CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 09/10/1998

Experimenters: Jason Marshall, Shyam Sarda

ClientType: Electromagnetic Manufacturer

ProjectNumber: Project #1

Substrates: Copper, Nickel

PartType: Coupon

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

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To determine the minimum cleaning time at increased concentrations.

Experimental Procedure: Eighteen preweighed coupons were contaminated with oil using a hand held swab and then weighed. Two cleaning solutions were made into 15% solutions using DI water in a 600 mL beaker. The solutions were heated to 130 F on a hot plate. The beakers were then placed into a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 also at 130 F. Three coupons were placed in each cleaner for a set cleaning time. These cleaning times were 15, 30 and 60 seconds. Coupons were rinsed in tap water at 120 F for 30 seconds and air dried. Final weights were taken after drying was complete.

SUBSTRATE MATERIAL: Copper/Nickel 70/30
CONTAMINANTS: Oil-Castrol 10W-40

Results: Both chemistries had good results for the all cleaning times. Table 1 list the cleaning efficiencies for both cleaners at the 3 cleaning times.
Table 1. Cleaning Efficiencies at Various Intervals

	AK-6215			Daraclean 282		
Time	15	30	60	15	30	60
Coupon 1	87.36	89.57	93.35	92.36	95.22	90.64
Coupon 2	90.27	97.45	79.11	96.52	97.43	96.15
Coupon 3	94.48	97.11	100.80	98.12	96.53	94.33
Ave	90.70	94.71	91.09	95.67	96.39	93.71
Std Dev	3.58	4.45	11	2.97	1.11	2.81

Summary:

Substrates:	Copper, Nickel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Calgon Corporation	AK 6215	15	94.71	☑	
Magnaflux	Daraclean 282	15	96.39	☑	

Conclusion: The increased concentration has allowed the cleaning times to be decreased to under 1 minute. The next testing will be performed using the second oil supplied by the client.