Mercury Nozzle Status

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Nozzle Constraints

- Tilted solenoid has imposed new geometry constraints on the nozzle
  - Up-beam windows are now at bottom of primary containment
  - Nozzle cannot penetrate primary on end flange, currently penetrates from sides
  - No interaction between beam & Hg until Hg exits nozzle
Flow Issues

- High flow in small diameter thin-wall lines, tight flow path

- Direction changes cause several problems
  - Pressure drop
  - Vibration
  - Cavitation
  - Tube erosion
Design Issues

- Desire mechanically attached nozzle for changeout during cold testing – in current concept manifold is welded in position

- Need to maximize pipe diameter to decrease velocity and minimize pressure drop
  - Two supply lines

- Structural requirements for piping restraints not yet investigated

- Possibly supply Hg outside of solenoid in double-wall pipe – a last resort
Nozzle Designs

Initial Concept

Current Concept
Next Steps

- Determine physical constraints
  - Beam cannot penetrate manifold
- Develop manifold internals for manufacturability
- Flow analysis
- Structural analysis
- Princeton tests