CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1999
DateRun:	09/07/1999
Experimenters:	Jason Marshall
ClientType:	Light Manufacturer
ProjectNumber:	Project #1
Substrates:	Liquid
PartType:	Part
Contaminants:	Fluxes, Lubricating/Lapping Oils, Dirt, Stickies, Solder
Cleaning Methods:	
Analytical Methods:	Colorimeter
Purpose:	To evaluate cleaning and rinse solutions after one hour intervals to determine how long bath will last.

Experimental Procedure: Six samples were received for both the cleaning solution and rinse water. Using the colorimeter, several different analytes were measured. Using the zero hour sample as the base line level, each sample's analyte level was recorded.
The analytes used as tracers were:
Percent Transmittance (%T)
Absrobance (abs)
Silica Lo (Si)
Nitrate (NO3)
Aluminum (Al)
Ammonia-L (NH3-L)
Bromine (Br)
Chlorine (Cl)
From the measured values, any apparent trends were noted.
SUBSTRATE MATERIAL: Liquid
CONTAMINANTS: Lubricant, glass dust, solder flux, gummies (Teflon Tape, oils, lead solder, dust/grime)

Results: After analyzing the eight different methods, it appeared that the age of the bath in hours did not result in a systematic increase in the tracer element. Three methods tested did not show any changes at all. These methods were not evaluated for all the samples. Table 1 lists the readings made for each time period and analyte for the Wash Water samples. The Rinse Water samples were evaluated only for the analytes which showed variations in the Wash Water methods. Table 2. lists the results from the Rinse Water samples.

Table1. Colorimeter Results for Wash Water

Analyte	%T	abs	Si	NO3	AL	NH3	Bromine	Chlorine
0 hour	100	0	0	0	0	0	0.07	0
1 hour	88	0.05	0	0.02	0	0	0.22	0.06
2 hour	95	0.02	0	0.07	0	0	0.24	0.05
3 hour	95	0.02	NT	0.06	NT	NT	0.19	0.03
4 hour	94	0.03	NT	0.11	NT	NT	0.23	0.06
5 hour	95	0.02	NT	0.09	NT	NT	0.24	0.05
End 2nd Shift	NT	NT	NT	0.13	NT	NT	0.29	0.08

Table 2. Colorimeter Readings for Rinse Water

Analyte	%T	abs	Si	NO3	AL	NH3	Bromine	Chlorine
0 hour	100	0	NT	0.01	NT	NT	0.08	NT
1 hour	100	0	NT	0.01	NT	NT	0.09	NT
2 hour	100	0	NT	0	NT	NT	0.09	NT
3 hour	NT	NT	NT	NT	NT	NT	0.09	NT
4 hour	NT	NT	NT	NT	NT	NT	0.08	NT
5 hour	NT	NT	NT	NT	NT	NT	0.08	NT
End 2nd Shift	NT	NT	NT	NT	NT	NT	NT	NT

Summary:

Conclusion:

CLEANING LABORATORY
EVALUATION SUMMARY

The level of contamination in the wash water did not follow any patterns. In some tests, the 1-hour sample contained more contaminant than the later samples. The rinse water samples appeared to be at the same level as the initial sample. Comparison of the parts cleaned at each stage should be performed to determine if the parts are at the same level of cleanliness throughout the five-hour sampling period.