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: 1-6-06
Time: 1400
Run length: 214,000 - 18000 = _____ 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	56	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	57	53
5	PC	BW	15	59	120	140	153	158	140	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	30/CT-1 < 20	60	165				160	82
9	SC	FR	17	60	165				165	91
10	SA	FR	14/CT-3 < 500	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	1590
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: Acid 2 mins
Dump ph: 10

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: 1-9-06
Time: 2200
Run length: 214,000 - 20,000 = 194,000 gallons
Service Water pressure: 82 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	86	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	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			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			86	191/208
6h	SC to PC	SR	8	59		85			86	191
6i	PC	FR	16	59		165			164	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			168	91
10	SA	FR	14/CT-3 < 500	60		165			168	103
11	Rinse Recycle		13/CT-5 < 2.00	60		165			168	116
12	Mandatory Recycle		10			165			168	116
	Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.040	290	300
1.0417	1.040	950	980
	Total:	1590	1590
1.0084	1.010	1020	1130
1.0184	1.018	1785	1910
1.0317	1.020	2295	2100
	Total:	2975	3120

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

Neutralization Basin pH: 9.6
Corrections: 1 min. acid
Dump ph: <8.0

Notes:

Regeneration Log (Concurrent Series)

Date: 2-28-06
Time: 1530
Run length: 214,000 - 1900 = 195000 gallons
Service Water pressure: _____ 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	60	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	60	53
5	PC	BW	15	59	120	140	153	158	16	36
6a	SA	3% NaOH	29	60	10				12	155
6b	SA to PA	3% NaOH	66	60	10				12	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				86	191
6i	PC	FR	16	59	165				164	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 < 5 ✓	60	165				162	103
✓ 11	Rinse Recycle		13/CT-5 < 2 ✓	60	165				124	116
12	Mandatory Recycle		10		165				124	116
	Service				150				NO	122

	Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
3%= 1.0215				
5%=1.0417				
	1.0417	1.060	290	329
	1.0417	1.040	950	1001
		Total:	1590	1625 (1710)
	1.0084	1.012	1020	1140
	1.0184	1.016	1785	192
	1.0317	1.021	2295	235
		Total:	2975	3144 (3090)

✓ ≤ 50 ✓ Caustic Pump # P54

Setting: 400

Caustic Temp. 124 °F

Target = 49° C or 120° F

(+) over 275 in 1 1/2 Demin tank.

Neutralization Basin pH: 11.4
Corrections: 3 MINS. Acid.
Dump ph: 7

Notes: After Regen Neut. Basin was approx. 2/3 full. (High odor of Caustic) Initial PH of N/Basin High.

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: 3-3-06
Time: 0240
Run length: 214,000 - 18000 = 196,000 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	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	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				164	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				162	82
9	SC	FR	17	60	165				164	91
10	SA	FR	14/CT-3 < 500	60	165				164	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				130	116
12	Mandatory Recycle		10		165				130	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	530
1.0417		950	
	Total:	1590	1580
1.0084	1.010	1020	~~1.020~~
1.0184	1.020	1785	—
1.0317		2295	—
	Total:	2975	3080

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

Neutralization Basin pH: 7.8
Corrections: NONE
Dump ph: 7.8

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: 03-15-06
Time: 09:15
Run length: 214,000 - 52K = 162000 gallons
Service Water pressure: 94 psi Temp. 77 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	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 (67)	60	10				10	155
6c	SA to PA	SR	32	60	20				250	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 (18)	59	165				165	29
7	PA	FR	< 100 22	60	+ 2 MINS 165				165	49
8	PC to PA	Recycle 3	30/CT-1 < 20	60	+ 5 MINS 165				160*	82
9	SC	FR	< 50 17	60	+ 4 MINS 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				125	116
12	Mandatory Recycle		10		165					116
	Service				150					122

AM
< 100 →
< 20 →
< 50 →
< 5 →
< 2 →

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.0	290	280
1.0417	1.042	950	920
	Total:	1590	
1.0084	1.0085	1020	1040
1.0184	1.017	1785	1910
1.0317	1.30	2295	2430
	Total:	2975	

← 100 MINS * ✓ – Prolong 2 mins
← Prolong 5 MINS
+ 4 MINS

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

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

Notes: Chain Valve #82 Seized up. Will not Turn/budge/MOVE. (*) Unit failed to go into Mandatory Recycle or start C.O.I tests. Started unit in Manual then switched to Auto & it Worked.

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: 3-17-06
Time: 0415
Run length: 214,000 - 30K = 184K gallons
Service Water pressure: 94 psi Temp. 78 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	94	97
4	PA	BW	15	59	50	57	62	64	60	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				165	116
12	Mandatory Recycle		10		165				165	116
	Service				150				~~14~~	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.042	290	280
1.0417	1.042	950	
	Total:	1590	
1.0084	1.0075	1020	1050
1.0184	1.018	1785	
1.0317	1.3	2295	2262
—	Total:	2975	

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

Neutralization Basin pH: 8
Corrections: ~~7~~
Dump ph: 8

Notes: _____

Regeneration Log (Concurrent Series)

Date: 3-20-04
Time: 1653
Run length: 214,000 - 22,000 = 192,000 gallons
Service Water pressure: 92 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	87	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	144	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				164	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				159	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				124	116
12	Mandatory Recycle		10		165				124	116
	Service				150				123	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	1610
1.0084	1.009	1020	
1.0184	1.018	1785	
1.0317	1.0310	2295	
	Total:	2975	3130

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

Neutralization Basin pH: 8.4
Corrections: None
Dump ph: 8.4

Notes:

Regeneration Log (Concurrent Series)

Date: 3/23/06
Time: 1115
Run length: 214,000 - 26000 = 188000 gallons
Service Water pressure: 90 psi Temp. 75 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	97	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				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	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				175	116
12	Mandatory Recycle		10		165				175	116
	Service				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	1.012	1020	
1.0184	1.020	1785	
1.0317		2295	
	Total:	2975	

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

Neutralization Basin pH: 8.0
Corrections: 30 sec 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: 4/12/06
Time: 07:13
Run length: 214,000 - 29,000 = 185,000 gallons
Service Water pressure: 88 psi Temp. 77 degrees F

Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	61	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	59	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				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				123	116
12	Mandatory Recycle		10		165				123	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	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.030	2295	
	Total:	2975	

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

Neutralization Basin pH: 8.9
Corrections: 30 lbs.
Dump ph: 7.5

Notes:

Regeneration Log (Concurrent Series)

Date: 4-17-06
Time: 1640
Run length: 214,000 - 7,000 = 207,000 gallons
Service Water pressure: 86 psi Temp. 77 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	59	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	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					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					49
8	PC to PA	Recycle	30/CT-1 < 20	60	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					116
	Service				150				145	122

2445

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	1630
1.0084	1.0080	1020	
1.0184	1.0190	1785	
1.0317	1.0300	2295	
	Total:	2975	3270

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

Neutralization Basin pH: 9.5
Corrections: Yes
Dump ph: 7.5

Notes: SUPER - SMOOTH

Regeneration Log (Concurrent Series)

Date: 4/19/06
Time: 0700
Run length: 214,000 - 30000 = 184000 gallons
Service Water pressure: 94 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				125	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	
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	

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

Neutralization Basin pH: 9.0
Corrections: 1 min ACID
Dump ph: 8.0

Notes:

27,000

Regeneration Log (Concurrent Series)

Date: 4/22/06
Time: 08:10
Run length: 214,000 - 27,000 = 187,000 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 #
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
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
X	6d	PC	Settle	3	60	0				0	
X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
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	100 22	60	165				165	49
X	8	PC to PA	Recycle	30/CT-1 < 20	60	165				160	82
X	9	SC	FR	50 17	60	165				165	91
X	10	SA	FR	14/CT-3 < ~~100~~ 5	60	165				165	103
X	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	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	

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

Neutralization Basin pH: 8.0
Corrections: 20 Sec
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 4/27/06
Time: 1013
Run length: 214,000 - 20,000 = 194,000 gallons
Service Water pressure: 86 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 #
X	1	SA	BW	15	60	50	57	66	68	64	110
X	2	SA	Settle	3	60						
X	3	SC	BW	10	59	75	87	97	101	95	97
X	4	PA	BW	15	59	50	57	62	64	60	53
X	5	PC	BW	15	59	120	140	153	158	150	36
X	6a	SA	3% NaOH	29	60	10				10	155
X	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
X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
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				163	82
X	9	SC	FR	17	60	165				165	91
X	10	SA	FR	14/CT-3 <500	60	165				165	103
X	11	Rinse Recycle		13/CT-5 <2.00	60	165				125	116
X	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	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3110

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

Neutralization Basin pH: 5.5
Corrections: 1 min Caus
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 5/5/06
Time: 1155
Run length: 214,000 - 19000 = _____ gallons
Service Water pressure: 100 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	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	60	53
5	PC	BW	15	59	120	140	153	158	151	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				167	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	60	165				165	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
12	Mandatory Recycle		10		165				Reset	116
	Service				150				140	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	
1.0417		950	
1041	Total:	1590	15
1.0084	1.010	1020	
1.0184	1.018	1785	
1.0317	1031	2295	2270
	Total:	2975	3140

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

Neutralization Basin pH: 5
Corrections: 6 min caustic
Dump ph: 7.0

Notes: program stop on fast Rinse. Had to Reboot system - p/A - Reset to 149K
p/c
5/13
s/c

D. Aviles. 2245

(:) MOVED

Regeneration Log (Concurrent Series)

Date: 05-14-06
Time: 10:44 Regeneration of Anion(s)
Run length: 214,000 - ____ = ____ gallons
Service Water pressure: 75 psi Temp. 78 degrees F
Repeat caustic application / Regen of Anion(s)

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

N/A

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		53
5	PC	BW	15	59	120	140	153	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					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	22	60	165				164	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~~ 5	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 Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417		950	
	Total:	1590	
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	

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

Neutralization Basin pH: 10+
Corrections: 5 min acid
Dump ph: 7

Notes: Did not go to step # 11 and give a Rinse to waste. conductivity High alum.

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: 5/2/06
Time: 0915.
Run length: 214,000 - _____ = _____ gallons
Service Water pressure: 100 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	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				140	116
12	Mandatory Recycle		10		165					116
	Service				150					122

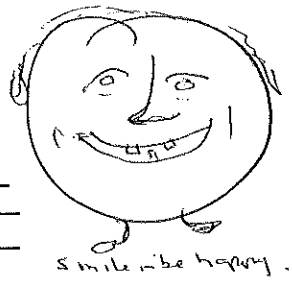
3%= 1.0215
5%=1.0417

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

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

Neutralization Basin pH: 5.0
Corrections: Caustic for 5 mins
Dump ph: 6.5

Notes:



Regeneration Log (Concurrent Series)

Date: 5-31-06
Time: 1335
Run length: 214,000 - 63,000 = 151,000 gallons
Service Water pressure: 84 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	98	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	5% NaOH	29	60	10				9	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				84	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				130	116
12	Mandatory Recycle		10		165				130	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	No Flow	290	280
1.0417	1.042	950	950
—	Total:	1590	1560
1.0084	1.008	1020	1040
1.0184	1.018	1785	1810
1.0317	1.031	2295	2340
	Total:	2975	3120

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

Neutralization Basin pH: 5.5
Corrections: Added 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

12

Date: 06-04-06
Time: 15:15
Run length: 214,000 - 24000 = 190,000 gallons
Service Water pressure: 196 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	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				"	82
	9	SC	FR	17	60	165				"	91
	10	SA	FR	14/CT-3 < 5	60	165				"	103
	11	Rinse Recycle		13/CT-5 < 2.00	60	165				"	116
	12	Mandatory Recycle		10		165				"	116
		Service	NSS			150				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	1.0415	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.0175	1785	
1.0317	1.03	2295	
	Total:	2975	

Caustic Pump # 5A
Setting: 250/400
Caustic Temp. 120°F
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: 6-8-06
Time: 0022
Run length: 214,000 - 18000 = 195,000 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	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	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
+4	7	PA	FR	22	60	165				165	49
	8	PC to PA	Recycle	30/CT-1 < 20	60	165				165	82
+4	9	SC	FR	17	60	165				165	91
+4	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	320
1.0417	1.041	950	980
	Total:	1590	1650
1.0084	1.008	1020	1020
1.0184	1.018	1785	1900
1.0317	1.031	2295	2420
	Total:	2975	3110

Caustic Pump # A
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

Date: 6/11/06
Time:
Run length: 214,000 - 25000 = 189000 gallons
Service Water pressure: 93 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	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	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					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 # 3
Setting: 250/400
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 8.0
Corrections:
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

Date: 6-14,15-6 6
Time: 0015
Run length: 214,000 - 51,600 = _____ gallons
Service Water pressure: 86 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	68	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			130	116
12	Mandatory Recycle		10			165			130	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	
1.0084	1.008	1020	1020
1.0184	1.018	1785	1850
1.0317	1.030	2295	2300
	Total:	2975	3060

Caustic Pump # A
Setting: 220/400
Caustic Temp. 120
Target = 49° C or 120° F

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

Notes: _____

Regeneration Log (Concurrent Series)

Date: 6/18/06
Time: 0730
Run length: 214,000 - 14,000 = 200,000 gallons
Service Water pressure: 99 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	151	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				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	1.041	950	
	Total:	1590	
			1610
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: 8.0
Corrections: add acid for 30 sec.
Dump ph: 9.0

Notes:

Regeneration Log (Concurrent Series)

Date: 6/20/06
Time: 1353
Run length: 214,000 - 14,000 = 200,000 gallons
Service Water pressure: 93 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	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	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				164	29
7	PA	FR	22	60	165				164	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				164	82
9	SC	FR	17	60	165				165	91
X 10	SA	FR	14/CT-3 < 100	60	165				165	103
X 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	1.041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	

Caustic Pump # A
Setting: 200/400
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: 6-23-06
Time: 1457
Run length: 214,000 - 22000 = _____ gallons
Service Water pressure: 99 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						
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	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	1.0417	950	
	Total:	1590	1610
1.0084	1.0084	1020	
1.0184	1.0184	1785	
1.0317	1.0317	2295	
	Total:	2975	3190

Caustic Pump # A
Setting: 400
Caustic Temp. 120
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: 6-26-6
Time: 14:45
Run length: 214,000 - 147000 = 67 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	94	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	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~~ 59	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	100 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 (5)	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					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.04	290	
1.0417	1.04	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.03	2295	
	Total:	2975	

Caustic Pump # 5B
Setting: 4.00
Caustic Temp. 120°F
Target = 49° C or 120° F

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

Notes:

24300
2430
486
445.50
2164.80
4329.60

Regeneration Log (Concurrent Series)

Date: 6-30-06
Time: 0036
Run length: 214,000 - 18,000 = 196,000 gallons
Service Water pressure: 88 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	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	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
+6 min 7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle	30/CT-1 < 20	60	165				164	82
+4 min. 9	SC	FR	17	60	165				166	91
+4 min. 10	SA	FR	14/CT-3 < 100	60	165				163	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				126	116
12	Mandatory Recycle		10		165				126	116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	1.043	290	300
1.0417	1.043	950	970
	Total:	1590	1620
1.0084	1.0080	1020	
1.0184	1.0190	1785	
1.0317	1.0290	2295	
	Total:	2975	3160

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

Neutralization Basin pH: 9.0
Corrections: 1 min acid
Dump ph: 8.0

Notes:

Regeneration Log (Concurrent Series)

Date: 7/2/06
Time: 1700
Run length: 214,000 - 23 = 191000 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	98	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	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				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				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	280
1.0417	1.041	950	
	Total:	1590	1580
1.0084	1.085	1020	1110
1.0184	1.190	1785	
1.0317	1.031	2295	
	Total:	2975	3050

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

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

Notes:_____

Regeneration Log (Concurrent Series)

Date: 7/5/06
Time: 17:15
Run length: 214,000 - 31 = 183,000 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 #
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	152	36
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				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				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		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	3100

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

Neutralization Basin pH: 7.0
Corrections:
Dump ph:

Notes:

Regeneration Log (Concurrent Series)

Date: 7/8/06
Time: 1422
Run length: 214,000 - 25 000 = 189 000 gallons
Service Water pressure: 86 psi Temp. 80 degrees F
A

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	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				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					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				126	116
12	Mandatory Recycle		10		165				126	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		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3080

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

Neutralization Basin pH: 9.0
Corrections: 1 MIN ACID
Dump ph: 8.0

Notes: _____

Regeneration Log (Concurrent Series)

Date: 7/10/06
Time: 1628
Run length: 214,000 - 148K = _____ 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 #
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	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					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				162	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					116
	Service				150					122

+8
+3
+5

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1041	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1031	2295	
	Total:	2975	3080

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

Neutralization Basin pH: ~~6.8~~ 10.8
Corrections: 3 minutes Acid 4 min caustic
Dump ph: 6.8

Notes: to much acid had to use caustic
RAISE ph. to Dump.

Resin changed on cation

Regeneration Log (Concurrent Series)

Date: 7/11
Time: 1350
Run length: 214,000 - 137K = _____ gallons
Service Water pressure: 90 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°	85°	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	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				74	191/206
6f	SC to PC	3.0% Acid	9	59	85				74	191/207
6g	SC to PC	5.0% Acid	6	59	85				74	191/208
6h	SC to PC	SR	8	59	85				74	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					116
	Service				150					122

+8
+5
+5

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1040	950	
	Total:	1590	1660
1.0084	1.006	1020	
1.0184	1.015	1785	
1.0317	1.030	2295	
	Total:	2975	2610

high

low

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

Neutralization Basin pH: 9.5
Corrections: 2 mins Acid
Dump ph: 7.0

Notes:

Low flow on acid

Regeneration Log (Concurrent Series)

Date: 7/12/06
Time: 1670
Run length: 214,000 - 70,000 = 144,000 gallons
Service Water pressure: 87 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

WAS NOT MONITORED

* NO FLOW THROUGH SAMPLE POINT (CAUSTIC WAS FLOWING)

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	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				164	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				145	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	1.017	1785	
1.0317	1.033	2295	
	Total:	2975	3330

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

Neutralization Basin pH: 9.5
Corrections: Acid 2 min
Dump ph: 7.5

Notes: CT 4 conductivity High fast rinse recycle

Regeneration Log (Concurrent Series)

Date: 7/16/06
Time: 1900
Run length: 214,000 - 33,000 = 181,000 gallons
Service Water pressure: 85 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	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				162	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				124	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	1600
1.0084	1.009	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3110

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

Neutralization Basin pH: 5.0
Corrections: ADD CAUSTIC 4 min
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 7/20/06
Time: 1330
Run length: 214,000 - 4000 = 210,000 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	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	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 15	59	165				165	29
7	PA	FR	22	60	165				165	49
8	PC to PA	Recycle 5	30/CT-1 < 20	60	165				165	82
9	SC	FR	17	60	165				165	91
10	SA	FR 5	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

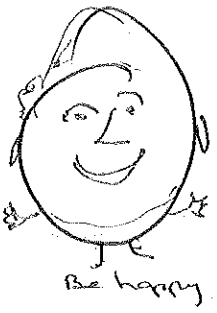
3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417		290	
1.0417	1.011	950	
	Total:	1590	1610
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3160

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

Neutralization Basin pH: 7.0
Corrections:
Dump ph:

Notes:



Regeneration Log (Concurrent Series)

Date: 7-23-06
Time: 1255
Run length: 214,000 - 7,000 = 207,000 gallons
Service Water pressure: 92 psi Temp. 84 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	68	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	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				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	1.042	290	290
1.0417	1.042	950	950
	Total:	1590	1590
1.0084	1.009	1020	1140
1.0184	1.018	1785	1900
1.0317	1.032	2295	2480
	Total:	2975	3190

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

Neutralization Basin pH: 6.5
Corrections: NONE
Dump ph: 6.5

Notes: Prolonged Step 11 by 30 mins.

Regeneration Log (Concurrent Series)

Date: 07/31/06
Time: 0900
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	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				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	300
1.0417	1.042	950	980
	Total:	1590	1610
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3170

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

Neutralization Basin pH: 8.0
Corrections: Caustic & MINS.
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 8-2-06
Time: 0240
Run length: 214,000 - 214 = _____ gallons
Service Water pressure: 48 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	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	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	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				166	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				168	116
12	Mandatory Recycle		10		165				166	116
	Service				150					122

+2

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	1660
1.0084	1.008	1020	940
1.0184	1.018	1785	1900
1.0317	1.031	2295	1990
	Total:	2975	3110

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

Neutralization Basin pH: 10.5
Corrections: 0
Dump ph: _____

Notes: I/S @ 0741

Regeneration Log (Concurrent Series)

Date: 08/03/06
Time: 11:00
Run length: 214,000 - 14000 = 200000 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				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	320
1.0417	1.0412	950	970
	Total:	1590	1640
1.0084	1.008	1020	1120
1.0184	1.018	1785	1890
1.0317	1.037	2295	2400
	Total:	2975	3100

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

Neutralization Basin pH: 5.5
Corrections: caustic 4mins.
Dump ph: 7.0

Notes: I/S @ 1615

Regeneration Log (Concurrent Series)

Date: 08/06/06
Time: 1230
Run length: 214,000 - 12 = 202,000 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	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	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				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	3300
1.0417	1.047	950	1060
	Total:	1590	1730
1.0084	1.008	1020	1140
1.0184	1.018	1785	1920
1.0317	1.031	2295	2440
	Total:	2975	3130

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

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

Notes:

Regeneration Log (Concurrent Series)

Date: 08/09/06
Time: 1306
Run length: 214,000 - 11 000 = 203000 gallons
Service Water pressure: 90 psi Temp. 88 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	68	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	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	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				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	290
1.0417	1.042	950	950
	Total:	1590	1620
1.0084	1.008	1020	1130
1.0184	1.018	1785	1910
1.0317	1.032	2295	2430
	Total:	2975	2730

Caustic Pump # 5A
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)

Date: 08/15/06
Time: 1030
Run length: 214,000 - 6000 = 208000 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	66	68	68	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	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	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				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	1.0412	950	
	Total:	1590	1630
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.037	2295	
	Total:	2975	3130

Caustic Pump # B
Setting: 450
Caustic Temp. 120
Target = 49° C or 120° F

Neutralization Basin pH: 10
Corrections: 3 MINS ACID
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 08/18/06
Time: 0830
Run length: 214,000 - 49000 = 165000 gallons
Service Water pressure: 92 psi Temp. 87 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	68	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	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	310
1.0417	1.042	950	970
	Total:	1590	1640
1.0084	1.008	1020	1140
1.0184	1.018	1785	1920
1.0317	1.032	2295	2440
	Total:	2975	3140

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

Neutralization Basin pH: 6.6
Corrections:
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 08/23/06
Time: 0800
Run length: 214,000 - 12000 = 202000 gallons
Service Water pressure: 94 psi Temp. 87 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	68	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	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	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				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	320
1.0417	1.042	950	990
	Total:	1590	1630
1.0084	1.008	1020	1140
1.0184	1.018	1785	1930
1.0317	1.037	2295	2450
	Total:	2975	3150

Caustic Pump # A
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: 08/25/06
Time: 2215
Run length: 214,000 - 15080 = 199000 gallons
Service Water pressure: 100 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	69	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	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				160	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	1.0411	950	
	Total:	1590	1600
1.0084	1.0081	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3150

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

Neutralization Basin pH: 6.5
Corrections:
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 9-16-06
Time: 0300
Run length: 214,000 - 114K = 200K gallons
Service Water pressure: 92 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	98	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				88	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					49
8	PC to PA	Recycle	30/CT-1 < 20	60	165					82
9	SC	FR	17	60	165					91
10	SA	FR	14/CT-3 < 100	60	165				122	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165					116
12	Mandatory Recycle		10		165					116
	Service				150				148	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	1146
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.031	2295	
	Total:	2975	3100

Caustic Pump # B
Setting: 400
Caustic Temp. 118 °F
Target = 49° C or 120° F

Neutralization Basin pH: OK
Corrections: None
Dump ph: 7.4

Notes:

Regeneration Log (Concurrent Series)

Date: 9/19/06
Time: 12:36
Run length: 214,000 - 14,000 = 200,000 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 #
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	97	97
X	4	PA	BW	15	59	50	57	62	64	61	53
X	5	PC	BW	15	59	120	140	153	158	152	36
1406 X	6a	SA	5% NaOH	29	60	10				10	155
1500 X	6b	SA to PA	5% NaOH	66	60	10				10	155
1532 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
X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
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
1559 X	7	PA	FR	22	60	165				165	49
1630 X	8	PC to PA	Recycle	30/CT-1 < 20	60	165				162	82
1647 X	9	SC	FR	17	60	165				165	91
1704 X	10	SA	FR	14/CT-3 ~~<100~~ 5	60	165				165	103
1721 X	11	Rinse Recycle		13/CT-5 < 2.00	60	165				123	116
X	12	Mandatory Recycle		10		165				123	116
		Service				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	1.032	2295	
	Total:	2975	

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

Neutralization Basin pH: 5.5
Corrections: 3 min Caustic
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 09-24-06
Time: 12:36
Run length: 214,000 - 12,000 = 202 K gallons
Service Water pressure: 97 psi Temp. 88°F 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

(12)

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1238-1253	1	SA	BW	15	60	50	57	66	68	65	110
(2) (13) 55-05	2	SA	Settle	3	60					✓	
	3	SC	BW	10	59	75	87	97	101	97	97
1305-1320	4	PA	BW	15	59	50	57	62	64	62	53
1320-1335	5	PC	BW	15	59	120	140	153	158	153	36
1320-1350	6a	SA	5% NaOH	29	60	10				10	155
1350-1456	6b	SA to PA	5% NaOH	66	60	10				10	155
1456-1528	6c	SA to PA	SR	32	60	20				20	156
1528-1531	6d	PC	Settle	3	60	0				✓	
1338-1350	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
1351-1360	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1360-1406	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
1406-1414	6h	SC to PC	SR	8	59	85				85	191
1414-1430	6i	PC	FR	16	59	165				165	29
1528-1558	7	PA	FR	<10 22	60	165				165	49
16:29-16:29	8	PC to PA	Recycle	30/CT-1 < 20 ✓	60	165				163	82
16:29-1650	9	SC	FR	<5 17 ✓	60	165				165	91
16:50-17:04	10	SA	FR	14/CT-3 < 5 ✓	60	165				122	VWO 103
17:04-17:17	11	Rinse Recycle		13/CT-5 < 2.00 ✓	60	165				120	116
17:17-17:2	12	Mandatory Recycle		10		165				120	116
		Service				150					122

3%= 1.0215
5%=1.0417

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

+ 8 mins. Prolong to 15:58 hr.
+4 mins. Prolong to 16:50 hr

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

Neutralization Basin pH: 5.0
Corrections: Added caustic.
Dump ph: 6.5

Notes:

1350+66
± 1450+6
= 1456

Regeneration Log (Concurrent Series)

Date: 09/27/06
Time: 14 34 *
Run length: 214,000 - 8000 = 206000 gallons
Service Water pressure: 96 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

* 1434-1435 delay

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1435-1451 →	1	SA	BW	15 ✓	60	50	57	66	68	66	110
1451-1517 →	2	SA	Settle	3 326	60					✓	
1452-1502 →	3	SC	BW	10 ✓	59	75	87	97	101	97 ✓	97
1502-1517 →	4	PA	BW	15 ✓	59	50	57	62	64	62	53
1517-1532 →	5	PC	BW	15 ✓	59	120	140	153	158	150	36
1517-1546 →	6a	SA	5% NaOH	29 ✓	60	10				10	155
1546-1652 →	6b	SA to PA	5% NaOH	66 ✓	60	10				10	155
1652-1725 →	6c	SA to PA	SR	32	60	20				20	156
1732-1735 →	6d	PC	Settle	3	60	0				—	
Delay 1736-1748 →	6e	SC to PC	1.5% Acid	12 ✓	59	85				85	191/206
1748-1757 →	6f	SC to PC	3.0% Acid	9 ✓	59	85				85	191/207
1757-1603 →	6g	SC to PC	5.0% Acid	6 ✓	59	85				85	191/208
1603-1611 →	6h	SC to PC	SR	8 ✓	59	85				85	191
1611-1627 →	6i	PC	FR	16 ✓	59	165				165	29
1725 →	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				120	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	
1.0084	1.0085	1020	
1.0184	1.02	1785	
1.0317	1.032	2295	
	Total:	2975	

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

Neutralization Basin pH: 3.5
Corrections: 10 min caustic
Dump ph: 6.4

Notes:

46 66 112
69 57 172
16:52 - 1724

52 33 84
60 24

1849
stc

Regeneration Log (Concurrent Series)

Date: Oct 1, 06
Time: 0230
Run length: 214,000 - 8000 = 206000 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	98	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				87	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	27 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				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	1.040	950	
	Total:	1590	
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	

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

Neutralization Basin pH: OK
Corrections: N/A
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 10-3-06
Time: 2200
Run length: 214,000 - Ø = 214000 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	60	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	60	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				88	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				88	191
6i	PC	FR	16	59	165				166	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				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		290	
1.0417	1.041	950	
	Total:	1590	1590
1.0084	1.0085	1020	
1.0184	1.018	1785	
1.0317	1.032	2295	
	Total:	2975	3100

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

Neutralization Basin pH: 7.4
Corrections: N/A (3 min acid)
Dump ph: 6.5

Notes:

Regeneration Log (Concurrent Series)

Date: 10/3/06
Time: 1905
Run length: 214,000 - 23,000 = _____ gallons
Service Water pressure: 93 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 #
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
X	5	PC	BW	15	59	120	140	153	158	153	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
X	6d	PC	Settle	3	60	0					
X	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
X	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
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				158	82
X	9	SC	FR	17	60	165				165	91
X	10	SA	FR	14/CT-3 < 100	60	165				165	103
X	11	Rinse Recycle		13/CT-5 < 2.00	60	165				122	116
X	12	Mandatory Recycle		10		165				122	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	
1.0084	—	1020	
1.0184	—	1785	
1.0317	—	2295	
	Total:	2975	

Caustic Pump # B
Setting: ~~100~~ 400
Caustic Temp. 121
Target = 49° C or 120° F

Neutralization Basin pH: 6.3
Corrections: None
Dump ph: 6.3

Notes: Hydrometer is Broken

Regeneration Log (Concurrent Series)

Date: 10/9/06
Time: 0200
Run length: 214,000 - 6000 = 208000 gallons
Service Water pressure: 84 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

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	87	97
4	PA	BW	15	59	50	57	62	64	62	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				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					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					116
	Service				150					122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417		950	
	Total:	1590	1680
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3166

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

Neutralization Basin pH: 7.0
Corrections: N/A
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: 10-18-06
Time: 1330
Run length: 214,000 - 2 = 212000 gallons
Service Water pressure: 84 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	105	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	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				86	191
6i	PC	FR	16	59	165				165	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				162	91
10	SA	FR	14/CT-3 < 100	60	165				162	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				162	116
12	Mandatory Recycle		10		165				162	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	~~1400~~ 1600
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3700

Caustic Pump # A
Setting: 400
Caustic Temp. 100°F
Target = 49° C or 120° F

Neutralization Basin pH: 7.0
Corrections: N/A
Dump ph: 7

Notes:

✓ - in progress stage
✓ - completed stage

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: 10-11-06
Time: 18:48
Run length: 214,000 - 12,000 = 202,000 gallons
Service Water pressure: 86 psi Temp. 80° degrees F

Activity Duration

1848 : 1 minute Delay PSB

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	26 mins 3 ✓	60					26 MINS ✓	
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	+ Delay Settle	3 ✓	~~60~~ 59		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~~ 28 mins ✓	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			123 ✓	116
12	Mandatory Recycle		10			165			122 ✓	116
	Service					150				122

ACID
3%= 1.0215
5%=1.0417

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

Activity Duration:
18:49 - 1904 →
1904 - 1930 →
1905 - 1915 →
1915 - 1930 →
1930 - 1945 →
1930 - 1959 →
1959 - 2105 →
2105 - 2137 →
1945 - 1948 →
1948 - 2000 →
2001 - 2010 →
2010 - 2016 →
2016 - 202[illegible] →
2024 - 2040 →
2137 - 2205 →
2205 - 2235 →
2235 - 2257 →
2257 - 2311 →
2311 - 2325 →
2325 - 2335 →
2335 →

← Actual time 28 Mins. Not 22 - without any prolong.

PROLONG 6 MINS

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

NB Found VLV #91 closed.

Neutralization Basin pH: 5
Corrections: Add Caustic 5 MINS.
Dump ph: 6.0

Notes:

* N.B This time (duration) was actually 28 mins. not 22.

Defect - Acid (dilute) Sample Line. No Flow thru VLV # CWTD BV 200 (1/2" Stainless line). Dilute Acid flow thru 2 3/4" to 3" line good.
Supervisor informed.
~~Pilot lamp~~ (Mimic) ~~for VLV ABV-55 (caustic) to PA out.~~
" " for PA - caustic Application ~~out~~ poor/dull
~~PC inlet valve ABV-24 fail open.~~

Regeneration Log (Concurrent Series)

Date: 10/14/06
Time: 2020
Run length: 214,000 - 0700 = 207000 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				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	1650
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
Target = 49° C or 120° F

Neutralization Basin pH: 6.5
Corrections:
Dump ph: 6.6

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: 10-20-06
Time: 14:12
Run length: 214,000 - 11,000 = 203000 gallons
Service Water pressure: 97 psi Temp. 78° degrees F

1412 – 1413 delay.

	Step	Vessel	Process	Time	Add.	GPM Target 60°	70°	80°	83°	Actual	RSV #
1413–1428	1	SA	BW	15	60	50	57	66	68	65	110
1428–1429	2	SA	Settle	3	60	—	—	—	—	—	
1429–1439	3	SC	BW	10	59	75	87	97	101	95	97
1439–1454	4	PA	BW	15	59	50	57	62	64	61	53
1454–1509	5	PC	BW	15	59	120	140	153	158	151	36
1454–1523	6a	SA	5% NaOH	29	60	10				10	155
1523–1629	6b	SA to PA	5% NaOH	66	60	10				10	155
1629–1701	6c	SA to PA	SR	32	60	20				20	156
1509–1512	6d	PC	Settle	3	~~60~~ 59	0				0	—
1513–1526	6e	SC to PC	1.5% Acid	12	59	85				85	191/206
1526–1534	6f	SC to PC	3.0% Acid	9	59	85				85	191/207
1534–1541	6g	SC to PC	5.0% Acid	6	59	85				85	191/208
1541–1549	6h	SC to PC	SR	8	59	85				85	191
1549–1605	6i	PC	FR	16	59	165				165	29
1701–1729	7	PA	FR	22	60	165				165	49
1729–1801	8	PC to PA	Recycle	30/CT-1 < 20	60	165				162	82
1801–1818	9	SC	FR	17	60	165				165	91
1818–	10	SA	FR	14/CT-3 < ~~100~~ 5	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	1.042	290	
1.0417	1.042	950	
	Total:	1590	
1.0084	1.0085	1020	
1.0184	1.02	1785	
1.0317	1.03	2295	
	Total:	2975	

← Actual Time = 28 Mins Not 220
← Prolong 1 minute.

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

Neutralization Basin pH: 5.0
Corrections:
Dump ph: 7.0

Notes: Add caustic for 6 min.

Regeneration Log (Concurrent Series)

Date: 10/27/06
Time:
Run length: 214,000 - 71000 = 143000 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

Hydrometer Broken.

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				163	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				124	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	1.008	1020	
1.0184		1785	
1.0317		2295	3190
	Total:	2975	

F/R stuck. MANUAL operation

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

Step 7
Timer Ended unit would not get out of FAST Rinse wanted to manual mode.
DID FAST Rinse Recycle stuck IN Recycle mode.
Reset switch BACK to AUTO, FAST Rinse Reset.

Neutralization Basin pH: 5.5
Corrections: 3 minutes Caustic
Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 10\30\06
Time: 11:00
Run length: 214,000 - 11000 = 203,000 gallons
Service Water pressure: 76 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	149	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				155	91
10	SA	FR	14/CT-3 < 100	60	165				150	103
11	Rinse Recycle		13/CT-5 < 2.00	60	165				152	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	Broken	290	
1.0417	meter	950	
	Total:	1590	1600
1.0084	meter	1020	
1.0184	broke	1785	
1.0317		2295	
	Total:	2975	3190

Caustic Pump # B
Setting: 400
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: 11/01/06
Time: 1230
Run length: 214,000 - 21000 = 193000 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				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				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	1620
1.0084		1020	
1.0184		1785	
1.0317		2295	
	Total:	2975	3190

Caustic Pump # 3
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)

Date: 11/5/06
Time: 1850
Run length: 214,000 - 23 = _____ gallons
Service Water pressure: 92 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

5 COUNTED UP
ON 60
NO TIMER

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	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				122	116
12	Mandatory Recycle		10		165				122	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	1760
1.0084	1.009	1020	
1.0184	1.019	1785	
1.0317	1.030	2295	
	Total:	2975	3150

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

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

Notes: _____

Regeneration Log (Concurrent Series)

Date: 11-7-06
Time: 20:00
Run length: 214,000 - 25000 = _____ gallons
Service Water pressure: 92 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 #
1947 2002	1	SA	BW	15	60	50	57	66	68	60	110
2002 2005	2	SA	Settle	3	60						
2005 2015	3	SC	BW	10	59	75	87	97	101	97	97
2016 2031	4	PA	BW	15	59	50	57	62	64	62	53
2030	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			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			122	116
	12	Mandatory Recycle		10			165			122	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	1.030	2295	
	Total:	2975	3090

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

Neutralization Basin pH: 6.7
Corrections: NONE
Dump ph: 6.7

Notes:

TOTAL CL
BEFORE 1.89
AFTER 0.00

Regeneration Log (Concurrent Series)

Date: 11/9/06
Time: 1900
Run length: 214,000 - 214000 = 27000 gallons
Service Water pressure: 80 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	87	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				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				125	116
12	Mandatory Recycle		10		165				125	116
	Service				150				150	122

3%= 1.0215
5%=1.0417

Hydrometer Target	Hydrometer Actual	Dilution Water Target	Dilution Water Actual
1.0417	—	290	310
1.0417	1.04	950	1050
	Total:	1590	1650
1.0084	1.008	1020	1030
1.0184	1.018	1785	1900
1.0317	1.032	2295	2320
	Total:	2975	3110

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

Neutralization Basin pH: 7.9
Corrections: NONE
Dump ph: 7.9

Notes:

Regeneration Log (Concurrent Series)

Date: 11-21-06
Time: 0830
Run length: 214,000 - 21 K = _____ gallons
Service Water pressure: 90 psi Temp. 75 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				95	191
6i	PC	FR	16	59	165				165	29
7	PA	FR	~~22~~ 28	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					116
12	Mandatory Recycle		10		165					116
	Service				150					122

11:25 - 55
1155 1034
1220
.16
.215 - 1245
.253 - 1318
.318 - 1332
1333 - 1347

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	1650
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.036	2295	
	Total:	2975	3120

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

Neutralization Basin pH: 6.8
Corrections: —
Dump ph: 6.8

Notes: _____