Log Book
Campaign 05

**2014-10-15**

07:28 Heating up Steam pipes
07:50 HP Seal Water Pump ON
07:58 Screw Press ON
08:01 High-shear Mixing Conveyor ON
08:02 Steam to Metso ON
08:07 Scrubbers ON
08:08 Both Acid Agitators ON, PAMP#2 ON
08:14 T-pipe Vent CLOSED
08:20 CV#1&2 ON, FBCC ON
Metal Detector checked and cleaned out!
Liq Tank Agitator housing clogged with biomass
Joe is working on it
08:25 Other Vents CLOSED
08:34 PSF (@100%) and PSB TC ON
08:39 FBLBs ON @ 110%
08:56 Started PSB LBs @ 70% speed (Press=127.5 psi; level=60%)
08:59 FBLBs→CAS
09:03 to 09:08 Increased speed PSF up to 120% gradually
09:06 Prop 2B SV OPEN @ 50%→70%
09:07 Prop 2B SV CLOSED
09:10 PSB LB→65%
PSB LBs, TC, and PSF OFF
09:11 Metso Steam OFF; Depressurize and clean out
09:12 FBLBs OFF
09:37 Knifegate Overrides ON; Both OPEN
10:10 Tried check of PSB TC. Everything looked good.
10:12 PSF ON @ 100%
10:13 PSF OFF
10:14 Prop 2B SIP SV→Auto
10:16 Hot and Cooling Water Pumps ON
10:20 2B SV CLOSED; VacPump ON
10:21 VacPump OFF; Cooling Water to VacPump CLOSED
10:25 VacPump ON and OFF
2B SV OPEN in Auto
$CO_2$ Scrub Pump OFF
10:33 Steam to Metso AND PSB ON
10:36 Knifegate cycle running again. Overrides OFF
10:48 Prop 2B @ 250°F. Began 90-minute Hold Timer
10:53 Metso Manual Valve OPENED. Restarted Steam to Metso Valve
11:17 PSF@100% and PSB TC ON
11:26 FBLBs ON→CAS
11:29 PSBLBs ON@ 70%; Feeding Metso
11:32 FBLBs→MAN@75% →CAS
11:33 FBLBs OFF (PSB level climbing a lot)

11:33 to 11:48 Adjusting PSF speed. Ended up at 108%
11:37 Dumping Caustic into Sump for 5 minutes.
11:41 $CO_2$ Scrubber Pump ON
11:45 FBLBs ON @ 50% MAN
11:48 Inoculation Port on 2B sterilized.
11:50 FBLBs→CAS
11:57 Metso @ Temperature and Pressure
Temp=185°C~365°F; Press~150 psi(A)
FBLBs=100%(CAS); PSF=108%(MAN)
CV#1&2=100%(MAN); Acid~4.67 GPH (CAS)
Screw Press=5.0 RPMs; PSB LBs=70%(MAN)
PreSteamBin=72%(A) & 110°F (A)
12:02 Dumping more Caustic into Sump to raise pH; WW pH=5.7
12:13 to 12:47 Having rough patch of biomass, Constant PSF adjustments, end at 92%
12:39 Adding more Caustic to Sump for ten minutes.
12:51 Ended SIP for Prop 2B
12:57 Switching Temp for 2B to "Normal", began cooling tank
13:00 Cooling Water Return Valve only opened 80% of normal (field report)
13:34 Waste Water Pump ON; Level=95.5%
pH and Cond later
13:51 FBLBs→40%, MAN→CAS
13:54 PSBLBs→75%→80%
14:01 FBLBs→25% MAN; Lab Flask inoculated.
14:12 FBLBs→50%→CAS
14:48 PSBLBs→85%
14:50 Prop 2B pH probes calibrated and in tank
14:55 FBLBs→MAN@40%
15:03 Joe and Peter checking jacket return valves on Prop 2B
24 gal $H_2O$ = 26.25% Level
+12 gal $H_z$ = 41.92%
15:06 2B Cooling Water Return Valve works fine
Just the indicator is messed up
15:09 FBLBs→MAN@55%
15:12 Began adding UV Water to Prop 2B
FBLBs→70%→CAS
15:15 Paused UV Water Add to Prop 2B
Very Abrupt Spike, but was not actual level
15:17 Prop 2B Agitator ON
15:18 Prop 2B Agitator OFF
15:20 Resuming UV Addition to Prop 2B
15:21 Pausing again; Resuming; and done (between 26.1% and 27.4%)
Final-current level less than one-inch below pH probe (field report)
15:35 C5 Pump ON @ 50% in Recirc Loop
Initial Level=27.5%
15:44 C5 Pump→65%
15:48 Began adding C5 to Prop 2B
Initial 2B Level=26.4%
Target=41.9%

15:51 C5 Pump back into Recirc; paused C5 addition
15:52 Resumed addition of C5 to Prop 2B
15:53 Paused C5 addition to Prop 2B; 41.2% to 42.0% level
Joe called it "good"
Final C5 Tank Level=24.4%
15:58 Prop 2B Agitator ON
16:04 C5 Pump OFF
16:05 FBLBs→MAN @ 50→40%
16:06 FBLBs OFF (high level in PSB)
16:07 Base B Pump#5 ON @ 50%; Prop 2B Target pH=8.00
16:10 Base B Pump#5→75%
16:20 FBLBs ON @ 40% MAN
16:26 FBLBs→85%→CAS
16:39 Base B Pump#5 OFF; Prop 2B pH adjusting DONE, right on target
16:40 to 16:51 Slowing down PSF to 92%
17:15 FBLBs OFF (HIGH PSB Level)
17:17 FBCC OFF
17:19 CV#1&2 OFF
17:20 Issue with Hot Water Supply to 2B. Line isn't hot at all.
Also noticed temp had not risen at all
PSB LBs to PSF and Steam to Metso OFF
Boiler OFF
17:27 Acid Systems OFF
17:36 Airblock (Not sure?) in Hot Water Pump
Joe has fixed the problem now though.
Prop 2B Temp starting to go up now (was around 81°F)
17:53 At 20 psi, Locked OPEN knifegates; Overrides ON for knifegates and C5 Discharger
17:54 PSF (@100%) and PSB TC ON
18:07 Scrubbers OFF
18:12 Shutting down (WW pump OFF) Metso (PSB TC to C5 Discharger)
18:14 Began Metso washdown
18:18 Metso shutdown HP Seal Water Pump OFF

**2014-10-16**

08:18 UV Water Pump ON
Inoculation of Prop 2B set around 2:00 PM
09:07 Prop 3B SV OPEN @ 50%
09:12 Prop 3B SV CLOSED
09:39 Began SIP Procedures on Prop 3B
09:44 Reached 5 psi in Prop 3B. Vac Pump ON
09:50 Vac Pump OFF; Prop 3B @ -10 psi; SV OPEN
10:09 Reached 250°F in Prop 3B. Began 90-minute SIP wait
10:16 Acid Systems ON (Except PAMP#1)
10:18 HP Seal Water Pump ON
10:28 Reversing Screw to Blow Tank Agitator ON
10:31 C5 Discharger to High-Shear Mixing Conveyor
Steam to Metso ON
10:34 Metso shut down to check HP Seals

Fixing some issues with HP Seal Pump?
11:00 HP Seal Water Pump ON
11:01 HP Seal Water Pump OFF
11:20 Eulogio taking sample from PA Hold Tank
Level=73.2%; Cond=22.2 mS/cm
11:41 HP Seal Water Filters were cleaned out today
Joe finishing repairs on nutrient lines
11:42 HP Seal Water Pump ON; Adding Steam to 3B nutrient lines
11:47 Starting knifegate cycle
11:56 C5 Discharger to High-Shear Mixing Conveyor & Metso Steam ON
12:00 Scrubbers ON
12:04 Sterilizing Nutrient Lines to 3B
12:08 T-pipe Vent CLOSED
12:18 Other Metso Vents CLOSED
12:26 PSB TC and PSF(@100%) ON
12:32 CV#2&1 ON
12:33 FBCC ON; higher load than normal
Peter says it sounds kind of rough
12:41 Feeding Metso (112.5 psi currently)
PSB LBs ON @ 70%
Adding Caustic to Sump
12:42 PSF→115%
12:43 FBLBs ON @ 70% MAN
12:46 Forgot to turn on steam to PSB early. Hope it work OK despite the Cold Biomass
12:49 to 13:22 Slowing PSF down from 115% to 93%
12:52 FBLBs→CAS
12:58 FBLBs→MAN @ 110%
13:06 At Temp and Pressure in Metso.
Temp=185°C~365°F; Press~150 psi(A)
FBLBs=110%(MAN); PSF=107%(MAN)
CV#1&2=100%(MAN); Acid~4.67 GPH (CAS)
Screw Press=5.0 RPMs; PSB LBs=70%(MAN)
PreSteamBin=72%(A) & 110°F (A)
13:07 Manually stepping down Metso SV
13:10 FBLBs→50%
13:12 FBLBs OFF
13:20 WW Pump ON; Level=74.6%
13:25 PSB LBs→80%
13:31 FBLBs ON @50→100→CAS
WW Flow~33.5 GPM
13:53 FBLBs→MAN @ 70%→CAS
14:00 Screw Press drain valve CLOSED
14:03 PSB LBs→85%
14:10 FBLBs→MAN @ 80%→CAS
14:13 Prop 3B SV CLOSED. Finished SIP Wait
14:21 FBLBs OFF; PSF→92%
14:27 FBLBs ON→CAS; Prop 3B Temp Control to “Normal: in Auto
14:32 PSF→ 90%; FBLBs→MAN @ 40%→CAS

14:41 Liq Tank SV OPEN @ 50%
14:45 Liq Tank SV CLOSED
Prop 3B Target Levels and gallons
26.4% for 240 gallons UV Water
37.7% for +120 gallons Hydrolyzate
14:59 Began adding UV Water to Prop 3B
15:00 Pausing to put in pH probe; Current level=5.9%
15:06 FBLBs→MAN @ 60%
15:08 FBLBs→40%
15:19 FBLBs→60%
15:35 Pre-Inoculation of Prop 2B
(L) 39.3%; pH=6.99; (T) 98.9°F; (P) 1.50 psi
15:38 FBLBs→80%
15:40 to 15:49 Slowing PSF down to 80%
Beginning of rough patch in PSB TC
15:51 Inoculating Prop 2B
15:52 to 16:11 Speeding PSF up to 100%
15:59 T=0hr Prop 2B Sample Taken
(L) 43.2%; pH=6.82; (T) 97.6°F; (P) 1.67 psi
16:14 Resumed adding UV Water to Prop 3B
16:16 to 16:38 Slowing PSF down to 87%
End of rough patch in PSB TC
16:34 Paused UV Water Add to Prop 3B; Current Level=22.55%
16:36 Resumed UV Water addition to Prop 3B
FBLBs OFF
16:38 Starting Metso Flow-rate Test
16:44 Paused UV Water to 3B; Done with UV Water to 3B
Final Level=26.2%
16:46 Bumping with a little bit of UV Water [to Prop 3B]
16:49 Done with UV Water to Prop 3B for real now. Final=26.8
16:51 C5 Pump ON @ 65%
16:59 Began adding Hydrolyzate to Prop 3B.
Initial C5 Tank Level=24.6%
17:08 to 17:16 Speeding PSF up to 120%
Beginning another rough patch in PSB TC
17:25 to 17:42 Slowing PSF down to 96%
17:27 C5 Pump→85%
17:39 Steam into Liq Tank, starting SIP Procedures
17:44 Liq Tank @ SIX psi; Liq SV CLOSED; Vac Pump ON
Paused briefly to close steam trap
17:55 Liq Tank @ -10 psi. Vac Pump OFF; Cooling Water to Vac Pump CLOSED
17:56 Liq Tank Steam ON. Going to 250.0°F
18:08 C5 Pump→70%
18:11 C5 Agitator OFF
18:13 Metso Flow-rate Test DONE
Finished adding Hydrolyzate to Prop 3B
C5 Tank Empty
Prop 3B level=37.8%

18:22 Prop 3B Agitator ON
18:37 Reached 250°F in Liq Tank. Began 90-minute SIP wait
PSF→ 93%
18:39 FBLBs OFF
18:40 Manual step-down Liq Tank SV from 64% to 28%
Then turn back to Auto
18:49 Began adding Base to Prop 3B
Base B Pump #8 ON @ 85%
18:54 FBLBs ON in CAS
19:08 Base B Pump#8→65%
19:10 Base B Pump #8 OFF. Prop 3B pH=8.03
19:19 PSF→90→85%
19:21 to 19:29 Speeding up PSF to 120%
19:49 Base B Pump#5 set @ 75%
19:52 Slowing down PSF. Maybe things have cleared out? PSF→115→110%
19:55 PSF back to 120%. Nope.
*Shift Change*
20:00 to 20:15 Slowing down PSF to 105%
20:43 Liq @ 250°F
21:02 ScPr→3 RPM, squeeze to C5 Tank
21:04 PSB TC acting up again
21:06 PSF→110%
21:11 pH Control 2B back in Auto, S.P. 6.33, Pump @18% (M)
Sterilizing Enzyme Lines
21-20 ScPr→2.8 RPM; PSF→100%
21:28 WW done; pump flushed
21:33 to 21:54 Speeding PSF up to 115%
21:40 ScPr→2.6 RPM
22:15 Steam OFF Liq, SIP 90 minutes
22:25 2B using base, Pump#5 @ 20%
22:39 ScPr→2.5 RPM
22:40 Pump#5 Speed→22%
22:57 Temp Control ON for Liq
22:59 Pump#5→20%
23:19 Liquefaction Setpoints:
Initial UV Water-467 gallons→25.5%
Biomass→Liq-1 GPMwater addition
Enzyme→0.021 GPM at 22% Pump speed
About 12 hours to fill
1995 gallons→94.6%
When going forward, water flow 1 GPM→1.6 GPM
23:55 Adding UV to Liq

**2014-10-17**
00:46 Liq Full 25.5%
pH probes never put in-whoopsie
01:18 Putting some steam to Liq to hurry it up
02:43 Nutrient Totes peroxided, cleaning Pump#1

03:09 ScPr→5 RPM, drains swapped. When Amps go down, going to Liq
03:15 Metso→Liq
Water @ 1 GPM, Reversing Screw Bypass ON
03:25 Gluconase Pump ON, AA#1 Pump ON
03:35 Upper pH probe in Liq
03:49 "Popping" steam for SIP of pHA
04:00 Starting SIP of pHA
04:00 T=12hr Prop 2B Sample Taken
(L) 42.4%; pH=6.30; (T) 99.7°F; (P) 1.81 psi
04:21 Sending WW. Tank 96.6% pH=11.5
04:32 PSF→110%
05:20 pHA @ 250°F for 1.5 hours
05:47 Sterilizing transfer Line pHA→Ferm C
4:00 sample was 3.3 g/L
07:13 Cleaning Trace Metals Pump#2
07:43 Finally back to Temp on pHA, lost it when opened to transfer lines
*Shift Change*
07:48 TMMgS Pump #2 OFF
08:06 pH Adj Tank back at 250°F now
08:14 Liq Tank Agitator→40→45%
Liq Tank Level=54.5%
08:31 TMMgS Pump#2 ON @ 70%; pumping nutrients into Prop 3B
08:33 T=18hr Metso sample started
08:35 Liq Tank Agitator→50%; want to ensure mixing
08:36 TMMgS Pump #2 OFF
08:41 Liq Tank Agitator→40%
08:48 TMMgS Pump#2 ON @ 75%
08:51 Don't want to get peroxide and the other cleaning chemicals into the Fermentor
DO NOT OPEN FERMENTOR NUTRIENT AND ANTI-FOAM VALVES UNLESS ISMAEL OR JOE TELLS ME [Chris] OTHERWISE
08:56 TMMgS Pump #2 OFF
08:58 TMMgS Pump#2 ON @ 75%
09:00 Liq Tank Agitator→35→30% (level bouncing)
09:06 TMMgS Pump #2 OFF
09:11 Adding glucose now to Prop 3B
TMMgS Pump#2 ON @ 75%
09:33 Wait for 65% Level in Liq Tank before speeding up agitator up again.
Liq Tank Agitator→35% at 60.6% Level
09:35 Continuing (since 8:06) to adjust pH Adjustment Tank's SV. Values generally between 87 and 88%
Target time for ending pH Adj SIP is 10:30
09:52 Turning ON CIP systems and heating up the tanks
10:05 Glucose added to Prop 3B
Liq Tank Level @ 63%; Liq Tank Agi→40%
10:08 Heating up sample ports for Props 2B & 3B
10:23 Liq Tank @ 65%; Liq Tank Agi→45%
T=18hr Prop 2B Sample Taken
(L) 41.1%; pH=6.33; (T) 99.2°F; (P) 1.35 psi

10:28 Prop 3B has been sealed off the whole time since SIP was done on it.
10:30 Began inoculating Prop 3B with Prop 2B
10:34 Finished inoculating Prop 3B
Liq Tank Agi→50%
10:35 T=0hr Prop 3B Sample Taken
(L) 43.8%; pH=6.90; (T) 98.3°F; (P) 0.25 psi
Only Vent (to BW) cracked open; Vacuum Breaker CLOSED
10:39 Liq Tank Agi→ 55% (Level=66.3%)
10:45 Liq Tank Agi→ 60% (Level=66.8%)
10:48 Finished SIP on pH Adj. Slurry Line to Ferm C CLOSED
10:49 Liq Tank Agi→ 65% (Level=67.1%)
10:53 Briefly turned pH Adjustment Tank's Temp Control to "Normal"→Auto before pressure plummeted to -4.5 psi
Happened faster than I [Chris] could type commands and enter them.
pH Adj Temp Control in Manual currently @ -5%
10:56 Temp Control→SIP; pH Adj SV OPEN @ 40% for thirty seconds to get pH Adj pressure above 1.00 psi
10:58 Liq Tank Agi→ 70% (Level=68.0%)
11:01 Liq Tank Agi→ 75% (Level=68.5%)
11:03 Temp Control OFF for Prop 2B
11:07 Liq Tank Agi→ 80% (Level=69.0%)
11:11 Liq Tank Agi→ 85% (Level=69.3%)
11:17 Liq Tank Agi→ 90% (Level=69.9%)
11:24 Liq Tank Agi→ 100% (Level=70.2%)
FBLBs→MAN @ 25%
11:40 FBLBs→CAS
12:06 WW Pump OFF
Kevin going over to show Peter how to flush it out thoroughly and which valve to close it off.
12:49 Began initial Rinse of Prop 2B
Ferm C Pump ON
Prop 2B pH Control OFF (My bad)
12:54 Ferm C Pump back ON
12:56 Ferm C Pump OFF
13:06 Weird and heart-stopping sequence between PSF and PSB TC
I saw PSF amps in upper 7's at several points, before I decided to speed up PSF anyway despite low amps
PSF→100→95→90→80→70→85→95→120%
13:11 Began Rinse CIP of Prop 2B through sprayballs
Ferm C Pump ON; Rinse Pump→80%
13:12 Still rough patch going on in PSB TC
13:12 to 13:32 Varying PSF speed between 110% and 120% constantly to test an idea and due to low amps in PSF
13:13 VERY BAD PATCH
13:28 Testing an idea with PSF; Still BAD
13:29 Rinse Pump→80%
13:39 Rough patch calming down, gave OK to check knifegate
13:46 to 14:14 Slowing PSF down to 97% from 118% as amps calmed down
14:04 Ferm C SV OPEN @ 50%

14:06 Ferm C SV CLOSED
14:30 Began SIP of Ferm C
14:46 Ferm C SV CLOSED. Waiting for OK from field. Was @ 5.5 psi in Ferm C
14:47 OPENed Ferm C SV to 20% to get +5 psi again
14:51 Ferm C SV CLOSED
14:52 Vac Pump ON
Bugs are growing GOOD in 3B!
14:57 pH Adj Temp Control ON in Auto for "Normal" mode.
15:01 WW pH=10.6; Level=55.7%
15:06 Power is ON to pH Adjustment Tank's Agitator. Agitator is still OFF though
Didn't want a repeat of what's happened in the past with the disconnect
FBLBs→MAN @ 25%
15:15 FBLBs→CAS
15:18 PER ISMAEL: Not going all the way to -10 psi in Ferm C; Pressure= -8.4 psi
Vac Pump OFF; Ferm C Steam ON
15:21 WW Pump ON, pH=10.6; Level =60.0%
Flow>30 GPM
15:31 Reached 250°F in Ferm C. Began 75-minute SIP wait
15:39 Liq Tank Level Sensor isn't being too accurate right now
Pumping last ~1700 lbs from Mix Tank to PA Hold Tank
15:42 Turning ON pH Control for Prop 3B. Set @ 6.52 to test
Base B Pump#8 set @ 65%
15:46 Confirmed Base B Pump#8 running properly
15:54 FBLBs→MAN @ 25%
Joe reports that we have about 2 feet left in Liq Tank, maybe thirty minutes
Maybe two inches below level sensor antenna.
16:00 Setting connections for pumping from Liq Tank→DFT
Getting some more Liq Tank level alarms (91.4%?!?)
16:06 Liq Pump ON @ 80%, going to DFT
16:09 LP→2.7 GPM in Auto
16:12 T=0hr Liq Tank Sample Taken
UV Flow into Liq Tank→1.6 GPM
(L 90.7%; pH=5.01; (T) 121.9°F; (P) 1.03 psi
pH probe calibrated and in pH Adj Tank
16:15 FBLBs→90%→CAS
16:21 Finished transferring to PA Hold Tank. Level=78.8% and 22.0 mS/cm Cond
16:42 LP→2.8 GPM
16:48 Getting things set to pump to pH Adj from Liq Tank
Need to get pH probe into Ferm C before we pump into it!
17:01 Finished SIP wait of Ferm C
17:07 Ferm C Temp Control→"Normal" in Auto
17:11 Introducing sterile air into Ferm C to catch pressure
17:17 NOW PUMPING TO pH ADJUSTMENT TANK!
17:18 LP→50% (4.5 GPM)→60%
17:20 LP→80%
17:24 LP OFF; Blasting Liq→pH Adj Line with UV Water
17:25 LP ON @ 80%; LP→60% (Target: 2.7 GPM)
17:26 PSB TC AND LB SHUT OFF! (due to Liq Tank Level)

17:27 PSF OFF due to OH CRUD!
17:31 PSF (100%) to PSB LBs (85%) ON
17:34 THAT WAS FAR TOO CLOSE
Acid back up to speed
17:37 pH probe calibrated and inserted into Ferm C
17:38 AAP#3 ON; pH Control ON to pH Adjustment Tank
17:46 LP→2.9 GPM
17:50 Ferm C Slurry Line Valve OPEN; pAP ON
Began pumping pH Adj→Ferm C
17:51 pAP OFF
SN Figured out how "Groups" work for HMI
17:55 pAP ON @ 7.0 GPM
18:00 T=0hr pH Adjustment Tank Sample Taken
(L) 58.1%; pH=6.53; (T) 95.9°F; (P) -0.03 psi
18:03 Having issues swith Liq Tank Level Indicator
18:07 PSF to PSB LBs OFF and ON (same values)
I [Chris] was looking for it this time.
18:10 PSB LBs OFF and ON twice due to Liq Tank Levels
18:12 PSB LBs OFF and ON again due to Liq Tank Levels
Override ON for PSB LBs
KEEP CLOSE EYE ON METSO
18:14 LP reset and backflushed
18:55 PER ISMAEL pH Adj Tank pH Control @ 6.50 to protect enzymes and keep them going
19:01 Ismael is handling some issues with the Liq Tank pH Probes on other HMI computer
19:08 Liq Tank Level sensor removed and cleaned off.
19:14 pAP→75%
19:21 Ismael switched the Liq Tank pH Control to the "A" probe
19:25 TMMgS Pump#1 OFF
19:37 pH Adj Tank Level seems very WRONG right now
Field reports ~50% full right now
Level sensor completely covered
19:44 pAP→3.0 GPM
19:50 FBLBs→MAN @ 120%
*Shift Change*
20:12 to 20:25 Speeding up PSF to 120%; Here we go again
20:27 Liq and pHA pumps @ 2 GPM to increase levels
20:37 PSF→110→105%, Transfer still spiking, but PSF amps low
20:40 TM Pump#1 ON to lines with UV Water
20:50 T=30hr Metso sample taken.
21:04 to 21:50 Speeding PSF up from 100% to 120%
21:40 PSB TC still not settled
21:45 pHA Pump→1.5 GPM, trying to visually get 50% and hold
22:03 pHA Level alarms going nuts.
22:05 WW Done, pump flushed
22:10 TM Pump#1 OFF
22:11 to 22:28 Slowing down PSF to 97%, finally calming down!
22:30 T=12hr Prop 3B Sample Taken
(L) 42.5%; pH=6.29; (T) 98.1°F; (P) 0.22 psi

22:30 T=6hr Liq Tank Sample Taken
(L) 84.8%; pH=5.50; (T) 122.0°F; (P) 0.46 psi
23:12 Visual on pHA~55%
23:16 Liq Pump→3 GPM, pHA→2.8 GPM
23:37 Reversed pHA Pump, no rise in Ferm in a while
Confirmed it is pumping into C

**2014-10-18**
00:46 Ferm C Agitator ON
01:18 Liq Pump Reversed. Liq→3.5 GPM; pHA→2.5 GPM
01:29 Liq→3.2 GPM
01:49 Liq Tank Level now joining in [going nuts]
01:53 Reverse pHP
02:10 Liq→3.5 GPM pH→2.8 GPM
02:45 Liq Sensor went NaN. Covered? Putting Pump @ 5.0 GPM and pH→4.0 GPM. See if it clears.
At least it stopped alarming every 10 seconds.
Just cleared, back to alarming. Back to 3.5 and 2.8 [GPM respectively]
02:53 WW [pH]=10.14
02:57 Strange Temp drop in Ferm C, will watch
03:00 Reversed Liq Pump
03:13 Liq→4.0 GPM, pHA→3.2 GPM, try to lower [Liq Level] a little, Liq alarms driving me nuts.
03:39 Confirmed level drop in Enzyme Totes, just to be sure.
03:44 Sending out WW, 78.2% level
03:52 Liq→5.0 GPM, pH→4.3 GPM. Totally have lost Liq level at this point.
04:10 T=12hr Liq Tank Sample
(L) Unknown; pH=4.99; (T) 121.8°F; (P) 0.45 psi
04:10 T=18hr Prop 3B Sample
(L) 42.9%; pH=6.30; (T) 98.9°F; (P) 0.25 psi
[THIS SAMPLE WAS DONE EARLY]
Sample was 3.9 g/L [Ethol], holding off Inoculation
04:18 pHA reads pH=6.5. Ferm C reads 6.27. Have to wait for sample for true reading.
04:21 pHA reading 100%, field says ~45%, got nervous, pump @ 4 GPM
05:14 PSF→95%
05:52 Visually pHA~ 50%
06:15 T=12hr pH Adjustment Tank Sample Taken
(L) ??? pH=6.47; (T) 97.9°F; (P) -0.22 psi
Was told 2B CIP to be done after 3B→C inoc.
06:50 Reversed pHAP
06:58 pHA~40% Liq Pump→3.5 GPM, pHA→2.5 GPM
07:07 Lab reported 06:00 sample of pHA was 6.57 which lines up with pHA probe. Ferm C reads 6.20 of the same slurry.
*Shift Change*
08:11 Sterilizing Sample Port for Prop 3B (Joe's call)
08:31 T=42hr Metso Blow Tank sample started
08:49 Joe is doing visual check on Liq Tank's level before we switch over.
08:53 Blow Tank Sample Finished
08:55 T=22hr [Ethol]=7.something (taken from Prop 3B)
08:58 TMMgS Pump #1 ON; Adding nutrients to Ferm C

09:15 Getting ready to inoculate Ferm C with Prop 3B
09:17 Began inoculation of Ferm C with draining of Prop 3B
Prop 3B: (L) 42.2%; pH=6.39; (T) 98.8°F; (P) 7.81 psi
Ferm C: (L) 26.9%; pH=6.16; (T) 98.5°F; (P) 0.13 psi
09:19 Temp and pH Control for Prop 3B OFF
09:20 Ferm C pH Control ON! Base B#3 ON @ 85%
pH set @ 6.30
09:23 Prop 3B Agitator OFF
09:25 BBP#3 ON @ 85% continuously in HMI control
09:26 Reversing Screw→"Reverse" to Dumpster
Stopped Liq Tank feed, UV Water, and Enzyme (Gluconase) Pump
09:27 Screw Press→3.5 RPMs
09:28 TMMgS Pump→ 20%
09:29 BBP#3 OFF
09:30 Finished inoculation of Ferm C
09:33 T=0hr Ferm C Sample Taken
(L) 31.8%; pH=6.39; (T) 98.7°F; (P) -0.04 psi
09:34 Ferm C pH Control ON Auto, set @ 6.38 for now
09:40 Screw Press→3.0 RPMs
09:50 WW Pump OFF
09:55 Steam ON to Liq Tank Sample Port
Screw Press→2.8 RPMs
09:57 Finally remembered to CLOSE Discharge Value to Liq Tank
10:03 pAP→2.7→2.8 GPM
10:04 pAP→3.0 GPM
10:08 T=18hr Liq Tank Sample
(L) Unknown; pH=5.41; (T) 121.8°F; (P) 2.39 psi
10:10 More PSF & PSB TC Craziness
PSF→90→85→80→70→65→75→85→90→95%
10:12 Set Liq Tank pH Control to "B" probe
10:12 to 10:19 Speeding PSF up to 120%
10:16 FBLBs→85→CAS
10:20 Screw Press→2.6 RPMs
10:23 Still having issues with Loads in PSB TC
10:23 to 11:26 Lots of varying speeds for pAP. Ended at 3.0 GPM
10:31 Dumping out Caustic Tank
Caustic Tank Agitator and Pump OFF
10:41 to 12:22 Slowing PSF down to 93%
10:54 LP→4.0 GPM
11:22 Caustic Tank EMPTY
11:23 Began filling Caustic Tank to 50% with Process Water
Used roughly 34 gallons of Enzyme
11:41 Caustic Tank Agitator ON
12:01 Finished initial Process Water to 51.0%
Pump ON @ 55%
12:04 Began adding 1633 lbs of Caustic Soda to Caustic Tank
12:13 LP→4.5 GPM; Just trying to shove it the slurry through to the pH Adj Tank
12:15 pAP→2.5 GPM; LP→5.0 GPM

No reason why pH Adj Tank Pressure should be dropping right now
12:17 Getting spikes in pH Adj Pump pressure now
12:20 LP→4.5 GPM; pAP→2.8 GPM
12:28 Finished adding 1634 lbs Caustic Soda to Caustic Tank; Level=53.5%
12:30 Screw Press→2.5 RPMs
12:31 pAP→3.3 GPM
12:50 pAP→3.0 GPM
12:55 WW pH=12.52 @ 57.1% Level
12:57 Joe doing quick blowdown of boiler
Screw Press→2.4 RPMs
13:14 pAP→2.5 GPM
13:11 Nothing getting into pH Adj Tank; ScPr→2.8 RPMs
13:12 pAP OFF due to no flow into pH Adj Tank
13:13 UV water somehow getting into pH Adj "from side"
Blowing out clog with UV Water
13:15 LP OFF; Blasting with more UV Water
13:16 LP ON @ 4.6 GPM→7.0 GPM
13:19 pAP ON @ 6.5 GPM
13:24 WW Pump ON; 66.4% Level; pH=12.5
13:26 LP→5.0 GPM; Nutrients still working
13:28 TMMgS Pump#1→85%; pAP→4.5 GPM
13:30 pAP→4.0 GPM; Screw Press→2.6 GPM
13:27 LP→5.3 GPM
13:52 TMMgS Pump #1 OFF
13:59 LP→5.8 GPM
14:02 TMMgS Pump#1 ON@ 80%
14:11 Screw Press→2.4 RPMs
14:14 TMMgS#1 OFF and ON @ 80%
14:21 LP→5.0 GPM
14:22 Screw Press→2.2 RPMs; LP→5.8 GPM
14:36 Screw Press→2.3 RPMs
14:40 TMMgS#1 OFF
14:42 Reached 40.3% Level in Ferm C. Calling Ismael to find out what he wants done
14:50 TMMgS#1 ON @ 100%
14:52 Finished pumping to pH Adj Tank
Switched to Liq→Decanter Feed Tank
LP→7.0 GPM
14:54 AAP#1&3 OFF, pH Control for Liq and pH Adj→MAN and OFF
14:57 pAP OFF; Ferm C Liq Slurry Valve CLOSED
14:58 TMMgS OFF
15:05 TMMgS ON @ 100%
15:06 TMMgS OFF
15:08 TMMgS ON @ 100%
15:11 TMMgS OFF
15:12 TMMgS ON @ 100%
15:37 Kevin adding grease to Metso screws
15:48 T=6hr Ferm C Sample Taken
(L) 40.6%; pH=6.33; (T) 98.4$^{o}$F; (P) -0.04 psi

15:55 Decanter Feed Tank Agitator ON @ 13% level (with Override ON)
16:03 Heating up CIP tanks
16:13 pH Adj Agitator OFF
16:16 TMMgS#1 OFF
16:18 pH Adj Temp Control OFF; TMMgS#1 ON @ 100%
16:22 FBLBs→MAN@25%
16:25 Caustic Tank has apparently been draining to sump whole time
Will HAVE to do Caustic Determination
Will not be doing any Caustic CIP anytime soon.
16:32 FBLBs→65→CAS
16:52 Caustic Concentration~2.9%
17:12 LP OFF; hose broken. Peter going to check Liq Tank level
17:20 LP ON @ 7.0 GPM
17:27 PSF→85%
17:29 Beginning Addition of 506 lbs of Caustic Soda (Start Level=75.7%)
17:41 Finished Adding Caustic Soda to Caustic Tank
Adding Process Water to top off @ 80% Level
17:51 Liq Pump tripped and reset. Back ON @ 80% (7.0 GPM)
17:53 FBLBs→MAN @ 50%→CAS
17:58 Liq Pump tripped again and is being reset.
18:01 Liq Pump blew out an element. Will drain Liq Tank to floor
Metso (dump) knifegates are squealing
18:13 to 18:18 Speeding PSF up to 120%
18:21 Warned everyone away from Metso
BAD Loads in PSB TC
18:23 Caustic Concentration=4.0% @ 80.5% Level
18:26 to 18:41 VERY touch and go with Metso
Varying PSF speeds to maybe get SOMETHING going better. PSF between 105% and 120%
Tried slowing down PSF in case bigger clumps aren't falling into too fast PSF?
18:37 Knifegate squealing sound has changed in pitch. Gotta get Metso safer to be around first.
18:41 Gave tentative OK to get things done around Metso
18:42 ScPr→2.8 RPMs; Still fighting with PSB TC
18:45 ScPr->4.5 RPMs I saw 7+ Amps on Screw Press Feed Screw! NOPE!
18:54 BAD 10+ Amp SPIKE IN PSB TC!
18:59 SP→3.3 RPMs
19:01 Liq Tank Agitator OFF
19:02 Liq Tank Temp Control OFF; Slowed down PSF
19:05 Speeding up PSF again
19:06 PSB TC just refuses to stop being a problem; PSF→115%
19:09 SP→3.0 RPMs
19:14 to 19:36 Slowing down PSF from 115% to 90%
19:22 FBLBs→MAN@35%
19:36 SP→2.8 RPMs
19:48 FBLBs→110%→CAS
19:53 SP→2.7 RPMs
*Shift Change*
20:15 Rinsing Liq with UV to get worst out
20:30 Heating up Caustic Tank

20:46 Turned OFF TMMgS #1, CLOSED valves
21:00 Trying to blast through transfer lines with Rinse Water.
Liq→knuckle, pH→knuckle, all of it
21:24 PSF→87%
21:33 ScPr→2.6 RPMs
UV being left in header, rinsing everything
21:59 Rinse $H_2O$ to Liq, flipping Nutrient Header
22:00 T=12.5hr Ferm C Sample
(L) 41.0%; pH=6.33; (T) 98.7°F; (P) -0.05 psi
22:11 Adding water to Rinse Tank
22:18 Removing all pH probes
22:27 Rinsing Enzyme→Liq
22:39 Adding Water to Rinse Tank (40→50%)
22:52 Doing all rinse cucles to avoid having to constantly flip header
Liq→pHA→2B→3B
All transfers, vents, C5, enzyme, sprayballs to floor
22:55 Liq Sprayballs Rinse Water
23:08 Taking break to refill Rinse Tank and reheat
21%→80%
23:10 ScPr→2.5 RPM
23:24 PSF→95→105%
23:30 Rough patch, PSF→120%, hope to hold on
23:52 Still @120% (PSF), ScPr→3.3 until clear

**2014-10-19**
00:00 Still Fighting Metso
00:25 WW Done
00:30 Rinse pH Adj Vent/Transfer
00:35 Metso calming down, that wasn't fun, ScPr→2.6 RPMs
pH Adj Sprayballs Rinse
00:47 to 01:20 Speeding up PSF from 92% to 120%
00:50 2B Sprayballs Rinse (Oops, after Transfer)
01:20 Metso acting up again
01:37 Right when I [Jeff] called to say I was shutting down, the belts screeched, shut OFF feed, steam.
ScPr→5.0 RPMs, drain CLOSED
Pretty sure chute plugged
Bypass was still ON PSB Livebottoms from Liq Fill, didn't shut off w/feed and I [Jeff] didn't catch right away. Transfer is probably Good And Full.
01:55 Flipping Header to Caustic into Liq
Liq 'squeals when pressurized. Either around agitator or Metso knifegate
02:06 Handling OFF
02:14 Dump Chamber OPEN, pushing PSF forward
DON'T DARE TRY PSB Transfer until checked out
02:20 Caustic Wash of Enzyme→Liq Lines
02:43 Liq Caustic Sprayball, one at time
02:57 Tried turning Transfer with pipe wrench-Negative
03:33 Chute pulled, was PACKED. Trying to clear transfer now.
03:51 Clog in Transfer is BAD, shutting rest of system down. HP Seal Pump OFF, Valve CLOSED

03:53 WW pH-11.52, Cond 1.32 mS/cm
04:18 Caustic of pHA-Vent-Transfer-Sprayballs
04:34 Transfer worse than though, not going to clear out tonight. Only one small clean-out port on top
05:10 $CO_2$ Scrubber Pump/Water OFF, Fan-Bleach Scrubber ON
05:14 Acid Agit. OFF
05:22 2B Vent/C5 Caustic
05:25 2B Sprayballs Caustic
05:50 3B Vent/C5 Caustic
05:53 3B Sprayballs Caustic
06:12 Flipping Header to UV into Liq
06:35 Starting V transfer lines Liq, Decanter, Enzymes
06:45 Sending WW, tank 74%, ~35 GPM
07:130 Liq Sprayball #1 UV
07:41 Vents done pHA, 2B, 3B. C5 2B, 3B
07:44 POWER OUTAGE, Compressor coming up
Potable, Process, UV, Cooling, Bleach Scrubber, Ferm C Agitator ON
*Shift Change*
07:58 Everything back up except Caustic Pump
08:00 Shut down CIP Agitators and Rinse Pump
08:21 Reversing Screw, Screw Press, and HP Seal Water Pump ON
08:22 SPFS and Blow Tank Agitator ON
Turning them on to do washdown
08:28 PSB LB ON @ 10%, PSBLBs→30% (In Reverse)
08:29 PSBLBs OFF
08:30 Joe thinks we have PSB LBs freed up.
08:34 PSB TC is "clogged up real bad"
08:36 PSB LBs ON 10%→15%
08:37 PSB LBs OFF
08:43 PSB LBs ON @ 50% (In Reverse)
08:44 PSB LBs→60%
08:47 PSB LBs OFF (Amps hit 9+)
08:48 to 08:55 Several attempts to 'bump' PSB TC in reverse
09:00 Tried again in forward for PSB TC; No good
09:01 Tried again in reverse for PSB TC; somewhat promising
09:02 Running PSB forward. Actually, ran well!
09:06 PSB TC and LBs (50%) ON in reverse
09:07 PSB LBs→70%
09:09 PSB LBs→85→100%
09:10 PSB LBs and PSB TC OFF
09:12 PSB TC ON and PSB LBs ON @ 50%.
09:13 PSB LBs→85%, then OFF. All good with it.
09:14 PSB TC OFF; APPARENTLY main Metso SV OPENS when PSB LBS are ON. Crud.
09:15 Blow Tank Agitator OFF
09:17 Rest of Metso shut down. HP Seal Water Pump OFF
09:18 PSB Overrides OFF
09:21 Ferm C Sample Port Steam ON for T=24 Sample
Was never told when it was taken.
09:57 HP Seal Water Pump ON

10:02 Reversing Screw to Blow Tank Agitator ON
10:03 C5 Hydrolyzer Discharger to High-Shear Mixing Conveyor ON
10:04 Steam ON to Metso
10:22 Presteam Bin Level Sensors back ON; Metso Vents CLOSED
10:28 Metso Steam to C5 Discharger OFF. Leaking steam out of Metso
WW Pump OFF
10:34 Knifegate Overrides ON, both OPEN
10:45 Metso Shutdown (HP Seal Pump still ON)
11:22 HP Seal Water Pump OFF
12:52 Joe opening Vent on Ferm C a bit more
13:16 Began UV Rinse #2 of pH Adjustment Tank (15 min)
13:37 HP Seal Water Pump ON
13:39 Reversing Screw to Blow Tank Agitator ON
Knifegate Overrides OFF
13:42 C5 Discharger to High-Shear Mixing Conveyor ON
Steam ON to Metso
13:43 CV#2&1 ON
13:44 FBCC ON
13:51 $CO_2$ Scrubber Pump ON, Proc Water to Scrubber set @ 1.5 GPM
13:55 Vents on Metso CLOSED
13:58 Began 15-minute UV Rinse on Prop 2B
14:08 Biomass Handling OFF so Joe can make some adjustments
14:14 CV#2 ON
14:15 CV#1 and FBCC ON; still losing pressure in Metso
14:16 Boiler down to 90 psi according to Peter
Joe going to check in MCC
14:22 Guys in field are getting things set to switch to Blue Boiler
14:24 Metso CV CLOSED
15:07 Began 15 min UV Rinse of Prop 3B
15:09 Ferm C Pump ON
15:10 Restarted UV Rinse #1 of Prop 3B
15:16 Biomass Handling OFF
15:19 Coil BAD on Blue Boiler (field report); Metso and HP Seal Water Pump OFF
15:20 $CO_2$ Scrubber and Acid OFF
15:27 Began 15 min UV Rinse #2 on Prop 3B
15:31 Ferm C Pump OFF, squealing sounds
15:38 T=30hr Ferm C Sample
(L) 41.0%; pH=6.33; (T) 98.4$^{o}$F; (P) -0.03 psi
16:02 HP Seal Water Pump ON; Blue Boiler fixed (?)
16:03 Reversing Screw to Blow Tank Agitator ON
16:07 Metso Steam ON; C5 Discharger to High-Shear Mixing Conveyor ON
16:09 CV#2&1 ON
16:10 FBCC ON
16:19 T-pipe Vent CLOSED
16:28 Other Metso Vents CLOSED
16:38 WW pH=11.18 @ 54.1% Level; Lights flickered in Control Room (and Trailer)
16:52 BWp ON
16:54 BWP OFF

16:56 Starting slowly but certainly losing pressure in Metso
17:17 BWP ON
17:21 Biomass Handling OFF
17:30 High-Shear Mixing Conveyor to C5 Discharger OFF
Metso Steam OFF
17:31 Metso shut DOWN
17:32 Acid Systems OFF
17:33 BWP ON
17:34 BWP OFF
17:40 BWP ON
17:44 BWP OFF
17:46 BWP ON
17:48 BWP OFF and ON and OFF
17:55 WW Pump ON Level=66.4% (Draining BW to floor)
Trying to stay ahead of solids
18:06 BWP ON
18:07 BWP OFF and ON
18:08 BWP OFF
18:09 BWP ON and OFF
18:36 HP Seal Water Pump OFF
19:30 Peter getting a sample (conical tube) from slurry coming out of BW drain for lab
Current Level = 53.5%
19:54 BWP ON and OFF
19:55 BWP ON and OFF
*Shift Change*
20:08 BWP ON
20:13 BWP OFF
20:15 BWP ON
20:19 Heating up Decanter Pick Heater
20:30 No Go, pump and heater OFF
20:37 Odd level fluctuations in Bleach Scrubber
20:50 Rinse Pump ON
20:51 Putting Rinse water in header try to clear out to decanter
20:57 Manual Valve Bleach Scrubber→WW Tank CLOSED
High level, must be false, couldn't bypass. Pumping out bleach for no reason.
21:30 T=36hr Ferm C Sample
(L) 40.9%; pH=6.33; (T) 98.2$^{o}$F; (P) -0.04 psi
23:10 WW OFF

**2014-10-20**
03:40 T=42hr Ferm C Sample
(L) 40.7%; pH=6.33; (T) 98.3$^{o}$F; (P) -0.04 psi
07:18 Rinse Pump OFF
*Shift Change*
08:21 BWP ON
08:22 BWP OFF and ON
08:24 BWP OFF
08:29 BWP ON

08:30 BWP OFF
08:34 BWP ON
08:39 BWP OFF
08:44 BWP ON; Apparently “pumping good now”
08:54 BWP OFF
08:58 BWP ON
09:00 BWP OFF
09:06 BWP ON
09:14 BWP OFF
09:33 There might be wood chips of some kind in BWp (field report)
09:47 Bleach Scrubber level mysteriously going down now, along with level in $CO_2$ Scrubber after it had surged up briefly.
10:08 Peter confirmed 7202_V-14 (Bleach Scrubber to Waste Water) is indeed closed
10:23 BWP ON
10:29 T=48hr Ferm C Sample
(L) 40.7%; pH=6.33; (T) 98.5$^{o}$F; (P) -0.04 psi
10:31 BWP OFF
10:53 Bleach Scrubber level holding near 71% at moment
10:54 BWP ON
10:58 Steam ON to Beer Pick Heater
10:59 BPH SV→-5→10→20%
Temp in BPH IS going down though!
11:01 BPH SV→10→6%
11:03 Lost flow to Decanter Feed Tank (BPH Temp spiked up)
11:04 BPH SV→-5% (best way to look for flow)
11:10 BWP OFF
11:12 BWP ON
11:13 BWP OFF
11:17 BWP ON
11:18 BPH SV→20%
11:19 BPH→10→6%
11:20 -5%, no indication of flow right now
11:25 BWP OFF
14:42 BPH SV→20%, trying to pump into DFT with another pump (diaphragm)
14:49 Recirc Loop Valve CLOSED. All flow should be to DFT
14:50 No luck so far with new pmp
15:24 New attempt at pumping from BW→DFT
15:26 Peter and Tommy say pump is going. Still waiting on HMI
BPH SV→Auto
15:29 BPH SV→MAN @60→80→40→20%
15:30 Temp in BPH is actually DROPPING now. BPH SV→10%
Very slow but steady (T<190$^{o}$F now)
15:30 T=54hr Ferm C Sample
(L) 40.9%; pH=6.33; (T) 98.4$^{o}$F; (P) -0.04 psi
15:33 Still no change yet in DFT level
15:34 BPH SV→Auto; Held for about 30 more seconds then sharp rise in temp and probably loss of any flow
15:39 Trying again. Got Temp to change without Steam burst shot

BPH SV→+6%
15:42 BPH SV→8%
15:43 BPH SV→9%, Slope of temp curve IS changing with increased steam
15:44 BPH SV→10%; Guys opened valve and FLOW
15:45 BPH SV→60→70→80→81→Auto
We have Good Flow to DFT from BW
15:46 Got some nice variation in BPH in BPH and level of DFT going UP
15:47 BPH→MAN→75→85→80→70→72
15:50 BPH SV→Lots of numbers→81.5→80.5→80→79.5%
15:53 Manual control [of BPH SV] with Diaphragm Pump is frustrating
BPH SV→Auto
15:54 Temperature in Beer Pick Heater varying WILDLY
15:59 Changing Control Logic for BPH SV, so it won't vary so much so fast, done by Ismael
16:03 BPH running MUCH smoother now!
Alteration also makes valve err on high of temperature now, which is safer than before.
16:24 Lost flow to DFT
[Ethol] @ T=50 hr ~15 g/L
16:26 Ferm C Temp Control set @ 140°F; Hot Water Heater set @ 185°F
16:30 Decanter ON
16:32 Pumping to DFT from BW again
16:38 Ismael Instructions: DO NOT let DFT go over 90%
16:53 Ferm C pH Control→MAN and OFF; Base B Pump #3
17:12 DFP ON @ 20% MAN; Decanter FIC set to 3.00 GPM
At least 0.80 GPM difference between local and HMI readings
Error about 0.75 GPM at the moment
Assuming field reading to be more accurate
17:16 DFP→CAS
17:17 FIC_4901 set @ 3.2 GPM
17:20 Solids coming out "Great" according to Joe
17:49 Decanter chute plugged up a bit
17:53 Lost Flow going from BW→DFT
17:58 Decanter Flow set @ 4.00 GPM
18:08 Flow restarted to DFT, not much.
18:12 Flow lost to DFT from BW
18:19 Punching line with UV water
18:22 Rinse Pump ON @ 55%
Going to try blasting through clog with this pump
18:23 Rinse Pump→85%
18:24 Rinse Pump→55%
18:29 Rinse Pump→88%
18:31 Rinse Pump→55%
19:13 Rinse Pump→80→85%
19:15 Rinse Pump→55%
Running recurring 15 min timer for unclogging Decanter Chute
19:26 Rinse Pump→100%
*Shift Change*
20:35 Flushing Decanter Pump→Decanter line

SN-Remind Ismael in the morning: DFP flow meter is calibrated to water (From Lime Slurry Line) much different density, low flow so not a huge deal but none-the-less.

21:35 Decanter Feed→5 GPM
21:48 Decanter Chute plugged, shut off pump
22:06 Plug Clear→back to 4 GPM→4.5 GPM
22:30 Chute plugged again, pump OFF
Slurry (BW)→DFP
22:31 NOPE
22:39 DFP→3.5 GPM
22:53 Chute plugged, going to CIP mode and clear whole thing out
23:35 DP ON 100%
23:38 DP OFF, 5 GPM flush of Decanter, shutting it down after, not getting anywhere

**2014-10-21**

00:30 Ferm C @ 140°F
Chute removed from Decanter for modification
01:30 First Kill Sample on Ferm C (we were working on chute)
02:30 Kill Sample
03:30 Kill Sample
04:30 Kill Sample
04:46 Transferring FermC→BW
Temp control OFF
05:27 Heating Caustic, Rinse ON, Ferm C AG OFF
05:33 ~20sec UV Rinse →BW
05:40 UV Rinsing Solids out of Ferm C
WW @ 60%, going to test after Rinse Cycle
06:15 Rinse Water of Transfer Line to Ferm C, C5, Vent
06:25 Sprayball Cycle of Ferm C, Hot Water OFF
06:35 Refilling Rinse Tank (40%)
06:45 Flipping Header to Caustic
06:50 Caustic Cycle of Ferm C
07:15 Still trying to get WW pH UP
07:20 Filling Header to UV→Sump to help with WW pH (5 min)
07:29 UV Cycle of Ferm C
07:38 WW pH=5.9. Tank 89%, putting in more Caustic and let sit, shouldn't be much going to the sump now
07:52 Ferm C Pump OFF
*Shift Change*
Began heating Rinse Tank
09:32 POWER LOST
Potable and Process Pumps ON
09:33 Rinse Pump and AG ON; UV and Cooling ON
09:36 DFT Agitator ON
10:21 WW Pump ON; WW pH=6.59, Level=97.1%
13:15 Might having issues with Sump pumps according to Tommy
13:38 Sump pumps back to running
14:00 WW Override ON. Going to run WW Tank as low as possible
14:20 Joe is fairly certain we ruptured the pressure disk on Prop 2B when we overfilled it during CIP

14:30 Running a test on Vacuum Breaker of pH Adjustment Tank
15:15 WW Flow starting to go down
15:48 WW Pump OFF, Override OFF, Level @ 3.5%
18:01 Process and Potable Water Pumps 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 |