

Marshall Space Flight Center

ES61 – Mechanical Components Test Facility Capabilities

The Mechanical Components Test Facility (MCTF), also known as “Leak Lab” at Marshall Space Flight Center is a multi-capability lab that facilitates payload evolution from proof-of-concept to on-orbit operations. We also have the capability to bring our equipment to various locations for off-site testing.



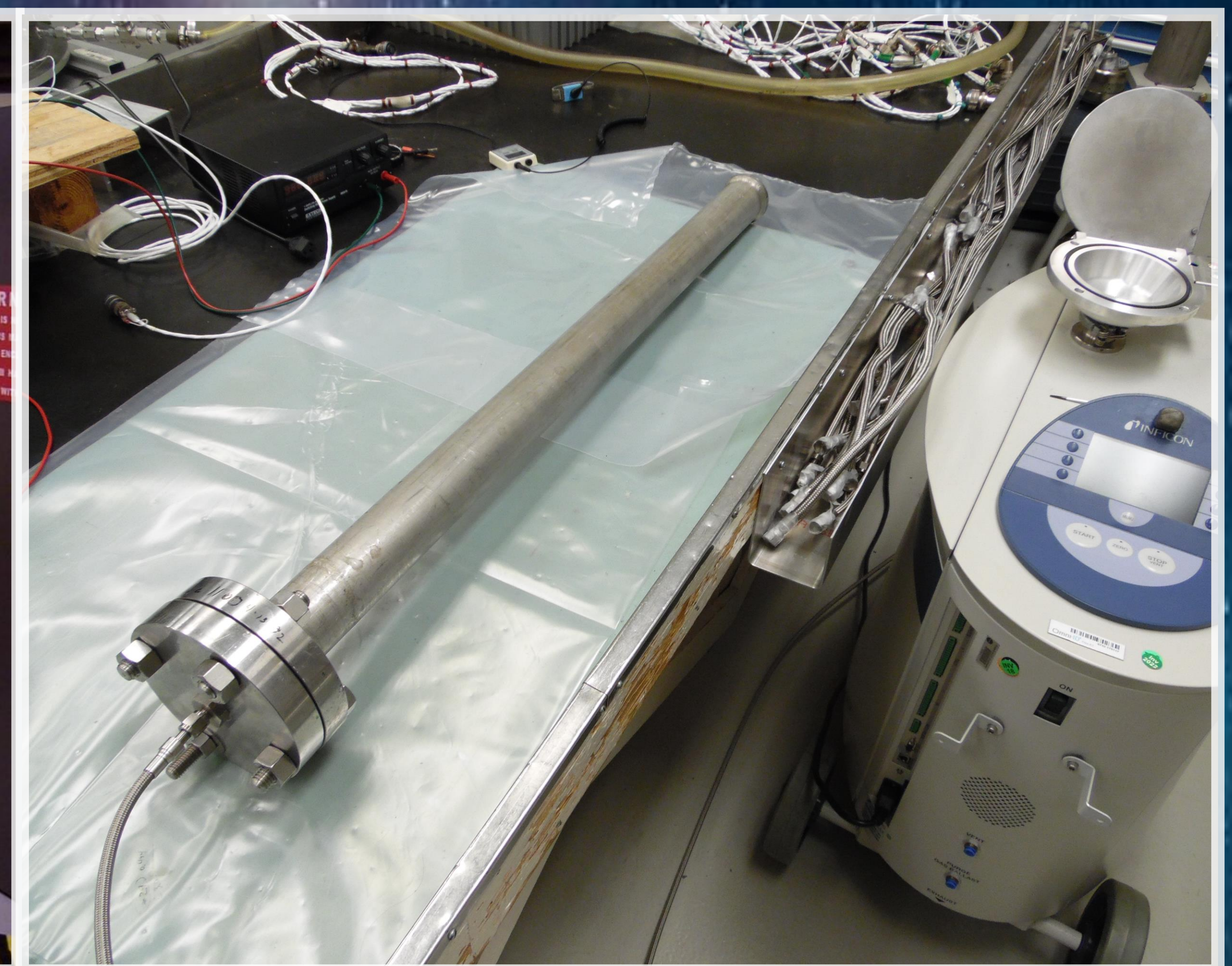
Vacuum Chamber

- Two 3' x 4' chambers
- Used for positive-pressure leak testing
- Multiple feedthroughs
- Millitorr-range vacuum pressures



High-Pressure Test Cell

- 5000 psi test pressures
- Nitrogen and Missile Grade Air (MGA)
- Test-to-failure (Small test articles)



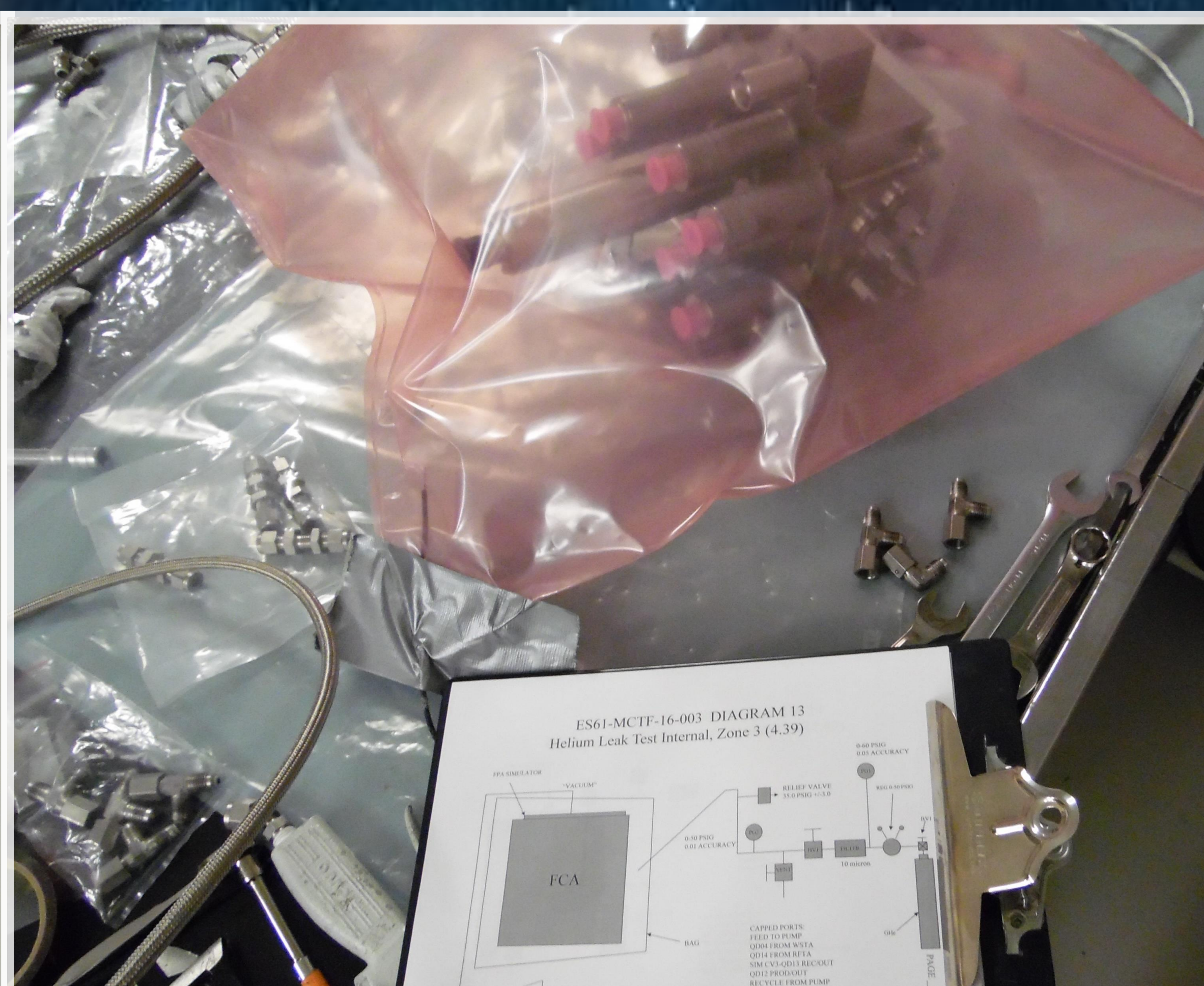
Bombing

- Electronic components are taken from helium backfilled chamber after some time and leak tested under vacuum with mass spectrometer
- Multiple sizes of bombing chambers



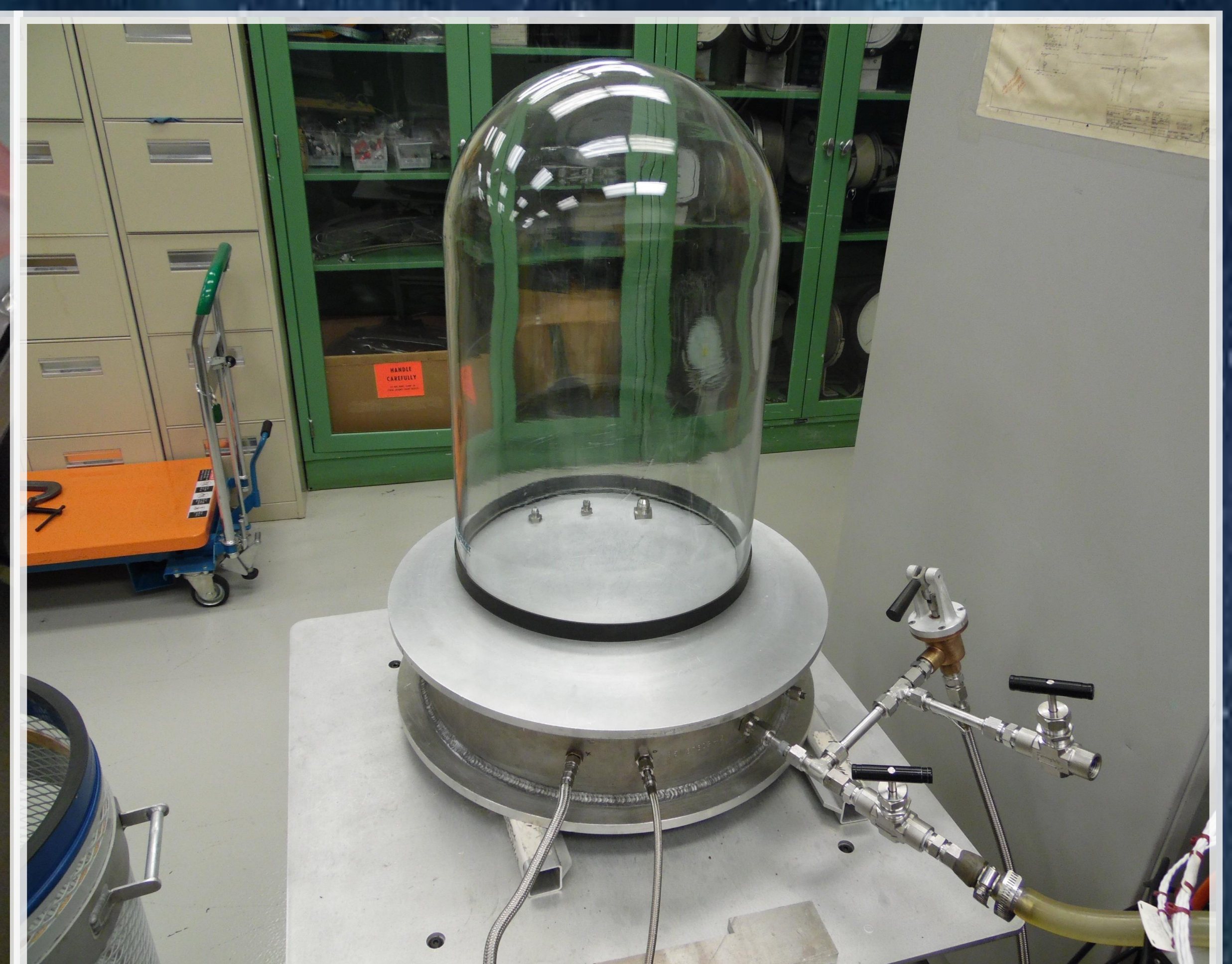
Local Point Leak Testing

- Detector probe used to detect gross leaks, with helium as tracer gas, around fittings, joints, etc.
- Bubble leak testing using air or nitrogen with liquid solution.



Negative-Pressure Testing

- Bag pressurized with helium.
- Mass spectrometer connected to hardware with internal volume under vacuum.
- Used to detect leaks from outside in.



Positive-Pressure Testing

- Multiple feedthroughs with various connections.
- Article pressurized with helium; mass spectrometer connected to vacuum inside bell jar for leak detection.