CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 07/26/2000

Experimenters: Jason Marshall

ClientType: Bellows Mfr

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Part

Contaminants: Greases, Lubricating/Lapping Oils

Cleaning Methods: Ultrasonics

Analytical Methods: Visual

Purpose: To evaluate cleaning process using supplied parts.

Experimental Procedure: Two cleaners were selected from the previous trial based on the effective cleaning results obtained. Both solutions were diluted to 5% by volume using DI water in 600 ml beakers and heated to 130 F in the ultrasonic tank filled with tap water. Five contaminated types of parts were immersed in the beakers in the ultrasonic unit. After ten minutes of cleaning, the various parts were removed from the ultrasonic energy and rinsed for 30 seconds in tap water at 120 F. Drying was performed in a VWR Scientific Vacuum oven at 250 F for 10 minutes at a pressure of 30 in Hg. Parts were allowed to cool to room temperature and sealed in plastic bags to be sent back to the client for analysis.

SUBSTRATE MATERIAL: Aluminum parts (AM 350, AL 6061)
CONTAMINANTS: Grease (Cello-Seal), Oil (Elf Lubricant North America Elf Cut 51 [64742-53-6, 64742-52-5, 63449-39-8,8016-28-2])
CONTAMINATING PROCESS USED: Parts received contaminated.

Results: All types of parts appeared to be visually clean. It was noted that both sets of the MOD's cleaned in Beyond 2001 were not completely dry. Also, one set of the MOD's cleaned in All Clear 450 did not dry all the way. All other parts were dried to completion. Table 2 lists the part types used and notes which ones were not completely dried.

Table 2. Part Description

	PCR#	Order#	Desc	Part#	Mat'l	Notes	Beyond 2001	United 450
#6	2424	Weld	ID's	Rejects	AM 350	Not Cleaned		
#8	Misc	Weld	MOD's	Rejects	AM 350	Not Cleaned		Not Dry
#3	2496	---	M-C	---	6061 AL	Machine Chill using Elfdwaw 51		
#9	Misc	Weld	MOD's	Rejects	AM350	Leak checked contaminated w/ Cello-Seal	Not Dry	Not Dry
#1	2498	---	FD	---	AM 350		Not Cleaned	

Summary:

Substrates:	Aluminum				
Contaminants:	Greases, Lubricating/Lapping Oils				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Today & Beyond	Beyond 2001	5	0.00	☑	
United Laboratories International	United 450 All Clear	5	0.00	☑	

Conclusion: The two cleaners seem to be capable of removing the different types of contaminants from the various part configurations using ultrasonic energy. Drying of the MOD pieces require longer drying times due to the design of the parts (an additional 15 minutes may be enough to complete the drying of these parts).