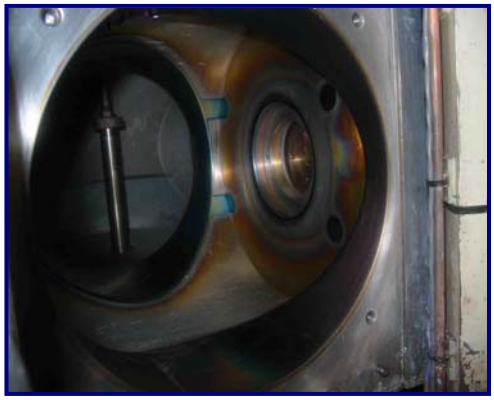

BEFORE

Foamtec International
Wilshire Contamination Control Division
cleaning critical surfaces

AFTER

VACUUM CHAMBER PM TECHNIQUE
AXCELIS GSD ION SOURCE CLEAN

OBJECTIVE:

TO EFFECTIVELY PM THE GSD RESOLVING HOUSING IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY, PARTICLE PERFORMANCE, ELIMINATING THE USE OF H_2O_2, AND REDUCING HAZARDOUS WASTE

Vacuum Chamber: AXCELIS GSD 200E ION IMPLANTER
Vacuum Chamber Process Residue: PROCESS INDUCED RESIDUE
Vacuum Chamber Components: ION SOURCE

Old Procedure: H_2O_2, ScotchBrite®, DI water, wipers and IPA
New Procedure: Foamtec products, DI water, MiraWIPES® and IPA

DANGER:

USE OF HYDROGEN PEROXIDE (H_2O_2) CAUSES A VARIETY OF ENVIRONMENTAL, HEALTH, AND SAFETY CONCERNS. CAN CAUSE PROLONGED PUMP DOWN TIMES AND HIGH VOLTAGE ARCING. BREATHING APPARATUS AND FULL ACID PPE IS RECOMMENDED WHILE SCRUBBING WITH H_2O_2. SCRUBBING PHOSPHORUS WHILE USING H_2O_2 INCREASES THE RISK OF FIRES AND/OR THE RELEASE OF HAZARDOUS CHEMICAL FUMES, POTENTIALLY RESULTING IN PERSONAL INJURY AND PROPERTY DAMAGE

Vacuum Chamber Products:

- (1) HT4754 UltraSOLV® Sponge
- (1) HT4536D-10-1 360 Grit Diamond ScrubPAD
- (1) HT4536DC3-1 360 Grit Diamond ScrubDISK®
- (1) FT901 ErgoSCRUB®
- (1) HT5790S-25 MiraWIPES®

NOTE: INITIAL CLEAN MAY REQUIRE THE USE OF ADDITIONAL PRODUCTS TO EFFECTIVELY CLEAN CHAMBER BACK TO BARE METAL.

AXCELIS GSD 200E SOURCE CLEAN PM PROCEDURE:

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

Step 1: Using proper procedures and **safety guidelines** properly shutdown, vent and remove all source parts from source chamber

Step 2: Place HT4754 UltraSOLV® Sponge, 360 Grit Diamond ScrubPAD and 360 Grit Diamond ScrubDISK® into container with approximately 1 liter of DI water (See Fig 1a & 1b)

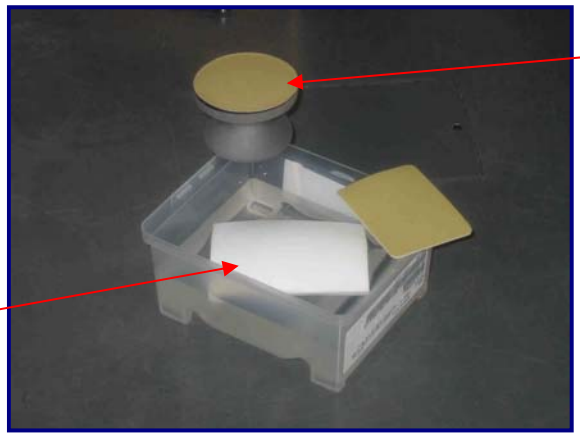

Fig 1b: 360 Grit Diamond ScrubDISK® attached to ErgoSCRUB®

Fig 1a: ScrubPAD, ScrubDISK®, and sponge in 1-liter DI water

Step 3: Vacuum inside of the source chamber using an approved arsenic vacuum system

Step 4: Using the dampened UltraSOLV® Sponge, wipe down all areas throughout source chamber

NOTE: Continue to re-soak and dampen the UltraSOLV® Sponge as necessary

Step 5: Attach dampened 360 Grit Diamond ScrubDISK® to ErgoSCRUB® (See Fig 2 above)

Step 6: With UltraSOLV® Sponge, dampen a 6" to 8" scrubbing area within the source chamber

Step 7: Using 360 Grit Diamond ScrubDISK® and ErgoSCRUB® scrub deposition from moistened area within source chamber

Step 8: Remove the deposition from the scrubbed area by wiping with the UltraSOLV® Sponge

AXCELIS GSD 200E SOURCE CLEAN PM PROCEDURE (CONT'D):

Step 9: To un-load ScrubDISK® of deposition, place the ScrubDISK® onto the dampened UltraSOLV® Sponge and pull across in one direction (See Fig 2, 3 & 4)

Fig 2: Loaded Diamond ScrubDISK®

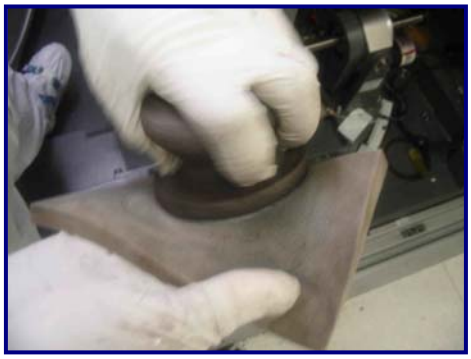

Fig 3: Un-loading technique onto UltraSOLV® Sponge

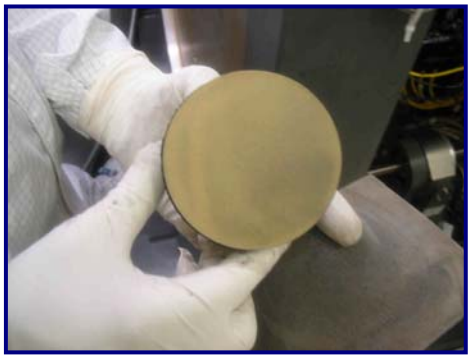

Fig 4: Clean, un-loaded Diamond ScrubDISK®

Step 10: To un-load UltraSOLV® Sponge return back to container of DI water to rinse (See Fig 5 & 6)

Fig 5: UltraSOLV® Sponge loaded with deposition

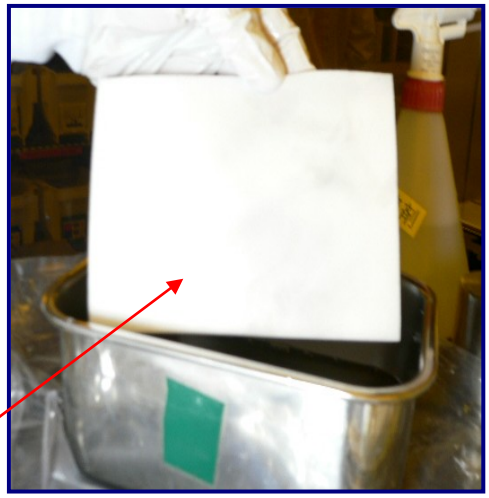

Fig 6: UltraSOLV® Sponge free of deposition after rinse in DI water

Step 11: Continue to repeat process throughout entire chamber using ScrubDISK® with ErgoSCRUB®. Use 360 Grit Diamond ScrubPAD for remaining areas that cannot be reached with ErgoSCRUB®, unloading ScrubPAD on UltraSOLV® Sponge as necessary

Step 12: Continue to repeat process throughout entire chamber until all deposition is removed. It is important to keep the ScrubPAD and chamber moist with DI water during clean

AXCELIS GSD 200E SOURCE CLEAN PM PROCEDURE (CONT'D):

Step 13: After all areas within entire chamber have been effectively cleaned, rinse out UltraSOLV® Sponge and thoroughly wipe out chamber as you prep the chamber for FINAL WIPE PROCEDURE

FINAL WIPE PROCEDURE:

IMPORTANT NOTE

THIS IMPORTANT STEP MUST BE EFFECTIVELY FOLLOWED IN ORDER TO ACHIEVE THE MAXIMUM EFFICIENCY OF TOOL RECOVERY AND PERFORMANCE. CONTINUE TO WIPE ALL OF THE AFFECTED PM AREAS WITHIN THE IMPLANT GSD 200E SOURCE CHAMBER REPEATEDLY, UNTIL ALL MIRAWIPES® HAVE BEEN USED AND NO DEPOSITION IS SEEN ON THE WIPES

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 WIPE PROCEDURE the most **CRITICAL STEP** of the PM procedure (See Fig 7, 8 & 9)

Fig 15a: Current fab wiper after completely wiping Axcelis Ion source Chamber

Fig 15b: Particles picked up using HT5790S MiraWIPES® after completely wiping with current fab wiper

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

Step 14: Dampen the HT5790S MiraWIPES® with IPA and perform a **THOROUGH AND EFFECTIVE FINAL WIPE-DOWN** of the entire source chamber – including o-ring grooves and all sealing surfaces

Step 15: Ensure to wipe down all shields and spare parts placed back into the Axcelis GSD Source using additional IPA dampened HT5790S MiraWIPES®