# Underground Updates

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# Introduction

- This summer, PICO-500 has started shipping parts and assembling in SNOLAB
- The UofA and SNOLAB team have been working on this
- Main goals were to have everything shipped and in place for assembly, as well as start cleaning of the Jars
- Due to unfortunate events, there have been major setbacks in assembly underground, but we made the best of our time there

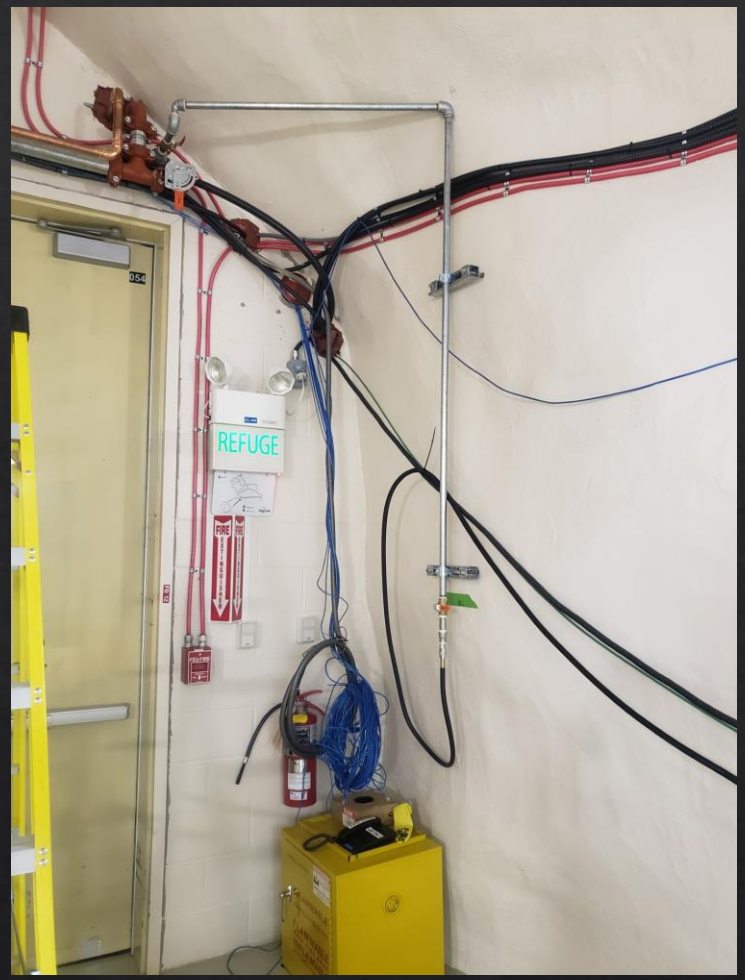
# Shipping of Parts

- All major apparatus's have been shipped, cleaned, and setup in the Cryopit
  - Cleaning enclosures, Assembly table, Dishwasher, IV and Hardware, Practice Jars, Quartz handler, etc
- Several other parts have been processed underground as well:
  - Cameras, servers (some), Tools, UPW
- Quartz Handler was just recently sent underground (crucial for starting cleaning) as well as the IJ cleaning enclosure
- What’s left?
  - Seals and pads for IV
  - Misc. Parts from UofA

# Testing of Equipment

- PICO Helium Leak Checker:
  - Faulty Pressure sensor, now fixed and good to go
- Dishwasher Tests:
  - Initially damaged in shipment
  - New piping, temp sensors
  - Hooked up to air and UPW lines**
  - Works great, ready for cleaning
- Quartz Handler
  - Tested pressure and overall movements of parts
- Chillers (top and camera)
  - Damage in shipping, multiple tests done with load
  - No issues found, testing has been closed out
- Microscope for sample analysis
  - Works great
- Assembly Table testing
  - Completed full inspection and cleaned

# Cleaning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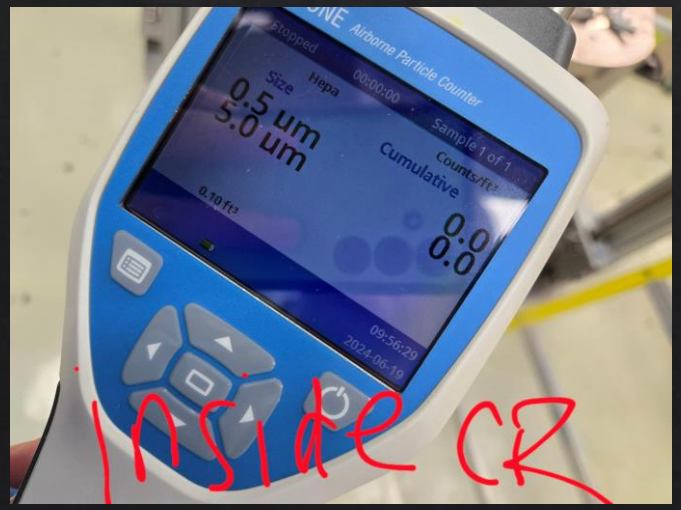
# Assembly Table

- Installed underground
  - No problems in installation
  - No parts damaged

- Do we need to bolt this down to the floor?

# Particle Counts

- Fairly low in CR without movement
  - Multiple people working inside causes a lot more particulates
  - We need to produce a full procedure for cleaning before we enter the cleanroom (Ashley)





- Particulate counts in BAD (back access drift) are very BAD
  - Well over 1000 counts/ft^3 for 0.5um and 5um
  - Largely due to holes in the door between lab and drift
    - Recently patched, but should be considered when transporting parts through the area
  - Mitigated with Radon bag?

# Future Plan

- David and I are arriving Sept 4th for a month, and probably a subsequent trip
- Plan on cleaning of practice jars
  - I would like to expedite this process so we can start cleaning the real jars
- After cleaning the fake jars, I'd like to do a test assembly
  - This will allow us to do leak tests, a test movement of the IV from Cryopit to CubeHall, and get everyone familiar with the lifts who aren't
- Radon Mitigation
  - Jeremy is planning on coming sometime in September too
- Cleaning of the bellows
  - Hasn't been though of, but recently planned out and going to test this coming month.
- PV cleaning
- UPW line parts are processed, expected to be installed next week

# Important Questions

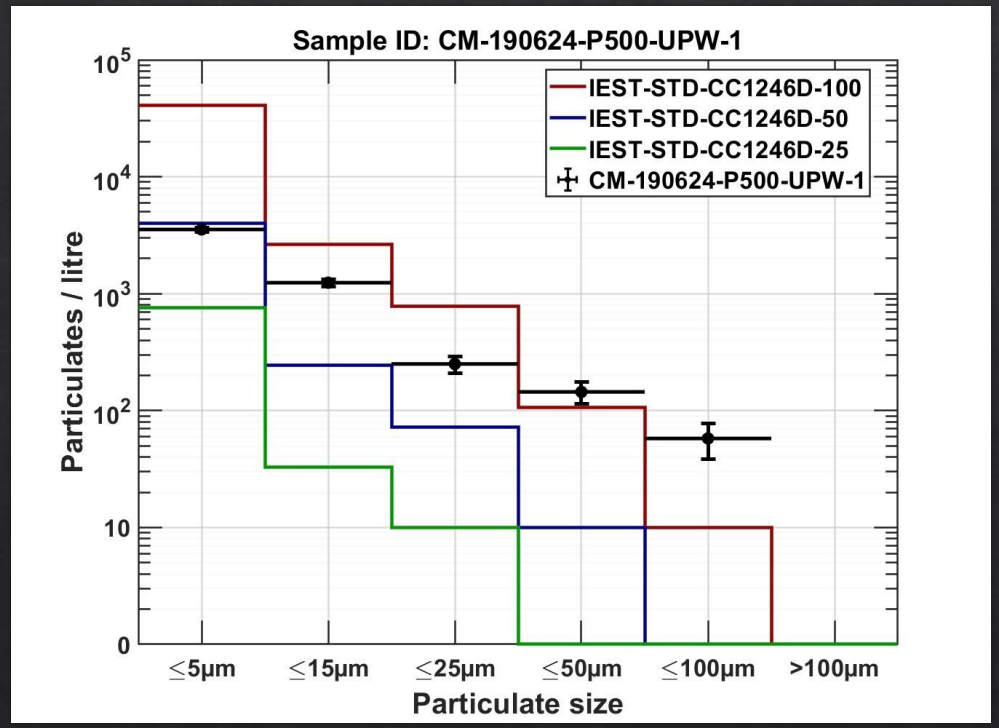
- Plan is to have the IV assembly done by December (just components from UofA)
- …. We need to have the IV under N2 flush until its inserted into the PV, which could be months
  - When is the PV built, should we hold off some of the assembly?
- Perhaps we build a large enclosure to hold the IV in an N2 environment
  - Something just lowered on top, seals with the floor.
- Piezo installation?
  - Is this on the assembly table or BFAT?
  - When is production done?
  - Could increase time of N2 flush on IV

# Questions?

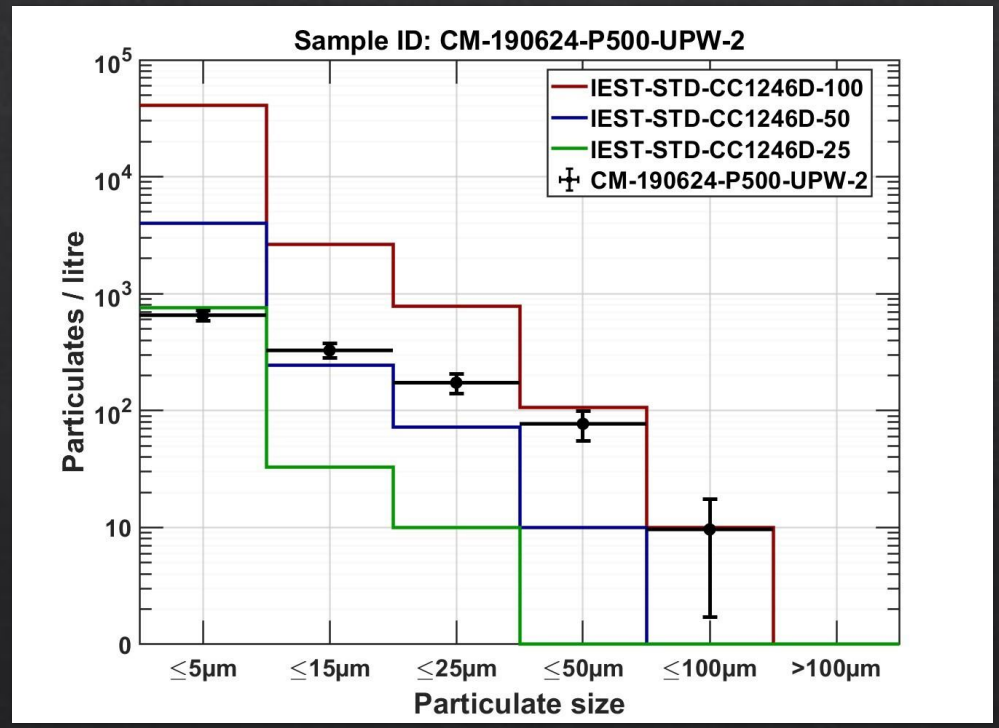
# Extra slides

# UPW line samples

## Mini clean UPW

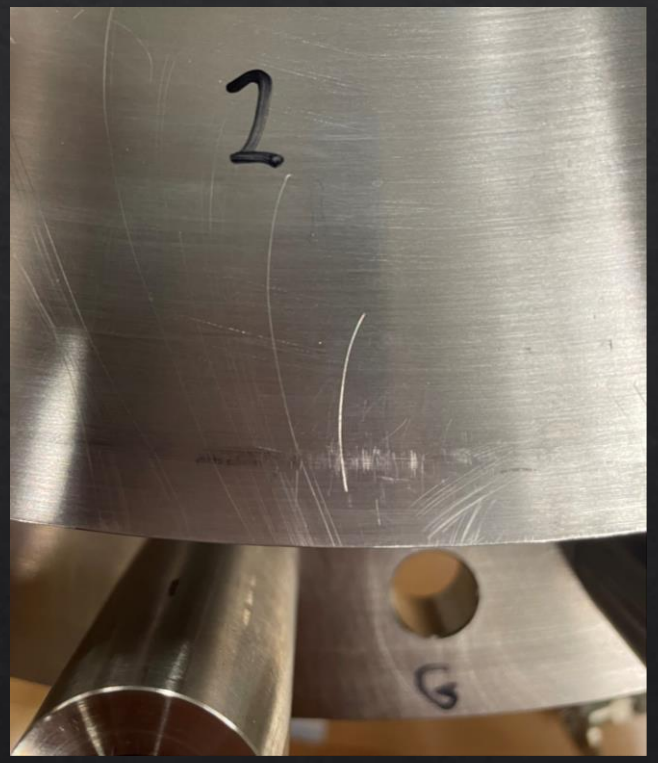



## After 5 min purge



# Testings Underground

- After PICO He leak checker was fixed, we performed leak tests on the bellows and surrounding parts
- Known leak on the IV assembly
  - **Part is not going in final assembly**



# Leaks

- Sniffing test is far less accurate
- One major leak located (possibly in same position as the one before but needs to be confirmed)
- Leak checked all of bellows, only leak near the Al flange (with know leak)
- Reached roughly 2.5 10^-4 mbar l/s