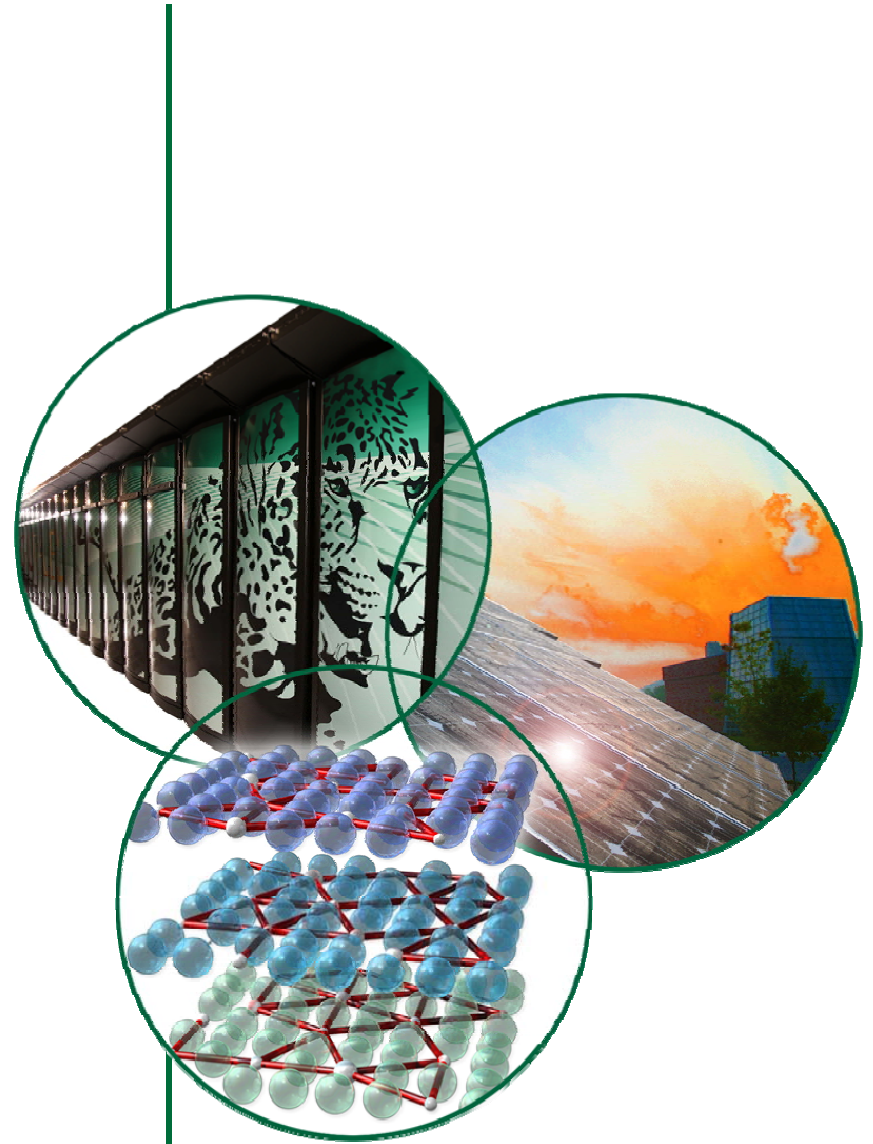


# MERIT Primary Containment Inspection – HandySurf Review

Van Graves

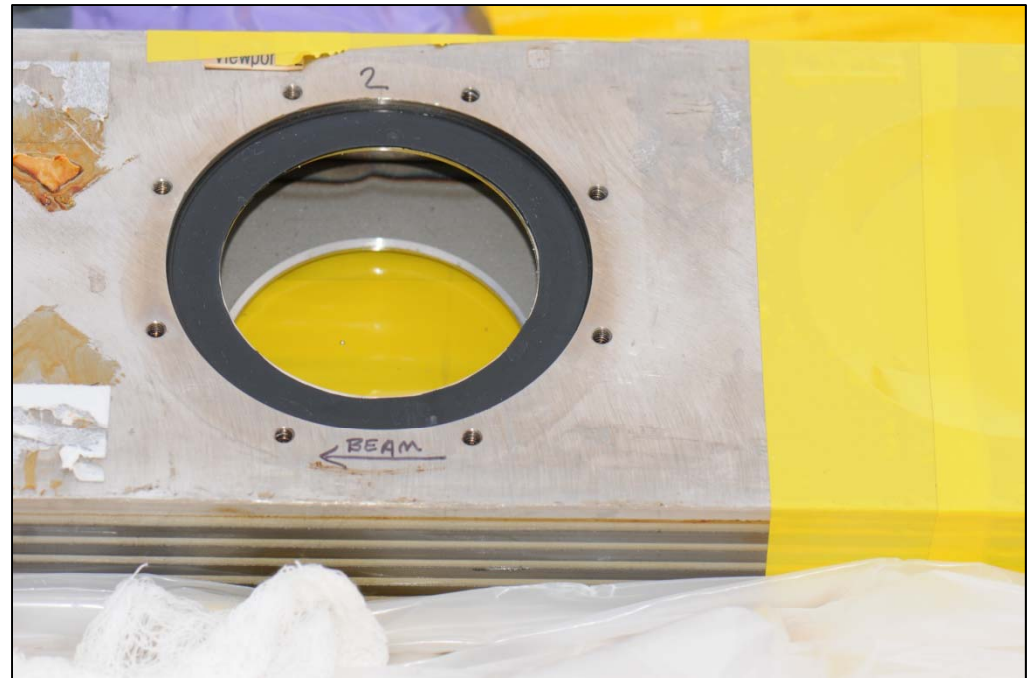
MERIT Video Conference  
November 24, 2010



# MERIT Snout Inspection 10 Sept 2010 With 35mm Camera & Macro Lens



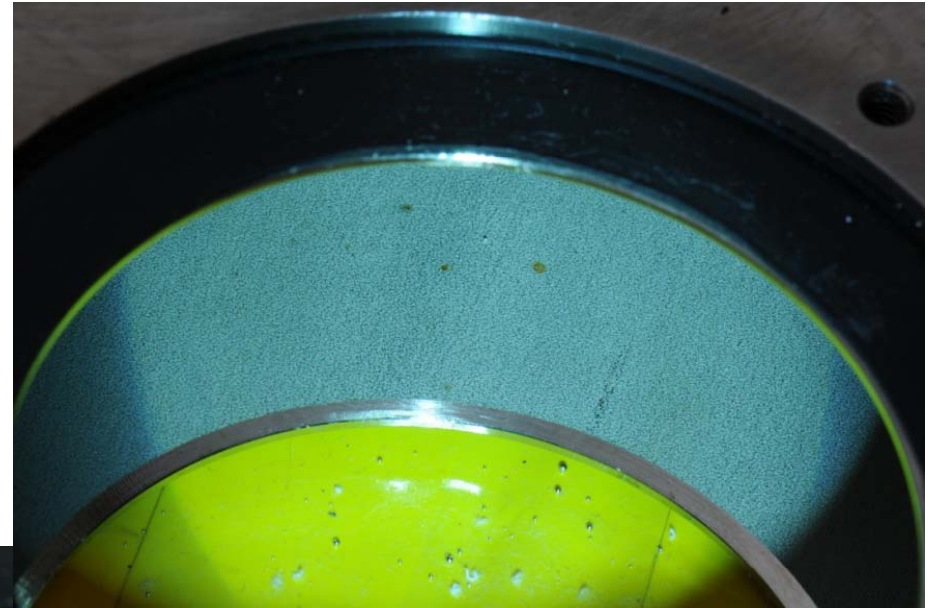
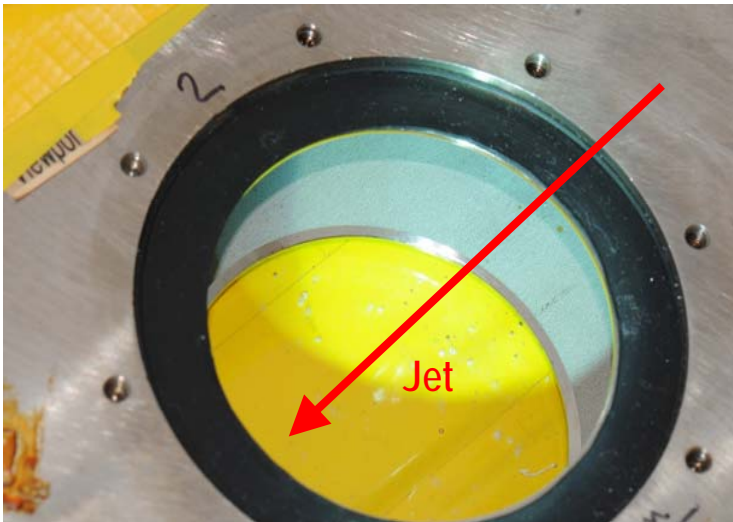
Setup



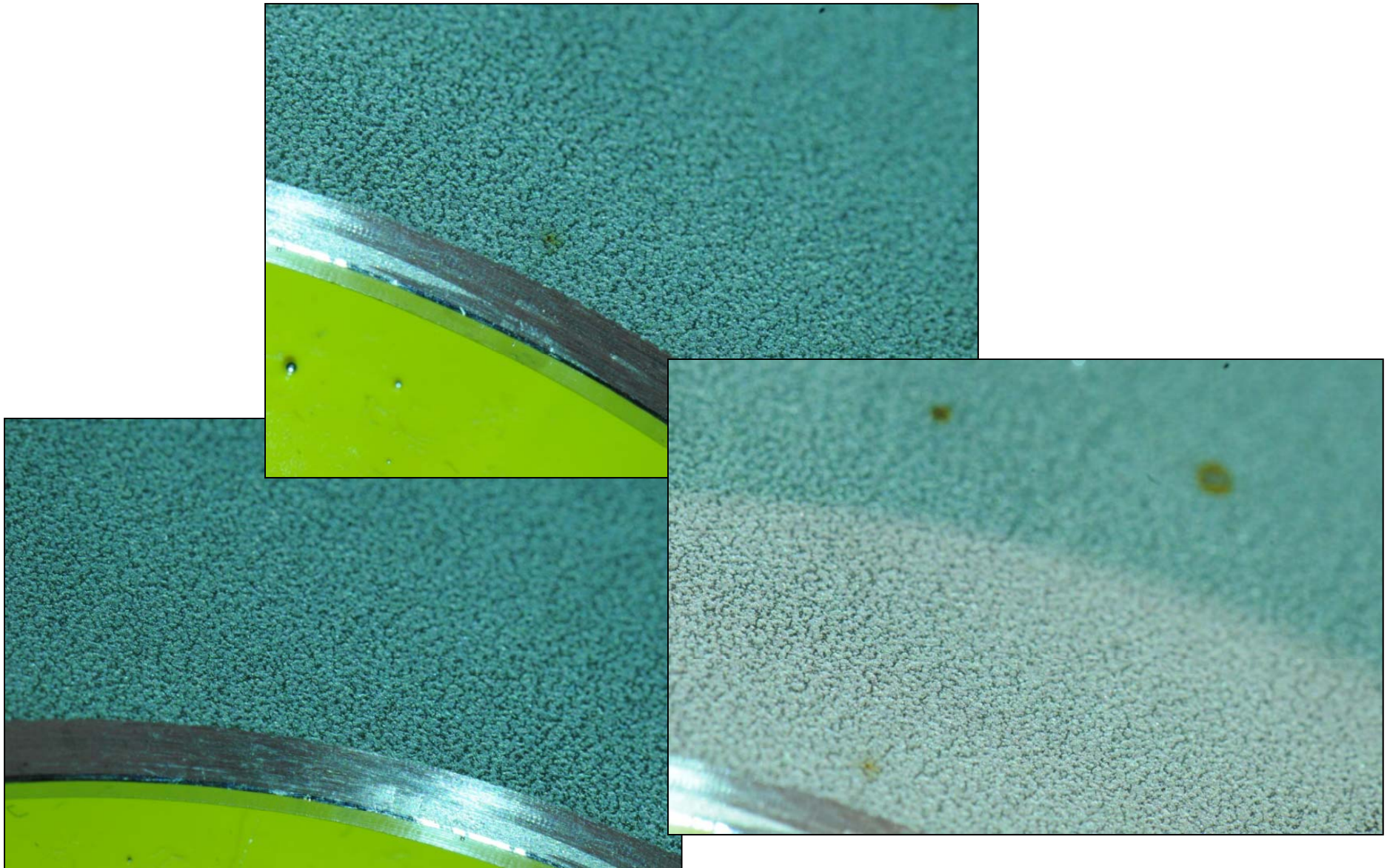
Snout Orientation –  
Beam from Right  
Top of Container is Up

# Viewport 2 Upstream Side

- General surface appearance is uniform



# Viewport 2 Upstream Side Close-Ups

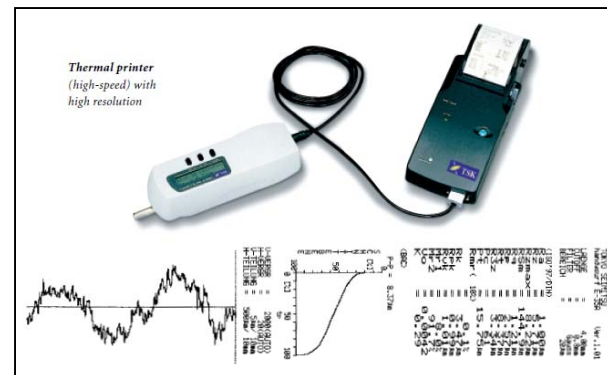
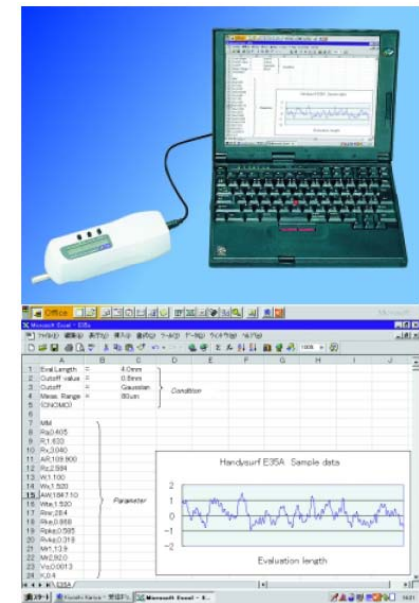


# Observations

- Surface appearance consistent throughout interior of primary containment – no local differences around viewports
- 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 **or other instrumentation**

# Zeiss HandySurf E-35

- Portable, hand-held surface tester for measuring roughness and contour
- Output
  - Read-out unit provides calculated values
  - Printer
  - Data points to Excel

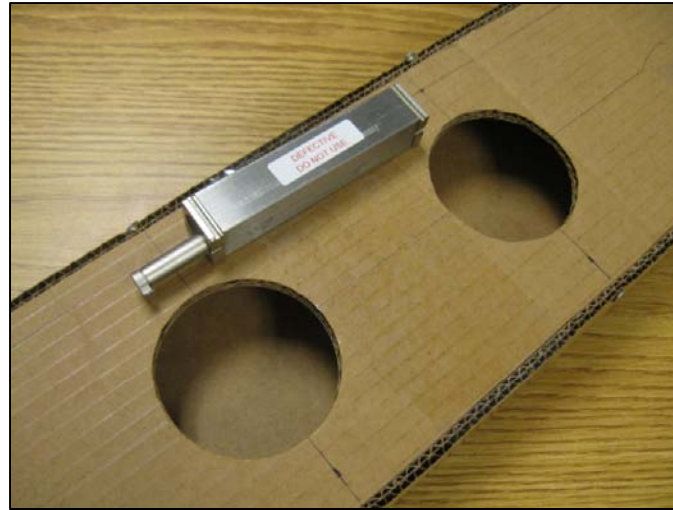


# Handysurf Specifications

- Traversing length: 12.5mm
- Tracing speed: 0.6mm/s
- Evaluation length: 0.4 – 12.5mm with 0.1mm step  
0.4/1.25/4/12.5mm
- Measuring range: 40/160 $\mu$ m
- Resolution: 0.02 $\mu$ m
- Stylus radius: 5 $\mu$ m
- Skid: Sapphire, radius 40mm

# Inserting Instrument into Snout

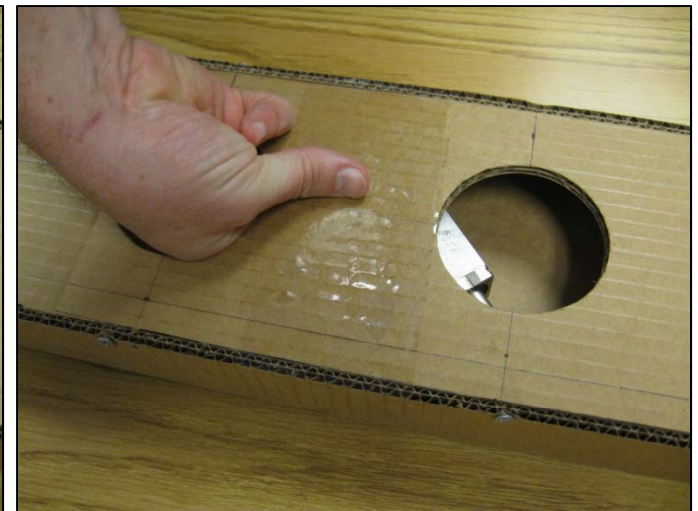
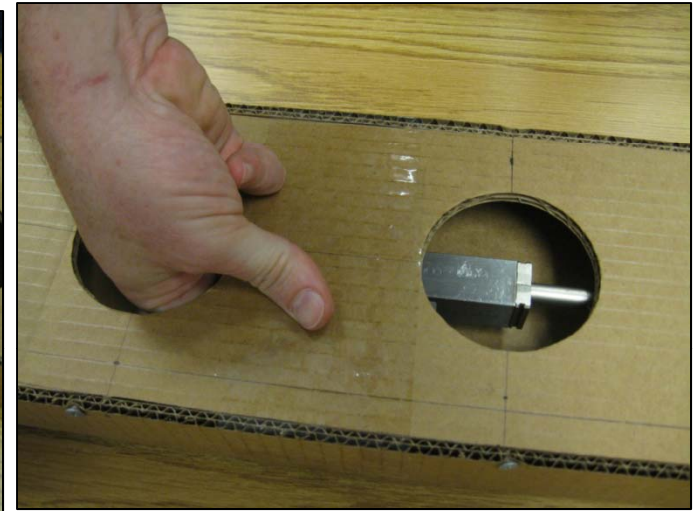
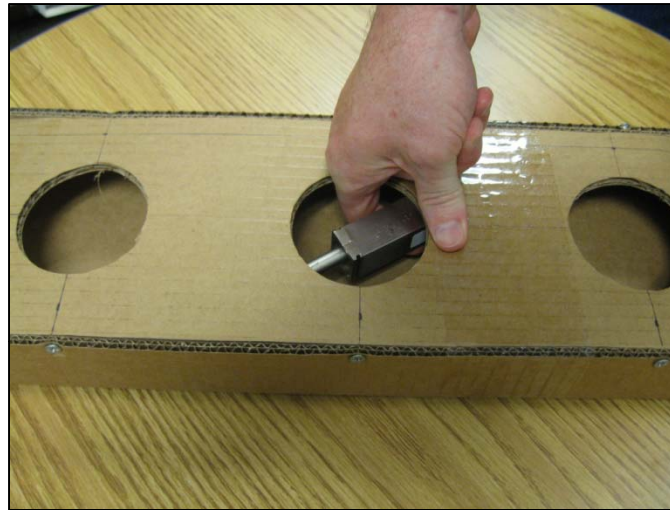
- Can fit into containment chamber
- Attach cable after insertion
- Instrument body will need to be covered for contamination control





# Measuring Orientations

- Will not be able to perform true radial measurements at all locations
- Probe stylus retracts as it measures (12.5mm)
- Body must be held steady



# Considerations

- Contaminated environment
  - Will take precautions to cover exterior surfaces
  - May have to dispose of probe if it can't be de-contaminated
- Cost
  - Handysurf E-35 \$2250
  - Printer (optional) \$860
  - Thermal paper \$80
  - PC cable \$260
  - Replacement probe \$510
    - Total \$3960 w/printer, \$3030 w/o printer
- Sales rep will let me test a working instrument with my cardboard prototype next week