swissport
fueling services
Phone: 206.246.0407
Fax : 206.246.0409
2350 S. 190th St. Seattle, WA 98188

August 20, 2012

Washington Utilities and Transportation Commission
Attn: Mr. David D. Lykken, Pipeline Safety Director
1300 S. Evergreen Park Dr. S.W., P.O. Box 47250, Olympia, WA 98594-7250
(360) 664-1160

Regarding: 2012 Standard Liquid Safety Inspection- SeaTac Fuel Facilities, LLC.
Swissport Fueling corrective action- **Cathodic Protection**

On June 25, 2012, the Washington Utilities and Transportation Commission (WUTC) approved the Swissport request for an extension to complete analysis and remediation of the low cathode protection (CP) reading on cell 1 for tank 115 until August 21, 2012 Swissport Fueling would like to offer the completed corrective action for CP of tank 115.

Probable Violation from March 2012 WUTC Audit

5. 49CFR 195.573 What must I do to monitor external corrosion control?
Finding(s):
Tank 115 cell #1 rectifier was reading -0.692 which is less than the minimum voltage necessary for cathodically protecting the tank bottom of -0.85.
Planned corrective action / (05/02/2012) - Swissport has consulted with Asset Integrity Manager who is NACE certified and plans to increase settings or make other necessary corrections to comply with regulation.

Corrective Action (08/14/2012)
Swissport's objective was to investigate if tank 115's external bottom was receiving adequate cathodic protection and provide a corrective action plan to the above WUTC audit finding of low cell 1 mv reading.
Swissport Seattle Facility staff and NACE certified Asset Integrity Manager formulated an action plan to observe tank 115 in its native state by turning off tank 115's Rectifier and observe the mv readings on cell 1 and cell 2.
Swissport also contracted a third party corrosion engineering company Kadlec Associates Corrosion Engineers (KACE) to review the data and offer recommendations.

Tank 115 De Pole Survey data (June 15 to August 20, 2012 by Swissport)

De Pole Survey

Date	Cell 1	Cell 2
06/15/12	0.327	0.329
06/25/12	0.198	0.197
06/29/12	0.188	0.188
07/06/12	0.193	0.179
07/09/12	0.181	0.171
07/16/12	0.179	0.163
07/23/12	0.189	0.183
07/24/12	0.189	0.183
07/25/12	0.190	0.182
07/26/12	0.180	0.174
07/27/12	0.178	0.173
07/30/12	0.179	0.160
07/31/12	0.174	0.156
08/01/12	0.166	0.156
08/02/12	0.140	0.150

The data shows that tank 115 is receiving adequate protection per National Association of Corrosion Engineers (NACE) RP 0193-01 when evaluated using the 100mv polarization criteria.

Additionally, Swissport and KACE recommend a Native Survey of the entire Tank Farm and have contracted Norton Corrosion to conduct the survey. Swissport will inform WUTC of the scheduled date of the Survey and provide report data related to tank 115.

See Attachments:
KACE Report
Swissport De Pole Survey data

Sincerely,

L. Dean Williams, General Manager
Swissport Fueling, Inc. - Seattle, WA

cc: Jay Long SeaTac Fuel Facilities, LLC Consortium Chairman
Mark Norris, Swissport Fueling VP of Consortiums

KACE
KADLEC ASSOCIATES
CORROSION ENGINEERS
www.kadlecassociates.com

PO BOX 1248
TRAVERSE CITY MI 49685
PH 231-941-4950
FAX 231-941-1972
EMAIL info@kadlecassociates.com

August 6, 2012

Swissport Fueling Inc.
Dan Liss
Sky Harbor Int'l Airport
4200 E. Airlane Drive
Phoenix, AZ 85034

PH# 602-273-3662
FAX# 602-244-8565

Subject: Cathodic Protection Engineering Services
Tank 115 – Cathodic Protection Effectiveness
Swissport Fueling Inc., Seattle, WA
KACE Job # 1351a

Seattle – Tank 115: Cathodic Protection Discussion:

The data indicates the external bottom of Tank #115 is receiving adequate cathodic protection per NACE (National Association of Corrosion Engineers) RP 0193-01 when evaluated using the 100 mV polarization criterion. See data sheets (for 2009, 2010, and 2011) on the following pages.

The cathodic protection system for Tank 115 consists of the following:

- Rectifier, under tank anodes, under tank permanent reference electrodes (for each of the 8 tanks)
  - The under tank anodes for all 8 AST's provide cathodic protection current for all buried metallic structures in the tank farm area (as all structures are electrically continuous)

- There are also 2 deep-well anode beds that provide supplemental cathodic protection to all tank bottoms and buried piping in the tank farm area (re-activated in 2008)

The under tank cathodic protection systems (rectifiers, anodes and reference electrodes) for all 8 AST's were installed in 2005. A directional drill rig was used to install the anodes and reference electrodes under the tank bottoms.

No action is required at this time.

Recommendations

If higher potentials are desired the following is recommended:

- Install additional surface anodes (horizontal or vertical) around the perimeter of Tank 115, 20 – 25 total
  - Anode type: 3mm MMO wire anode, prepackaged in 3" x 80" canister, w/ #8 HMWPE anode lead wire
  - Install to a depth of 5' minimum (10' depth is preferred)
  - Install approximately 20' on center
  - Install approximately 10' – 15' from the tank perimeter
  - Keep all anodes a minimum of 20' from all foreign buried metallic structures (piping, conduit runs, utilities, misc)

- Install 3 – 4 bags of coke breeze with each anode

- Optional – run individual anode leads to a new junction box (this will allow 'fine tuning' of the anode system), note this will increase the material and labor costs, ***highly recommended***

- After the anodes are installed, conduct a current test to determine the amount of voltage required
  - The new anodes could be powered from either the under tank anode junction box or the south deep-well anode junction box (depending on amount of voltage required), trenching required

- Complete cathodic protection wiring

- Allow tank bottom to polarize

- Conduct cathodic protection survey

Please call if you have any questions (231) 929-0866. Thank you for allowing us to be of service.

Respectfully,

Jason Kadlec
Project Manager

2011 ANNUAL CP INSPECTION
SWISSPORT FUELING
SEATAC INTERNATIONAL AIRPORT

Location	Potentials - millivolts				
	On	Instant Off	Native by others	Polarization	IF
Date→	10/18/2011		5/7/2009	Decay	% effective
Tank 113 - buried piping					
In-use fuel piping					
24" Riser w/IF SW side - W	2564	882	280	602	
E	2060	817	239	578	
24" Riser TS	2280	821	276	545	
anode disc.			1530 anode	9.8 mA collection	
12" Riser capped SE	2396	854	289	565	
8" Riser w/IF S side	2758	851	281	570	
8" Riser TS	2751	828	279	549	
anode disc.			1624 anode	12 mA collection	
12" Riser NE side - W	1990	736	256	480	
E	2153	757	264	493	
2"/4" Riser w/ IU S side	3793	1236	346	890	
Miscellaneous structures					
2 - 4" Risers Foam Line - NW	608	331	344	-13	
2 - 4" Risers Foam Line - SE	375	529	550	-21	same ref location
tank	1878	627			same ref location
3 Risers Foam Line - SE	683	675	533	142	
Tank 114 (120') - tank fuel level 36'					
N	1427	856	258	598	
E	2649	1353	132	1221	
S	3490	2007	258	1749	
W side Jbox, Perm. Ref 1 (red) - 40'	1927	197	97	100	
Perm. Ref 2 (blk) - 80'	1611	450	27	423	
W	2593	1072	159	913	
Tank 114 - buried piping					
In-use fuel piping					
24" Riser NE side - W	1204	985	698	287	
E	1426	884	601	283	
4" Riser NE	1411	948	694	254	
2"/4" Riser w/ IU S side	3080	1457	569	888	
Miscellaneous structures					
2 - 4" Risers Foam Line - NW	123	325	649	-324	same ref location 1
tank	2468	808			same ref location 1
2 - 4" Risers Foam Line - SE	420	602	701	-99	same ref location 2
tank	3053	1505			same ref location 2
Tank 115 (120') - tank fuel level 30'					
N	1834	503	105	398	
E	2054	630	150	480	
S	1664	476	246	230	
W side Jbox, Perm. Ref 1 (red) - 40'	856	359	67	292	
Perm. Ref 2 (blk) - 80'	1041	379	-49	428	

2011 ANNUAL CP INSPECTION
SWISSPORT FUELING
SEATAC INTERNATIONAL AIRPORT

Location	Potentials - millivolts				
	On	Instant Off	Native by others	Polarization Decay	IF % effective
Date→	10/18/2011		5/7/2009		
W	1706	420	174	246	
Tank 115 - buried piping					
In-use fuel piping					
30" Riser capped E	2611	902	357	545	
30" Riser TS	2615	935	368	567	
anode disc.		864	1532 anode	10 mA collection	
12" Riser NE side - W	2821	1018	407	611	
E	1813	1022	447	575	
2"/4" Riser w/ IU S side	1850	766	353	413	
30" Riser w/ IF through S concrete wall, ~40' SE of tank	1401	961	332	629	100%
across iso (OPL side)	1231	958			
TS ~ 45' N of 30" Riser @ concrete wall	2160	1123	447	676	
anode disc.		1061	1578 anode	25 mA collection	
TS @ concrete wall S of tank	606	324	96	229	
anode disc.		321	1248 anode	6 mA discharge	
Miscellaneous structures					
2 - 4" Risers Foam Line - NW	711	658	556	102	same ref location 1
tank	2033	603			same ref location 1
2 - 4" Risers Foam Line - SE	876	725	489	236	same ref location 2
tank	2569	1033			same ref location 2
Underground Storage Tank - 30' SW of Tank 114					
UST W End	2200	1105	475	630	
UST Middle	2106	1232	513	719	
UST E End	2513	1378	506	872	
4" Riser N	2627	1178	476	702	
Meter & Filter Station					
In-use fuel piping					
Air Line 10' N of Rectifier	772	678			
2 - 12" Risers S end Filter Pad - E	1121	927	303	624	
W	1177	960	303	657	
Water Valve between 12" Risers	77	101			
5 - 12" Risers & 5 - 8" Risers 10' W of Insulated Pipe Loop	1548	952	448	504	
6" Riser capped (bond cable attached)	1800	939	448	491	
TS under Insulated a/g Pipe Loop (beside asph entrance rd - looped removed 2010)	1750	994	392	602	
anode disc.			1492 anode	5.3 mA collection	
TS Permanent Ref Cell (defective)			310		
8" Riser SW end a/g Pipe Loop	1800	939	387	552	
12" Riser 7' W of TS	1757	964	387	577	
6" Riser clay sys #4	875	730	227	503	

		Test # 1		Test # 2	FLX	IF
Location	Native	Off	On	pol decay	off/on	Effectiveness
Date	05 / 07 / 09	10/14/10	10/14/10	w/10 data	10/14/10	10/14/10
Tank 113 (100') - Tank empty for maintenance						
Jbox south side, Ref cell 1 (red) - 40'	165	451	2076	286		
Ref cell 2 (blk) - 80'	166	471	2136	305		
N	222	630	2381	408		
E	218	453	1826	235		
S	284	514	2286	230		
W	253	481	2251	228		
Tank level	n/a	23'				
Tank 114 (120')						
Jbox southwest side, Ref cell 1 (red) - 40'	97	214	2203	117		
Ref cell 2 (blk) - 80'	27	461	1777	434		
N	258	956	1162	698		
E	132	1500	2743	1368		
S	258	1854	3866	1596		
W	159	1254	3019	1095		
Tank level	n/a	11'				
Tank 115 (120')						
Jbox south side, Ref cell 1 (red) - 40'	67	324	774	257		
Ref cell 2 (blk) - 80'	-49	372	998	421		
N	105	491	1827	386		
E	150	643	2115	493		
S	246	661	1537	415		
W	174	412	1686	238		
Tank level	n/a	42'				
Tank 108 - buried piping						
In-use Fuel Piping						
12" riser se side, west	357	651	1624	294		
12" riser se side, east	353	721	1572	368		
2"/4" w/ IU riser n side	262	532	1280	270		
4 -12" risers at pumps, approx 30' se of tank	501	861	1116	360		
cp test station approx 10' s of pump pad	645	994	1275	349		
4"riser w/ steel cage, s side	411	753	1555	342		
Miscellaneous structures						
2 - 4" risers **foam line**, nw side	530	851	1102			
2 - 4" risers **foam line**, se side	548	472	759			
Tank 109 - buried piping						
In-use Fuel Piping						
12" riser se side, west	336	713	1647	377		
12" riser se side, east	355	772	1689	417		
2"/4" riser w/ IU n side	293	710	2559	417		
Miscellaneous structures						
2 - 4" risers **foam line**, nw side	528	658	446			
2 - 4" risers **foam line**, se side	437	632	1030			
3 - risers **foam lines**, s side	554	558	490			
Tank 110 - buried piping						
In-use Fuel Piping						
24" riser w/ IF sw side, west	691	1020	1194	329		

Location	Native	Test # 1 Off	Test # 1 On	Test # 2 pol decay	FLX off/on	IF Effectiveness
Date	05 / 07 / 09	10/14/09	10/14/09	w/09 data	10/14/09	10/14/09
Tank 113 (100') - Tank empty for maintenance						
Jbox south side, Ref cell 1 (red) - 40'	165	716	3806	551		
Ref cell 2 (blk) - 80'	166	809	4184	643		
N	222	743	3071	521		
E	218	615	2394	397		
S	284	723	3079	439		
W	253	716	3118	463		
Tank level	n/a	0'				
Tank 114 (120')						
Jbox southwest side, Ref cell 1 (red) - 40'	97	396	2601	299		
Ref cell 2 (blk) - 80'	27	491	1950	464		
N	258	967	1119	709		
E	132	1490	2760	1358		
S	258	1645	3540	1387		
W	159	1520	3265	1361		
Tank level	n/a	25'				
Tank 115 (120')						
Jbox south side, Ref cell 1 (red) - 40'	67	361	1283	294		
Ref cell 2 (blk) - 80'	-49	384	1244	433		
N	105	548	1848	443		
E	150	675	2222	525		
S	246	725	1604	479		
W	174	473	1852	299		
Tank level	n/a	41'				
Tank 108 - buried piping						
In-use Fuel Piping						
12" riser se side, west	357	642	1584	285		
12" riser se side, east	353	712	1586	359		
2"/4" w/ IU riser n side	262	572	1320	310		
4 -12" risers at pumps, approx 30' se of tank	501	921	1346	420		
cp test station approx 10' s of pump pad	645	1012	1407	367		
4"riser w/ steel cage, s side	411	761	1731	350		
Miscellaneous structures						
2 - 4" risers **foam line**, nw side	530	870	1041	340		
2 - 4" risers **foam line**, se side	548	553	711	5		
Tank 109 - buried piping						
In-use Fuel Piping						
12" riser se side, west	336	710	1568	374		
12" riser se side, east	355	762	1601	407		
2"/4" riser w/ IU n side	293	797	2603	504		
Miscellaneous structures						
2 - 4" risers **foam line**, nw side	528	637	342	109		
2 - 4" risers **foam line**, se side	437	664	999	227		
3 - risers **foam lines**, s side	554	512	439	-42		
Tank 110 - buried piping						
In-use Fuel Piping						
24" riser w/ IF sw side, west	691	1052	1254	361		
cp test station at 24" riser	718	1114	1421	396		

Tank 115 De Pole Survey

	On/Off C-1	On/Off C-2
De Pole Survey	.880/.327	.614/.329

Date	Cell 1	Cell 2
06/15/12	0.327	0.329
06/25/12	0.198	0.197
06/29/12	0.188	0.188
07/06/12	0.193	0.179
07/09/12	0.181	0.171
07/16/12	0.179	0.163
07/23/12	0.189	0.183
07/24/12	0.189	0.183
07/25/12	0.190	0.182
07/26/12	0.180	0.174
07/27/12	0.178	0.173
07/30/12	0.179	0.160
07/31/12	0.174	0.156
08/01/12	0.166	0.156
08/02/12	0.140	0.150