CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1998
DateRun:	04/01/1998
Experimenters:	Jason Marshall
ClientType:	Manufacturers of Precision Parts and Assemblies
ProjectNumber:	Project #2
Substrates:	Stainless Steel
PartType:	Coupon
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil
Cleaning Methods:	
Analytical Methods:	Colorimeter
Purpose:	Measure sulfate or sulfide in bath
Experimental Procedure:	Three different oil-cleaner mixtures were made in 100mL beakers. Oil was added to the cleaning bath. The first solution contained 0.1mL of oil and the total volume was brought to 50mL. The second and third contained 0.2 and 0.3 mL respectively. The M-Auto cleaning solution was used for the blank in the first part of the trial and then DI water was used. Three readings were made for each mixture. A graph of the average values was constructed. SUBSTRATE MATERIAL: Liquid (cleaning bath, M-Auto) CONTAMINANTS: C-Eblis oil (sulfur based) CONTAMINATING PROCESS USED: Oil was added to cleaning bath in concentrations of 0.20, 0.40 and 0.60 ppm using a pipette.
Results:	Table 1 shows the values obtained using the cleaning solution as the blank and Table 2 list values for the DI blank. Figures 1 and 2 graphically display the relationships between the expected and measured values.

Table 1 With Blank Correction Sulfide (ppm)

Table 1	With Blank Correction	
Sulfide (ppm)	Expected	Measured
	0	0
	0.2	0.21
	0.4	0.4
	0.6	0.69
Slope =	1.13	

Table 2 Without Blank Correction Sulfide (ppm)

Sulfide (ppm)	Expected	Measured
	0	0.47
	0.2	0.85
	0.4	0.99
	0.6	1.26
Slope =	1.24	

More accurate results were obtained using the cleaning solution as the blank. Sulfide concentration may be used to determine the amount of oil in the cleaning solution.

Summary:	
Conclusion:	The above graphs are an effective way to determine contamination in the cleaning solution. When the bath is no longer able to clean parts effectively, sulfide readings should be made. During the next cleaner cycle when this sulfide level is approached, the bath can be modified to decrease the oil-cleaner ratio.