CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 09/30/1998

Experimenters: Jason Marshall

ClientType: Aerospace Industry

ProjectNumber: Project #1

Substrates: Alloys, Nickel

PartType: Part

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

Cleaning Methods: Ultrasonics

Analytical Methods: Black light

Purpose: Further comparison of the current cleaner to other aqueous cleaners.

Experimental Procedure: Parts were contaminated with the EDM Fluid using a plastic pipette. Observations were made under black light conditions to determine a baseline level of fluorescence. Four chemistries were used for cleaning. Each was made into 5% solutions using DI water in 600 mL beakers. The beakers were placed into a 40 kHz Crest ultrasonic unit model 4Ht 1014-6 and heated to 150 F. One part was placed into each beaker and cleaned for 3 minutes without the ultrasonic in operation. Parts were inverted and cleaned for another 3 minutes using the ultrasonic energy. Each part was removed and rinsed with tap water at 120 F for 20 seconds and dried with a Master Appliance Heat Gun model HG-301A. Black light observations were made and recorded.

SUBSTRATE MATERIAL: Nickel Alloy-Inconel
CONTAMINANTS: Oil-EDM Fluid
CONTAMINATING PROCESS USED: Oil was made to fluoresce using Spectronics Corporation's AR-GLO® 1. Oil was applied using a plastic pipette.

Results: All four chemistries removed the EDM fluid from the parts. It was noted that there was some Zyglo penetrant oil on the parts prior to cleaning. Only one cleaner was extremely effective in removing this oil. Table 1 lists each cleaner and the observations made.

Table 1. Comparison of Chemistries

CHEMISTRY	EDM Fluid Removal	Zyglo Penetrant Oil
Blue Gold	Good/ Excellent	Good/Okay
Valtech	Good/ Excellent	Okay/Poor
SWR One	Good/ Excellent	Okay
Zyglo	Good/ Excellent	Excellent

NOTE: Excellent observations corresponded to a large amount of contaminant being removed. Good observations related over half of the contaminant being cleaned. Okay was less than half the contaminant removed. No sign of contaminant removal received a rating of poor.

Summary:

Substrates:	Alloys, Nickel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Carroll Company	Blue Gold Heavy Industrial Cleaner	5	0.00	☑	
Valtech Corporation	Valtron SP 2275	5	0.00	☑	
SWR Corporation	SWR One	5	0.00	☑	
Magnaflux	Zyglo Emulsifier ZR 10B	5	0.00	☑	

Conclusion: The Zyglo Emulsifier ZR-10B was found to be the best remover of the Zyglo Penetrant ZL-27A Oil both in the previous trial and from the last trial. All of the chemistries were effective in removing the EDM fluid.