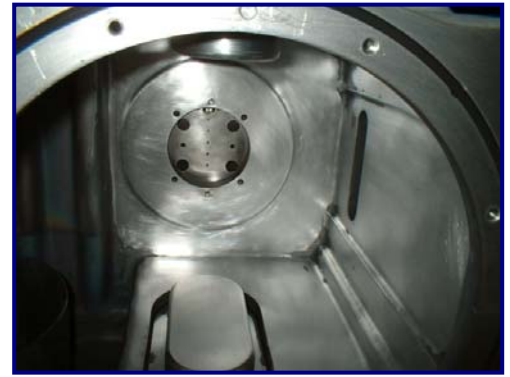




BEFORE



AFTER

VACUUM CHAMBER PM TECHNIQUE VARIAN VIISION®* 80 SOURCE CHAMBER

OBJECTIVE:

TO EFFECTIVELY PM THE VARIAN VIISION® 80 SOURCE CHAMBER IN A TIMELY MANNER, WHILE HELPING TO MINIMIZE PARTICLE ISSUES, IMPROVE TOOL PERFORMANCE AND REDUCE HAZARDOUS WASTE

Vacuum Chamber:

Vacuum Chamber Process Residue:

BF3, P, SB, IN, ASH3 BEAM DEPOSITION

Vacuum Chamber Components:

SOURCE CHAMBER

Old Procedure:

Scotch-Brite™*, hydrogen peroxide (H₂O₂), 40 grit sand paper, wire mesh

Solvent:

DI water, IPA (only)

DANGER:

USE OF HYDROGEN PEROXIDE (H₂O₂) 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 H₂O₂. SCRUBBING PHOSPHORUS WHILE USING H₂O₂ 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](#) 360 Grit Diamond ScrubPAD
- (1) [HT4536DC3-1](#) 360 Grit Diamond ScrubDISK®
- (1) [FT901](#) Soft handle w/Loop ErgoSCRUB®
- (3) [HT179036D](#) 360 Grit Diamond ScrubTIP®
- (25) [HT5790S](#) MiraWIPE® Wipers

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

RECOMMEND: PERFORM A ROUND OF 2-3 PM'S ON SAME TOOL TO ESTABLISH SUFFICIENT DATA FOR EVALUATION

VARIAN VIISION®* 80 SOURCE CHAMBER CLEAN PM PROCEDURE:

- Step 1:** Remove all source parts from source chamber (source head, bushing, etc...)
- Step 2:** Vacuum inside of the chamber using an approved arsenic vacuum system
- Step 3:** Wipe-down inside of the chamber using an H₂O dampened UltraSOLV® [HT4754](#) Sponge
- Step 4:** Using a DI water dampened [HT4536DC-1](#) ScrubDISK®, attached to the [FT901](#) ErgoSCRUB®, scrub an 8"x8" area within the source chamber
- Step 5:** Wipe-down the affected chamber area using the DI water dampened UltraSOLV® [HT4754](#) sponge
- Step 6:** Unload the ScrubDISK® of deposition by wiping the UltraSOLV® [HT4754](#) Sponge with the ScrubDISK® in one direction (See Fig 1, 2 & 3)



Fig 1: ScrubDISK® loaded with deposition



Fig 2: Pull & twist ScrubDISK® across UltraSOLV® Sponge

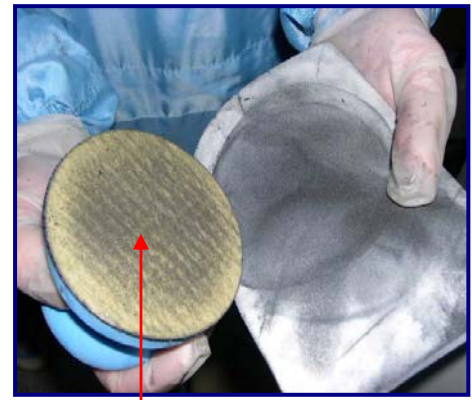


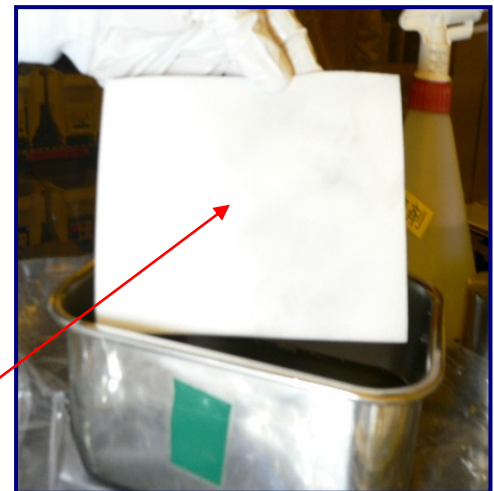
Fig 3: Unloaded ScrubDISK®

- Step 7:** Unload the UltraSOLV® [HT4754](#) Sponge by moistening with DI water and ringing out into a HazMat container (See Fig 4 & 5)



Fig 4: UltraSOLV® Sponge loaded with deposition

Fig 5: UltraSOLV® Sponge free of deposition after rinse in DI water



VARIAN VIISION®* 80 SOURCE CHAMBER CLEAN PM PROCEDURE (CONT'D):

Step 8: Repeat steps 4 – 7, using the [HT4536D](#) ScrubPAD and the [HT179036D](#) ScrubTIP® where necessary, until all deposition is removed

FINAL WIPE PROCEDURE:

VERY IMPORTANT NOTE

THE USE OF [HT5790S](#) MiraWIPES® DURING THE FINAL WIPE PROCEDURE IS A CRITICAL STEP TO EFFECTIVELY REMOVE PARTICLE DEFECTS FROM PROCESS CHAMBER DOOR

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 6a & 6b)

Fig 6a: Current fab wiper after completely wiping chamber



Fig 6b: 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 9: Repeatedly wipe the inside of the source chamber using an IPA dampened [HT5790S](#) MiraWIPE®. Ensure to wipe entire chamber effectively until all areas are removed of deposition

VARIAN VIISION®* 80 SOURCE CHAMBER CLEAN PM PROCEDURE (CONT'D):

SOURCE CHAMBER – BEFORE CLEANING



Fig 7, 8 & 9: Arsenic, Boron, Phosphorus, Antimony . . .



VARIAN VIISION®* 80 SOURCE CHAMBER CLEAN PM PROCEDURE (CONT'D):

SOURCE CHAMBER – AFTER CLEANING

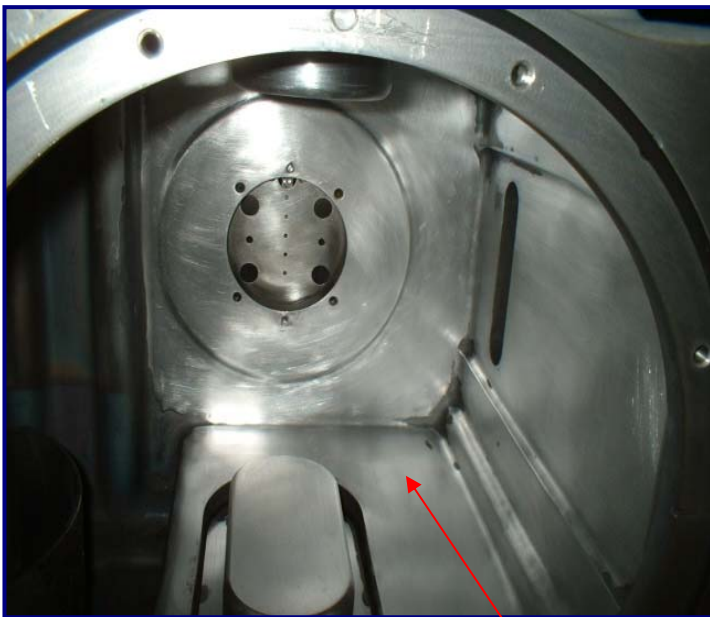


Fig 10 & 11: PM completed using only DI water and IPA for final wipe-down
NO H₂O₂ (Hydrogen Peroxide)

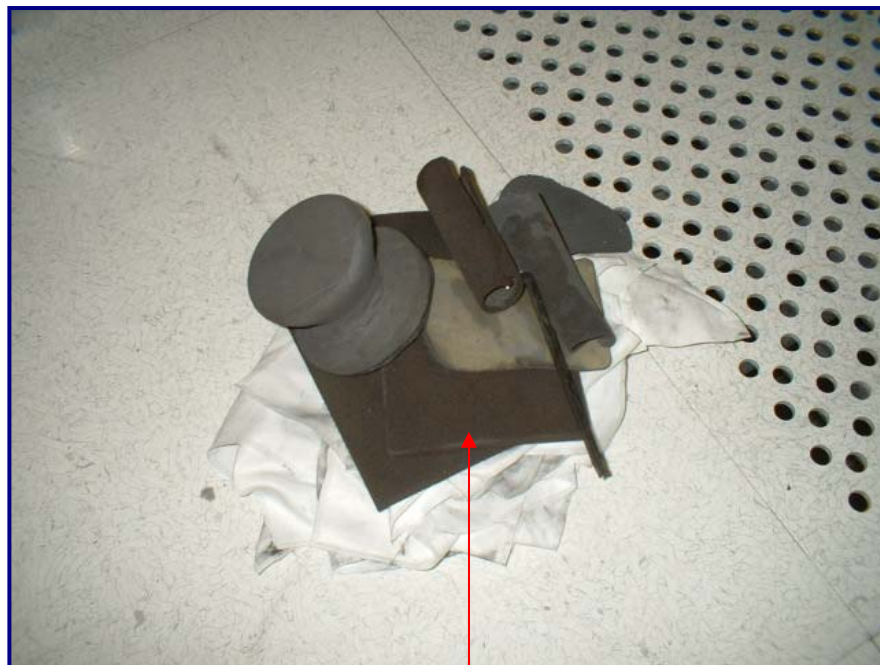


Fig 12: Total amount of hazardous waste generated