



# MIDWEST

Electrical Testing and Maintenance Co., Inc.  
5141 North 35th St., Milwaukee, WI 53209  
414.931.0992 / 414.461.8485 Fax

1060 Breezewood Lane, Suite #4  
Neenah, WI 54956  
920.727.1600 / 920.727.1620 Fax

[www.swgr.com](http://www.swgr.com)



## Thermographic Survey

### Sample Company

Mr. John Smith
111 Main St.
Anywhere, USA

**Thermographer: Ben Franklin**

**Date: Any Date**

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Sample Company  
Mr. John Smith  
Anywhere, USA

Any Date

Attn: Re: Annual Infrared Scan

Sir:

MIDWEST has completed the **Infrared Scan** of your electrical power distribution system. This report comprises the following documents.

- 1.0 Report Cover Letter**
- 2.0 Table of Thermograms** listing the problems found.
- 3.0 Infrared Report Page** for each problem found. Each Infrared Report Page has the following:
  - 3.1 Infrared Image of the problem
  - 3.2 Real Life Picture of the problem
  - 3.3 Data Table with equipment temperature, temperature of the problem area, and the difference in temperature, referred to as "Delta T."
  - 3.4 Evaluation of the problem
  - 3.5 Recommendations to correct the problem
  - 3.6 "Repair Priority" indicating the estimated urgency of repair
- 4.0 Record of Repairs** sheet to conveniently document the repairs
- 5.0 Routing List** of all the equipment scanned

If you have any questions, MIDWEST would be happy to discuss them with you. MIDWEST thanks you for your business and looks forward to continuing to serve your electrical power needs.

Respectfully,  
**Ben Franklin**

Infrared Division  
MIDWEST

Attachment

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**ULTRASONIC SCANNING-TESTING-MAINTENANCE-REPAIR**  
Circuit Breakers - Transformers - Switchgear - Substations - Relays - Cables - Oil Testing  
**ENGINEERING - SAFETY TRAINING - HUGE INVENTORY**  
**24 HR. EMERGENCY SERVICE**

# **TABLE OF THERMOGRAMS**

This table lists all images taken along with repair priorities.

<b>No.</b>	<b>Priority</b>	<b>Location</b>	<b>Equipment</b>
1	Critical	Outdoor Substation	2500kVA Transformer
2	Critical	Electrical Room #2	Switch #2
3	Urgent	Main Electrical Room	Switch #1

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## ***MIDWEST ELECTRICAL TESTING***

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### **Fox Valley Division**

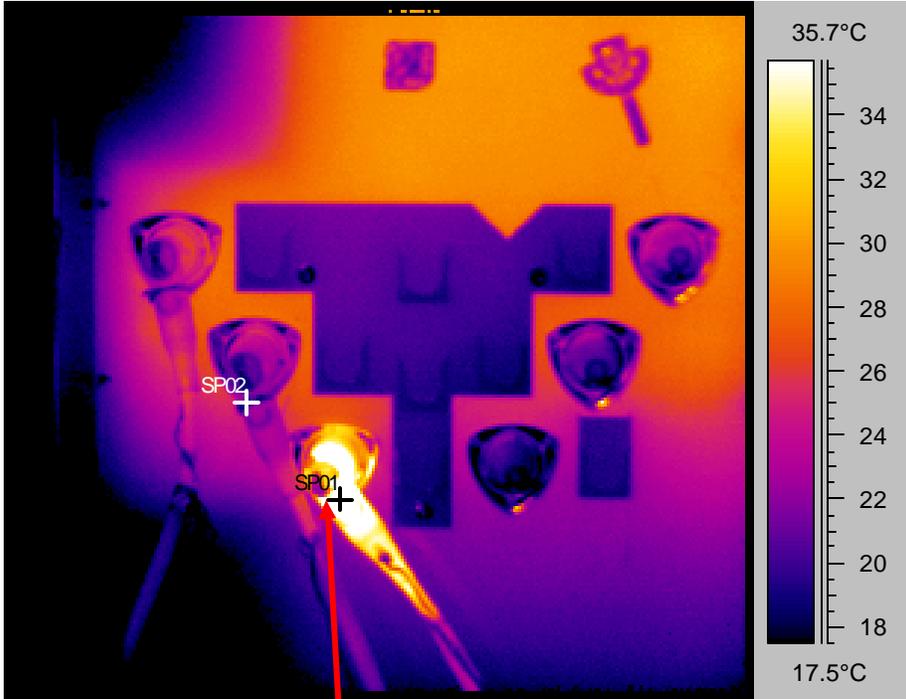
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# Sample Company

## Location

Outdoor Substation

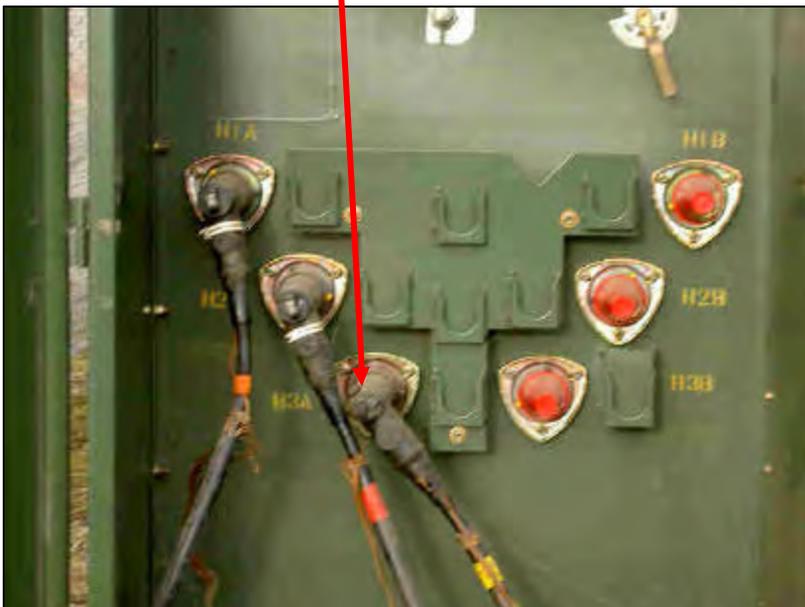
2500kVA Transformer



<b>Problem #</b>	<b>1</b>
<b>Repair Priority</b>	<b>Critical</b>
<b>Hot Spot</b>	<b>43.0°C</b>
<b>Ref. Temp</b>	<b>19.0°C</b>
<b>Delta T</b>	<b>24.0</b>
<b>Time</b>	<b>Any Time</b>
<b>Date</b>	<b>Any Day</b>

## Evaluation

The connection is overheating by **24°C**. High Voltage elbow terminator may have a defective "cable-to-terminator" connection inside the elbow terminator.



## Recommendations

Replace the deficient High Voltage elbow terminator. Based on our experience, the best solution is to replace the elbow terminator.

## Repair Priority

**Critical Repair Priority** - Repair as soon as possible.

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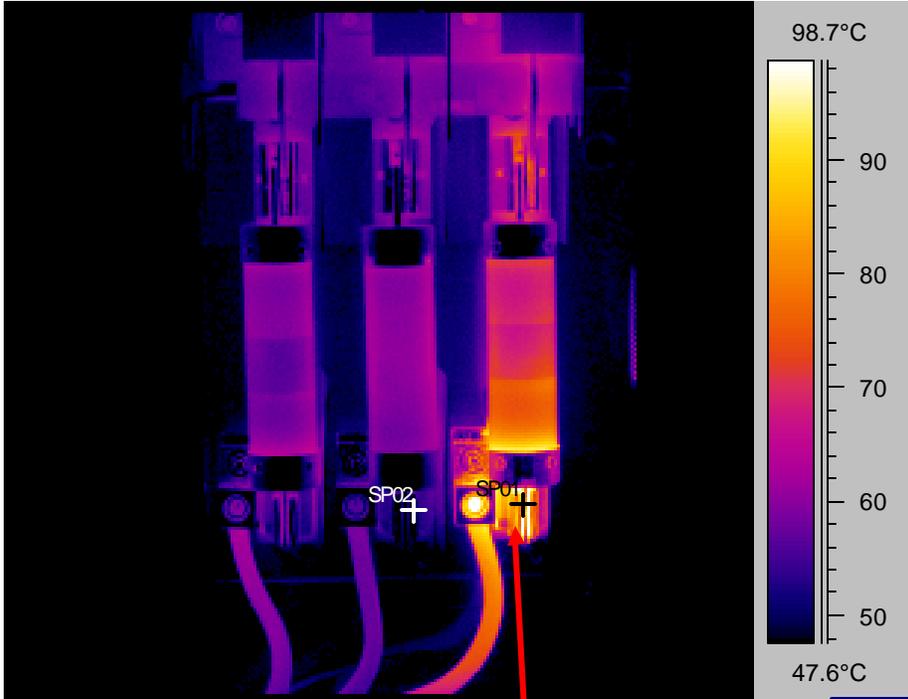
920.727.1600 / Fax 920.727.1620

# Sample Company

## Location

Electrical Room #2

Switch #2



<b>Problem #</b>	<b>2</b>
<b>Repair Priority</b>	<b>Critical</b>
<b>Hot Spot</b>	<b>104.3°C</b>
<b>Ref. Temp</b>	<b>47.4°C</b>
<b>Delta T</b>	<b>57.0</b>
<b>Time</b>	<b>Any Time</b>
<b>Date</b>	<b>Any Day</b>

## Evaluation

The lower C phase fuse clip and wire connection are hot. A dirty or loose connection is suspected.

## Recommendations

Clean the fuse contact surfaces and fuse clip, reassemble. Check fuse clip for proper tension. Disconnect the wire. Clean the wire and lug. Inspect for signs of burning or pitting. Reassemble. Make sure the lug is properly torqued.

## Repair Priority

**Critical Repair Priority** - Repair as soon as possible.



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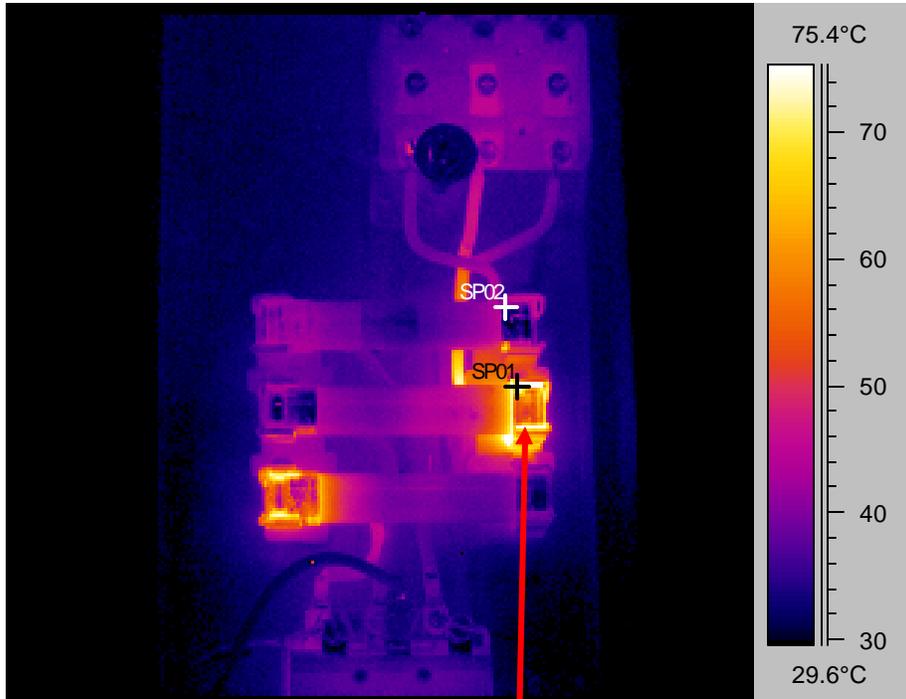
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# Sample Company

## Location

Main Electrical Room

Switch #1



<b>Problem #</b>	<b>3</b>
<b>Repair Priority</b>	<b>Urgent</b>
<b>Hot Spot</b>	<b>79.4°C</b>
<b>Ref. Temp</b>	<b>36.0°C</b>
<b>Delta T</b>	<b>43.4</b>
<b>Time</b>	<b>Any Time</b>
<b>Date</b>	<b>Any Day</b>

## Evaluation

The lower left and center right fuse clips are hot. Loose wire connections or poor fuse clip tension is suspected.



## Recommendations

Remove all the fuses, clean the fuse contact areas and fuse clip contact areas, reassemble. Check fuse clips for proper tension. Replace if necessary. Clean the wire to lug connection. Check all the lugs for proper torque.

## Repair Priority

**Urgent Repair Priority** - Repair at earliest opportunity.

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# RECORD OF REPAIRS

This page lists all images taken and has areas for you to document repairs.

No.	Location	Equipment	Action Taken	By	On
1	Outdoor Substation	2500kVA Transformer	-	-	-
2	Electrical Room #2	Switch #2	-	-	-
3	Main Electrical Room	Switch #1	-	-	-

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# MIDWEST ELECTRICAL TESTING & MAINTENANCE CO.

## THERMOGRAPHIC INSPECTION REPORT

Customer: Sample Company  
 Owner/User: Sample User  
 Address: 111 Main St. Anywhere, USA

Date: Any Date

Project No.: 10001

Assistant: John Smith

NO.	LOCATION	EQUIPMENT DESCRIPTION	STATUS
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1.	Main Electrical Room	Switch #1	Hot Spot
2.	Below Mezzanine Steps	East Wall Air Handler Disconnect	No Problems
3.	EXT-16 Mezzanine	Control Cabinets	No Problems
4.	EXT-16 Mezzanine	Substation S-1A, Breakers Only	No Problems
5.	EXT-16 Mezzanine	MCC	No Problems
6.	EXT-16 Mezzanine	Transformers	No Problems
7.	Under Mezzanine (EXT-16)	B1-MDP1-RP1	No Problems
8.	Office Mezzanine Above QA Lab	Panel B1-MDP1-RP1-LP1	No Problems
9.	EXT-16 Carriage	Power Panel	No Problems
10.	Office Mezzanine Above QA Lab	B1-MDP1-RP1-LP1A	No Problems
11.	East Wall	South Air Handler Disconnect	Not Running
12.	East Wall Outside Chiller Room	QO Panel FU-B1-B01-3	No Problems
13.	Chiller Room Next to Garage Door	Panel IL 1401	No Problems
14.	Chiller Room	480 Panel	No Problems
15.	Chiller Room	Chiller Control Panel	No Problems
16.	Chiller Room	Air Compressor 1	No Problems
17.	Chiller Room (Mezzanine)	Air Dryer 1, Bus Disconnect Only	No Problems
18.	Chiller Room	Chiller 1	No Problems
19.	Chiller Room	Chiller 2	Not Running

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## THERMOGRAPHIC INSPECTION REPORT

Customer: Sample Company  
 Owner/User: Sample User  
 Address: 111 Main St. Anywhere, USA

Date: Any Date

Project No.: 10001

Assistant: John Smith

NO.	LOCATION	EQUIPMENT DESCRIPTION	STATUS
20.	Warehouse	Bus Duct (South) + (East) Walls	No Problems
21.	PRS.31	Control Room	No Problems
22.	PRS.31	Unwind Control Panel	No Problems
23.	PRS.31	Rewind Control Panel	No Problems
24.	PRS.31	Rewind Control Panel	No Problems
25.	PRS.31	Unwind Control Panel	No Problems
26.	PRS.31	Control Room	No Problems
27.	Outdoor Substation	2500KVA Transformer	Hot Spot
28.	INK Room (Mezzanine)	Box Drive	No Problems
29.	INK Room (Mezzanine)	Solvent System Control Panel (B-CSF SOLV PNL)	No Problems
30.	INK Room (Mezzanine)	PRI Control Panel (2) B-P Wash	No Problems
31.	INK Room (Mezzanine)	B-PRI Panel	No Problems
32.	INK Room (Mezzanine)	INK Room Exhaust Fan Control Panel B-SR Fan	No Problems
33.	Southwest Corner of Warehouse	INK Room Lighting Panel BI-MDP1-BD1-PP1-PP1	No Problems
34.	Southwest Corner of Warehouse	480V Panel BI-MDP1-BD1-PP1-RP1	No Problems
35.	Electrical Room #2	Switch #2	Hot Spot
36.	Compactor Room	Trim System Control Panel	No Problems