

Regeneration Log (Concurrent Series)

Date: 12/29/08

Time: 0906

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

Service Water pressure: 94 psi Temp. 72 degrees F

PA=Primary Anion

SC=Secondary Cation

SA=Secondary Anion

BW=Back Wash

SR=Slow Rinse

FR=Fast Rinse

RSV=Rate Set Valve

[illegible]

Neutralization Basin pH: 9.5
Corrections: acid 2 mins
Dump pH: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 12/24/05

Time: 0045

Run length: 214,000 - 13000 = 201000 gallons

Service Water pressure: 92 psi Temp. 70 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	57	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	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.041	950	
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1600
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.009	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.032	2295	
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3120
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				159	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 <200	60	165				145	116				
12	Mandatory Recycle		10		165					116				
	Service				150					122				

Caustic Pump # B'

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 6.9

Corrections: None

Dump pH: 6.9

Notes:

Regeneration Log (Concurrent Series)

Date: 12/7/05

Time: 1200

Run length: $214,000 - 18,000 =$ _____ gallons

Service Water pressure: 110 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	65	110				
2	SA	Settle	3	60								3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	94	97		5%=1.0417		
4	PA	BW	15	59	50	57	62	64	58	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	147	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.0411	950	
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1608
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.0009	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.031	2295	
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3170
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 < 500	60	165				165	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				145	116				
12	Mandatory Recycle		10		165				160	116				
	Service				150					122				

Caustic Pump # 13

Setting: 400

Caustic Temp. 121

Target = 49° C or 120° F

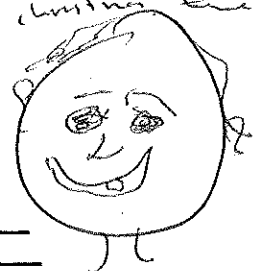
to churning time

Neutralization Basin pH: 8.0

Corrections:

Dump ph: 80

Notes:



Regeneration Log (Concurrent Series)

Date: 11/30/05
 Time: 1300
 Run length: 214,000 - 24000 = 190000 gallons
 Service Water pressure: 93 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				Actual	RSV #				
					60°	70°	80°	83°						
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	3% NaOH	29	60					10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60					10	155	1.0417	1.041	950	
6c	SA to PA	SR	32	60					20	156	Total:		1590	
6d	PC	Settle	3	60					0					
6e	SC to PC	1.5% Acid	12	59					85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59					85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59					85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59					85	191	Total:		2975	
6i	PC	FR	16	59					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 <500	60					165	103				
11	Rinse Recycle		13/CT-5 <200	60					165	116				
12	Mandatory Recycle		10						165	116				
	Service								150	122				

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

Neutralization Basin pH: 10
 Corrections: 1.5 Acid
 Dump pH: 7.0

Notes: _____

Regeneration Log (Concurrent Series)

Date: 11-25-05

Time: 1900

Run length: 214,000 - 13,000 = 211,000 gallons

Service Water pressure: 82 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	62	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	94	97				
4	PA	BW	15	59	50	57	62	64	60	53				
5	PC	BW	15	59	120	140	153	158	147	36				
6a	SA	3% NaOH	29	60	10				10	155	1.0417	1.042	290	290
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.043	950	950
6c	SA to PA	SR	32	60	20				20	156	Total:		1590	1590
6d	PC	Settle	3	60	0				-					
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.010	1020	1140
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.019	1785	1940
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.032	2295	2460
6h	SC to PC	SR	8	59	85				85	191	Total:		2975	3150
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 <500	60	165				165	103				
11	Rinse Recycle		13/CT-5 <200	60	165				165	116				
12	Mandatory Recycle		10		165				124	116				
	Service				150					122				

Caustic Pump # A

Setting: 400

Caustic Temp. 121

Target = 49° C or 120° F

Neutralization Basin pH: 9.4 1 min Acid

Corrections:

Dump pH: 7.5

Notes:

Regeneration Log (Concurrent Series)

Date: 11-21-05

Time: 23/0

Run length: $214,000 - 28K = 186K$ gallons

Service Water pressure: 91 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	62	110				
2	SA	Settle	3	60					✓			3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	88	97		5%= 1.0417		
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	156	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				12	155	1.0417	1.212	290	✓
6b	SA to PA	3% NaOH	66	60	10				15	155	1.0417	1.04	950	✓
6c	SA to PA	SR	32	60	20				18	156	✓	✓ Total:	1590	✓
6d	PC	Settle	3	60	0				—	—	—	—		—
6e	SC to PC	1.5% Acid	12	59	85				88	191/206	1.0084	1.087	1020	✓
6f	SC to PC	3.0% Acid	9	59	85				88	191/207	1.0184	1.086	1785	✓
6g	SC to PC	5.0% Acid	6	59	85				88	191/208	1.0317	1.1072	2295	✓
6h	SC to PC	SR	8	59	85				86	191		Total:	2975	✓
6i	PC	FR	16	59	165				160	29	Caustic Pump # _____ Setting: _____ Caustic Temp. _____ Target = 49° C or 120° F			
7	PA	FR	22	60	165				162	49				
8	PC to PA	Recycle	30/CT-1 < 20	60	165				163	82				
9	SC	FR	17	60	165				164	91				
10	SA	FR	14/CT-3 < 500	60	165				142	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				112	116				
12	Mandatory Recycle		10		165				142	116				
	Service				150				186	122				

Neutralization Basin pH: ✓

Corrections: nk

Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 11-09-05

Time: 19:52

Run length: $214,000 - 28,000 = 186,000$ gallons

Service Water pressure: 92 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				Actual	RSV #	
					60°	70°	80°	83°			
1	SA	BW	15	60	50	57	56	68	64	110	
2	SA	Settle	3	60					✓	—	3%= 1.0215
3	SC	BW	10	59	75	87	97	101	94	97	5%=1.0417
4	PA	BW	15	59	50	57	62	64	60	53	Hydrometer
5	PC	BW	15	59	120	140	153	158	146	36	Dilution Water
6a	SA	3% NaOH	29	60	10				10	155	Target
6b	SA to PA	3% NaOH	66	60	10				10	155	Actual
6c	SA to PA	SR	32	60	20				20	156	Target
6d	PC	Settle	3	60	0						Actual
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	Total:
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1590
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	Total:
7	PA	FR	22	60	165				165	49	2975
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-3 500	60	165				165	103	
11	Rinse Recycle		13/CT-5 200	60	165				125	116	
12	Mandatory Recycle		10		165					116	
	Service				150					122	

Caustic Pump # 5A

Setting: 400

Caustic Temp. 120°

Target = 49° C or 120° F

Neutralization Basin pH: 8.4

Corrections: _____ OK

Dump ph: 9.4

Notes: _____

Regeneration Log (Concurrent Series)

Date: 11/4/05

Time: 0915

Run length: 214,000 - 13,000 = 201,000 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	62	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	91	97				
4	PA	BW	15	59	50	57	62	64	60	53				
5	PC	BW	15	59	120	140	153	158	148	36				
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.0417	950	
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1.600
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3130
6i	PC	FR	16	59	165				165	29				
7	PA	FR	22	60	165				165	49				
8	PC to PA	Recycle	30CT-1 <20	60	165				162	82				
9	SC	FR	17	60	165				165	91				
10	SA	FR	14CT-3 <500	60	165				165	103				
11	Rinse Recycle		13CT-5 <200	60	165				126	116				
12	Mandatory Recycle		10		165					116				
	Service				150					122				

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.8

Corrections: Acid NEUT. 1.5 min

Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 10/29/05

Time: 09:00

Run length: $214,000 - 18,000 = 196,000$ gallons

Service Water pressure: 88 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				Actual	RSV #		
					60°	70°	80°	83°				
1	SA	BW	15	60	50	57	66	68	63	110		
2	SA	Settle	3	60								
3	SC	BW	10	59	75	87	97	101	92	97		
4	PA	BW	15	59	50	57	62	64	59	53		
5	PC	BW	15	59	120	140	153	158	147	36	Hydrometer	Dilution Water
6a	SA	3% NaOH	29	60		10			10	155	Target	Actual
6b	SA to PA	3% NaOH	66	60		10			10	155	Target	Actual
6c	SA to PA	SR	32	60		20				156	Total:	1590
6d	PC	Settle	3	60		0						
6e	SC to PC	1.5% Acid	12	59		85			84	191/206	1.0084	1.008
6f	SC to PC	3.0% Acid	9	59		85			84	191/207	1.0184	1.018
6g	SC to PC	5.0% Acid	6	59		85			84	191/208	1.0317	1.030
6h	SC to PC	SR	8	59		85			85	191	Total:	2975
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 < 500	60		165			165	103		
11	Rinse Recycle		13/CT-5 < 200	60		165			135	116		
12	Mandatory Recycle		10			165			135	116		
	Service					150				122		

3%= 1.0215

5%= 1.0417

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH:

Corrections: ~~3 mins~~ A C I D 3 mins

Dump ph: 15

Notes:

Regeneration Log (Concurrent Series)

Date: 10/25/05
 Time: 0900
 Run length: 214,000 - 14,000 = 200,000 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				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	<u>62</u>	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	<u>92</u>	97
4	PA	BW	15	59	50	57	62	64	<u>58</u>	53
5	PC	BW	15	59	120	140	153	158	<u>147</u>	36
6a	SA	3% NaOH	29	60		10			<u>10</u>	155
6b	SA to PA	3% NaOH	66	60		10			<u>10</u>	155
6c	SA to PA	SR	32	60		20			<u>20</u>	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			<u>84</u>	191/206
6f	SC to PC	3.0% Acid	9	59		85			<u>84</u>	191/207
6g	SC to PC	5.0% Acid	6	59		85			<u>84</u>	191/208
6h	SC to PC	SR	8	59		85			<u>85</u>	191
6i	PC	FR	16	59		165			<u>165</u>	29
7	PA	FR	22	60		165			<u>165</u>	49
8	PC to PA	Recycle	30/CT-1 <20	60		165			<u>165</u>	82
9	SC	FR	17	60		165			<u>165</u>	91
10	SA	FR	14/CT-3 <500	60		165			<u>165</u>	103
11	Rinse Recycle		13/CT-5 <200	60		165			<u>125</u>	116
12	Mandatory Recycle		10			165			<u>125</u>	116
	Service					150				122

3%=1.0215
 5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	<u>1.040</u>	950	
	Total:	1590	<u>1580</u>
1.0084	<u>1.008</u>	1020	
1.0184	<u>1.018</u>	1785	
1.0317	<u>1.030</u>	2295	
	Total:	2975	<u>3340</u>

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

Neutralization Basin pH: 9.5
 Corrections: Acid 3 MINS.
 Dump pH: 6.5

Notes: _____

Regeneration Log (Concurrent Series)

Date: 10/22/05
 Time: 1500
 Run length: 214,000 - 21000 = 193000 gallons
 Service Water pressure: 89 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				Actual	RSV #				
					60°	70°	80°	83°						
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	60	53				
5	PC	BW	15	59	120	140	153	158	152	36				
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	300
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.042	950	950
6c	SA to PA	SR	32	60	20				20	156	Total:		1590	1590
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.011	1020	1100
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.019	1785	1870
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.031	2295	2370
6h	SC to PC	SR	8	59	85				85	191	Total:		2975	3050
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				163	91				
10	SA	FR	14/CT-3 <500	60	165				165	103				
11	Rinse Recycle		13/CT-5 <200	60	165				130	116				
12	Mandatory Recycle		10		165				132	116				
	Service				150				161	122				

Caustic Pump # 8"

Setting: 400

Caustic Temp. 120°F

Target = 49° C or 120° F

Neutralization Basin pH: 7.4
 Corrections: no corrections
 Dump pH: 7.4

Notes: (eat mor chicken)

Regeneration Log (Concurrent Series)

Date: 10/19/05

Time: 1900

Run length: $214,000 - 21,000 = 193,000$ 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				Actual	RSV #				
					60°	70°	80°	83°						
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	Hydrometer	Dilution Water		
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1041	950	
6c	SA to PA	SR	32	60		20			20	156		Total:	1590	1630
6d	PC	Settle	3	60		0			0					
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.031	2295	
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	3270
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 < 500	60		165			165	103				
11	Rinse Recycle		13/CT-5 < 200	60		165			165	116				
12	Mandatory Recycle		10			165			132	116				
	Service					150			132	122				

3% = 1.0215

5% = 1.0417

Caustic Pump # 13

Setting: _____

Caustic Temp. _____

Target = 49° C or 120° F

Neutralization Basin pH: 7.5

Corrections: o.k

Dump ph: 7.5

Notes:

Regeneration Log (Concurrent Series)

Date: 10/9/07

Time: 2200

Run length: 214,000 - 150,000 = 199,000 gallons

Service Water pressure: 90 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	<u>66</u>	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	<u>97</u>	97				
4	PA	BW	15	59	50	57	62	64	<u>62</u>	53				
5	PC	BW	15	59	120	140	153	158	<u>152</u>	36				
6a	SA	3% NaOH	29	60	10				<u>10</u>	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				<u>10</u>	155	1.0417		950	
6c	SA to PA	SR	32	60	20				<u>20</u>	156	Total:		1590	<u>1628</u>
6d	PC	Settle	3	60	0				<u>0</u>					
6e	SC to PC	1.5% Acid	12	59	85				<u>85</u>	191/206	1.0084	<u>1.008</u>	1020	
6f	SC to PC	3.0% Acid	9	59	85				<u>85</u>	191/207	1.0184	<u>1.019</u>	1785	
6g	SC to PC	5.0% Acid	6	59	85				<u>85</u>	191/208	1.0317	<u>1.030</u>	2295	
6h	SC to PC	SR	8	59	85				<u>85</u>	191	Total:		2975	<u>3110</u>
6i	PC	FR	16	59	165				<u>165</u>	29				
7	PA	FR	22	60	165				<u>165</u>	49				
8	PC to PA	Recycle	30/CT-1 <20	60	165				<u>165</u>	82				
9	SC	FR	17	60	165				<u>165</u>	91				
10	SA	FR	14/CT-3 <500	60	165				<u>165</u>	103				
11	Rinse Recycle		13/CT-5 <200	60	165				<u>130</u>	116				
12	Mandatory Recycle		10		165				<u>130</u>	116				
	Service				150					122				

Caustic Pump # 5B

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)

Date: 10-7-05

Time: 1410

Run length: $214,000 - 37,000 = 177,000$ gallons

Service Water pressure: 91 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				Actual	RSV #		
					60°	70°	80°	83°				
1	SA	BW	15	60	50	57	66	68	67	110		
2	SA	Settle	3	60								3%= 1.0215
3	SC	BW	10	59	75	87	97	101	94	97		5%= 1.0417
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer	
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417	290
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.0420
6c	SA to PA	SR	32	60		20			20	156		Total: 1590
6d	PC	Settle	3	60		0						
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.0080
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.019
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.030
6h	SC to PC	SR	8	59		85			85	191		Total: 2975
6i	PC	FR	16	59		165			165	29		3140
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 < 500	60		165			165	103		
11	Rinse Recycle		13/CT-5 < 200	60		165			128	116		
12	Mandatory Recycle		10			165			130	116		
	Service					150				122		

Caustic Pump # A

Setting: 400

Caustic Temp. 119

Target = 49° C or 120° F

Neutralization Basin pH: 4.0

Corrections: 3 min Caustic

Dump ph: 6.5

Notes: Hope This regen is good. (Nils 😊 😞)

Regeneration Log (Concurrent Series)

Date: 10/4/05

Time: 2040

Run length: 214,000 - 23,000 = 191,000 gallons

Service Water pressure: 91 psi Temp. 80 degrees F

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

GPM Target										
Step	Vessel	Process	Time	Add.	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	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			162	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 <200	60		165			127	116
12	Mandatory Recycle		10			165			127	116
	Service					150				122

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.040	950	
	Total:	1590	1610
	Total:	2975	3100

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.1

Corrections: 0

Dump pH: 7.1

Notes:

Regeneration Log (Concurrent Series)

Date: 10/02/05

Time: 1:00

Run length: $214,000 - 20,000 = 194,000$ gallons

Service Water pressure: 100# psi Temp. 80° 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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	66	110				
2	SA	Settle	3	60								3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	97	97		5%=1.0417		
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417	1.042	290	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.040	950	
6c	SA to PA	SR	32	60		20			20	156		Total:	1590	1610
6d	PC	Settle	3	60		0			✓					
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	3110
6i	PC	FR	16	59		165			165	29				
7	PA	FR	22	60		165			165	49				
8	PC to PA	Recycle	30/CT-1 20	60		165			161	82				
9	SC	FR	17	60		165			165	91				
10	SA	FR	14/CT-3 500	60		165			165	103				
11	Rinse Recycle		13/CT-5 200	60		165			127	116				
12	Mandatory Recycle		10			165			127	116				
	Service					150				122				

Caustic Pump # 13

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 6.8

Corrections:

Dump ph: 1200

Notes:

Regeneration Log (Concurrent Series)

Date: 9-30-05

Time: 1857

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

Service Water pressure: 80 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

GPM Target										Actual	RSV #
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°			
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	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			165	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-3 <200	60		165			128	116	
12	Mandatory Recycle		10			165			128	116	
	Service					150				122	

3%= 1.0215
 5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.042	290	310
1.0417	1.042	950	980
Total:		1590	1600
Total:		2975	3120

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

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.042	290	310
1.0417	1.042	950	980
	Total:	1590	1600
1.0084	1.008	1020	1130
1.0184	1.018	1785	1910
1.0317	1.031	2295	2420
	Total:	2975	3120

Caustic Pump # A'

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.7

Corrections:

Dump ph: 7.2

1 min H₂SO₄

Notes:

Regeneration Log (Concurrent Series)

Date: 9-22-05

Time: 1500

Run length: 214,000 - 20000 = 7 gallons

Service Water pressure: 85 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

					GPM Target									
Step	Vessel	Process	Time	Add.	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	57	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	140	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.042	950	
6c	SA to PA	SR	32	60	20				20	156	Total:		1590	1600
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.031	2295	
6h	SC to PC	SR	8	59	85				85	191	Total:		2975	3100
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 <500	60	165				160	103				
11	Rinse Recycle		13/CT-5 <200	60	165				145	116				
12	Mandatory Recycle		10		165				140	116				
	Service				150					122				

3%= 1.0215

5%=1.0417

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 5.0

Corrections: Add caustic for 2 min.

Dump ph: 7.0

Notes: _____

Regeneration Log (Concurrent Series)

Date: 9/20/05

Time: 1900

Run length: 214,000 - 23000 = 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

					GPM Target									
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	Actual	RSV #				
1	SA	BW	15	60	50	57	66	68	66	110				
2	SA	Settle	3	60							3%= 1.0215			
3	SC	BW	10	59	75	87	97	101	98	97	5%=1.0417			
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				10	155	1.0417	1.0420	290	300
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417		950	
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.009	1020	1110
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.180	1785	1880
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.320	2295	
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	
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	Caustic Pump # <u>A</u>			
10	SA	FR	14/CT-3 < 500	60	165				165	103	Setting: <u>400</u>			
11	Rinse Recycle		13/CT-5 < 200	60	165				128	116	Caustic Temp. <u>120</u>			
12	Mandatory Recycle		10		165				126	116	Target = 49° C or 120° F			
	Service				150					122				

Caustic Pump # A'

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 10.5

Corrections: 4.0 min Acid

Dump pH: 7.5

Notes:

Regeneration Log (Concurrent Series)

Date: 9/17/05

Time: 1025

Run length: 214,000 - 2000 = 207,000 gallons

Service Water pressure: _____ psi Temp. _____ degrees F

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

GPM Target										Actual	RSV #					
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°				3%= 1.0215		5%=1.0417		
1	SA	BW	15	60	50	57	66	68	65	110						
2	SA	Settle	3	60												
3	SC	BW	10	59	75	87	97	101	98	97						
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water			
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual		
6a	SA	3% NaOH	29	60		10			10	155	1.0417		290			
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.042	950			
6c	SA to PA	SR	32	60		20			20	156		Total:	1590	1580		
6d	PC	Settle	3	60		0										
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008	1020			
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018	1785			
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.031	2295			
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	3130		
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 <500	60		165			165	103						
11	Rinse Recycle		13/CT-5 <200	60		165			127	116						
12	Mandatory Recycle		10			165			127	116						
	Service					150			150	122						

Caustic Pump # A

Setting: 400

Caustic Temp. 122

Target = 49° C or 120° F

Caustic Pump # A

Setting: 400

Caustic Temp. 122

Target = 49° C or 120° F

Neutralization Basin pH: 10.4

Corrections: 3.5 min acid

Dump pH: 7.2

Notes: _____

Regeneration Log (Concurrent Series)

Date: 9/15/05

Time: 0100

Run length: 214,000 - 0 = 214,000 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

GPM Target										
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	152	36
6a	SA	3% NaOH	29	60	10				10	155
6b	SA to PA	3% NaOH	66	60	10				10	155
6c	SA to PA	SR	32	60	20				20	156
6d	PC	Settle	3	60	0					
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 <500	60	165				165	103
11	Rinse Recycle		13/CT-5 <200	60	165				127	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	1.041	950	
Total:		1590	1590
Total:		2975	3120

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 3.3

Corrections: 6 min caustic

Dump pH: 6.1

Notes:

01:00
17-22"

Regeneration Log (Concurrent Series)

Date: 9-12-05

Time: 1210

Run length: 214,000 - 1,000 = 213,000 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				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	<u>66</u>	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	<u>88</u>	97
4	PA	BW	15	59	50	57	62	64	<u>60</u>	53
5	PC	BW	15	59	120	140	153	158	<u>150</u>	36
6a	SA	3% NaOH	29	60		10			<u>10</u>	155
6b	SA to PA	3% NaOH	66	60		10			<u>10</u>	155
6c	SA to PA	SR	32	60		20			<u>20</u>	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			<u>85</u>	191/206
6f	SC to PC	3.0% Acid	9	59		85			<u>85</u>	191/207
6g	SC to PC	5.0% Acid	6	59		85			<u>85</u>	191/208
6h	SC to PC	SR	8	59		85			<u>85</u>	191
6i	PC	FR	16	59		165			<u>165</u>	29
7	PA	FR	22	60		165			<u>165</u>	49
8	PC to PA	Recycle	30CT-1 <20	60		165			<u>162</u>	82
9	SC	FR	17	60		165			<u>164</u>	91
10	SA	FR	14CT-3 <500	60		165			<u>164</u>	103
11	Rinse Recycle		13CT-5 <200	60		165			<u>127</u>	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	<u>1.042</u>	950	
	Total:	1590	<u>1590</u>
1.0084	<u>1.009</u>	1020	
1.0184	<u>1.019</u>	1785	
1.0317	<u>1.032</u>	2295	
	Total:	2975	<u>3130</u>

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 3.0

Corrections: 8 min Caustic

Dump pH: 10.5

Notes:

Regeneration Log (Concurrent Series)

Date: 9/9/05

Time: 19:20

Run length: $214,000 - \underline{5,000} = \underline{209,000}$ gallons

Service Water pressure: 86 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				Actual	RSV #		
					60°	70°	80°	83°				
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	3% NaOH	29	60		10			10	155	1.0417	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.041
6c	SA to PA	SR	32	60		20			20	156		Total: 1590
6d	PC	Settle	3	60		0						1590
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.032
6h	SC to PC	SR	8	59		85			85	191		Total: 2975
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 < 500	60		165			165	103		
11	Rinse Recycle		13/CT-5 < 200	60		165			127	116		
12	Mandatory Recycle		10			165				116		
	Service					150				122		

3% = 1.0215

5% = 1.0417

Hydrometer

Dilution Water

Target

Actual

Target

Actual

Caustic Pump # 4

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 3.0

Corrections: 7 min CAUSTIC

Dump ph: 6, 8

Notes:

B' MS

Regeneration Log (Concurrent Series)

Date: 9/5/05

Time: 2358

Run length: 214,000 - 15000 = 199000 gallons

Service Water pressure: 87 psi Temp. 80 degrees F

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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #				
					60°	70°	80°	83°						
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	3% NaOH	29	60	10				10	155	1.0417		290	300
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.041	950	950
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1590
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.009	1020	1120
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.019	1785	1890
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.032	2295	2410
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3090
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 < 500	60	165				165	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				130	116				
12	Mandatory Recycle		10		165				130	116				
	Service				150				125	122				

Caustic Pump # B

Setting: 400

Caustic Temp. 121

Target = 49° C or 120° F

Neutralization Basin pH: 4.2

Corrections: None 3 min Caustic

Dump pH: 6.8

Notes: _____

Regeneration Log (Concurrent Series)

Date: 9/2/05

Time: 20100

Run length: 214,000 - 17000 = 197000 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				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	<u>65</u>	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	<u>97</u>	97
4	PA	BW	15	59	50	57	62	64	<u>62</u>	53
5	PC	BW	15	59	120	140	153	158	<u>153</u>	36
6a	SA	3% NaOH	29	60		10			<u>10</u>	155
6b	SA to PA	3% NaOH	66	60		10			<u>10</u>	155
6c	SA to PA	SR	32	60		20			<u>20</u>	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			<u>85</u>	191/206
6f	SC to PC	3.0% Acid	9	59		85			<u>85</u>	191/207
6g	SC to PC	5.0% Acid	6	59		85			<u>85</u>	191/208
6h	SC to PC	SR	8	59		85			<u>85</u>	191
6i	PC	FR	16	59		165			<u>165</u>	29
7	PA	FR	22	60		165			<u>165</u>	49
8	PC to PA	Recycle	30/CT-1 <20	60		165			<u>165</u>	82
9	SC	FR	17	60		165			<u>165</u>	91
10	SA	FR	14/CT-3 <500	60		165			<u>165</u>	103
11	Rinse Recycle		13/CT-5 <200	60		165			<u>127</u>	116
12	Mandatory Recycle		10			165			<u>127</u>	116
	Service					150			<u>125</u>	122

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	<u>1.041</u>	950	
	Total:	1590	<u>1590</u>
	Total:	2975	<u>3120</u>

Caustic Pump # B'

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.4

Corrections: NONE

Dump pH: 7.4

Notes:

Regeneration Log (Concurrent Series)

Date: 8/30/05

Time: 2:10

Run length: 214,000 - 0 = 214,000 gallons

Service Water pressure: 100 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

GPM Target										
Step	Vessel	Process	Time	Add.	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	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 ⁵	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 <500	60		165			165	103
11	Rinse Recycle		13/CT-5 <200	60		165			160	116
12	Mandatory Recycle		10			165			160	116
	Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.041	950	
	Total:	1590	1620
1.0084	1.008	1020	
1.0184	1.018	1785	
1.0317	1.031	2295	
	Total:	2975	3320

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.5

Corrections:

Dump pH: 7.5

Notes:



10/11/05

Regeneration Log (Concurrent Series)

Date: 8-29-05

Time: 0130

Run length: 214,000 - 2000 = 212000 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

GPM Target										Actual	RSV #				
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	3%= 1.0215			5%=1.0417			
1	SA	BW	15	60	50	57	66	68	64	110					
2	SA	Settle	3	60											
3	SC	BW	10	59	75	87	97	101	96	97					
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water		
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual	
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290		
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.041	950		
6c	SA to PA	SR	32	60	20				20	156	Total:		1590	1610	
6d	PC	Settle	3	60	0										
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.008	1020		
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785		
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.031	2295		
6h	SC to PC	SR	8	59	85				85	191	Total:		2975	3150	
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				163	91					
10	SA	FR	14/CT-3 <500	60	165				163	103					
11	Rinse Recycle		13/CT-5 <200	60	165				163	116					
12	Mandatory Recycle		10		165					116					
	Service				150					122					

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.3

Corrections: 1 Minute Acid

Dump pH: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 8/26/05

Time: 2630

Run length: $214,000 - \underline{13,500} = \underline{201,500}$ gallons

Service Water pressure: 150 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

GPM Target														
Step	Vessel	Process	Time	Add.	60°	70°	80°	93°	Actual	RSV #				
1	SA	BW	15	60	50	57	66	68	65	110				
2	SA	Settle	3	60							3%= 1.0215			
3	SC	BW	10	59	75	87	97	101	98	97	5%=1.0417			
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.0417	950	
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1610
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.0084	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.0184	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.0317	2295	
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3310
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					91				
10	SA	FR	14/CT-3 < 500	60	165					103				
11	Rinse Recycle		13/CT-8 < 200	60	165					116				
12	Mandatory Recycle		10		165					116				
	Service				150					122				

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 6.1

Corrections:

Dump ph: 6.7

Notes:

Extend 5% Acid for 5 min.

Regeneration Log (Concurrent Series)

Date: 08/24/05
Time: 6:35

Time: 6:30

Run length: 214,000 - 20000 = 196 000 gallons

Service Water pressure: 92 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				Actual	RSV #	
					60°	70°	80°	83°			
1	SA	BW	15	60	50	57	66	68	66	110	
2	SA	Settle	3	60							3%= 1.0215
3	SC	BW	10	59	75	87	97	101	98	97	5%=1.0417
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer
5	PC	BW	15	59	120	140	153	158	153	36	Target
6a	SA	3% NaOH	29	60	10				10	155	1.0417
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417
6c	SA to PA	SR	32	60	20				20	156	Total:
6d	PC	Settle	3	60	0						
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317
6h	SC to PC	SR	8	59	85				85	191	Total:
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 < 500	60	165				165	103	
11	Rinse Recycle		13/CT-5 < 200	60	165				130	116	
12	Mandatory Recycle		10		165				130	116	
	Service				150					122	

Caustic Pump # 5A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.1

Corrections:

Dump ph: 71

Notes:

Caustic Pump # 5A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Regeneration Log (Concurrent Series)

Date: 8/18/05

Time: 1940

Run length: 214,000 - 15000 = 199000 gallons

Service Water pressure: _____ psi Temp. _____ degrees F

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

GPM Target										Actual	RSV #
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°			
1	SA	BW	15	60	50	57	66	68	66	110	
2	SA	Settle	3	60					97		
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	152	36	
6a	SA	3% NaOH	29	60		10			10	155	
6b	SA to PA	3% NaOH	66	60		10			10	155	
6c	SA to PA	SR	32	60		20			20	156	
6d	PC	Settle	3	60		0					
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	
6h	SC to PC	SR	8	59		85			85	191	
6i	PC	FR	16	59		165			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 <500	60		165			164	103	
11	Rinse Recycle		13/CT-5 <200	60		165			130	116	
12	Mandatory Recycle		10			165			125	116	
	Service					150				122	

3% = 1.0215
 5% = 1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.0410	950	
Total:		1590	1600
Total:		2975	3130

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

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.040	950	
Total:		1590	1600
1.0084	1.009	1020	
1.0184	1.018	1785	
1.0317	1.050	2295	
Total:		2975	3130

Caustic Pump # 13

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9

Corrections: AKIN 1 MIN

Dump pH: 7.5

Notes: _____

Regeneration Log (Concurrent Series)

Date: 8/14/05

Time: 0130

Run length: $214,000 - 21,000 = 193,000$ 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				Actual	RSV #		Hydrometer		Dilution Water	
					60°	70°	80°	83°				Target	Actual	Target	Actual
1	SA	BW	15	60	50	57	66	68	66	110					
2	SA	Settle	3	60								3%= 1.0215			
3	SC	BW	10	59	75	87	97	101	97	97		5%=1.0417			
4	PA	BW	15	59	50	57	62	64	60	53					
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual	
6a	SA	3% NaOH	29	60		10			10	155	1.0417	1.040	290		
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.040	950		
6c	SA to PA	SR	32	60		20				156		Total:	1590	1610	
6d	PC	Settle	3	60		0									
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.009	1020		
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.020	1785		
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.032	2295		
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	3030	
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 < 500	60		165			165	103					
11	Rinse Recycle		13/CT-5 < 200	60		165			127	116					
12	Mandatory Recycle		10			165			130	116					
	Service					150				122					

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9
Corrections: ACID 1 MW
Dump pH: 8

Notes:

you
Dummy
FUCK
100

Regeneration Log (Concurrent Series)

Date: 8/13/05

Time: 1750

Run length: $214,000 - \frac{14,000}{1} = 200,000$ gallons

Service Water pressure: 160 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				Actual	RSV #		
					60°	70°	80°	83°				
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	Hydrometer	
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.042
6c	SA to PA	SR	32	60		20			20	156		Total: 1590
6d	PC	Settle	3	60		0			✓	✓		
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.030
6h	SC to PC	SR	8	59		85			85	191		Total: 2975
6i	PC	FR	16	59		165			165	29		3100
7	PA	FR	22	60		165			165	49		
8	PC to PA	Recycle	30/CT-1 < 20	60		165			161	82		
9	SC	FR	17	60		165			165	91		
10	SA	FR	14/CT-3 < 500	60		165			165	103		
11	Rinse Recycle		13/CT-5 < 200	60		165			125	116		
12	Mandatory Recycle		10			165				116		
	Service					150				122		

3% = 1.0215

5% = 1.0417

Caustic Pump # B

Setting: 400

Caustic Temp. 119°F

Target = 49° C or 120° F

Neutralization Basin pH: 9.2

Corrections: (1) One minute ACID

Dump ph: 7-8

Notes:

Regeneration Log (Concurrent Series)

Date: 8/10/05

Time: 19:51

Run length: $214,000 - 11,000 = 203,000$ gallons

Service Water pressure: 91 psi Temp. 80 degrees F

PC=Primary Cation

PA=Primary Anion

SC=Secondary Cation

SA=Secondary Anion

BW=Back Wash

SR=Slow Rinse

FR=Fast Rinse

RSV=Rate Set Valve

RSV - Rate Set Valve

					GPM Target									
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	Actual	RSV #				
1	SA	BW	15	60	50	57	66	68	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	61	53				
5	PC	BW	15	59	120	140	153	158	152	36				
6a	SA	3% NaOH	29	60					10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60					10	155	1.0417	1.041	950	
6c	SA to PA	SR	32	60					20	156	Total:		1590	1590
6d	PC	Settle	3	60					0					
6e	SC to PC	1.5% Acid	12	59					85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59					85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59					85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59					85	191	Total:		2975	3110
6i	PC	FR	16	59					165	29				
7	PA	FR	22	60					165	49				
8	PC to PA	Recycle	30/CT-1 <20	60					162	82				
9	SC	FR	17	60					165	91				
10	SA	FR	14/CT-3 <500	60					165	103				
11	Rinse Recycle		13/CT-5 <200	60					130	116				
12	Mandatory Recycle		10						165	116				
	Service								150	122				

3%= 1.0215

5%=1.0417

Hydrometer

Dilution Water

Target

Actual

Target

Actual

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.1

Corrections: 1 MIN ACID

Dump ph: 7.9

Notes: * "METERED END OF RUN" - PRIMARY CATION

Caustic Pump # 4

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Regeneration Log (Concurrent Series)

Date: 8-4-05 SA
Time: 0550 61,000
Run length: 214,000 - 126,000 = 153,000 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				Actual	RSV #		
					60°	70°	80°	83°				
1	SA	BW	15	60	50	57	66	68	66	110		
2	SA	Settle	3	60								3%=1.0215
3	SC	BW	10	59	75	87	97	101	96	97		5%=1.0417
4	PA	BW	15	59	50	57	62	64	61	53		
5	PC	BW	15	59	120	140	153	158	153	36	Hydrometer	Dilution Water
6a	SA	3% NaOH	29	60		10			10	155	Target	Actual
6b	SA to PA	3% NaOH	66	60		10			10	155	Target	Actual
6c	SA to PA	SR	32	60		20			20	156	Target	Actual
6d	PC	Settle	3	60		0			—		Target	Actual
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.008
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.031
6h	SC to PC	SR	8	59		85			85	191	1.0317	1.031
6i	PC	FR	16	59		165			165	29		
7	PA	FR	22	60		165			165	49		
8	PC to PA	Recycle	30/CT-1 <20	60		165			164	82		
9	SC	FR	17	60		165			165	91		
10	SA	FR	14/CT-3 <500	60		165			165	103		
11	Rinse Recycle		13/CT-5 <200	60		165			129	116		
12	Mandatory Recycle		10			165				116		
	Service					150				122		

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH:_____

Corrections:

Dump ph: 6.3

Notes:

Regeneration Log (Concurrent Series)

Date: 7/27/05

Time: 0100

Run length: 214,000 - 28000 = _____ 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	66	110				
2	SA	Settle	3	60								3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	97	97		5%=1.0417		
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer	Dilution Water		
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417		290	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417		950	
6c	SA to PA	SR	32	60		20			20	156		Total:	1590	
6d	PC	Settle	3	60		0			—					
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084		1020	
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184		1785	
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317		2295	
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	
6i	PC	FR	16	59		165			162	29				
7	PA	FR	22	60		165			162	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			130	103				
11	Rinse Recycle		13/CT-5 < 200	60		165			130	116				
12	Mandatory Recycle		10			165			130	116				
	Service					150			135	122				

Caustic Pump # A

Setting: 900

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.4

Corrections:

Dump ph: 7.4

Notes:

Regeneration Log (Concurrent Series)

Date: 7-23-05

Time: 1255

Run length: 214,000 - 15,000 = 199,000 gallons

Service Water pressure: 78 psi Temp. 80 degrees F

PC=Primary Cation

PA=Primary Anion

SC=Secondary Cation

SA=Secondary Anion

BW=Back Wash

SR=Slow Rinse

FR=Fast Rinse

RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	66	110				
2	SA	Settle	3	60					—	—				
3	SC	BW	10	59	75	87	97	101	97	97				
4	PA	BW	15	59	50	57	62	64	62	53				
5	PC	BW	15	59	120	140	153	158	153	36				
6a	SA	3% NaOH	29	60	10				10	155				
6b	SA to PA	3% NaOH	66	60	10				10	155				
6c	SA to PA	SR	32	60	20				20	156				
6d	PC	Settle	3	60	0				—	—				
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.090	1020	1090
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	1890
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.032	2295	2390
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 <500	60	165				165	103				
11	Rinse Recycle		13/CT-5 <200	60	165				165	116				
12	Mandatory Recycle		10		165				165	116				
	Service				150				180	122				

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.045	290	300
1.0417	1.042	950	950
Total:		1590	1590

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.2

Corrections: 1 min H2SO4

Dump pH: 7.6

Notes:

Regeneration Log (Concurrent Series)

Date: 7/21/05

Time: 1840

Run length: 214,000 22000 = 192000 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				Actual	RSV #				
					60°	70°	80°	85°						
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	96	97				
4	PA	BW	15	59	50	57	62	64	61	53				
5	PC	BW	15	59	120	140	153	158	150	36				
6a	SA	3% NaOH	29	60	10				10	155				
6b	SA to PA	3% NaOH	66	60	10				10	155				
6c	SA to PA	SR	32	60	20				20	156				
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59	85				85	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				163	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 <200	60	165				130	116				
12	Mandatory Recycle		10		165				130	116				
	Service				150					122				

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.040	950	
Total:		1590	1600
Total:		2975	3100

Caustic Pump # 11

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:

$$\begin{array}{r} 214 \\ 22 \\ \hline 192 \end{array}$$

Time: 0430

43000
214000

92

PA=Primary Anion

SA=Secondary Anion

BW=Back Wash

SR=Slow Rinse

FR=Fast Rinse

RSV=Rate Set Valve

3%= 1.0215
5%=1.0417

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

9.0

ACID 1 ml

7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 7/16/05

Time: 2330

Run length: 214,000 - 32,000 = 182,000 gallons

Service Water pressure: 91 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	67	110				
2	SA	Settle	3	60								3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	98	97		5%=1.0417		
4	PA	BW	15	59	50	57	62	64	64	53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158	153	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	300
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.0411	950	950
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1590
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.0085	1020	1100
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.0485	1785	1850
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.0310	2295	2350
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3020
6i	PC	FR	16	59	165				165	29	Caustic Pump # <u>B</u> Setting: <u>400</u> Caustic Temp. <u>120°</u> Target = 49° C or 120° F			
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 < 500	60	165				165	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				130	116				
12	Mandatory Recycle		10		165				130	116				
	Service				150					122				

Neutralization Basin pH: 9.0

Corrections: 1 min. ACID

Dump ph: 80

Notes:

Caustic Pump # B

Setting: 400

Caustic Temp. 120°

Target = 49° C or 120° F

Regeneration Log (Concurrent Series)

Date: 7-14-05

Time: 0145

Run length: 214,000 - 31,000 = 183,000 gallons

Service Water pressure: 82 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	66	110				
2	SA	Settle	3	60					—					
3	SC	BW	10	59	75	87	97	101	97	97				
4	PA	BW	15	59	50	57	62	64	62	53				
5	PC	BW	15	59	120	140	153	158	153	36				
6a	SA	3% NaOH	29	60					10	155	1.0417	1.0417	290	300
6b	SA to PA	3% NaOH	66	60					10	155	1.0417	1.0417	950	960
6c	SA to PA	SR	32	60					20	156				
6d	PC	Settle	3	60					—					
6e	SC to PC	1.5% Acid	12	59					85	191/206	1.0084	1.0084	1020	1040
6f	SC to PC	3.0% Acid	9	59					85	191/207	1.0184	1.0184	1785	1820
6g	SC to PC	5.0% Acid	6	59					85	191/208	1.0317	1.0317	2295	2380
6h	SC to PC	SR	8	59					85	191				
6i	PC	FR	16	59					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 <500	60					165	103				
11	Rinse Recycle		13/CT-5 <200	60					130	116				
12	Mandatory Recycle		10						130	116				
	Service								150	122				

Caustic Pump # A

Setting: 400

Caustic Temp. 120°

Target = 49° C or 120° F

Neutralization Basin pH: 8.8

Corrections: 1 acid

Dump pH: 7.2

Notes: good

Regeneration Log (Concurrent Series)

Date: 7/1/05

Time: 2030

Run length: 214,000 - 27000 = _____ gallons

Service Water pressure: 100 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				Actual	RSV #
					60°	70°	80°	83°		
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	98	97
4	PA	BW	15	59	50	57	62	64	63	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	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 <200	60		165			140	116
12	Mandatory Recycle		10			165			140	116
	Service					150				122

3%= 1.0215
5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1.0411	950	
	Total:	1590	1618
1.0084	1.000	1020	
1.0184	1.018	1785	
1.0317	1.021	2295	
	Total:	2975	2130

Caustic Pump # B

Setting: 400

Caustic Temp. 119° F

Target = 49° C or 120° F

Neutralization Basin pH: 7.5

Corrections: _____

Dump pH: 7.5

Notes: _____

Sample pump broke.

Needs pH strip



Regeneration Log (Concurrent Series)

Date: 8/25/05

Time: 1:00

Run length: $214,000 - 3000 = 211,000$ gallons

Service Water pressure: 160 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				Actual	RSV #
					60°	70°	80°	83°		
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	98	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	154	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	22 ¹⁵	60		165			165	49
8	PC to PA	Recycle	30/CT-1 < 20	60		165			165	82
9	SC	FR	17 ¹⁵	60		165			165	91
10	SA	FR	14/CT-3 < 500	60		165			165	103
11	Rinse Recycle		13/CT-5 < 200	60		165			140	116
12	Mandatory Recycle		10			165			140	116
	Service					150				122

$$3\% = 1.0215$$
$$5\% = 1.0417$$

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	—	290	
1.0417	1.041	950	
	Total:	1590	1638 ⁵²⁻⁴
1.0084	1.008	1020	
1.0184	1.019	1785	
1.0317	1.030	2295	
	Total:	2975	3010

Caustic Pump # 13

Setting: 400

Caustic Temp. 120° F.

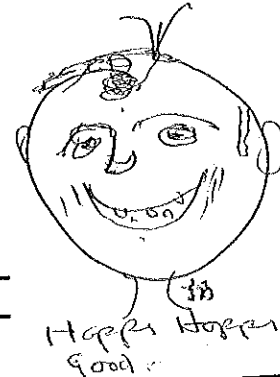
Target = 49° C or 120° F

Neutralization Basin pH: 4.0

Corrections: Add caustic for 2 in

Dump ph: 7.0

Notes:



Regeneration Log (Concurrent Series)

Date: 5-18-05

Time: 2225

Run length: $214,000 - \frac{10,000}{1} = 204,000$ gallons

Service Water pressure: 85 psi Temp. 80 degrees F

PC=Primary Cation

PA=Primary Anion

SC=Secondary Cation

SA=Secondary Anion

BW=Back Wash

SR=Slow Rinse

FR=Fast Rinse

RSV=Rate Set Valve

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60					—	
3	SC	BW	10	59	75	87	97	101	100	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	152	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0			—	
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	22	60		165			165	49
8	PC to PA	Recycle	30/CT-1 < 20	60		165			155	82
9	SC	FR	17	60		165			165	91
10	SA	FR	14/CT-3 < 500	60		165			165	103
11	Rinse Recycle		13/CT-5 < 200	60		165			165	116
12	Mandatory Recycle		10			165			165	116
	Service					150				122

$$3\% = 1.0215$$
 $5\% = 1.0417$

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.041	290	300
1.0417	1.041	950	990
	Total:	1590	1640
1.0084	1.008	1020	1100
1.0184	1.019	1785	1840
1.0317	1.030	2295	2340
	Total:	2975	3010

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 7.0

Corrections: NONE

Dump ph: 1

Notes:

Regeneration Log (Concurrent Series)

Date: 5/12/05

Time: 1200pm

Run length: 214,000 - 20,000 = 194,000 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

GPM Target										
Step	Vessel	Process	Time	Add.	60°	70°	80°	83°	Actual	RSV #
1	SA	BW	15	60	50	57	66	68	66	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	97	97
4	PA	BW	15	59	50	57	62	64	62	53
5	PC	BW	15	59	120	140	153	158	153	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			85	191/206
6f	SC to PC	3.0% Acid	9	59		85			85	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			85	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	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 <500	60		165			165	103
11	Rinse Recycle		13/CT-5 <200	60		165			130	116
12	Mandatory Recycle		10			165			130	116
	Service					150				122

3%= 1.0215

5%= 1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.041	290	300
1.0417	1.041	950	960
	Total:	1590	1580
1.0084	1.0090	1020	1100
1.0184	1.0190	1785	1860
1.0317	1.0310	2295	2360
	Total:	2975	3020

Caustic Pump # B

Setting: 400

Caustic Temp. 119

Target = 49° C or 120° F

Neutralization Basin pH: 7.0

Corrections: None

Dump pH: 7.0

Notes: _____

Regeneration Log (Concurrent Series)

Date: 05-07-06
Time: 08:10 hr
Run length: 214,000 - 40 = 174 gallons
Service Water pressure: _____ psi Temp. 78 degrees F

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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #	3%= 1.0215		5%=1.0417	
					60°	70°	80°	83°			Target	Actual	Target	Actual
1	SA	BW	15	60	50	57	66	68	63	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101		97				
4	PA	BW	15	59	50	57	62	64		53	Hydrometer		Dilution Water	
5	PC	BW	15	59	120	140	153	158		36	Target	Actual	Target	Actual
6a	SA	5% NaOH	29	60	10					155	1.0417		290	
6b	SA to PA	5% NaOH	66	60	10					155	1.0417		950	
6c	SA to PA	SR	32	60	20					156		Total:	1590	
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85					191/206	1.0084		1020	
6f	SC to PC	3.0% Acid	9	59	85					191/207	1.0184		1785	
6g	SC to PC	5.0% Acid	6	59	85					191/208	1.0317		2295	
6h	SC to PC	SR	8	59	85					191		Total:	2975	
6i	PC	FR	16	59	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					122				

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

Neutralization Basin pH: 6

Corrections:

Dump ph: 10

Notes: Summary of sheet, Basin 13/10^{hr}

Caustic Pump # 5B

Setting:_____

Caustic Temp. _____

Target = 49° C or 120° F

Regeneration Log (Concurrent Series)

Date: 5-4-05
Time: 12:47 ¹³⁰⁰
Run length: 214,000 - 48,000 = 166,000 gallons
Service Water pressure: 154 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	65	110				
2	SA	Settle	3	60								3%= 1.0215		
3	SC	BW	10	59	75	87	97	101	97	97		5%=1.0417		
4	PA	BW	15	59	50	57	62	64	62	53	Hydrometer	Dilution Water		
5	PC	BW	15	59	120	140	153	158	152	36	Target	Actual	Target	Actual
6a	SA	3% NaOH	29	60		10			10	155	1.0417	1.0420	290	
6b	SA to PA	3% NaOH	66	60		10			10	155	1.0417	1.0420	950	
6c	SA to PA	SR	32	60		20			20	156		Total:	1590	1690
6d	PC	Settle	3	60		0								
6e	SC to PC	1.5% Acid	12	59		85			85	191/206	1.0084	1.090	1020	
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.0180	1785	
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.030	2295	
6h	SC to PC	SR	8	59		85			85	191		Total:	2975	3070
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 < 500	60		165			165	103				
11	Rinse Recycle		13/CT-5 < 200	60		165			165	116				
12	Mandatory Recycle		10			165			165	116				
	Service					150				122				

Caustic Pump # A

Setting: 401

Caustic Temp. 121

Target = 49° C or 120° F

Neutralization Basin pH: 9.8
 Corrections: 112 min Acid
 Dump pH: 7.0 pH

Notes: _____

Caustic Pump # A
Setting: 401
Caustic Temp. 121
Target = 49° C or 120° F

$$\begin{array}{r} 19 \\ 16 \\ \hline 35 \end{array}$$

Regeneration Log (Concurrent Series)

Date: 4-30-05

Time: 0935

Run length: 214,000 - 34,000 = 180,000 gallons

Service Water pressure: 54 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				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	65	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	98	97
4	PA	BW	15	59	50	57	62	64	60	53
5	PC	BW	15	59	120	140	153	158	155	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			22	156
6d	PC	Settle	3	60		0			0	
6e	SC to PC	1.5% Acid	12	59		85			84	191/206
6f	SC to PC	3.0% Acid	9	59		85			84	191/207
6g	SC to PC	5.0% Acid	6	59		85			84	191/208
6h	SC to PC	SR	8	59		85			84	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 <500	60		165			162	103
11	Rinse Recycle		13/CT-5 <200	60		165			161	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	1.0400	290	
1.0417	1.045	950	
	Total:	1590	1690
1.0084	1.008	1020	
1.0184	1.016	1785	
1.0317	1.032	2295	
	Total:	2975	3070

Caustic Pump # B

Setting: 410

Caustic Temp. 125

Target = 49° C or 120° F

Neutralization Basin pH: 7.0

Corrections: N/A

Dump pH: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date:_____

Time:

Run length: 214,000 - $\frac{12}{1} = 26216$ gallons

Service Water pressure: 82 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	64	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	96	97				
4	PA	BW	15	59	50	57	62	64	62	53				
5	PC	BW	15	59	120	140	153	158	153	36				
6a	SA	3% NaOH	29	60	10				10	155	1.0417	1.046	290	320
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.042	950	970
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1610
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.008	1020	
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.018	1785	
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.032	2295	
6h	SC to PC	SR	8	59	85				84	191		Total:	2975	3060
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				163	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 < 200	60	165				131	116				
12	Mandatory Recycle		10		165				131	116				
	Service				150					122				

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual

Caustic Pump # A

Setting: 400

Caustic Temp. _____

Target = 49° C or 120° F

Neutralization Basin pH: 9.5

Corrections: Acid Nest. - 3 mins

Dump ph: 7.5

Notes: #7 prolong 3 min. - #10 prolong 5 min

Regeneration Log (Concurrent Series)

Date: 3-30-05

Time: 1530

Run length: 214,000 - 21000 = 193000 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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #
					60°	70°	80°	83°		
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	152	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			21	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			84	191/207
6g	SC to PC	5.0% Acid	6	59		85			84	191/208
6h	SC to PC	SR	8	59		85			84	191
6i	PC	FR	16	59		165			165	29
7	PA	FR	22	60		165			165	49
8	PC to PA	Recycle	30/OT-1 <20	60		165			165	82
9	SC	FR	17	60		165			165	91
10	SA	FR	14/OT-3 <500	60		165			165	103
11	Rinse Recycle		13/OT-5 <200	60		165			140	116
12	Mandatory Recycle		10			165			140	116
	Service					150				122

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.041	290	320
1.0417	1.040	950	980
	Total:	1590	1650
1.0084	1.008	1020	1000
1.0184	1.018	1785	1860
1.0317	1.03	2295	2370
	Total:	2975	3050

Caustic Pump # 5A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 8.5

Corrections: None

Dump pH: 8.5

Notes:

[Handwritten signature]

Regeneration Log (Concurrent Series)

Date: 3/27/08

Time: 1730

Run length: $214,000 - 15,000 = 199,000$ gallons

Service Water pressure: 91 psi Temp. 80 degrees F

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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	106	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	144	36
6a	SA	3% NaOH	29	60		10			10	155
6b	SA to PA	3% NaOH	66	60		10			10	155
6c	SA to PA	SR	32	60		20			20	156
6d	PC	Settle	3	60		0				
6e	SC to PC	1.5% Acid	12	59		85			0	191/206
6f	SC to PC	3.0% Acid	9	59		85			84	191/207
6g	SC to PC	5.0% Acid	6	59		85			85	191/208
6h	SC to PC	SR	8	59		85			84	191
6i	PC	FR	16	59		165			163	29
7	PA	FR	22	60		165			165	49
8	PC to PA	Recycle	30/CT-1 ≤ 20	60		165			167	82
9	SC	FR	17	60		165			168	91
10	SA	FR	14/CT-3 ≤ 500	60		165			166	103
11	Rinse Recycle		13/CT-5 ≤ 200	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	1.040	290	
1.0417	1.043	950	
	Total:	1590	
1.0084	1.0082	1020	
1.0184	1.019	1785	
1.0317	1.032	2295	
	Total:	2975	

Caustic Pump # SA

Setting: 400

Caustic Temp. 121°

Target = 49° C or 120° F

Neutralization Basin pH: 9.5
Corrections: run Acid Pump 2 min
Dump pH: 8.0

Notes: _____

Caustic Pump # 5A
Setting: 400
Caustic Temp. 121'
Target = 49° C or 120° F

Regeneration Log (Concurrent Series)

Date: 3-9-05

Time: 1000

Run length: 214,000 - 17,000 = 197,000 gallons

Service Water pressure: 88 psi Temp. 72 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				Actual	RSV #				
					60°	70°	80°	83°						
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	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	1.0084	1.009	1020	1110
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018	1785	1880
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.031	2295	2390
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 <500	60		165			165	103				
11	Rinse Recycle		13/CT-5 <200	60		165			130	116				
12	Mandatory Recycle		10			165			130	116				
	Service					150			130	122				

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.042	290	310
1.0417	1.042	950	970
		Total:	1590
			1620
		Total:	2975
			3070

Caustic Pump # B

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 9.0

Corrections: 2 min H₂SO₄

Dump pH: 7.0

Notes:

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

Time: 0800

Run length: $214,000 - \underline{13,000} = \underline{201,000}$ gallons

Service Water pressure: 88 psi Temp. 75 degrees F

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	62	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	92	97				
4	PA	BW	15	59	50	57	62	64	59	53	Hydrometer			
5	PC	BW	15	59	120	140	153	158	146	36	Target	Actual		
6a	SA	3% NaOH	29	60	10				10	155	1.0417		290	300
6b	SA to PA	3% NaOH	66	60	10				10	155	1.0417	1.045	950	960
6c	SA to PA	SR	32	60	20				20	156		Total:	1590	1580
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				85	191/206	1.0084	1.0090	1020	1120
6f	SC to PC	3.0% Acid	9	59	85				85	191/207	1.0184	1.0185	1785	1890
6g	SC to PC	5.0% Acid	6	59	85				85	191/208	1.0317	1.031	2295	4400
6h	SC to PC	SR	8	59	85				85	191		Total:	2975	3090
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 < 500	60	165				165	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				130	116				
12	Mandatory Recycle		10		165				130	116				
	Service				150					122				

3%= 1.0215

5%=1.0417

Caustic Pump # B

Setting: 400

Caustic Temp. 122

Target = 49° C or 120° F

Neutralization Başın pH: 7.0

Corrections: *None*

Dump ph: 7.0

Notes:

Regeneration Log (Concurrent Series)

Date: 2/21/05

Time: 1000

Run length: 214,000 - 21000 = 193000 gallons

Service Water pressure: 88 psi Temp. 72 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	<u>58</u>	110				
2	SA	Settle	3	60										
3	SC	BW	10	59	75	87	97	101	<u>87</u>	97				
4	PA	BW	15	59	50	57	62	64	<u>57</u>	53				
5	PC	BW	15	59	120	140	153	158	<u>140</u>	36				
6a	SA	3% NaOH	29	60	10				<u>10</u>	155				
6b	SA to PA	3% NaOH	66	60	10				<u>10</u>	155				
6c	SA to PA	SR	32	60	20				<u>20</u>	156				
6d	PC	Settle	3	60	0									
6e	SC to PC	1.5% Acid	12	59	85				<u>85</u>	191/206	1.0084	<u>1.008</u>	1020	<u>1100</u>
6f	SC to PC	3.0% Acid	9	59	85				<u>85</u>	191/207	1.0184	<u>1.018</u>	1785	<u>1970</u>
6g	SC to PC	5.0% Acid	6	59	85				<u>85</u>	191/208	1.0317	<u>1.029</u>	2295	<u>2570</u>
6h	SC to PC	SR	8	59	85				<u>85</u>	191				
6i	PC	FR	16	59	165				<u>165</u>	29				
7	PA	FR	22	60	165				<u>165</u>	49				
8	PC to PA	Recycle	30/CT-1 < 20	60	165				<u>160</u>	82				
9	SC	FR	17	60	165				<u>165</u>	91				
10	SA	FR	14/CT-3 < 500	60	165				<u>165</u>	103				
11	Rinse Recycle		13/CT-5 < 200	60	165				<u>130</u>	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	<u>290</u>
1.0417	<u>1.041</u>	950	<u>960</u>
Total:		1590	<u>1600</u>

Caustic Pump # 14

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)

Date: 2-9-05

Time: 1010

Run length: 214,000 - 26,000 = 188,000 gallons

Service Water pressure: 86 psi Temp. 71 degrees F

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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #
					60°	70°	80°	83°		
1	SA	BW	15	60	50	57	66	68	58	110
2	SA	Settle	3	60						
3	SC	BW	10	59	75	87	97	101	87	97
4	PA	BW	15	59	50	57	62	64	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			165	(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 < 200	60		165			165	(116)
12	Mandatory Recycle		10			165			165	116
	Service					150				122

3%= 1.0215

5%= 1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	310
1.0417	1.040	950	990
	Total:	1590	1650
1.0084	1.008	1020	1100
1.0184	1.018	1785	1880
1.0317	1.030	2295	2390
	Total:	2975	3080

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 10

Corrections: 4 mi acid

Dump pH: 6.0

Notes:

Regeneration Log (Concurrent Series)

Date: 1/26
 Time: 0900
 Run length: 214,000 - 20000 = 214000 gallons
 Service Water pressure: 90 psi Temp. 71 degrees F

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

Step	Vessel	Process	Time	Add.	GPM Target				Actual	RSV #
					60°	70°	80°	83°		
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				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 < 500	60		165			165	103
11	Rinse Recycle		13/CT-5 < 200	60		165			140	116
12	Mandatory Recycle		10			165			138	116
	Service					150				122

3%= 1.0215
 5%= 1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417		290	
1.0417	1041	950	
Total:		1590	1610
Total:		2975	3100

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

Neutralization Basin pH: 10
 Corrections: 3 minutes ACID
 Dump pH: 7

Notes: OK to Dump

Regeneration Log (Concurrent Series)

Date: 1-31-05

Time: 0956

Run length: 214,000 - 22,000 = 192,000 gallons

Service Water pressure: 86 psi Temp. 72 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				Actual	RSV #				
					60°	70°	80°	83°						
1	SA	BW	15	60	50	57	66	68	58	110				
2	SA	Settle	3	60		5								
3	SC	BW	10	59	75	87	97	101	88	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	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	1.0084	1.007	1020	1100
6f	SC to PC	3.0% Acid	9	59		85			85	191/207	1.0184	1.018	1785	1910
6g	SC to PC	5.0% Acid	6	59		85			85	191/208	1.0317	1.029	2295	2430
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 <500	60		165			165	103				
11	Rinse Recycle		13/CT-5 <200	60		165			165	116				
12	Mandatory Recycle		10			165			165	116				
	Service					150			128	122				

3%= 1.0215

5%=1.0417

Hydrometer		Dilution Water	
Target	Actual	Target	Actual
1.0417	1.040	290	310
1.0417	1.040	950	980
Total:		1590	1620
Total:		2975	3120

Caustic Pump # A

Setting: 400

Caustic Temp. 120

Target = 49° C or 120° F

Neutralization Basin pH: 10
Corrections: 4 min Acid
Dump pH: 7

Notes: _____

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