

ELECTREX CO., INC.

**41700 Executive Drive
Harrison Twp., Michigan 48045
Phone: 586.468.7571 Fax: 586.468.5217**

Infrared Preventive Maintenance Inspection

at

Sample

Job Number E-0000

Customer:

Contact:

Title:

Address:

Phone:

Fax:

Quote Number:

I.P.M.I. Performance Date:

I.P.M.I. Performed By:

Infrared Camera Operated By: Larry Page III

Thermographer Certification # A.I.R.T. #1-780

Report Generated By: Larry Page III

Number Of Locations Scanned:

Number Of Images Taken:

Number Of Images In Report:

Imager Type: Agema Thermovision 570

Imager Serial Number: 348597

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Inspected Equipment:

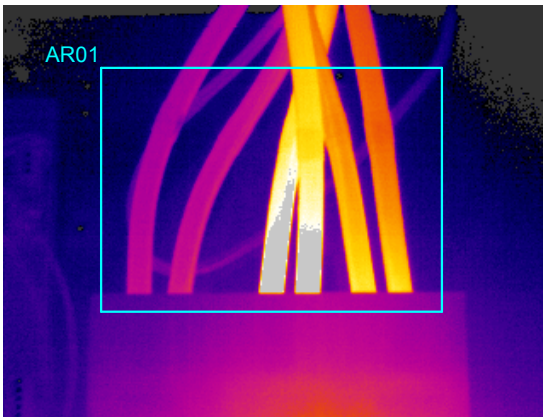
RC-200 Weld Controller B

Identification



Location:	Rear Compartment Assembly
Equipment:	RC-200 Weld Controller B
Item:	Wires & Terminations
Date:	11/9/1999
Time:	11:55:45 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	78.0°F
Max. Temperature:	127.6°F
Area 1 Max. Temp.	127.6°F

Fault Description

Developed overheating. Should be repaired as soon as possible.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Clean & Tighten.

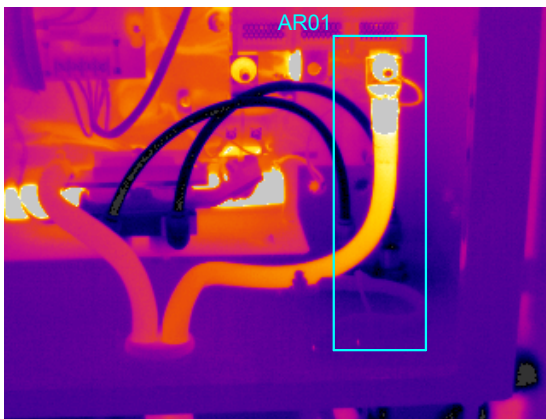
LA 300 R-30 Weld Controller E

Identification



Location:	Ladder Assembly
Equipment:	LA 300 R-30 Weld Controller E
Item:	Wires & Termination
Date:	11/9/1999
Time:	12:13:58 PM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	78.0°F
Max. Temperature:	334.0°F
Area 1 Max. Temp.	153.9°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Crimp Lug and Hardware, Clean & Tighten.

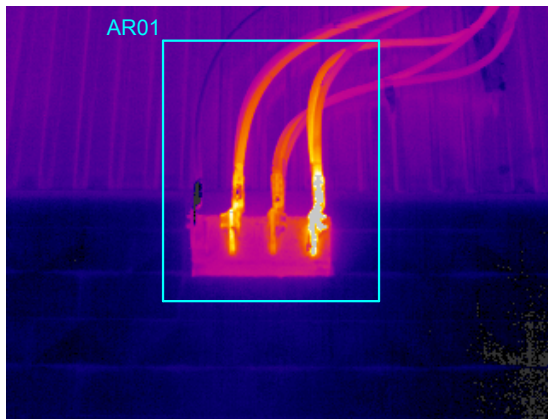
Riser for 240V Service

Identification



Location:	North Wall (Outside)
Equipment:	Riser for 240V Service
Item:	Riser & Wires
Date:	5/28/1999
Time:	9:36:42 AM

Infrared Image



Object Distance	15.0 ft
Ambient Temp.	80.0°F
Max. Temperature:	214.1°F
Area 1 Max. Temp.	214.1°F

Fault Description

Acute Overheating. Immediate Repairs Required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Crimp Lug and Hardware, Clean & Tighten.

Inspected Equipment:

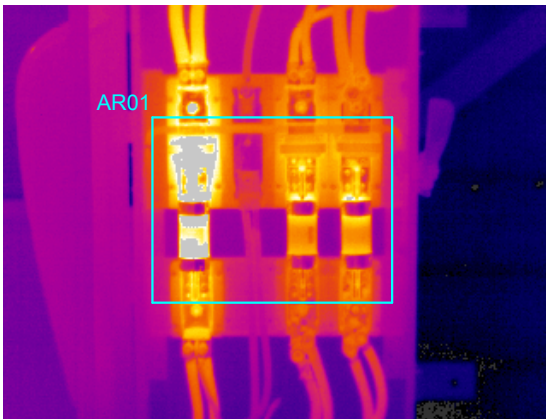
Building Main Disconnect

Identification



Location:	Near Switchgear
Equipment:	Building Main Disconnect
Item:	Fuse, Fuse Holder, Terminations
Date:	3/28/2001
Time:	11:32:02 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	78.0°F
Max. Temperature:	134.8°F
Area 1 Max. Temp.	134.8°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Fuse and Fuse Contacts, Clean & Tighten.

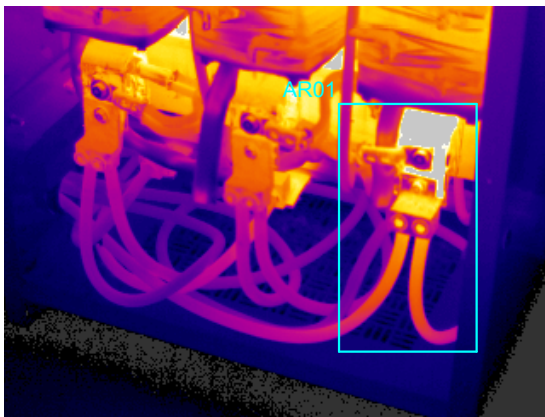
300 KVA T-Former (Air Comp.)

Identification



Location:	Air Comp. Room
Equipment:	300 KVA T-Former (Air Comp.)
Item:	Terminations, Wires, & Lug
Date:	6/15/1999
Time:	1:10:59 PM

Infrared Image



Object Distance	3.0 ft
Ambient Temp.	78.3°F
Max. Temperature:	219.4°F
Area 1 Max. Temp.	219.4°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	100 - 115 Degrees Fahrenheit
Classification 2	As Available	116 - 130 Degrees Fahrenheit
Classification 3	ASAP	131 - 140 Degrees Fahrenheit
Classification 4	Critical	Above 141 Degrees Fahrenheit

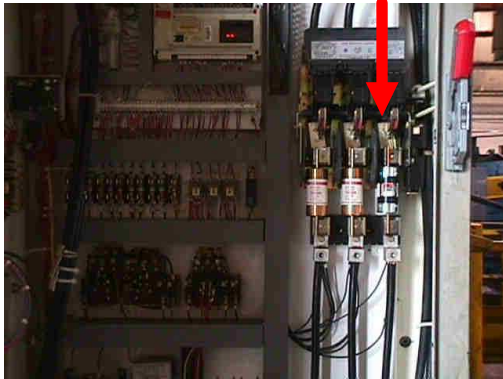
Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Bus Bar from Phase C Coil, Clean & Tighten.

Inspected Equipment:

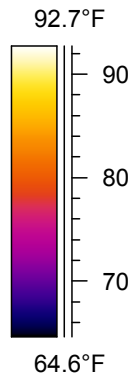
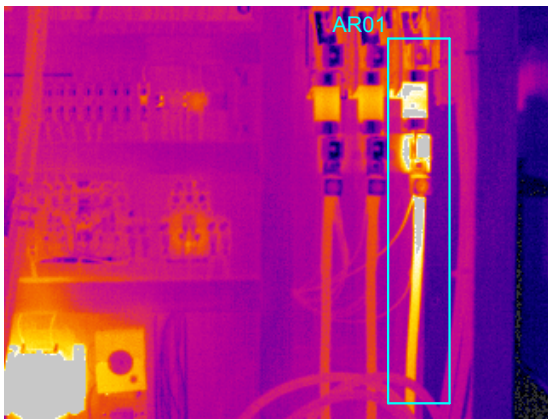
Control Panel

Identification



Location:	Press #1
Equipment:	Control Panel
Item:	Fuses, Wire & Terminations
Date:	6/16/1999
Time:	8:57:46 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	81.0°F
Max. Temperature:	131.9°F
Area 1 Max. Temp.	102.5°F

Fault Description

Second Stage of Overheating. Should be Attended to at First Opportune Moment.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Fuse and Fuse Contacts, Clean & Tighten.

Inspected Equipment:

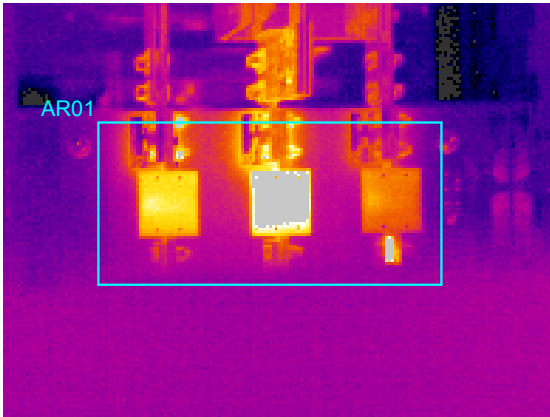
Welding Duct C Main

Identification



Location:	4000A Welding Switchgear
Equipment:	Welding Duct C Main
Item:	Fuse
Date:	10/27/1999
Time:	11:33:25 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	68.5°F
Max. Temperature:	137.0°F
Area 1 Max. Temp.	137.0°F

Fault Description

Acute overheating. Immediate repairs required.

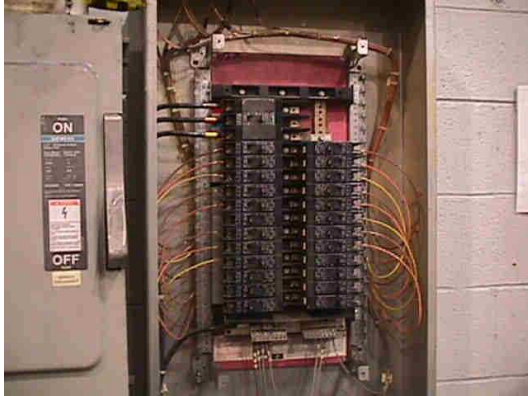
Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Phase B Fuse, Clean & Tighten.

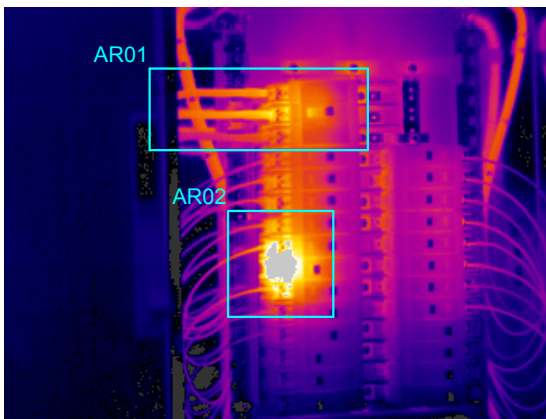
100A 480V L.P.

Identification



Location:	SouthEast Wall
Equipment:	100A 480V L.P.
Item:	Breaker, Termination, Wire
Date:	10/27/1999
Time:	12:02:28 PM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	68.0°F
Max. Temperature:	211.6°F
Area 1 Max. Temp.	143.0°F
Area 2 Max. Temp.	211.6°F

Fault Description

Acute overheating. Immediate repairs required.

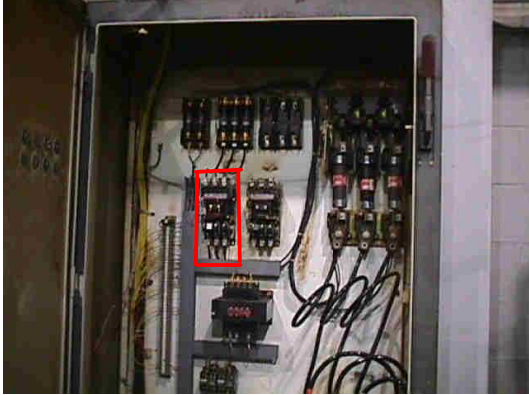
Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Necessary Breakers, Clean & Tighten.

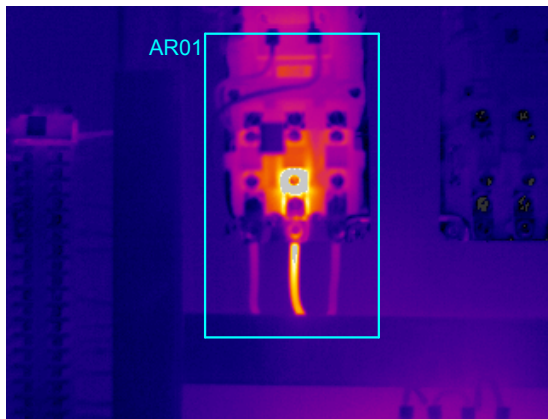
Cooling Tower Control Panel

Identification



Location:	East Wall
Equipment:	Cooling Tower Control Panel
Item:	Wires, Terminations
Date:	10/27/1999
Time:	1:09:58 PM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	78.0°F
Max. Temperature:	213.2°F
Area 1 Max. Temp.	213.2°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Overload and Internal Contacts, Clean & Tighten.

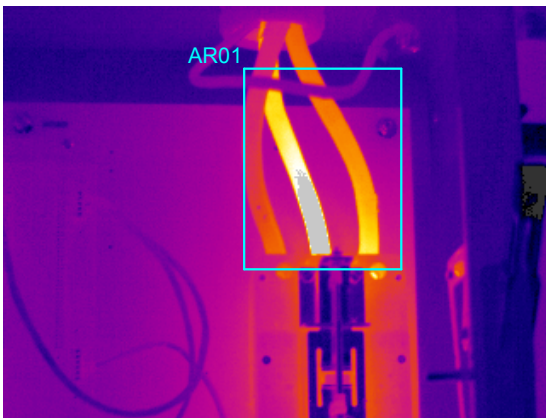
Inspected Equipment:
CP E4 RR-40R

Identification



Location:	Rear Rail RH
Equipment:	CP E4 RR-40R
Item:	Wire, & Termination
Date:	10/28/1999
Time:	10:16:34 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	71.0°F
Max. Temperature:	135.1°F
Area 1 Max. Temp.	135.1°F

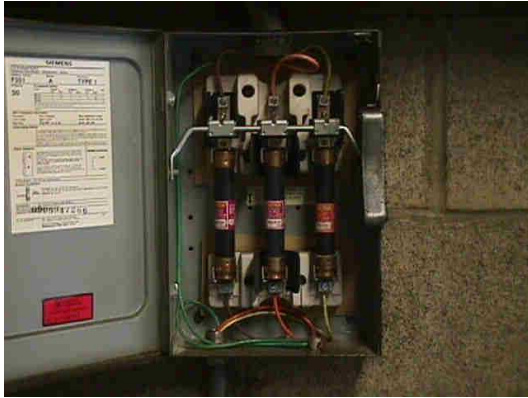
Fault Description Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation
 Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Clean & Tighten.

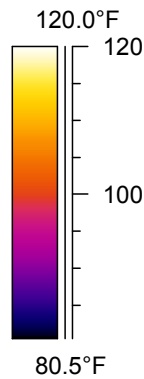
30A Disc. for Air Comp. Refrige. Unit

Identification



Location:	Air Compressor Room (East)
Equipment:	30A Disc. for Air Comp. Refrige. Unit
Item:	Fuses, Terminations, & Wires
Date:	6/16/1999
Time:	1:43:08 PM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	80.6°F
Max. Temperature:	162.1°F
Area 1 Max. Temp.	162.1°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Defective Disconnect.

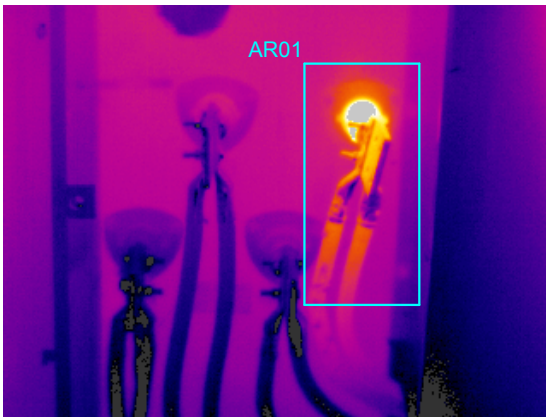
Inspected Equipment:
500 KVA Transformer

Identification



Location:	Outside Feeding Bldg. B
Equipment:	500 KVA Transformer
Item:	Transformer
Date:	9/18/2000
Time:	10:53:32 AM

Infrared Image



Object Distance	5.0 ft
Ambient Temp.	72.0°F
Max. Temperature:	143.1°F
Area 1 Max. Temp.	143.1°F

Fault Description

Acute overheating. Immediate repairs required.

Problem Severity is in Red	Repair Time Frame	Based on Delta T Method
Classification 1	Next Scheduled Shutdown	1 - 15 Degrees Fahrenheit
Classification 2	As Available	16 - 35 Degrees Fahrenheit
Classification 3	ASAP	36 - 55 Degrees Fahrenheit
Classification 4	Critical	Above 56 Degrees Fahrenheit

Recommendation

Amprobe Loads, Shutdown Equipment, Confirm Proper Conductor Size, Confirm Proper Overcurrent Protection, Disassemble, Inspect, Replace Transformer Immediately.

Recommended Electrical Repair Priority Table

Temperature Rise

Repair Priority

******from reference component******

1 - 15 Degrees F

First Stage of overheating. Should be monitored and repaired during next scheduled maintenance.

16 - 35 Degrees F

Second stage of overheating. Should be attended to at the first opportune moment.

36 -55 Degrees F

Developed overheating. Should be repaired as soon as possible.

Above 56 Degrees F

Acute overheating. Immediate repairs required.

The above table is only a guide to help determine the order to schedule the repairs. The final decision as to the severity of the repair priority for each problem and the scheduling of maintenance rests solely with the client.

There are no rules for the assessment of excess temperatures which are measured on directly overheated surfaces. Indirect overheating can be caused by hidden faults, e.g.: breaker contactors inside a breaker where the temperature is measured on the outside casing.

Experience shows that breakers and other components with internal faults where an approximate temperature increase of 10% measured on the surface are considerably hotter inside. Very often the faulty parts are severely burnt.

-----For every problem, always inspect for physical damage to determine repair or replacement of the particular component identified.

-----An inspection should also be made after a problem has been repaired to ensure it has been corrected properly.

All equipment was inspected in the "As Found" condition. No attempt was made to put a load on equipment that was not operating or under low load.

Electrex Co., Inc. assumes no liability directly or indirectly as a result of this inspection.

**To Allow For Seasonal Load Changes
Electrical / Mechanical Predictive Maintenance Inspection
Should be Performed at Least Twice a Year**