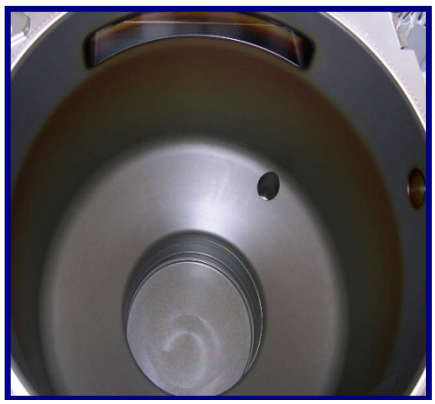

BEFORE

Foamtec International
Wilshire Contamination Control Division
cleaning critical surfaces

AFTER

VACUUM CHAMBER PM TECHNIQUE
LAM 2300 METAL ETCH
LIGHT DEPOSITION

OBJECTIVE:

TO EFFECTIVELY PM THE LAM 2300 METAL ETCH CHAMBER IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY AND PARTICLE PERFORMANCE

Vacuum Chamber: LAM 2300 METAL ETCH
Vacuum Chamber Process Residue: PROCESS INDUCED RESIDUE
Vacuum Chamber Components: CHAMBER, SLIT VALVE, CHUCK AND ASSOCIATED PARTS

Old Procedure: **3 HOURS**, **ONE TECH**, Scotch-Brite™, DI water, 200+ wipes & IPA

New Procedure: **1 HOUR**, **ONE TECH**, Foamtec International PM Kit, DI water & IPA

Vacuum Chamber Products:

LAM2300 METAL ETCH CHAMBER PM KIT
PM Kit P/N: HT4500-LAM23-2 PM KIT
Light Deposition

- (1) HT4754 UltraSOLV® Sponge
- (1) HT4536D-10-1 360 Grit Diamond ScrubPAD
- (1) HT5790S-25 MiraWIPES®

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE:

View "How to" instructional videos on http://www.foamtecintlwcc.com/flash/

Step 1: Using proper procedures and **safety guidelines**, shutdown and prepare LAM2300 Metal ETCH Chamber for wet clean

Step 2: Properly stage a container of DI water next to the chamber and place a Foamtec International HT4536D ScrubPAD and HT4754 UltraSOLV® Sponge into the container (See Fig 1)

Fig 1: Container of DI water with ScrubPAD and UltraSOLV® Sponge

Step 3: Take damp UltraSOLV® Sponge and begin wiping Metal ETCH Chamber and bottom of e-chuck allowing the water to react with the process induced residue. Remove as much of the deposition as possible with the sponge (See Fig 2 & 3)

This initial wipe portion of PM should take 15-20 minutes, and will remove 90% of the deposition with just the sponge and DI water

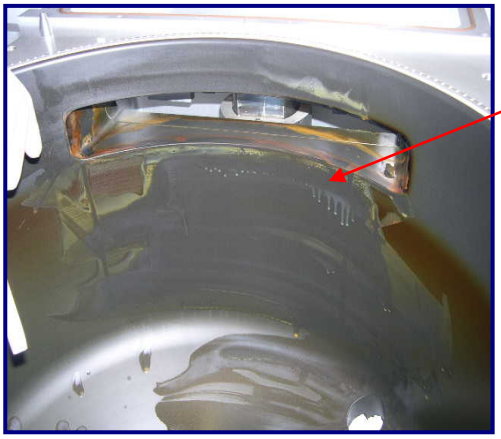

Fig 2: DI water from UltraSOLV® Sponge reacting with deposition

Fig 3: UltraSOLV® Sponge wiping Metal ETCH Chamber, 90% of deposition removed

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 4: It will be important to keep the UltraSOLV® Sponge moist and clear of excess deposition by replacing the sponge in the container of DI water and rinsing clear (See Fig 4)

NOTE: The Metal ETCH Chamber will be very hot; therefore, it will require rinsing the sponge frequently in the container of DI water, in order to keep moist

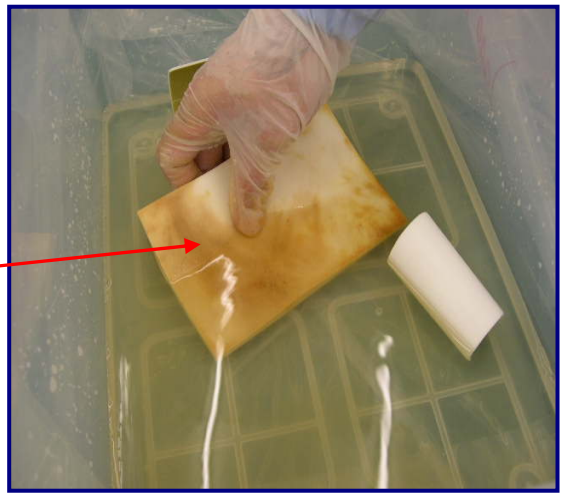

Fig 4: Rinsing UltraSOLV® Sponge in container of DI water

Step 5: After performing initial wipe with the UltraSOLV® Sponge for at least 15 minutes, take the moist 360 Grit Diamond ScrubPAD from the container of DI water and begin scrubbing the Metal ETCH Chamber and bottom of e-chuck (See Fig 5)

Ensure to keep the ScrubPAD moist during scrub portion of PM by returning to the container of DI water as necessary

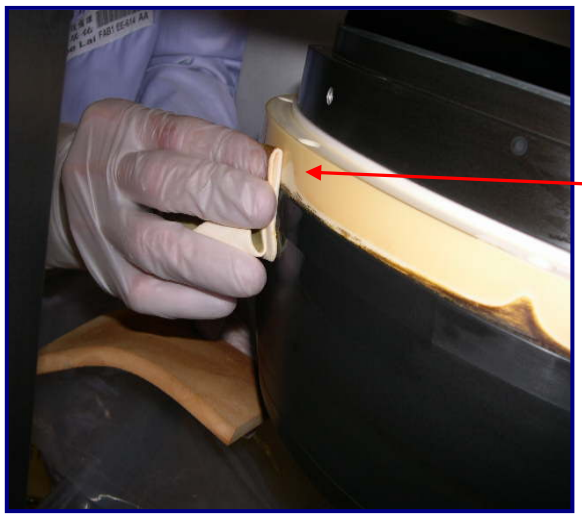

Fig 5: 360 Grit Diamond ScrubPAD scrubbing bottom of e-chuck

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 6: Be prepared to wipe the scrubbed portion of the e-chuck with the dampened UltraSOLV® Sponge immediately after scrubbing with the 360 Grit Diamond ScrubPAD, ensuring not to let the wet deposition dry onto the chamber wall (See Fig 6)

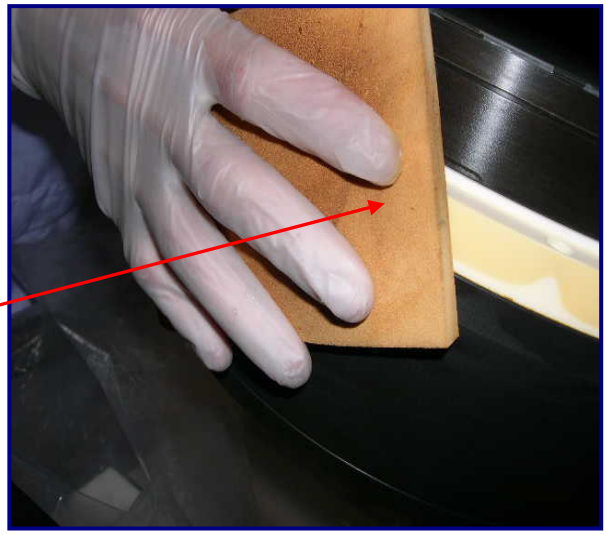

Fig 6: UltraSOLV® Sponge wiping Metal ETCH Chamber during scrub portion of PM

Step 7: Pull ScrubPAD across the UltraSOLV® Sponge in one direction to also free ScrubPAD of deposition (See Fig 7, 8 & 9)

Fig 7: ScrubPAD loaded with deposition

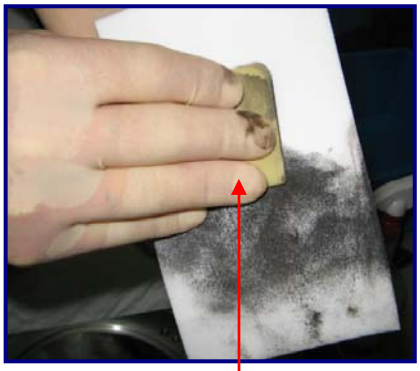

Fig 8: Pull ScrubPAD across UltraSOLV® Sponge

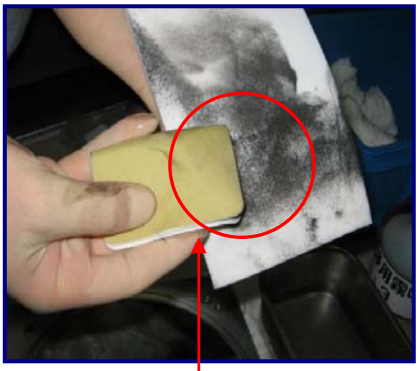

Fig 9: Unloaded ScrubPAD

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 8: Continue to return UltraSOLV® Sponge and 360 Grit Diamond ScrubPAD into the container of DI water to rinse free of deposition (See Fig 10 & 11)

Fig 10: UltraSOLV® Sponge loaded with deposition

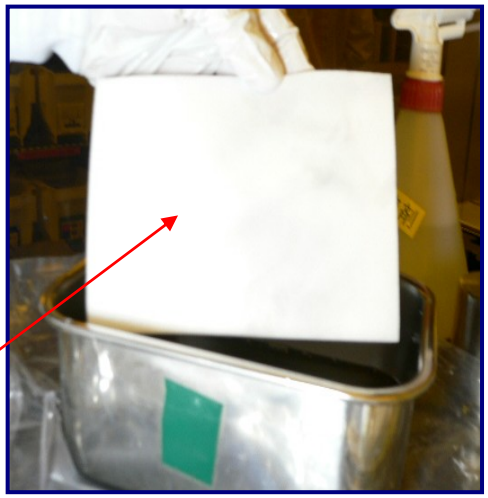

Fig 11: UltraSOLV® Sponge free of deposition after rinse in DI water

NOTE: Continue to repeat this **SCRUB – WIPE – RINSE** procedure outlined in steps 5 through 8 for the remainder of the Metal ETCH Chamber. KEY POINT is not to let the wet deposition dry onto the chamber wall

Step 9: Using the same technique as described above, (**SCRUB – WIPE – RINSE**) clean all portions of Metal ETCH Chamber that are required; slit valve, pump ports, view ports, e-chuck, door mount….

NOTE: May remove deposition buildup on e-chuck ceramic ring, or additional parts if normally scrubbed using your current procedure (See Fig 12 & 13)

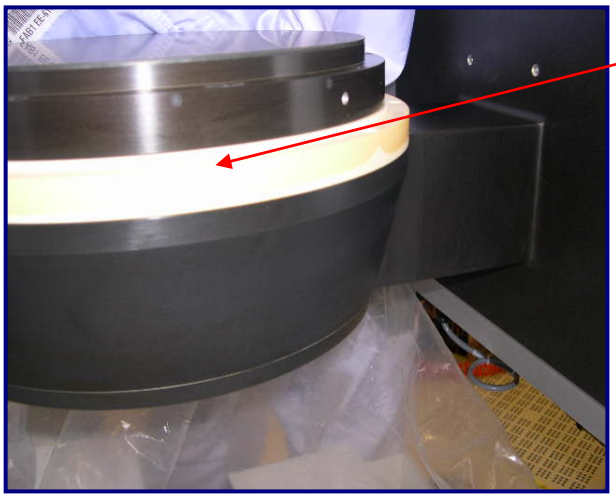

Fig 12: Clean ceramic ring

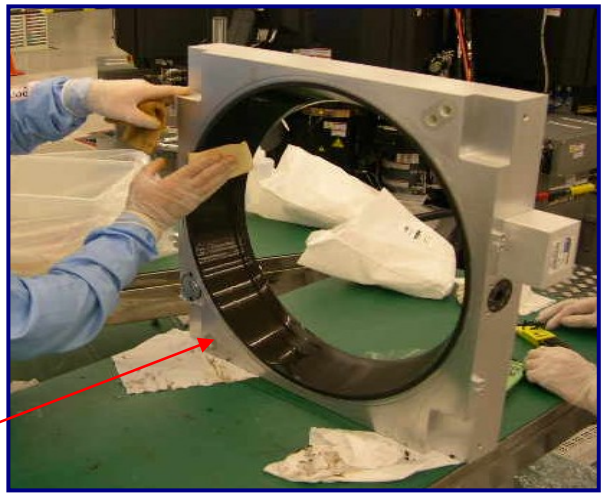

Fig 13: GDP assembly

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 10: After completing entire ETCH Chamber scrub, replace container with fresh DI water

Step 11: Rinse out UltraSOLV® Sponge in fresh DI water and prepare Metal ETCH Chamber for FINAL WIPE PROCEDURE by again, wiping all areas of chamber with dampened UltraSOLV® Sponge

FINAL WIPE PROCEDURE:

IMPORTANT NOTE

AS THE LAM ETCH CHAMBER IS A VERY PARTICLE SENSITIVE AREA, IT IS CRITICAL TO FOLLOW THE FOAMTEC INTERNATIONAL FINAL WIPE PROCEDURE IN ITS ENTIRETY TO MAXIMIZE TOOL RECOVERY BENEFITS

NOTE: Figure below shows how much more deposition the Foamtec International MiraWIPE® can remove from a critical surface compared to the standard fab wiper, making the MiraWIPE® Final IPA Wipe the most **CRITICAL STEP** of the PM procedure (See Fig 14a & 14b)

Fig 14a: What the MiraWIPE® was able to remove, AFTER the standard fab wiper

Fig 14b: The last standard fab wiper used to wipe out a chamber

MiraWIPES® are the KEY STEP for DEFECT REDUCTION and IMPROVE TOOL RECOVERY

Step 12: Ensure to remove gloves and replace with a fresh set prior to FINAL WIPE PROCEDURE

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 13: Using 100% IPA, dampen the HT5790S MiraWIPES® and perform a **THOROUGH AND EFFECTIVE FINAL WIPE-DOWN** of the entire LAM 2300 Metal ETCH Chamber, e-chuck, slit valve, pump ports, view ports and all associated parts being replaced under hi-vac within the chamber

TOOL RECOVERY:

Step 14: Follow proper tool recovery guidelines as outlined by LAM Research Corporation

METAL ETCH CHAMBER BEFORE

METAL ETCH CHAMBER AFTER