

Controls SW Group Meeting

July 27, 2023

Agenda

1. State of the machine
2. Upcoming schedules
3. Recent issues with archiving

T. Summers

Welcome Lukas Ho-Koziol

Started with us Monday, working for Jeremy.

You can find him in the cubicles so stop by and say hello!

- BA in Mathematics, BS in Computer Science
- President of the UCSC Rocket Team 2 years
- Interned at the UCSC Genomics Institute for 2 years
- I like to bake bread??
- Looking for house plants, if anyone knows a good nursery or has a house plant I can have cuttings of, let me know!

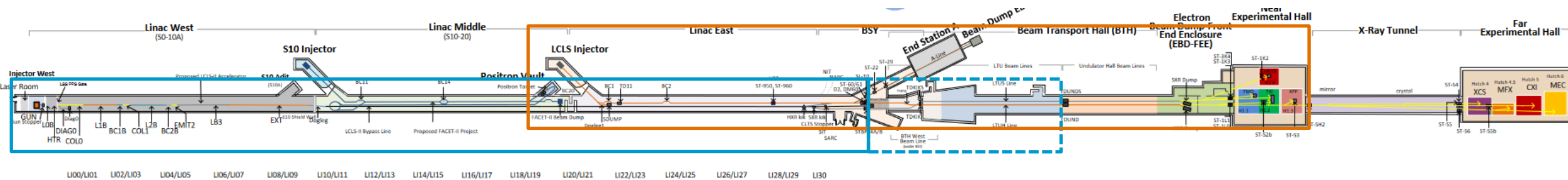


State of the Accelerators

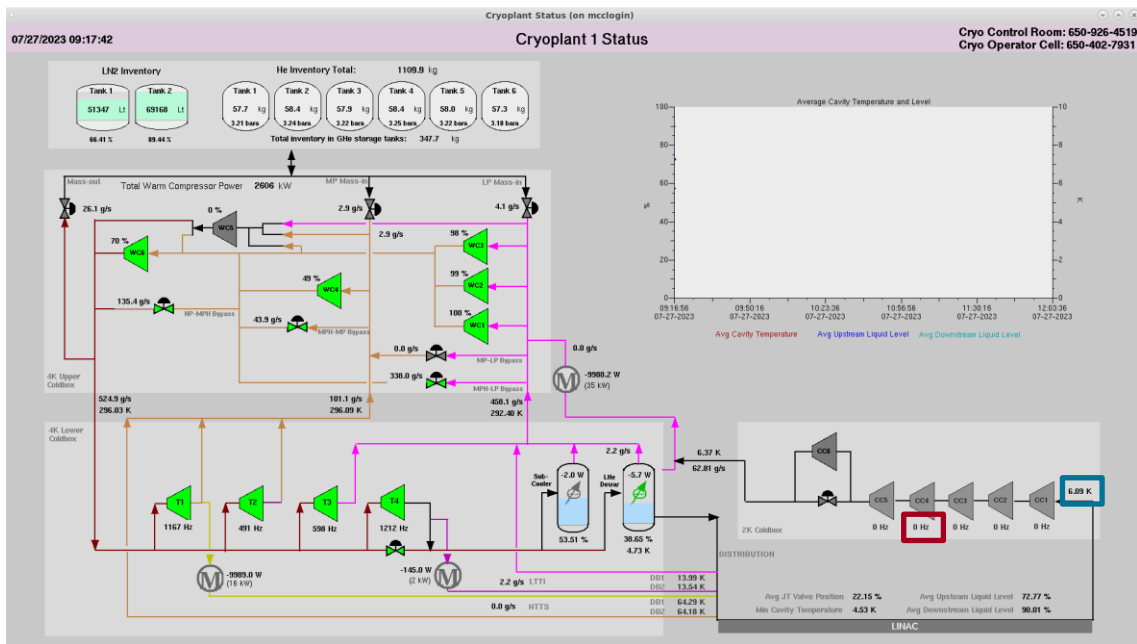
LCLS-SC cryoplant issues, LCLS-Cu running beam, FACET working through restart

- **LCLS-SC:** Plan was to be sending beam past BSY-Dump to the Spreader and LTU for the first time
 - Progress on pause due to issues with one of the Cryoplant's 2K system compressors
- **FACET:** Plan to restart the injector and start restoring beam through the linac
 - Started running beam yesterday and optimizing injector emittance, sending up to TD11
- **LCLS-Cu/NC:** Beam was restored through linac and undulator lines
 - Continuing to run to the experimental halls for tuning and photon MD
 - Generally running on swing/owl shifts only to allow for focus on SC program during day shift

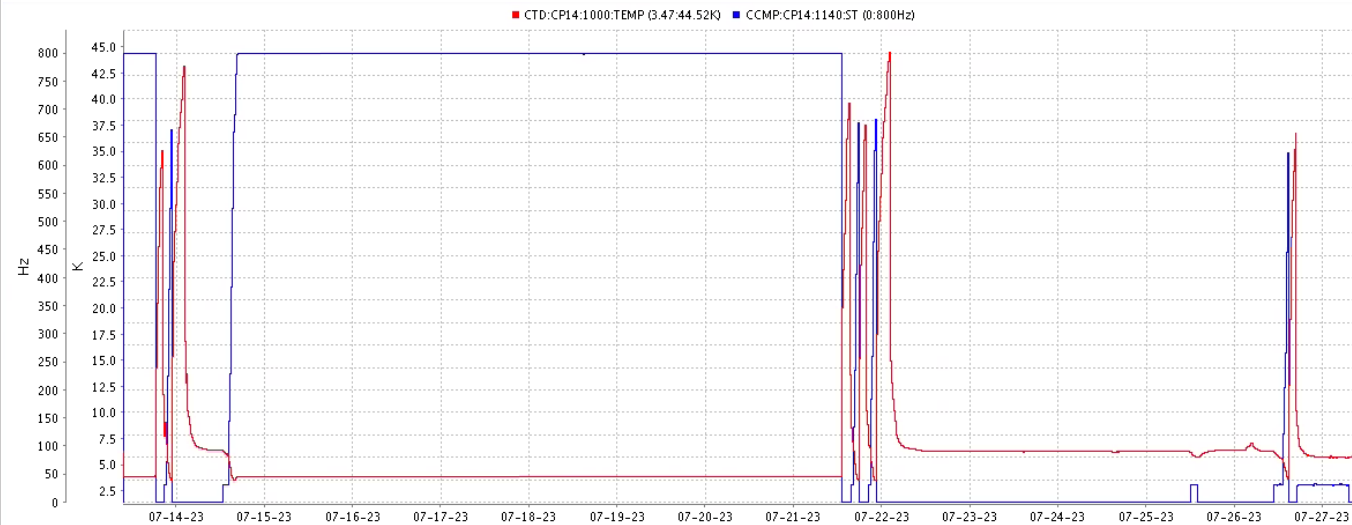
*** ACR can continue using the beam during the day shift while SC is on hold ***



Following along with the cryoplant status



Last 2 weeks – cold compressor Hz and return gas temperature



- Top-left is **Upper Coldbox** and shows the status of the big warm compressors – there should always be 5 running (green)
- Bottom-left is **Lower Coldbox** and shows the status of the 4 turbines – all should be running (green), and the LHe dewar which should be half-ish full (blue)
- Bottom-right is the **2K Coldbox** which shows the status of the cold compressors – the row of 5 should be running (green) at several hundred Hz, and the temperature of the gas coming back from the linac should be ~ 3.5K (when plant is running only 4K this return temp is ~ 6K)

Upcoming maintenance periods

PAMM August 1-3 (Tuesday–Thursday)

- Following PAMMs every 2-3 weeks

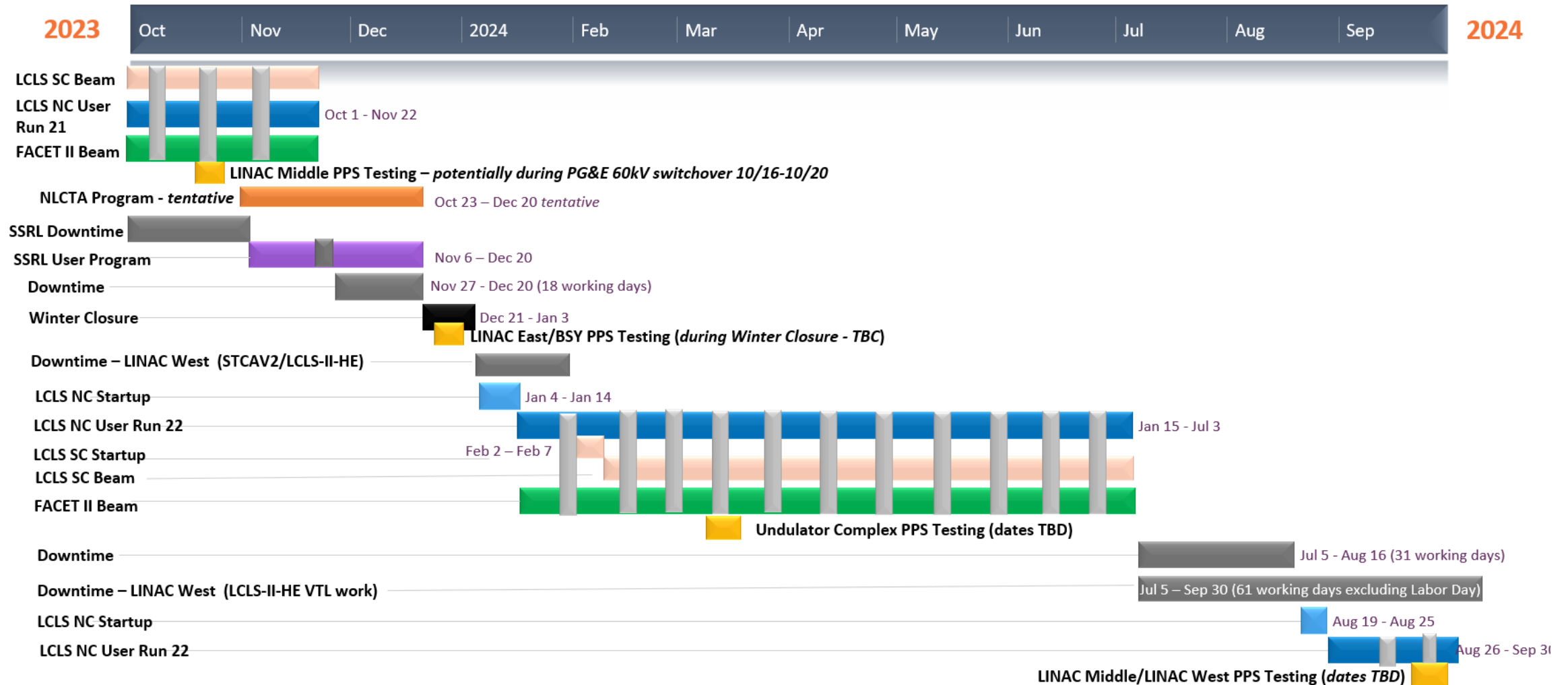
Start Date ↓	End Date	Program	Machine Status	Description
11/01/2023	12/20/2023	All Accelerators	Downtime	2023 Nov-Dec downtime (LCLS SC, FACET, LCLS Cu)
09/19/2023	09/21/2023	All Accelerators	PAMM	9/19-9/21 PAMM
09/05/2023	09/07/2023	All Accelerators	PAMM	9/5-9/7 PAMM
08/15/2023	08/17/2023	All Accelerators	PAMM	8/15-8/17 PAMM
08/01/2023	08/03/2023	All Accelerators	PAMM	8/1-8/3 PAMM

PPS Zone	RPFO Survey	Access State	Access Start	Search Time	No Access
Injector West	08/01 06:00	Permitted Access	08/01 12:00	08/03 11:00	08/03 16:00
LI01-LI07	08/01 06:00	Permitted Access	08/01 12:00	08/03 11:00	08/03 16:00
LI08-LI10A	08/01 06:00	Permitted Access	08/01 12:00	08/03 11:00	08/03 16:00

PPS Zone	RPFO Survey	Access State	Access Start	Search Time	No Access
S10 Injector		No Access			
LI10/LI11		No Access			
LI12/LI13		No Access			
LI14/LI15		No Access			
LI16/LI17		No Access			
LI18		No Access			
LI19/LI20	08/01 06:00	Permitted Access	08/01 07:00	08/03 09:00	08/03 11:00

PPS Zone	RPFO Survey	Access State	Access Start	Search Time	No Access
LCLS-INJ		Permitted Access	08/01 06:00	08/02 13:00	08/02 13:30
LI21-LI23	08/01 07:00	Controlled Access	08/01 08:00		08/02 18:00
LI24/LI25	08/01 07:00	Controlled Access	08/01 08:00		08/02 18:00
LI26-LI29	08/01 07:00	Controlled Access	08/01 08:00		08/02 18:00
LI30	08/01 07:00	Controlled Access	08/01 08:00		08/02 18:00
BSY and BTHW	08/01 07:00	Controlled Access	08/01 08:00		08/02 18:00
HX-2	08/01 08:00	Permitted Access	08/01 08:15		08/02 18:00
BTH (LTU and U)	08/01 07:30	Permitted Access	08/01 08:30	08/02 14:00	08/02 16:00
EBD-FEE	08/01 08:30	Permitted Access	08/01 09:30	08/02 16:00	08/02 18:00

Looking ahead – big picture for following months



Recent Archiving issues



Several reports of PVs being Paused when they shouldn't be

- **It all started back during the power outages**
 - When a PV disappears (E.g., IOC powered off) the archiver will repeatedly reach out “Hello? Are you out there??” but these requests become less frequent over time. Eventually heartbroken, the archiver assumes the PV is gone and Pauses it.
 - The archiver will return us reports on the number of Paused PVs.
- **There is an automatic progress that tried to resume these Paused PVs so if an IOC is powered back on the PVs should be resumed eventually**
 - This has been failing, possibly because it is taking a very long time to return the list of Paused PVs – because **there are over 500,000 Paused PVs in the LCLS and FACET archivers!** Many of those are PVs that no longer exist since the names were **changed**. Murali is thinking of a new way for us to manage those so the archiver can work more efficiently.
 - BTW - this is the main reason that rebooting each of the LCLS archivers (with ~200K PVs each) can take several hours to reconnect to all the PVs – it's trying and failing to reach all the disconnected ones. For comparison, Cryoplat's archiver with ~50K mostly-alive PVs will resume them all in a few minutes.

Recent Archiving issues



How to we fix this?

- Short term – we’re fixing case-by-case, trying to resume all
 - When a Paused PV is reported, we find out what IOC it’s on (findpv), then go and poke that IOC’s .archive file
 - > `touch $IOC_DATA/sioc-cp12-cr08/archive/sioc-cp12-cr08.archive`
 - The auto-archiving script sees the updated file timestamp and resumes the PVs in the last (or adds them if they aren’t already archiving).
- Longer term – archiver housekeeping
 - Unfortunately, the handy script that automatically adds things in the PVs from these .archive files does not remove PVs that are longer listed – so we tend to not think about them anymore.
 - We will start slowly going through the list to see what’s obsolete and delete the PVs. The historical data will remain for retrieval, but the archivers will no longer be asking for them.