CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 04/29/1999

Experimenters: Jason Marshall

ClientType: Electron & Ion Technology Co

ProjectNumber: Project #1

Substrates: Alloys

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Dirt, Oil

Cleaning Methods:

Analytical Methods: OSEE

Purpose: To determine if the brown gunk contaminant would change the OSEE readings differently than the metal working fluid.

Experimental Procedure: OSEE readings were taken from a clean coupon. The metal working fluid was centrifuged for five minutes at about 1000 rpm using a Fisher Scientific Centrific Centrifuge Model 225. A plastic eye dropper was immersed to the bottom of the test tube and the metal working fluid was withdrawn. The metal working fluid was then placed on the coupon (upper section) and wiped with a handheld swab. OSEE readings of the coupon and metal working fluid were recorded. A second eye dropper was used to withdraw the brown gunk from the top of the test tube and placed on the coupon (lower section) and wiped with a new handheld swab. OSEE readings were measured for the coupon and brown gunk.

SUBSTRATE MATERIAL: Molybdenum coupon
CONTAMINANTS: Metal working fluid (Hangsterfer's S-500CF_US) & Brown gunk
CONTAMINATING PROCESS USED: After initial OSSE readings, parts contaminant was wiped on using swab.

Results: Both contaminant OSEE readings were found to decrease from the original clean coupon values. The brown gunk lowered the readings less than the metal working fluid. Table 1 lists the readings obtained for each contaminant and the averages and standard deviations.

Table 1. OSEE Readings Verification

	Clean Readings	Metal Working fluid	Brown Contaminant
	203	169	184
	220	173	197
	230	176	201
	232	184	205
	222	162	186
	211	194	200
Average	220	176	196
Std Dev	11.1	11.3	8.55

Although the readings for the brown contaminant were shown to affect the OSEE readings differently than the metal working fluid, the contaminant did not cause the readings to become higher than the original clean coupon.

Summary:

Conclusion: Despite determining that the second contaminant (brown gunk) affected OSEE readings differently than the metal working fluid, the values were not higher than the base line readings. Further examination of OSEE readings needs to be performed on the original parts using the same procedure as in the first experiment conducted for the client.