

August 23, 2019

Thermographic Survey Report

Prepared for:

ABC Manufacturing

Sacramento, CA

Prepared by:

Zarheer Jooma PE IEEE (SM)

Electrical Engineer

CONTENTS

Thermographic Inspection Results

Equipment Status Summary

August 23, 2019

John Smith
ABC Manufacturing
1234 Sunset Drive
Sacramento, CA 94203

Dear John Smith,

Thank you for the opportunity to conduct a Thermographic Inspection and provide you with the results and recommendations contained in this report.

On August 1st, 2019, a Thermographic Inspection was performed on all panelboards. The purpose of this inspection was to ascertain the existing condition of electrical system components, to suggest corrective action(s), and routine procedures which will reduce unplanned downtime, prevent accidents, and lengthen the mean time between failures (MTBF) of electrical equipment.

Thermal scanning included:

Visual Inspections
Infrared Scanning Inspection

This report consists of a detailed summary of the findings, evaluations and recommendations.

This survey is an important part of your preventive maintenance program. There are four basic rules to effective preventive maintenance:

- Keep it dry
- Keep it cool
- Keep it clean
- Keep it tight

We are available for any further questions you may have about the report, or if you need any additional services.

Kind Regards,

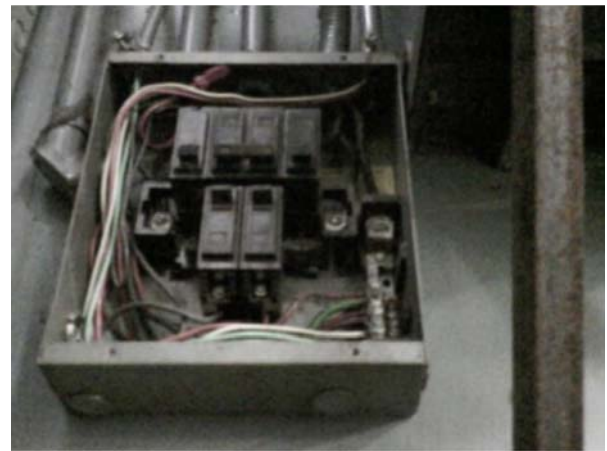
Zarheer Jooma PE IEEE (SM)
Electrical Engineer

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ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Shipping/West Wall/South EQUIPMENT ID: Panel LV3/Fan Men's Room TARGET: Breaker 8 CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	70.1 °F
Sp1	160.0 °F
Sp2	89.9 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	119	NA	NA	3.3	NA

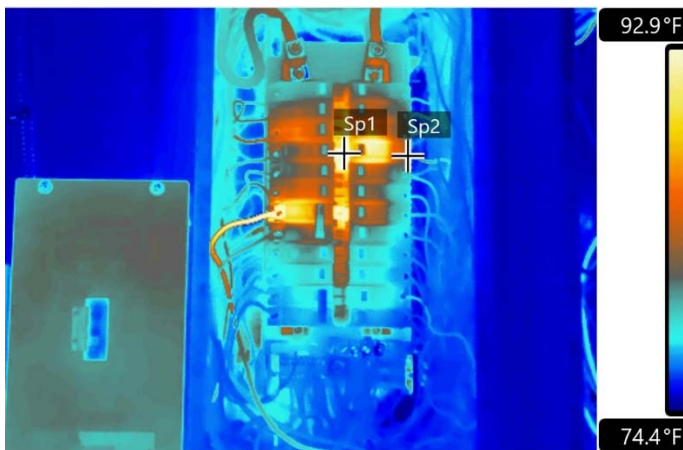
TECHNICIANS SUMMARY

PROBLEM	Bus connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Replace breaker
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: West Wall/Office Entry EQUIPMENT ID: Panel BPOP1/Unnamed Breaker 8 TARGET: Bus connection CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	21.6 °F
Sp1	103.5 °F
Sp2	81.8 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	119	NA	NA	3.3	NA

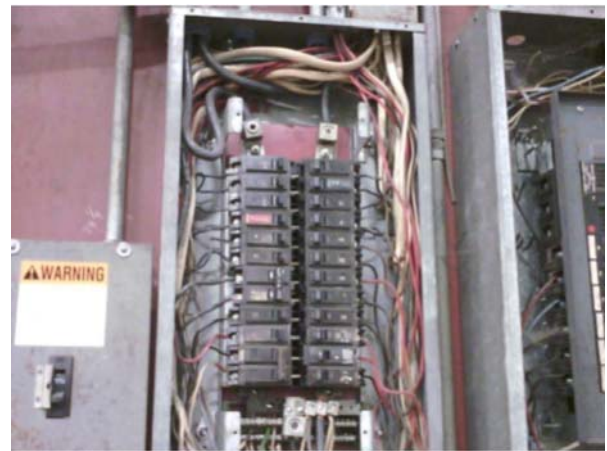
TECHNICIANS SUMMARY

PROBLEM	Breaker
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Replace breaker
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Ship/West Wall/Office Entry EQUIPMENT ID: Panel PBP1/Unnamed Breaker 13,15 TARGET: Circuit 13 CONDITION: Intermediate

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	15.9 °F
Sp1	97.9 °F
Sp2	82.0 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
120	120	NA	15.4	3.1	NA

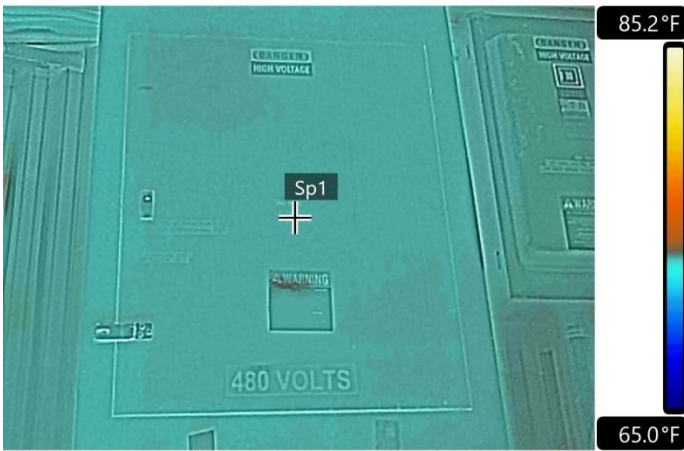
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Screw was tightened
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Ship/West Wall/Office Entry EQUIPMENT ID: Panel HVP/Ship/1 TARGET: Feeder conduit CONDITION: Intermediate

Visible Light Image or Repaired Image



THERMAL READINGS	
Deltas	-
Sp1	73.6 °F
Areas	-
Ellipses	-

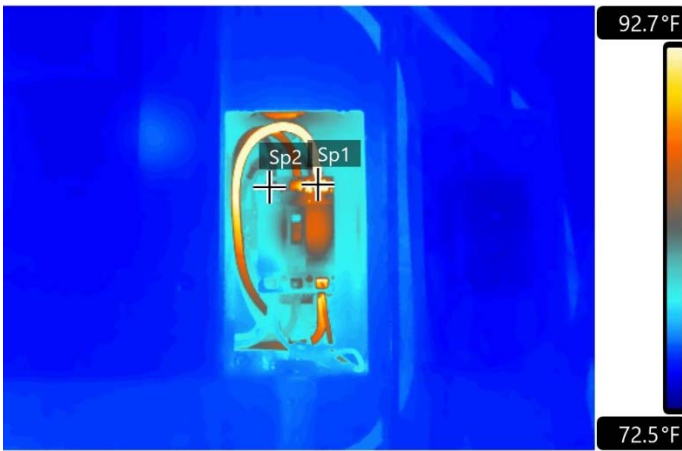
ACTIVE VOLTAGE AND AMPERAGE					
L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

TECHNICIANS SUMMARY	
PROBLEM	Hole around conduit
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Cover hole
REMARKS	NEC violation. Also any item installed with a disconnect handle exceeding a height of 6'7" from floor in the "On" position is in NEC violation.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Ship/West Wall/Office Entry EQUIPMENT ID: Breaker HVP/Ship/1 TARGET: C-Phase line side wire connection CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS	
Dt1 (Sp1 - Sp2)	23.4 °F
Sp1	105.8 °F
Sp2	82.4 °F
Areas	-
Ellipses	-

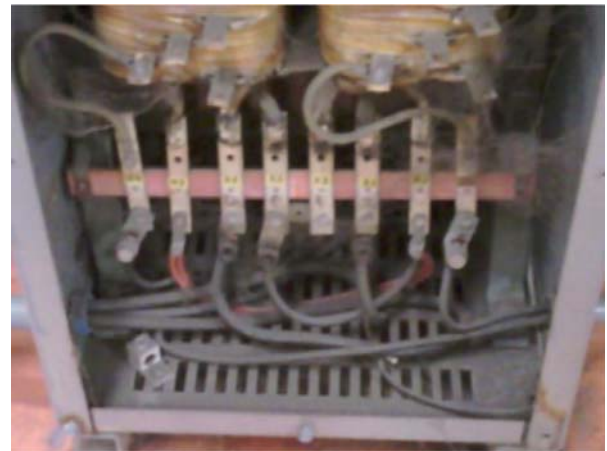
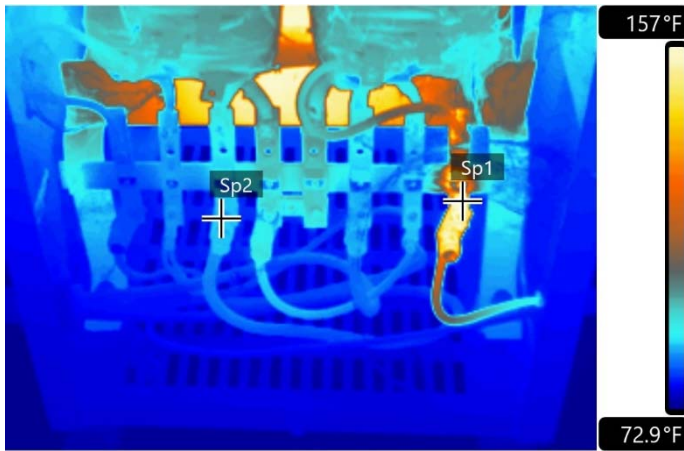
ACTIVE VOLTAGE AND AMPERAGE					
L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
278	278	279	5.7	11.4	10.9

TECHNICIANS SUMMARY	
PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Ship/West Wall/Office Entry EQUIPMENT ID: T-BPOP1 TARGET: High voltage right wire lug CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	71.5 °F
Sp1	162.5 °F
Sp2	91.0 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
282	281	NA	11.3	11	NA

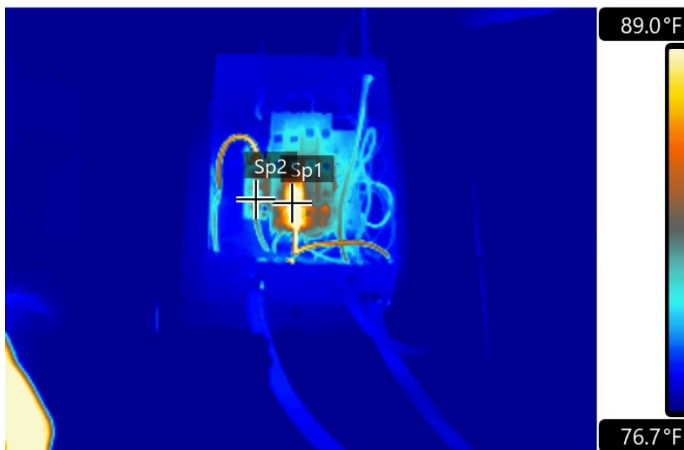
TECHNICIANS SUMMARY

PROBLEM	Loose lug connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	Transformer is not properly grounded to XO lug and building steel as per the NEC

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Ship/West Wall/Office Entry EQUIPMENT ID: Panel LV1/N. End Plugs TARGET: Breaker 6 CONDITION: Intermediate

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	13.8 °F
Sp1	94.6 °F
Sp2	80.8 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
122	NA	NA	1.8	NA	NA

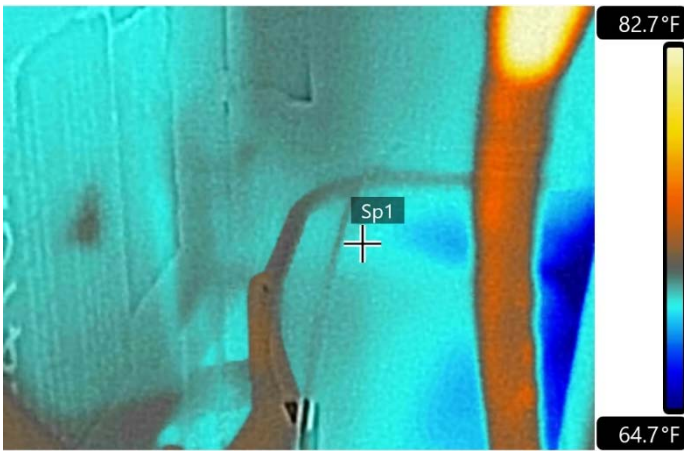
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Screw was tightened
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Mechanical Room/2nd Floor EQUIPMENT ID: AHU-2 TARGET: Conduit with feeder wiring CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS	
Deltas	-
Sp1	70.1 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE					
L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

TECHNICIANS SUMMARY	
PROBLEM	Improper conduit run.
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install conduit as per the NEC
REMARKS	Two forms of conduit are mechanically connected for continuous ground path. NEC 300.10

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Men's Locker Room EQUIPMENT ID: Panel Shop Lighting TARGET: Openings in dead front CONDITION: Serious

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Visible Light Image or Repaired Image



THERMAL READINGS

Deltas	-
Sp1	80.8 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

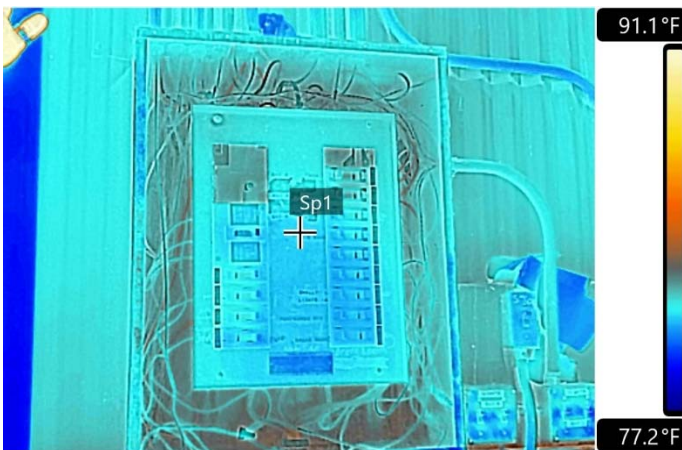
TECHNICIANS SUMMARY

PROBLEM	Unused breaker openings
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install breaker filler plates
REMARKS	Panel cover door lock is damaged

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Men's Locker Room EQUIPMENT ID: Panel Shop Lighting TARGET: Breaker 7,9,11 CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Deltas	-
Sp1	81.0 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

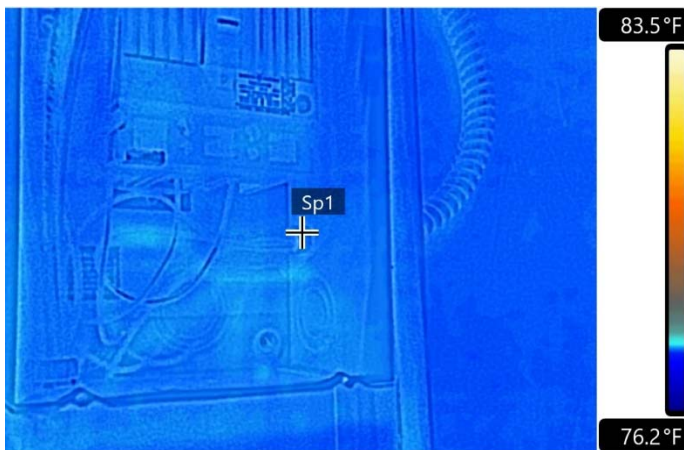
TECHNICIANS SUMMARY

PROBLEM	Wire attached to breaker is incorrect size
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install #10awg wire from breaker to load
REMARKS	NEC violation

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/East Wall EQUIPMENT ID: Breaker/Supply Fan TARGET: Flexible conduit connector CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Deltas	-
Sp1	77.6 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

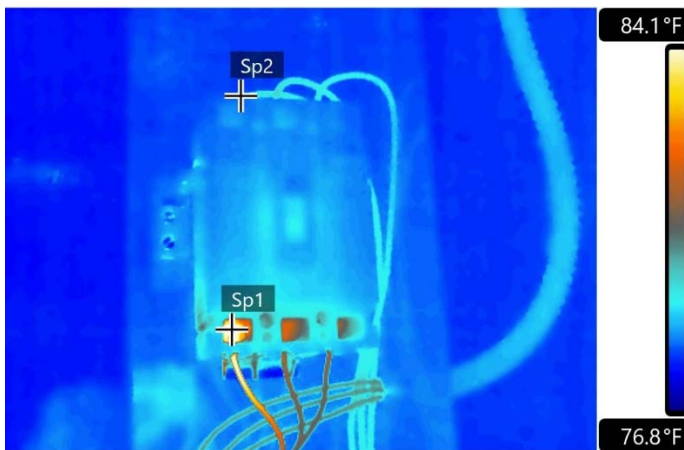
TECHNICIANS SUMMARY

PROBLEM	Missing locknut
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install locknut
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/East Wall EQUIPMENT ID: Breaker/#1 Fan TARGET: A-Phase load side wire connection CONDITION: Minor

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	7.0 °F
Sp1	85.4 °F
Sp2	78.4 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
287	287	286	6.2	5.9	5.8

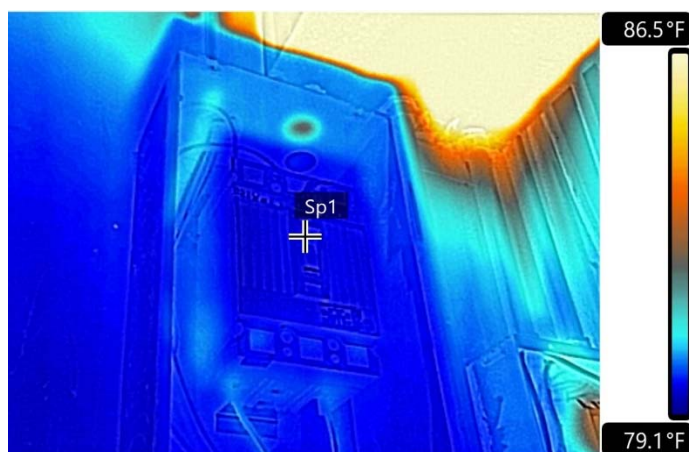
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Screw was tightened
REMARKS	The flexible conduit connector at bottom right is missing the locknut

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/West Wall EQUIPMENT ID: Breaker/N. Air Cond TARGET: Top of Enclosure CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS	
Deltas	-
Sp1	79.7 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE					
L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

TECHNICIANS SUMMARY	
PROBLEM	Unused openings
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install knockout plug
REMARKS	Something laid on top of enclosure could fall inside and fault to ungrounded conductors.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/East Wall EQUIPMENT ID: Breaker/#3 TARGET: Top of Enclosure CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Deltas	-
Sp1	79.3 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

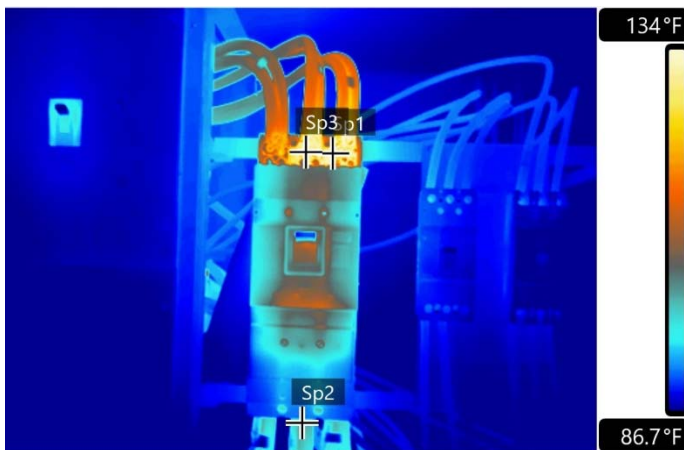
TECHNICIANS SUMMARY

PROBLEM	Unused openings
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install knockout plug
REMARKS	Something laid on top of enclosure could fall inside and fault to ungrounded conductors.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/South Wall EQUIPMENT ID: MDP/Sec 2/Main TARGET: Breaker/C-Phase line side wire connection CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS

Dt2 (Sp3 - Sp2)	28.6 °F
Dt1 (Sp1 - Sp2)	29.9 °F
Sp1	133.4 °F
Sp2	103.5 °F
Sp3	132.1 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
495	492	495	250	335	325

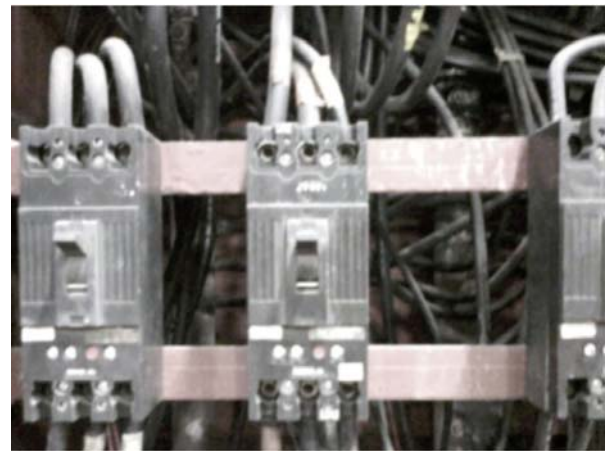
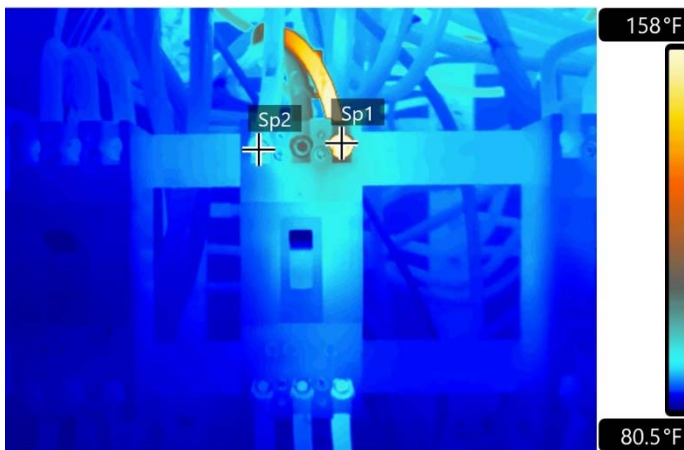
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	Breaker is missing the wire cover similar to the one at bottom of breaker

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/South Wall EQUIPMENT ID: MDP/Sec 1/West Wall Feeder TARGET: Breaker/C-Phase line side wire connection CONDITION: Critical

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	92.8 °F
Sp1	188.2 °F
Sp2	95.4 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
286	286	285	16	30	32

TECHNICIANS SUMMARY

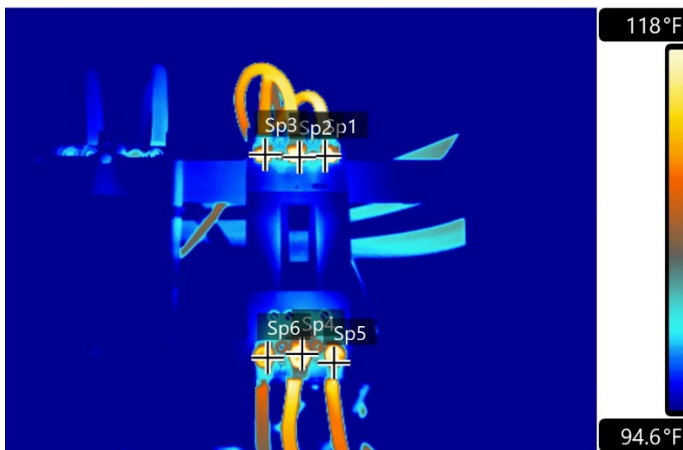
PROBLEM	Loose lug connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	Remove hex set screw and wire to check lug to breaker connection.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/South Wall EQUIPMENT ID: MDP/Sec 1/Paint Shop TARGET: Breaker/All connections CONDITION: Intermediate

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Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp6)	13.0 °F
Sp1	127.5 °F
Sp2	127.2 °F
Sp3	119.0 °F
Sp4	121.3 °F
Sp5	118.9 °F
Sp6	114.5 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
287	286	286	95	110	103

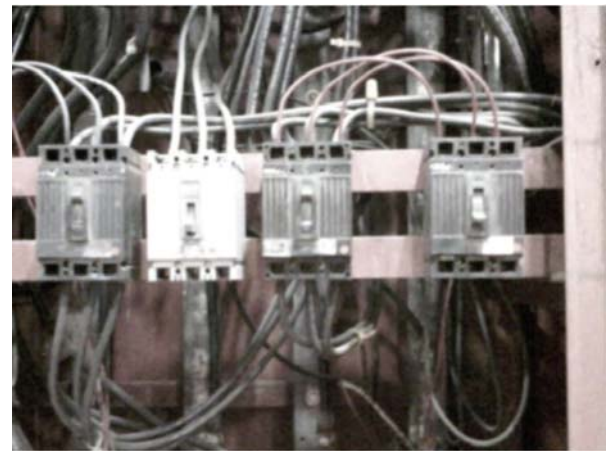
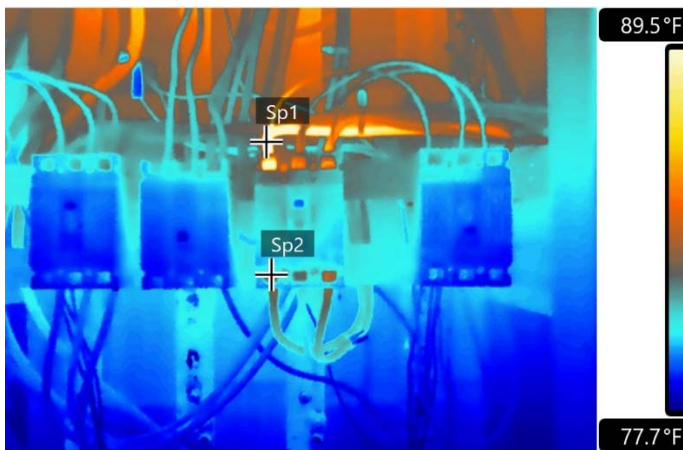
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	Remove hex set screw and wire to check lug to breaker connection.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Drywall/South Wall EQUIPMENT ID: MDP/Sec 1/Shop Lighting TARGET: Breaker/A-Phase line side wire connection CONDITION: Intermediate

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	15.4 °F
Sp1	98.6 °F
Sp2	83.2 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
285	284	284	13	6	17

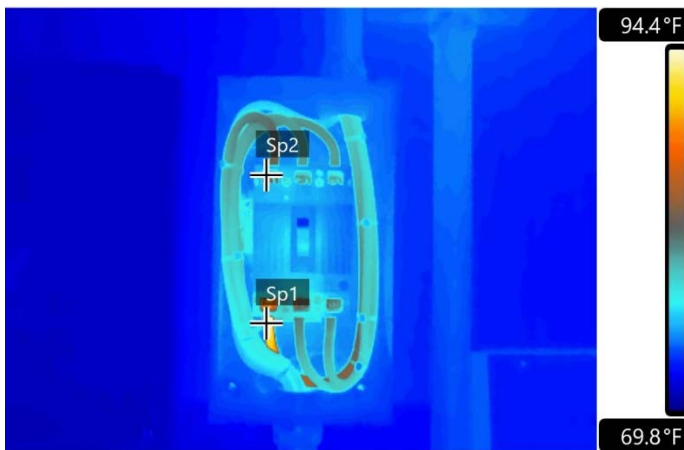
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: Breaker PD TARGET: C-Phase load side wire lug CONDITION: Intermediate

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	11.3 °F
Sp1	93.7 °F
Sp2	82.4 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
280	280	281	60	60	60

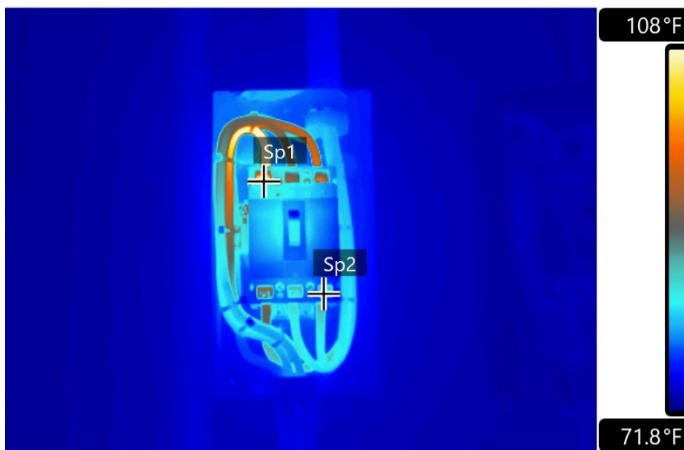
TECHNICIANS SUMMARY

PROBLEM	Loose lug connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: Breaker PC TARGET: All line side and C-Phase load side connections CONDITION: Critical

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	36.8 °F
Sp1	120.4 °F
Sp2	83.6 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
282	281	283	13	12	9

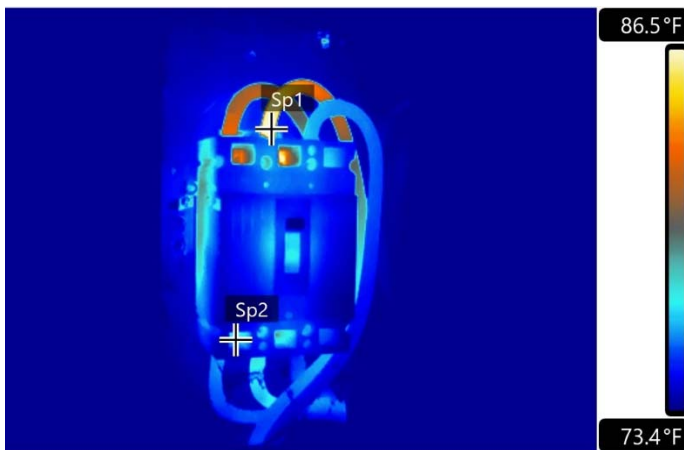
TECHNICIANS SUMMARY

PROBLEM	Loose wire connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: Breaker PB TARGET: B-Phase line side connection CONDITION: Minor

	Visible Light Image or Repaired Image
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THERMAL READINGS

Dt1 (Sp1 - Sp2)	9.7 °F
Sp1	86.4 °F
Sp2	76.7 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
281	282	283	5.3	5.1	0

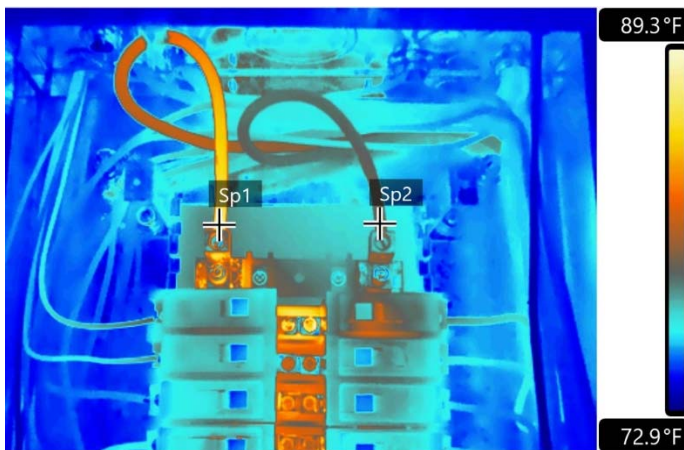
TECHNICIANS SUMMARY

PROBLEM	Loose lug connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: Panel BPTR-2 TARGET: A-Phase line connection CONDITION: Minor

Visible Light Image or Repaired Image



THERMAL READINGS

Dt1 (Sp1 - Sp2)	8.2 °F
Sp1	88.3 °F
Sp2	80.0 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
121	121	NA	13	14	NA

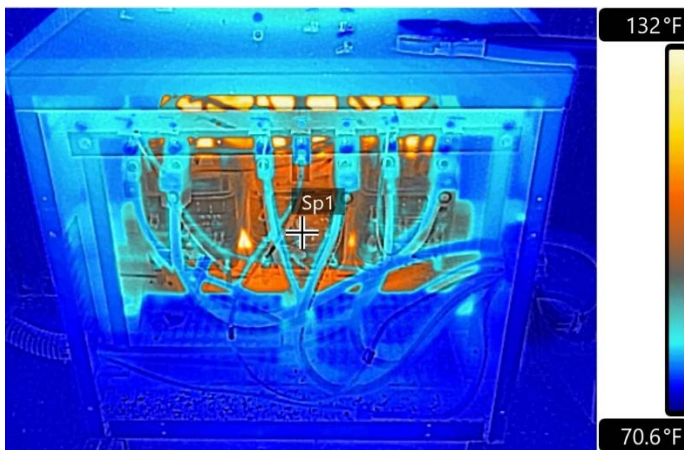
TECHNICIANS SUMMARY

PROBLEM	Loose lug connection
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Check all connections
REMARKS	Single phase panel

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: T-TRBP-1 TARGET: Neutral lug CONDITION: Critical

Visible Light Image or Repaired Image



THERMAL READINGS

Deltas	-
Sp1	96.7 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE

L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

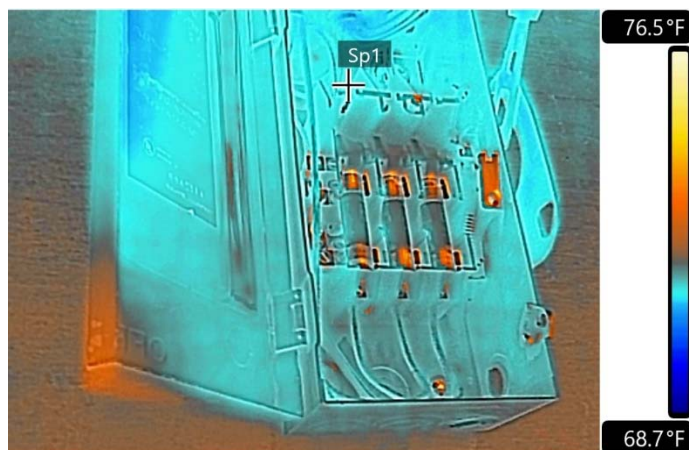
TECHNICIANS SUMMARY

PROBLEM	Improper connection and wire sizing
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install correct size neutral and grounding conductors
REMARKS	Transformer is not properly grounded to the XO lug and building steel as per the NEC. Neutral is improperly sized. Missing protective bushings on both entry conduits.

ABC Manufacturing Annual Thermographic Survey

OWNER	NOMENCLATURE
	LOCATION: Tool Room EQUIPMENT ID: Disconnect/Victor Lathe TARGET: Unused openings CONDITION: Serious

Visible Light Image or Repaired Image



THERMAL READINGS	
Deltas	-
Sp1	71.3 °F
Areas	-
Ellipses	-

ACTIVE VOLTAGE AND AMPERAGE					
L1-N (volts)	L2-N (volts)	L3-N (volts)	L1 (amps)	L2 (amps)	L3 (amps)
NA	NA	NA	NA	NA	NA

TECHNICIANS SUMMARY	
PROBLEM	Unused openings
CORRECTIVE ACTION TAKEN	
RECOMMENDATION	Install knockout plug
REMARKS	

Equipment Status Summary

Page	Issue	Location	Equipment ID	Condition
2	Bus connection	Shipping/West Wall/South	Panel LV3/Fan Men's Room	Serious
3	Breaker	West Wall/Office Entry	Panel BPOP1/Unnamed Breaker 8	Serious
4	Loose wire connection	Ship/West Wall/Office Entry	Panel PBP1/Unnamed Breaker 13,15	Intermediate
5	Hole around conduit	Ship/West Wall/Office Entry	Panel HVP/Ship/1	Intermediate
6	Loose wire connection	Ship/West Wall/Office Entry	Breaker HVP/Ship/1	Serious
7	Loose lug connection	Ship/West Wall/Office Entry	T-BPOP1	Serious
8	Loose wire connection	Ship/West Wall/Office Entry	Panel LV1/N. End Plugs	Intermediate
9	Improper conduit run.	Mechanical Room/2nd Floor	AHU-2	Serious
10	Unused breaker openings	Men's Locker Room	Panel Shop Lighting	Serious
11	Wire attached to breaker is incorrect size	Men's Locker Room	Panel Shop Lighting	Serious
12	Missing locknut	Drywall/East Wall	Breaker/Supply Fan	Serious
13	Loose wire connection	Drywall/East Wall	Breaker/#1 Fan	Minor
14	Unused openings	Drywall/West Wall	Breaker/N. Air Cond	Serious
15	Unused openings	Drywall/East Wall	Breaker/#3	Serious
16	Loose wire connection	Drywall/South Wall	MDP/Sec 2/Main	Serious
17	Loose lug connection	Drywall/South Wall	MDP/Sec 1/West Wall Feeder	Critical
18	Loose wire connection	Drywall/South Wall	MDP/Sec 1/Paint Shop	Intermediate
19	Loose wire connection	Drywall/South Wall	MDP/Sec 1/Shop Lighting	Intermediate
20	Loose lug connection	Tool Room	Breaker PD	Intermediate
21	Loose wire connection	Tool Room	Breaker PC	Critical
22	Loose lug connection	Tool Room	Breaker PB	Minor
23	Loose lug connection	Tool Room	Panel BPTR-2	Minor
24	Improper connection and wire sizing	Tool Room	T-TRBP-1	Critical
25	Unused openings	Tool Room	Disconnect/Victor Lathe	Serious