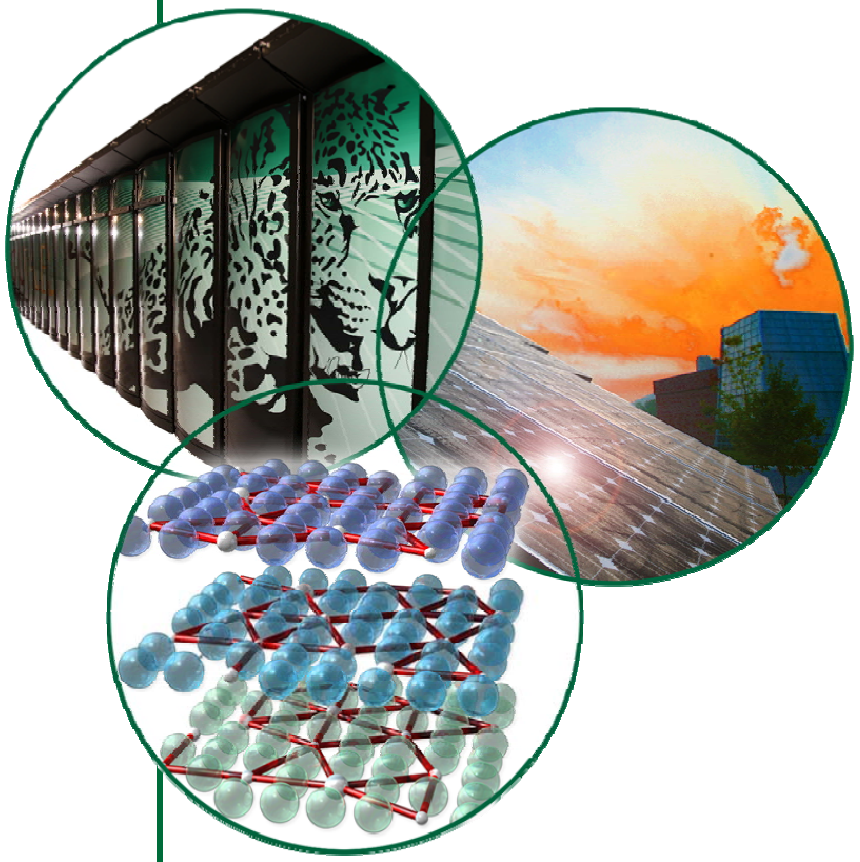
MERIT Primary Containment Inspection

Van Graves

MERIT Video Conference
October 13, 2010

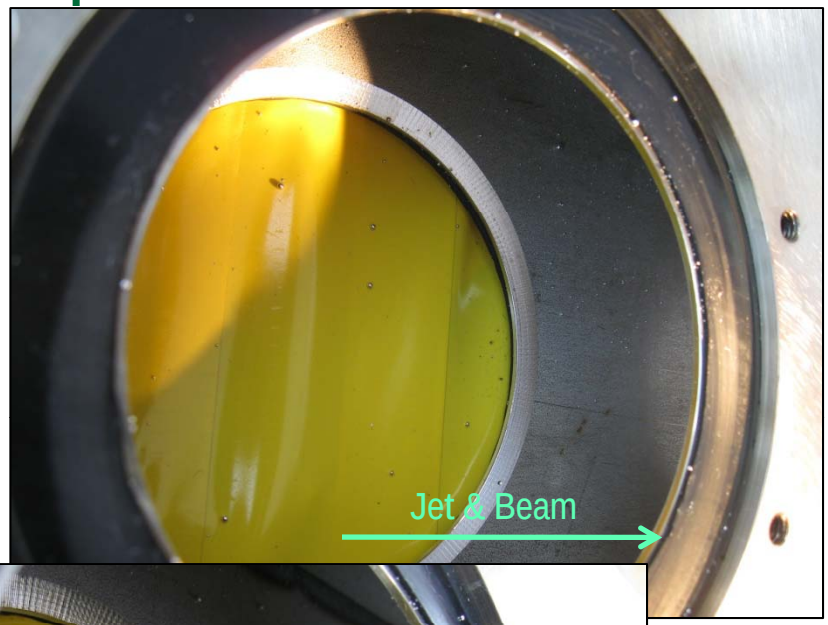


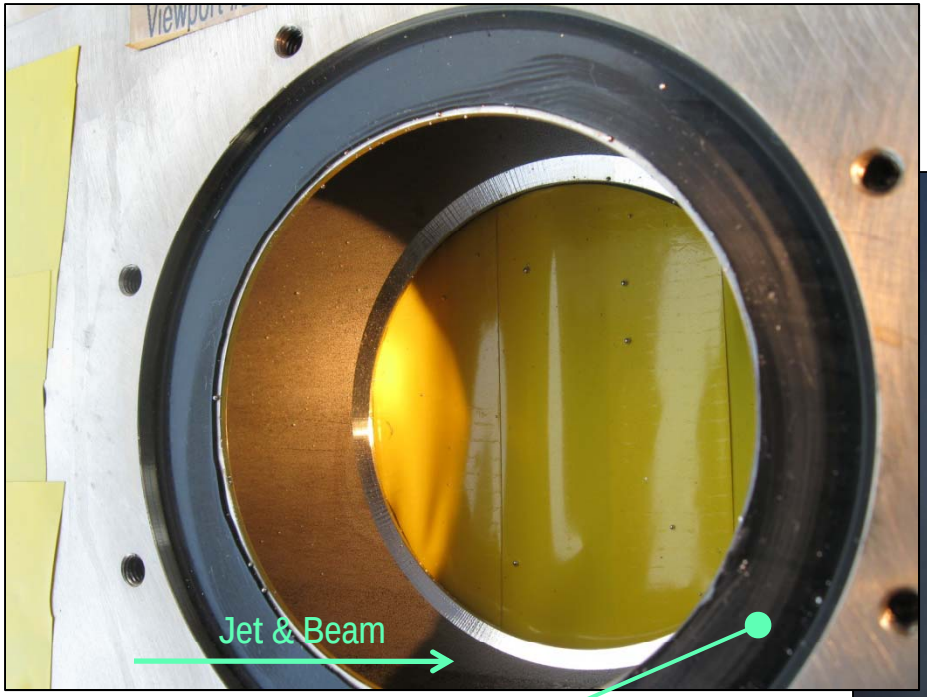
U.S. DEPARTMENT OF ENERGY

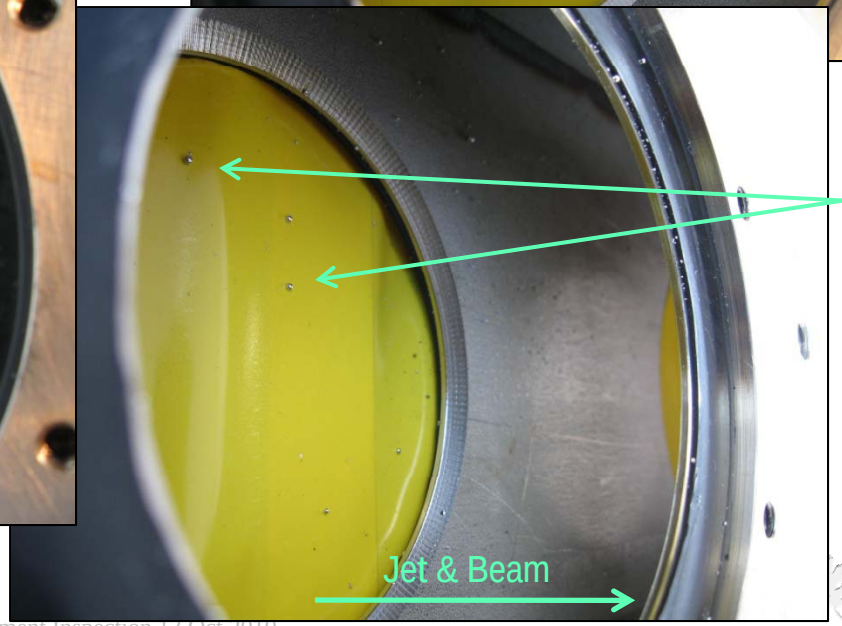
OAK RIDGE NATIONAL LABORATORY
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

Mercury Primary Containment Inspection 17 Aug – Viewport 2

- Sapphire windows removed
- No obvious surface damage noted
- Higher quality photographs to be obtained

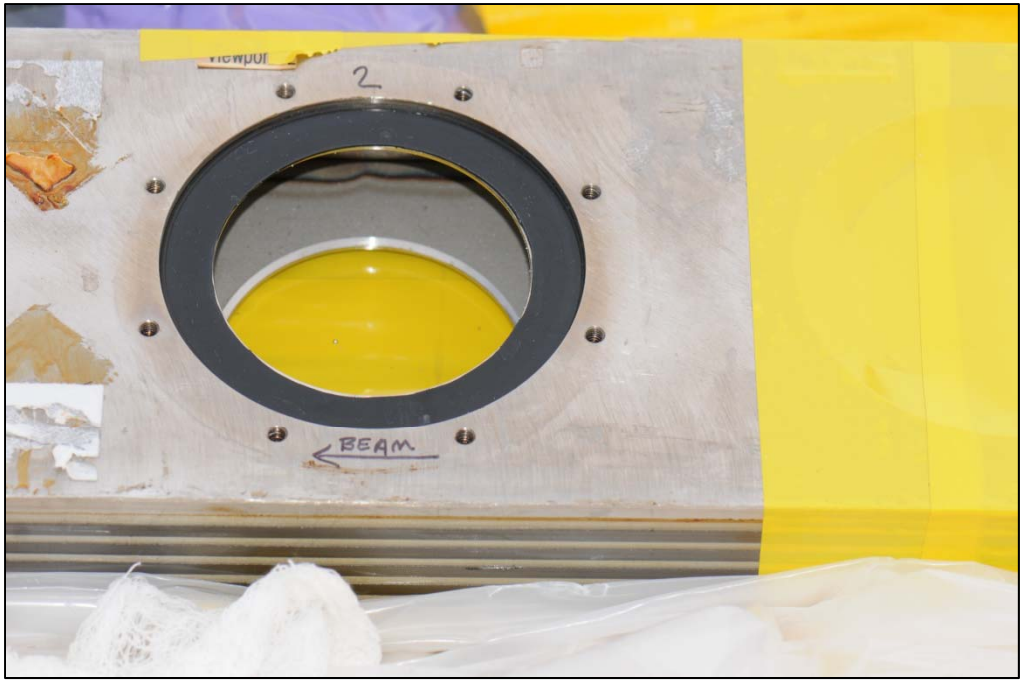






New Photographs Taken 10 Sept With 35mm Camera & Macro Lens

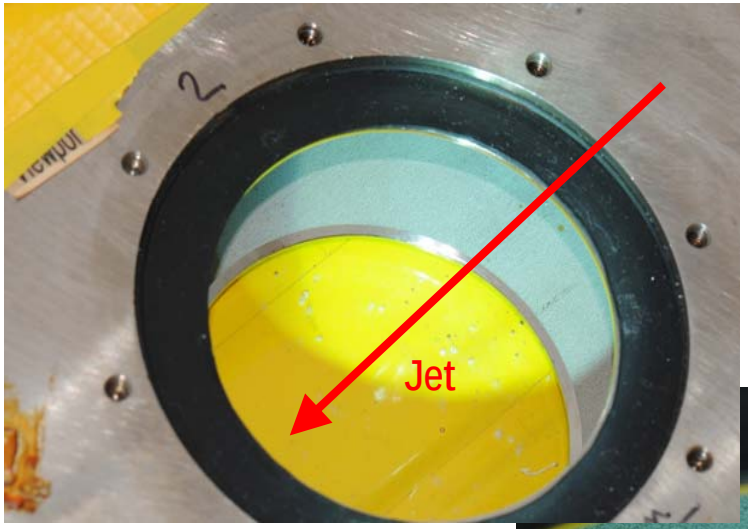
Setup

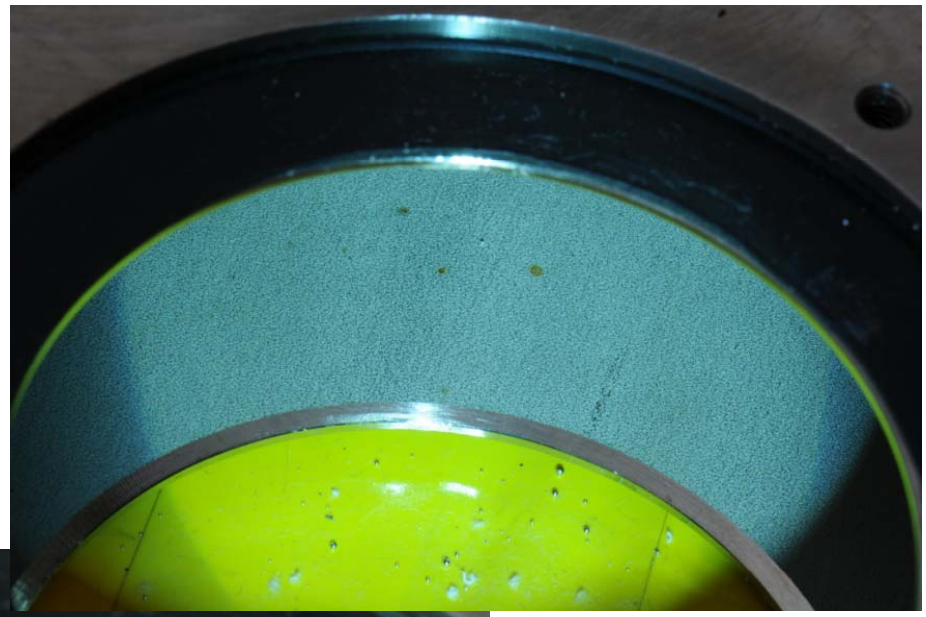


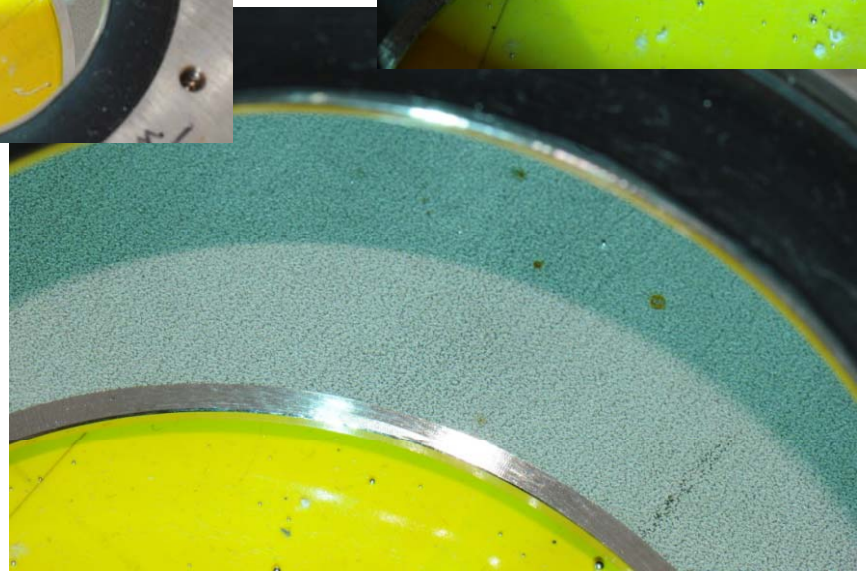
Snout Orientation –
Beam from Right
Top of Container is Up

Viewport 2 Upstream Side

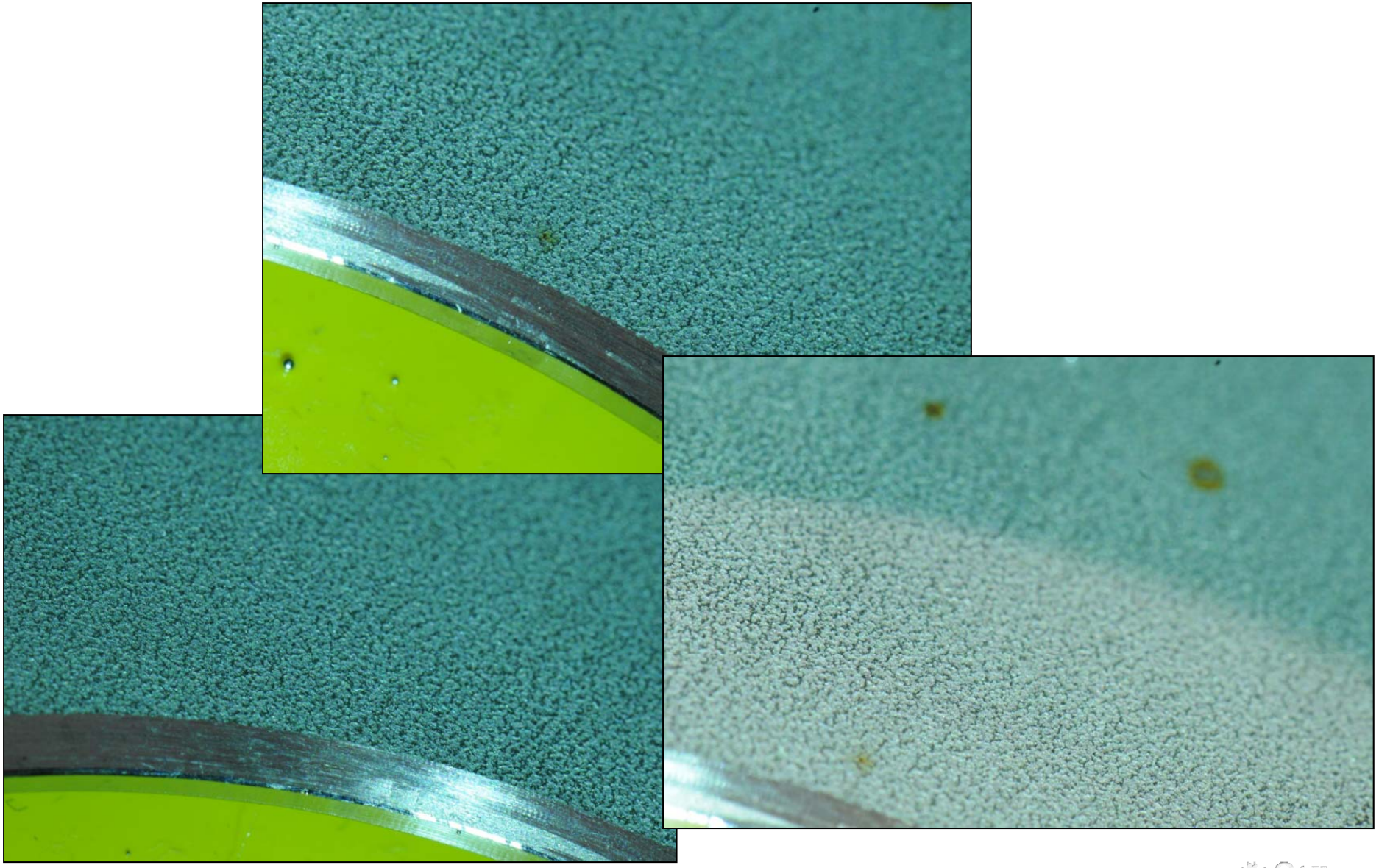
- General surface appearance is uniform





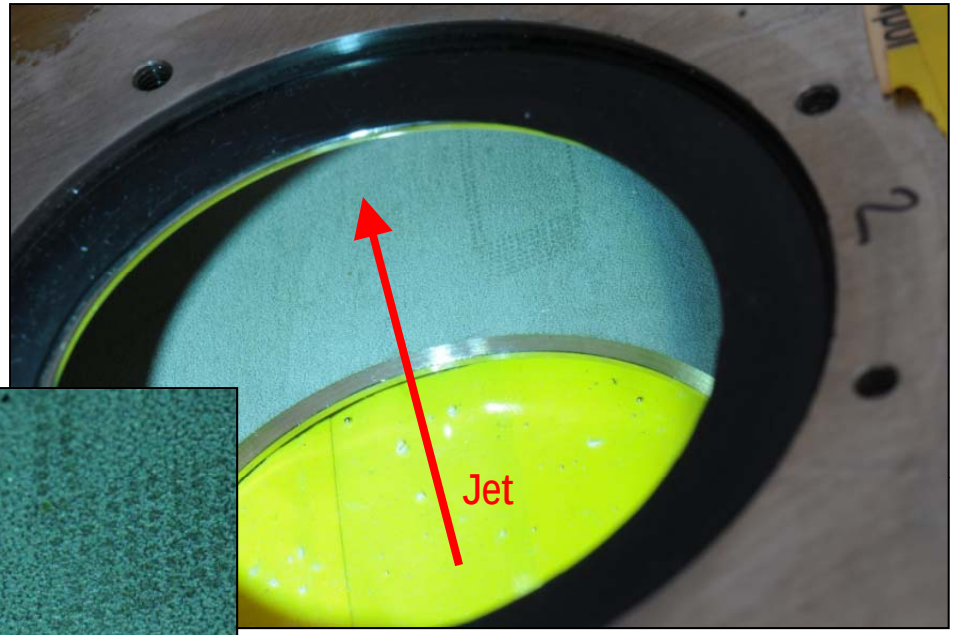


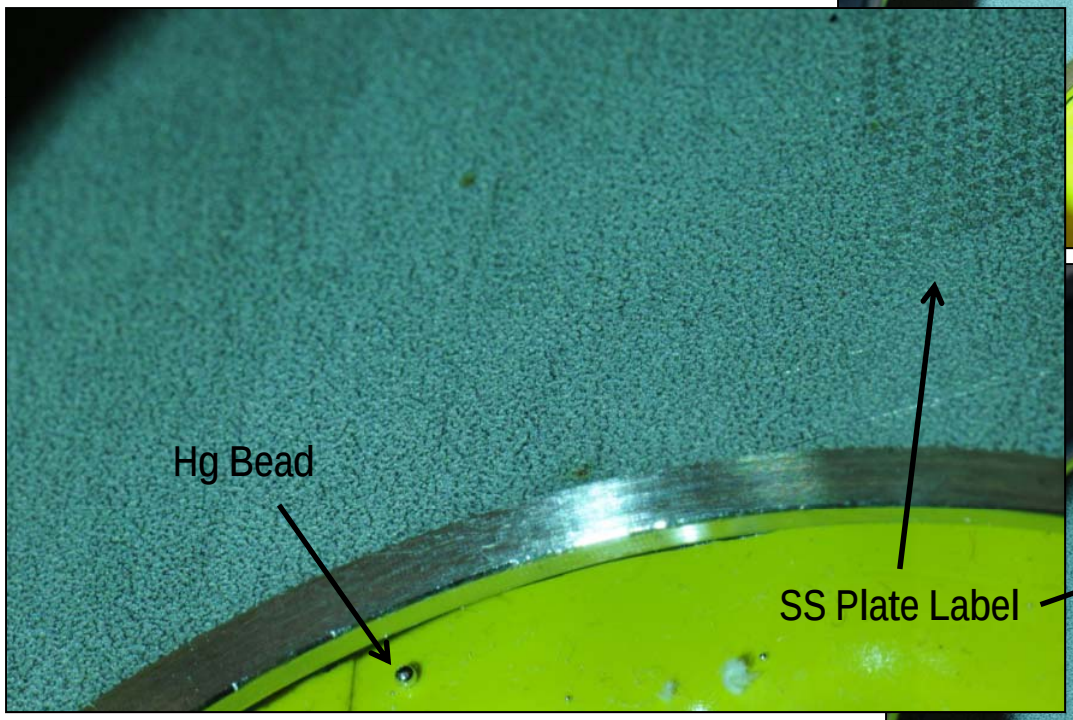
Viewport 2 Upstream Side Close-Ups

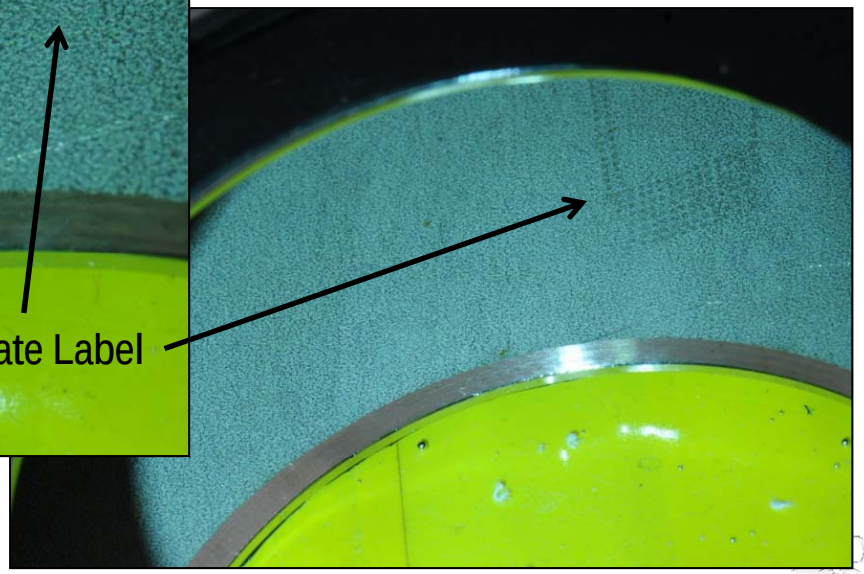


Viewport 2 downstream side

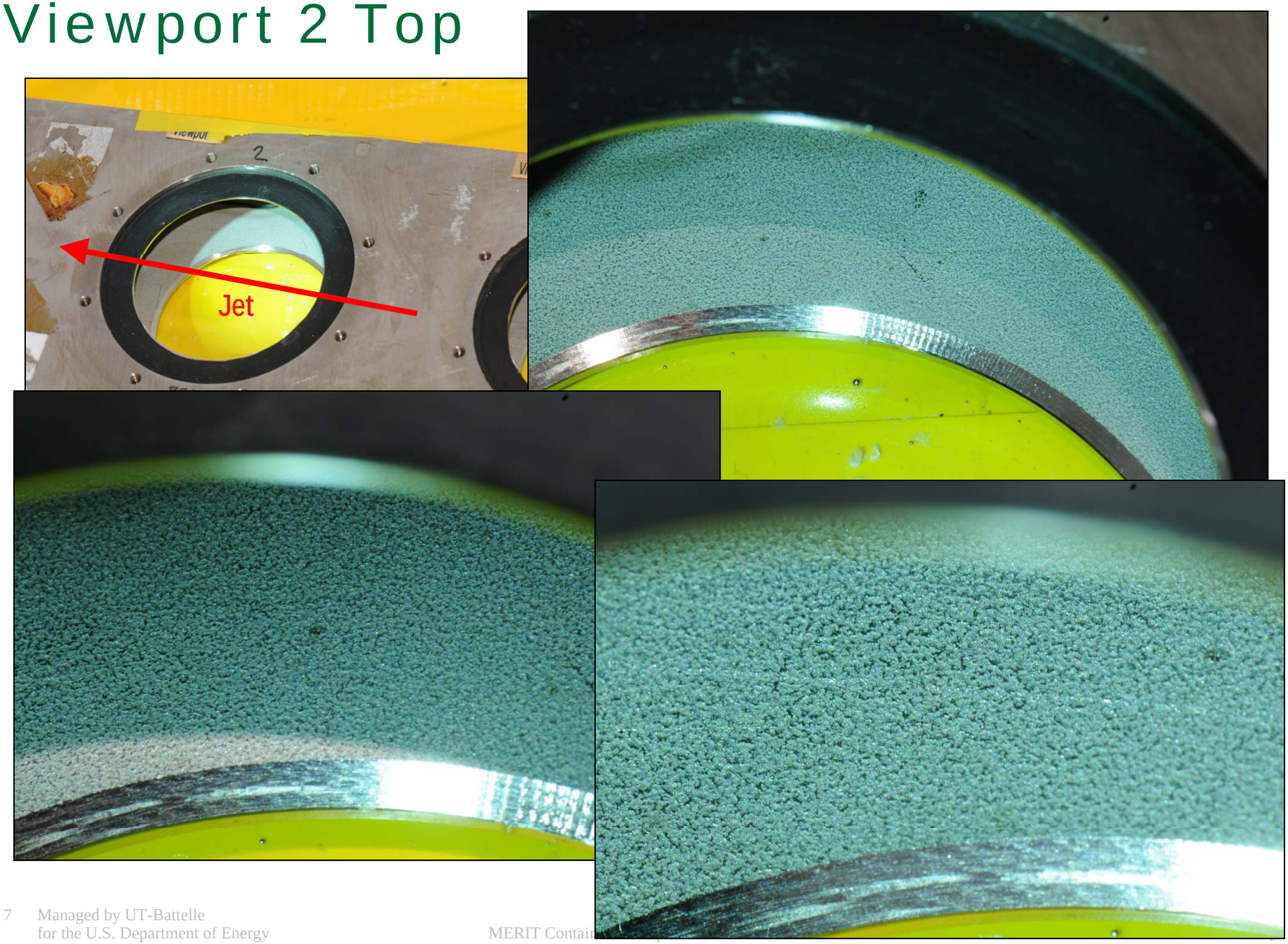
- Raw material labeling intact





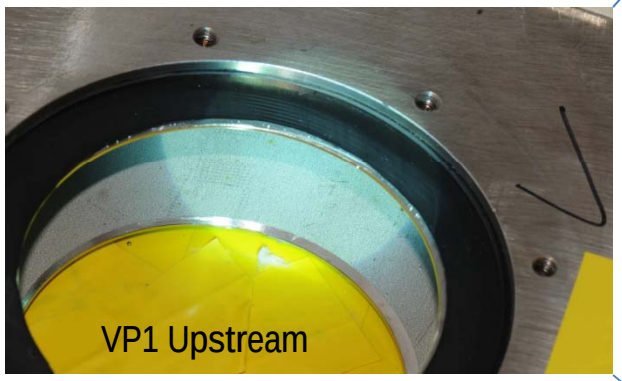


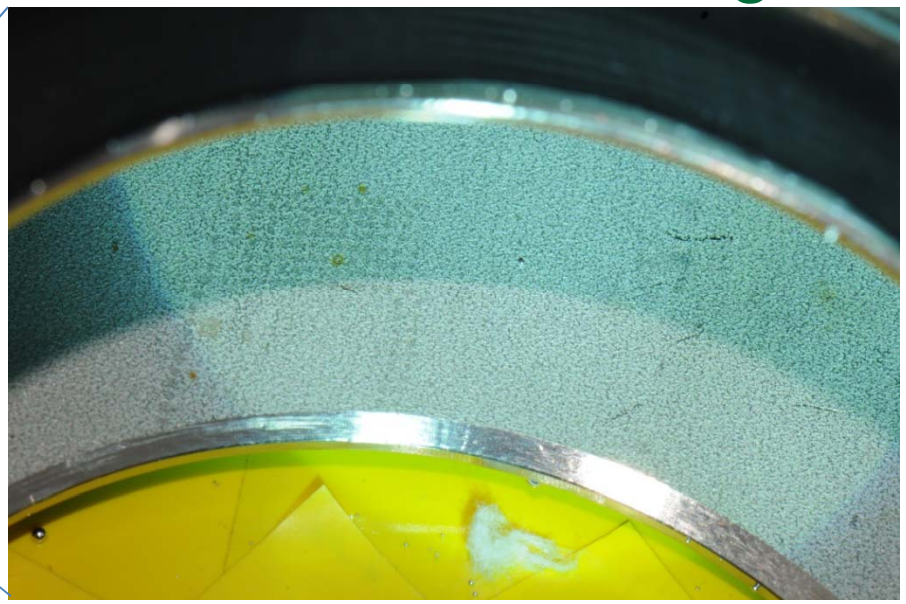
Viewport 2 Top

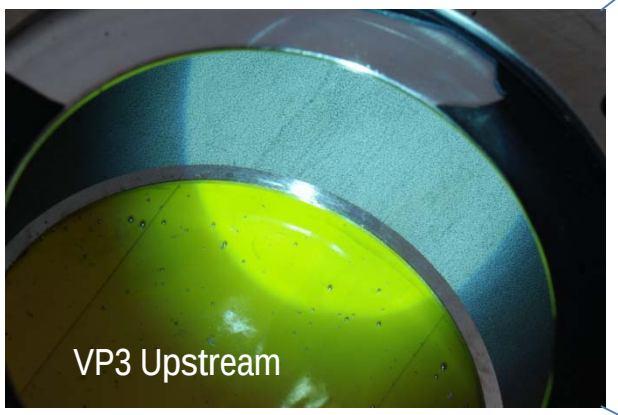


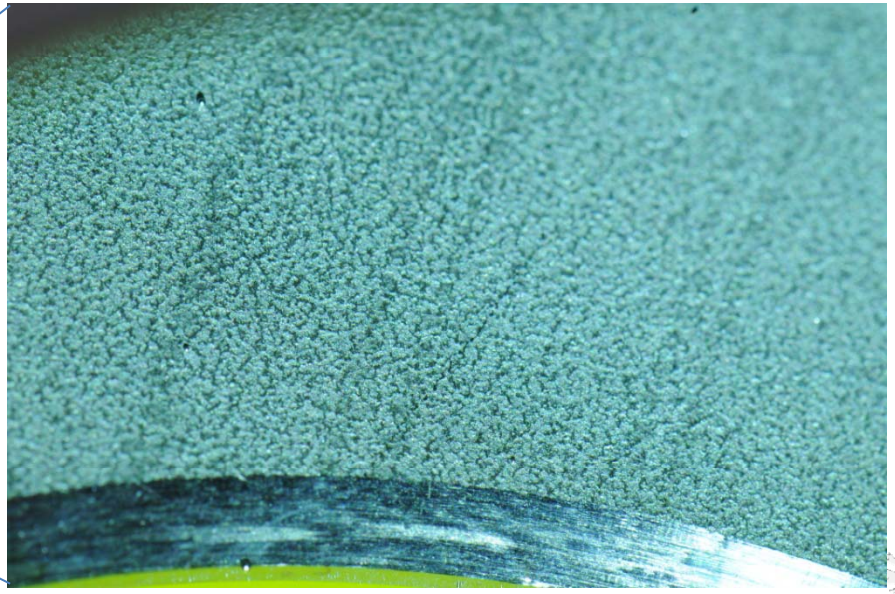
Viewport 2 Bottom

Other Viewports Have Similar Images









Primary Containment Microscopic Inspection

- Dissection of chamber around viewport 2
  - Might require purchase of dedicated tool due to radiation & Hg issues
  - Would also allow sectioning of mercury nozzle piping
- Decontamination of pieces (includes sapphire viewports)
- Inspection with SNS scanning electron microscope
- Cost estimate: $25k

Observations

- Surface appearance consistent throughout interior of primary containment – standard, un-machined surface texture
- Higher resolution images do not support theory of mercury bead pitting, at least on a macroscopic level
- Further investigation possible by sectioning chamber, decontaminating and viewing pieces with microscope