Hg System Assembly and Testing Status

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MERIT VRVS Meeting
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Primary Containment Completed

- Issues with piping resolved, final fit-up completed
- Optical diagnostic system installed and operational
**SS Water Test Nozzles**

- Nozzle A – diameter reduction after bend, 2.5° nozzle angle
- Nozzle B – reduction before bend, 2.5° nozzle angle
- Nozzle C – test nozzle with reduction after bend, straight nozzle tip
Results

- Nozzle B spray worse than Nozzle A
  - Neither jet was acceptable

- Definite increase in jet diameter at higher velocities

- Nozzle C gave best results

- Water droplets on windows was a problem
Nozzle Issues

- Flow path is a three-piece weldment
  - Inlet tube
  - Nozzle flange
  - Short angled nozzle tip

- Smooth path requires constant ID

- Investigation revealed SS nozzles had step in flow path (flange thru hole smaller than tube IDs)
Modified Nozzle A Tested

- Nozzle A was manually modified using drill bits to provide nearly constant ID from flange to tip
- Tests showed definite improvement

Nozzle A As Received, 20m/s

Nozzle A After Mods, 20m/s
Proposed Path Forward

- Proceed with fabrication of Ti nozzle A as designed
- Ensure constant ID of flow path prior to weldment
- Perform final reaming of nozzle tip
- Leave extra nozzle tip length for pressure testing
Readiness Review Conducted

- Internal ORNL review held to determine if necessary steps are in place for mercury operations
- No issues noted as long as safety equipment is in place and operating procedures are followed
- Have ordered replacement pond liner since original sent to MIT
- Awaiting Hg filter housings
Current Status / Next Steps

• Complete secondary containment
  – Check for pressure leaks
  – Install Hg vapor filters

• Remove nozzle, clean inside of viewports, reinstall nozzle

• Drain water and replace with Hg
  – Perform Hg tests with nozzle A

• Await Ti nozzle A or proceed to MIT?
  – Equipment crating is being fabricated