UT-BATTELLE

# Hg System Status

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**Muon Collaboration Friday Meeting**

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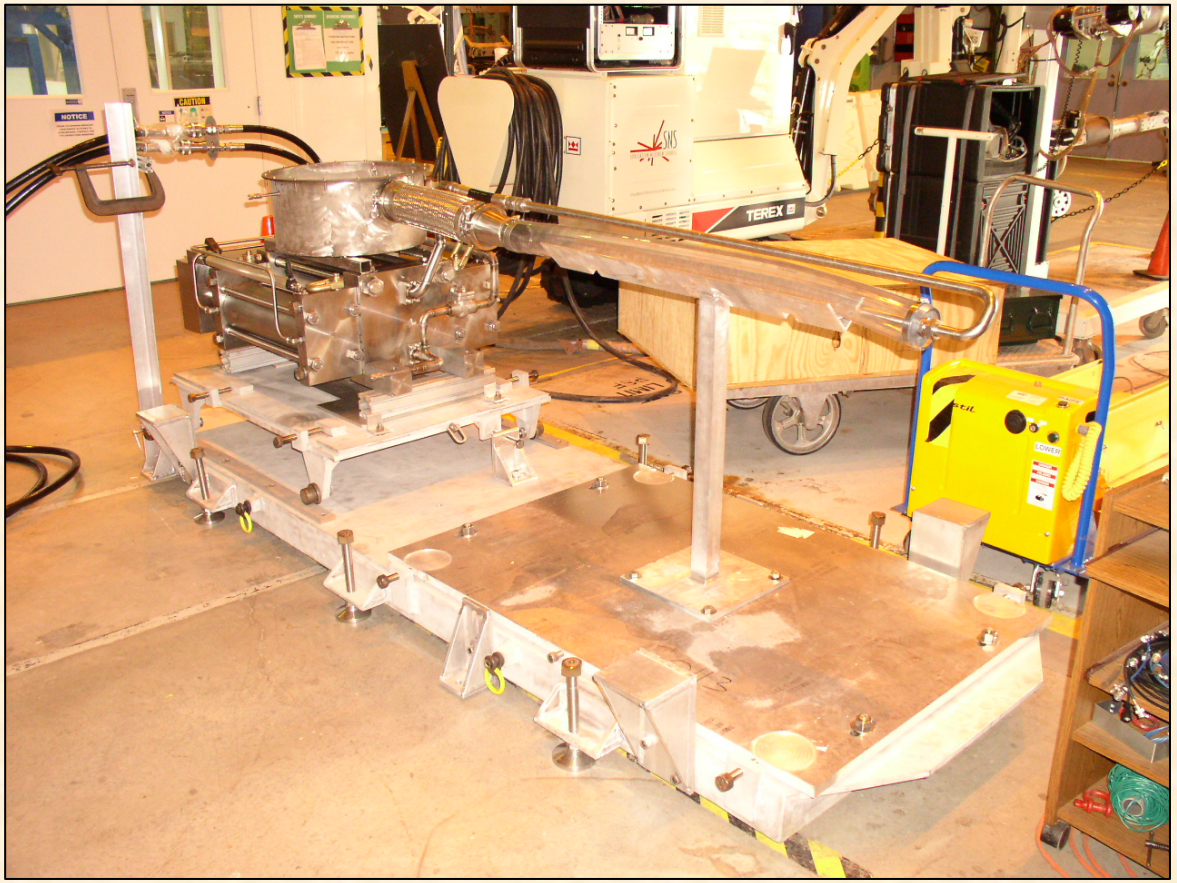
OAK RIDGE NATIONAL LABORATORY
U. S. DEPARTMENT OF ENERGY

# Initial Water Testing Setup

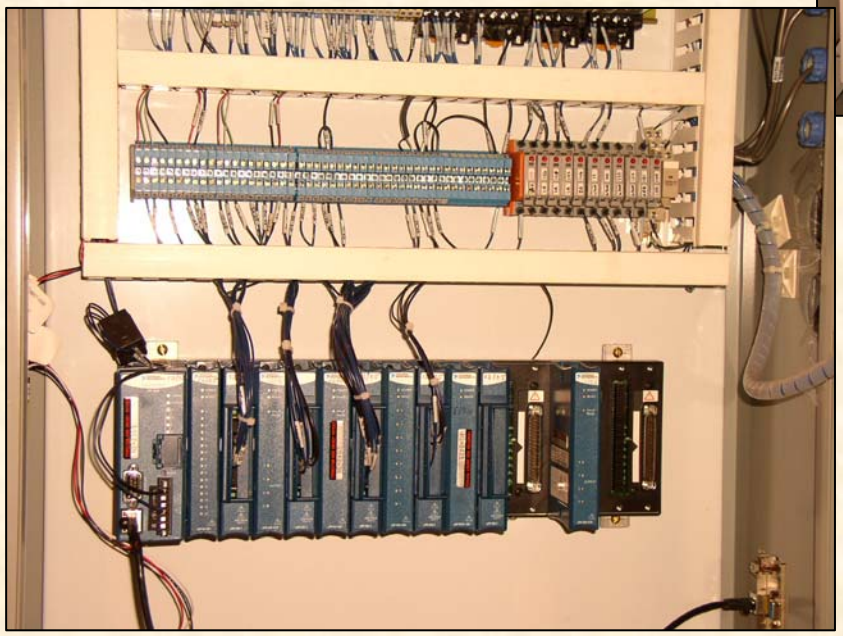
- **A primary containment has been mocked up to allow initial water tests to be performed**
- **Will be used to debug Labview control software and test some of the sensors**
- **Remainder of syringe hardware scheduled for delivery week of Oct 23**



# Control System Connections

- **Most internal Labview wiring completed**
- **Temporary wiring for sensors required for testing**
- **Remainder to be completed upon delivery of wiring pkg from Princeton**

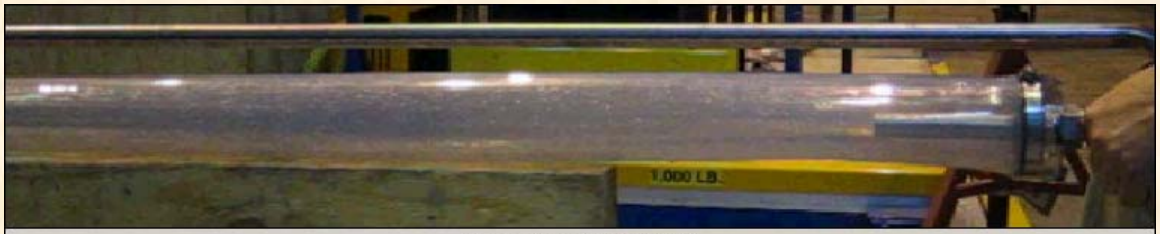
**At last review**



**Current wiring**

# Syringe Pump Performance Testing

- **Control system development complete based on water tests**
  - **Minor modifications may be required after switch to Hg, but none are expected**
  - **Data logging incorporated**
- **System can produce a 20m/s, 1cm-dia water jet**
  - **Water test nozzle configuration approximately matches one of the two Hg nozzles**
  - ***My opinion: jet quality looks good for a no-field condition. Holds together for better than ~1/2m***




061013 20mps jet.avi

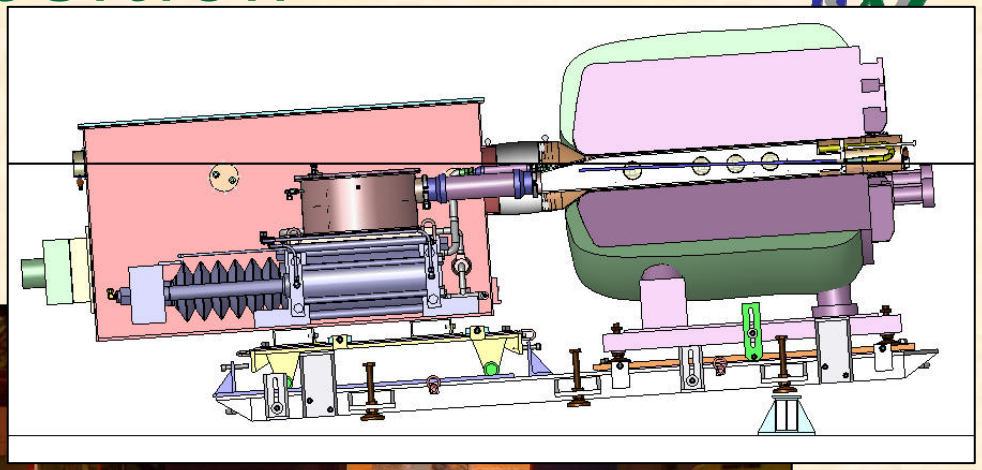
# Water Test 20m/s Screenshot

# Load Testing of Common Baseplate & Target Cart

- **CERN Safety Commission voiced concerns regarding analysis performed on common baseplate design**
- **Load test performed on structures to verify strength and test adjusting mechanisms**
- **Estimated component weights**
  - **Magnet: 12000 lbs (5440 kg)**
  - **Hg system (with 23liters Hg): 4000 lbs (1810 kg)**
- **Test weights**
  - **Magnet: 13600 lbs (6170 kg) = 113% estimated weight**
  - **Hg system: 4500 lbs (2040 kg) = 113% estimated weight**

# In Nominal Test Position

- **Baseplate tilt ~ 66mrad**
- **Elevation matches CAD models**



# Operational Testing

- **Lifting jacks and lateral position adjustment mechanisms tested**

# Roller Testing

- **Loaded baseplate pushed with pallet jack while on three Hilman rollers**

# Leveling Jack Testing

- **Baseplate adequately supported by four leveling jacks**

# Conclusions

- **Syringe pump control system development completed**
- **System can produce 20m/s water jet within pump's performance limits**
  - **No reason to think Hg will be different**
- **MERIT common baseplate has been successfully tested with 113% expected loading**
- **Final assembly and optics integration to commence shortly**
- **Switch to Hg will be made once all operational aspects of system have been tested with water**

# Conclusions

- **Manual control of syringe demonstrated**
- **Hydraulic system fill and drain procedures developed**
- **Hg control system wiring is underway, water tests to start afterwards**
- **Ready for Hg testing after conclusion of water tests and when remainder of fabricated components available**