

# MERIT Optics Cleaning Status

V.B. Graves

August 31, 2011

# MERIT Optical Component Cleaning

- Optical components, beam window, and nozzle decontaminated for shipping 26 August 2011
- Smaller items cleaned in a multi-stage process
  - Three ultrasonic cleaning solutions (HgX, Branson IS, Branson OR)
  - Acetone
  - Isopropanol
- Nozzle piping rinsed with HgX, a mercury-absorbing powder dissolved in water

# Setup



# Sapphire Disk Processing

- 15 minutes in each solution (Branson solutions shown), then rinse with acetone & isopropanol
- One disk was broken during original dismantlement operations



# Beam Window Processing

- HgX solution shown, but window went through same process as sapphire disks



# Nozzle Pipe Processing


- Exterior wiped and interior rinsed 3 times with HgX



# Radiation Measurements

- All items were below detectable limit with gamma monitor
- NaI measurements also made, readings were above background

YT - 407189



**CAUTION  
RADIOACTIVE MATERIAL**

---

**SURVEY INFORMATION**

BUILDING <b>7615</b>	ROOM NO. <b>WEST SIDE</b>
REQUESTED BY ORIGINATOR/DIVISION <b>GRAVES / FCID</b>	
DESCRIPTION OF MATERIAL/REMARKS <b>WINDOW #2 LEFT - MERIT EXPERIMENT -</b>	

---

**SURFACE CONTAMINATION**

		Check if None Detected
MAX. FIXED + REMOVABLE ALPHA	<b>&lt; 100</b> dpm/100cm <sup>2</sup>	<input type="checkbox"/>
REMOVABLE ALPHA	<b>&lt; 20</b> dpm/100cm <sup>2</sup>	<input type="checkbox"/>
MAX. FIXED + REMOVABLE BETA/GAMMA	<b>N/A</b> dpm/100cm <sup>2</sup>	<input type="checkbox"/>
REMOVABLE BETA/GAMMA	<b>&lt; 200</b> dpm/100cm <sup>2</sup>	<input type="checkbox"/>

---

**EXTERNAL DOSE RATE**

	Contact	1 Foot	___ Feet
BETA/GAMMA mrad/hr at	<b>NC</b>		
GAMMA mR/hr at	<b>&lt; 0.1</b>	<b>&lt; 0.1</b>	<b>&lt; 0.1</b>
NEUTRON mrem/hr at	<b>NC</b>		

**1 METER**

---

**SPECIAL HANDLING REQUIREMENTS**

Contact Health Physics prior to grinding, burning, buffing, welding, dry machining, or using impact tools on this item.

This item may have radioactive material inside.

Other: **FOR OFFSITE SHIPMENT**

---

**SURVEY INSTRUMENTS USED**

ALPHA INSTRUMENT I. D. <b>LWSO-025</b>	BETA/GAMMA INSTRUMENT I. D. <b>LWSO-025</b>
OTHER INSTRUMENT I. D. <b>CTD-7646 / SAAS-01N</b>	

---

**SURVEY COMPLETED**

DATE <b>8-29-11</b>	BY (Name and Badge No.) <b>AW Hammer, 34657</b>
------------------------	--

ORNL-236 (8-03)

# Next Steps

- Contact ORNL Shipping to arrange transport of all items to BNL
  - Other items include secondary beam windows and optics bench, but they weren't Hg-wetted and did not need to undergo the cleaning process
- Prepare to inspect interior surfaces of the MERIT jet containment snout with the Handysurf profilometer

