N-ESR-G-00001

HIGH LEVEL WASTE EMERGENCY RESPONSE DATA AND WASTE TANK DATA

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Rev	Date	Description	BY	CHK	APP
902	12/30/19	The main purpose of this ERD is to support the Tk 41 to Tk 23 transfer. Updated Table E-1and E-1A; Updated Table L-1; (Tk 23 Spontaneous Level limit from N/A to 373.85”); Updated Table L-2; (Tk 23 GRM Q-Time to N/A, GRM Required to N, Seismic Release Q-Time to N/A, Spontaneous Release Q-Time to Infinity, and NFPA Q-Time to Infinity, Tk 51 GRM Q-Time from 32 to 30, Seismic Release Q-Time from 62 to 37, Spontaneous Release Q-Time from 62 to 37, and NFPA Q-Time from 54 to 34); Updated Table L-3E; Updated Table L-9; Updated Table G-4	FLW	NRP	CMR
901	12/16/19	The main purpose of this ERD is to support the Tk 41 to Tk 35 transfer. Updated Table E-1and E-1A; Updated Table L-1; (Tk 9 Flammability Status from Slow to Very Slow, Hydrogen Analyzer Limit from 44% to N/A, Required Turnovers from 16 to 18, Tk 14 Required Turnovers from 5 to 6, Tk 35 Spontaneous Level limit from N/A to 346”); Updated Table L-2; (Tk 35 GRM Q-Time to N/A, GRM Required to Y, Seismic Release Q-Time to N/A, Spontaneous Release Q-Time to Infinity, and NFPA Q-Time to Infinity, Tk 51 GRM Q-Time from 28 to 32, Seismic Release Q-Time from 35 to 62, Spontaneous Release Q-Time from 35 to 62, and NFPA Q-Time from 33 to 54); Updated Table L-3E; Updated Table L-4A; Updated Table L-4B; Updated Table L-5; (Tk 9 Sample Frequency from 730 to 180, Tk 25 Sample Frequency from 365 to 180 days, Tk 51 Supernate Temperature limit from 60 to 50); Updated Table L-9; Updated Table G-2; Updated Table G-3A; Updated Table G-4; Updated Table G-7	FLW	NRP	CMR
900	12/10/19	The main purpose of this ERD is to update Table L-4A. Updated Table L-4A.	FLW	NRP	CMR
899	11/13/19	The main purpose of this ERD is to support lowering the Tk 41 HLLCP set point. Updated Table L-1; (Tk 41 HLLCP from 301” to 200”, Spontaneous Level limit from N/A to 200”); Updated Table L-2; (Tk 41 GRM Q-Time to N/A, Seismic Release Q-Time to N/A, Spontaneous Release Q-Time to Infinity, and NFPA Q-Time to Infinity, Tk 51 GRM Q-Time from 31 to 28, Seismic Release Q-Time from 50 to 35, Spontaneous Release Q-Time from 50 to 35, and NFPA Q-Time from 44 to 33); Updated Table L-3E; Updated Table L-4A; Updated Table G-4; Updated Table L-9	FLW	AH	NRP
898	11/6/19	The main purpose of this ERD is to support the Tk 41 to Tk 23 transfer. Updated Table L-5; (Tk 15 Sample Frequency from 180 to 365 days, Tk 23 Supernate Temperature limit from 65 to 50, Tk 41 Inhibitor Status from ADD to OK); Updated Table G-4	FLW	NRP	CMR
897	10/28/19	The main purpose of this ERD is to support CSTF SWPF integration. Updated Table E-2; Updated Table G-1; Updated Table G-2; Updated Table G-3A; Updated Table G-8.	FLW	NRP	CMR

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

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-137 equiv./ 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-90 equiv./ gal)	Sludge/Salt Slurry** Gamma Dose Concentration (Ci Cs-137 equiv./gal)	Overall Sludge/Salt Slurry** Dose Concentration (Ci Pu-238 equiv./gal)
1	1.72E-04	1.983E01	2.393E-03	5.015E-03	6.207E-01	1.300E01	6.792E-03
2	1.72E-04	7.355E00	9.958E-04	2.861E-03	2.427E-01	4.805E00	3.525E-03
3	1.74E-04	1.082E-03	1.738E-04	3.013E-03	2.497E-01	1.558E-02	3.145E-03
4	1.56E-04	4.193E-01	2.028E-04	9.859E-02	1.236E01	1.584E00	1.052E-01
5	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
6	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
7	1.73E-04	3.164E-01	2.089E-04	5.775E-02	5.871E00	8.733E-01	6.092E-02
8	2.07E-04	5.293E-01	2.672E-04	4.916E-01	2.279E01	1.931E00	5.037E-01
9	2.06E-04	1.984E00	4.304E-04	2.792E-03	2.284E-01	1.305E00	3.731E-03
10	2.06E-04	9.241E-02	2.170E-04	2.612E-03	2.033E-01	7.005E-02	2.726E-03
11	2.09E-04	2.060E-04	2.095E-04	5.291E-01	1.726E01	9.399E-01	5.383E-01
12	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
13	2.06E-04	5.898E-01	2.727E-04	1.248E-01	1.027E01	1.281E00	1.303E-01
14	2.04E-04	1.572E01	1.977E-03	4.913E-03	5.462E-01	1.083E01	8.018E-03
15	2.07E-04	5.292E-01	2.672E-04	5.389E-02	3.967E00	7.407E-01	6.774E-02
16	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
17	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
18	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
19	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
20	0.00E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00	0.000E00
21	1.92E-04	4.728E-01	2.462E-04	3.283E-01	1.664E01	1.012E00	3.371E-01
22	1.87E-04	6.332E-02	1.954E-04	1.885E-01	1.200E01	2.722E-01	1.948E-01
23	1.95E-04	1.509E-01	2.124E-04	9.106E-03	3.382E-01	1.649E-01	1.030E-02
24	7.08E-03	6.105E00	7.827E-03	6.015E-03	1.112E-01	5.189E00	6.653E-03
25	7.21E-03	1.280E00	7.405E-03	7.043E-03	1.882E-01	8.407E-01	7.790E-03
26	7.21E-03	1.175E00	7.393E-03	3.562E-02	6.515E-01	9.922E-01	3.607E-02
27	7.21E-03	3.801E00	7.687E-03	7.041E-03	2.480E-01	2.482E00	7.448E-03
28	7.21E-03	3.814E00	7.691E-03	7.044E-03	2.535E-01	2.487E00	7.455E-03
29	2.06E-04	1.199E00	3.409E-04	2.490E-03	1.899E-01	7.873E-01	2.677E-03
30	7.08E-03	5.662E00	7.749E-03	1.229E-02	3.481E-01	3.693E00	1.289E-02
31	2.06E-04	8.359E00	1.143E-03	2.490E-03	1.921E-01	5.441E00	3.199E-03
32	7.08E-03	2.825E00	7.430E-03	5.859E-01	1.594E01	2.715E00	5.945E-01
33	6.97E-03	2.102E00	7.268E-03	7.655E-02	1.031E01	2.258E00	8.220E-02
34	6.70E-03	3.302E00	7.068E-03	3.566E-01	1.497E01	3.504E00	3.648E-01
35	7.08E-03	1.051E00	7.233E-03	2.717E00	4.555E01	3.767E00	2.875E00
36	2.06E-04	1.318E01	1.683E-03	2.758E-03	1.992E-01	8.577E00	3.821E-03
37	7.08E-03	3.718E00	7.530E-03	6.959E-03	2.301E-01	2.424E00	7.350E-03
38	7.08E-03	7.661E-02	7.149E-03	9.537E-03	3.339E-01	1.641E-01	9.730E-03
39	6.50E-03	4.904E-01	6.671E-03	1.793E00	8.828E01	2.043E00	1.839E00
40	6.97E-03	1.801E-01	7.017E-03	1.232E-01	5.618E00	1.420E00	1.263E-01
41	7.08E-03	1.733E-01	7.157E-03	8.904E-03	2.577E-01	1.291E-01	9.813E-03
42	6.95E-03	6.204E00	7.674E-03	3.338E-01	2.228E01	6.092E00	3.462E-01
43	7.08E-03	2.610E-01	7.168E-03	1.736E-01	6.056E00	4.035E-01	1.768E-01
44	7.21E-03	2.404E00	7.533E-03	7.044E-03	2.538E-01	1.571E00	7.352E-03
45	7.21E-03	4.340E00	7.748E-03	7.045E-03	2.502E-01	2.829E00	7.492E-03
46	7.21E-03	4.943E00	7.815E-03	7.045E-03	2.504E-01	3.221E00	7.536E-03
47	7.21E-03	4.357E00	7.752E-03	1.636E-02	3.622E-01	3.053E00	1.689E-02
48	2.50E-06	4.212E-02	7.223E-06	1.248E-06	1.780E-05	2.106E-02	3.611E-06
49	7.08E-03	4.645E-01	7.195E-03	6.955E-03	2.724E-01	3.099E-01	7.133E-03
50	7.50E-04	3.116E-03	7.539E-04	6.395E-03	1.037E-01	3.404E-02	6.453E-03
51	7.20E-03	2.594E-01	7.259E-03	1.067E-01	3.886E00	4.992E-01	1.202E-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	2.393E-03	6.792E-03
2	9.958E-04	3.525E-03
3	1.738E-04	3.145E-03
4	2.028E-04	1.052E-01
5	0.00E00	0.00E00
6	0.00E00	0.00E00
7	2.089E-04	6.092E-02
8	2.672E-04	5.037E-01
9	4.304E-04	3.731E-03
10	2.17E-04	2.726E-03
11	2.095E-04	5.383E-01
12	0.00E00	0.00E00
13	2.727E-04	1.303E-01
14	1.977E-03	8.018E-03
15	2.672E-04	6.774E-02
16	0.00E00	0.00E00
17	0.00E00	0.00E00
18	0.00E00	0.00E00
19	0.00E00	0.00E00
20	0.00E00	0.00E00
21	2.462E-04	3.371E-01
22	1.954E-04	1.948E-01
23	2.124E-04	1.03E-02
24	7.827E-03	6.653E-03
25	7.405E-03	7.79E-03
26	7.393E-03	3.607E-02
27	7.687E-03	7.448E-03
28	7.691E-03	7.455E-03
29	3.409E-04	2.677E-03
30	7.749E-03	1.289E-02
31	1.143E-03	3.199E-03
32	7.43E-03	5.945E-01
33	7.268E-03	8.22E-02
34	7.068E-03	3.648E-01
35	7.233E-03	2.875E00
36	1.683E-03	3.821E-03
37	7.53E-03	7.35E-03
38	7.149E-03	9.73E-03
39	6.671E-03	1.839E00
40	7.017E-03	1.263E-01
41	7.157E-03	9.813E-03
42	7.674E-03	3.462E-01
43	7.168E-03	1.768E-01
44	7.533E-03	7.352E-03
45	7.748E-03	7.492E-03
46	7.815E-03	7.536E-03
47	7.752E-03	1.689E-02
48	7.223E-06	3.611E-06
49	7.195E-03	7.133E-03
50	7.539E-04	6.453E-03
51	7.259E-03	1.202E-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
H-Canyon AFS-2	7.36 E-01	5.85 E-03
ETP	6.3 E-07	4.2 E-05
299-H	3.6 E-01	42.0
DWPF	1.263 E-01	1.801 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-1A and E-1).
2. MCU effluents, and SWPF to Tk 50 influents 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) or HTTP://PCEWEB.SRS.GOV/INPUTDECK

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, Chemical Cleaning) [*A/C* SAC 5.8.2.27.a]	Conductivity Probe Height/Fill Limit (in. off bottom of tank) [*A/C* SAC 5.8.2.44] (See Note 2)	Spontaneous Level Limit (See Note 2)	Waste Tank Contains Saltcake Above Sludge (See Note 5)	Ventilation Status for Seismic Event [*A/C* SAC 5.8.2.27.d & 5.8.2.27.e] (See Note 1)	H2 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 & 5.8.2.29.d]
1	F	Slow	211.69	N/A	Y			12 %	12
2	F	Very Slow	210.13	N/A	Y			N/A	10
3	F	Slow	233.00	N/A				44 %	12
4	F	Very Slow	199.91	199.91				N/A	1
7	F	Slow	221.00	221.00				44 %	17
8	F	Rapid	234.00	224.00				12 %	13
9	H	Very Slow	228.00	N/A	Y			N/A	18
10	H	Very Slow	165.00	N/A	Y			N/A	13
11	H	Slow	144.88	144.88				16 %	15
13	H	Slow	175.00	175.00				44 %	~~18~~ 19
14	H	Very Slow	99.91	N/A	Y			N/A	6
15	H	Very Slow	150.00	90.00			Yes	N/A	17
21	H	Slow	374.69	374.69				44 %	17
22	H	Slow	248.00	248.00				44 %	19
23	H	Very Slow	373.85	373.85				N/A	8
24	H	Slow	374.79	N/A				12 %	13
25	F	Slow	365.00	N/A				12 %	16
26	F	Rapid	215.00	215.00		Priority 1		44 %	~~16~~ 17
27	F	Slow	365.00	N/A				12 %	12
28	F	Slow	365.54	N/A				12 %	12
29	H	Slow	365.07	N/A				12 %	12
30	H	Rapid	365.10	N/A		Priority 1		12 %	13
31	H	Slow	365.22	N/A				12 %	12
32	H	Rapid	300.04	N/A		Priority 2		12 %	26
33	F	Rapid	360.29	360.29		Priority 1		12 %	14
34	F	Rapid	355.04	N/A				12 %	14
35	H	Rapid	346.00	346.00				12 %	~~15~~ 16
36	H	Rapid	365.60	N/A				12 %	12
37	H	Rapid	365.00	N/A		Priority 1		12 %	12
38	H	Rapid	365.88	N/A		Priority 1		12 %	12
39	H	Rapid	290.63	N/A				12 %	See Note 3
40	H	Slow	170.00	159.80				44 %	25
41	H	Slow	200.00	200.00	Y			40 %	17
42	H	Rapid	360.00	360.00				12 %	13
43	H	Rapid	355.57	355.57		Priority 1		12 %	~~13~~ 14
44	F	Slow	365.57	N/A				12 %	12
45	F	Slow	365.50	N/A	Y			12 %	12
46	F	Slow	365.50	N/A	Y			12 %	12
47	F	Rapid	365.50	N/A				12 %	16
48	H	N/A	242.75	N/A				~~N/A~~ 12 %	12
49	H	Slow	364.75	N/A				16 %	13
50	H	Very Slow	290.00	290.00				N/A	12
51	H	Rapid	275.00	275.00				44 %	19

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:
7 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. Maximum tank level shall be determined from the lower of the HLLCP setpoint or the Spontaneous Level limit. If Spontaneous Q-time is non-infinite, Spontaneous Level Limit is N/A. Additionally, TSR LCO 3.2.7 states that the Tank 48 liquid level shall be less than 248".
3. Portable hydrogen monitors must be used to verify hydrogen concentration is less than or equal to 2.5% LFL prior to performing Free Supernate Removal activity. If this value is being used to satisfy a yearly or quarterly ventilation requirement 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.
5. Y indicates Waste Tanks containing exposed saltcake or saltcake underneath supernate that has been present for less than or equal to 4 days.

Tank 11: Tk 11 maximum HLLCP set at 145" protects assumptions contained in Compliance Strategy – Item 8 as defined in LWO-EVP-2007-00058 (ERD 410).
Tank 50: Tank 50 Flammability Status of Very Slow must be maintained as required by U-ESS-G-00007, 2.2.6.

Table L-2 Quiescent Times

Tank	Gas Release Mode (GRM) Q-Time (days) (See Note 1)	Gas Release Mode Required (Y or N) (If GRM Q-Time exceeded ["A/C" SAC 5.8.2.29.a]) (See Note 2)	Seismic Release Q-Time ["A/C" SAC 5.8.2.28.a] (days) (See Note 3)	Spontaneous Release Q-time ["A/C" SAC 5.8.2.28.a] (days) (See Note 4)	NFPA 69 Q-time (days) (See Note 5)
4	N/A	N	∞	∞	∞
7	N/A	N	∞	∞	∞
8	~~58~~ 45	Y	∞	∞	∞
11	N/A	N	∞	∞	∞
13	N/A	N	∞	∞	∞
15	N/A	N	N/A	∞	∞
21	N/A	N	∞	∞	∞
22	~~N/A~~ 280	~~N~~ Y	∞	∞	∞
23	N/A	N	N/A	∞	∞
26	~~N/A~~ 215	Y	N/A	~~∞~~ 530	~~∞~~ 436
33	~~10~~ N/A	Y	N/A	∞	∞
35	N/A	N	N/A	∞	∞
40	91	Y	114	88	100
41	N/A	~~Y~~ N	N/A	∞	∞
42	N/A	Y	∞	∞	∞
43	N/A	Y	N/A	∞	∞
50	N/A	N	∞	∞	∞
51	30	Y	37	37	34

[1] Initially the operation of waste tank mixing devices 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 the assumed initial condition 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.

[2] If the time given in the previous column is exceeded, this column denotes those tanks that must enter GRM when slurry pumps are run. For Waste Tanks that do not have a GRM Q-Time (e.g. N/A) this column identifies the need to enter GRM before slurrying activities.

[3] 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. Seismic Q-time is calculated based on actual/projected waste tank level.

[4] The Spontaneous Q-Time denotes when pumps must be run such that an instantaneous release from slurried sludge will not exceed the LFL in the time protected by the waste tank flammability classification. Spontaneous Q-time is calculated based on actual/projected waste tank level.

[5] The NFPA Q-Time denotes when pumps must be run such that an instantaneous release from the slurried sludge will not exceed 60% of the LFL based on actual/projected waste tank level.

Tank 13: Pre Transfer Water Addition.
Tank 15: Pre Transfer Water Addition.
Tank 22: See X-CLC-H-00983.
Tank 26: See X-CLC-F-00858.
Tank 33: See X-CLC-F-00809.
Tank 40: Pre Transfer Water Addition.
Tank 41: See X-CLC-H-01188.
Tank 51: Tk 26 to 51 and Pre Transfer Water Addition.

Table L-3A Tank 13 Adjusted Quiescent Times

Tank	Time Since 100% Release (days)	Gas Release Mode (GRM) Q-Time(days)	Seismic Release Q-Time [*A/C * SAC 5.8.2.28.a] (days)	Spontaneous Release Q-time [*A/C* SAC 5.8.2.28.a] (days)	NFPA 69 Q-time (days)
13	0	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 15 Adjusted Quiescent Times

Tank	Time Since 100% Release (days)	Gas Release Mode (GRM) Q-Time(days)	Seismic Release Q-Time [*A/C * SAC 5.8.2.28.a] (days)	Spontaneous Release Q-time [*A/C* SAC 5.8.2.28.a] (days)	NFPA 69 Q-time (days)
15	0	N/A	N/A	∞	∞

*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 26 Adjusted Quiescent Times

Tank	Time Since 100% Release (days)	Gas Release Mode (GRM) Q-Time(days)	Seismic Release Q-Time [*A/C * SAC 5.8.2.28.a] (days)	Spontaneous Release Q-time [*A/C* SAC 5.8.2.28.a] (days)	NFPA 69 Q-time (days)
26	0	215	N/A	530	436
26	4	214	N/A	529	435
26	8	213	N/A	528	434
26	12	212	N/A	527	433
26	16	211	N/A	526	432
26	20	210	N/A	525	431
26	24	209	N/A	524	430
26	28	208	N/A	523	429
26	32	207	N/A	522	428
26	36	206	N/A	521	427
26	40	205	N/A	520	426
26	44	204	N/A	519	425
26	48	203	N/A	518	424
26	52	202	N/A	517	423
26	56	201	N/A	516	422
26	60	200	N/A	515	421
26	64	199	N/A	514	420
26	68	198	N/A	513	419
26	72	197	N/A	512	418
26	76	196	N/A	511	417
26	80	195	N/A	510	416
26	84	194	N/A	509	415
26	88	193	N/A	508	414
26	92	192	N/A	507	413
26	96	191	N/A	506	412
26	100	190	N/A	505	411
26	104	189	N/A	504	410
26	108	188	N/A	503	409
26	112	187	N/A	502	408
26	116	186	N/A	501	407
26	120	185	N/A	500	406
26	124	184	N/A	499	405
26	128	183	N/A	498	404
26	132	182	N/A	497	403
26	136	181	N/A	496	402
26	140	180	N/A	495	401

*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.
Note: For continuation of Adjusted Q-Time Days contact the Process Chemistry group.

Table L-3D Tank 40 Adjusted Quiescent Times

Tank	Time Since 100% Release (days)	Gas Release Mode (GRM) Q-Time(days)	Seismic Releaase Q-Time [*A/C * SAC 5.8.2.28.a] (days)	Spontaneous Release Q-time [*A/C* SAC 5.8.2.28.a] (days)	NFPA 69 Q-time (days)
40	0	91	114	88	100
40	4	90	113	87	99
40	8	89	112	86	98
40	12	88	111	85	97
40	16	87	110	84	96
40	20	86	109	83	95
40	24	85	108	82	94
40	28	84	107	81	93
40	32	83	106	80	92
40	36	82	105	79	91
40	40	81	104	78	90
40	44	80	103	77	89
40	48	79	102	76	88
40	52	78	101	75	87
40	56	77	100	74	86
40	60	76	99	73	85
40	64	75	98	72	84
40	68	74	97	71	83
40	72	73	96	70	82
40	76	72	95	69	81
40	80	71	94	68	80
40	84	70	93	67	79
40	88	69	92	66	78
40	92	68	91	65	77
40	96	67	90	64	76
40	100	66	89	63	75
40	104	65	88	62	74
40	108	64	87	61	73
40	112	63	86	60	72
40	116	62	85	59	71
40	120	61	84	58	70
40	124	60	83	57	69
40	128	59	82	56	68
40	132	58	81	55	67
40	136	57	80	54	66
40	140	56	79	53	65
40	144	55	78	52	64
40	148	54	77	51	63
40	152	53	76	50	62
40	156	52	75	49	61
40	160	51	74	48	60
40	164	50	73	47	59
40	168	49	72	46	58
40	172	48	71	45	57
40	176	47	70	44	56
40	180	46	69	43	55
40	184	45	68	42	54
40	188	44	67	41	53
40	192	43	66	40	52
40	196	42	65	39	51
40	200	41	64	38	50
40	204	40	63	37	49
40	208	39	62	36	48
40	212	38	61	35	47
40	216	37	60	34	46
40	220	36	59	33	45
40	224	35	58	32	44
40	228	34	57	31	43
40	232	33	56	30	42
40	236	32	55	29	41
40	240	31	54	28	40
40	244	30	53	27	39
40	248	29	52	26	38
40	252	28	51	25	37
40	256	27	50	24	36
40	260	26	49	23	35
40	264	25	48	22	34
40	268	24	47	21	33
40	272	23	46	20	32
40	276	22	45	19	31
40	280	21	44	18	30
40	284	20	43	17	29
40	288	19	42	16	28
40	292	18	41	15	27
40	296	17	40	14	26
40	300	16	39	13	25
40	304	15	38	12	24
40	308	14	37	11	23
40	312	13	36	10	22
40	316	12	35	9	21
40	320	11	34	8	20
40	324	10	33	7	19
40	328	9	32	6	18
40	332	8	31	5	17
40	336	7	30	4	16
40	340	6	29	3	15
40	344	5	28	2	14
40	348	4	27	1	13
40	352	3	26	0	12

Note: This table shows the adjusted Q-times based on 75% release, combined with the number of days since the 100% release 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-3D 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-3E Tank 51 Adjusted Quiescent Times

Tank	Time Since 100% Release (days)	Gas Release Mode (GRM) Q-Time(days)	Seismic Release Q-Time [*A/C * SAC 5.8.2.28.a] (days)	Spontaneous Release Q-time [*A/C* SAC 5.8.2.28.a] (days)	NFPA 69 Q-time (days)
51	0	30	37	37	34
51	4	29	36	36	33
51	8	28	35	35	32
51	12	27	34	34	31
51	16	26	33	33	30
51	20	25	32	32	29
51	24	24	31	31	28
51	28	23	30	30	27
51	32	22	29	29	26
51	36	21	28	28	25
51	40	20	27	27	24
51	44	19	26	26	23
51	48	18	25	25	22
51	52	17	24	24	21
51	56	16	23	23	20
51	60	15	22	22	19
51	64	14	21	21	18
51	68	13	20	20	17
51	72	12	19	19	16
51	76	11	18	18	15
51	80	10	17	17	14
51	84	9	16	16	13
51	88	8	15	15	12
51	92	7	14	14	11
51	96	6	13	13	10
51	100	5	12	12	9
51	104	4	11	11	8
51	108	3	10	10	7
51	112	2	9	9	6
51	116	1	8	8	5
51	120	0	7	7	4

Note: This table shows the adjusted Q-times based on 75% release, combined with the number of days since the 100% release 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-3E 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-4A Salt Dissolution Evaluation [*A/C* SAC 5.8.2.29]

Tank	Salt Well Mining: GRM Required (Y/N/NA)	Transfer Pump Recirculation: GRM Required (Y/N/NA)	Liquid Addition: GRM Required (Y/N/NA)	Interstitial Liquid Removal: GRM Required (Y/N/NA)	Pump/Jet Suction Height Delta (inches) See Note 1	Maximum Liquid Addition to Stay Out of GRM (gallons)	Protected Assumptions	Status
10	N See Note 4	N See Note 4	N See Note 4	N/A	N/A	235,440 above the Salt Cake Layer See Note 4	HLLCP = 165” SAV = 60% Supernate Temperature limit = 70 degrees C; Tank Classification = Very Slow	Approved
Note: If any column contains “Y”, WCS Online must be updated								

Table L-4A Salt Dissolution Evaluation [*A/C* SAC 5.8.2.29] Continuation

Tank	Salt Well Mining: GRM Required (Y/N/NA)	Transfer Pump Recirculation: GRM Required (Y/N/NA)	Liquid Addition: GRM Required (Y/N/NA)	Interstitial Liquid Removal: GRM Required (Y/N/NA)	Pump/Jet Suction Height Delta (inches) See Note 1	Maximum Liquid Addition to Stay Out of GRM (gallons)	Protected Assumptions	Status
41	N See Note 3	N See Note 3	N See Note 3	N See Note 3	N/A	347,490 gallons above the Salt Cake layer	HLLCP ≤ 200”; SAV = 60%; Supernate Temperature limit = 70 degrees C; Tank Classification = Slow or Rapid, Hmix ≤ 0.2303	Approved
Note: If any column contains “Y”, WCS Online must be updated								

1. 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.
2. Deleted
3. Refer to X-CLC-H-01188, Rev.2
4. Refer to X-CLC-H-01269, Rev.1

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

Table L-4B Sludge Agitation Evaluation [*A/C* SAC 5.8.2.29 & SAC 5.8.2.51]

Tank Number	Sludge Agitation: Gas Release Mode Required (Y/N/NA)	Protected Assumptions
7	N See Note 3	HLLCP = 221”, SAV = 60%, Supernate Temperature limit = 60 degrees C, Tank Classification = Slow
21	See Note 2	HLLCP = 374.69”, SAV = 60%, Hmix ≤ .22, Supernate Temperature limit = 65 degrees C, Tank Classification = Slow, Minimum level = 279.7”
26	N See Note 4	HLLCP = 215”, SAV = 60%, Hmix ≤ 0.35, Supernate Temperature limit = 60 degrees C, Tank Classification = Rapid
Note: If any column contains “Y”, WCS Online must be updated		

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

1. Deleted.
2. Per X-CLC-H-01305, Rev.0
3. Per X-CLC-F-00855, Rev.0
4. Per X-CLC-F-00858, Rev.1

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	N/A	N/A	N/A
2	F	N/A	~~105~~ 75	100	OK	Dry	N/A	N/A	N/A
3	F	~~16~~ 60	105	~~55~~ 110	~~ADD~~ OK	Active	~~90~~ 180	N/A	N/A
4	F	36	75	70	OK	Active	90	N/A	N/A
7	F	60	~~75~~ 60	70	OK	Active	180	N/A	N/A
8	F	60	~~100~~ 60	95	OK	Active	90	N/A	N/A
9	H	60	~~105~~ 60	100	OK	Active	180	N/A	N/A
10	H	50	~~105~~ 60	70	ADD	Active	90	N/A	N/A
11	H	60	100	95	OK	Active	90	N/A	N/A
13	H	60	115	110	OK	Active	180	N/A	N/A
14	H	N/A	~~105~~ 75	100	OK	Dry	N/A	N/A	N/A
15	H	60	105	100	OK	Inactive	365	N/A	N/A
21	H	65	~~115~~ 60	N/A	OK	Active	~~365~~ 180	N/A	N/A
22	H	40	75	N/A	OK	Active	90	N/A	N/A
23	H	~~65~~ 50	~~115~~ 105	N/A	~~ADD~~ OK	Active	180	N/A	N/A
24	H	65	115	N/A	OK	Inactive	1460	N/A	N/A
25	F	60	115	110	OK	Active	180	N/A	N/A
26	F	50	~~100~~ 60	95	OK	Active	90	N/A	N/A
27	F	60	115	110	OK	Inactive	1460	N/A	N/A
28	F	60	115	110	OK	Inactive	1460	N/A	N/A
29	H	60	100	95	OK	Active	180	N/A	N/A
30	H	90	115	110	OK	Active	180	N/A	N/A
31	H	60	115	110	OK	Inactive	1460	N/A	N/A
32	H	100	~~115~~ 100	~~110~~ 95	OK	Active	~~180~~ 90	N/A	N/A
33	F	50	115	110	OK	Active	730	N/A	N/A
34	F	60	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	95	~~115~~ 100	~~110~~ 95	OK	Active	~~180~~ 90	N/A	N/A
38	H	40	75	70	OK	Active	90	N/A	N/A
39	H	65	~~115~~ 105	~~110~~ 100	OK	Active	180	N/A	N/A
40	H	40	~~75~~ 60	70	OK	Active	730	N/A	N/A
41	H	50	~~75~~ 60	70	~~ADD~~ OK	Active	90	N/A	N/A
42	H	60	115	110	OK	Active	730	N/A	N/A
43	H	40	75	70	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	100	OK	Dry	N/A	N/A	N/A
46	F	N/A	~~115~~ 75	100	OK	Dry	N/A	N/A	N/A
47	F	95	115	110	OK	Inactive	1460	N/A	N/A
48	H	35	N/A	~~N/A~~ 95	OK	Active	90	N/A	N/A
49	H	60	115	110	OK	Active	730	N/A	N/A
50	H	39	~~105~~ 60	100	OK	Active	180	N/A	N/A
51	H	50	~~100~~ 60	95	OK	Active	90	N/A	N/A

Tks 3, 7, 8, 9, 13, 15, 21, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 42, 44, 47, 48, 49, 50 & 51 Supernate Temperatures limits are driven by Flammability Requirements.
Type I, II, III, and IIIA Tanks (Excluding Tank 50) with a Supernate Temperature limit > 60ºC shall be classified as Rapid as required by U-ESS-G-00007, 2.2.8.
Type IV Tanks with a Supernate Temperature limit > 65 ºC shall be classified as Rapid as required by U-ESS-G-00007, 2.2.9.
Waste Tanks identified in the Quiescent Time Program with non-infinite Seismic and/or Spontaneous Q-Times (Tanks 40 and 51) shall maintain a Supernate and Sludge/Salt Temperature limit of less than or equal to 60ºC. The Waste Tanks that exceed this limit shall meet the requirements established per requirement 2.2.18 of U-ESS-G-00007.
Tks 1, 2, 14, 45, & 46 Sludge/Salt Temperatures for "Dry" Tanks that are not undergoing Salt Dissolution are driven by Flammability Requirements.
Waste Tanks undergoing Bulk Saltcake dissolution or Sludge Activities; or having Infinite Seismic and Spontaneous Q-Times but non-infinite GRM or NFPA Q-times shall maintain a Sludge/Salt temperature limit of less than or equal to 60ºC (WSRC-TR-2002-00087). This applies to Tks 8, 9, 10, 21, 26, 41, and 50.
Tank 4: Per WCS Inhibitor Status controlled per Supernate Temp Limit
Tank 48: Per corrosion program criteria, WSRC-TR-2002-00327
Tank 50: Supernate Temperature driven by LCO 3.8.14
Tanks 10, 11, and 41: Salt Dissolution processing.
Tank 23 Inhibitor Status per WCS-2020-00021
Tanks 23 and 41 Supernate Temperature/Inhibitor Status per U-PDDEV-H-00005.

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)	791,100	1,118,500	1,373,238	1,685,000
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.

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

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

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

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

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

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

$$Type\ IV\ Ventilation\ Time\ (hr) = \frac{[1{,}685{,}000 - (H_W \times 3540)] \times N_T}{Q_{WT} \times (448.86)}$$

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
Pump Pit Sumps LCO 3.7.1	FPP-1	7.7	53,238.0
	FPP-2	16.4	60,182.4
	FPP-3	16.4	60,182.4
	HPP-2	See Note 3	59,284.8
	HPP-3	See Note 3	59,284.8
	HPP-4	See Note 3	59,284.8
	HPP-5	21	72,516.0
	HPP-6	21	72,516.0
	HPP-7	26.4	119,008.8
	HPP-8	26.4	119,008.8
	HPP-9	26.4	119,008.8
	HPP-10	26.4	119,008.8
Diversion Box Sumps LCO 3.7.2	FDB-2	1.9	13,352.4
	FDB-3	-----	3,028.8
	HDB-2	2.5	45,150.0
	HDB-3	-----	3,762.0
	HDB-4	-----	1,783.2
	HDB-5	-----	1,910.4
	HDB-6	1.5	18,034.8
	HDB-7	3.4	60,559.2
	HDB-8	2.9	52,749.6
Valve Boxes/Drain Valve Boxes, HPFP LCO 3.7.4	HPFP	-----	916.8
	Tank 15/16 Valve Box	-----	93.6
	Tank 21 Valve Box	-----	651.6
	Tank 22 Valve Box	-----	651.6
	Tank 40 Valve Box	-----	1,585.2
	Tank 40 Drain Valve Box	-----	556.8
	Tank 42 Valve Box	-----	2,356.8
	Tank 49 Valve Box	-----	2,090.4
	Tank 50 Valve Box	-----	2,434.8
	Tank 51 Valve Box	-----	1,585.2
	Tank 51 Drain Valve Box	-----	1,008.0
Transfer Facility Ventilation LCO 3.7.5	FPP-1/FDB-2	9.7	66,590.4
	FPP-2/FPP-3/FDB-4	21.2	155,130.0
	HPP-2/HPP-3/HPP-4/HDB-2	49.6	223,004.4
	HPP-5/HPP-6	21	145,032.0
HDB-8 Complex Process Vessel Ventilation LCO 3.7.6	HPT-7/HPT-8/HPT-9/HPT-10	2.6	46,200.0
LDB Drain Cell LCO 3.7.11	LDB Drain Cell	-----	7,549.2
242-16H Evaporator Cell Sump Level LCO 3.7.12	242-16H Evaporator Cell Sump	1.3	68,848.8
Type 1 Waste Tank Annuli LCO 3.8.5	F& H Area Tank Farms	Note 2	190,788.3
Type II Waste Tank Annuli LCO 3.8.5	F& H Area Tank Farms	Note 2	234,729.7
242-25H Evaporator Cell LCO 3.6.3	242-25H Evaporator Cell	2.5 (Note 4)	185,163.8

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

4 M-CLC-H-03528

Table L-8 Tank 48 Hydroxide Concentration

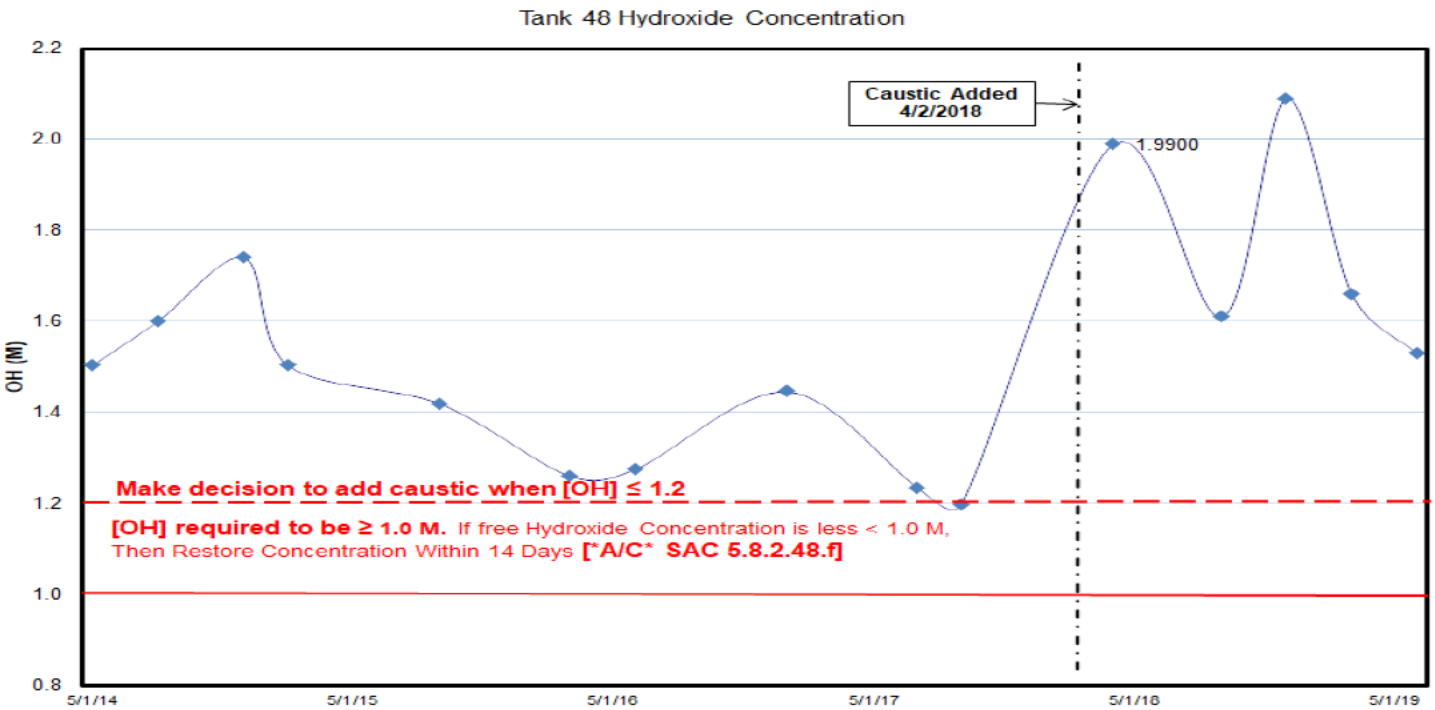

Table L-9 Transient Level Limits for Waste Tanks Containing Mixing Devices (*A/C* SAC 5.8.2.29.f & 5.8.2.29.g)

Tank	Slurried Sludge Only	Transient Level Limit (inches)
4	Yes	254
7	Yes	136 (if Riser 8 slurry pump is operated)
		136 (if Riser 3 slurry pump is operated)
11	Yes	254
13	Yes	245
15	No*	166
21	Yes	411
22	Yes	318
23	No*	N/A
26	No*	238
35	No*	N/A
40	Yes	238
41	No*	238
42	No*	317
43	No*	N/A
50	Yes	356
51	Yes	238

Note: For Waste Tanks containing only Slurried Sludge and Mixing Device has been operated within 180 days, the transient level limit does not apply.

* Settled/Slurried Sludge
Tank 7: Per X-CLC-F-00855
Tank 26: Per X-CLC-F-00814
Tank 41: Per X-CLC-H-01188.

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	**Approved**	pH>12	50H or through HDB-8 to one of the other H-Area tanks	X-WCP-H-00002 X-WDEV-H-00001
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 128 (Note 5)	22H	X-WCP-S-00001
	DWPF-RW-02	DWPF Recycle from "Normal Operations"	**Unapproved**	T<50ºC before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-WCP-S-00001
	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 128 (Note 5)	22H	X-WCP-S-00001
	DWPF-RW-04	DWPF Recycle from "Infrequent Operations"	**Unapproved**	pH >12, T<50ºC before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-WCP-S-00001
	DWPF-IW-01	HEME/HEPA Dissolution	**Approved**	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 128 (Note 5)	22H	X-WCP-S-00001
	DWPF-IW-02	HEME/HEPA Dissolution	**Unapproved**	T<50ºC before transfer AND Minimum of 260 gallons of hydroxide and minimum of 280 gallons of nitrite per RCT batch	38H, 43H	X-WCP-S-00001
	DWPF-RW-07	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.	41H	X-WCP-S-00001
	DWPF-RW-08	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.	41H	X-WCP-S-00001
	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-WCP-S-00001
	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-WCP-S-00001

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

Facility	Waste Stream Numbers	Description	Status	Receipt Requirements (Must verify every transfer)	Designated Receipt Tank(s)	References
H-Canyon	HCAN-RW-03	General Purpose Evaporator Bottoms	**Approved**	pH >12, T<50 C before transfer.	39H	X-WCP-H-00008
	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<50ºC before transfer, Ammonia < 0.0164 wt%	39H	X-WCP-H-00008
	HCAN-RW-09	HB-Line Digested Resin	**Approved**	pH>12, T<50ºC before transfer, Ammonia < 0.0164 wt% (Note 7)	39H	X-WCP-H-00008 X-CLC-A-00112
	HCAN-RW-10	AFS-2 Column Waste	**Approved**	pH>12, T<50ºC before transfer, Ammonia < 0.0164 wt% (Note 7)	39H	X-WCP-H-00034
	HCAN-RW-11	AFS-2 Filtrate Waste	**Approved**	pH>12, T<50ºC before transfer, Ammonia < 0.0164 wt% (Note 7)	39H	X-WCP-H-00034
	HCAN-IW-01	PVV Filter Flush	**Approved**	pH>12, T<50ºC 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
SWPF	SWPF-RW-01	Decontaminated Salt Solution	**Unapproved**	pH>12, Cs-137 < 1.29E+06 pCi/mL, Isopar-L < =87.5 mg/L,Temp <= 40ºC (104ºF), Density > 1.2 g/mL	50H	X-WCP-J-00001

Descriptions: Regular Waste (RW) – Routine Waste Stream, Irregular Waste (IW) – 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-00380, Rev.10, and X-CLC-H-01178 Rev.2.
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 (SNM), 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 (e.g., HCAN-RW-10-FLUSH) . The flushes do not contain any nitrates and the specific nuclear material (SNM), 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	2H, and 3H Evaporator Overheads, Retention Basins, and H-Area Catch Tank transfers to ETP	X-WCP-H-00013, Approved	X-WDEV-H-00007 (Expires 12/11/2020) X-WDEV-H-00003 X-WDEV-H-00005
	Inhibited Water heel from F-Tank Farm 10K IW Tank to ETP.	X-WCP-F-00013, Approved	
511-S	Tank 49 Salt transfers through 511-S	X-WCP-H-00042, Approved	
DWPF	Tank 40 Sludge transfers to DWPF	X-WCP-H-00042, Unapproved	
Saltstone	Tank 50 transfers to Saltstone	X-WCP-H-00043, Unapproved	
SWPF	Tank 49 Transfer to SWPF	X-WCP-H-00029, 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	**7/27/19**	**0.75[1]**	**0.029[1]**
Sub Surface	**7/27/19**	**0.78[1]**	**0.049[1]**

TANK 43 ENRICHMENT MONITORING

Sample Type	Sample Date	U-235 (eq) Enrichment (wt%)	Pu wt% of fissionable elements (wt%)
Surface	**7/27/19**	**0.78[1]**	**0.046[1]**
Sub Surface	**7/27/19**	**0.79[1]**	**0.046[1]**

1. **These results are good through March 25, 2020.** For reference see X-CLC-H-00794, Rev.25

Evaporator Feed Qualification

3H System Tank	Si and NAS Evaluation Approval Date[1]	Si and NAS Evaluation Expiration Date[2]
Tank 32	9/19/19	3/18/20
Tank 30	9/19/19	3/18/20
Tank 37	9/19/19	3/18/20

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

Table G-3A SWPF Batch Feed Qualification

Batch	Current Location	Status
SWPF Batch 1	Tank 49H	Approved[1,3]
SWPF Batch 2	Tank 21H	Approved[2,3]

1. X-ESR-H-01007
2. X-ESR-H-01019
3. X-ESR-Z-00048

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

Area	Tank	Footnote	OH ≤ 1 M	Feed Qual Calc #
F	3	2	Yes	
F	4	1	Yes	
F	7	1	No	
H	9	2	Yes	
H	10	2	Yes	
H	11	1	No	
H	13	1	Yes	
H	15	1	No	
H	21	1	No	
H	22	1	Yes	
H	23	1	Yes	
H	24	1	No	
F	25	1	No	
F	26	1	No	
F	27	1	No	
H	29	1	Yes	
F	33	1	No	
F	34	1	No	
H	35	1	No	
H	38	1	No	
H	39	1	No	
H	40	1	Yes	
H	41	1	Yes	
H	42	1	No	
H	43	1	No	
H	47	1	No	
H	49	1	No	
H	50	1	No	
H	51	1	No	

NOTES:

1. Tanks that contain DWPF Recycle waste and require an Evaporator Feed Qualification Evaluation to be performed before a transfer from these Tanks material into the 3H Evaporator System

2. These Tanks undergoing Bulk Salt Dissolution activities and require an Evaporator Feed Qualification Evaluation prior to transferring the waste tank material into the 3H 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	Approved Transfers by SCDHEC and EPA
F	4	None
F	7	Tank 3 Salt Dissolution Transfers***
F	8	Tk 51 2018 Leachate*
H	10	None
H	11	Tank 10 to Tank 11 TCCR Transfers**
H	15	None

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]

*ARF-021659 is the SCDHEC approval letter allowing aluminum leachate from the 2018 LTAD campaign. (No Appreciable solids)
*ARF-021646 is the EPA approval letter allowing aluminum leachate from the 2018 LTAD campaign. (No Appreciable solids)

** ARF-021296 is the SCDHEC approval letter allowing Tank 10 to Tank 11 TCCR Transfers. (No Appreciable solids)
** ARF-021292 is the EPA approval letter allowing Tank 10 to Tank 11 TCCR Transfers. (No Appreciable solids)

*** ARF-021463 is the SCDHEC approval letter allowing Tank 3 Salt Dissolution Transfers. (No Appreciable solids)
*** ARF-021485 is the EPA approval letter allowing Tank 3 Salt Dissolution Transfers. (No Appreciable solids)

Table G-8 Free Supernate Removal Activities

Facility	Waste Tank	Designated Location	Status	References
HTF	Tk 32	3H Evap	Approved	X-CLC-H-01136
HTF	Tk 43	2H Evap	Approved	X-CLC-H-01136
HTF	Tk 49	SWPF	Approved	X-CLC-H-01136
HTF	Tk 50	Saltstone	Approved	X-CLC-H-01136

Note: Reviewer must ensure Waste Tank total solids level is within limits established by X-CLC-H-01136.

Table G-9
Nitrite Feed Qualification[1]

Tank	Nitrite (NO2) ≥ 0.281 M
32	Yes

Note 1: Per EFQ PDD (WSRC-TR-2003-00055); in support of the 242-25H Evaporator DSA Addendum (U-DSA-H-00003).

Table G-10
242-25H Evaporator Feed Inhalation Dose Potential[1]
[SAC 5.8.2.51]

242-25H Evap Feed ≤ IDP Limit	IDP Evaluation Approval Date[2]	Evaluation Expiration Date[3]
Yes	9/19/19	3/18/20

Note 1: Per 242-25H Evaporator DSA Addendum (U-DSA-H-00003) Waste transferred to the 242-25H Evaporator shall be less than or equal to 1.85E+07 rem/gal (this value does not include uncertainty).

Note 2: Per X-ESR-H-00944
Note 3. Evaluation expiration date does not include 25% grace period

Table G-11
TCCR Batch Qualification Table

[5.8.2.57.f]

Phase	Batch	Water Addition Limit	Tk 10 STP Suction Height	Tk 10 Designated Thermocouple	Tk 10 Minimum Temperature Limit	Number of IX Column Flushes to Tk 10
Batch Prep	3	Per GRM[1]	N/A	N/A	N/A	N/A

1. Refer to X-CLC-H-01269, Rev.1

Table G-12
TCCR Tank 11 to Tank 50 Batch Qualification Table

Batch	Current Location	Status
1A	Tank 11	Unapproved [1,2]

1. X-ESR-H-00983, Rev.1
2. X-ESR-H-00975, Rev.0