

Log Book
Campaign 09

2015-02-09

08:15 Potable/Process ON
08:19 WW Pump ON. Steam ON. Cooling Water ON. Chiller ON.
08:57 Start SIP 2B procedure
09:01 Steam in 2B Jacket and 2B tank
09:06 Vacuum Pump ON for 20 seconds
09:08 2B Steam trap OPEN (tank)
09:18 Steaming 2B transfer lines
09:29 @ 250°F of 2B. Starting 90-minute timer
09:32 WW Pump ON in Recirc. Level @ 69.5%
09:43 Caustic and Rinse System ON
10:25 Heating up Hot Water Tank
10:37 WW pH @ 5.33
10:59 SIP Complete 2B
11:02 SIP Started 2A/Lines
11:19 Ran Vac Pump→2A for 20 seconds
11:55 2A @ 250°F
Caustic Tank-48.0%, Strength 3.1%
Going to try to raise to 4.5→5%
13:26 Began adding 1006 lbs caustic soda to Caustic Tank
Total was 1010 lbs
13:28 Steam OFF to 2A
13:32 Temp Control ON 2B
13:49 Topping off Caustic Tank to 80%
13:52 Temp Control ON 2A
14:07 Caustic Tank filled, 80.3%
14:15 WW pH=8.23 Cond=1.62 mS/cm after 5-minute Caustic from Caustic Tank
14:23 Caustic @ 183°F. Stop heating.
14:41 Ferm C Pump ON. CIP for Prop 3A. Rinse Level @ 85%. 20-minute sprayball
15:10 Rinse Sprayball 3B
15:40 Caustic Sprayball 3B
16:09 Caustic Sprayball 3A
16:36 UV Sprayball 3A
Note-2A Targets:
25 gallons UV (First)→12.6%
12 gallons Hz (Second)→30.4%
17:05 UV Sprayball 3B
17:10 SLOW addition of UV→2A
Per Ismael, check WW Pump tonight, flow under 30 GPM
17:37 2A Agitator ON
17:41 Uv→2A complete. Nope, now bouncing
17:46 Hz in Recirc.
17:52 Now UV done. ~12.6%
17:55 Hz→2A, Antifoam ready. C5 Tank @ 65.4%
18:02 Pausing, adding Antifoam

18:20 Hz addition done
18:25 Conditioning 2A pH→8.0
18:29 Conditioning complete, 8.07
18:34 WW Pump OFF. Pump secured and flushed
18:44 Cooling Transfer lines with UV Water
Shift Change
20:11 2B Numbers:
First, UV Water 25 gal and @ 27.6% Level
Then, Hydrolyzate 12 gal and @ 44.5% Level
Addition of Antifoam as needed
20:49 Beginning addition of UV Water to Prop 2B
20:50 Stopped UV addition to Prop 2B. Will have to drain tank down to level through sterilized (with steam) sampled port
20:52 Prop 2B AG ON
20:56 Level surge likely due to adjusting regulator on UV Water Pump
21:00 Beginning drain on Prop 2B. Starting level=46.0%
21:09 Prop 2B AG OFF. Much smoother level reading as a result.
21:13 Resuming draining of Prop 2B
21:16 Stopped draining Prop 2B. Will see where level settles
21:20 Prop 2B AG ON @ 10% (AG baffle only half-covered at current level of ~26%)
21:24 Began adding Hydrolyzate to Prop 2B
21:25 Adding 200 mL of Antifoam. AG→40%
21:27 Prop 2B AG→30%
21:29 Adding another 100 mL of Antifoam
21:30 Pausing Hydrolyzate addition to Prop 2B. Level around 42%
21:31 Field confirmed AG fully covered now.
Prop 2B AG→95%
21:32 Resuming Hz→Prop 2B
21:33 Pausing Hz add again.
21:34 Prop 2B Level between 44.1% and 45.0%
C5 Tank went from 62.5% to 59.3%
21:42 BBP#5 ON @ 20%. Conditioning Prop 2B now
21:44 BBP#5→30%
21:57 Having foaming issues in Prop 2B again.
Level now around 38.6% and dropping
22:00 Finished adding more Antifoam
22:02 Prop 2B pH=8. BBP#5 OFF
22:04 Doing a quick burst of Hz→Prop 2B to bring level up a bit
22:06 Doing second burst of Hz→Prop 2B
22:08 Doing third burst of Hz→Prop 2B
22:09 BBP#5 back ON @ 30% (pH had dropped to 7.62)
Prop 2B spargers @ 0.05 ACFM
22:12 BBP#5 OFF. Prop 2B pH=8
22:38 Flipping CIP Header to Rinse
22:48 C5 Pump OFF
Accidentally had all of its oil drained.
23:00 Began 15-to-20-minute Rinse CIP of pH4

Other sprayball was removed and installed into Prop 3B to replace barely-turning sprayball (the socket closer to WW Tank)
Rinse Pump→85%
23:20 Finished Rinse CIP of pHAT
Rinse Pump→55%

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00:02 Began Caustic CIP of pHAT through only sprayball
Caustic Pump→85%
00:22 Finished Caustic CIP of pHAT
Caustic Pump→55%
00:24 Rinse Systems OFF
00:41 Began UV Rinse of pHAT through sprayball for 25 minutes
00:43 Caustic Systems OFF
01:06 Finished UV Rinse of pHAT
02:38 Began UV Rinse of Prop 3B
Ferm C Pump ON
Level in C5 Tank seems to be going down. Not sure if normal variation or otherwise. Will watch.
02:53 Actual start of UV Rinse through sprayballs of Prop 3B
03:09 C5 Tank @ 57.3%. This makes no sense.
Joe is checking on the tank and lines.
All drains and possible leaks are still sealed tight.
03:13 Ferm C Pump OFF. Finished UV Rinse of Prop 3B
03:22 C5 Tank AG might not be running. Possibly burnt out?
Might want to add a section about checking C5 AG as part of PMs?
03:32 C5 Tank AG fuse box reset. Running AG through HMI now.
03:52 Ferm C Pump ON, Extra UV Rinse on Prop 3B
04:10 Ferm C Pump OFF
05:00 Began UV Rinse of Prop 3A transfer lines
Ferm C Pump ON
05:17 WW Pump ON in Recirc Loop @ 50.4% Level
05:25 Began UV Rinse of Prop 3A through sprayballs for 25 minutes
05:34 WW pH=11.94 Cond=5.62 mS/cm
05:37 Heating up WW pick heater, sending WW to Buckeye
Level @ 55.0%, Flow>30 GPM
05:51 Ferm C Pump OFF. Finished UV Rinse of Prop 3A
Shift Change
08:01 WW Pump OFF, pump secured/flushed
Note-2A Inoc. Planned for 09:30
08:40 Steam to Jacket of Liq
08:50 Nutrients going in 2A
09:00 Steam into Liq
09:11 Liq +5 psi, Vac Pump ON
09:21 Liq -10 psi, Vac Pump OFF
09:35 Pre-Inoc. 2A
(L) 28.1%; pH=6.98; (T) 98.3°F; (P) 1.13 psi
09:47 Steaming Liq transfer lines
10:00 Bleach Scrubber/Blower ON

10:01 **Inoc. 2A Complete**
 (L) 30.9%; pH=6.93; (T) 99.4°F; (P) 1.51 psi
 10:03 Steaming Enzyme lines, sample port
 10:08 t=0hr sample taken for 2A.
 10:18 Liq @ 250°F
 Note-3A Level Alarm disabled until it clears up
 12:02 Steam OFF to Liq
 12:12 Steam to Liq Jacket OFF
 12:18 Metso start from RevSc→PSBTC
 12:20 HP Seal ON
 12:30 Cab#2 ON. #1 ON. Biomass Transfer ON
 12:34 Steam feed to Metso
 Blow back damper cleaned. 53 psi
 12:38 PSF, PSBTC OFF
 12:54 High shear mixing @ 213. T-pipe vent CLOSED
 12:56 CO₂ Pump ON
 13:00 **Going to do this run with Hydrolyzer Discharger cracked (like before) per Ingram.**
 Note-Alarm on Top Dump Valve not allowing bottom to fully
 13:20 PSBTC and PSF ON
 13:30 Cut steam, waiting to get dump cycle right.
 13:45 Cycle Time 15→18 seconds, working steam back to 105%
 13:58 **Feeding Metso, PSBLB→50%, PSF→100%**
 14:03 Steam in jacket of pHA
 14:11 PSF→95→90%
 14:18 pHA@ 5 psi Vac Pum→-10 psi ~15 sec, Steam back ON
 14:24 WW in Recirc (36.9%)
Note-2B Inoc. Planned for 16:00
 14:33 PSBLB→60%
 14:51 **@ Temp and Press**
 15:00 PSBLB→70%
 15:15 Bleach Scrubber level alarm disabled
 15:16 PSF→95%
 15:32 PSBLB→80%
 15:42 PSF→100%
 15:49 Nutrients→2B
 15:50 Metso Setpoints
 FBLB @ 75% (M) PSF @ 100% (M)
 CV #1&2 @ 100% (M) Hyd @ 170 psi (A)/ 190°C/ 375°F
 PSBLB @ 80% ScPr @ 9.0 RPMs (A)
 Level-Visual, Temp @ 110°F (Cas) PAMP#1→21.5% (M)
 16:00 pHA finally @ 250°F (lots of lines open) SV-97%
 16:10 **2B Inoc t=0 taken**
Pre: (L) 43.6% 98.9°F; pH=6.93(P) 1.07 psi
Post: (L) 46.6% 98.3°F; pH=6.91(P) 1.14 psi
 16:21 pH=10.26; 870 µS/cm Wastewater
 16:55 Adding UV→Liq through top ~20% or hit pH probe. Final level after flow rate test
 17:28 Steam OFF to pHA, SIP Complete
 17:36 WW→Georgia-Pacific, 77.1%

17:49 Temp Control ON Liq
17:55 Flowrate Test
18:05 2A Sample
(L) 28.7%; pH=6.45; Temp 99.5°F; (P) 1.19 psi
18:06 Sending rest of Acid Mix→Hold around 1100 lbs.
18:09 PSF→95→905 (must have bridged)
18:12 PSF→95%
18:20 Liq Agitation ON
18:21 PSB CV in Manual @ 60% for visual issues with camera
18:34 Acid Transfer done, 75.8%
19:04 PSF→100%
19:07 Cleaning out Beta Gluconase Pump, sanitizing
19:09 Stopped Water→Liq, 20.2%, heating up, Last Target was 21.5%
19:37 Prop 2A pH Control→Auto set @ 6.35, BBP#4 set @ 15%
19:58 PSB SV→55%
Shift Change
20:07 GP OFF
20:10 GP ON. Rinsing with water
20:27 GP OFF
20:31 GP ON, C5 Discharger Vent might be clogged. Pressure from 170→177 psi
20:34 GP OFF; Vent clog cleared, Metso SV→105%
20:38 FBLBs→85→95%
Will be purging 3A/B through vents on top of both tanks.
20:42 Metso pressure not going back up. Boiler @ 240 psi.
Metso pressure holding @ 161 psi
Joe going to close vent and re-open slowly once back @ pressure in Metso
Steam leak has gotten worse
20:47 C5 Discharger Vent cracked OPEN; FBLBs→105%
20:49 FBLBs→120%
20:55 FBLBs→105%, Alarm for top knifegate
20:58 FBLBs→80%
21:10 Beginning SIP Procedures for Prop 3B (without VacPump steps)
21:15 Beginning SIP Procedures for Prop 3A (without VacPump steps)
21:21 FBLBs→95%
21:25 FBLBs→110%
21:30 Reached 250°F in Prop 3B. Began 90-minute timer
21:33 FBLBs→100%
21:35 FBLBs→90→100%
21:46 Reached 250°F in Prop 3A. Began 90-minute timer
21:48 FBLBs→110%, PSB SV→50%
21:50 t=6hr Metso Blow Tank Sample Taken
Acid @ 5.33 GPH; 21.6 mS/cm; PSBLBs @ 80% 190°C
21:55 Liq Tank Settings
0.016 GPM Enzyme; GP @ 18.7%
Initial Level @ 23.1% = 443 gal
Tank full @ 36.4% = 758 gal
Biomass flow = 158 lbs/hr
UV Flow (after pumping) @ 1.23 GPM

21:57 Filling Liq Tank to 23.1% via automatic valve
22:02 Alarm for top knifegate
22:04 3rd Alarm for top knifegate
22:06 4th Alarm for top knifegate; FBLBs→100%
22:10 Liq Tank @ level, FBLBs→90%
22:11 Discharge Knifegate to Liq Tank OPEN
Reversing Screw→STOP, Direction→Forward
Reversing Screw→ON in FORWARD
Feeding Liquefaction
Discharge Knifegate to C6 Dumpster CLOSED
22:13 AAP#1 ON (in standby for CAS)
22:14 FBLBs→85%
Slight steam leak on Rev. Scr.
22:18 FBLBs→80%
22:19 GP ON @ 18.7%, Liq Tank pH below 6.00
22:20 Liq Tank pH Control→Auto
22:28 FBLBs→77%
22:29 GP OFF and ON. Valves properly set now
22:31 GP→50% for priming the line
22:34 GP→75%
22:37 GP OFF
22:39 GP ON @ 75%
22:41 GP OFF
22:44 FBLBs→82%
22:46 GP ON @ 75% and OFF
22:54 GP ON @ 75%
22:56 GP→95%; Flow finally
22:57 FBLBs→90%
22:58 GP→26%
23:01 GP→29.6%. Will hold for 50 minutes then go to normal speed
Ended Prop 3B SIP Wait
23:06 FBLBs→100%
23:20 **Finished Prop 3A SIP Wait**
23:26 FBLBs→110%
23:30 Ended SIP of Prop 3A. Cooling normally like Prop 3B
23:39 FBLBs→105→90%
23:41 FBLBs→80→75%
23:47 FBLBs→70%
23:51 GP→18.7%, resuming normal speed

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00:02 FBLBs→75%
00:04 PSB SV→45%
00:07 PSF→105%
00:08 t=8hr Prop 2B Sample Taken 0.05 ACFM
(L) 45.6%; pH=6.57; (T) 99.0°F; (P) 0.71 psi
00:09 FBLBs→70%
00:18 FBLBs→75%

00:22 FBLBs→95%
00:35 FBLBs→105%
00:41 t=8hr Prop 2B [Ethol]=0.44 g/L
00:42 FBLBs→95%
00:45 FBLBs→85%
00:47 PSF→107%, FBLBs→77%
00:49 FBLBs→76%
01:04 FBLBs→90%
01:12 FBLBs→85%
01:26 Prop 3B TC→"NORMAL" in Auto
01:28 Prop 3A TC→"NORMAL" in Auto
FBLBs→82→85%
01:37 PSF→110%, FBLBs→90%
PSB Camera shows some really interesting ways biomass builds up in it
01:45 Prop 2A Sample Port Steam ON
t=8hr Prop 2A [Ethol]=0.4 g/L
01:51 FBLBs→10%
01:53 WW Pump OFF
01:59 FBLBs→115%
02:05 t=16hr Prop 2A Sample Taken
(L) 20.6%; pH=6.37; (T) 99.9°F; (P) 0.99 psi
02:12 FBLBs→95%
02:28 FBLBs→80%
02:38 FBLBs→83%
02:40 t=16hr Prop 2A [Ethol]=3.0 g/L
02:46 FBLBs→90%
02:53 FBLBs→100%
03:00 FBLBs→105%
03:08 Prop 2B pH Control→Auto, set @ 6.40, BBP#5@10%
03:10 FBLBs→95%
03:16 Adding Xylose to Prop 2A just in case.
03:18 FBLBs→90%
03:27 FBLBs→85%
03:32 PSF→113%
03:35 FBLBs→77%
03:51 FBLBs→85%
03:55 FBLBs→90%
04:04 FBLBs→100%
04:05 FBLBs→120%, HMI level dropping somewhat worried as a result
Level on camera sort of low but not especially noticeable
04:13 FBLBs→105%
04:17 FBLBs→90%
04:20 PSF→108%, FBLBs→80%
04:36 FBLBs→75→70%
04:41 FBLBs→80%
04:45 BBP#5→12.5%
04:46 WW Pump ON in Recirc Loop @ 48.2%
04:52 pH Adj Tank TC→"NORMAL" in Auto

FBLBs→75%
04:54 PSF→113%
05:04 FBLBs→70%
05:11 FBLBs→60%
05:23 FBLBs→75%
05:35 FBLBs→70%
05:37 PSB SV→40%, FBLBs→80%
05:40 FBLBs→85%
05:46 FBLBs→90%
05:52 FBLBs→110%
05:58 FBLBs→100%
06:05 LP ON @ 80%
Pumping to pH Adj Tank
06:06 FBLBs→85%
06:08 UV Water→Liq Tank in Auto. Flow set @ 1.2 GPM
LP→25%
06:13 FBLBs→70%, PSF→118%, PSBSV→45%
06:18 pH Adj Tank AG ON (per field request)
06:21 FBLBs→75%
06:25 t=0hr Liq Tank Sample Taken
(L) 35.7%; pH=4.97; (T) 121.8°F; (P) 0.70 psi
7-hour fill time
06:27 Field reports that slurry looks like a milkshake, real smooth.
7-minute Caustic addition to WW Tank, pH=6.6, L=69.0%
AAP#3 ON in CAS
06:29 pH Adj Tank pH Control→Auto
06:31 FBLBs→85%
06:35 Getting early pHAT sample to verify pH readings
06:37 FBLBs→100%
06:40 FBLBs→90%
06:44 Prop 3A spargers set @ 1.0 ACFM
06:50 pAP ON @ 40%, Pumping to Prop 3A
06:53 FBLBs→100%
06:54 pAP→30→25%
06:55 t=0hr pHAT Sample Taken
(L)46.1%; pH=6.42; (T) 99.9°F; (P) 0.99 psi
07:00 EE pH=10.82
07:04 Prop 3A Target=20.5%, 210 gallons
07:05 LP & pAP→20%
07:08 Heating up WW pick heater. Sending out @ 79%
07:19 pAP→22.5%
07:21 Liq Tank Sample ~ 17% solids (was 17.75%)
Might have had false readings on agitator impeller.
07:25 FBLBs→90%
07:30 pAP→20%
07:32 FBLBs→80%, PSBSV→50%
07:39 Prop 2B Sample Port Steam ON
Boiler pressure all night between 240 and 250 psi

07:41 FBLBs→70%
07:59 t=16hr Prop 2B Sample Taken
(L) 41.5%; pH=6.35; (T) 99.7°F; (P) 0.70 psi
08:02 Prop 3A AG ON @ 50% (barely touching @ 12.3% level)
Shift Change
08:22 10 g/L Xylose to 2B
08:33 Caustic Systems ON, heating Rinse
08:35 Nutrients into 3A
08:40 2A Sample Taken (Inoc)
(L) 28.6%; pH=6.34; 99.8°F; (P) 0.93 psi
3A Pre-Inoc
(L) ~20%; pH=6.32; 99.1°F; (P) 0.64 psi
08:47 2A→3A
3A→ (L) 23.6%; pH=6.30; 97.6°F (P) 2.15 psi
3A pH in Auto, Pump #7 55%
08:52 2A pH Control/Agitation/Temp OFF
08:54 Liq Pump in Cascade, 36.4% Level
09:00 Metso Sample Taken
5.05 g/L 2A @ Inoc.
10:16 3A Target 800 gallons→74.1%
10:20 400 gallon nutrient addition→3A (37.8%)
11:12 Rinsing 2A
11:29 Full Rinse Cycle using Ferm A Pump
11:55 600 gallon nutrient addition→3A (56%)
12:00 Liq Sample Taken
12:19 Draining off some of Cooling Water Tank
13:35 Pumping pHA→3B
13:39 800 gallon nutrient addition→3B
13:46 2B (for reference) Sample
(L) 45.2%; pH=6.34; (T) 98.0°F; (P) 0.65 psi
14:20 Just realized top dump valve hasn't alarmed in a while.
14:28 Water to plant is DOWN.
14:38 3B Agitator ON
BIGGER ISSUE
Potable water down to 32% from Metso Water Seals
HP Seal Pump now running on Process Water; watch that level (it's also refilling Hot Water Tank, Scrubber, and more.
15:23 2B Inoc Sample Taken
(L) 34.8%; pH=6.29; (T) 99.8°F; (P) 0.61 psi
15:26 2B→3B
Pre: (L) 21.8%; pH=6.49; (T) 97.4°F; (P) 1.36 psi
Post: (L) 26.1%; pH=6.41; (T) 98.3°F; (P) 1.52 psi
Temp/Agit/pH OFF of 2B
15:56 Ferm C Pump ON. CIPing 2B. Rinse.
16:09 3B pH=6.34. Start auto pH control. SP=6.34
16:17 Top gate alarm moving (3 times, did cycle though)
16:18 small spike on ScPr and SPFS
16:25 Blow Tank Agitator Seal alarm, 15 seconds later

Whole system shut down

- 16:44 Been determined that filters clogged from switching to Process Water.
Once clear, will clear out Metso
- 16:59 400-gallon nutrient addition→3B
Water back to plant
- 17:00 Caustic Cycle of 2A/2B lines
- 17:08 Seal Water lined back up to filters, starting HP pump and conveyors to clear out Metso.
Decision came down to shut down 3B (?). Anyway, Base Pump/Temp Control OFF
- 17:18 Pumping pHA→Liq, Liq→Decanter Feed Tank
- 17:30 pHA AG OFF
- 17:32 pHA Pump OFF, still showing 8% but not pumping
CIP of 2A/2B on hold to clear lines with UV (pHA/Liq) to avoid clogging.
- 18:01 ALL Lines for Liq/pHA clear (luckily)
- 18:09 Decanter AG ON
- 18:12 Conveyors, HP Pump OFF up to Blow Tank
- 18:16 CO₂ Scrubber down
- 18:21 Lower conveyors, seal water OFF
- 18:39 Liq AG OFF
- 18:40 Liq Pump OFF, draining rest to sump, no idea what level is, should be ~ 20%
- 18:45 Resuming CIP, Sprayballs 2A
- 19:12 Caustic Cycle of 2B
- 19:34 Ammonia Lines closed to Liq, smells. Pump has been off.
- 19:39 Ferm A Pump ON

Shift Change

- 20:00 Starting UV Rinse of Prop 2B through Sprayballs for 25 minutes.
- 20:27 Prop 2B SV→50% OPEN and CLOSED
Finished Prop 2B UV Rinse
- 20:29 Ferm A Pump OFF
- 21:06 Began UV Rinse of Prop 2A through Sprayballs for 25 minutes
- 21:13 t=12hr Prop 3A Sample Taken
(L) 73.9%; pH=6.30; (T) 98.4°F; (P) 2.81 psi
- 21:17 DFP ON @ 50%
- 21:19 DFP→30%
- 21:28 WW Pump OFF. Pump rinsed and tank valve CLOSED
- 21:34 t=6hr Prop 3B Sample Taken
(L) 46.0%; pH=6.31; (T) 98.0°F; (P) 0.71 psi
- 21:35 Prop 2A SV→50% OPEN
- 21:46 t=12hr 3A [Ethol]=0.3 g/L & t=6hr 3B [Ethol]=0.34 g/L
- 21:49 Ferm A Pump OFF
- 22:52 DFT AG OFF
- 23:16 Rinse Tank at Temperature
- 23:21 Prop 3A AG just tried switching OFF
Level sensor freaking out suddenly.
AG override ON
- 23:54 Flushing DFP and Decanter with Process Water
DFP→60%

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00:04 DFP ON @ 60%
00:07 DFP OFF
00:25 DFT AG ON (filling tank and then will drain to floor)
Drain DFT once Liq→pHA knuckle cleaned out and done
02:03 Began Rinse CIP of Liq Tank through sprayballs for 15 minutes
Rinse Pump→85%
02:18 Finished Rinse CIP of Liq Tank
Rinse Pump→55%
03:10 t=18hr Prop 3A Sample Taken
(L) 74.5%; pH=6.30; (T) 98.4°F; (P) 5.14 psi
03:18 Prop 3A Level Sensor freaking out. Reading ~90%
03:26 Began Rinse CIP of pHAT through sprayball for 15 minutes
Rinse Pump→85%
03:41 Finished Rinse CIP of pHAT
Rinse Pump→55%
03:42 Refilling Rinse Tank
03:43 t=12hr Prop 3B Sample Taken
(L) 45.8%; pH=6.31; (T) 98.6°F; (P) 2.75 psi
04:05 WW Pump ON @ 58.0% Level (in Recirc Loop)
04:09 Caustic CIP of Liq and pHAT transfer lines
04:36 Prop 3A pressure @ 6.6 psi. Been steadily increasing.
05:15 Began Caustic CIP of pHAT through sprayball.
Caustic Pump→85%
05:30 Finished Caustic CIP of pHAT. Caustic Pump→85%
05:49 AAP#3 ON @ 30% and OFF (popping)
05:50 pHAT SV→50% OPEN
05:54 Began Caustic CIP of Liq Tank through Sprayball#1
Caustic Pump→85%
06:10 Continued Caustic CIP of Liq Tank in Sprayball#2.
06:12 AAP#1 ON @ 30% and OFF. Liq Tank SV→50% and CLOSED
06:14 Draining DFT to floor
06:18 Pausing Caustic CIP of Liq Tank. Caustic Pump→55%
06:27 WW pH=11.92 Cond=8.00 mS/cm Level=69.6%
06:36 Resumed Caustic CIP of Liq Tank. Caustic Pump→85%
06:45 Finished Caustic CIP of Liq Tank. Caustic Pump→55%
06:48 Heating up WW pick heater. Sending out WW
07:10 Began UV Rinse of pHAT and Liq Tank transfer lines
07:13 DFT AG OFF
07:45 Began UV Rinse of pHAT through Sprayball for 25 minutes
07:51 pHAT SV→50%
07:52 pHAT SV CLOSED

Shift Change

08:27 Rinsing Reversing Conveyor→Liq
08:50 UV Rinse Sprayballs of Liq for 30 min.
08:58 Cycling Ball Valves for Kevin, only issue seems to be on CLOSE cycle for top one.
09:05 Caustic System OFF
09:06 Prop 3A Sample Taken
(L) 75.2%; pH=6.30; (T) 98.4°F; (P) 6.31 psi

09:27 Prop 3B Sample Taken
(L) 45.6%; pH=6.31; (T) 98.8°F; (P) 3.12 psi
09:53 Top Valve cycling cleanly now
10:03 Both valves cycling cleanly
13:16 WW Pump OFF
14:50 Temp Control ON pHA, Test PSV→OFF
15:07 Temp Control ON 2B, Test PSV→OFF
15:08 Prop 3A Sample Taken
(L) 72.4%; pH=6.30; (T) 98.6°F; (P) 7.47 psi
15:11 Temp Control ON 2A, Test PSV
3A & 3B Test
15:30 Prop 3B Sample Taken
(L) 44.9%; pH=6.31; (T) 98.5°F; (P) 3.70 psi
15:49 Steam PSVs Passed
16:54 3A now vented→BW, pressure was 8+ and climbing, 2B sparger back in (cleaned)
17:09 UV Pump and lights OFF
18:13 Tonights Plan, when water comes back on:
Run metso 5-6 hours. Check ball valves functions and acid line leak.
Sample for lab full analysis and autoclave bag of cake.

Shift Change

21:13 t=36hr Prop 3A Sample Taken
(L) 72.4%; pH=6.29; (T) 98.4°F; (P) 1.73 psi
21:34 t=30hr Prop 3B Sample Taken
(L) 44.9%; pH=6.29; (T) 98.7°F; (P) 3.90 psi

2015-02-13

02:49 Prop 3A Sample Port steam ON
03:05 t=42hr Prop 3A Sample Taken
(L) 73.1%; pH=6.29; (T) 98.6°F; (P) 1.81 psi
03:40 t=36hr Prop 3B Sample Taken
(L) 44.5%; pH=6.29; (T) 98.8°F; (P) 4.42 psi
03:59 Paul and Peter installing camera over by HP Seals
04:19 HP Seals Camera working well now
06:09 Rinse Systems ON and heating up tank
07:40 BBPs #7 & 8→80%. 3A/B pHs dropping noticeably!
3A @ 6.26; 3B @ 6.24
Honestly should have noticed sooner. Pumps began running more around 4 AM.
Peter confirmed that base totes were not empty.
07:55 Still no Potable Water flow back

Shift Change

08:15 water back ON, waiting 30 min to make sure
08:24 WW in Recirc
08:57 Metso conveyors/HP Pump ON up to Dump Chamber-Not cycling correctly.
09:12 Still not getting clean cycles, not going forward until we do
09:37 WW pH=6.11, adding more caustic
10:17 Piece of metal found in air feed line restricting flow. Working fast now
10:25 Conveyors on to chamber, looks good
10:28 HP Pump/Rest of Conveyors ON

10:47 WW pH=9.9 1.25 mS/cm
 10:50 Sending WW→Buckeye
 11:01 Steam to Metso
 Changed cycle 18 sec→16 sec, working faster
 11:24 Cycle down to 12 sec, looks good, leaving (Kalvin's doing)
 11:50 PSBTC and PSF ON
 12:09 Feeding Metso PSBLB→50%; PSF→100%
 12:22 PSBLB→60% PSF→95%
 12:40 PSBLB→70% PSF→100%
 12:55 PSBLB→80%
 13:06 PSF→105%
 13:20 Metso @ Press/Temp/Speed (80%)
 13:30 Metso Settings @ Stable State
 Feed Bin @ 60% (Visual); PSF @ 105%
 CV#1&2 @ 100% (M); Hyd @ 170 psi/190°C/375°F SV~90%
 PSB-(L)-Visual, (T)-50%, LB @ 80%; ScPr @ 9.0 RPMs (A)
 PAMP #1→21.75%
 13:51 PSF→110%
 14:45 Stopped draining off Cooling Water ~45%
 15:23 PSF→115%
 09Prop 3A Sample Taken
 15:27 Prop 3A/B Samples Taken
 3A: (L) 73.1%; pH=6.31 (T) 98.7°F; (P) 1.7 psi
 3B: (L) 44.6% pH=6.31; (T) 98.6°F; (P) 4.69 psi
 EtOL→0.4 g/L & 0.35 g/L
 17:32 Samples Taken, shutting OFF Feed and steam
 17:47 Taking Temp/pH Control OFF 3A/B, Handling OFF
 17:51 Been decided to leave Bleach Scrubber/Fan ON over weekend, kill on Monday
 18:28 Hot, Cooling, H₂O OFF, CO₂ Pump OFF
 18:35 HP Pump OFF. Conveyors to Blow Tank, Rinse
 18:39 Lower Screws, Seal Water OFF
 19:29 3A & 3B Agitators in Manual in MCC
 Speed went down as result
 19:38 WW OFF
 19:31 Systems OFF

2015-02-16 Post-Campaign

08:10 Prop 3A/B TCs→"NORMAL" in Auto
 Setpoint @ 140°F. Began heat-kill.
 10:26 Reached 140°F in Prop 3B. Began 3-hour wait timer.
 11:38 Reached 140°F in Prop 3A. Began 3-hour wait timer.
 13:45 Prop 3B Heat-kill Sample Taken
 (L) 42.4%; pH=5.57; (T) 139.6°F; (P) 4.20 psi
 14:12 Prop 3B TC OFF. Will transfer to DFT soon by way of Ferm A Pump
 14:14 Ferm A Pump ON (transferring Prop 3B→DFT)
 14:28 Prop 3B AG OFF
 14:36 Ferm A Pump OFF. DFT AG ON; transfer complete.
 14:42 Prop 3A Heat-kill Sample Taken

(L) 72.5%; pH=5.64; (T) 139.8°F; (P) 2.53 psi

- 14:44 Prop 3A/B TCs set @ 100°F to stop dehydration and caking along propagator walls until tanks can be rinsed.
- 14:46 Ferm A Pump ON; transferring Prop 3A → DFT
- 15:17 Prop 3A AG OFF
- 15:28 Ferm A Pump OFF
- 15:57 5-minute rinse for 3A
- 15:59 Ferm A Pump ON
- 16:05 Ferm A Pump OFF. Rinse back to loop.
- 16:09 Ferm A Pump ON. 5-minute rinse for 3B
- 16:17 Ferm A Pump OFF.

Log Book Keys

Color Coding

blue text

green text

purple text

red text

yellow highlight

tank refill log (i.e., bleach, caustic acid)

notes from field

problems

sampling/inoculation-related information

process notes, major issues

Abbreviations

AAP	Aqueous Ammonia Pump
AG	Agitator
BT	Blow Tank
BW	Beerwell
BWP	Beerwell Pump
C5 Discharger	Hydrolyzer Discharge Screw
CIP	Clean in Place
CV	CableVey-Cable conVeyors
DFP	Decanter Feed Pump
FBLBs	Feed Bin Live Bottoms
FBTC/FBCC	Feed Bin Transfer/Collection Conveyor
GP	Gluconase Pump
HPSWP	High Pressure Seal Water Pump
HSMC	High Shear Mixing Conveyor
LIQ	Liquefaction Tank
LP/LIQP	Liquefaction Tank Pump
PA	Phosphoric Acid
PAHT	Phosphoric Acid Holding Tank
PAMP	Phosphoric Acid Metering Pump
PAMT	Phosphoric Acid Mix Tank
pAP	pH Adjustment Tank Pump
PATP	Phosphoric Acid Tote Pump
pHA	pH Adjustment Tank
Prop	Propagator
PSBLBs	Pre-Steam Bin Live Bottoms
PSF	Plug Screw Feeder
RevSc	Reversing Screw
ScPr	Screw Press
SIP	Sterilize in Place
SV	Steam Valve
WW	Waste Water