Log Book
Campaign 14

2015-05-05

06:00 Process, Potable, Hot, UV, Cooling Water, and Plant Steam ON
07:23 SIP on 2A and 2B
No pulling vacuum today.
07:55 Reached 250°F in Prop 2A/B. Began 90-minute timer
08:14 WW Pump ON @ 17.3% Level
08:19 CV#2 to FBLBs (@50%) ON. Emptying out Feed Bin
08:22 Rinsing (CIP Rinse) Lower Metso→Liq→Sump
08:24 RevScr (FORWARD) and ScPr ON
08:34 FBLBs→75%
08:42 ScPr and RevScr OFF
08:49 RevScr ON in REVERSE
08:55 RevScr OFF
08:57 Began Rinse CIP of Liq Tank through sprayballs for 15 minutes
Rinse Pump→85%
09:02 Finished Rinse CIP of Liq Tank through sprayballs. Rinse Pump→55%
09:09 Flipping CIP Header to UV Rinse
09:17 Began UV Rinse of Liq Tank through sprayballs for 20 minutes
09:24 FBLBs→90%
09:25 Finished SIP timers for Prop 2A/B
09:32 Ended SIP on Prop 2A/B
09:37 Finished UV Rinse of Liq Tank
10:11 Liq SV→30%
10:16 Liq SC reset.
Began SIP Procedures on Liq Tank
10:26 Liq Tank @ +5 psi, Steam OFF, VacPump ON
10:35 Liq Tank @ -10 psi, VacPump OFF, Steam ON
10:50 Biomass Handling OFF
11:30 Liq Tank lines open to steam now
12:08 Began cooling down Prop 2A/B transfer and addition lines
12:30 Reached 250°F in Liq Tank. Began 90-minute timer.
PSB Vibrator not working. Will not be using it.
12:41 Doing 20-gal Hz and 17-gal UV Water for each of the Prop 2A/B
12:42 RevScr to BTAG ON
12:43 HP Seal Water Pump ON
12:45 C5 Discharger and Hydrolyzer ON
12:47 HSMC and Metso Steam ON
12:49 Scrubbers ON, Bleach Scrubber level strange
12:51 PAHT AG and PAMP#2 ON
13:00 T-pipe vent CLOSED at T_U=218°F
13:02 CV#2 ON and OFF
13:05 CV#2 ON
13:06 CV#1 and FBCC ON
13:07 Level Notes: 20 gal Hz; 17 gal UV (Antifoam when needed)
Prop 2A: 5.1%; 30.4%

Prop 2B: 18.8%; 40.8%
13:21 C5 Pump ON @ 50%
13:22 Began adding Hz→Prop 2A. Target=5.1%
13:23 Flow confirmed into Prop 2A
13:25 Adding Antifoam NOW into Prop 2A
13:31 Prop 2A/B TCs OFF
13:40 C5 Pump OFF. Letting Prop 2A level stabilize
C5 Pump ON @ 50%
13:41 Prop 2A @ 5.3% Level. C5 Pump OFF (doing Prop 2B Hz next)
13:44 All Metso Vents CLOSED
13;46 Metso @ 52 psi, PSF (@100%) and PSBTC ON
13:50 C5 Pump On @ 75%, then C5 Pump→50% after 30 seconds
Began adding Hz→Prop 2B
13:58 Metso @ 101 psi, PSBLBs ON @ 60%; FBLBs ON @ 70%
Acid→6.00 GPH
14:00 SIP Timer for Liq Tank Finished; PSF→105%
14:01 C5 Pump OFF. Prop 2B Level spiking into Dead Zone
14:04 FBLBs→40→45%
14:06 C5 Pump ON @ 50%. Finishing Hz add→Prop 2B
14:07 WW pH=11.41 Cond=2.35 mS/cm Level=67.2%
14:11 Ending SIP on Liq Tank (stepping down SVs om 5-10% increments).
14:12 PSF→100%
14:13 FBLBs→50%
14:14 Metso @ T&P. PSBLBs→70%, Acid→7.00 GPH
14:15 C5 Pump ON @ 50%. Resuming Hz→Prop 2B
14:17 C5 Pump OFF. Finished C5 Add→Prop 2B (level erratic)
14:20 Began UV Add→Prop 2A. Target=30.4%
14:26 Pausing UV Add→Prop 2A. Level~28% now
14:27 Resuming UV Add→Prop 2A
14:29 Finished UV Add→Prop 2A. Level~31.3%
14:30 Prop 2A AG ON
14:32 Sending out WW @ 70.6% Level
14:33 Began UV Add→Prop 2B. Target=40.8%
14:34 Prop 2A might be leaking. Informed field and they are looking into it.
14:37 Paused UV Add→Prop 2B. Level~37%
14:38 PSBLBs→80%, Acid→8.00 GPH
14:40 Resuming UV Add→Prop 2B
14:41 FBLBs→90%. Pausing UV Add→Prop 2B
14:45 Finished UV Add→Prop 2B. Level~40.8%
14:46 Prop 2B AG ON
14:47 Began conditioning Prop 2A to pH=8.00; BBP#4@10%
14:58 Began conditioning Prop 2B to pH=8.00; BBP#5@10%
15:00 C5 Pump ON @ 50%
Flushing out C5 Pump
C5 Pump OFF
15:03 C5 Hydrolyzer vent cracked open now
15:37 BBP#4 & 5→15%
15:41 FBLBs→45%

15:44 Began adding UV Water→Liq Tank @ 3.6 GPM
15:55 BBP#4→10%
Liq Tank pH Sensor not reading anymore ("NaN")
15:59 BBP#4→12.5%
16:09 Liq Tank pH probe set to "A"
16:10 BBP#4&5→10% (testing to see if it will reduce pH spike tomorrow when pH control is turned on)
16:15 Prop 2B pH=8.00. BBP#5 OFF. Finished conditioning Prop 2B
16:17 Prop 2A pH=8.00. BBP#4 OFF. Finished conditioning Prop 2A
16:20 Sugars Sample Taken from Props 2A/B
16:28 FBLBs→50%
16:33 Began 2-hour Metso Flowrate Test
16:35 Caustic Systems ON. Heating up Tank
16:38 FBLBs→60%
16:50 Liq Tank pH probe taken out and cleaned. PSF→105%
16:55 Might need to put in 2nd pH probe for Liq Tank
16:59 Adjusted UV→Liq Tank timer to fill tank to 420 gallons
17:08 FBLBs→70%
17:12 FBLBs→75%
17:20 Liq Tank TC→"NORMAL" in Auto
17:44 By Joe's request, continuing UV→Liq Tank for 5 more minutes
17:49 Stopped UV→Liq Tank @21.9%, 450 gallons
17:50 Liq Tank AG ON @ 100%
17:58 Liq Tank pH probe "B" in top port of the tank.
18:02 Will need to start draining out of Liq tank via sterile sample port
18:10 LTAG OFF
18:21 Began adding UV Water→Liq Tank @ 3.6 GPM
Started @ 21.6% Level
Target is 21.9% Level
18:26 Adding UV Water→Liq Tank for another ten minutes.
18:38 Stopped UV Water→Liq Tank. Field began draining through sample port
Level~23.6%
Target Level for drain=21.9%
Finished Flowrate Test for Metso
18:42 FBLBs→70%
18:45 FBLBs→65%
18:46 FBLBs→55%
18:58 LTAG ON @ 30%
19:05 Metso Flowrate=180 lbs/hr of biomass; 38.5% dry-weight
Metso Settings:
Temp=185°C=366°F; Pressure=150 psi (A)
FBLBs @ 55% (M); PSF @ 105% (M)
CV#1&2 @ 100% (M); ScPr@ 9.0 RPMs (A)
PAMP#2 CAS; Acid Cond=17.1 mS/cm; Flow @ 8.00 GPH (A)
PSBLBs @ 80% (M); PSB Level-CAMERA; PSB Temp=110°F (A)
19:08 LTAG→100%; Stopped draining tank
19:14 GP ON @ 75%
19:17 LTAG→60%, level was doing strange things
19:18 FBLBs→50%

19:25 FBLBs→45%
19:26 GP OFF
19:30 Liq Tank Settings:
Initial Level=21.4% (438 gallons)
Target Level=33.8% (726.8 gallons)
Enzyme Flow=0.017986 GPM (GP set @ 20% speed)
UV Flow after Target Level=1.45 GPM~1.5 GPM
5.05-hour Retention Time
19:33 GP ON @ 75%
Priming Enzyme Line→Liq Tank
19:36 GP OFF
19:37 Now Feeding Liquefaction Tank
Knifegate to Liq Tank OPEN
RevScr STOP, Direction set→"FORWARD"
RevScr "RUN FORWARD"
Knifegate to C6 Storage Dumpster CLOSED
19:40 GP ON @ 75% at pH=6.00
19:42 GP→50%; Flow confirmed in flow meter, now stepping down GP; LTAG→80%
19:43 GP→30%
19:46 AAP#1 ON (CAS); Liq Tank pH Control ON; GP→25%
19:47 GP→20%, LTAG→100%
19:52 FBLBs→50%
Shift Change
21:01 WW done, pump sealed and flushed
21:02 Rinse Cycle of 3A
21:40 Caustic Cycle of 3A
22:16 UV Cycle of 3A
23:41 PSF→110%
23:57 Steam into pHA jacket

2015-05-06
00:01 Steam to pHA Tank
Gained 50° in pHA Tank and no rise in pressure, checking I/O fuse
00:13 WW in Recirc
00:33 Temp Control ON 2A/2B
00:49 Still troubleshooting pHA. Steam @ 101%, pressure still only 1.34 and temp 222°
01:01 Steam OFF to pHA, appears Rupture Disk is shot.
01:13 WW pH=9.58, 600 µS/cm
01:21 WW going out
Liq Level bouncing, best estimate is that ~01:45 should be close to 33.8% Target
01:34 Steam back to pHA
01:46 Water ON to Liq, 1.5 GPM
02:00 t=0hr Liq Sample Taken
(L)35.3%; pH=5.02; (T) 122.0°F; 0.42 psi
02:15 Metso Sample Taken
02:38 pHA @ 250°F, 90 min hold started
02:46 Nutrients in 2B
(L) 40.1%; pH=6.82; (T) 100.2°F; 0.61 psi

02:55 Prop 2B Inoculated, t=0hr Sample Taken
(L) 43.5%; pH=6.80; (T) 99.2°F; 0.61 psi
03:13 Adding nutrients to 2A
(L) 30.3%; pH=6.96; (T) 100.4°F; 1.09 psi
03:24 Prop 2A Inoculated, t=0hr Sample Taken
(L) 34.0%; pH=6.87; (T) 98.8°F; 0.03 psi
Liq Sensor still screwy
03:36 16.7% DW in Liq, Increased UV to Liq→2.0 GPM for 1 hour
Liq Target=63%, going to do two 400 gallons in 3s.
04:03 PSF been running in 12s most of the night
04:08 pHA SIP hold done, Steam OFF
04:10 Liq Agit @ 30%, tank level is 50%, fingers crossed
04:31 Steam ON to 3A/3B
04:39 Liq UV Water back to 1.5 GPM
04:51 SIP Hold ON 3B (SV~10%)
05:06 SIP Hold ON 3A (SV~50%)
06:10 Liq @ 62.2%, walking agitator back up. Amps seems a little high
06:21 Metso→Bin, water/enzyme OFF
Taking another Metso Sample
06:23 Feed, Steam OFF, Metso boiler OFF, Acid OFF.
06:28 Handling OFF
06:30 Steam OFF to 3B
06:44 Temp Control ON 3s to cool and bring down pressure so we can get spargers set up
07:07 Chamber OPEN
Seemed like more steam than usual from chute
07:12 Clearing Plug
07:36 Conveyors OFF, HP OFF, Scrubber OFF
Shift Change
08:15 t=6hr Liq Tank Sample Taken
(L) 65.0%; pH=5.00; (T) 122.1°F; 0.73 psi
08:54 WW Pump OFF. Rinsed out and valve closed.
09:00 Field working on Flow Meter by PAMP#2
10:47 Prop 2B Sample Port Steam ON
11:00 t=8hr Prop 2B Sample Taken
(L) 42.2%; pH=6.54; (T) 98.2°F; 0.49 psi
11:30 t=8hr Prop 2A Sample Taken; 0.05 ACFM
(L) 32.5%; pH=6.49; (T) 100.0°F; 1.07 psi
14:01 t=12hr Liq Tank Sample Taken
(L) 64.4%; pH=4.99; (T) 121.8°F; 0.75 psi
14:11 Liquefaction pH starting to behave oddly.
14:54 Prop 2A pH Control ON and set @ 6.38, BBP#4 @ 6%
16:22 First Base add to Prop 2A. pH→6.46 (from 6.32)
Improvement over past occurrences.
17:07 Prop 2B pH Control ON and set @ 6.38, BBP#5 @ 6%
19:00 t=16hr Prop 2B Sample Taken; 0.049 ACFM; 2.69 g/L [Ethol]
(L) 40.7%; pH=6.34; (T) 97.8°F; 0.88 psi
19:27 BBP#4&5→10%
19:32 t=16hr Prop 2A Sample Taken; 0.05 ACFM; 4.95 g/L [Ethol]

(L) 30.5%; pH=6.31; (T) 98.1°F; 1.26 psi
19:57 BBP#4&5→15%
Shift Change
20:09 t=18hr Liq Sample Taken
(L) 63.3%; pH=4.99; (T) 121.9°F; 0.75 psi
20:26 Calibrating pH probe
20:49 Starting Liq→pHA, Liq Pump 40%
20:53 Flow into pHA, Liq Pump to 2 GPM
21:06 pHA AG ON
21:36 pHA Pump ON, Recircing.
Plan is to do a sample.
22:42 Target for 3A is 160 gallons, 200-gal total 16% Level Per Ismael
22:59 pHA→3A, TC ON, pHC ON
23:02 t=20hr Prop 2A Sample Taken; 7.2 g/L [Ethol]
(L) 31.1%; pH=6.32; (T) 98.1°F; 1.45 psi
23:05 Reversed pHA Pump
23:17 t=0hr pHA Sample
(L) 39.4%; pH=6.50; (T) 99.4°F; 0.98 psi
23:20 Confirmed flow into 3A
23:27 Liq Level acting up

2015-05-07
00:15 3A @ 16.2, pHA in recirc, pH and TC OFF, 3A AG ON @ 95%
02:00 t=24hr Liq Sample Taken
02:28 Nutrients in 3A for first 200 gallons
02:32 t=23hr Prop 2A Sample Taken; 8.8 g/L [Ethol]
(L) 30.3%; pH=6.32; (T) 97.8°F; 1.20 psi
02:36 Began 3A Inoculation with 2A
(L) 16.0%; pH Unknown; (T) 97.8°F; 0.06 psi
pH control OFF 2A
Having trouble with transfer, hopefully not clogged.
02:46 Inoculation Complete of 3A
(L) 19.4%; pH=6.29; (T) 98.8°F; 0.54 psi
Doesn't look like we made pH probe, 2A AG OFF
03:00 pH Control ON, Pump #7 @ 50%
03:01 t=24hr Prop 2B Sample Taken; 8.2 g/L [Ethol]
(L) 40.7%; pH=6.34; (T) 99.7°F; 0.88 psi
Slurry addition to be decided after 6 hours
03:26 Raising pH of slurry to go to 3B
160 gallons, 18.9%
03:34 pHA→3B @ 6 GPM→7 GPM
03:39 Nutrients in 3B for 200 gallons
03:44 Going to inoc. while filling as soon as we hit 15%
New target 22.7%
03:52 3B AG ON. pHC, TC OFF 2B
03:01 Inoculation of 3B complete, t=0hr Sample
(L) 23.0%; pH=6.32; (T) 99.2°F; 0.04 psi
pH control ON @ 45%, SP @ 6.38

04:14 Rinse Cycle 2A and 2B
Still can't believe level on 2A during CIP
MORNING PLAN:
Sample 6 hours after inoculation. 3A→09:00; 3B→10:00
If above 5 g/L add 100 gallons of slurry and rest of nutrients during addition
05:18 Flipping Header to Caustic
05:21 Caustic Cycles on 2A/2B
Having problems pumping out of 2B
06:35 Flipping to UV
06:44 UV of 2A/2B
07:02 Reversed Liq Pump
07:14 WW in Recirc; ~31 GPM
Shift Change
07:56 pAP→2.1GPM
08:04 t=30hr Liq Tank Sample Taken
(L) Unknown; pH=5.08 ;(T) 121.7°F; 0.77 psi
08:52 Steam ON to Prop 3A Sample Port
09:03 t=6hr Prop 3A Sample Taken
(L) 18.9%; pH=6.32; (T) 98.1°F; 0.54 psi
09:17 t=6hr Prop 3A [Ethol]=2.96 g/L
09:35 pAP→2.2 GPM
09:49 WW pH=11.5
10:00 t=6hr Prop 3B Sample Taken; 0.50 ACFM
(L) 23.1%; pH=6.33; (T) 98.9°F; 0.07 psi
10:02 Heating up WW pick heater. Level @ 73.1%
Flow~30 GPM
09:17 t=6hr Prop 3A [Ethol]=1.74 g/L
11:15 pAP→2.4 GPM
11:36 t=12hr pHAT Sample Taken
(L) 36.9%; pH=5.08; (T) 118.8°F; 1.38 psi
12:08 pAP→2.3 GPM
13:52 Steam ON to Liq Tank Sample Port
13:54 WW Pump OFF. Rinsed out
14:05 t=36hr Liq Tank Sample Taken
(L) Unknown pH=5.14 ;(T) 122.0°F; 0.61 psi
14:40 BBP#8→30% (Has not really been running too much)
15:02 t=12hr Prop 3A Sample Taken; 0.5 ACFM
(L) 18.7%; pH=6.32; (T) 98.9°F; 0.21 psi
09:17 t=6hr Prop 3A [Ethol]=7.15 g/L
15:39 pAP OFF, LP→2.0 GPM, pHAT pH and Temp Controls ON
Adding nutrients to Prop 3A
15:50 pHAT @ 97.5°F, pH=6.40, 54.1% Level
pAP ON @ 60% (5.3 GPM)
pHAT→Prop 3A
15:51 Good pumping→Prop 3A. pAP→3.5 GPM→2.5 GPM
Prop 3A Target=28.6% (halfway point @ 24.1%)
15:52 pAP→2.1 GPM
15:54 Nutrients added to Prop 3A

16:01 t=12hr Prop 3B Sample Taken; 0.51 ACFM
(L) 23.5%; pH=6.33; (T) 98.4°F; 0.03 psi
16:04 LP→2.1 GPM
16:08 LP→2.2 GPM
16:19 pAP→1.8 GPM (trying not to add too quickly)
16:28 t=12hr Prop 3B [Ethol]=2.5 g/L
16:33 pAP→2.3 GPM
17:08 pAP→2.2 GPM
17:28 Make sure next shift knows to do plates on 20:00 Liquefaction Tank Sample
17:29 pAP→2.1 GPM
17:47 LP→2.4 GPM
19:28 pAP→2.2 GPM
19:48 pAP→2.4 GPM
19:52 pAP→2.8 GPM
Shift Change
20:09 t=42hr Liq Sample Taken; Will plate.
(L) ???; pH=5.15; (T) 121.8°F; 2.01 psi
21:05 t=18hr Prop 3A Sample Taken; [Ethol]=9.7 g/L
(L) 28.6%; pH=6.32; (T) 98.5°F; 0.01 psi
22:10 t=18hr Prop 3B Sample Taken; [Ethol]=3.43 g/L
(L) 23.7%; pH=6.33; (T) 98.7°F; 0.03 psi
22:15 Bringing up pH, down Temp to pump 100 gallons to 3A
22:32 pHAT→3A
Target=37.8% @ 1.8 GPM
(L) 50.5%; pH=6.40; (T) 98.7°F; 1.88 psi
Wasn't sure it would pump so slow at first, but so far so good.
23:29 pHA→Liq, Temp OFF, Base OFF
23:33 t=24hr pHA Sample Taken
(L) 33.9%; pH=5.97; (T) 103.6°F; 1.98 psi

2015-05-08
02:06 t=48hr Liq Sample Taken
(L) 33.9%; pH=5.16; (T) 121.0°F; 2.08 psi
03:00 t=24hr Prop 3A Sample Taken; [Ethol]=13.03 g/L
(L) 37.8%; pH=6.32; (T) 98.6°F; 0.01 psi
04:04 t=24hr Prop 3B Sample Taken; [Ethol]=4.5 g/L
(L) 23.6%; pH=6.33; (T) 98.6°F; 0.13 psi
04:41 Liq Pump OFF, AA Pump 1&3 OFF, pH and Temp Control OFF Liq
05:01 pHA Pump/AG OFF
05:03 Pumping Liq→Decanter Tank
06:54 Liq Pump OFF, Decanter level out. Liq AG OFF, Decanter AG ON
Shift Change
08:06 WW Pump ON in recirc
09:20 t=24hr Prop 3A Sample Taken; Sparger=0.493 ACFM
(L) 37.8%; pH=6.32; (T) 98.6°F; 0.01 psi
09:36 Rinse Water connected to ScPr. Hot Rinse for ScPr and RevScr
09:45 Rinsed out end of ScPr where biomass always gets packed.
Level sensor of Liq not working

10:21 Sprayball Rinse Water of pHA done.
10:30 WW pH=8.43 Conductivity=1.73 mS/cm
11:00 Rinse Sprayball done for Liq
11:50 Flipped with Caustic. WW→GP
12:36 Caustic sprayball of Liq, 1 by 1.
13:28 Caustic sprayball on pHA
13:51 Flipping with UV. Caustic Systems OFF
14:53 UV done for pHA
15:15 UV done for Liq
15:30 t=36hr Prop 3A Sample Taken; Sparger=0.5 ACFM
(L) 37.2%; pH=6.32; (T) 98.2°F; 0.03 psi
16:22 t=36hr Prop 3B Sample Taken; Sparger=0.5 ACFM
(L) 23.6%; pH=6.32; (T) 98.7°F; 0.23 psi
18:00 WW Pump flushed out
19:00 3A stopped drawing base.
19:20 Base Pump #7 for 3A from 45→30%
Shift Change
20:46 Put new gasket in distillation cooling line, no leak, only 2 left.
21:05 t=42hr Prop 3A Sample Taken; [Ethol]=24.00 g/L
(L) 37.9%; pH=6.43; (T) 98.8°F; 0.00 psi
22:10 t=42hr Prop 3B Sample Taken; [Ethol]=3.43 g/L
(L) 23.9%; pH=6.33; (T) 98.7°F; 0.12 psi
22:17 3A pH peaked @ 6.43, currently 6.40
23:25 3A pH @ 6.34, set Pump #7 to 20%, ease into it
23:44 3A taking base again, pump to 30%
23:58 BBP#7→40%

2015-05-09
02:38 Steady base draw from 3A, more than trend shows. We'll know soon
03:00 t=48hr Prop 3A Sample Taken; [Ethol]=23.5 g/L
(L) 37.2%; pH=6.32; (T) 98.6°F; 0.00 psi
04:04 t=48hr Prop 3B Sample Taken; [Ethol]=12.05 g/L
(L) 23.4%; pH=6.32; (T) 98.6°F; 0.07 psi
Shift Change
09:01 t=54hr Prop 3A Sample Taken; 0.5 ACFM; [Ethol]=23.5 g/L
(L) 37.1%; pH=6.32; (T) 98.8°F; 0.00 psi
10:05 t=54hr Prop 3B Sample Taken 0.5 ACFM
(L) 23.4%; pH=6.32; (T) 98.6°F; 0.07 psi
10:49 Start kill 3A
pH Control OFF
11:55 Drained Cooling Water to 43%
12:43 3A @ 140°F
Start 3hr timer
12:58 Run Decanter Pump @ 60% to start then→30%
13:26 Decanter Feed Pump→20% seems overflowing Decanter
13:36 Found problem with water outlet at sump clogged. Closed valve and opened it. Solved the problem
Decanter Feed Pump→30%

14:00 t=58hr Prop 3B Sample Taken 0.5 ACFM
(L) 23.4%; pH=6.32; (T) 98.6°F; 0.37 psi
14:27 Start kill 3B
14:28 WW pH=5.98
14:30 Adding Dilute Caustic for 4 minutes
14:47 Decanter Agitator OFF
15:13 3B @ 140°F
Start 3hr kill hold
15:16 WW pH=5.72
15:48 3A Kill ended. Temp Control OFF
16:01 Prop 3A agitator OFF, start transfer to Ferm A
16:07 Transfer complete
UV sprayball 3A
Could not read clearly enough. Marked for double-checking
16:50 Sprayball Rinse Water for 3A
17:05 Sprayball Rinse Water for 3A done
17:10 Refilling Decanter Feed Tank with Process Water to 30%
17:13 Flip with Caustic
17:14 WW pH=5.93
Add @ 84%, adding 8 minutes of Dilute Caustic
17:20 CO_2 Scrubber Fan, Bleacher Pump OFF
17:30 Decanter Feed Tank agitator ON
18:01 Level of Decanter Feed Tank finished @ 43%
18:11 WW out to GP. Will get pH adjusted
18:13 Rinse and Caustic OFF
19:01 UV, Cooling, Hot, Chiller OFF
20:04 WW Pump OFF and flushed. Potable, Process, Steam OFF

Log Book Keys

Color Coding

blue text	tank refill log (i.e., bleach, caustic acid)
green text	notes from field
purple text	problems
red text	sampling/inoculation-related information
yellow highlight	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