Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12/28/2007
Time: 1900
Run length: 214,000 - 24000 = 190,000 gallons
Service Water pressure: 92 psi Temp. 74 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	62	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	92	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	145	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				160	29
7	PA	FR	22	60	165				160	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				150	91
10	SA	FR	14/CT-3 < 100	60	165				150	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				134	116
12	Mandatory Recycle		10		165				134	116
	Service				150				134	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	3090

Caustic Pump # A
Setting: 400
Caustic Temp. 120° F
Target = 49° C or 120° F

Neutralization Basin pH: 8.2
Corrections: None
Dump ph: 8.2

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12/18/07
Time: 1205
Run length: 214,000 - 22000 = 192000 gallons
Service Water pressure: 92 psi Temp. 72 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	60	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	90	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	145	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				150	116
12	Mandatory Recycle		10		165				150	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1580
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3080

Caustic Pump # 5B
Setting: 400
Caustic Temp. 120° F
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: ACID 3 MINS
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12-13-07
Time: 0915
Run length: 214,000 - 21K = 193K gallons
Service Water pressure: 80 psi Temp. 82 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				—	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.040	290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.03	2295	
	Total:	2975	

Caustic Pump # B
Setting: 400
Caustic Temp. 122
Target = 49° C or 120° F

Neutralization Basin pH: 8
Corrections: NONE
Dump ph: 8

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12-9-07
Time: ~~[illegible]~~ 1904
Run length: 214,000 - 32,000 = 182,000 gallons
Service Water pressure: 84 psi Temp. 81 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	94	97
4	PA	BW	15	59	50	57	62	64	41	53
5	PC	BW	15	59	120	140	153	158	144	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				135	116
	Service				150				140	122

2000

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1590
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3070

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: Acid - 3 mins
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12-5-07
Time: 1328
Run length: 214,000 - 19,000 = 195,000 gallons
Service Water pressure: 87 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				135	116
	Service				150				142	122

0458
1727
1746
1808

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0400	950	
	Total:	1590	1590
1.0084	1.0080	1020	
1.0184	1.0190	1785	
1.0317	1.0310	2295	
	Total:	2975	3080

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 6.6
Corrections:
Dump ph: 6.6

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12-01-07
Time: 22:10 - 21:10
Run length: 214,000 - 8 = 206,000 gallons
Service Water pressure: 96 psi Temp. 76 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	60	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	92	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	146	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				—	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				164	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				135	116
	Service				150					122

VWO.

2250
2250-2305
2305-

0120-0200
0200-0217
0217-234
0235-0252
252-0802

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1590
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3060

Caustic Pump # 5B
Setting: 400 / 250
Caustic Temp. 120 °F
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: None
Dump ph: 7

Notes:

VW

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 12/8/08
Time: 1836
Run length: 214,000 - 22000 = 192000 gallons
Service Water pressure: 92 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				125	116
12	Mandatory Recycle		10		165				125	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.042	950	
	Total:	1590	1660
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.5
Corrections:
Dump ph: 7.5

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9/07/07
Time: 1315
Run length: 214,000 - 191000 = _____ gallons
Service Water pressure: 99 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				145	91
10	SA	FR	14/CT-3 < 100	60	165				145	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				145.	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3050

Caustic Pump # A
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: added acid for 2 min.
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9-1-07
Time: 1905
Run length: 214,000 - 35,000 = 179,000 gallons
Service Water pressure: 84 psi Temp. 84 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	68	110
2	SA	Settle	3	60					–	
1923 3	SC	BW	10	59	75	87	97	101	101	97
4	PA	BW	15	59	50	57	62	64	64	53
1947 5	PC	BW	15	59	120	140	153	158	158	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				–	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
2324 10	SA	FR	14/CT-3 < 100	60	165				165	103
2351 11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				140	116
	Service				150				136	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	310
1.0417	1.042	950	970
	Total:	1590	1690
1.0084	1.010	1020	1160
1.0184	1.020	1785	1920
1.0317	1.031	2295	2390
	Total:	2975	3140

< 100 mho

< 50 mho Caustic Pump # A

< 5 mho Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 1 min Acid
Dump ph: 6.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8/30/07
Time: 1907
Run length: 214,000 - 9000 = 205000 gallons
Service Water pressure: 84 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
X	1	SA	BW	15	60	50	57	66	68	66	110
X	2	SA	Settle	3	60						
X	3	SC	BW	10	59	75	87	97	101	96	97
X	4	PA	BW	15	59	50	57	62	64	62	53
1948 X	5	PC	BW	15	59	120	140	153	158	152	36
X	6a	SA	5% NaOH	29	60	10				10	155
X	6b	SA to PA	5% NaOH	66	60	10				10	155
X	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
2004 X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
2014 X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
2024 X	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
X	6h	SC to PC	SR	8	59	85				85	191
X	6i	PC	FR	16	59	165				165	29
X	7	PA	FR	22	60	165				165	49
X	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
2258 X	9	SC	FR	17	60	165				164	91
X	10	SA	FR	14/CT-3 < 100	60	165				144	103
X	11	Rinse Recycle		13/CT-5 < 2.00	60	165				144	116
X	12	Mandatory Recycle		10		165				138	116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1660
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3120

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2min acid
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9-3-07
Time: 2030
Run length: 214,000 - 14000 = 200,000 gallons
Service Water pressure: 84 psi Temp. 80° degrees F

2102 - Delay

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2103-2118	1	SA	BW	15	60	50	57	66	68	66	110
2118-2144	2	SA	Settle	3	60					—	—
2119-2129	3	SC	BW	10	59	75	87	97	101	97	97
2129-2144	4	PA	BW	15	59	50	57	62	64	62	53
2144-2154	5	PC	BW	15	59	120	140	153	158	153	36
2144-2214	6a	SA	5% NaOH	29	60	10				10	155
2214-2320	6b	SA to PA	5% NaOH	66	60	10				10	155
2320-2352	6c	SA to PA	SR	32	60	20				20	156
2159-2203	6d	PC	Settle	3	60	0				—	—
2203-2215	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
2215-2224	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
2224-2230	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
2230-2238	6h	SC to PC	SR	8	59	85				85	191
2238-2254	6i	PC	FR	16	59	165				165	29
2351-0013	7	PA	FR	22	60	165				165	49
0018-0054	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
0054-0111	9	SC	FR	17	60	165				165	91
0120-0134	10	SA	FR	14/CT-3 < 100	60	165				165	103
0134-0147	11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
0147	12	Mandatory Recycle		10		165				145	116
		Service				150				138	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	290
1.0417	1.042	950	950
	Total:	1590	1590
1.0084	1.0084	1020	1130
1.0184	1.018	1785	1910
1.0317	1.032	2295	2320
	Total:	2975	3120

Caustic Pump # 5B
Setting: 250/400
Caustic Temp. 120°F.
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 2 min Caustic
Dump ph: 6

Notes:

17:41

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 08-26-07
Time: 17:41
Run length: 214,000 - 18000 = 196000 gallons
Service Water pressure: 85 psi Temp. 80 degrees F

delay ✓

1741 - 1742

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66 ✓	110
2	SA	Settle	3	60					— ✓	—
3	SC	BW	10	59	75	87	97	101	97 ✓	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	157	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				115	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

1742-1757
1757-1823
1758-1808
1808-1823
1823-
1823-

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1560
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3040

Caustic Pump # 5B
Setting: 250/400
Caustic Temp. 125
Target = 49° C or 120° F

Neutralization Basin pH: 6.5
Corrections: —
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8/16/07
Time: 0730
Run length: 214,000 - 1000 = 213000 gallons
Service Water pressure: 102 psi Temp. ~~0130~~ 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1690
1.0084	1.016	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3180

Caustic Pump # B
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: Add acid for 3 min.
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8-18-07
Time: 0122
Run length: 214,000 - _____ = 26,000 gallons
Service Water pressure: 84 psi Temp. _____ degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				[illegible]	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				88	191/207
6g	SC to PC	5.0% Acid	6	59	85				88	191/208
6h	SC to PC	SR	8	59	85				86	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	20/CT-1 < 20	60	165				168	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				159	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				160	116
12	Mandatory Recycle		10		165					116
	Service				150					122

1410
1426
1417

1534
1341
1350

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.0410	290	
1.0417	1.0410	950	
	Total:	1590	1580
1.0084	1.00	1020	1230
1.0184	1.018	1785	1980
1.0317	1.031	2295	2490
	Total:	2975	3080

Caustic Pump # P-5A

Setting: _____

Caustic Temp. _____

Target = 49° C or 120° F

1670
2/2
1634

Neutralization Basin pH: 5
Corrections: caustic
Dump ph: 8

Notes: _____

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8-26-07
Time: 2600
Run length: 214,000 - 7K = 207000 gallons
Service Water pressure: 88 psi Temp. 82 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	95	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				16	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				Ø	—
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				161	82
9	SC	FR	17	60	165				140	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150				140	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	
1.0417	1.040	950	
	Total:	1590	1596
1.0084	1.0081	1020	
1.0184	1.0184	1785	
1.0317	1.032	2295	
	Total:	2975	3009

Caustic Pump # B
Setting: 400
Caustic Temp. 122°F
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: N/A
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8/24/07
Time: 1930
Run length: 214,000 - 1000 = 213000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20					156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				160	116
12	Mandatory Recycle		10		165					116
	Service				150					122

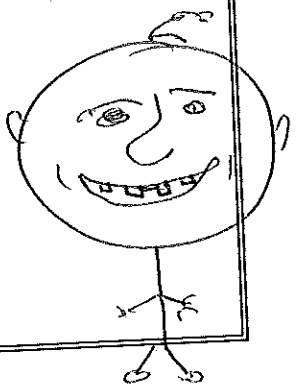
3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1590
1.0084	1.009	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3050

Caustic Pump # B
Setting: 2.00
Caustic Temp. 120° F.
Target = 49° C or 120° F

Neutralization Basin pH: 6.0
Corrections:
Dump ph: 6.0

Notes:



Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

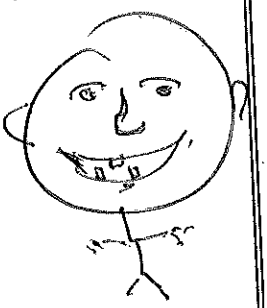
Date: 9/18/07
Time:
Run length: 214,000 - 16000 = 198000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	57	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				140	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3050

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F



Neutralization Basin pH: 6-0
Corrections: Add acid for 1 min
Dump ph: 7-0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9/12/07
Time: 2050
Run length: 214,000 - 19000 = 195000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				150	116
12	Mandatory Recycle		10		165				150	116
	Service				150				150	122

700 L
50 L

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.04	950	
	Total:	1590	1700
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.033	2295	
	Total:	2975	3140

Caustic Pump # ~~[illegible]~~ A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 3 ml ACID
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9-11-07
Time: 1545
Run length: 214,000 - 16K = 198K gallons
Service Water pressure: 82 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	150	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85					191/206
6f	SC to PC	3.0% Acid	9	59	85					191/207
6g	SC to PC	5.0% Acid	6	59	85					191/208
6h	SC to PC	SR	8	59	85					191
6i	PC	FR	16	59	165					29
7	PA	FR	28	60	165					49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				163	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

18:58
19:00
19:30
19 [illegible]
1957/8

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	315
1.0417	1.0411	950	985
	Total:	1590	1690
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3050

Caustic Pump # 5A
Setting:_____
Caustic Temp. _____
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1.5 MINS Acid.
Dump ph: 7.0
Notes: 20:00 Making H_2O. 09-11-07

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 9/10/07
Time: 7:35
Run length: 214,000 - 21000 = 193000 gallons
Service Water pressure: 82 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	53	53
5	PC	BW	15	59	120	140	153	158	152	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85					191/206
6f	SC to PC	3.0% Acid	9	59	85					191/207
6g	SC to PC	5.0% Acid	6	59	85					191/208
6h	SC to PC	SR	8	59	85					191
6i	PC	FR	16	59	165					29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	310
1.0417	1.042	950	990
	Total:	1590	1590
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3080

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8
Corrections: None
Dump ph: 8

Notes: Readings not logged due to lack of personnel / unit 5/6's / Unit 1/ dedication

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 09/18/07
Time: 2020
Run length: 214,000 - 13000 = 201000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62 ✓	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				150	91
10	SA	FR	14/CT-3 < 100	60	165				150	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.047	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.037	2295	
	Total:	2975	3050

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections:
Dump ph: 7.0

Notes:

Updated 7/25/06

214
21
193

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11-28-09
Time: 2101
Run length: 214,000 - 21,000 = 193 gallons
Service Water pressure: 70 psi Temp. 80 degrees F

1121
32
1153

32

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60					✓	
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10 ✓	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				✓	
6e	SC to PC	1.5% Acid	12	59	85				85 ✓	191/206
6f	SC to PC	3.0% Acid	9	59	85				85 ✓	191/207
6g	SC to PC	5.0% Acid	6	59	85				85 ✓	191/208
6h	SC to PC	SR	8	59	85				85 ✓	191
6i	PC	FR	16	59	165				165 ✓	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150				149	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.040	290	280
1.0417	1.041	950	880
	Total:	1590	
1.0084	1.008	1020	1100
1.0184	1.018	1785	1830
1.0317	1.031	2295	~~2320~~ 2320
	Total:	2975	2990

Caustic Pump # P-5A
Setting: 3/60
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8
Corrections: N/A
Dump ph: 8

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11/27/07
Time: 0200
Run length: 214,000 - 4000 = 210000 gallons
Service Water pressure: 77 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	150	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165					91
10	SA	FR	14/CT-3 < 100	60	165					103
11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
12	Mandatory Recycle		10		165				135	116
	Service				150				130	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.042	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.02	1785	
1.0317	1.03	2295	
	Total:	2975	

543

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 4.0
Corrections: 5 min caustic
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11/21/07
Time: 1300
Run length: 214,000 - 8 = 206K gallons
Service Water pressure: 86 psi Temp. 76 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	58	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	87	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	146	36
6a	SA	3% NaOH	29	60	10				110	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				82	191/206
6f	SC to PC	3.0% Acid	9	59	85				84	191/207
6g	SC to PC	5.0% Acid	6	59	85				83	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				162	29
7	PA	FR	28	60	165				163	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				162	82
9	SC	FR	17	60	165				163	91
10	SA	FR	14/CT-3 < 100	60	165				163	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				162	116
12	Mandatory Recycle		10		165				163	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0042	950	
	Total:	1590	1585
1.0084	1.0081	1020	
1.0184	1.0185	1785	
1.0317	1.0319	2295	
	Total:	2975	3000

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.5
Corrections: None
Dump ph: 7.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11-17-07
Time: 1954
Run length: 214,000 - 7,000 = 207,000 gallons
Service Water pressure: 87 psi Temp. 67 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2130	1	SA	BW	15	60	50	57	66	68	57	110
	2	SA	Settle	3	60						
2136	3	SC	BW	10	59	75	87	97	101	87	97
2146	4	PA	BW	15	59	50	57	62	64	59	53
	5	PC	BW	15	59	120	140	153	158	140	36
2200	6a	SA	3% NaOH	29	60	10				10	155
	6b	SA to PA	3% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0				0	
	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
	7	PA	FR	28	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
	9	SC	FR	17	60	165				165	91
	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
	12	Mandatory Recycle		10		165				165	116
		Service				150				148	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.040	950	
	Total:	1590	1580
1.0084	1.0080	1020	
1.0184	1.0190	1785	
1.0317	1.0300	2295	
	Total:	2975	3000

Caustic Pump # B
Setting: 406
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: None
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11/9/07
Time: 0837
Run length: 214,000 - 8000 = 206,000 gallons
Service Water pressure: 79 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	61	53
5	PC	BW	15	59	120	140	153	158	152	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				164	29
7	PA	FR	28	60	165				164	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				158	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1530
1.0084	1.008	1020	
1.0184	1.018	1785	129
1.0317	1.031	2295	190
	Total:	2975	3110

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 3
Corrections: 6 min NaOH
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 11/5/07
Time: 1035
Run length: 214,000 - 6000 = 208,000 gallons
Service Water pressure: 38 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1037	1	SA	BW	15	60	50	57	66	68	64	110
	2	SA	Settle	3	60						
	3	SC	BW	10	59	75	87	97	101	96	97
	4	PA	BW	15	59	50	57	62	64	61	53
	5	PC	BW	15	59	120	140	153	158	152	36
	6a	SA	3% NaOH	29	60	10				10	155
	6b	SA to PA	3% NaOH	66	60	10				10	155
1057	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
1138	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
1320	7	PA	FR	28	60	165				165	49
1348	8	PC to PA	Recycle	30/CT-1 < 20	60	165				159	82
1424	9	SC	FR	17	60	165				165	91
1444	10	SA	FR	14/CT-3 < ~~100-5~~	60	165				165	103
1500	11	Rinse Recycle		13/CT-5 < 2.00	60	165				137	116
1511	12	Mandatory Recycle		10		165				137	116
		Service	1521			150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.041	950	
	Total:	1590	1580
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3120

Caustic Pump # A
Setting: 400
Caustic Temp. 119
Target = 49° C or 120° F

Neutralization Basin pH: 4.0
Corrections: 2 min Caustic
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10/30/07
Time: 0022
Run length: 214,000 - 3000 = 211000 gallons
Service Water pressure: 92 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
X	1	SA	BW	15	60	50	57	66	68	65	110
X	2	SA	Settle	3	60						
X	3	SC	BW	10	59	75	87	97	101	96	97
X	4	PA	BW	15	59	50	57	62	64	61	53
X	5	PC	BW	15	59	120	140	153	158	153	36
X	6a	SA	3% NaOH	29	60	10				10	155
130 Y	6b	SA to PA	3% NaOH	66	60	10				10	155
X	6c	SA to PA	SR	32	60	20				20	156
X	6d	PC	Settle	3	60	0					
X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
133 X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
143 X	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
148 X	6h	SC to PC	SR	8	59	85				85	191
156 Y	6i	PC	FR	16	59	165				164	29
Y	7	PA	FR	28	60	165				150	49
X	8	PC to PA	Recycle	30/CT-1 < 20	60	165				164	82
X	9	SC	FR	17	60	165				163	91
X	10	SA	FR	14/CT-3 < 100	60	165				163	103
X	11	Rinse Recycle		13/CT-5 < 2.00	60	165				137	116
451	12	Mandatory Recycle		10		165				137	116
501		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	320
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	1130
1.0184	1.018	1785	1900
1.0317	1.031	2295	2420
	Total:	2975	3130

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 3
Corrections: 3 min caustic
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10/27/07
Time: 0520
Run length: 214,000 - 14000 = 200,00 gallons
Service Water pressure: 91 psi Temp._____degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				163	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				136	116
12	Mandatory Recycle		10		165				136	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1690
1.0084	1.008	1020	
1.0184	1.020	1785	
1.0317	1.032	2295	
	Total:	2975	3060

Caustic Pump # 8
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections:
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

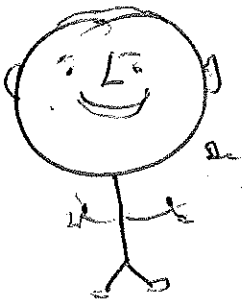
Date: 10/28/07
Time: 2330
Run length: 214,000 - 15000 = 199000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	64	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				145	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0411	950	
	Total:	1590	1700
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3122

Caustic Pump # B
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F



Neutralization Basin pH: 8.0
Corrections:
Dump ph: 8.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10/22/07
Time: 0900
Run length: 214,000 - 23000 = 191000 gallons
Service Water pressure:_____psi Temp._____degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				162	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				168	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0422	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: NONE
Dump ph: 7

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10-20-07
Time: 0015
Run length: 214,000 - 20,000 = 194,000 gallons
Service Water pressure: 91 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	64	110
2	SA	Settle	3	60					0	
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	152	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150				139	122

46

0416
0441

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0410	950	
	Total:	1590	1620
1.0084	1.0080	1020	
1.0184	1.0180	1785	
1.0317	1.0300	2295	
	Total:	2975	3130

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 min. Acid
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 10/7/07
Time: 1900
Run length: 214,000 - 16,000 = 198,000 gallons
Service Water pressure: 90 psi Temp: 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				145	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150				137	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1620
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.032	2295	
	Total:	2975	3120

Caustic Pump # A
Setting: 460
Caustic Temp 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 1 MIN ACID
Dump ph: 7.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10-15-07
Time: 1936
Run length: 214,000 - 23000 = 191000 gallons
Service Water pressure: 90 psi Temp. 81 degrees F

START 1937

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				163	82
9	SC	FR	17	60	165				145	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				198	116
12	Mandatory Recycle		10		165				140	116
	Service				150				138	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.041	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8-0
Corrections: 8
Dump ph: 8-0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10/13/07
Time: 0001
Run length: 214,000 - 25000 = 189,000 gallons
Service Water pressure: 90 psi Temp. 79 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				140	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150				138	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.032	2295	
	Total:	2975	3080

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.5
Corrections:
Dump ph: 8.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10-10-07
Time: 1629
Run length: 214,000 - 23000 = 191000 gallons
Service Water pressure: 88 psi Temp. 81 degrees F

Start	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1625	1	SA	BW	15	60	50	57	66	68	66	110
1640	2	SA	Settle	3	60						
1641	3	SC	BW	10	59	75	87	97	101	96	97
1659	4	PA	BW	15	59	50	57	62	64	62	53
1706	5	PC	BW	15	59	120	140	153	158	153	36
1706	6a	SA	3% NaOH	29	60	10				10	155
1735	6b	SA to PA	3% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20					156
	6d	PC	Settle	3	60	0					
1725	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
1737	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1746	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
	7	PA	FR	28	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
	9	SC	FR	17	60	165				165	91
	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
	12	Mandatory Recycle		10		165				165	116
		Service				150				140	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	310
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	1120
1.0184	1.018	1785	1890
1.0317	1.031	2295	2400
	Total:	2975	

Caustic Pump # B
Setting: 40
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.5
Corrections: —
Dump ph: 8.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 10/7/07
Time: 1500
Run length: 214,000 - 31,000 = _____ gallons
Service Water pressure: 90 psi Temp. 50 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				145	91
10	SA	FR	14/CT-3 < 100	60	165				145	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
12	Mandatory Recycle		10		165				145	116
	Service				150				140	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	1660
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.031	2295	
	Total:	2975	3170

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 min acid
Dump ph: 7.0

Notes: _____

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10-4-07
Time: 0836
Run length: 214,000 - 26,000 = 188,000 gallons
Service Water pressure: 89 psi Temp. 79 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
1007 6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				164	49
1203 8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
1238 9	SC	FR	17	60	165				145	91
10	SA	FR	14/CT-3 < 100	60	165				145	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
12	Mandatory Recycle		10		165				165	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0417	950	
	Total:	1590	1660
1.0084	1.0080	1020	
1.0184	1.0170	1785	
1.0317	1.0300	2295	
	Total:	2975	3200

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 mlh Acid
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 10-2-07
Time: 1930
Run length: 214,000 - 27,000 = 187,000 gallons
Service Water pressure: 78 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1932	1	SA	BW	15	60	50	57	66	68	66	110
1947	2	SA	Settle	3	60					—	
1948	3	SC	BW	10	59	75	87	97	101	97	97
1958	4	PA	BW	15	59	50	57	62	64	62	53
2013	5	PC	BW	15	59	120	140	153	158	153	36
2014	6a	SA	3% NaOH	29	60	10				10	155
2108	6b	SA to PA	3% NaOH	66	60	10?				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0				—	
	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
2246	7	PA	FR	28	60	165				165	49
2308	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
2345	9	SC	FR	17	60	165				165	91
0013	10	SA	FR	14/CT-3 < 100	60	165				165	103
0040	11	Rinse Recycle		13/CT-5 < 2.00	60	165				136	116
	12	Mandatory Recycle		10		165				136	116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	580
1.0417	1.040	950	1250
	Total:	1590	1890
1.0084	1.008	1020	1150
1.0184	1.017	1785	1940
1.0317	1.030	2295	2480
	Total:	2975	3190

Caustic Pump # A
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1.5 min Acid
Dump ph: 7

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9/30/07
Time: 0800
Run length: 214,000 - 20000 = 194000 gallons
Service Water pressure: 90 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				150	91
10	SA	FR	14/CT-3 < 100	60	165				150	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150				—	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.041	950	
	Total:	1590	1640
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3210

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: Good - 1 MID
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9-24-07
Time: 1909
Run length: 214,000 - 26000 = 188,000 gallons
Service Water pressure: 84 psi Temp. 83 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	151	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				164	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				136	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	340
1.0417	1.041	950	
	Total:	1590	1670
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3160

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 mins Acid
Dump ph: 7.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9/23/07
Time: 2022
Run length: 214,000 - 20,000 = ~~196,000~~ 194,000 gallons
Service Water pressure: 90 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60					–	
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	~~165~~				135	116
12	Mandatory Recycle		10		~~165~~				140	116
	Service				~~150~~ 13				135	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	1041
	Total:	1590	~~1910~~ 2230
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3090

High

Caustic Pump # 5A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 min ACID - 1 min caustic
Dump ph: 7.0

Notes: 0234 in service

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9-20-07
Time: 2156
Run length: 214,000 - 12,000 = 202,000 gallons
Service Water pressure: 87 psi Temp. 83 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2247	1	SA	BW	15	60	50	57	66	68	66	110
	2	SA	Settle	3	60						
2302	3	SC	BW	10	59	75	87	97	101	94	97
2313	4	PA	BW	15	59	50	57	62	64	62	53
2330	5	PC	BW	15	59	120	140	153	158	153	36
2330	6a	SA	3% NaOH	29	60	10				10	155
	6b	SA to PA	3% NaOH	66	60	10				10	155
0112	6c	SA to PA	SR	32	60	20				20	156
2345	6d	PC	Settle	3	60	0				0	
2346	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
2359	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
0014	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
0139	7	PA	FR	28	60	165				165	49
0159	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
0236	9	SC	FR	17	60	165				165	91
0315	10	SA	FR	14/CT-3 < 100	60	165				165	103
0354	11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
	12	Mandatory Recycle		10		165				165	116
		Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0400	950	
	Total:	1590	1690
1.0084	1.0080	1020	
1.0184	1.0181	1785	
1.0317	1.0305	2295	
	Total:	2975	3130

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 2 min Acid
Dump ph: 7.0

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6-26-07
Time: 2038
Run length: 214,000 - 25000 = 189,000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2109	1	SA	BW	15	60	50	57	66	68	44	110
2124	2	SA	Settle	3	60						
2127	3	SC	BW	10	59	75	87	97	101	96	97
2135	4	PA	BW	15	59	50	57	62	64	62	53
2150	5	PC	BW	15	59	120	140	153	158	153	36
2150	6a	SA	3% NaOH	29	60	10				10	155
2157	6b	SA to PA	3% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0				0	
2210	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
2222	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
2231	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
2237	6h	SC to PC	SR	8	59	85				85	191
2245	6i	PC	FR	16	59	165				165	29
0000	7	PA	FR	28	60	165				165	49
0024	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
0057	9	SC	FR	17	60	165				165	91
0133	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
	12	Mandatory Recycle		10		165				165	116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417	1.0410	950	
	Total:	1590	1640
1.0084	1.0080	1020	
1.0184	1.0180	1785	
1.0317	1.0290	2295	
	Total:	2975	3270

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 min acid
Dump ph: 6.5

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9/28/07
Time: 0710
Run length: 214,000 - 33000 = 181,000 gallons
Service Water pressure: 78 psi Temp. 78 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	63	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	28	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165					91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				143	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	
1.0417		950	
	Total:	1590	
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	2450

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 1 gal min Acid
Dump ph: 7.4

Notes:

Updated 7/25/06

Regeneration Log (Concurrent Series)

Date: 9/8/07
Time: 1836
Run length: 214,000 - 22000 = 192000 gallons
Service Water pressure: 89 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	150	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				—	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	34 ~~30~~/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				150	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				136	116
12	Mandatory Recycle		10		165				137	116
	Service				150					122

3%= 1.0215	
5%=1.0417	

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	N/A	290	300
1.0417	1.044	950	950
	Total:	1590	1570
1.0084	1.009	1020	1120
1.0184	1.019	1785	1880
1.0317	1.032	2295	2380
	Total:	2975	3060

2130
2152
2226
2243
2303
2316

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections: 0
Dump ph: 8.0

Notes: prolong #10

B Smith MS

Updated 7/25/06

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8/28/07
Time: 22:50
Run length: 214,000 - 4000 = 210 000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	158	158		36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1610
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.032	2295	
	Total:	2975	3050

Caustic Pump # A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections:
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8-14-07
Time: 1245
Run length: 214,000 - 12000 = 202000 gallons
Service Water pressure: 87 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1242	1	SA	BW	15	60	50	57	66	68	66	110
1258	2	SA	Settle	3	60						
1300	3	SC	BW	10	59	75	87	97	101	97	97
1309	4	PA	BW	15	59	50	57	62	64	63	53
1324	5	PC	BW	15	59	120	140	153	158	153	36
1324	6a	SA	5% NaOH	29	60		10			10	155
1354	6b	SA to PA	5% NaOH	66	60		10			10	155
1500	6c	SA to PA	SR	32	60		20			20	156
	6d	PC	Settle	3	60		0				
1342	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
1355	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
1404	6g	SC to PC	5.0% Acid	6	59		85			85	191/208
1410	6h	SC to PC	SR	8	59		85			85	191
1418	6i	PC	FR	16	59		165			165	29
1542	7	PA	FR	22	60		165			165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
1642	9	SC	FR	17	60		165			163	91
	10	SA	FR	14/CT-3 < 100	60		165				103
	11	Rinse Recycle		13/CT-5 < 2.00	60		165				116
	12	Mandatory Recycle		10			165				116
		Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 5.0
Corrections: 3 mins CAUSTIC
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 08-11-07
Time: 2031
Run length: 214,000 - 24,000 = 190 000 gallons
Service Water pressure: 82 psi Temp. 80° F degrees F

2031 - delay - 2032

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2032-2047	1	SA	BW	15	60	50	57	66	68	66	110
2047-2103	2	SA	Settle	3	60		—			—	—
2148-2208	3	SC	BW	10	59	75	87	97	101	97	97
2208-2213	4	PA	BW	15	59	50	57	62	64	62	53
2213-2228	5	PC	BW	15	59	120	140	153	158	153	36
2213-2243	6a	SA	5% NaOH	29	60		10			10	155
2243-2250	6b	SA to PA	5% NaOH	66	60		10			10	155
2250-2324	6c	SA to PA	SR	32	60		20			20	156
2228-2232	6d	PC	Settle	3	60		0			—	—
2031-2143	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
2144-2153	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
2158-2159	6g	SC to PC	5.0% Acid	6	59		85			85	191/208
2159-2207	6h	SC to PC	SR	8	59		85			85	191
2207-2223	6i	PC	FR	16	59		165			165	29
2324-2344	7	PA	FR	22	60		165			165	49
2344-2425	8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
0025-0103	9	SC	FR	<50 17	60		165			165	91
0103-0117	10	SA	FR	14/CT-3 < 100	60		165			120 ⊗	103
0117-0130	11	Rinse Recycle		13/CT-5 < 2.00	60		165			125 ⊗	116
✓	12	Mandatory Recycle		10	10		165				116
		Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	290
1.0417	1.043	950	950
	Total:	1590	1590
1.0084	1.008	1020	1130
1.0184	1.018	1785	2000
1.0317	1.032	2295	2420
	Total:	2975	3120

probing 11 MINS
probing 23 MINS
NONE

Caustic Pump # 5B
Setting: 250/400
Caustic Temp. 120° F
Target = 49° C or 120° F

Neutralization Basin pH: 5.0
Corrections: 3 mins caustic
Dump ph: 7.0

Notes: ⊗ Reduced flow due to failing degasifier lvl failing

2 +10
11-21

Regeneration Log (Concurrent Series)

Date: 8/9/07
Time: 2230
Run length: 214,000 - 20 = 194 gallons
Service Water pressure: 90 psi Temp: 86 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	160	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				155	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				130	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.5
Corrections: NONE REQUIRED
Dump ph: 2.5

Notes:

Regeneration Log (Concurrent Series)

Date: 08-07-07
Time: 07:31
Run length: 214,000 - 19,000 = 195,000 gallons
Service Water pressure: 92 psi Temp._____degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

0731-0732 1min delay

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
0732-0747 →	1	SA	BW	15	60	50	57	66	68	66	110
0747-0813 →	2	SA	Settle	3	60	—				— ✓	—
0748-0758 →	3	SC	BW	10	59	75	87	97	101	97 ✓	97
0758-0813 →	4	PA	BW	15	59	50	57	62	64	53 ✓	53
0813-0828 →	5	PC	BW	15	59	120	140	153	158	153 ✓	36
0813-0844 →	6a	SA	5% NaOH	29	60	10				10 ✓	155
0844-0950 →	6b	SA to PA	5% NaOH	66	60	10				10 ✓	155
950-1022 →	6c	SA to PA	SR	32	60	20				20 ✓	156
8:28-831 →	6d	PC	Settle	3	60	0				— ✓	
8:32-845 →	6e	SC to PC	1.5% Acid	12	59	85				85 ✓	191/206
845-854 →	6f	SC to PC	3.0% Acid	9	59	85				85 ✓	191/207
854-900 →	6g	SC to PC	5.0% Acid	6	59	85				85 ✓	191/208
900-908 →	6h	SC to PC	SR	8	59	85				85 ✓	191
908-924 →	6i	PC	FR	16	59	165				165 ✓	29
1022-1023 →	7	PA	FR	22	60	165				165 ✓	49
1053-1124 →	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165 ✓	82
1124-1147 →	9	SC	FR	17	60	165				165 ✓	91
1147-1200 →	10	SA	FR	14/CT-3 < 100	60	165				165 ✓	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				137	116
	12	Mandatory Recycle		10		165				137	116
		Service				150					122
				5:45							

1202-

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.041	290	310
1.0417	1.042	950	960
	Total:	1590	1610
1.0084	1.008	1020	1140
1.0184	1.018	1785	1920
1.0317	1.03	2295	2440
	Total:	2975	3140

** Less than 100 Mmhos - Prolong 9.0 mins.
Prolong for 1.0 mins.
Prolong 4 mins
Prolong 1 min

Caustic Pump # 2A
Setting: 250/400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 mins acid
Dump ph: 6.5

Notes:

317-627-0123 **Regeneration Log (Concurrent Series)**

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 8-2-07
Time: 2:00
Run length: 214,000 - 21,000 = 193,000 gallons
Service Water pressure: 92 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				145	116
12	Mandatory Recycle		10		165				145	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1,040	290	320
1.0417	1,041	950	970
—	Total:	1590	1610
1.0084	1,0080	1020	1130
1.0184	1,018	1785	2340
1.0317	1,0310	2295	2510
	Total:	2975	3130

Caustic Pump # P-54
Setting:
Caustic Temp. 120
Target = 49° C or 120° F

3130
~~3130~~
1610

Neutralization Basin pH: 9
Corrections: Sent Added Acid
Dump ph: 7.0

Notes:

~~2255~~ ~~22~~ ~~2277~~ ~~230~~

2255
22
2277
2317

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7-31-07
Time: 1903
Run length: 214,000 - 56,000 = 158000 gallons
Service Water pressure: 90 psi Temp. 81 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1903	1	SA	BW	15	60	50	57	66	68	44	110
	2	SA	Settle	3	60					0	
	3	SC	BW	10	59	75	87	97	101	97	97
1932	4	PA	BW	15	59	50	57	62	64	62	53
1947	5	PC	BW	15	59	120	140	153	158	154	36
1947	6a	SA	5% NaOH	29	60	10				10	155
	6b	SA to PA	5% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0				0	
	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				161	29
	7	PA	FR	22	60	165				165	49
2220	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
2252	9	SC	FR	17	60	165				165	91
2313	10	SA	FR	14/CT-3 < 100	60	165				165	103
2330	11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
	12	Mandatory Recycle		10		165				160	116
		Service				150				153	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	
1.0417	1.0408	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.0190	1785	
1.0317	1.0300	2295	
	Total:	2975	3070

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: none
Dump ph: 7.0

Notes: (3% acid now working)

Regeneration Log (Concurrent Series)

Date: 7-28-07
Time: 2314
Run length: 214,000 - 7,000 = 207,000 gallons
Service Water pressure: 91 psi Temp. 79 degrees F
81

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
	1	SA	BW	15	60	50	57	66	68	66	110
2331	2	SA	Settle	3	60					~~0~~	
2334	3	SC	BW	10	59	75	87	97	101	98	97
2342	4	PA	BW	15	59	50	57	62	64	62	53
2358	5	PC	BW	15	59	120	140	153	158	152	36
2358	6a	SA	5% NaOH	29	60		10			10	155
0027	6b	SA to PA	5% NaOH	66	60		10			10	155
0132	6c	SA to PA	SR	32	60		20			20	156
0012	6d	PC	Settle	3	60		0			0	
0016	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
0029	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
0038	6g	SC to PC	5.0% Acid	6	59		85			88	191/208
	6h	SC to PC	SR	8	59		85			85	191
	6i	PC	FR	16	59		165			163	29
0207	7	PA	FR	22	60		165			165	49
0233	8	PC to PA	Recycle	30/CT-1 < 20	60		165			164	82
0303	9	SC	FR	17	60		165			165	91
0333	10	SA	FR	14/CT-3 < 100	60		165			165	103
0359	11	Rinse Recycle		13/CT-5 < 2.00	60		165			140	116
0412	12	Mandatory Recycle		10			165			140	116
0423		Service					150			152	122

225

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	
1.0417	1.0400	950	
	Total:	1590	1660
1.0084	1.010	1020	
1.0184	No acid Valve Load	1785	
1.0317	1.028	2295	
	Total:	2975	3070

Caustic Pump # A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 10
Corrections: 5 min acid
Dump ph: 7.5

Notes: 3.0 acid valve did not open W.O. written.

Regeneration Log (Concurrent Series)

Date: 7-22-07
Time: 1:16 pm
Run length: 214,000 - 33,000 = ~~33,000~~ 213967 gallons
Service Water pressure: 92 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60		10			10	155
6b	SA to PA	5% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	22	60		165			165	49
8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
9	SC	FR	17	60		165			165	91
10	SA	FR	14/CT-3 < 100	60		165			165	103
11	Rinse Recycle		13/CT-5 < 2.00	60		165			165	116
12	Mandatory Recycle		10			165			165	116
	Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	305
1.0417	1.040	950	990
	Total:	1590	1630
1.0084	1.0080	1020	1280
1.0184	1.0180	1785	2050
1.0317	1.030	2295	2420
	Total:	2975	3070

Caustic Pump # P-5A
Setting:
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10.0
Corrections: Acid 3 mo.
Dump ph: 6.0

Notes:

Regeneration Log (Concurrent Series)

Date: 7-20-07
Time: 1402
Run length: 214,000 - 35,000 = _____ gallons
Service Water pressure: 92 psi Temp. 86 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	93°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	68	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	300
1.0417	1041	950	960
	Total:	1590	1630
1.0084	1.008	1020	1130
1.0184	1.018	1785	1900
1.0317	1.031	2295	2500
	Total:	2975	3560

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10+
Corrections: good 10 mins
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7/18/07
Time: 0010
Run length: 214,000 - ~~12,000~~ 21000 = 193000 gallons
Service Water pressure: 88 psi Temp. 83 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	68	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

124 - 230
230 302
305
1.25 - 134
204
324
402 - 419

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	320
1.0417	1.041	950	970
	Total:	1590	1640
1.0084	1.008	1020	1110
1.0184	1.016	1785	2000
1.0317	1.03	2295	2390
	Total:	2975	3070

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.5
Corrections: 6 min Acid
Dump ph: 7.5

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7-16-07
Time: 1325
Run length: 214,000 - 7000 = 207000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
13 25	1	SA	BW	15	60	50	57	66	68	67	110
13 43	2	SA	Settle	3	60						
13 48	3	SC	BW	10	59	75	87	97	101	97	97
13 57	4	PA	BW	15	59	50	57	62	64	61	53
14 06	5	PC	BW	15	59	120	140	153	158	151	36
14 08	6a	SA	5% NaOH	29	60	10				10	155
14 37	6b	SA to PA	5% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
14 24	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
14 36	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
14 46	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
14 52	6h	SC to PC	SR	8	59	85				85	191
15 01	6i	PC	FR	16	59	165				165	29
	7	PA	FR	22	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
	9	SC	FR	17	60	165				165	91
	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				147	116
	12	Mandatory Recycle		10		165					116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	1620
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3100

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections: 0
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7/03/07
Time: 1915
Run length: 214,000 - 214K = 0 gallons
Service Water pressure: 91 psi Temp. 86 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	68	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	64	53
5	PC	BW	15	59	120	140	153	158	160	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				155	116
12	Mandatory Recycle		10		165				165	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.01	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 5
Corrections: 4 MIN CAUSTIC
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7/11/07
Time: 11:00
Run length: 214,000 - 0 = 214000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20					156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.042	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3110

Caustic Pump # A
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections:
Dump ph:

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 7-9-07
Time: 0045
Run length: 214,000 - 0 = 214,000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

A

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1630
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3120

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 5
Corrections: 4 mins caustic
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 07/06/07
Time: 0845
Run length: 214,000 - 0 = 214000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				166	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165				140	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.042	950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3090

Caustic Pump # 5A
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections:
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 7-3-07
Time: 0050
Run length: 214,000 - 27,000 = _____ gallons
Service Water pressure: 78 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	90	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	156	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				—	
6e	SC to PC	1.5% Acid	12	59	85				86	191/206
6f	SC to PC	3.0% Acid	9	59	85				86	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				160	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165					103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				160	116
12	Mandatory Recycle		10		165				161	116
	Service				150				190	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	290
1.0417	—	950	960
	Total:	1590	1595
1.0084	—	1020	1030
1.0184	—	1785	1790
1.0317	—	2295	
	Total:	2975	

Caustic Pump # P-54
Setting: 400
Caustic Temp. 121°F
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: N/A
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

Date: 6-27-07
Time: 0810
Run length: 214,000 - 24000 = _____ gallons
Service Water pressure: _____ psi Temp. _____ degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60					—	—
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				166	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				155	116
	Service				150				138	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	320
1.0417	1.041	950	940
—	Total:	1590	1720
1.0084	1.009	1020	
1.0184	1.017	1785	
1.0317	1.031	2295	
	Total:	2975	3150

Caustic Pump # P-51A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1 min Acid
Dump ph: 7

Notes: _____

Regeneration Log (Concurrent Series)

Date: 6-23-07
Time: 1330
Run length: 214,000 - 22K = _____ gallons
Service Water pressure: 80 psi Temp. 53 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	64	53
5	PC	BW	15	59	120	140	153	158	150	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				Ø	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				160	29
7	PA	FR	22	60	165				160	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150				70	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.018	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	

Caustic Pump # P-5B
Setting: 400
Caustic Temp. 121 °F
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: Ø
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6/20/07
Time:
Run length: 214,000 - 13000 = 201000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				162	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				155.	82
9	SC	FR	17	60	165				164	91
10	SA	FR	14/CT-3 < ~~100~~	60	165				155	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				133	116
12	Mandatory Recycle		10		165				132	116
	Service				150					122

1840
1846
1913
1926

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1600
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317		2295	
	Total:	2975	3080.

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 2 min acid
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6-10-07
Time: 2350
Run length: 214,000 - 7K = 214K gallons
Service Water pressure: 9 psi Temp. 82 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
	1	SA	BW	15	60	50	57	66	68	66	110
	2	SA	Settle	3	60					—	
	3	SC	BW	10	59	75	87	97	101	97	97
26	4	PA	BW	15	59	50	57	62	64	62	53
41	5	PC	BW	15	59	120	140	153	158	156	36
55	6a	SA	5% NaOH	29	60	10				10	155
202	6b	SA to PA	5% NaOH	66	60	10				10	155
231	6c	SA to PA	SR	32	60	20				20	156
44	6d	PC	Settle	3	60	0				—	
57	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
006	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
012	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
120	6h	SC to PC	SR	8	59	85				85	191
136	6i	PC	FR	16	59	165				165	29
250	7	PA	FR	22	60	165				165	49
326	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
347	9	SC	FR	17	60	165				165	91
415	10	SA	FR	14/CT-3 < 100	60	165				165	103
439	11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
	12	Mandatory Recycle		10		165				140	116
		Service				150					122

+3
+1
+13
+10

3%=1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	310
1.0417	1.042	950	990
	Total:	1590	1660
1.0084	1.009	1020	1110
1.0184	1.019	1785	1880
1.0317	1.032	2295	2390
	Total:	2975	3080

Caustic Pump # A
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1 min acid
Dump ph: 8

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6-22-07
Time: 0150
Run length: 214,000 - 16,000 = 198,000 gallons
Service Water pressure: 92 psi Temp. 82 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	67	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	64	53
5	PC	BW	15	59	120	140	153	158	156	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				164	29
7	PA	FR	22	60	165				166	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				157	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				134	116
12	Mandatory Recycle		10		165				120	116
	Service				150				11	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	290
1.0417	1.041	950	980
	Total:	1590	1270
1.0084	1.008	1020	1030
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3110

Caustic Pump # B
Setting: 400
Caustic Temp. 122°
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 minutes ACID
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6-18-07
Time: 1010
Run length: 214,000 - 174 = _____ gallons
Service Water pressure: 80 psi Temp. 84 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60					—	—
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	65	53
5	PC	BW	15	59	120	140	153	158	160	36
6a	SA	5% NaOH	29	60	10				11	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	~~230~~ 20				20	156
6d	PC	Settle	3	60	0				—	—
6e	SC to PC	1.5% Acid	12	59	85				86	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				86	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				160	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				155	116
12	Mandatory Recycle		10		165				150	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.04	290	290
1.0417	1.04	950	980
	Total:	1590	1600
		—	
1.0084	1.085	1020	1020
1.0184	1.018	1785	1790
1.0317	1.031	2295	2290
—	Total:	2975	2986

Caustic Pump # P-5A
Setting: 100
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 7.5
Corrections: —
Dump ph: 7.5

Notes: _____

Regeneration Log (Concurrent Series)

Date: 6/16/07
Time: 1230
Run length: 214,000 - 10000 = 204000 gallons
Service Water pressure: 90 psi Temp. 82 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
	1	SA	BW	15	60	50	57	60	68	65	110
1239	2	SA	Settle	3	60						
1241	3	SC	BW	10	59	75	87	97	101	97	97
1250	4	PA	BW	15	59	50	57	62	64	62	53
	5	PC	BW	15	59	120	140	153	158	152	36
	6a	SA	5% NaOH	29	60	10				10	155
	6b	SA to PA	5% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
	6i	PC	FR	16	59	165				165	29
	7	PA	FR	22	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
	9	SC	FR	17	60	165				165	91
	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
	12	Mandatory Recycle		10		165					116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.042	950	980
	Total:	1590	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	2300
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8
Corrections: 1 MN ACID
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

Date: 6-11-07
Time: 0858
Run length: 214,000 - 16,000 = 198,000 gallons
Service Water pressure: 93 psi Temp. 78 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
0945	1	SA	BW	15	60	50	57	66	68	65	110
1000	2	SA	Settle	3	60					0	
1002	3	SC	BW	10	59	75	87	97	101	96	97
1011	4	PA	BW	15	59	50	57	62	64	62	53
1027	5	PC	BW	15	59	120	140	153	158	153	36
1027	6a	SA	5% NaOH	29	60	10				10	155
1057	6b	SA to PA	5% NaOH	66	60	10				10	155
1206	6c	SA to PA	SR	32	60	20				20	156
1041	6d	PC	Settle	3	60	0				0	
1056	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1107	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
1113	6h	SC to PC	SR	8	59	85				85	191
1121	6i	PC	FR	16	59	165				164	29
1240	7	PA	FR	22	60	165				164	49
1304	8	PC to PA	Recycle	30/CT-1 < 20	60	165				163	82
1335	9	SC	FR	17	60	165				164	91
1401	10	SA	FR	14/CT-3 < 100	60	165				165	103
1426	11	Rinse Recycle		13/CT-5 < 2.00	60	165				142	116
1439	12	Mandatory Recycle		10		165				140	116
		Service				150				159	122

(52)

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	
1.0417	1.0430	950	
	Total:	1590	1660
1.0084	1.0100	1020	
1.0184	1.0170	1785	
1.0317	1.0310	2295	
	Total:	2975	3070

Caustic Pump # A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 4 mth. Acid
Dump ph: 7.0

Notes: address 59 now works - still flaking address 60 ☺

Regeneration Log (Concurrent Series)

Date: 6/8/07
Time: 0310
Run length: 214,000 - 16,000 = _____ gallons
Service Water pressure: 90 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
0319 X	1	SA	BW	15	60	50	57	66	68	66	110
X	2	SA	Settle	3	60						
335 X	3	SC	BW	10	59	75	87	97	101	97	97
345 X	4	PA	BW	15	59	50	57	62	64	61	53
400 X	5	PC	BW	15	59	120	140	153	158	153	36
401 X	6a	SA	5% NaOH	29	60	10				10	155
431 X	6b	SA to PA	5% NaOH	66	60	10				10	155
536 /	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
419 X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
431 X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
440 X	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
446 X	6h	SC to PC	SR	8	59	85				85	191
454 X	6i	PC	FR	16	59	165				165	29
	7	PA	FR	22 100	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
	9	SC	FR	17	60	165				165	91
	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
	12	Mandatory Recycle		10		165				140	116
		Service				150				—	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.04	950	
	Total:	1590	1670
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3130

Caustic Pump # A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 1.0
Corrections: —
Dump ph: 1.0

Notes: _____

Regeneration Log (Concurrent Series)

Date: 6/6/07
Time: 2030
Run length: 214,000 - 13000 = 201000 gallons
Service Water pressure: 98 psi Temp. 80 degrees F

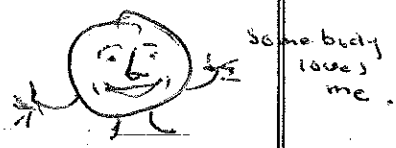
PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165/145				165/145	91
10	SA	FR	14/CT-3 < 100	60	~~165~~ 145				145	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				135	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1610
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3030

Caustic Pump # 13
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F



Neutralization Basin pH: 7.0
Corrections:
Dump ph: 7.0

Notes: Reset values # 91 & 103 to flow 145 gpm.

Regeneration Log (Concurrent Series)

Date: 6/4/07
Time: 1254
Run length: 214,000 - 31,000 = 183,000 gallons
Service Water pressure: 91 psi Temp. 81 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				154	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165					116
	Service				150					122

Pump's low level

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1610
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.030	2295	
	Total:	2975	3020

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 2 min Acid
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 6-2-07
Time: 1829
Run length: 214,000 - 23,000 = 191,000 gallons
Service Water pressure: 92 psi Temp. 81 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
0655	1	SA	BW	15	60	50	57	66	68	66	110
1910	2	SA	Settle	3	60						
1911	3	SC	BW	10	59	75	87	97	101	96	97
1921	4	PA	BW	15	59	50	57	62	64	62	53
192	5	PC	BW	15	59	120	140	153	158	151	36
1938	6a	SA	5% NaOH	29	60	10				10	155
1938	6b	SA to PA	5% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
2119	6d	PC	Settle	3	60	0				0	
1952	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
1956	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
2009	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
2147	6i	PC	FR	16	59	165				165	29
	7	PA	FR	22	60	165				165	49
2207	8	PC to PA	Recycle	30/CT-1 < 20	60	165				154	82
2243	9	SC	FR	17	60	165				165	91
2300	10	SA	FR	14/CT-3 < 100	60	165				165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
	12	Mandatory Recycle		10		165				120	116
0000		Service				150				124	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.0400	950	
	Total:	1590	1,710
1.0084	1.0080	1020	
1.0184	1.0174	1785	
1.0317	1.0310	2295	
	Total:	2975	3,130

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 4 min - acid
Dump ph: 6.0

Notes: Degasifier level went low during Fast rinse steps.

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 5/31/07
Time: 915
Run length: 214,000 - 22,000 = 192,000 gallons
Service Water pressure: 88 psi Temp. 80 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
924 X	1	SA	BW	15	60	50	57	66	68	66	110
X	2	SA	Settle	3	60						
939 X	3	SC	BW	10	59	75	87	97	101	96	97
948 X	4	PA	BW	15	59	50	57	62	64	61	53
1004 X	5	PC	BW	15	59	120	140	153	158	152	36
1001 X	6a	SA	5% NaOH	29	60	10				10	155
933 X	6b	SA to PA	5% NaOH	66	60	10				10	155
1139 X	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
1010 X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
036 X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1044 X	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
X	6h	SC to PC	SR	8	59	85				85	191
1058 X	6i	PC	FR	16	59	165				165	29
1212 X	7	PA	FR	22	60	165				164	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				153	82
1315	9	SC	FR	.17	60	165				165	91
1343	10	SA	FR	14/CT-3 < 100	60	165				165	103
1356	11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
	12	Mandatory Recycle		10		165				120	116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	~~1.03~~	290	
1.0417	1.041	950	951
	Total:	1590	1620
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	~~3110~~
	Total:	2975	3110

Caustic Pump # A
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: Tumin Acid
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 5-3-07
Time: 2100
Run length: 214,000 - 0 = 21400 gallons
Service Water pressure: 87 psi Temp. 90 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				158	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: 0
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

Date: 4/26/07
Time: 0800
Run length: 214,000 - 5000 = 209000 gallons
Service Water pressure: 97 psi Temp. _____ degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	95	97
4	PA	BW	15	59	50	57	62	64	57	53
5	PC	BW	15	59	120	140	153	158	145	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				162	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				145	116
	Service				150					122

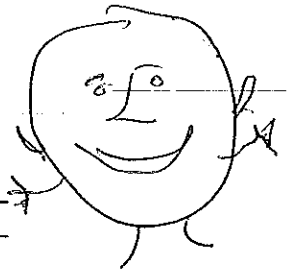
3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3130

Caustic Pump # 13
Setting: 2.00
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 6.5
Corrections: _____
Dump ph: 6.5

Notes: _____



Regeneration Log (Concurrent Series)

Date: 4/21/07
Time: 0845
Run length: 214,000 - 0 = 214000 gallons
Service Water pressure: _____ psi Temp. 78 degrees F

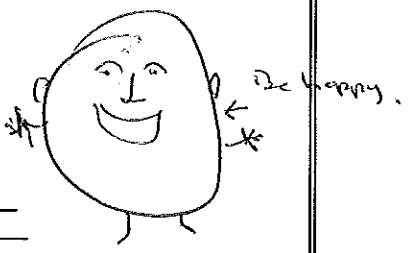
PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	90	97
4	PA	BW	15	59	50	57	62	64	57	53
5	PC	BW	15	59	120	140	153	158	145.	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				10	156
6d	PC	Settle	3	60	0				20	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				162	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				160	116
12	Mandatory Recycle		10		165				160	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	
1.0417	1.041	950	
	Total:	1590	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3090

Caustic Pump # A
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F



Neutralization Basin pH: 6.5
Corrections: _____
Dump ph: 6.5.

Notes: _____

Regeneration Log (Concurrent Series)

Date: 4-14-07
Time: 2005
Run length: 214,000 - 3,000 = 211,000 gallons
Service Water pressure: 88 psi Temp. 82 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	101	97
4	PA	BW	15	59	50	57	62	64	64	53
5	PC	BW	15	59	120	140	153	158	160	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				—	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	300
1.0417	1.04	950	960
	Total:	1590	1610
1.0084	1.008	1020	1080
1.0184	1.020	1785	1840
1.0317	1.032	2295	2350
	Total:	2975	3090

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7
Corrections: —
Dump ph: 7

Notes:

Regeneration Log (Concurrent Series)

Date: 4/11/07
Time: 1900
Run length: 214,000 - 0 = 214000 gallons
Service Water pressure: 85 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	150	36
1759 → 6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				120	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1600
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3090

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 6.5
Corrections:
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 4-8-07
Time: 2020
Run length: 214,000 - 0 = 214000 gallons
Service Water pressure: 86 psi Temp. 87 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	45 22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				158*	82
9	SC	FR	5 17	60	165				165	91
10	SA	FR	5 4/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				120	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.0417	290	310
1.0417	1.041	950	970
	Total:	1590	1660
1.0084	1.008	1020	1140
1.0184	1.018	1785	1910
1.0317	1.031	2295	2550
	Total:	2975	3170

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 6.5 12.8
Corrections: 7 min
Dump ph: 6.5 7.5

Notes:

1738

Regeneration Log (Concurrent Series)

Date: 4/3/07
Time: 0058
Run length: 214,000 - 9000 = 205000 gallons
Service Water pressure: 84 psi Temp. _____ degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	158	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				125	116
12	Mandatory Recycle		10		165				125	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3150

Caustic Pump # 5B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: —
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 3-30-07
Time: 19:00
Run length: 214,000 - 9,000 = 205,000 gallons
Service Water pressure: 82 psi Temp. 82 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	66	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				21	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				167	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	290
1.0417	1.041	950	1000
	Total:	1590	2100
1.0084	1.007	1020	1100
1.0184	1.017	1785	1875
1.0317	1.031	2295	2375
	Total:	2975	3075

Caustic Pump # 5A
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections: NONE
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 3-25-07
Time: 1812
Run length: 214,000 - 21000 = 193000 gallons
Service Water pressure: 86 psi Temp. 76 degrees F

	Step	Vessel	Process	Time (Actual MINS.)	Add.	GPM Target 60°	70°	80° (76°)	83°	Actual	RSV #
1812-1828	1	SA	BW	15	60	50	57	66	68	66	110
1828-1853	2	SA	Settle	25	60	—		—		—	—
1829-1839	3	SC	BW	10	59	75	87	97	101	95	97
1839-1854	4	PA	BW	15	59	50	57	62	64	60	53
1854-1909	5	PC	BW	15	59	120	140	153	158	148	36
1854-1924	6a	SA	5% NaOH	29	60	10				10	155
1924-2030	6b	SA to PA	5% NaOH	66	60	10				10	155
2030-2102	6c	SA to PA	SR	32	60	20				20	156
1909-1912	6d	PC	Settle	3	60	0				—	—
1914-1926	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
1926-1935	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1935-1941	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
1941-1949	6h	SC to PC	SR	8	59	85				85	191
1949-2005	6i	PC	FR	16	59	165				165	29
2102-2136	7	PA	FR	<166 gpm 22	60	165				165	49
2136-2206	8	PC to PA	Recycle	30/CT-1 < 20	60	165				150 *	82
2206-2241	9	SC	FR	<50 17	60	165				165	91
2241-2254	10	SA	FR	14/CT-3 < 5	60	165				165 140	103
2254-2307	11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
2307-2317	12	Mandatory Recycle		10		165				120	116
03-26-07		Service	0025 hrs.			150					122

3%= 1.0215	
5%=1.0417	

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.04	290	290
1.0417	1.042	950	1040
	Total:	1590	1620
—	—	—	—
1.0084	1.008	1020	1130
1.0184	1.018	1785	1910
1.0317	1.031	2295	2440
	Total:	2975	3130

Prolong 12 MINS.

82 Valve Needs Servicing & Stuck

prolong 18 MINS.

Caustic Pump # A

Setting: 400

Caustic Temp. 120°F

Target = 49° C or 120° F

VWD

(*) Low De-Gas fier L/L. Also Reduced flow to 140 GPM for correction.

Neutralization Basin pH: 7.5
Corrections: None
Dump ph: 7.5

Notes: Low De-Gas L/L Shut Down. 2317. Manually (with hose) full degasifier with Demin H2O to clear Low Pnl. & re-started.

Down in Service Back @ 0025 hrs. Making H2O

41
23
~~18~~

Regeneration Log (Concurrent Series)

Date: 3-27-07
Time: 20:30
Run length: 214,000 - 15,000 = 199,000 gallons
Service Water pressure: 83 psi Temp. 83 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2024-2039	1	SA	BW	15	60	50	57	66	68	65	110
2039-2042	2	SA	Settle	3	60						
2042-2050	3	SC	BW	10	59	75	87	97	101	96	97
2050 2105	4	PA	BW	15	59	50	57	62	64	64	53
2105 2120	5	PC	BW	15	59	120	140	153	158	156	36
2105 2134	6a	SA	5% NaOH	29	60	10				10	155
2134 2240	6b	SA to PA	5% NaOH	66	60	10				10	155
2241 2313	6c	SA to PA	SR	32	60	20				20	156
2120 2123	6d	PC	Settle	3	60	0					
2124 2136	6e	SC to PC	1.5% Acid	12	59	85				86	191/206
2136-2147	6f	SC to PC	3.0% Acid	9	59	85				86	191/207
2147 2151	6g	SC to PC	5.0% Acid	6	59	85				86	191/208
2151 2159	6h	SC to PC	SR	8	59	85				86	191
2159 2205	6i	PC	FR	16	59	165				165	29
2313-2345	7	PA	FR	2100 22	60	165				165	49
2345-0015	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
0015-0032	9	SC	FR	2500 17	60	165				165	91
0032 0046	10	SA	FR	14/CT-3 < 150	60	165				165	103
0046	11	Rinse Recycle		13/CT-5 < 2.00	60	165				121	116
	12	Mandatory Recycle		10		165					116
0123		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.04	290	
1.0417	1.04	950	1050
	Total:	1590	1720
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.03	2295	
	Total:	2975	3170

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.1
Corrections: None
Dump ph: 7.1

Notes:

Regeneration Log (Concurrent Series)

Date: 3/24/07
Time: 0230
Run length: 214,000 - 20000 = 194000 gallons
Service Water pressure: 140 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	150	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				84	191
6i	PC	FR	16	59	165				163	29
7	PA	FR	22	60	165				160	49
* 8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				160	91
10	SA	FR	14/CT-3 < 100	60	165				140	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.042	950	
	Total:	1590	1700
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	3310

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10.5
Corrections: Add acid 2.5 min
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 3-15-07
Time: 0000
Run length: 214,000 - 29,000 = 185,000 gallons
Service Water pressure: 87 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				162	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				164	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				145	116
	Service				150				152	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.0390	950	
	Total:	1590	1640
1.0084	1.0080	1020	
1.0184	1.0170	1785	
1.0317	1.0290	2295	
	Total:	2975	3120

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 11.4
Corrections: 5 min - acid
Dump ph: 7.8

Notes:

Regeneration Log (Concurrent Series)

Date: 3-10-07
Time: 0550
Run length: 214,000 - 20 000 = 194000 gallons
Service Water pressure: 86 psi Temp. 74 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68		110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101		97
4	PA	BW	15	59	50	57	62	64	56	53
5	PC	BW	15	59	120	140	153	158	140	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				125	116
12	Mandatory Recycle		10		165				125	116
	Service				150				120	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3040

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10.9
Corrections: 4 min Acid
Dump ph: 7.9

Notes:

1120

Regeneration Log (Concurrent Series)

Date: 5-11-07
Time: 1330
Run length: 214,000 - 6K = 208K gallons
Service Water pressure: 60 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				162	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				163	116
12	Mandatory Recycle		10		165				163	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.040	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	

Caustic Pump # A
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: None
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 5/24/07
Time: 1620
Run length: 214,000 - 21,000 = 193,000 gallons
Service Water pressure: 91 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

		Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
423	X	1	SA	BW	15	60	50	57	66	68	65	110
	X	2	SA	Settle	3	60						
438	X	3	SC	BW	10	59	75	87	97	101	96	97
448	X	4	PA	BW	15	59	50	57	62	64	62	53
503	X	5	PC	BW	15	59	120	140	153	158	151	36
533	X	6a	SA	5% NaOH	29	60	10				10	155
	/	6b	SA to PA	5% NaOH	66	60	10				10	155
		6c	SA to PA	SR	32	60	20					156
		6d	PC	Settle	3	60	0					
523	X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
536	X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
543	X	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
550	X	6h	SC to PC	SR	8	59	85				85	191
559	X	6i	PC	FR	16	59	165				165	29
		7	PA	FR	22	60	165					49
		8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
		9	SC	FR	17	60	165				165	91
		10	SA	FR	14/CT-3 < 100	60	165				165	103
		11	Rinse Recycle		13/CT-5 < 2.00	60	165				165	116
		12	Mandatory Recycle		10		165				165	116
			Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	N/A	290	310
1.0417	1.04	950	
	Total:	1590	
1.0084	1.008	1020	1120
1.0184	1.018	1785	2050
1.0317	1.031	2295	2450
	Total:	2975	

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.6
Corrections: ~~0~~ None
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 22 May 07
Time: 1550
Run length: 214,000 - 15,000 = 199,000 gallons
Service Water pressure: 80 psi Temp. 84 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
	1	SA	BW	15	60	50	57	66	68	67	110
	2	SA	Settle	3	60					—	
	3	SC	BW	10	59	75	87	97	101	101	97
	4	PA	BW	15	59	50	57	62	64	64	53
	5	PC	BW	15	59	120	140	153	158	156	36
0507	6a	SA	5% NaOH	29	60	10				10	155
0513	6b	SA to PA	5% NaOH	66	60	10				10	155
0495	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0				—	
0508	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
0517	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
0523	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
0531	6h	SC to PC	SR	8	59	85				85	191
0546	6i	PC	FR	16	59	165				165	29
0614	7	PA	FR	22	60	165				165	49
0713	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
0743	9	SC	FR	17	60	165				165	91
0800	10	SA	FR	14/CT-3 < 100	60	165				165	103
0816	11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
0856	12	Mandatory Recycle		10		165					116
		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.041	290	300
1.0417	1.041	950	970
	Total:	1590	1630
1.0084	1.009	1020	1060
1.0184	1.017	1785	1810
1.0317	1.030	2295	2390
	Total:	2975	3090

Caustic Pump # B
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1½ mins Acid
Dump ph: 8

Notes:

Regeneration Log (Concurrent Series)

Date: 20 MAY 2007
Time: 10 30 Am
Run length: 214,000 - 11000 = 203000 gallons
Service Water pressure: 90 psi Temp. 79 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				155	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				118	116
	Service				150					122

50 — needs adjustment

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	2308
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3090

Caustic Pump # B
Setting: ~~120~~ 100
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10
Corrections: 105 minutes of ACID
Dump ph: 7
Notes: Valve 82 need Adjustment.

Regeneration Log (Concurrent Series)

Date: 5/17/07
Time: 1400
Run length: 214,000 - 8000 = 206 000 gallons
Service Water pressure: 88 psi Temp. 80 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60		10			10	155
6b	SA to PA	5% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	22	60		165			165	49
8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
9	SC	FR	17	60		165			165	91
10	SA	FR	14/CT-3 < 100	60		165			165	103
11	Rinse Recycle		13/CT-5 < 2.00	60		165			165	116
12	Mandatory Recycle		10			165			165	116
	Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317		2295	
	Total:	2975	3110

Caustic Pump # 53
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections:
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 5/26/07
Time: 1750
Run length: 214,000 - 16,000 = 198,000 gallons
Service Water pressure: 51 psi Temp. _____ degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	96	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				165	191
6i	PC	FR	16	59	165				115	29
7	PA	FR	22	60	165				155	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				118	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.04	950	
	Total:	1590	1198
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	3080

Caustic Pump # 13
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: 1.5 min acid
Dump ph: 7.5

Notes: _____

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 3-8-07
Time: 0024
Run length: 214,000 - 19,000 = 195,000 gallons
Service Water pressure: 89 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60		10			10	155
6b	SA to PA	5% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0			0	
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			162	29
7	PA	FR	22	60		165			163	49
8	PC to PA	Recycle	30/CT-1 < 20	60		165			160	82
9	SC	FR	17	60		165			161	91
10	SA	FR	14/CT-3 < 100	60		165			152	103
11	Rinse Recycle		13/CT-5 < 2.00	60		165			155	116
12	Mandatory Recycle		10			165			138	116
	Service					150			151	122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.010	950	
	Total:	1590	1610
1.0084	1.0080	1020	
1.0184	1.019	1785	
1.0317	1.034	2295	
	Total:	2975	3100

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 9.0
Corrections: 2 min acid
Dump ph: 6.0

Notes:

Regeneration Log (Concurrent Series)

Monday

Date: 03-05-07

Time: 05:27 PM = 1727

Run length: 214,000 - 21,000 = 193,000 gallons

Service Water pressure: 100 psi Temp. 74 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Demineralizer Clock

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1737 – 1752 →	1	SA	BW	15	60	50	57	66	68	61	110
1752 – 1818 →	2	SA	Settle	3 (26)	60					—	—
1753 – 1803 →	3	SC	BW	10	59	75	87	97	101	92	97
1803 – 1818 →	4	PA	BW	15	59	50	57	62	64	59	53
1818 – 1833 →	5	PC	BW	15	59	120	140	153	158	146	36
1818 – 1847 →	6a	SA	5% NaOH	29	60	10				10	155
1845 – 1854 →	6b	SA to PA	5% NaOH	66	60	10				10	155
	6c	SA to PA	SR	32	60	20				20	156
	6d	PC	Settle	3	60	0					
1833 –	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
	6h	SC to PC	SR	8	59	85				85	191
1905	6i	PC	FR	16	59	165				165	29
1912	7	PA	FR	22	60	165				165	49
2000	8	PC to PA	Recycle	30/CT-1 < 20	60	165				155	82
2055	9	SC	FR	17	60	165				165	91
2124	10	SA	FR	14/CT-3 < 100	60	165				165	103
2141	11	Rinse Recycle		13/CT-5 < 2.00	60	165				122	116
2200	12	Mandatory Recycle		10		165				170	116
2224		Service				150				35	122

3%= 1.0215

5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.0420	290	
1.0417	1.042	950	
	Total:	1590	
1.0084	1.0080	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3100

+10
+7
+3

Caustic Pump # 5B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.4

Corrections: 2.5 minutes Acid

Dump ph: 6.8

Notes: STEP 8 NOT Getting 165 GPM

Chain valve wide open.

Regeneration Log (Concurrent Series)

Date: 3/2/07
Time: 0100
Run length: 214,000 - 2000 = 212000 gallons
Service Water pressure: 86 psi Temp. 76 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	60	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	90	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	148	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				155	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				120	116
	Service				150				124	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.040	950	
	Total:	1590	1620
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.030	2295	
	Total:	2975	3080

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: 0
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 2/26/07
Time: 2000
Run length: 214,000 - 7000 = 207,000 gallons
Service Water pressure: 86 psi Temp. 76 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	60	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	90	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	147	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				156	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				120	116
	Service				150				120	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	1430
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.032	2295	
	Total:	2975	3080

Caustic Pump # 15
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections:
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve
FRR

Date: 02-21-07
Time: 20:39
Run length: 214,000 - 11,000 = 203,000 gallons
Service Water pressure: 95 psi Temp. 72 degrees F

72°F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
2040-2056	1	SA	BW	15	60	50	57	66	68	60	110
2058-2150	2	SA	Settle	3:55	60	—	—	—			—
2055-2105	3	SC	BW	10	59	75	87	97	101	90	97
2106-2120	4	PA	BW	15	59	50	57	62	64	58	53
2120-2135	5	PC	BW	15	59	120	140	153	158	142	36
2120-2149	6a	SA	5% NaOH	29	60	10				10	155
2150-2254	6b	SA to PA	5% NaOH	66	60	10				10	155
2256-2328	6c	SA to PA	SR	32	60	20				20	156
2135-2138	6d	PC	Settle	3	60	0				3	—
2138-2150	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
2151-2200	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
2201-2207	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
2207-2215	6h	SC to PC	SR	8	59	85				85	191
2215-2231	6i	PC	FR	16	59	165				165	29
2328-2351	7	PA	FR	2100 gal 22	60	165				165	49
2351-0028	8	PC to PA	FR Recycle	30/CT-1 < 20	60	165				155	82
0028-0047	9	SC	FR	2500 gal 17	60	165				165	91
0047-0101	10	SA	FR R	14/CT-3 < 100.5	60	165				165	103
0101-0114	11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
0114-0124	12	Mandatory Recycle		10		165				120	116
0124		Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	—
1.0417	1.042	950	—
	Total:	1590	1600
1.0084	1.008	1020	—
1.0184	1.02	1785	—
1.0317	1.032	2295	—
	Total:	2975	3120

Probing (P) 1 min
P+ 4 mins
P+ 2 mins

Caustic Pump # B
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 6.5
Corrections: N/A
Dump ph: 6.5

Notes: * Chain Valve #8 Seized/Bound up. Would not budge.

CW
Forward Temp. Time Forward

ACW
Forward Temp Time backward

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 2/17/07
Time: 1400
Run length: 214,000 - 12,000 = 202,000 gallons
Service Water pressure: 90 psi Temp. 70 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	60	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	89	97
4	PA	BW	15	59	50	57	62	64	58	53
5	PC	BW	15	59	120	140	153	158	140	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < ~~100~~ 5	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165				120	116
	Service				150				144	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.04	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.03	2295	
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 3.2
Corrections: 3 min NaOH
Dump ph: 6.8

Notes:

1600 - 12"-22" H2O 35 scoops CL

Regeneration Log (Concurrent Series)

Date: 1-30-07
Time: 1952
Run length: 214,000 - 11000 = 203,000 gallons
Service Water pressure: 93 psi Temp. 71 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1958 - 2008	1	SA	BW	15	60	50	57	66	68	60	110
	2	SA	Settle	3	60						
2008 - 2019	3	SC	BW	10	59	75	87	97	101	86	97
2019 - 2034	4	PA	BW	15	59	50	57	62	64	54	53
2034 2049	5	PC	BW	15	59	120	140	153	158	140	36
2035 - 2110	6a	SA	5% NaOH	29	60		10			10	155
	6b	SA to PA	5% NaOH	66	60		10			10	155
2110 - 2142	6c	SA to PA	SR	32	60		20			20	156
	6d	PC	Settle	3	60		0				
	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
	6g	SC to PC	5.0% Acid	6	59		85			85	191/208
2120 - 2128	6h	SC to PC	SR	8	59		85			85	191
	6i	PC	FR	16	59		165			163	29
2242 - 2304	7	PA	FR	22	60		165			164	49
2312 - 2342	8	PC to PA	Recycle	30/CT-1 < 20	60		165			154	82
2343 0001	9	SC	FR	17	60		165			165	91
0001	10	SA	FR	14/CT-3 < 100	60		165			165	103
2015 2	11	Rinse Recycle		13/CT-5 < 2.00	60		165			120	116
0034	12	Mandatory Recycle		10			165			120	116
		Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.041	950	980
	Total:	1590	1610
1.0084	1.009	1020	
1.0184	1.020	1785	
1.0317	1.030	2295	
	Total:	2975	3100

Caustic Pump # B
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 8.1
Corrections:
Dump ph: 8.1

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 1/27/07
Time: 0800
Run length: 214,000 - 214000 = 2400000 gallons
Service Water pressure: 99 psi Temp. 72 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	58	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	88	97
4	PA	BW	15	59	50	57	62	64	57	53
5	PC	BW	15	59	120	140	153	158	140	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				83	191/206
6f	SC to PC	3.0% Acid	9	59	85				83	191/207
6g	SC to PC	5.0% Acid	6	59	85				83	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				160	29
7	PA	FR	22	60	165				156	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				156	82
9	SC	FR	17	60	165				155	91
10	SA	FR	14/CT-3 < 100	60	165				160	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				160	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.031	2295	
	Total:	2975	3040

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections:
Dump ph:

Notes: Timer is not Working
CT-4 meter is bad

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 2/18/07
Time: 0100
Run length: 214,000 - 7090 = 207000 gallons
Service Water pressure: 100 psi Temp. 70 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	56	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	86	97
4	PA	BW	15	59	50	57	62	64	57	53
5	PC	BW	15	59	120	140	153	158	140	36
6a	SA	5% NaOH	29	60	10				16	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				156	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				120	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				120	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	1610
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3100

Caustic Pump # B
Setting: 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections:
Dump ph:

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 1/21/07
Time: 1908
Run length: 214,000 - 17000 = 197000 gallons
Service Water pressure: 93 psi Temp. 81 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	95	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				21	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				84	191/207
6g	SC to PC	5.0% Acid	6	59	85				84	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				167	29
7	PA	FR	28 ~~22~~	60	165				166	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				166	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				123	116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.043	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.033	2295	
	Total:	2975	

Caustic Pump # A
Setting: 400
Caustic Temp. 122
Target = 49° C or 120° F

Neutralization Basin pH: 7.1
Corrections: X
Dump ph: 7.1

Notes:

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 01/16/07
Time: 0945
Run length: 214,000 - 18000 = 196000 gallons
Service Water pressure: 94 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				161	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 100	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				125	116
12	Mandatory Recycle		10		165				123	116
	Service				150				120	122

1002
1014
1027
1037
1047
1058
1107
1113
1121
1248
1258
1329
1346
1400
1419
1430

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.0421	950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3060

Caustic Pump # SB
Setting: 400
Caustic Temp. 120°F
Target = 49° C or 120° F

Neutralization Basin pH: 4.0
Corrections: Caustic 2 min
Dump ph: 6.5

Notes:

2039

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 2/13/07
Time: 2000
Run length: 214,000 - 6000 = 208000 gallons
Service Water pressure: 100 psi Temp. 74 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	58	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	93	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	145	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				125	91
10	SA	FR	14/CT-3 < 100	60	165				120	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
12	Mandatory Recycle		10		165					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.040	950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3100

Caustic Pump # A
Setting: 400
Caustic Temp. 122
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections:
Dump ph:

Notes:

C2

Regeneration Log (Concurrent Series)

Date: 1-12-07
Time: 12:00
Run length: 214,000 - 19000 = 195000 gallons
Service Water pressure: 90 psi Temp. 73 degrees F

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

						GPM Target					
	Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	Actual	RSV #
	1	SA	BW	15	60	50	57	66	68	64	110
	2	SA	Settle	3	60						
	3	SC	BW	10	59	75	87	97	101	97	97
	4	PA	BW	15	59	50	57	62	64	61	53
	5	PC	BW	15	59	120	140	153	158	140	36
400	6a	SA	5% NaOH	29	60		10			10	155
	6b	SA to PA	5% NaOH	66	60		10			10	155
	6c	SA to PA	SR	32	60		20			20	156
	6d	PC	Settle	3	60		0				
	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
	6g	SC to PC	5.0% Acid	6	59		85			85	191/208
	6h	SC to PC	SR	8	59		85			85	191
	6i	PC	FR	16	59		165			165	29
	7	PA	FR	22	60		165			165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
	9	SC	FR	17	60		165			165	91
	10	SA	FR	14/CT-3 < 100	60		165			165	103
	11	Rinse Recycle		13/CT-5 < 2.00	60		165				116
	12	Mandatory Recycle		10			165				116
		Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	290
1.0417	1.040	950	970
	Total:	1590	1630
1.0084	1.008	1020	1022
1.0184	1.019	1785	1800
1.0317	1.03	2295	2340
	Total:	2975	3120

Caustic Pump # B
Setting: 400
Caustic Temp. 120°
Target = 49° C or 120° F

Neutralization Basin pH: 4.0
Corrections: 4 min. Caustic
Dump ph: 6.3

Notes:

1628

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 1-4-07
Time: 1314
Run length: 214,000 - 18,000 = 196000 gallons
Service Water pressure: 93 psi Temp. 80 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	44	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	94	97
4	PA	BW	15	59	50	57	62	64	42	53
5	PC	BW	15	59	120	140	153	158	142	36
6a	SA	5% NaOH	29	60	10				10	155
6b	SA to PA	5% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0				0	
6e	SC to PC	1.5% Acid	12	59	85				85	191/206
6f	SC to PC	3.0% Acid	9	59	85				85	191/207
6g	SC to PC	5.0% Acid	6	59	85				85	191/208
6h	SC to PC	SR	8	59	85				85	191
6i	PC	FR	16	59	105				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				164	91
10	SA	FR	14/CT-3 < 100	60	165				164	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				125	116
12	Mandatory Recycle		10		165				125	116
	Service				150				155	122

1700 →

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.0439	290	
1.0417	1.0430	950	
	Total:	1590	1620
1.0084	1.0080	1020	
1.0184	1.0180	1785	
1.0317	1.0300	2295	
	Total:	2975	3120

Caustic Pump # B
Setting: 400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10.2
Corrections: 5 min acid
Dump ph: 8.3

Notes: Nils + Min M. at controls

Regeneration Log (Concurrent Series)

PC=Primary Cation
PA=Primary Anion
SC=Secondary Cation
SA=Secondary Anion
BW=Back Wash
SR=Slow Rinse
FR=Fast Rinse
RSV=Rate Set Valve

Date: 1/3/07
Time: 1243
Run length: 214,000 - 12000 = 202,000 gallons
Service Water pressure: 94 psi Temp. 70 degrees F

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
X	1	SA	BW	15	60	50	57	66	68	56	110
1358 X	2	SA	Settle	3	60						
1359 X	3	SC	BW	10	59	75	87	97	101	86	97
1409 X	4	PA	BW	15	59	50	57	62	64	57	53
1424 X	5	PC	BW	15	59	120	140	153	158	140	36
1425 X	6a	SA	5% NaOH	29	60		10			10	155
1454 X	6b	SA to PA	5% NaOH	66	60		10			10	155
1600 X	6c	SA to PA	SR	32	60		20			20	156
	6d	PC	Settle	3	60		0				
1450 X	6e	SC to PC	1.5% Acid	12	59		85			85	191/206
1455 X	6f	SC to PC	3.0% Acid	9	59		85			85	191/207
1505 X	6g	SC to PC	5.0% Acid	6	59		85			85	191/208
1510 X	6h	SC to PC	SR	8	59		85			85	191
1518 X	6i	PC	FR	16	59		165			165	29
1633 X	7	PA	FR	22	60		165			164	49
1700 X	8	PC to PA	Recycle	30/CT-1 < 20	60		165			158	82
1727 X	9	SC	FR	17	60		165			165	91
1744 X	10	SA	FR	14/CT-3 < ~~100~~ 15	60		165			165	103
1758 X	11	Rinse Recycle		13/CT-5 < 2.00	60		165			119	116
	12	Mandatory Recycle		10			165			120	116
		Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	
1.0417	1.040	950	
	Total:	1590	1640
1.0084	1.008	1020	
1.0184	1018	1785	
1.0317	1.031	2295	
	Total:	2975	3100

Caustic Pump # A

Setting:

Caustic Temp.

Target = 49° C or 120° F

Neutralization Basin pH: 4.0
Corrections:
Dump ph: 7.5

Notes: CAUSTIC 3 MIN