Log Book
Campaign 15

2015-05-19

08:15 Pot/Proc/Cool/UV/Steam, etc. ON
08:59 WW in Recirc
09:08 2A/2B Vac pulled, SIP steam ON
09:35 2A/2B SIP Hold started
10:15 WW 5.7
Running Caustic
10:44 WW 7.05, sending out
11:11 Steam OFF to 2B
11:12 Steam OFF to 2A
11:32 Cooling 2B
11:33 Cooling 2A
13:05 TC OFF both 2s
13:11 TC back ON, tanks heating up quickly
13:24 Starting UV→2A, no reading until 22 gallons, going to go until level then calculate how much to drain
Both pH probes calibrated and in tanks.
13:38 UV→2B, Target=14.9%
13:43 2A ended up @ 2.6%=23.5 gallons
Draining off 6.5 gallons, waiting for 2B level to settle.
13:48 2A has 17 gallons uV, no reading
2B still unsure, Level 14→22%
14:05 Little more UV→2B, try to get past this 'spot.'
14:26 Steaming C5 hose through pHA Tank ~1/2 hour, pausing fill, WW OFF
15:13 TC back OFF the 2s
2A Target is 22.2% according to new chart
15:36 C5→2A
15:47 2A Full, AG ON
15:55 Adding more UV to 2B, lots of level issues
15:58 Conditioning 2A
16:00 Don't know why 2B is so bad now and not during calibration
Need to revisit level calibration of 2B
Had to overfill 2B until a steady level, then calculate what to drain.
16:09 C5→2B, Target 40.8%
16:15 2A pH=8.05
16:21 2B full, Agitator ON
16:38 2B pH=8.03
Shift Change
20:02 C5 Pump ON @ 50%, flushing out
20:05 C5 Pump OFF
20:53 Began SIP Procedures on Liq Tank. Steam ON
21:04 Liq Tank @ +5 psi, Steam OFF, VacPump ON
21:13 Liq Tank @ -10 psi, VacPump OFF, Steam ON
21:50 Opening Liq Tank transfer lines to steam
23:17 Liq Tank @ 250°F. Began 90-minute timer

23:50 CV#2 ON
23:51 CV#1 and FBCC ON
23:52 HP Seal Water Pump ON
23:54 RevScr to BTAG ON
23:56 C5 Discharger to HSMC ON
23:57 BBD set @ 40 psi.
23:58 Metso Steam ON

2015-05-20
00:04 Refilling Bleach Scrubber from Tote.
00:09 PAHT AG and PAMP#2 ON
00:11 T-pipe vent CLOSED at 216°F
00:21 Finished Refilling Bleach Scrubber, Level @ 50.9%
00:23 All Metso vents CLOSED except discharger vent (cracked open)
Bleach Scrubber Pump ON. We have good flow.
00:24 CO_2 Scrubber Fan ON
00:26 CO_2 Scrubber Pump ON
00:38 Closing Discharger Vent now, taking too long to equalize temperatures
00:41 PSF (@100%) and PSBTC ON at 51.4 psi
00:47 Finished SIP of Liq Tank
Steam OFF
00:54 PSBLBs ON @ 60%
Acid→6.00 GPH, FBLBs ON @ 25%. Metso @ 101 psi
00:57 PSF→105%
00:59 FBLBs→20%, PSF→115%
01:00 FBLBs OFF
01:05 PSF→110%
01:06 PSBLBs→70%
Acid→7.00 GPH, FBLBs ON @ 25%
01:11 Metso at Temp and Pressure
01:12 FBLBs→35%
01:16 FBLBs→45%
01:19 PSBLBs→80%, Acid→8.00 GPH,
01:21 FBLBs→50%, Discharger Vent cracked open
01:27 FBLBs→55%
01:28 PSBLBs→70→60%
PSF→120%
01:29 FBLBs→70%
01:30 PSF→125%
01:31 PSBLBs→50%
PSF→135%
01:33 PSBLBs→40%
FBLBs→40%
01:35 PSF→130%, FBLBs→25%
01:36 PSBLBs to PSF, FBLBs, and Metso Steam OFF
01:37 Metso Vents OPEN
01:54 Dump Chamber OPEN, began unclogging PSBTC chute
02:16 PSBTC ON (amps look fine)

02:17 Prop 2A/B TCs→"NORMAL" in Auto; PSBTC OFF, adding nutrients to Prop 2A
02:18 PSF ON @ 100%
02:19 Prop 2A pH sensor acting up slightly
02:20 PSF OFF
02:24 PSF ON, adding nutrients to Prop 2B
02:32 Restarting Dump Chamber Cycle
02:33 PSF OFF, Metso Steam ON
02:34 T-pipe Vent CLOSED
02:43 All Metso Vents CLOSED
02:47 Began Inoculating Prop 2A
02:49 PSF (@100%) and PSBTC ON at 51.4 psi
02:53 Prop 2A Inoculation Finished (will sample after 2B inoculated)
02:59 PSBLBs ON @ 60%
Acid→6.00 GPH, FBLBs ON @ 25→30%
03:01 PSF→110%
03:06 Began Inoculating Prop 2B
03:11 FBLBs→35%
03:13 Metso at Temp and Pressure
t=0hr Prop 2A/B Samples Taken, Prop 2B Inoculated.
2A: 25.0%; pH=6.90; (T) 98.0°F; 0.25 psi
2B: 43.7%; pH=6.84; (T) 98.5°F; 2.20 psi
03:18 FBLBs→45%
03:26 PSBLBs→70%
Acid→7.00 GPH
03:38 FBLBs→55%
03:40 FBLBs→60%
03:46 FBLBs→70%
03:48 FBLBs→75%
03:49 WW Pump ON in Recirc Loop @ 52.5% Level
03:51 PSBLBs→80%
Acid→8.00 GPH
03:54 Began SIP Procedures on pHAT
Steam ON
FBLBs→80%
03:56 Began UV Add→Liq Tank @ 3.5 GPM to 450-gal, 21.9% Level
03:59 pHAT @ +5 psi, Steam OFF, VacPump ON
04:01 pHAT @ -10psi, VacPump OFF, Steam ON
FBLBs→85%
04:03 FBLBs→90%
04:24 FBLBs→85%
04:30 FBLBs→75%
04:51 FBLBs→65%
04:52 WW pH=6.91, Cond=747 µS/cm, Level=62.9%
04:55 Sending out WW @ 62.9% Level, Flow~32 GPM
04:58 FBLBs→60%
05:19 PSF→115%
PSBTC spiking
PSBLBs→70%

Joe and Leo trying to manually loosen up the chute externally.

05:20 PSF→120%, FBLBs→65%
05:22 PSBLBs→60→50%
05:23 PSF→125%
05:27 FBLBs→50%
05:29 PSF→130%
05:52 pHAT @ 250°F. Began 90-minute timer
05:59 PSBLBs→60%
06:03 Stopped UV→Liq Tank Level @ 22.1%
06:08 LT TC→"NORMAL" in Auto
06:10 LT AG ON @ 50%
07:03 Metso Flow Rate Test started.
07:22 Finished SIP of pHAT
Steam OFF
07:48 FBLBs→45%

Shift Change

08:15 Another 1hr flow rate test
08:44 Rinsing Enzyme lines
08:55 Spike in most of Metso conveyors @ once, power surge? 5 minutes later still a little high
09:10 Metso Sample PSBLB @ 60% Acid @ 6.00 GPH
Liq Targets:
120 lbs/hr; 36.46% DW; Enzyme Flow 0.006 GPM 8hr Retention
Start @ 450 gallons; Enzyme pump speed→11.83%
Target→35.6% then Water @ 0.9 GPM
09:50 Metso→Liq; pHC ON
10:04 Enzyme ON and primed.
Tried taking Liq AG to 100%, lost, 60% is highest right now, will try to walk up when we have more level
10:07 Liq Level and pH bouncing, the latter probably because of mixing.
10:56 Liq AG→65%
11:00 Liq AG→70%
11:02 t=8hr Prop 2A/B Samples Taken
2A: 23.9%; pH=6.50; (T) 97.8°F; 0.18 psi
2B: 41.3%; pH=6.54; (T) 99.5°F; 0.01 psi
11:24 Liq AG→75%
11:30 Liq AG→80%
11:31 WW done, pump flushed and secured
11:36 Liq AG→85%
11:49 Liq AG→90% (tank 25%, ok so far)
11:59 Liq AG→95%
12:04 Liq AG→100%, tank 25.2%
12:59 1hr smooth on Liq Level with AG @ 100%, now~27%, getting small (~3%) in level trend
13:10 Had a big spike and drop in Liq, came back at 26.4%, riding it out, definitely below 2nd Agitator.
13:54 Discharge Valve Alarm (2)
14:09 pHC ON 2A, set→6.38, pump @ 5% for start
PSB "stirrer" looks crooked
14:18 Confirmed that one side of mixer is BROKEN off, going to run until Boss is back. If it falls off will be okay unless it falls straight down between screws.

14:38 Been decided to run until it breaks, then immediately stop Metso and Liq, hopefully can stockpile ~360 to start the 3s.
~37.4%, trying to keep bin low to help.
14:46 2A pH 6.32→3.4 on first burst @ 5% speed
15:19 PSB steam in manual @ 50% to help see mixer
15:25 WW in recirc ~49 GPM, 61%
15:31 2B pHC ON 5% @ 6.38, first jump 6.32→6.54
16:16 WW pH=6.45, adding Caustic
I [Jeff] conditioned the Props and must have forgot to release the pressure, that's all me, both coming back down quickly
16:55 CV#1 and 2 now @ 70% to help mixer
16:59 WW going out 82.4%
17:05 Steam into jackets of 3A/B
17:36 3B SIP Hold
17:49 3A SIP Hold
18:40 Cut PSB steam to 40%
18:44 Liq @ 35.6%, UV ON @ 0.9 GPM
18:59 Pumping Liq→pHA (for Recirc)
19:07 SIP on 3B complete
19:09 No flow into pHA yet
19:10 t=0hr Liq Tank Sample Taken
(L)36.9%; pH=5.00; (T) 121.1°F; 0.77 psi
19:15 Still no flow into pHA, from low enzyme
t=16hr Prop 2A Sample Taken
(L) 22.4%; pH=6.35; (T) 100.3°F; 0.02 psi
19:20 t=16hr Prop 2B Sample Taken
(L) 39.7%; pH=6.33; (T) 98.4°F; 0.03 psi
Liq Pump tripped, reset
19:22 Liq slurry reported to be 'very thick'
Shift Change
19:50 GP→75%, flow confirmed, GP-→50%
19:51 GP→40%, FBLBs→50%
19:52 GP→30%
19:53 GP→25%
19:54 GP→20%
t=16hr Prop 2A [Ethol]=7.05 g/L
19:56 FBLBs→45%
20:04 Prop 3A/B TCs→"NORMAL" in Auto
20:06 pHAT TC→"NORMAL" in Auto
20:10 Liq Tank t=6hr DW=17%
UV→LT now @ 3.6 GPM
Will do 3.6 GPM for one hour.
20:17 FBLBs→48%
20:37 Will try Liq→pHAT first, if that fails, then will have to use hose connections directly into Prop 3A
20:41 LTAG→80%, trying to get level readings back without compromising too much on mixing
20:54 FBLBs→45%
21:08 LTAG→100%, Level Sensor is basically useless
21:12 UV→Liq Tank now @ 1.0 GPM

21:17 LP ON @ 75%
LT→pHAT
21:19 Slurry Flow→pHAT reported
21:21 AAP#3 ON (in standby)
21:22 pHAT AG and pH Control ON (reported by field to be covered, no level reading yet)
21:24 Manually bumping up AAP#3 and Cooling Water Valve operating percentages
21:30 Will be cooling Prop 3A/B transfer lines soon
21:31 pHAT Manual (field) valve was CLOSED. Now it is OPEN
21:38 pHAT→Prop 3A
pAP ON @ 75%
Level @ 75%; pH=6.50; (T) 103.2°F; 0.72 psi
21:39 Flow→Prop 3A reported by field, pAP→85%
21:42 pAP→75%
Fairly certain pHAT level sensor is covered.
21:44 pAP→80%
21:45 LP→55→40%, pAP→85%, pHAT reported to be VERY FULL!
Filling Prop 3A to where we can agitate
21:49 Adding nutrients→Prop 3A
21:54 Prop 3A Sample Port Steam ON
21:56 BBP#5→10%
22:03 Prop 3A AG ON @ 100% at 12.3% Level (Called by field)
22:06 pAP→90%, Filling pHAT to 200 gallons, because pHAT got too full.
22:11 pAP→70%
t=19hr Prop 2A Sample Taken
22:15 FBLBs→40%
22:22 pHAT→Prop 3B
Prop 3A pH probe now covered and reading 6.52
pAP→90%
Prop 3B Target Level=22.7%
Flow→Prop 3B confirmed.
22:23 Inoculating Prop 3A with Prop 2A
2A: 22.4%; pH=6.36; (T) 99.2°F; 1.97 psi
3A: 17.8%; pH=6.52; (T) 97.0°F; 0.22 psi
22:24 Prop 2A AG, TC, and pH Control OFF
22:26 Prop 3A Inoculated.
22:27 LP→50, pAP→75%
22:28 CIP Systems ON and heating up tanks.
22:30 t=0hr Prop 3A Sample Taken; 0.5 ACFM
(L) 22.2%; pH=6.32; (T) 97.6°F; 0.04psi
22:31 Prop 3A pH control ON and set@ 6.38. BBP#7 @ 15%
22:34 t=19hr Prop 2B Sample Taken
(L) 40.2%; pH=6.31; (T) 97.6°F; 0.06 psi
22:37 BBP#7→30→40%
22:38 LP→75%, steam leak reported from Rinse Tank heat exchanger
22:41 LT→pHAT line clogged. Line~20 psi
22:42 pAP→60%, LP OFF
22:44 Sending UV Water into LT→pHAT line to unclog
22:48 LP ON @ 75%, Adding nutrients→Prop 3B

22:50 LP OFF, ruptured pump tubing
22:53 PER ISMAEL, pAP OFF
22:54 Prop 3B AG ON, Level~15%
22:57 FBLBs→35→30%, LP ON @ 75%
23:01 FBLBs→35%; popping LT→pHAT line with UV Water again
23:03 FBLBs→40%
23:04 LP OFF and back ON
23:07 LP→60%
23:09 pAP ON @ 50%, good flow→Prop3B
23:10 LP OFF and ON @ 75%
23:13 pAP→40%
23:20 BBP#5→15%
23:28 Inoculating Prop 3B with Prop 2B
2B: 38.9%; pH=6.32; (T) 99.5°F; 0.24 psi
3B: 19.5%; pH=6.51; (T) 99.1°F; 0.32 psi
pHAT→LT now
pHAT TC and pH Control OFF
23:30 Prop 2B TC, pHC, and AG OFF
23:34 Finished Inoculation of Prop 3B
23:36 t=0hr Prop 3B Sample Taken; 0.5 ACFM
(L) 22.4%; pH=6.37; (T) 99.1°F; 0.04 psi
Prop 3B pHC ON, set @ 6.38, BBP#8 @ 40%
23:42 pAP→38.5%
23:48 Rinse Tank @ Temp
23:47 pAP→35→45%
23:52 Metso Sample finished.
23:53 Stopped Feed to Liq Tank, GP and UV Water→Liq Tank OFF
FBLBs, PSBLBs to PSF, and Metso Steam OFF
23:55 Acid Systems OFF

2015-05-21

00:02 Biomass Handling OFF
00:04 pAP→42%
00:20 pAP→35%
00:22 LP tripped
00:24 LP ON @ 50%
00:25 LP→75%
00:28 pAP→30%
00:32 LP→70%
00:44 pAP→35%
01:10 LP→65%, pAP→40%
01:18 t=6hr Liq Tank Sample Taken
(L)40.2%; pH=5.02; (T) 120.6°F; 1.90 psi
pAP→45%
01:23 pAP→50%
01:25 LP→60%
01:32 Metso @ 20 psi, Dump Chamber OPEN and depressurizing.
01:33 PSF (@100%) and PSBTC ON

01:35 pAP→45%
01:43 pAP→40%
01:53 LP→65%, pAP→35%
01:56 PSBTC to C5 Discharger OFF
01:57 pAP→30%
02:00 Metso Shutdown, HP Seal Water Pump, and CO_2 Scrubber Pump OFF
02:02 pAP→35%
02:20 WW Pump OFF, pump rinsed out and valve and closed.
02:27 LP→62%
02:37 LP→60%
02:44 LP→61%
02:58 Began Initial Rinse CIP of Prop 2A through sprayballs
Rinse Pump→85%, Ferm A Pump ON
03:00 Finished Initial Rinse of Prop 2A, Rinse Pump→55%
Prop 2A kill sample taken.
03:11 Began Rinse CIP of Prop 2A through sprayballs for 15 minutes for 15 minutes
Rinse Pump→85%
03:13 LP→60%, really interesting to watch line pressures decrease over time as enzymes go to work on the slurry.
03:26 Finished Rinse CIP of Prop 2A. Rinse Pump→55%
03:29 Ferm A Pump OFF
03:35 LP→58%, Ferm A Pump ON, Rinse Pump→85%
03:38 Rinse Pump→55%
Prop 2B kill sample.
03:54 Began Rinse CIP of Prop 2B through sprayballs for 15 minutes
Rinse Pump→85%
03:57 Rinse Pump→55%, need to drain down Prop 2B
04:09 Resuming Rinse CIP of Prop 2B. Rinse Pump→85%
04:11 Pausing Rinse CIP of Prop 2B. Rinse Pump→55%
04:14 Resuming Rinse CIP of Prop 2B with sprayball #1. Rinse Pump→85%
04:15 pAP→56%
04:29 Finished Rinse CIP of Prop 2B. Rinse Pump→85%
04:31 Ferm A Pump OFF
04:37 t=6hr Prop 3A Sample Taken; 0.52 ACFM
(L) 23.3%; pH=6.33; (T) 98.7°F; 0.06 psi
04:48 LP→57%
05:01 t=6hr Prop 3A [Ethol]=3.2 g/L
05:08 Flipping CIP Header to Caustic.
05:16 Caustic CIP of Prop 2A transfer lines and vent. Ferm A Pump ON
05:31 LP→56%
05:33 Ferm A Pump OFF
05:37 t=6hr Prop 3B Sample Taken; 0.55 ACFM
(L) 23.3%; pH=6.33; (T) 98.7°F; 0.06 psi
05:41 Ferm A Pump ON
05:52 Began Caustic CIP of Prop 2A though sprayballs for 15 minutes
Caustic Pump→85%
06:00 Popping Prop 2A-s Base line, Prop 2A SV→50% and CLOSED, PAMP#1 ON
06:01 Popping Prop 2A's Acid line

t=6hr Prop 3B [Ethol]=1.8 g/L
06:11 Finished Caustic CIP of Prop 2A. Caustic Pump→55%
06:17 Ferm A Pump OFF
06:20 Ferm A Pump ON
06:24 LP→55%
06:32 Began Caustic CIP of Prop 2B though sprayballs for 15 minutes
Caustic Pump→85%
06:48 Sprayball#2 of Prop 2B; popping Prop 2B's Bas Base line
06:49 Popping Prop 2B's Acid Line; Prop 2B SV→50% and CLOSED
07:03 Finished Caustic CIP of Prop 2B
Caustic Pump→55%
07:12 Ferm A Pump OFF. PAMP#1 OFF
07:14 Flipping CIP Header to UV Water
07:20 t=12hr Liq Tank Sample Taken
(L) 41.1% ;pH=5.00; (T) 120.4°F; 1.87 psi
07:24 Ferm A Pump ON, UV Rinse on Prop 2A's lines
07:34 Began UV Rinse for Prop 2A through sprayballs for 20 minutes.
07:43 Popping Prop 2A's Base and Acid Lines. PAMP#1 ON
07:44 Prop 2A SV→50% and CLOSED
07:54 Finished UV Rinse of Prop 2A
Shift Change
08:28 Nuclear Sources OFF PSB
08:41 UV Rinse of 2B, going to floor, Rinse @ 84%
08:56 2B lines complete, sprayballs started
09:00 Acid, base, steam popped, Acid Pump OFF, sprayballs started.
09:24 WW in Recirc
09:25 UV 2B done
Bent up mixer removed through top of PSB.
10:40 t=12hr 3A Sample Taken; 8.5 g/L
(L) 22.1%; pH=6.33; (T) 98.7°F; 0.08 psi
10:47 t=12hr pHA Sample Taken (in Recirc)
(L) 21.9%; pH=5.03; (T) 119.0°F; 1.25 psi
11:20 pHA Pump OFF, TC and pHC ON, going to pump to 3A to get to 300 gallons ~28.7%
11:29 Nutrients into 3A
Slurry pumping
Holding off on 3B
11:30 t=12hr 3B Sample Taken; 3.06 g/L EtOH
(L) 23.7%; pH=6.32; (T) 98.4°F; 0.06 psi
12:01 Liq Loop back in Recirc.
pHA TC and pHC OFF, 3A @ 300 gallons
3B pH issue: here→6.32; Lab→6.19; S.P. upped 6.38→6.50
12:29 Reversed pHA Pump
13:08 t=18hr Liq Tank Sample Taken
(L) 37.4%; pH=5.08; (T) 121.6°F; 1.44 psi
16:40 t=18hr 3A Sample Taken
(L) 28.5%; pH=6.36; (T) 98.4°F; 0.07 psi
17:08 GC not working, just going to finish 3A to 400 gallons→37.8%. pHAP OFF, TC and pHC ON
17:22 Pumping into 3A

17:23 GC working, 3A 18hr: 11.3 g/L
17:24 Nutrients in 3A
17:30 t=18hr 3B Sample Taken; 6.33 g/L EtOH
(L) 23.6%; pH=6.44; (T) 99.0°F; 0.08 psi
17:52 3A Full
Back in loop.
17:59 TC and pHC ON (again) to add 100 gallons to 3B (32.1%)
18:10 BBP#7→45%
18:12 Pumping to 3B
18:16 Changed Liq Temp→77°F so enzymes won't release too much sugars
18:36 Liq Loop going
TC and pHC OFF pHA
19:00 t=24hr Liq Tank Sample Taken
(L) 26.6%; pH=5.16; (T) 110.75°F; 1.35 psi
Shift Change
20:02 LP→3.6 GPM
20:17 LP→3.7 GPM
20:38 LP→3.8 GPM
22:29 LP→3.7 GPM
22:30 t=24hr Prop 3A Sample Taken; 0.5 ACFM
(L) 37.6%; pH=6.32; (T) 98.5°F; 0.07 psi
22:50 t=24hr Prop 3A [Ethol]=13.2 g/L
23:07 LP→3.8 GPM
23:38 t=24hr Prop 3B Sample Taken; 0.5 ACFM
(L) 33.1%; pH=6.44; (T) 97.9°F; 0.14 psi
23:50 t=24hr Prop 3B [Ethol]=11.05 g/L
23:51 LP→3.6 GPM, going to do last 75 gallon add→Prop 3B soon
Target is 41.5% Level
23:55 pAP OFF, pHAT TC and pHC ON; LP→3.4 GPM
23:56 LP→3.0 GPM
23:59 LP→2.5 GPM

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00:07 LP→3.0 GPM
00:08 LP→3.5 GPM, pAP ON @ 4.0 GPM
pHAT→Prop 3B
Final 75-gal addition.
00:09 LP→4.0 GPM
00:10 pAP→6.0→6.5 GPM
00:13 pAP→5.5 GPM
00:14 pAP→4.5 GPM
00:16 Nutrients added to Prop 3B
00:19 LP→3.5 GPM, going to drive down the level of pHAT
00:22 LP→3.2 GPM
00:23 LP→2.8 GPM
00:24 LP→2.0 GPM
00:28 Prop 3B @ 41.2% Level
pAP and LP OFF. AAP# 1 and 3 OFF

pHAT and LT TCs and pHCs OFF
00:32 t=24 Prop 3B Lab pH=6.37 while HMI shows 6.44
00:33 Flushing LT and pHAT transfer lines with UV Water
00:34 t=30hr Liq Tank Sample Taken
(L) Unknown pH=5.23; (T) 76.8°F; 1.81 psi
00:56 WW pH=11.59; Cond=4.0 mS/cm; Level=67.0%
02:41 Been about two hours since the last time BBP#7 was seen pumping base. Prop 3A pH=6.35, so the bugs might be dying now in it or really slowed down.
03:02 Sending out WW @ 67.4% Level, Flow~32 GPM
03:04 Draining Liq Tank now
03:11 LTAG OFF
03:45 Began draining pHAT
03:49 pHAT AG OFF
04:37 t=30hr Prop 3A Sample Taken
(L) 36.7%; pH=6.32; (T) 98.6°F; 0.06 psi
05:27 Knifegate to Liquefaction OPEN
05:28 RevScr(→Liq Tank) and ScPr ON, rinsing through to Liq Tank
05:36 RevScr→"RUN REVERSE" after "STOP"
05:37 RevScr→"RUN FORWARD" after "STOP"
05:39 t=30hr Prop 3B Sample Taken
(L) 41.6%; pH=6.44; (T) 98.3°F; 0.08 psi
05:44 Sludge reported to still be coming out of Liq Tank after it was clear by the end of an earlier UV Rinse.
05:53 ScPr and RevScr OFF. RevScr was put into "REVERSE" before shutting it down.
Knifegate to Liq Tank CLOSED.
06:05 t=30hr Prop 3A [Ethol]=16.1 g/L and Prop 3B [Ethol]=16.0 g/L
06:09 Began Rinse CIP of LT lines and pHAT lines
06:40 Began Rinse CIP of Liq Tank through sprayballs for 15 minutes
Rinse Pump→85%
07:00 Pausing Rinse CIP of Liq Tank to drain out tank. Rinse Pump→55%
07:10 Resuming Rinse CIP of Liq Tank. Rinse Pump→85%
07:13 Finished Rinse CIP of Liq Tank
07:16 Began Rinse CIP of pHAT through sprayball for 15 minutes
Rinse Pump→85%
07:31 Finished Rinse CIP of pHAT, Rinse Pump→55%
07:40 WW Pump OFF, pump rinsed, and valve closed
Shift Change
08:15 Flipping CIP Header to Caustic.
08:57 Liq/pHA Lines done. Liq sprayballs started
10:09 pHA sprayballs
10:35 t=36hr Prop 3A Sample Taken; 19.4 g/L
(L) 36.7%; pH=6.32; (T) 98.2°F; 0.06 psi
10:42 Flipping to UV
Transfer lines, pHA sprayballs, Liq sprayballs, enzymes ALL
11:39 t=36hr Prop 3B Sample Taken; 20.1 g/L
(L) 41.6%; pH=6.44; (T) 98.3°F; 0.08 psi
12:56 Changed set point for pH of 3B to 6.4
16:45 t=42hr Prop 3A Sample Taken; 23.04 g/L

(L) 37.6%; pH=6.32; (T) 98.0°F; 0.04 psi
17:35 t=42hr Prop 3B Sample Taken; 24.9 g/L
(L) 41.9%; pH=6.34; (T) 98.3°F; 0.07 psi
Shift Change
22:34 t=48hr Prop 3A Sample Taken; 0.5 ACFM
(L) 37.1%; pH=6.32; (T) 98.0°F; 0.04 psi
[Ethol]=23.2 g/L
23:20 Prop 3B Sample Port Steam ON
23:32 t=48hr Prop 3B Sample Taken; 0.5 ACFM
(L) 41.6%; pH=6.44; (T) 98.3°F; 0.08 psi
[Ethol]=23.9 g/L

2015-05-23
04:33 t=54hr Prop 3A Sample Taken; 0.5 ACFM
(L) 37.1%; pH=6.32; (T) 98.0°F; 0.04 psi
[Ethol]=25.7 g/L
05:35 t=54hr Prop 3B Sample Taken; 0.52 ACFM
(L) 41.9%; pH=6.34; (T) 98.3°F; 0.07 psi
[Ethol]=24.2 g/L
05:52 Vanessa re-calibrated HPLC after 48-hour sample got lower Ethanol concentrations.
[Ethol] still going up regardless.
Shift Change
10:30 t=60hr Prop 3A Sample Taken; 25.4 g/L
(L) 37.1%; pH=6.32; (T) 98.0°F; 0.04 psi
11:10 3A set to 140°F, pHC OFF
11:30 t=60hr Prop 3B Sample Taken; 25.5 g/L
(L) 41.9%; pH=6.34; (T) 98.3°F; 0.07 psi
13:07 Kill Hold started on 3A
14:00 t=62.5hr Prop 3B Sample Taken; 25.5 g/L
(L) 41.9%; pH=6.34; (T) 98.3°F; 0.07 psi
3B set to 140°F, pHC OFF
15:10 3B @ 140°F, hold started.
16:14 Temp Control on 3A OFF
16:21 Sending 3A→Ferm A
16:23 3A AG OFF
16:30 3A→Ferm A transfer complete
16:37 Flipping to Rinse
16:48 pH probe out, 3A Rinse Cycle started.
16:56 Lines done, sprayballs ON
17:12 3A Rinse complete
17:19 Caustic OFF, going to wait for 3B kill, transfer it, rinse it, clean next week.
18:10 Transfer 3B→Ferm A, TC OFF
18:18 Hot/Cool OFF, 3B AG OFF
18:20 Steam/Chiller, Scrubbers OFF
18:25 UV OFF
18:26 Rinse Cycle 3B
18:59 3B Rinse complete, Rinse Systems OFF
19:10 Pot/Process 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