

# 260-L LAr System Progress Report

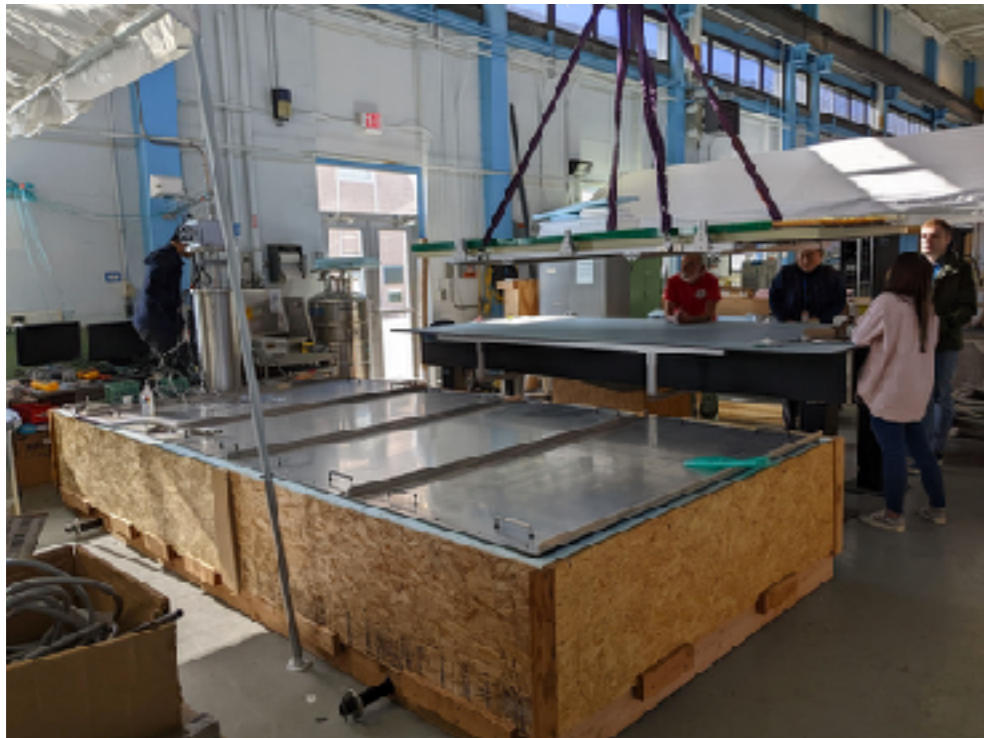
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# Lab Safety and Space Management

- COVID level in Suffolk County is MEDIUM now
- Face masks are optional onsite at BNL
- CRP lifting will be moved into the coldbox this week
- CRP Cold box Fill
  - Safety requested a dry fill to empty the cold box to ensure the integrity of the new coldbox
  - Fittings for the 65 ft insulated hose ready to fill from the 6000-gallon LN2 tank
- Heating in the highbay is expected due to steam maintenance



# Preparation for the next run

## ▶ **Inline filter modification**

- The cylinder was flipped
- All the insulation and heating components removed
- Tubing and plumbing will be done once we got the new pressure relief devices and parts.
- The plumbing needs to be done quickly with positive pressure in the cylinder with a constant outflow



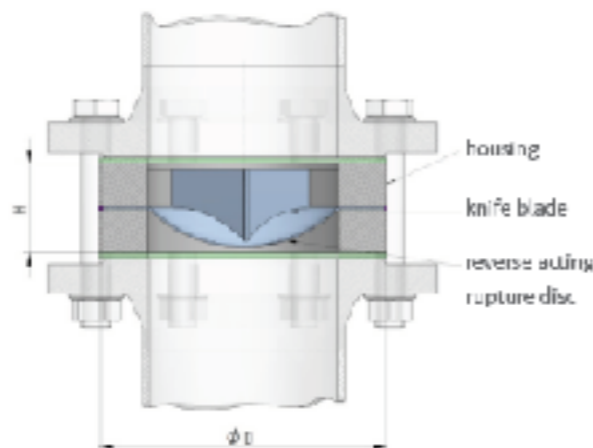
# Preparation for the next run

## ► **Burst disk replacement for the inline filter**

- Quoted received from Rembe for the burst disk+holder+assembly
- The cost seems to be too high, with a total of \$8400 for two sets
  - Burst disk for 70 psig and 100 psig is \$150 each
  - The holder of the burst disk is \$4050 each
  - Lead time 12-14 weeks
- An alternative source found Schlesinger, seems to be more promising
  - The burst disk act as the gasket in VCR fittings
  - The leak rate fulfills our requirements
  - Existing assembly on the catalog, we can build our own housing if that takes too long



Rembe



Schlesinger

# Preparation for the next run

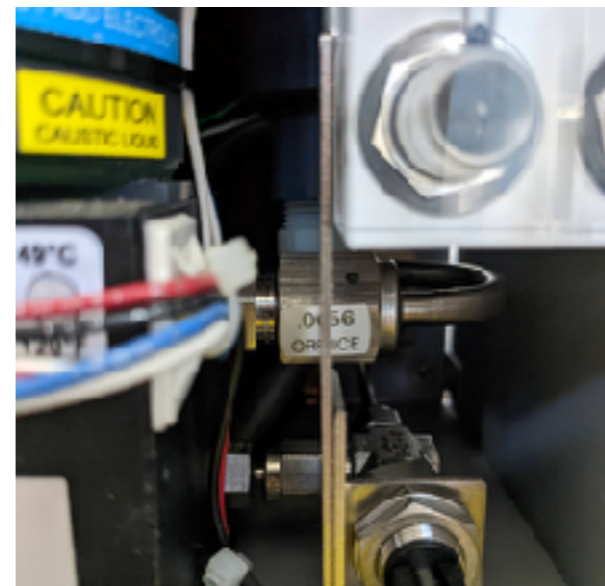
## ► Purity monitor assembly

- The Purity monitor was installed on the top flange assembly
- New assembly procedure tried
- Will connect the cabling and conduct the bench test for functionality



# Discussion with Servomex

- ▶ **I had a Zoom meeting with Phils Rogers from Servomex for questions about the O2 analyzer**
  - The pressure range of input sampling gas is 15 to 25 psig. The specs of 1.03 to 1.72 bar should be barg
  - The essential requirement for a good analyzer reading with quick response time is a flow rate of  $\sim 0.4$  SLPM, usually in the range of 0.3-0.5 SLPM is okay
  - The analyzer is mainly used in the semiconductor industry typically with high application gas pressure, a 0.0056" orifice is implemented upstream of the analyzer cell to restrain the flow
  - The analyzer has been tested at the factory for a low flow rate as low as  $\sim 0.1$  SLPM, low flow rate increase the response time but readings should be accurate with a stable flow to the cell
  - The inlet fitting into the analyzer all goes into the analyzer cell, no bypass. The flow rate on the meter is the actual reading



# Discussion with Servomex

- Possible explanations for the correlation between [O<sub>2</sub>] readings and pressure
  - Such fluctuation is commonly observed at the factory with leaks on the upstream
  - Malfunctioning of the analyzer cell
  - Contaminated electrolyte solution
- Suggested solutions/steps
  - Leak check the plumbing to the gas analyzer
  - Use the automatic calibration device equipped to the analyzer with a purifier to provide Zero gas(Procedure provided)
  - Use fresh electrolyte solution
- Additional comments
  - The length of the tubing to the analyzer has minimum influence on the readings as long as a sufficient flow rate to the cell of 0.4 SLPM is achieved. Only has an influence on the response time.
  - The most extreme solution for the low flow rate is removing the 0.0056" orifice upstream of the analyzer with a VCR through fitting

