



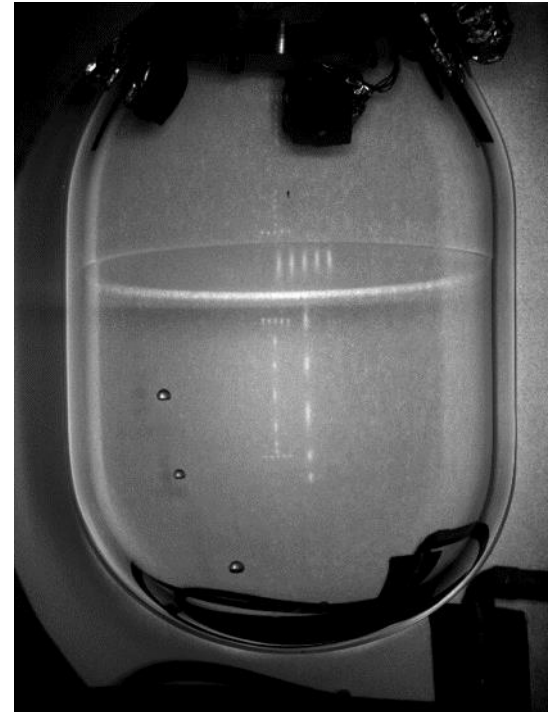
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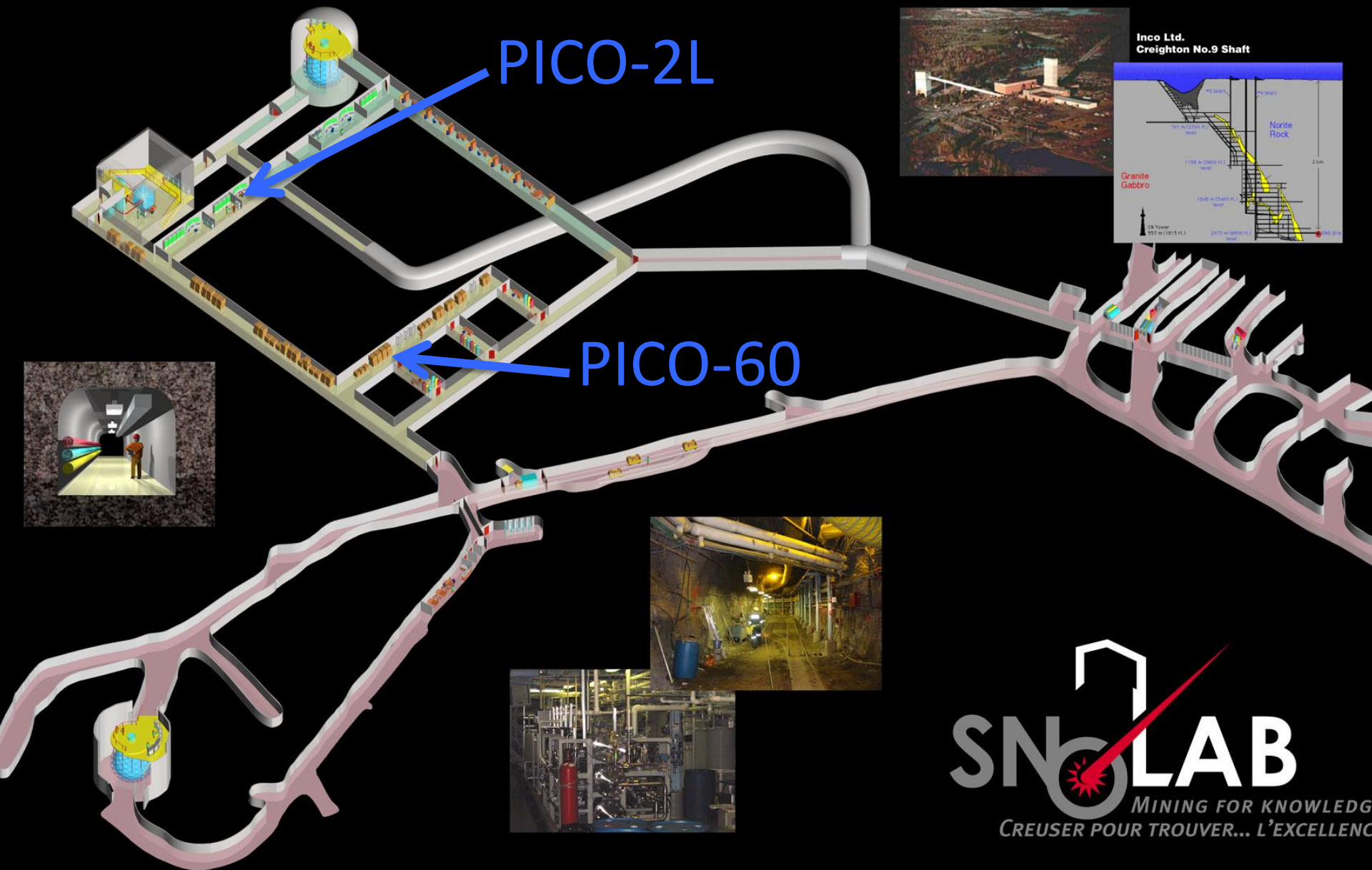
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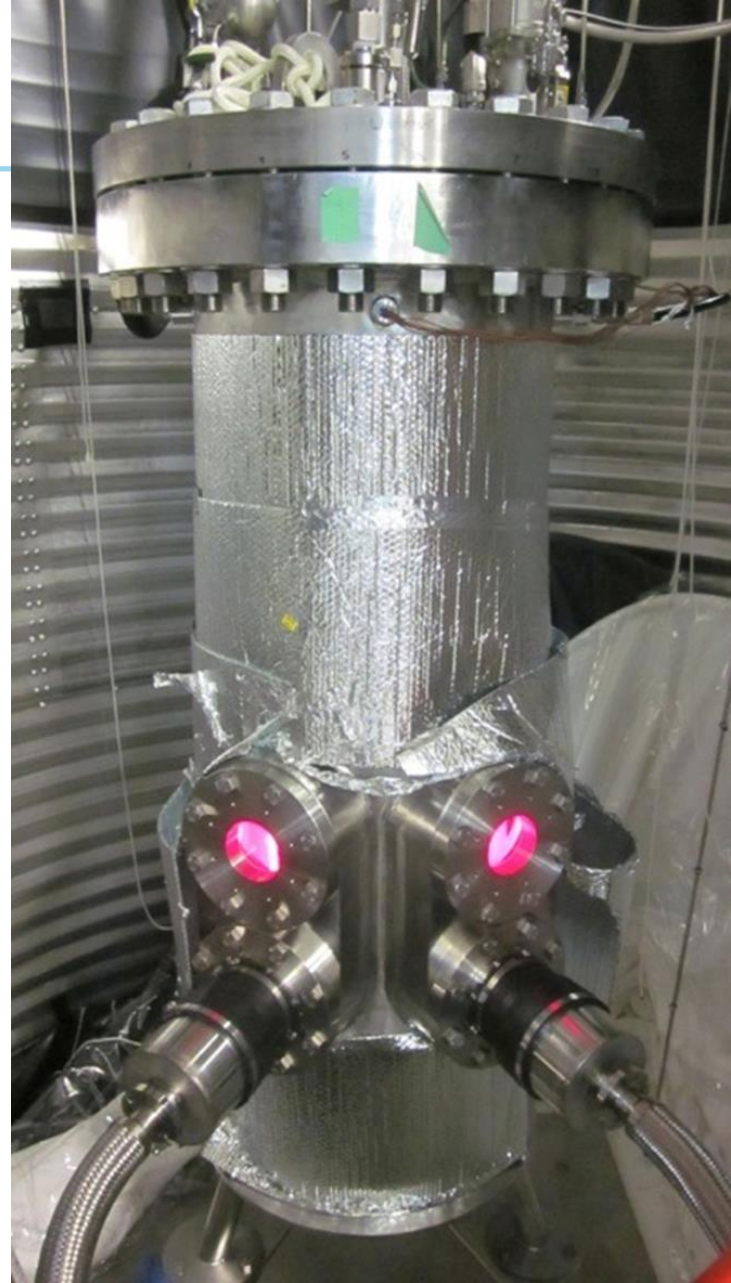
## PICO Status Report

Andrew Sonnenschein  
All Experimenters Meeting  
02 May 2016





**SNOLAB**  
 MINING FOR KNOWLEDGE  
 CREUSER POUR TROUVER... L'EXCELLENCE





# Changes to PICO-60 System for 2016 Run

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- Switch from CF3I target liquid to C3F8 target liquid, optimizing sensitivity to Spin-dependent WIMP-nucleon scattering.
- New high-purity fused silica Inner Vessel from Heraeus Quartz.
- Gasket system for Inner Vessel changed to reduce silica particulates.
- Spray cleaning system to improve initial cleanliness of assembled Inner Vessel.
- High purity on-line liquid handling system allows semi-continuous recirculation of bubble chamber fluids through a 100 –nanometer filter.
- New DAQ system with 4 video cameras- doubles active detector volume.
- New plant for chilling and purifying shielding water
- Refurbished muon veto- water damage to electronics fixed
- New acoustic sensor array- improved long term reliability.

- Inner Vessel assembly, April 2016

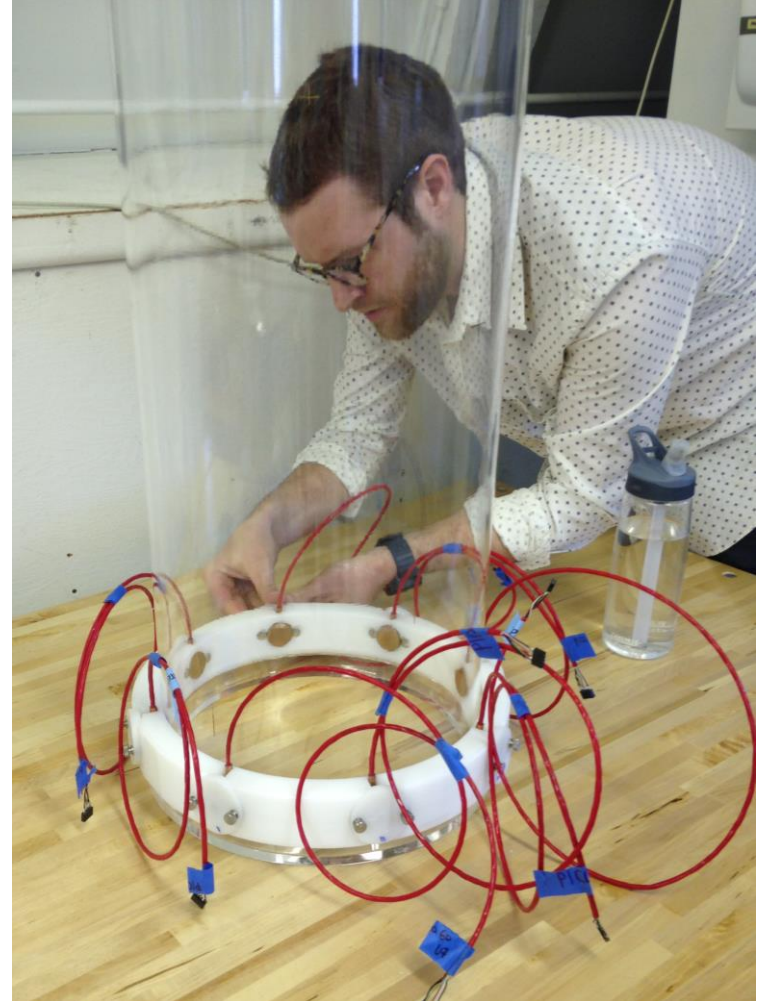
- Critical assembly step-mating of fused silica and stainless steel parts.
- New synthetic fused silica vessel (Suprasil) from Heraeus Quartz.
- New Fermilab gasket design to reduce stress on quartz.



Old acoustic sensor  
attachment- epoxy

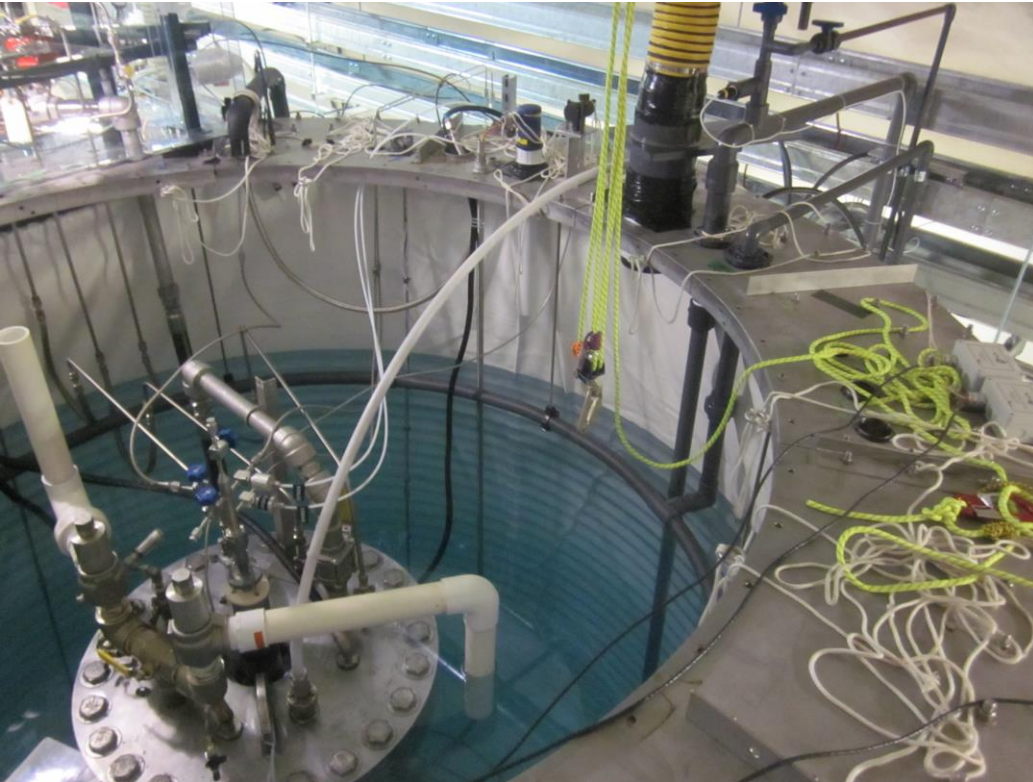


New system— spring  
loaded contacts



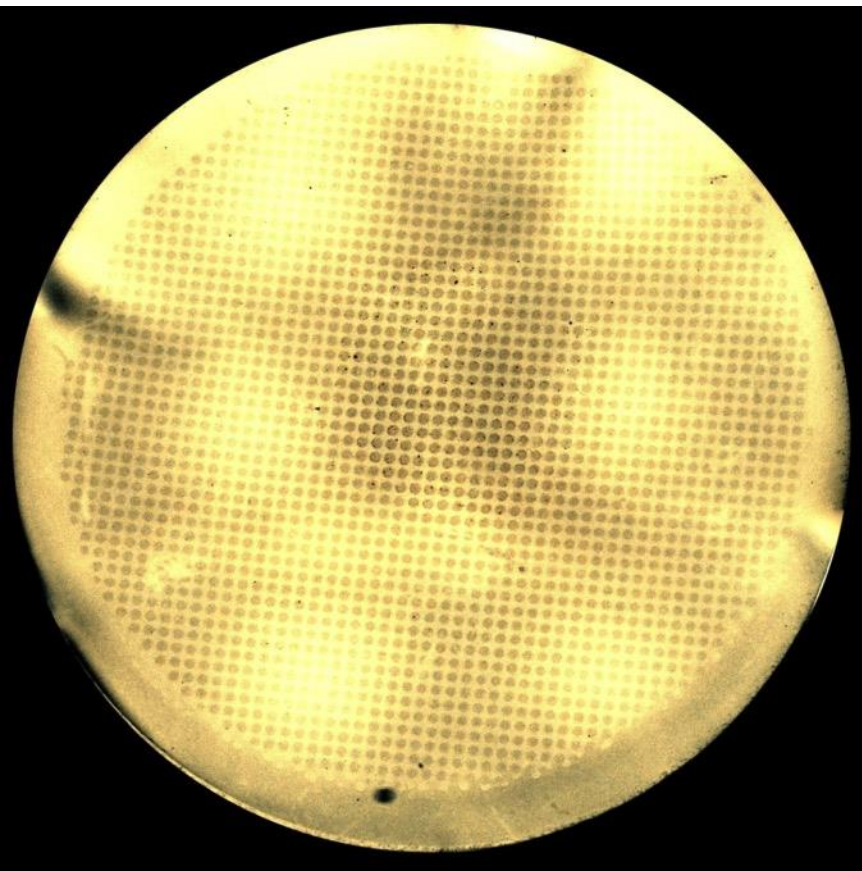


# Shielding Water Purification System

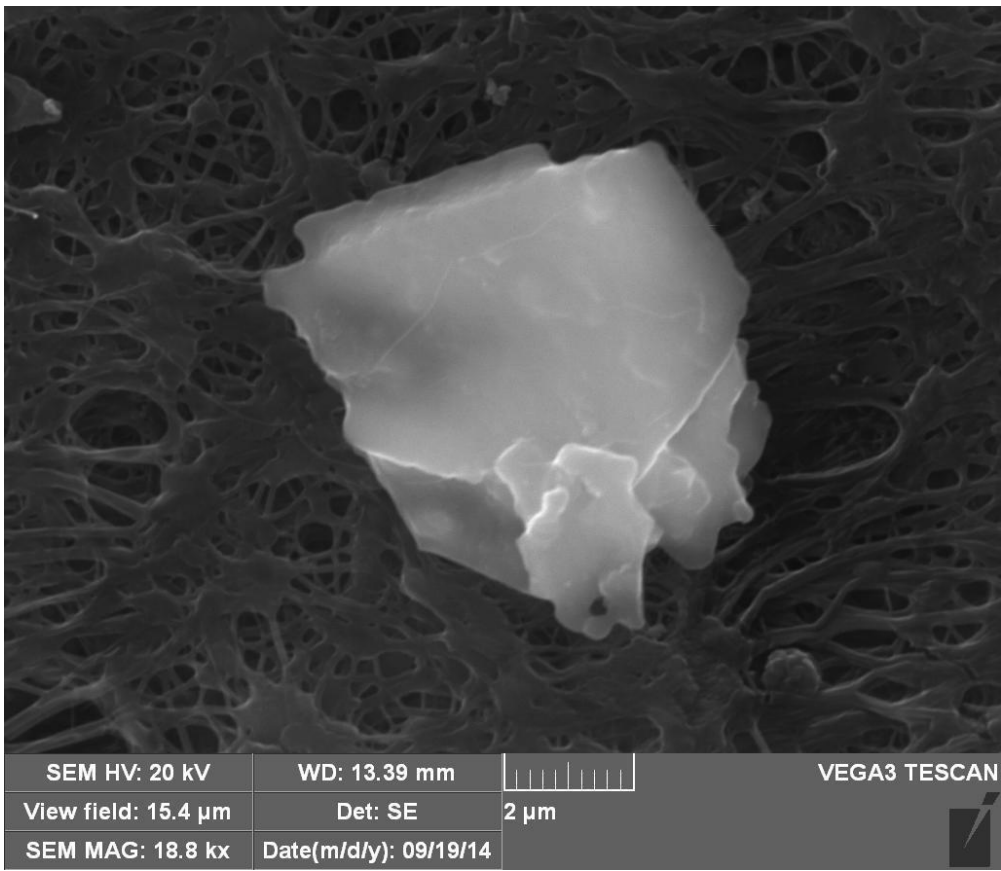


# Contamination from PICO-60 2013-2014 Run

Filter sample from PICO-60  
60 buffer fluid



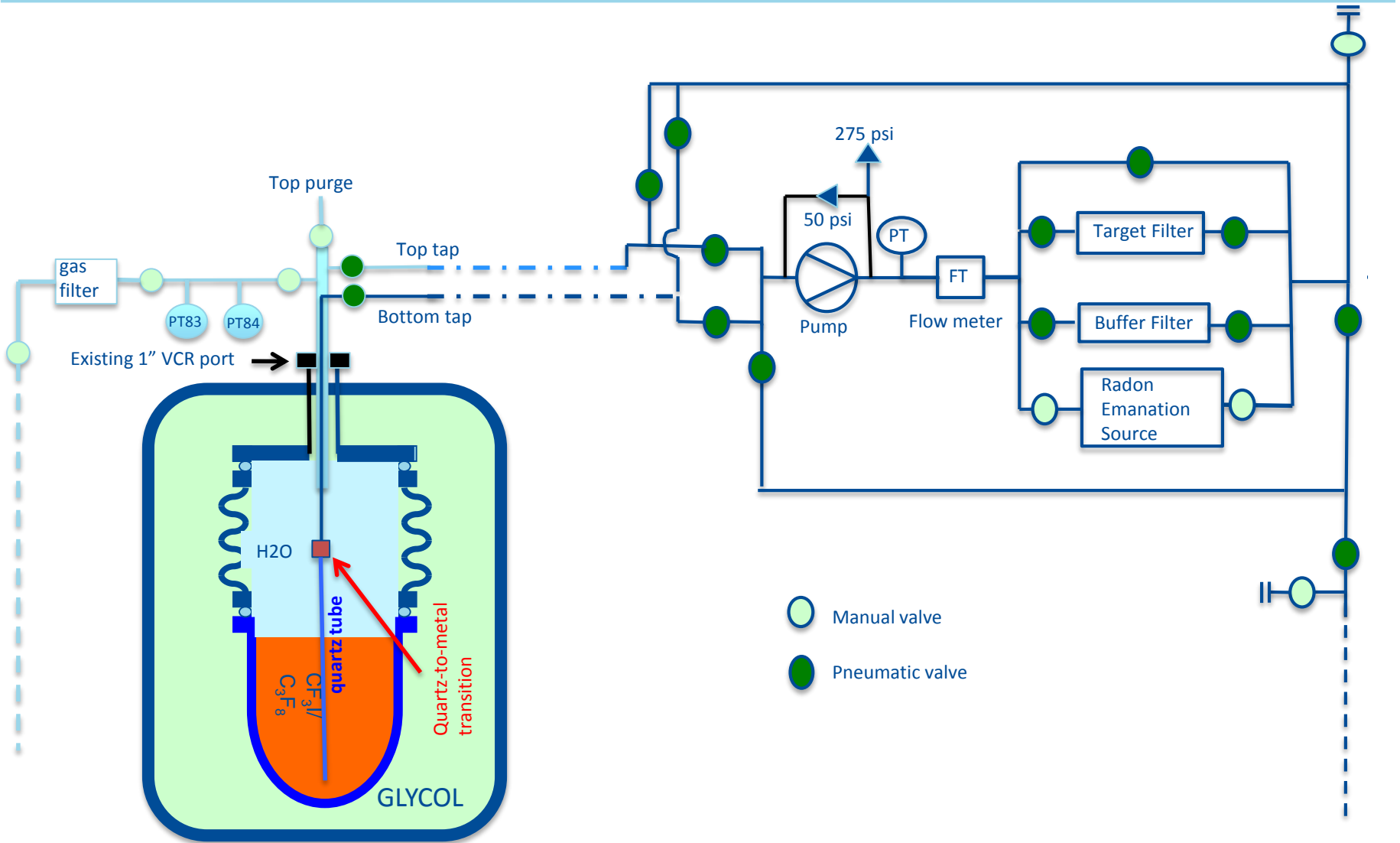
Quartz  
particle



SEM HV: 20 kV	WD: 13.39 mm		VEGA3 TESCAN
View field: 15.4 µm	Det: SE		
SEM MAG: 18.8 kx	Date(m/d/y): 09/19/14		



# PICO-60 On-line filtration system



# Cleaning up Filtration System



~ 10 micron stainless steel  
particle from pump

## Summary and Near- Term Schedule

- All upgrades needed for next PICO-60 run are nearing completion.
- This month— cleaning up inner vessel and fluid systems to reduce particulates.
- Inner vessel installation in detector early June.
- Start of new physics run in July.
- PICO-2L test run started in April.
- Ongoing R&D: Single fluid bubble chamber.