MID ATLANTIC INFRARED SERVICES, INC.
5309 Mohican Rd., Bethesda, Md. 20816 301-320-2870

PREDICTIVE MAINTENANCE INSPECTION

CLIENT: Major Widgets

ADDRESS: 1000 Industrial Way
Baltimore, MD

DATE: October 5, 2000

SUBJECT: Infrared, vibration and ultrasonic survey of electrical and mechanical equipment

Infrared Survey Equipment Inventory

Major Widgets

30-Sep-00

Equip Type	Floor	Room	Equip Name	Manufacturer	Volts	Amps	KVA	
Equipment BUS DISCONNECT								
BUS DISCONNECT	2	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	3	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	3	ELEC RM	NONE	GE		480	125	0
BUS DISCONNECT	3	ELEC. ROOM	NONE	GE		480	100	0
BUS DISCONNECT	4	ELEC RM	NONE	GE		480	60	0
BUS DISCONNECT	5	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	6	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	7	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	7	ELEC. ROOM	NONE	GE		480	100	0
BUS DISCONNECT	8	ELEC RM	NONE	GE		480	90	0
BUS DISCONNECT	8	ELEC RM	NONE	GE		480	400	0
BUS DISCONNECT	8	ELEC RM	NONE	GE		480	200	0
BUS DISCONNECT	8	ELEC RM	NONE	GE		480	125	0
BUS DISCONNECT	8	ELEC. ROOM	NONE	GE		480	300	0
Total= 14								
Equipment Disconnect								
Disconnect	1	FOOD COURT	NONE	GE		480	30	0
Disconnect	2	ELEC RM	AHU 2 1	GE		480	50	0
Disconnect	3	ELEC RM	AHU 31	GE		480	50	0
Disconnect	4	ELEC RM	AHU 4 1	GE		480	50	0
Disconnect	5	ELEC RM	AHU 5 1	GE		480	50	0
Disconnect	6	ELEC RM	AHU 6 1	GE		480	50	0
Disconnect	7	ELEC RM	AHU 7 1	GE		480	50	0
Disconnect	7	ELEC. ROOM	NONE	Cutler Hammer		208	200	0
Disconnect	8	ELEC RM	AHU 81	GE		480	50	0
Disconnect	C	PUMP RM	NONE	Westinghouse		480	20	0
Disconnect	C	PUMP RM	NONE	GE		480	20	0
Disconnect	PH	ROOF	CT1	GE		480	80	0
Disconnect	PH	ROOF	CT2	GE		480	80	0
Total= 13								
Equipment Emerg. Auto Trans								
Emerg. Auto Trans Switch	C	MAIN ELEC RM	ATS	Zenith		480	600	0
Total= 1								
Equipment Emerg. Panel								
Emerg. Panel	C	MAIN ELEC RM	DPEMB	GE		480	600	0
Emerg. Panel	C	MAIN ELEC RM	HEMB	GE		480	200	0
Emerg. Panel	PH	ELE PH	DPELPH	GE		480	400	0
Total= 3								
Equipment Motor Control Center								
Motor Control Center	C	CHILLER PLANT	MCCP	GE		480	600	0
Motor Control Center	PH	ELEC RM	MCC PH	GE		480	600	0

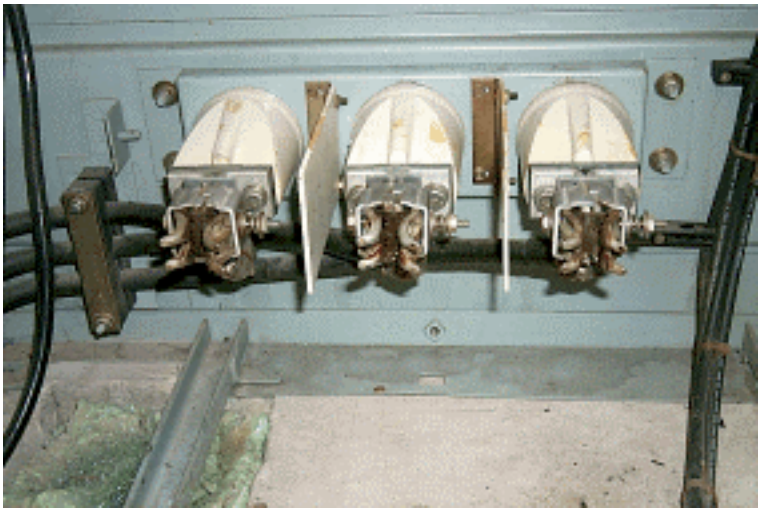
MID ATLANTIC INFRARED SERVICES INFRARED ANALYSIS

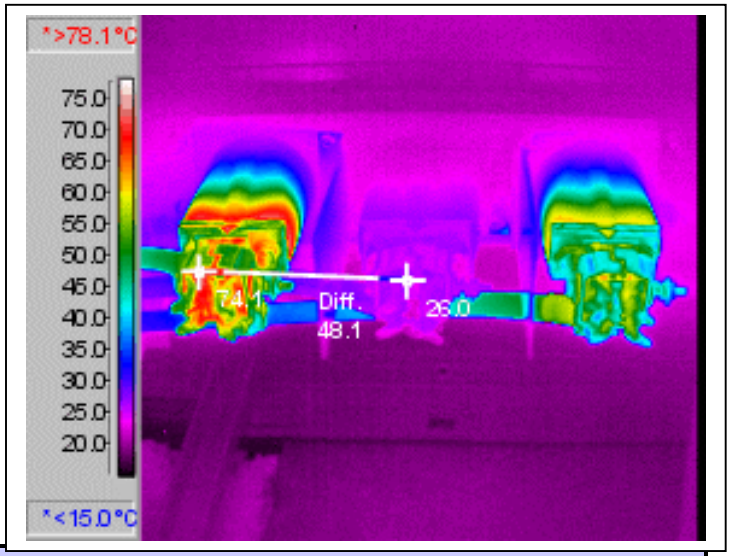
CLIENT	Major Widgets
PROBLEM NUMBER	1
EQUIPMENT	River, Pump 3 starter

PROBLEM DESCRIPTION T1 and T3 secondary stabs show excessive heat. Micro-ohmmeter readings were taken that shows high resistance (20 milliohms vs 53 microhms) across the stab clips. After moving the clips, the resitance was eliminated.

RECOMMENDATION Problem corrected. No further action required.

HIGH PRIORITY: No





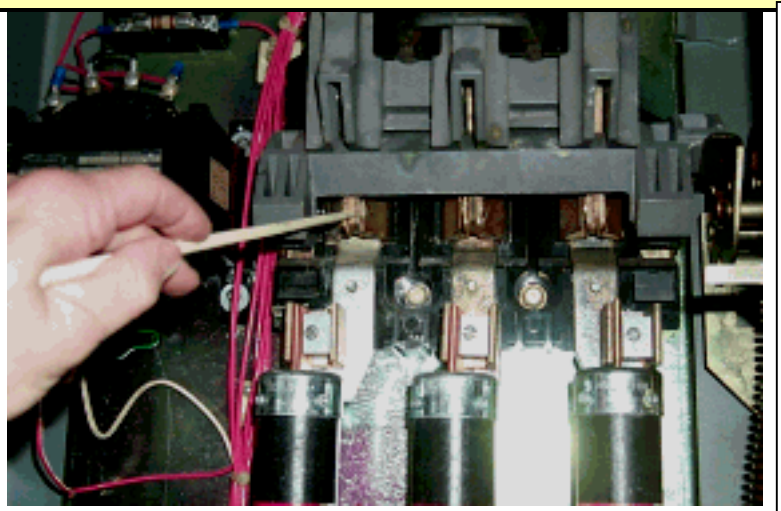
Repaired by: _____Date: _____

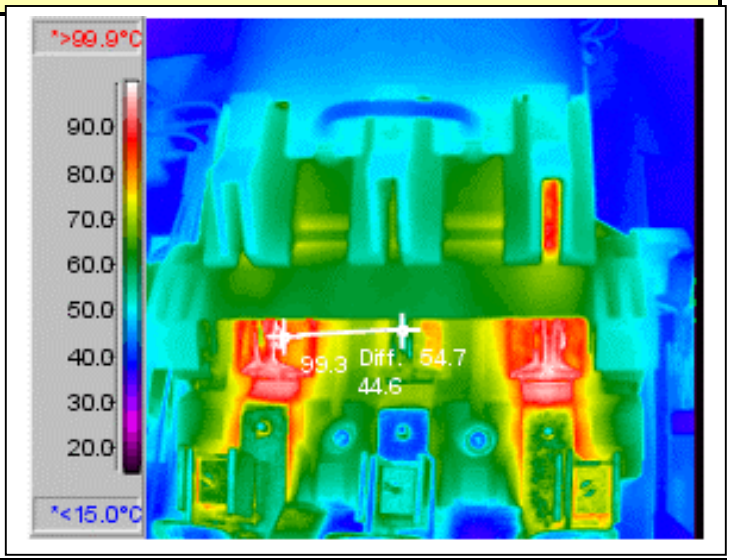
MID ATLANTIC INFRARED SERVICES INFRARED ANALYSIS

CLIENT	Major Widgets
PROBLEM NUMBER	2
EQUIPMENT	Liquid Pack, North Demister Fan starter

PROBLEM DESCRIPTION Disconnect switch, A and C phases, show excessive heat. FOP test shows poor contact at switch pivot points.

RECOMMENDATION Problem repaired. No further action required.





Repaired by: _____Date: _____

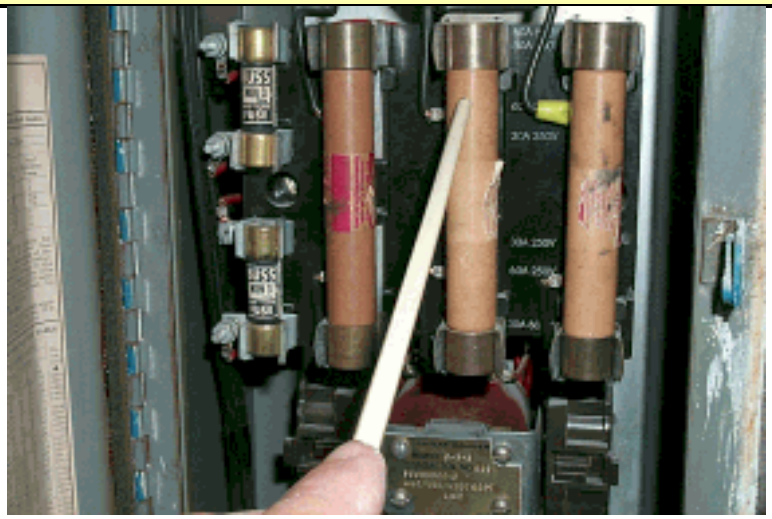
MID ATLANTIC INFRARED SERVICES INFRARED ANALYSIS

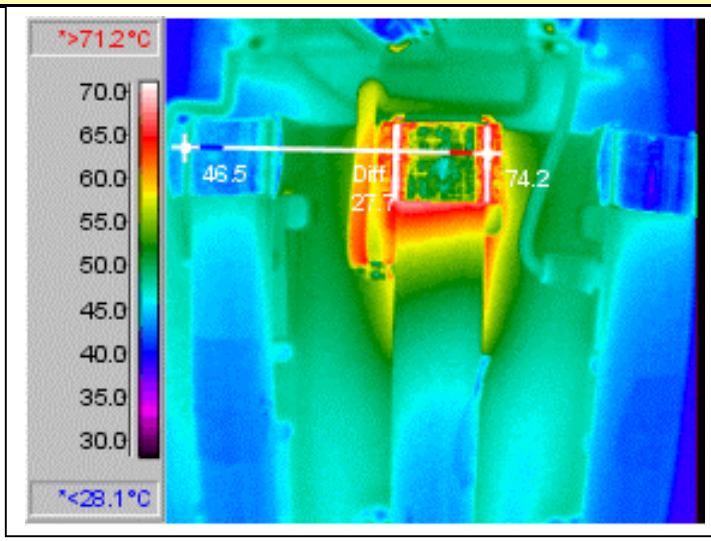
CLIENT	Major Widgets
PROBLEM NUMBER	3
EQUIPMENT	Bars, 5th floor, DEFI, west wall, starter Exhaust fan #2

PROBLEM DESCRIPTION B phase fuse, line side, shows excessive heat. FOP test shows poor contact inside renewable link fuse.

RECOMMENDATION Replace all renewable link fuses with non-renewable fuses.

HIGH PRIORITY: **No**



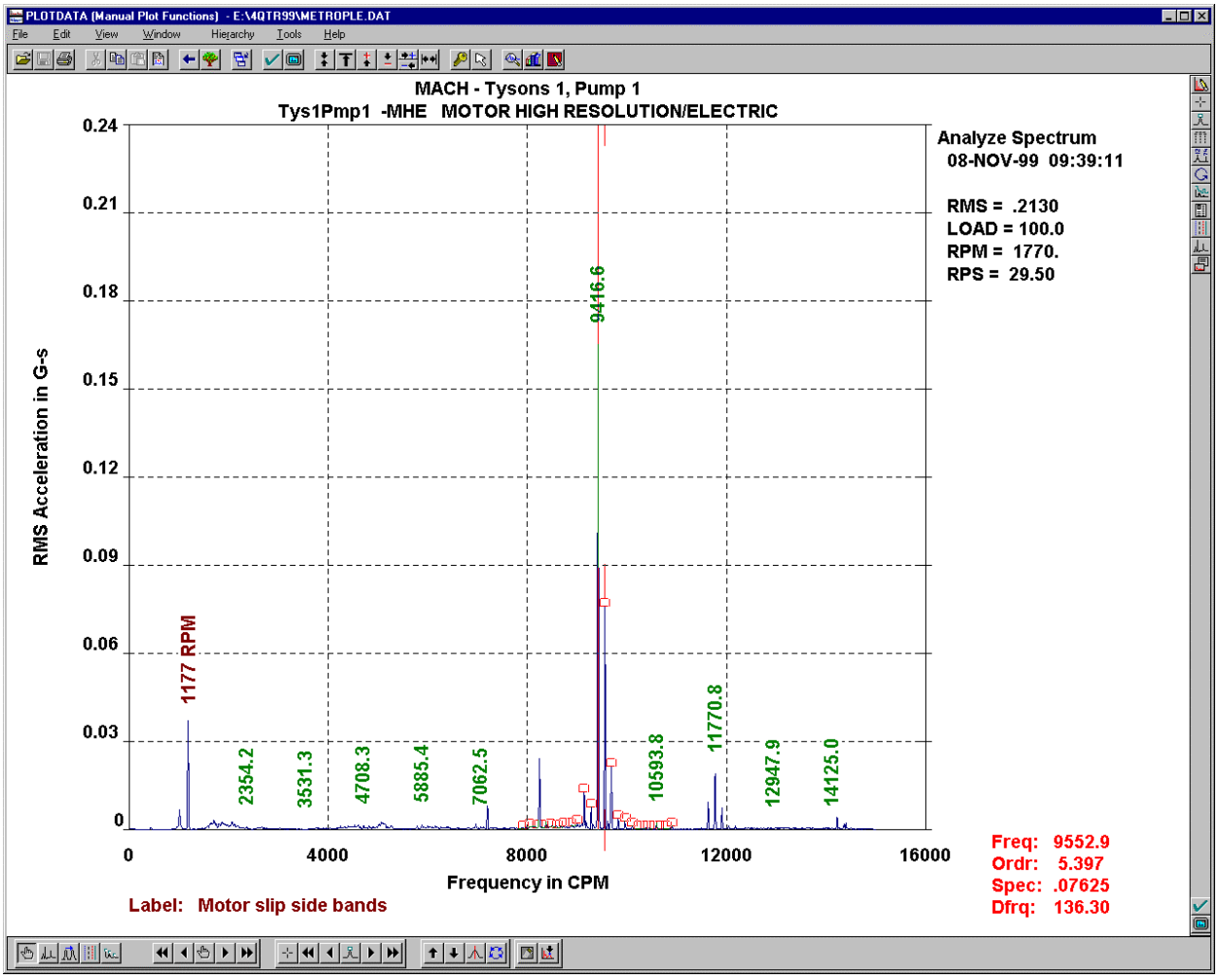


Repaired by: _____Date: _____

VIBRATION TESTING REPORT

MACHINE: Tysons 1 station, Pump 1

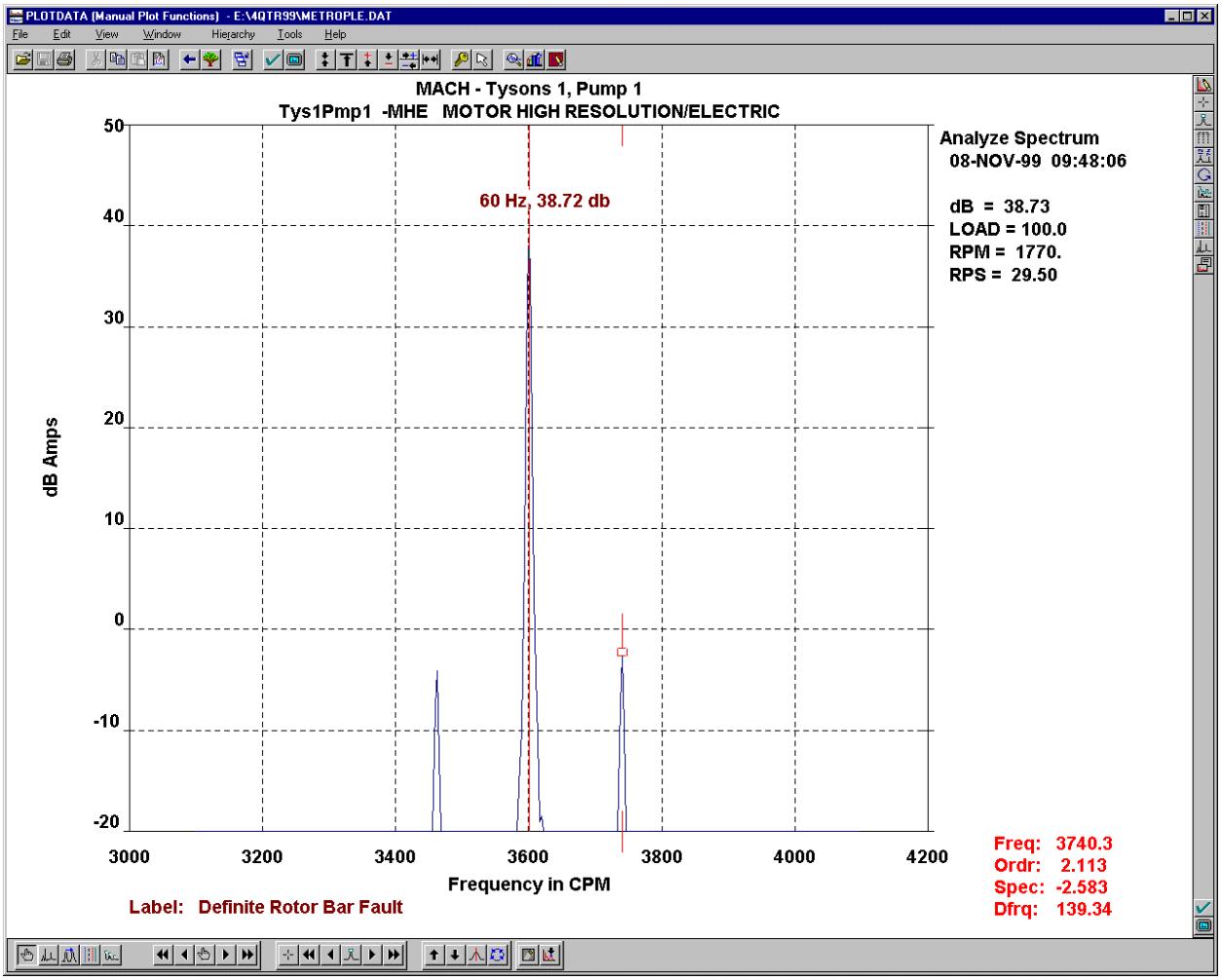
PROBLEM DISCUSSION: This motor has an audible beat. Vibration testing shows sidebands around several shaft speed harmonics. The side bands are spaced at slip frequency x the number of motor poles. This generally indicates a rotor fault such as broken end ring or rotor bars.



VIBRATION TESTING REPORT

MACHINE: Tysons 1 Station, Pump 1

PROBLEM DISCUSSION: Current signature shows motor slip X number of poles side bands at 41.3 db below 60 Hz current level. If the difference is less than 46 db, then a rotor bar problem is present.



VIBRATION TESTING REPORT

MACHINE: Hydromation blower #2 (Magnus Line)

PROBLEM DISCUSSION: Vibration spectra for the inboard (coupling side) fan bearing, shows dramatic increase in high frequency vibration. Very high ultrasound is present. The demodulated ultrasound spectrum shows likely bearing fault frequencies. The peak view spectrum shows similar fault frequencies and shaft speed sidebands around each fault frequency peak. These data suggest a severe bearing fault and looseness on the shaft.