

# APS Upgrade Update

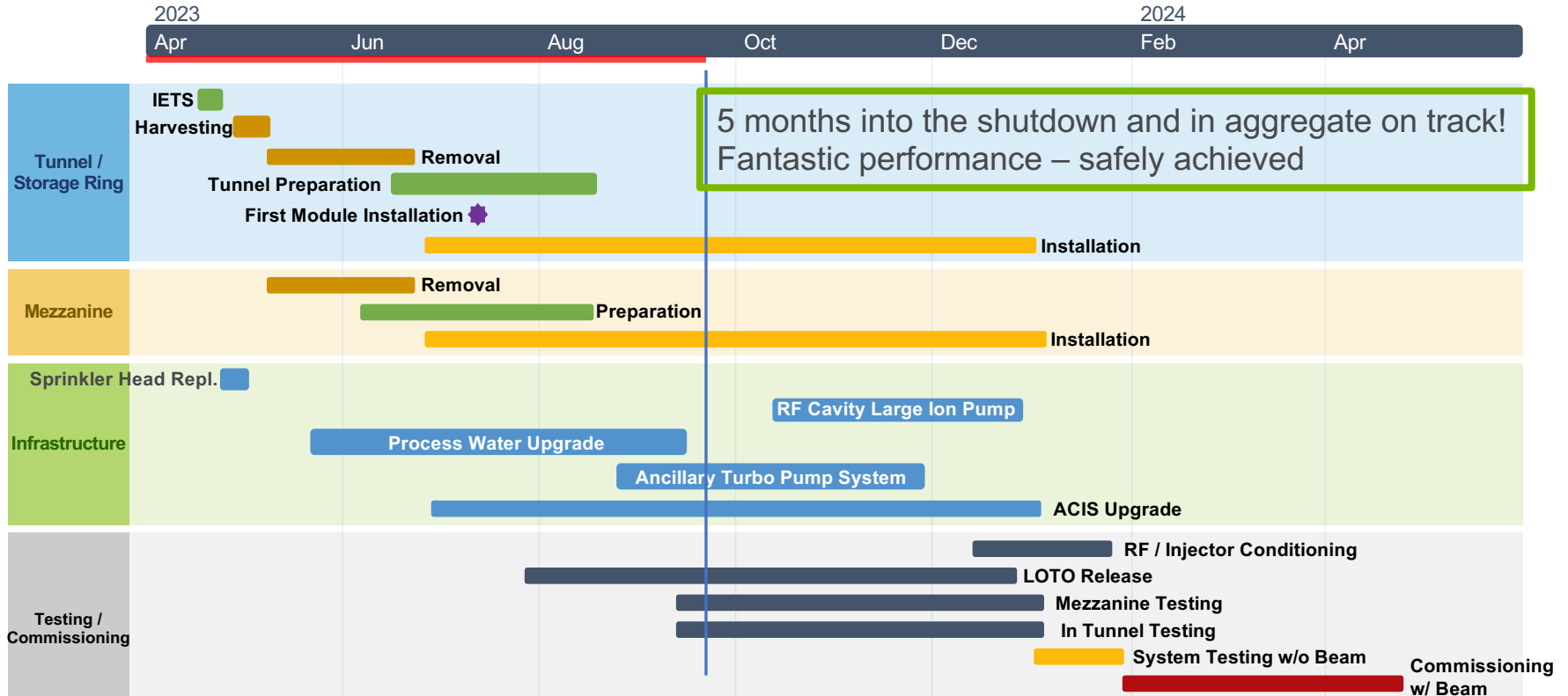
Five months into the shutdown...

Jim Kerby  
Project Director, APS Upgrade



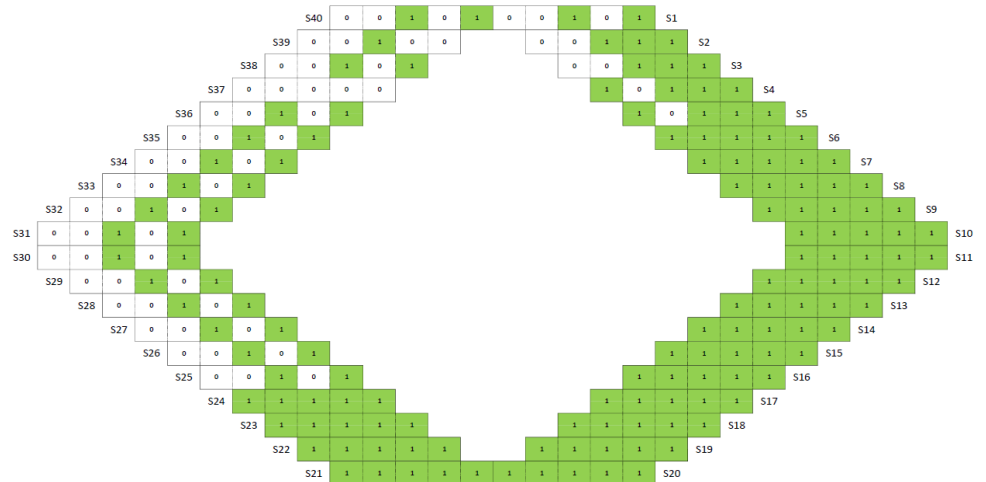
CSSI Grand Tube installation at 9-ID

# STORAGE RING SCHEDULE



# ACCELERATOR STATUS

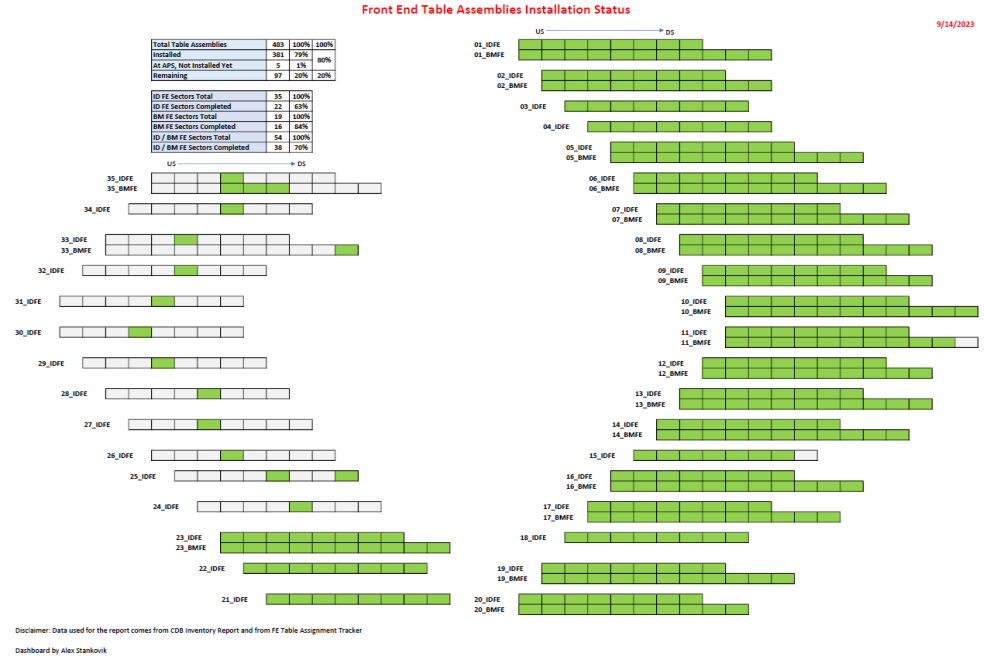
- 184 modules assembled & ready for installation
- 140/200 modules installed
- 47/54 wall collimators installed
- Essentially all mezzanine racks are full
- 60% of cable pulls completed
- Inter-rack connections progressing well
- Test and checkout slow start
  - Network connectivity verification complete sectors 17/18
  - Integrated electrical checkout started in sectors 23/24



Disclaimer: Data used for the report comes from CDB Inventory Report  
Dashboard by Alex Stankovik

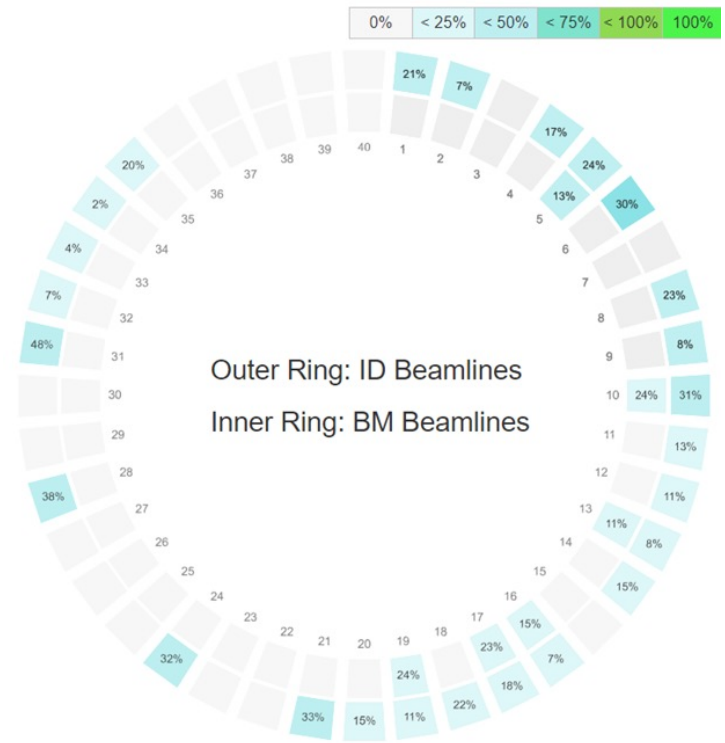
# FRONT END STATUS

- 38/54 front end have tables placed
  - 5 secured, aligned and under vacuum
- 35/44 Insertion Devices + Intermediate Energy X-ray (IEX) undulator ready for installation
- Front end and insertion device racks populated and cabled
- Intra rack cabling underway
- First insertion device vacuum chamber (IDVC) install in next weeks



# EXPERIMENT FLOOR STATUS

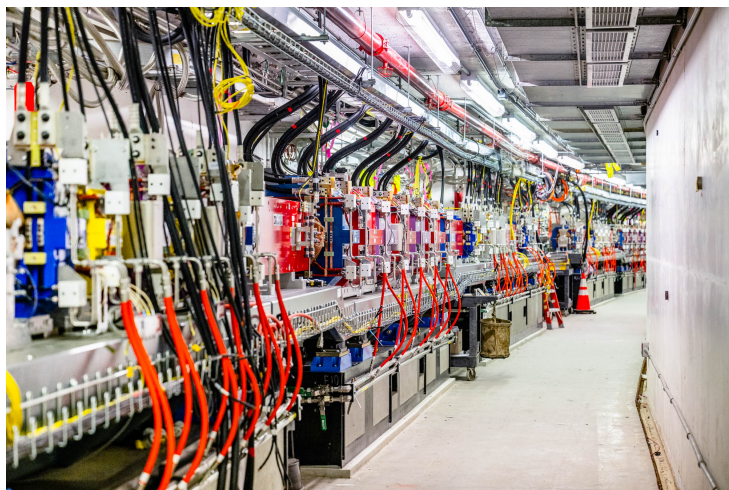
- Mirror system installation starting at 34-ID
- 9-ID Grand Tube installation completed this week
- 8-ID instruments (Small-Angle X-ray Scattering and Wide-Angle X-ray Scattering) installed and accepted
- Shielded enclosure work at 11-ID (through October), 15-ID (starting mid-October), 9-ID and 20-ID (completion early-October)
- Preparations for shielded enclosure work at 4-ID, 33-ID and 34-ID
- 28-ID component harvesting and assembly
- Utility modifications for numerous beamlines
- Beamline components installed throughout the APS



# PROGRESS IN PICTURES



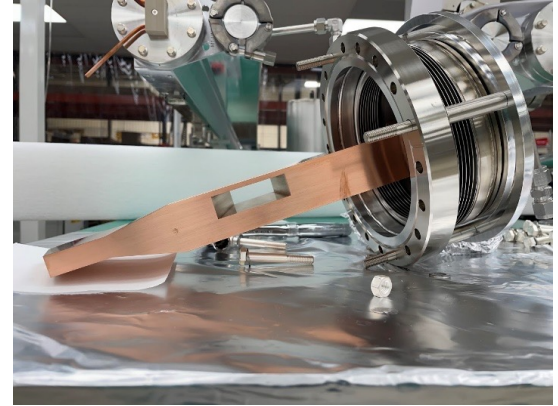
# PROGRESS IN PICTURES



# ADDRESSING CHALLENGES AS THEY ARISE

## Vendor oversight and quality assurance has been key

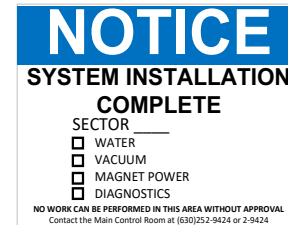
- Electrical checkout of beam position monitors when delivered, for completion of Doublet L-bend Multiplet-A (DLM-A) module completion in 981
- Parallel procurement of component bellows for the beam position monitors
- Final deliveries of absorbers for completion of Quadrupole/L-Bend Dipole/Quadrupole-B (QMQ-B) modules
- Test and checkout of integrated storage ring / mezzanine sectors





# EQUIPMENT INSTALLATION ACCEPTANCE

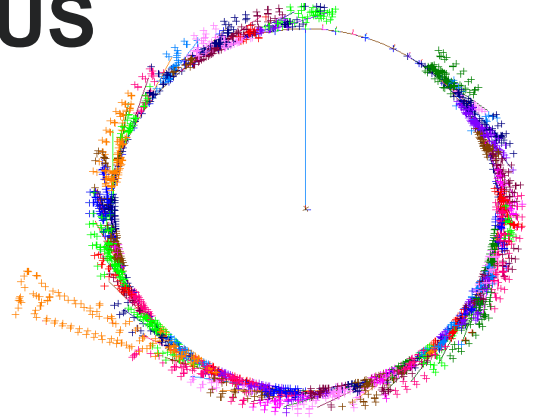
- As the installation of the APS-U continues, the Test and Checkout (T&C) Phase is about to begin, introducing new hazards.
- A new level of awareness must be stressed
- All hazards are being evaluated and mitigation approaches reviewed
- Signage and barricades will be used to isolate areas under T&C
- We are stressing the importance of reading, understanding and following the posted instructions
- A more detailed explanation of the T&C phase will be presented in future meetings



# NEW ALIGNMENT NETWORK STATUS

## Implementation -- radially outwards

- Established storage ring network, module installation well along
- Collimator placement very near completion
- Front End alignment ramping up
- Beamline tie ins complete, beamline work ramping up
  - Beamline offsets discussed + available  
<https://anl.app.box.com/folder/223069918814>
  - Alignment of equipment when delivered
  - Creation of new floor reference lines
  - Final alignment of all RSS components and beamline optics
- Resource requests handled through Robert Winarski



# SUMMARY

- Installation continues to progress well
- It's a brand-new machine (facility) – team doing well to address issues as they arise, and modify efforts to avoid similar issues in next sector
- Effort is being shifted as work is completed – but resources remain scarce, and must be coordinated
- Ensuring up front that the task is documented and understood is critical to safety and to success!
- LINAC/PAR Internal Readiness Review completed! Congrats!!!

