gamma Dose Concentration (Ci Cs-137equiv./ gal)	Overall Supernate Dose Concentration (Ci Pu-238 equiv./gal)	Sludge/Salt Slurry** Alpha Dose Concentration (Ci Pu-238 equiv./gal)	Sludge/Salt Slurry** Beta Dose Concentration (Ci Sr-90equiv./ gal)	Sludge/Salt Slurry** Gamma Dose Concentration (Ci Cs-137equiv./gal)	Overall Sludge/Salt Slurry** Dose Concentration (Ci Pu-238 equiv./gal)
1	1.72E-04	1.98E+01	2.39E-03	5.02E-03	6.27E-01	1.30E+01	6.80E-03
2	1.72E-04	7.35E+00	9.94E-04	2.86E-03	2.42E-01	4.81E+00	3.53E-03
3	1.72E-04	7.46E+00	1.01E-03	2.85E-03	2.35E-01	4.87E+00	3.52E-03
4	1.56E-04	5.43E-01	2.16E-04	1.01E-01	1.30E+01	1.74E+00	1.08E-01
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	1.72E-04	6.40E-01	2.44E-04	5.96E-02	6.38E+00	1.18E+00	6.31E-02
8	2.07E-04	4.11E-01	2.54E-04	8.25E-01	3.96E+01	2.87E+00	8.46E-01
9	2.04E-04	7.21E+00	1.01E-03	2.79E-03	2.45E-01	4.71E+00	3.45E-03
10	2.04E-04	5.68E-01	2.68E-04	2.60E-03	2.04E-01	3.81E-01	2.75E-03
11	2.09E-04	1.04E-01	2.21E-04	5.43E-01	1.93E+01	1.10E+00	5.53E-01
12	2.08E-04	1.55E-04	2.08E-04	5.38E-01	2.56E+01	1.63E+00	5.51E-01
13	2.04E-04	9.32E-01	3.09E-04	1.27E-01	1.06E+01	1.62E+00	1.33E-01
14	2.04E-04	1.67E+01	2.07E-03	4.94E-03	6.19E-01	1.15E+01	6.55E-03
15	2.07E-04	2.03E-01	2.30E-04	1.80E-01	1.57E+01	1.19E+00	1.89E-01
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	1.92E-04	9.26E-01	2.97E-04	1.38E-01	6.99E+00	1.06E+00	1.41E-01
22	1.86E-04	8.65E-02	1.97E-04	2.02E-01	1.36E+01	2.52E-01	2.09E-01
23	1.92E-04	5.72E-01	2.56E-04	2.38E-02	1.08E+00	5.82E-01	2.44E-02
24	7.08E-03	6.14E+00	7.84E-03	3.54E-03	N/A	3.07E+00	N/A
25	7.21E-03	2.11E+00	7.50E-03	7.04E-03	2.05E-01	1.38E+00	7.33E-03
26	7.21E-03	1.27E+00	7.41E-03	4.16E-02	7.93E-01	1.10E+00	4.21E-02
27	7.21E-03	3.82E+00	7.69E-03	7.03E-03	2.04E-01	2.49E+00	7.44E-03
28	7.21E-03	3.84E+00	7.70E-03	7.04E-03	2.05E-01	2.50E+00	7.46E-03
29	2.04E-04	3.62E-01	2.45E-04	2.49E-03	1.89E-01	2.43E-01	2.62E-03
30	7.08E-03	6.15E+00	7.81E-03	1.24E-02	3.27E-01	4.01E+00	1.30E-02
31	2.04E-04	8.41E+00	1.14E-03	2.49E-03	1.89E-01	5.47E+00	3.20E-03
32	7.08E-03	4.64E+00	7.64E-03	5.57E-01	1.63E+01	3.98E+00	5.66E-01
33	6.97E-03	2.00E+00	7.26E-03	7.61E-02	1.09E+01	2.23E+00	8.20E-02
34	6.70E-03	3.37E+00	7.07E-03	3.57E-01	1.54E+01	3.57E+00	3.65E-01
35	7.08E-03	1.07E+00	7.24E-03	2.84E+00	7.98E+01	4.02E+00	2.88E+00
36	2.04E-04	1.32E+01	1.68E-03	2.76E-03	1.95E-01	8.58E+00	3.82E-03
37	7.08E-03	2.95E+00	7.45E-03	6.96E-03	2.00E-01	1.93E+00	7.30E-03
38	7.08E-03	2.19E-01	7.18E-03	6.96E-03	2.09E-01	1.51E-01	7.12E-03
39	6.50E-03	3.15E-01	6.60E-03	1.87E+00	6.30E+01	1.98E+00	1.90E+00
40	6.93E-03	2.19E-01	6.98E-03	1.30E-01	6.45E+00	1.61E+00	1.34E-01
41	7.08E-03	6.94E-02	7.16E-03	1.17E-02	4.20E-01	7.23E-02	1.20E-02
42	6.95E-03	4.38E+00	7.47E-03	3.00E-01	2.02E+01	4.68E+00	3.11E-01
43	7.08E-03	2.02E-01	7.18E-03	1.78E-01	6.70E+00	3.66E-01	1.82E-01
44	7.21E-03	2.40E+00	7.54E-03	7.04E-03	2.05E-01	1.57E+00	7.35E-03
45	7.21E-03	4.51E+00	7.77E-03	7.04E-03	2.05E-01	2.94E+00	7.51E-03
46	7.21E-03	5.13E+00	7.84E-03	7.04E-03	2.05E-01	3.34E+00	7.55E-03
47	7.21E-03	4.38E+00	7.76E-03	1.64E-02	3.22E-01	3.07E+00	1.69E-02
48	2.50E-06	4.50E-02	7.53E-06	1.25E-06	N/A	2.25E-02	N/A
49	7.08E-03	7.46E-01	7.24E-03	6.96E-03	2.09E-01	4.93E-01	7.16E-03
50	2.30E-06	1.95E-03	2.53E-06	1.34E-02	2.22E-01	8.12E-02	1.36E-02
51	7.00E-03	2.44E-01	7.07E-03	1.27E-01	5.75E+00	1.50E+00	1.31E-01

*Supernate refers to pure liquid with no entrained solids.
**Sludge/Salt Slurry refers to a 50:50 mixture of solids and supernate, if appropriate.

Table E-1A Airborne/Liquid Dose Concentrations (Based on ICRP 68/72 Values)

Tank	Overall Supernate Dose Concentration (Ci Pu-238 equiv./gal)	Overall Sludge/Salt Slurry** Dose Concentration (Ci Pu-238 equiv./gal)
1	2.39E-03	6.80E-03
2	9.94E-04	3.53E-03
3	1.01E-03	3.52E-03
4	2.16E-04	1.08E-01
5	N/A	N/A
6	N/A	N/A
7	2.44E-04	6.31E-02
8	2.54E-04	8.46E-01
9	1.01E-03	3.45E-03
10	2.68E-04	2.75E-03
11	2.21E-04	5.53E-01
12	2.08E-04	5.51E-01
13	3.09E-04	1.33E-01
14	2.07E-03	6.55E-03
15	2.30E-04	1.89E-01
16	N/A	N/A
17	N/A	N/A
18	N/A	N/A
19	N/A	N/A
20	N/A	N/A
21	2.97E-04	1.41E-01
22	1.97E-04	2.09E-01
23	2.56E-04	2.44E-02
24	7.84E-03	N/A
25	7.50E-03	7.33E-03
26	7.41E-03	4.21E-02
27	7.69E-03	7.44E-03
28	7.70E-03	7.46E-03
29	2.45E-04	2.62E-03
30	7.81E-03	1.30E-02
31	1.14E-03	3.20E-03
32	7.64E-03	5.66E-01
33	7.26E-03	8.20E-02
34	7.07E-03	3.65E-01
35	7.24E-03	2.88E+00
36	1.68E-03	3.82E-03
37	7.45E-03	7.30E-03
38	7.18E-03	7.12E-03
39	6.60E-03	1.90E+00
40	6.98E-03	1.34E-01
41	7.16E-03	1.20E-02
42	7.47E-03	3.11E-01
43	7.18E-03	1.82E-01
44	7.54E-03	7.35E-03
45	7.77E-03	7.51E-03
46	7.84E-03	7.55E-03
47	7.76E-03	1.69E-02
48	7.53E-06	N/A
49	7.24E-03	7.16E-03
50	2.53E-06	1.36E-02
51	7.07E-03	1.31E-01

*Supernate refers to pure liquid with no entrained solids.

**Sludge/Salt Slurry refers to a 50:50 mixture of solids and supernate, if appropriate.

Table E-2 Influent Waste Streams Dose Concentrations Based on ICRP 68/72 Values

Source	Airborne Dose Concentration (Ci Pu-238eq/gal) (1)	Gamma Dose Concentration (Ci Cs-137eq/gal) (1)
H Canyon	4.28 E-03	1.8E-01
ETP	6.3 E-07	4.2 E-05
299-H	3.6 E-01	42.0
DWPF	1.34 E-01	2.19 E-01

Notes:

1. The basis for values given in the table above comes from calculation, X-CLC-H-00749.(For DWPF, see Tank 40 Overall Sludge/Salt Slurry Dose Concentration and Supernate Gamma Dose Concentration values; Tables E-1 and E-1A).
2. ARP effluents, MCU influents and effluents, and 512-S effluents to MCU do not contain sufficient source term to trigger an Emergency Action Level and therefore are not included in this table. The basis for this statement is from Documented Safety Analysis (WSRC-SA-2002-00007) and Emergency Planning and Hazards Assessment (S-EHA-G-00002).

Table E-2A MCU Airborne/Liquid Dose Concentrations Based on ICRP 68/72 Values

Supernate Alpha Dose Conc (Ci Pu-238 equiv./gal) (1)	Supernate Am-241 Conc (Ci/gal) (1)	Supernate Gamma Dose Conc (Ci Cs-137 equiv./ gal) (1)	Overall Supernate Dose Conc (Ci Pu-238 equiv./gal) (1)	Sludge/Salt Slurry Alpha Dose Conc (Ci Pu-238 equiv./gal) (1)	Sludge/Salt Slurry Am-241 Conc (Ci / gal) (1)	Sludge/Salt Slurry Beta Dose Conc (Ci Sr-90equiv./ gal) (1)	Sludge/Salt Slurry Gamma Dose Conc (Ci Cs-137equiv./gal) (1)	Overall Sludge/Salt Slurry Dose Conc (Ci Pu-238 equiv./gal) (1)
5.73E-04	**1.92E-06**	**1.10**	**7.05 E-04**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Notes:

1. The basis for values given in the table above comes from calculation, X-CLC-H-00678.

Table E-3 Ancillary Equipment Fill Volumes

References: Documented Safety Analysis (WSRC-SA-2002-00007) and Input Data and Assumptions Calculation (S-CLC-G-00235)

Type Vessel	ID	Total Volume Including Sump (ft3)	Total Volume (gal)	One Sump Volume (ft3)	One Sump Volume (gal)
Valve Box	15/16	7.8	59	0.161	1
Valve Box	21	54.3	407	0.157	1
Valve Box	22	54.3	407	0.157	1
Valve Box	1, 2, 3, & 4	44.4	333	0	0
Valve Box	5	51.2	384	0	0
Valve Box	28a	59.9	449	0.122	1
Valve Box	28b	48.8	366	0	0
Valve Box	LDB17	18.9	142	0	0
Tank 40 Valve Box	NA	132.1	989	0	0
Tank 40 Drain Valve Box	NA	46.4	348	0	0
Tank 42 Valve Box	NA	196.4	1470	0	0
Tank 49 Valve Box	NA	174.2	1304	0	0
Tank 50 Valve Box	NA	202.9	1518	0	0
Tank 51 Valve Box	NA	132.1	989	0	0
Tank 51 Drain Valve Box	NA	84	629	0	0
241-96H Valve Box	96H	256	1916	1.5	11
LDB Drain Cell	NA	629.1	4707	6.25	47
F-Area Catch Tank Encas.	NA	4989	37323	1	7
H-Area Catch Tank Encas.	NA	4989	37323	1	7
FTF - Jet Encas.	NA	1710	37323	0	0
HTF- West Jet Encas.	NA	1805	13504	0	0
Pump Pit	FPP 1	4436.5	33190	8	60
Pump Pit	FPP 2	5015.2	37519	9.1	68
Pump Pit	FPP 3	5015.2	37519	9.1	68
Pump Pit	HPP 1	5902.9	44160	7.88	59
Pump Pit	HPP 2	4940.4	36960	7.88	59
Pump Pit	HPP 3	4940.4	36960	7.88	59
Pump Pit	HPP 4	4940.4	36960	7.88	59
Pump Pit	HPP 5	6043	45208	9.76	73
Pump Pit	HPP 6	6043	45208	9.76	73
Pump Pit	HPP 7	9917.4	74193	25.89	194
Pump Pit	HPP 8	9917.4	74193	25.89	194
Pump Pit	HPP 9	9917.4	74193	25.89	194
Pump Pit	HPP 10	9917.4	74193	25.89	194
Pump Tanks	-	962.5	7201	N/A	N/A
High Point Flush Pit	HPFP	76.4	572	1.042	8
Diversion Box	FDB 1	11258.5	84225	0	0
Diversion Box	FDB 2	1112.7	8325	3.48	26
Diversion Box	FDB 3	252.4	1889	1.06	8
Diversion Box	FDB 4	2897.1	21674	5.744	43
Diversion Box	FDB 5	2491.2	18637	9.3	70
Diversion Box	FDB 6	2944.1	22025	7.1	53
Diversion Box	HDB 1	10974.6	82101	0	0
Diversion Box	HDB 2	3762.5	28148	0	0
Diversion Box	HDB 3	313.5	2346	1	7
Diversion Box	HDB 4	148.6	1112	1.06	8
Diversion Box	HDB 5	159.2	1191	0.98	7
Diversion Box	HDB 6	1502.9	11244	2.44	18
Diversion Box	HDB 7	5046.6	37754	6.61	49
Diversion Box	HDB 8	4395.8	32885	25.17	188
LPDT Cell	N/A	14200	106231	N/A	N/A
Evaporator Cell	16F (2F)	6880	51470	10	75
Evaporator Cell	16H (2H)	6880	51470	10	75
Evaporator Cell	25H (3H)	14903	111490	13	97
Evaporator Max Waste Vol	16F (2F)		4442		
Evaporator Max Waste Vol	16H (2H)		4442		
Evaporator Max Waste Vol	25H (3H)		18607		

Table E-4 Miscellaneous Information

References:

Documented Safety Analysis (WSRC-SA-2002-00007)
Input Data and Assumptions Calculation (S-CLC-G-00235)

Conversions:

1 Ci = 2.2 E+12 dpm
1 ft^3 = 28.316 liter
1 ft^3 = 7.481 gal
1 gal = 3.7853 liter
1 g/cm^3 = 62.43 lb/ft^3
1 watt = 3.413 Btu/hr
1 meter = 3.2808 ft
1 mile = 1.6094 kilometer

Lineal Pipe Volumes

1 in dia. = 0.05 gal/ft
1.5 in dia. = 0.09 gal/ft
2 in dia. = 0.17 gal/ft
3 in dia. = 0.38 gal/ft
4 in dia. = 0.66 gal/ft
5 in dia. = 1.04 gal/ft
6 in dia. = 1.5 gal/ft
8 in dia. = 2.7 gal/ft

Fill Factors	Primary	Annulus
Type I	2710 gal/in	379.4 gal/in
Type II	3500 gal/in	428.4 gal/in
Type III/IIIA	3510 gal/in	428.4 gal/in
Type IV	3540 gal/in	N/A

Use of the waste tank fill factors generates approximate volumes unless credit for the non-linear relationship at higher elevations in the Type I, II, III, and IIIA waste tanks is considered. The Type I, II, III, and IIIA waste tank fill factors are applicable at lower elevations but overestimate the volume of waste at higher elevations when used with the waste height.

Max Flow Rates

Transfer Jet = 125 gpm
Pump Tank = 250 gpm
Telescoping Transfer Pump = 360 gpm

Max Flow Rates for Submersible Mixer Pump (SMP)

Leak at top of column = 55 gpm
Leak for overflow riser = 75 gpm

Maximum Distance To Site Boundary

F Tank Farm	9.39 kilometers
H Tank Farm	11.54 kilometers

Table L-1 Waste Tank Flammability Control Data and Limits

Tank	Area	Flammability Status (Rapid, Slow, Very Slow, Chemical Cleaning) [*A/C* SAC 5.8.2.27.a]	Conductivity Probe Height/Fill Limit [2] (in. off bottom of tank) [*A/C* SAC 5.8.2.44]	Seismic Time to LFL <7 days [*A/C* SAC 5.8.2.27.a]	F Area Ventilation Status [1] for Seismic Event [*A/C* SAC 5.8.2.27.a]	H Area Ventilation Status [1] for Seismic Event [*A/C* SAC 5.8.2.27.a]	H_2 Conc is greater than 60% of LFL in Very Slow Tanks	Hydrogen Analyzer Limit, % LFL [*A/C* SAC 5.8.2.27.b]	Number of Required Turnovers [*A/C* SAC 5.8.2.29.b, 5.8.2.30.b]
1	F	Slow	211.69					12%	13
2	F	Very Slow	210.13					12%	10
3	F	Very Slow	210.04				~~Yes~~	12%	9
4	F	Very Slow	199.91					44%	1
7	F	Slow	202.00					44%	17
8	F	Slow	234.00					12%	13
9	H	Very Slow	210.38					12%	11
10	H	Very Slow	130.13					44%	~~7~~ 11
11	H	Slow	144.88					16%	14
12	H	Closure	~~61.00~~ N/A					~~44%~~ N/A	~~1~~ N/A
13	H	Slow	255.04					44%	18
14	H	Very Slow	99.91					12%	5
15	H	Slow	150.00					12%	22
21	H	Slow	374.69					44%	18
22	H	Slow	311.00	Yes		Priority 2		12%	16
23	H	Very Slow	373.85					12%	6
24	H	Slow	374.79					12%	13
25	F	Slow	365.00					44%	17
26	F	RAPID	365.47	Yes	Priority 1			12%	13
27	F	Slow	360.29					12%	12
28	F	Slow	365.54					12%	12
29	H	Slow	365.07					12%	13
30	H	RAPID	365.10					12%	13
31	H	Slow	365.22					12%	13
32	H	RAPID	300.04					12%	~~18~~ 19
33	F	RAPID	360.29	Yes	Priority 1			12%	15
34	F	RAPID	355.04					12%	15
35	H	RAPID	346.00					12%	17
36	H	RAPID	365.60					12%	13
37	H	RAPID	365.00					12%	13
38	H	RAPID	365.88	Yes		Priority 1		12%	13
39	H	RAPID	290.63	Yes		Priority 2		12%	18
40	H	Slow	222.07					20%	22
41	H	Very Slow	301.00					44%	5
42	H	RAPID	360.00					12%	13
43	H	RAPID	355.57	Yes		Priority 1		12%	14
44	F	Slow	365.57					12%	12
45	F	Slow	365.50					12%	13
46	F	Slow	365.50					12%	13
47	F	RAPID	365.50	Yes	Priority 1			44%	17
48	H		242.75					N/A	12
49	H	Slow	364.75					16%	13
50	H	Very Slow	362.75					N/A	~~12~~ 0
51	H	Slow	125.00					44%	20

1. Priority 1 refers to tanks that may become flammable within 24 hours following a seismic event. Priority 2 refers to tanks that have greater than 24 hours, but less than 7 days to become flammable following a seismic event, AND Chemical Cleaning tanks with 3 days to become flammable (seismic or non-seismic).

Per LCO 3.8.13, the required number of portable ventilation systems is as follows:

6 based on one for each Priority 1 and one for each seven Priority 2 tanks SHALL be located in BLDG. 241-242H

0 Stainless Steel Systems: One assembly SHALL be located in building 241-242H for each Chemical Cleaning waste tank. AND One assembly SHALL be located in building 241-65F for each Chemical Cleaning waste tank.

2. The Conductivity Probe Heights (HLLCP) setpoints are conservative with respect to the calculated fill limits. HLLCP setpoints shall be considered the fill limits required per the *A/C* SAC 5.8.2.44 (Tank Fill Limits) and the TSR LCO 3.8.4. The Tank 48 fill limit is 248" as specified in TSR LCO 3.2.7.
3. Tank Flammability Status must be reclassified OR portable hydrogen monitors must be used to verify the hydrogen concentration is less than 2.5% LFL prior to performing an activity that could release hydrogen gas. If this value is being used to satisfy a yearly or quarterly ventilation requirement for a Very Slow tank, then the Number of Required Turnovers is 12.
4. Tk 50 Number of Required Turnovers will remain at 0 as long the Flammability Status is Very Slow and Table L-2 indicates the GRM is not Required.

Tank 3: H_2 Concentration below 60% of LFL per X-CLC-F-00817 (ERD Rev.725, 4/15/15).

Tank 9 & 11 maximum HLLCP set at 210.38" and 145" respectively to protect against potential siphons during maintenance of the Chromate Water (CRW) system. (U-CLC-G-00040)

Tank 10: Pre Transfer Water Addition.

Tank 11: Tank 11 maximum HLLCP set at 145" protects the assumptions contained in Compliance Strategy – Item 8 as defined in LWO-EVP-2007-00058 (ERD 410, 11/13/07).

*** Tank 12: Per X-CLC-H-00993, Rev.0 and X-CLC-H-01005 Rev.0 (ERD Rev.670, 3/5/14)**.

Tank 22: Priority Status per X-CLC-H-01125.

Tank 27: Do not raise Tk 27 HLLCP Setpoint above 360.29" to prevent an aerosolization event with the Tk 27 Transfer Jet that has a known packing leak.

Tank 32: Pre Transfer into Tk 32 for Vapor Space Turnovers.

Tank 33: For Time to LFL see X-CLC-F-00809.

Tank 50: Tank 50 Flammability Status of Very Slow must be maintained.

Table L-2 Quiescent Times

Tank	Frequency to Run Slurry Pumps to stay out of Gas Release Mode[1] (days) [*A/C* SAC 5.8.2.29.a]	Gas Release Mode Required (Y or N) [If Frequency to Run Slurry Pumps to stay out of Gas Release Mode exceeded][2] [*A/C* SAC 5.8.2.29.a]	Gas Release Mode 'Pump Run Q-Time with no start/stop Pump Operation Controls[3] (days) [*A/C* SAC 5.8.2.29.c]	Gas Release Mode Pump Run Q-Time with start/stop Pump Operation Controls[4] (days)	Seismic Q-Time[5] (days) [*A/C* SAC 5.8.2.28]
4	N/A	N	N/A	N/A	Not Under Quiescent Time Program
7	N/A	N	N/A	N/A	∞
8	25	Y	41	N/A	∞
11	N/A	N	N/A	N/A	∞
12	N/A	N	N/A	N/A	∞
13	N/A	Y	N/A	N/A	Not Under Quiescent Time Program
21	N/A	N	N/A	N/A	Not Under Quiescent Time Program
22	N/A	Y	N/A	N/A	Not Under Quiescent Time Program
40	~~37~~ 36	Y	~~59~~ 56	N/A	~~119~~ 113
42	12	Y	17	N/A	∞
50	N/A	N	N/A	N/A	∞
51	~~171~~ 169	Y	~~205~~ 202	N/A	∞

[1] Initially the operation of slurry pumps beyond the Gas Release Mode (GRM) available time will force the tank to go into Gas Release Mode. A key assumption for this pump run is that the percent hydrogen in the vapor space is reduced to 2.5% LFL either through sufficient vapor space turnovers or the alternative monitoring method described in the Flammability PDD. A value of zero days in this column indicates a VERY SLOW waste tank under the Q-Time program that has an equilibrium hydrogen concentration that is greater than the Safety Analysis Value for trapped gas release. Mixing is prohibited for waste tanks in this configuration. Another key assumption is that the HLLCP is at the level specified in Table L-1; all other tank characteristics (e.g., sludge/salt level, tank level, chemistry, heat loads, etc.) are based on current tank conditions in WCS.

[2] This column denotes those tanks that must enter (GRM) when slurry pumps are run, if the time given in the prior column is exceeded. For sludge tanks that have not been slurried, this column identifies the need to enter GRM before slurrying activities.

[3] The Pump Run Program Q-Time with no pump operation controls utilizes a time dependent hydrogen accumulation methodology and assumes an instantaneous release. In order to utilize these q-times, an adequate number of slurry pumps must have operated at initiation of the Pump Run Q-time. A key assumption for this pump run is that the percent hydrogen in the vapor space is reduced to 2.5% LFL either through sufficient vapor space turnovers or the alternative monitoring method described in the Flammability PDD. Another key assumption is that the HLLCP is at the level specified in Table L-1; all other tank characteristics (e.g., sludge/salt level, tank level, chemistry, heat loads, etc.) are based on current tank conditions in WCS.

[4] The Pump Run Program Q-Time with pump operation controls utilizes a time dependent hydrogen accumulation methodology and credits release rates and ventilation. The Pump Run Program Q-Time with pump operation controls is implemented when the Pump Run Program Q-Time with no pump operation controls is exceeded. Pump operation controls may include number of pumps run, pump speeds and hold times.

[5] The Seismic Q-Time utilizes the maximum amount of retained hydrogen in the sludge to determine when pumps must be run such that an instantaneous release, with no ventilation credited, during a seismic event will not exceed the LFL in less than 7 days. If the tank is incapable of releasing enough hydrogen to exceed the LFL in less than 7 days, the seismic Q-time is infinite.

Tank 40: Pre Transfer Water Addition to Tk 40.
Tank 51: Pre Transfer Water Addition to Tk 51.

Table L-3A Tank 7 Adjusted Quiescent Times

Time Since 4th Pump Last Operated (days)	Frequency to Run Slurry Pumps to stay out of Gas Release Mode (days) [*A/C* SAC 5.8.2.29.a]	Pump Run Q-Time with no start/stop Pump Operation Controls (days) [*A/C* SAC 5.8.2.29.c]	Seismic Q-Time (days) [*A/C* SAC 5.8.2.28]
0	N/A	N/A	∞

*Changes in Table L-3A must be reviewed for impacts to Table L-1 and L-2. Approval of this ERD states that the individual has completed this review.

Table L-3B Tank 40 Adjusted Quiescent Times

Time Since 4th Pump Last Operated (days)	Frequency to Run Slurry Pumps to stay out of Gas Release Mode (days) [*A/C* SAC 5.8.2.29.a]	Pump Run Q-Time with no start/stop Pump Operation Controls (days) [*A/C* SAC 5.8.2.29.c]	Seismic Q-Time (days) [*A/C* SAC 5.8.2.28]
0	36	56	113
4	35	55	112
8	34	54	111
12	33	53	110
16	32	52	109
20	31	51	108
24	30	50	107
28	29	49	106
32	28	48	105
36	27	47	104
40	26	46	103
44	25	45	102
48	24	44	101
52	23	43	100
56	22	42	99
60	21	41	98
64	20	40	97
68	19	39	96
72	18	38	95
76	17	37	94
80	16	36	93
84	15	35	92
88	14	34	91
92	13	33	90
96	12	32	89
100	11	31	88
104	10	30	87
108	9	29	86
112	8	28	85
116	7	27	84
120	6	26	83
124	5	25	82
128	4	24	81
132	3	23	80
136	2	22	79
140	1	21	78
144	0	20	77

Note: This table shows the adjusted Q-times based on running 3 slurry pumps, combined with the number of days since the 4th pump in the tank was used. The Q-times were all rounded down, such that any day increment not listed in the table is governed by the next day increment listed (e.g., the adjusted seismic Q-time is the same for days 1-4, 5-8, 9-12, etc.). (Per the generic methodology defined in X-CLC-H-00541)

*Changes in Table L-3B must be reviewed for impacts to Table L-1 and L-2. Approval of this ERD states that the individual has completed this review.

Table L-3C Tank 51 Adjusted Quiescent Times

Time Since 4th Pump Last Operated (days)	Frequency to Run Slurry Pumps to stay out of Gas Release Mode (days) [*A/C* SAC 5.8.2.29.a]	Pump Run Q-Time with no start/stop Pump Operation Controls (days) [*A/C* SAC 5.8.2.29.c]	Seismic Q-Time (days) [*A/C* SAC 5.8.2.28]	Time Since 4th Pump Last Operated (days)	Frequency to Run Slurry Pumps to stay out of Gas Release Mode (days) [*A/C* SAC 5.8.2.29.a]	Pump Run Q-Time with no start/stop Pump Operation Controls (days) [*A/C* SAC 5.8.2.29.c]	Seismic Q-Time (days) [*A/C* SAC 5.8.2.28]	Time Since 4th Pump Last Operated (days)	Frequency to Run Slurry Pumps to stay out of Gas Release Mode (days) [*A/C* SAC 5.8.2.29.a]	Pump Run Q-Time with no start/stop Pump Operation Controls (days) [*A/C* SAC 5.8.2.29.c]	Seismic Q-Time (days) [*A/C* SAC 5.8.2.28]
0	169	202	∞	228	112	145	∞	456	55	88	∞
4	168	201	∞	232	111	144	∞	460	54	87	∞
8	167	200	∞	236	110	143	∞	464	53	86	∞
12	166	199	∞	240	109	142	∞	468	52	85	∞
16	165	198	∞	244	108	141	∞	472	51	84	∞
20	164	197	∞	248	107	140	∞	476	50	83	∞
24	163	196	∞	252	106	139	∞	480	49	82	∞
28	162	195	∞	256	105	138	∞	484	48	81	∞
32	161	194	∞	260	104	137	∞	488	47	80	∞
36	160	193	∞	264	103	136	∞	492	46	79	∞
40	159	192	∞	268	102	135	∞	496	45	78	∞
44	158	191	∞	272	101	134	∞	500	44	77	∞
48	157	190	∞	276	100	133	∞	504	43	76	∞
52	156	189	∞	280	99	132	∞	508	42	75	∞
56	155	188	∞	284	98	131	∞	512	41	74	∞
60	154	187	∞	288	97	130	∞	516	40	73	∞
64	153	186	∞	292	96	129	∞	520	39	72	∞
68	152	185	∞	296	95	128	∞	524	38	71	∞
72	151	184	∞	300	94	127	∞	528	37	70	∞
76	150	183	∞	304	93	126	∞	532	36	69	∞
80	149	182	∞	308	92	125	∞	536	35	68	∞
84	148	181	∞	312	91	124	∞	540	34	67	∞
88	147	180	∞	316	90	123	∞	544	33	66	∞
92	146	179	∞	320	89	122	∞	548	32	65	∞
96	145	178	∞	324	88	121	∞	552	31	64	∞
100	144	177	∞	328	87	120	∞	556	30	63	∞
104	143	176	∞	332	86	119	∞	560	29	62	∞
108	142	175	∞	336	85	118	∞	564	28	61	∞
112	141	174	∞	340	84	117	∞	568	27	60	∞
116	140	173	∞	344	83	116	∞	572	26	59	∞
120	139	172	∞	348	82	115	∞	576	25	58	∞
124	138	171	∞	352	81	114	∞	580	24	57	∞
128	137	170	∞	356	80	113	∞	584	23	56	∞
132	136	169	∞	360	79	112	∞	588	22	55	∞
136	135	168	∞	364	78	111	∞	592	21	54	∞
140	134	167	∞	368	77	110	∞	596	20	53	∞
144	133	166	∞	372	76	109	∞	600	19	52	∞
148	132	165	∞	376	75	108	∞	604	18	51	∞
152	131	164	∞	380	74	107	∞	608	17	50	∞
156	130	163	∞	384	73	106	∞	612	16	49	∞
160	129	162	∞	388	72	105	∞	616	15	48	∞
164	128	161	∞	392	71	104	∞	620	14	47	∞
168	127	160	∞	396	70	103	∞	624	13	46	∞
172	126	159	∞	400	69	102	∞	628	12	45	∞
176	125	158	∞	404	68	101	∞	632	11	44	∞
180	124	157	∞	408	67	100	∞	636	10	43	∞
184	123	156	∞	412	66	99	∞	640	9	42	∞
188	122	155	∞	416	65	98	∞	644	8	41	∞
192	121	154	∞	420	64	97	∞	648	7	40	∞
196	120	153	∞	424	63	96	∞	652	6	39	∞
200	119	152	∞	428	62	95	∞	656	5	38	∞
204	118	151	∞	432	61	94	∞	660	4	37	∞
208	117	150	∞	436	60	93	∞	664	3	36	∞
212	116	149	∞	440	59	92	∞	668	2	35	∞
216	115	148	∞	444	58	91	∞	672	1	34	∞
220	114	147	∞	448	57	90	∞	676	0	33	∞
224	113	146	∞	452	56	89	∞	680	0	32	∞

Note: This table shows the adjusted Q-times based on running 3 slurry pumps, combined with the number of days since the 4th pump in the tank was used. The Q-times were all rounded down, such that any day increment not listed in the table is governed by the next day increment listed (e.g., the adjusted seismic Q-time is the same for days 1-4, 5-8, 9-12, etc.). (Per the generic methodology defined in X-CLC-H-00541)

*Changes in Table L-3C must be reviewed for impacts to Table L-1 and L-2. Approval of this ERD states that the individual has completed this review.

Table L-4 Salt Tank Gas Release Mode Evaluation [*A/C* SAC 5.8.2.30]

Tank Number	Salt Well Mining: Gas Release Mode Required [1] (Y/N)	Salt Dissolution: Gas Release Mode Required (Y/N)	Interstitial Liquid Removal: Gas Release Mode Required (Y/N)	Pump/Jet Suction Height Delta [2] (inches)	Maximum Liquid Addition for Salt Dissolution to Stay Out of Gas Release Mode (gallons)	Protected Assumptions

[1] Per U-CLC-G-00027, the release of hydrogen due to salt well mining in Types I, II, III/IIIA **will not** require entry into Gas Release Mode (GRM) or become flammable in less than 7 days, as long as the limits stated in the evaluation are protected (refer to Protected Assumptions in Table L-4). Ventilation should be run for adequate number of vapor space turnovers (refer to Table L-1) to bring the vapor space to 2.5% LFL and/or compared the waste tank's LFL reading obtained using a known LFL concentration, prior to salt well mining.

[2] Pump/Jet Suction Height is the maximum distance in a waste tank between the salt level and the pump/jet suction height to stay out of (GRM), during interstitial liquid removal.

*Changes in Table L-4 must be reviewed for impacts to Table L-1. Approval of this ERD states that the individual has completed this review.

Table L-5 Waste Tank Data and Limits [*A/C* Admin Control 5.8.2.13]

Tank	Area	Supernate Temperature Limit (C)	Sludge/Salt Temperature Limit (C)	Wall or Bottom Temperature Limit (C)	Inhibitor Status	Corrosion Tank Status	Sample Frequency (days)	Life Cycle Initiation DATE	Life Cycle Expiration DATE
1	F	N/A	~~105~~ 75**	100	OK	Dry	NA	N/A	N/A
2	F	N/A	~~105~~ 75**	100	OK	Dry	NA	N/A	N/A
3	F	N/A	~~105~~ 75**	100	OK	Dry	NA	N/A	N/A
4	F	37	75	70	OK	Active	90	N/A	N/A
7	F	35	75	70	OK	Active	90	N/A	N/A
8	F	60*	100	95	OK	Active	90	N/A	N/A
9	H	N/A	~~105~~ 75**	100	OK	Dry	NA	N/A	N/A
10	H	N/A	~~105~~ 75**	~~100~~ 70	OK	Dry	NA	N/A	N/A
11	H	100*	100	95	OK	Inactive	180	N/A	N/A
12	H	N/A	N/A	N/A	N/A	Final Stabilization Prep	NA	3/6/14	3/5/24
13	H	100*	100	95	OK	Active	90	N/A	N/A
14	H	N/A	~~105~~ 75**	100	OK	Dry	NA	N/A	N/A
15	H	100*	100	95	OK	Active	180	N/A	N/A
21	H	70*	115	N/A	OK	Active	365	N/A	N/A
22	H	40*	75	N/A	OK	Active	90	N/A	N/A
23	H	70*	115	N/A	OK	Active	180	N/A	N/A
24	H	100*	115	N/A	OK	Inactive	1460	N/A	N/A
25	F	70*	115	110	OK	Active	180	N/A	N/A
26	F	100*	115	110	OK	Active	180	N/A	N/A
27	F	100*	115	110	OK	Inactive	1460	N/A	N/A
28	F	100*	115	110	OK	Inactive	1460	N/A	N/A
29	H	70	115	110	OK	Active	180	N/A	N/A
30	H	100*	115	110	OK	Active	180	N/A	N/A
31	H	75*	115	110	OK	Inactive	1460	N/A	N/A
32	H	100*	115	110	OK	Active	180	N/A	N/A
33	F	50*	115	110	OK	Active	365	N/A	N/A
34	F	50*	115	110	OK	Active	730	N/A	N/A
35	H	50*	115	110	OK	Active	180	N/A	N/A
36	H	100*	115	110	OK	Inactive	1460	N/A	N/A
37	H	100*	115	110	OK	Active	180	N/A	N/A
38	H	100*	100	95	OK	Active	90	N/A	N/A
39	H	70	115	110	OK	Active	180	N/A	N/A
40	H	~~40~~ 75*	75	70	OK	Active	90	N/A	N/A
41	H	60*	115	110	OK	Active	180	N/A	N/A
42	H	60*	115	110	OK	Active	730	N/A	N/A
43	H	100*	100	95	OK	Active	90	N/A	N/A
44	F	60*	115	110	OK	Inactive	1460	N/A	N/A
45	F	N/A	~~115~~ 75**	110	OK	Dry	NA	N/A	N/A
46	F	N/A	~~115~~ 75**	110	OK	Dry	NA	N/A	N/A
47	F	100*	115	110	OK	Inactive	1460	N/A	N/A
48	H	35*	N/A	~~N/A~~ 95	OK	Active	180	N/A	N/A
49	H	70*	115	110	OK	Active	365	N/A	N/A
50	H	39*	115	110	OK	Active	180	N/A	N/A
51	H	40	75	70	OK	Active	90	N/A	N/A

*** Supernate Temperatures are driven by Flammability Requirements**
**** Sludge/Salt Temperatures for "Dry" Tanks are driven by Flammability Requirements**
Tank 10: Pre Transfer Water Addition to Tk 10.
Tanks 12: In accordance with SW11.5-MODE Section 4.1.
Tank 4, & 7: Per WCS.1.5 Inhibitor Status controlled per Supernate Temp Limit
Tank 32 and 37: To support 3H Evaporator Operation (Alignment of Sample Frequency)
Tank 40: Per X-ESR-H-00797, Rev.1 the Supernate Temperature limit can be increased to 75 C until 5/2/16.
Tank 48: Per corrosion program criteria, WSRC-TR-2002-00327
Tank 50: Supernate Temperature driven by LCO 3.8.14
Tank 51: A Supernate Temperature of 75 degree C is allowed during pump runs, and up to 30 days afterwards.

Table L-6 Time for Vapor Space Turnovers in Waste Tanks

[*A/C* SAC 5.8.2.29.b and *A/C* SAC 5.8.2.30.b]

Tank Type	Type I	Type II	Type III/IIIA	Type IV
Tank Number	1-12	13-16	25-51	17-24
Tank Height (in)	294	324	396	411
Tank Full Volume (gallons)	793,411	1,121,357	1,373,238	1,684,055
Tank Fill Factor (gal/in)	2710	3500	3510	3540

The amount of ventilation time needed to perform the required vapor space turnovers from Table L-1, for any waste tank, can be calculated by using the following equations [where, Q_{WT} = ventilation flow rate (ft^3/min), H_w = level of waste in tank (inches), and N_T= number of Vapor Space Turnovers required by Table L-1]:

The Type I Waste Tank Ventilation Time is determined as follows.

$$\text{Type I Ventilation Time (hr)} = \frac{(294 - H_W) \times 2710 \times N_T}{Q_{WT} \times (448.86)}$$

The Type II Waste Tank Ventilation Time is determined as follows.

$$\text{Type II Ventilation Time (hr)} = \frac{(324 - H_W) \times 3500 \times N_T}{Q_{WT} \times (448.86)}$$

The Type III/IIIA Waste Tank Ventilation Time is determined as follows.

$$\text{Type III/IIIA Ventilation Time (hr)} = \frac{(396 - H_W) \times 3510 \times N_T}{Q_{WT} \times (448.86)}$$

The Type IV Waste Tank Ventilation Time is determined as follows.

$$\text{Type IV Ventilation Time (hr)} = \frac{[1{,}684{,}055 - (H_W \times 3540)] \times N_T}{Q_{WT} \times (448.86)}$$

Note 1: Equations are found in X-CLC-G-00048, "Vapor Space Turnovers for Transfer Facilities and Waste Tanks."

Note 2: The DSA minimum flow rate is 72 scfm for a "Rapid" Tank, and 45 scfm for a "Slow" tank. The only waste tanks permitted to contain ESP SLUDGE SLURRY are Waste Tanks 40 and 51. Therefore, Tanks 40 and 51 DSA minimum flow rate is 188 scfm for a "Rapid Tank". The "Rapid Tank" minimum flow rate of 72 scfm would be sufficient when Tanks 40 and 51 do not contain ESP SLUDGE SLURRY. These values may be used for Q_{WT}, when installed ventilation is being used to perform the vapor space turnovers, if unable to measure the actual flow rate.

Note 3: Vapor space turnover calculations shall be performed in accordance with the requirements of the E7 Manual and shall be recorded in the STE log book or per appropriate procedures.

Note 4: When supplemental ventilation is used, SW11.1-WTE-3-4.21, shall be used to establish the measured flow rate and calculate the required vapor space turnovers. When supplemental ventilation is used in conjunction with the installed system, the time for completing the required vapor space turnover shall not take any credit for installed ventilation flow. Only the measured flow from the supplemental ventilation source is used

Table L-7 Time for Twelve Vapor Space Turnovers in Other Tank Farm Facilities

Transfer System	Location	Time Needed to complete 12 Vapor Space Turnovers for installed ventilation (hr)	12 Vapor Space Turnover Factor (Cubic Ft)
Pump Pit Sumps LCO 3.7.1	FPP-1	7.7	53238.0
	FPP-2	16.4	60182.4
	FPP-3	16.4	60182.4
	HPP-2	See Note 3	59284.8
	HPP-3	See Note 3	59284.8
	HPP-4	See Note 3	59284.8
	HPP-5	21	72516.0
	HPP-6	21	72516
	HPP-7	26.4	119008.0
	HPP-8	26.4	119008
	HPP-9	26.4	119008.0
	HPP-10	26.4	119008
Diversion Box Sumps LCO 3.7.2	FDB-2	1.9	13352.4
	FDB-3	—	3028.8
	HDB-2	2.5	45150.0
	HDB-3	—	3762
	HDB-4	—	1783.2
	HDB-5	—	1910.4
	HDB-6	1.5	18034.8
	HDB-7	3.4	60559.2
	HDB-8	2.9	52749.6
Valve Boxes/Drain Valve Boxes, HPFP LCO 3.7.4	HPFP	—	916.8
	Tank 15/16 Value Box	—	93.6
	Tank 21 Value Box	—	651.6
	Tank 22 Value Box	—	651.6
	Tank 40 Value Box	—	1585.2
	Tank 40 Drain Value Box	—	556.8
	Tank 42 Value Box	—	2356.8
	Tank 49 Value Box	—	2092.4
	Tank 50 Value Box	—	2434.8
	Tank 51 Value Box	—	1585.2
	Tank 51 Drain Value Box	—	1008
Transfer Facility Ventilation LCO 3.7.5			
	FPP-1/FDB-2	9.7	66590.4
	FPP-2/FPP-3/FDB-4	21.2	155130.0
	HPP-2/HPP-3/HPP-4/HDB-2	49.6	223004.4
	HPP-5/HPP-6	21	145032.0
HDB-8 Complex Process Vessel Ventilation LCO 3.7.6	HPT-7/HPT-8/HPT-9/HPT-10	2.6	46200
LDB Drain Cell LCO 3.7.11	LDB Drain Cell	—	7549.2
242-16H and 242-16F Evaporatior Cell Sump Level LCO 3.7.12	242-16F Evaporator Cell Sump	1.9	68848.8
	242-16H Evaporator Cell Sump	1.3	68848.8
Type 1 Wast Tank Annuli LCO 3.8.5	F & H Area Tank Farms	Note 2	190788.3
Type 2 Wast Tank Annuli LCO 3.8.5	F & H Area Tank Farms	Note 2	234729.7

NOTES:

1. If supplemental ventilation is required to perform 12 vapor space turnovers, the time required is determined by using the following equation: $Time_{Measured}$ (hours) = 12 Vapor Space Turnover Factor ÷ Ventilation Flow Rate (SCFH). The 12 Vapor Space Turnover Factor is documented in the above table.

- The TSR Bases require 12 volume turnovers for the entire volume of the structure used when the current vapor space volume cannot be accurately determined. If the vapor space volume can be accurately determined when using installed ventilation, the following equation may be used: $Time_{Installed}$ = (Time needed to complete 12 Vapor Space Turnovers (hr) $*V_{NEW})/V$. Where, V_{New} = accurately determined vapor space volume of system (ft^3), V = entire volume of system (ft^3). If the vapor space volume can be accurately determined when using measured ventilation, the following equation may be used to determine the time required to perform 12 vapor space turnovers. $Time_{Measured'}$ = ($Time_{Measured}$ $*V_{NEW})/V$.
- Vapor space turnover calculations shall be performed in accordance with the requirements of the E7 Manual and shall be recorded in the STE log book or per appropriate procedures.
- When supplemental ventilation is used, SW11.1-WTE-3-4.21, shall be used to establish the measured flow rate and calculate the required vapor space turnovers. When supplemental ventilation is used in conjunction with the installed system, the time for completing the required vapor space turnover shall not take any credit for installed ventilation flow. Only the measured flow from the supplemental ventilation source is used.

2. When using installed ventilation on a Type I & II Waste Tank Annulus, determine the flow rate and time required to achieve 12 vapor space turnovers in accordance with SW11.6-SR-3.8.5 Section 4.3 or 4.4 as appropriate. (S-CLC-G-00274, Rev 0).

3. Obtain value from Shift Technical Engineer.

Table L-8 Tank 48 Hydroxide Concentration

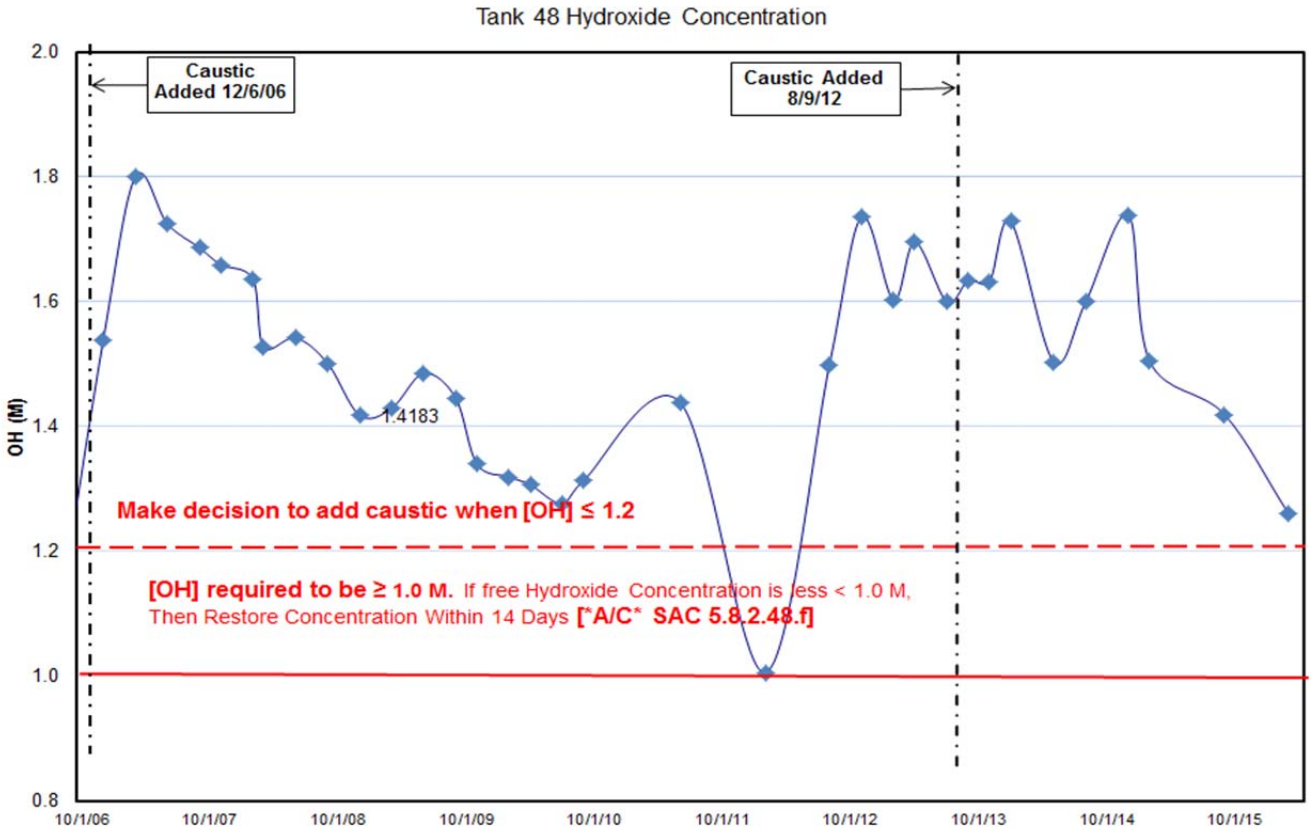

Table G-1 Waste Acceptance Program Approved Liquid Waste Streams (*A/C* SAC 5.8.2.15)

Facility	Waste Stream Numbers	Description	Status	Receipt Requirements (Must verify every transfer)	Designated Receipt Tank(s)	References
ETP	ETP-RW-001	ETP Evaporator Bottoms	**Unapproved**	pH>12	50H or through HDB-8 to one of the other H-Area tanks	**X-WCP-H-00002**
DWPF	DWPF-RW-01	DWPF Recycle from "Normal Operations"	**Approved**	T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch. Total number of transfers allowed **46** (Note 5)	22H	X-SD-G-00005
	DWPF-RW-02	DWPF Recycle from "Normal Operations"	**Unapproved**	T<50°C before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-SD-G-00005
	DWPF-RW-03	DWPF Recycle from "Infrequent Operations"	**Approved**	pH >12, T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch. Total number of transfers allowed **46** (Note 5)	22H	X-SD-G-00005
	DWPF-RW-04	DWPF Recycle from "Infrequent Operations"	**Unapproved**	pH >12, T<50°C before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-SD-G-00005
	DWPF-IW-01	HEME/HEPA Dissolution	**Unapproved**	T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch a minimum of 215 gallons of nitrite per each RCT batch. Total number of transfers allowed **46** (Note 5)	22H	X-SD-G-00005
	DWPF-IW-02	HEME/HEPA Dissolution	**Unapproved**	T<50°C before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-SD-G-00005
	DWPF-RW-05	512-S Filtrate to MCU	Approved	20°C ≤ T ≤ 29°C	Salt Solution – Receipt Tk 1 or Tk 2	X-SD-G-00005
	DWPF-RW-06	512-S to Tk 50	**Approved**	None	50H	X-SD-G-00005
	DWPF-RW-07	DWPF Recycle from "Normal Operations"	**Unapproved**	T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch.	41H	X-SD-G-00005
	DWPF-RW-08	DWPF Recycle from "Infrequent Operations"	**Unapproved**	pH >12,T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch.	41H	X-SD-G-00005
	DWPF-RW-09	DWPF Recycle from "Normal Operations"	**Unapproved**	T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch Total number of transfers allowed 66 (Note 4)	13H	X-SD-G-00005
	DWPF-RW-10	DWPF Recycle from "Infrequent Operations"	**Unapproved**	pH >12, T<50°C before transfer AND Minimum of 75 gallons of hydroxide per RCT batch and a minimum of 215 gallons of nitrite per each RCT batch Total number of transfers allowed 66 (Note 4)	13H	X-SD-G-00005

Table G-1 Waste Acceptance Program Approved Liquid Waste Streams (*A/C* SAC 5.8.2.15) Continuation

H-Canyon	HCAN-RW-03	General Purpose Evaporator Bottoms	**Approved**	pH >12, T<50°C before transfer.	50H	X-WCP-H-00008 SRNS-E1120-2016-00009 Expires 4/20/2017
	HCAN-RW-04	LAW in Standby	Unapproved	Requires sulfate evaluation prior to waste stream approval.	Inactive waste stream	X-WCP-H-00008
	HCAN-RW-05	LAW from HM Processing	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008
	HCAN-RW-06	HAW	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008
	HCAN-RW-08	Sumps, Spent Solvent Wash and Sample Returns	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008
	HCAN-RW-09	HB-Line Digested Resin	Unapproved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008
	HCAN-RW-10	AFS-2 Column Waste	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt% (Note 7)	39H	X-WCP-H-00034
	HCAN-RW-11	AFS-2 Filtrate Waste	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt% (Note 7)	39H	X-WCP-H-00034
	HCAN-IW-01	PVV Filter Flush	Approved	pH>12, T<50°C before transfer Must verify Tank 39 liquid level is greater than 199 inches See Note 1 below, Ammonia < 0.064 wt%	39H	X-WCP-H-00008
	HCAN-IW-02	Laboratory Sample Returns	Approved	pH>12, T<50°C before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008

Descriptions: Regular Waste (RW) – Routine Waste Stream, Irregular Waste (IR) – Variable Composition, Special Waste (SW) – High Variable Waste Stream
Acronyms: WCP – Waste Compliance Plan, SWCP – Special Waste Compliance Plan, T – Temperature of waste
Status: Approved – Acceptable to Receive, Unapproved – Not Acceptable to Receive, Draft WCP – Being accepted based on existing acceptance criteria
Notes:

1. Post PVV flush requirements for pump tanks can be found in Table 4 of X-CLC-H-00490. The number of flushes required is based on the wt% ammonia in the waste transfer. This data must be acquired from H-canyon personnel.
2. Changes in Table G-1 must be reviewed for impacts to Table E-2. Approval of this ERD states that the individual has completed this review. PVV Flush Stream to remain Approved pending confirmation that adequate flush volume has passed through H Pump Tank 5 to reduce the ammonia contribution of LFL to less than 5%.
3. Deleted.
4. The total number of transfers allowed applies to the receipt waste tank, not the individual waste stream. Total number of transfers derived from X-CLC-S-00323.
5. The total number of transfers allowed applies to the receipt waste tank, not the individual waste stream. Total number of transfers derived from X-CLC-S-00350.
6. Though flushing the waste header is not required, flush solution may be generated and transferred upon request. If requested, the flush solution will be generated in neutralization Tank 16.1 with water and NaOH added to create a 1.2M NaOH in 750 gallon batches. Though not sampled, the volume, pH, and free OH information will be entered into WG08. The flushes do not contain any nitrates and the specific nuclear material (SNIM), fissle content, and ammonia content of the flush solution are considered zero (0).
7. Flushing of the Waste Header may be required. The flush stream will be named according to what was transferred prior to the flush (i.e. HCAN-RW-10-FLUSH) . The flushes do not contain any nitrates and the specific nuclear material (SNIM), fissile content, and ammonia content of the flush solution are considered zero (0).

Table G-2 Waste Streams from F/H Tank Farms to Other Facilities

Facility	Description	Current WCP/Approval Status	Deviations
ETP	2F, 2H, and 3H Evaporator Overheads, Retention Basins, and H-Area Catch Tank transfers to ETP	X-WCP-H-00013, Approved	ETP-RFD-2015-00006; Expires 6/8/16 3H deviation Limits Beta/Gamma 1000 dpm/mL for Cs-137 & RCG = 2.57E-02 dpm/mL. ETP-RFD-2015-00005; Expires 6/8/16 2H steam condensate routed to 8H Retention Basin. ETP-RFD-2015-00004; Expires 6/8/16 Copper = 0.10 mg/L to 281-8H.
DWPF	Tank Farm transfers to DWPF	X-WCP-H-00019, Approved	X-ESR-H-00762
Saltstone	Tank 50 transfers to Saltstone	X-WCP-H-00014, Approved	

Table G-3 Evaporator Enrichment Monitoring & Evaporator Feed Qualification

TANK 38 ENRICHMENT MONITORING

Sample Type	Sample Date	U-235 (eq) Enrichment (wt%)	Pu wt% of fissionable elements (wt%)
Surface	**10/8/15**	**0.97[1]**	**0.014[1]**
Sub Surface	**10/21/15**	**0.65[1]**	**0.004[1]**

TANK 43 ENRICHMENT MONITORING

Sample Type	Sample Date	U-235 (eq) Enrichment (wt%)	Pu wt% of fissionable elements (wt%)
Surface	**10/7/15**	**0.66[1]**	**0.003[1]**
Sub Surface	**10/7/15**	**0.65[1]**	**0.005[1]**

1. **These results are good through June 5, 2016.** For reference see X-CLC-H-00794, Rev. 16

Evaporator Feed Qualification

3H System Tank	Si and NAS Evaluation Approval Date[1]	Si and NAS Evaluation Expiration Date[2]
Tank 32	Unapproved	Unapproved
Tank 30	Unapproved	Unapproved
Tank 37	Unapproved	Unapproved

1. Per X-CLC-G-00026
2. Evaluation expiration date does not include 25% grace period

Table G-3A ARP/MCU Batch Feed Qualification

Batch	U-235(eq) Enrichment (wt%)	Status	Supplemental Shielding at MCU
Salt Batch 7	≤ 3.0 [1]	Approved [1, 5]	Not Required [2]
Salt Batch 8	≤ 3.0 [3]	Approved [3,6,7,8,9,10]	Not Required [4]

1. X-ESR-H-00551, Rev.1
2. N-ESR-H-00025, Rev.0
3. X-ESR-H-00739, Rev.0
4. N-ESR-H-00028, Rev.0
5. X-ESR-H-00752, Rev.0
6. X-ESR-H-00759, Rev.0
7. X-ESR-H-00784, Rev.0
8. X-ESR-H-00806, Rev.0
9. X-ESR-H-00763, Rev.0
10. X-ESR-H-00827, Rev.0

Table G-4 Waste Tanks Requiring Compensatory Measures for 2F and 3H Evaporator Feed

Area	Tank	Footnote	OH ≤ 1 M	Feed Qual Calc #
F	4	1	Yes	
F	7	1	Yes	X-CLC-G-00079
F	8	1	No	X-CLC-G-00092
H	11	1	No	
H	12	1	Yes	
H	13	1	No	X-CLC-H-01057
H	21	1	No	
H	22	1	Yes	
H	23	1	No	
H	24	1	No	
F	25	1	No	
F	26	1	No	X-CLC-F-00831
F	27	1	No	
H	29	1	No	X-CLC-H-01105
H	30	1	No	
H	32	1	No	
F	33	1	No	X-CLC-G-00073
F	34	1	No	X-CLC-G-00071
H	35	1	No	X-CLC-G-00107
H	37	1	No	
H	38	1	Yes	
H	39	1	No	X-CLC-H-01117
H	40	1	Yes	X-CLC-G-00099
H	41	1	Yes	
H	42	1	No	X-CLC-H-01047
H	43	1	No	
H	47	1	No	
H	49	1	No	
H	50	1	No	
H	51	1	Yes	X-CLC-H-01057

NOTES:

1. Tanks that contain DWPF Recycle waste and require an Engineering Evaluation to be performed before a transfer from these Tanks into the Evaporator System

TABLE G-5
DELETED

Table G-6 Waste Tanks In or Beyond Sampling and Characterization Phase Requiring Applicability Determination for Unreviewed Waste Management Question (UWMQ)

Area	Tanks In or Beyond Sampling and Characterization Phase
F	5
F	6
H	12
H	16
F	17
F	18
F	19
F	20

NOTE - This table is for engineering use only. There are no operational procedures for this table. Thus, no actions for operations personnel are required.

Table G-7 Waste Tanks declared as "Bulk Waste Removal Efforts (BWRE) Complete"

Area	Tanks Declared BWRE Complete
F	4
F	7
F	8
H	11
H	12

Addition of contaminated liquids is prohibited unless approved by SCDHEC and EPA. Contact the **Environmental & Waste Characterization** group for questions related to adding additional liquid to tanks listed in Table G-7.
Note: For further information See Appendix L of the Federal Facility Agreement (FFA). [WSRC-OS-94-42]