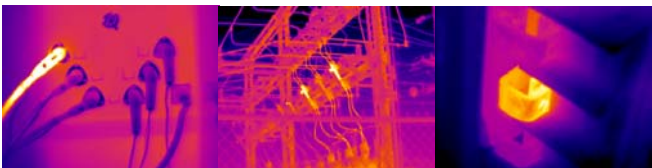


Infrared Testing Survey Report

Prepared For:
Company Name
Company Address



Current Date
Job Number: 777



Report Parameters

The following is a report based on the inspection of your facility. Thermal anomalies can be defined as components that are warmer in one part of an electrical circuit than other comparable parts in that same circuit and are under the same load. Each page contains a thermogram (thermal image) that shows what the thermographer sees with the infrared camera, as well as a digital photograph to give a pictorial reference as seen with the human eye.

The Infrared Inspection Report contains thermal anomalies found in the electrical equipment that was scanned. A thermogram (thermal image) of the components identifying the anomaly and a control photograph identifying the equipment correspond with each piece of equipment where an anomaly was discovered. The location of the anomalies is indicated with arrows.

With an Infrared camera we use the same standard throughout our testing. The lighter the color in the thermogram, the warmer the temperature of the object. On the same spectrum, the darker the object the cooler that object is. The temperature scale on the right side of the thermogram determines the range that the camera was in and should be considered when analyzing the results of this report.

Temperature rise between like components is used to classify the severity of each anomaly found. This rise is directly related to whether the equipment was running under load at the time, weather and ambient air temperature, as well as the emissivity of the components being tested. The emissivity was set at **.95** for this inspection.

The heavier the load is in equipment, the more obvious the anomalies appear. All equipment was inspected in an "as found" condition. Equipment that is listed on the following page may or may not have been under load at the time of the inspection.

The anomalies found during this inspection are classified as:

0°C To 9°C	Minor	Inspect or repair during regular maintenance or no action required.
10°C To 24°C	Intermediate	Repair in the near future. Inspect for physical damage.
25°C To 34°C, Exception: Lower Temperature Rise That Could Cause Unscheduled Downtime	Serious	Repair in immediate future; inspect components and surrounding components for physical damage. Repair as soon as possible.
35°C Or Greater, Exception: Lower Temperature Rise That Could Cause Unscheduled Downtime	CRITICAL	Replace or repair immediately. Failure of this equipment is very likely in the near future.

Equipment Inspected

Roof

2000 KVA Padmount Transformer #1
2000 KVA Padmount Transformer #2
After-Burner D, E & F Control Cabinet
After-Burner D, E & F Disconnect
After-Burner A, B & C Control Cabinet
After-Burner A, B & C Disconnect
RTU- 3 Disconnect (NR)
RTU- 5 Disconnect (Disconnect Off)
AHU- 2 Disconnect & Control Cabinet (NR)
AHU- 14 Disconnect & Control Cabinet (NR)
RTU-18 Disconnect And Control Cabinet (Fan Only)
RTU-20 Disconnect (NR)
AEC Chiller Control Cabinet
AEC Chiller Disconnect
Trane Chiller Control Cabinet
Trane Chiller Disconnect
400/500 After-Burner Control Cabinet & Disc.
Compressor Room Exhaust Fan Disconnects
 North
 Center
 South
AHU-17 Disconnect And Control Cabinet (NR)
AHU-16 Disconnect And Control Cabinet (NR)
AHU-19 Disconnect And Control Cabinet
AHU-23 Disconnect And Control Cabinet
AHU-24 Disconnect And Control Cabinet
AHU-21 Disconnect And Control Cabinet
AHU-22 Disconnect And Control Cabinet (NR)
AEC Unit
RTU #1
RTU #6 (NR)
RTU #10 (NR)
RTU # 9
(2) RTU In SE Corner Of Roof
RTU #8 (NR)
RTU #11(NR)
RTU #7(NR)
AHU-15
RTU #12 (NR)
RTU 13(NR)
AHU #14
EF 25
EF26 (NR)
EF 27 (NR)
RTU #4 (Locked Out)

Main Electrical Service #1

2500 Amp Fused Disconnect
2000 Amp Switchboards (2)
Panel PP1
Panel A
Panel C
(4) Lighting Contactors

Upstairs Clothing Room

Panel CC

Upstairs Storage Behind Training Room

Panel J

Downstairs

Panel D (White Hallway)

Boiler Room

Panel I
Panel F
Contactors for 1&2 Circ. Pumps
Contactor for outside lights

Cleaning Closet

Panel PP3
Panel G

Elevator Room

Disconnect
Control Panel

Generator Closet

Panel DD
Transfer Switch

300 Room

Distribution Panel
110 volt Breaker Panel

Pre-Press

East Wall Panel
Panel H
New Panels
120 Volt Branch
480/ 277 Panel

Equipment Inspected (Continued)

400 Press Line

Dryer Control Cabinet-Running 1 line
Motor Control Center-Running 11 line
Oil Pump Control Cabinet
400 KVAR Capacitor Bank #1
Panel LP2
Tote Exhaust Fan Control Cabinet (NR)
Panel B
Panel PP2

450 Line A

PP1 240 Volt
PP1 480 Volt
Drive Control Cabinet
Dryer Control Cabinet

450 Line B

PP2 240 Volt
PP2 480 Volt
Drive Control Cabinet
Dryer Control Cabinet

Compressor Mezzanine

2500 Amp Main Fused Disconnect
2000 Amp Power Switchboards (2)
Compressor #1 C.C. and Disconnect
Compressor #2 C.C. and Disconnect (NR)
Compressor #3 C.C. and Disconnect
Compressor #4 C.C. and Disconnect (NR)
Compressor #5 C.C. and Disconnect
Compressor #6 C.C. and Disconnect
Air Dryer
PP-4
PP-5
400 KVAR Capacitor Bank #2
Press Panels A-C Disconnects
Press Room D,E,F Disconnect
Misc. Fan Control Cabinets (4)

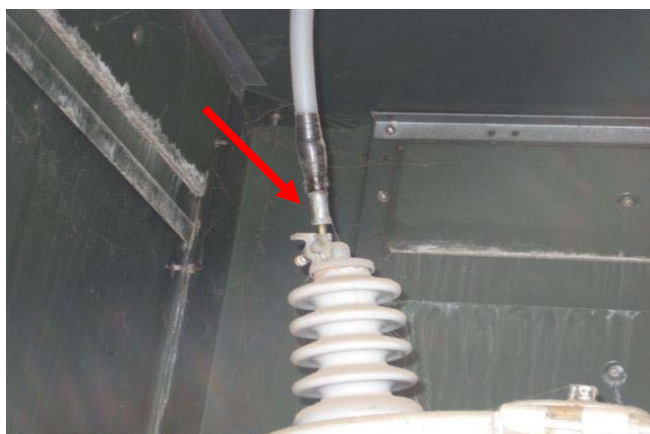
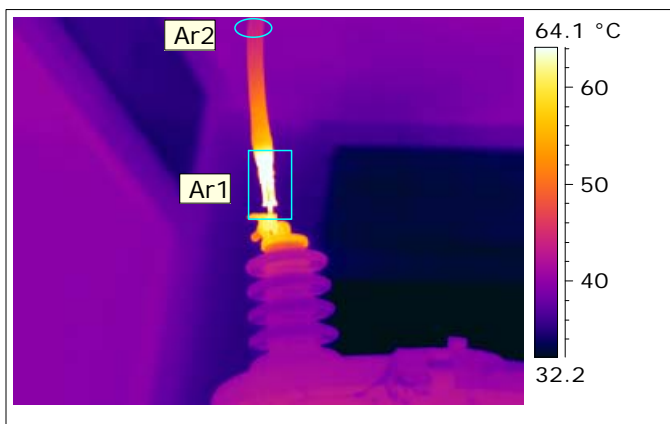
Warehouse

Baler
Misc. Lighting/Power Panels
Panel PP-3
Panel E
Panel PP-6
Panel EE

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_1433.jpg
Maximum Temperature	72
Control Temperature	45
Temperature Rise	27
Severity	Serious

Location	South Side Of Building Transclosure East Can West High Voltage Connection
Equipment	250 KVA Transformer
Type	Termination
Image Date	9/17/2008
Image Time	2:04:31 PM
Recommendation	Repair

Analysis & Recommended Action:

The crimp connection above shows a 27°C rise as compared to the cable connected. The thermal image is taken from the opposite side to get a better angle. The termination needs to be remade with the proper crimp terminal, using the appropriate crimp tool. There is also oil leaking from this transformer at the secondary bushing. Repairs should be made at the next available shut down using qualified High Voltage personnel.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

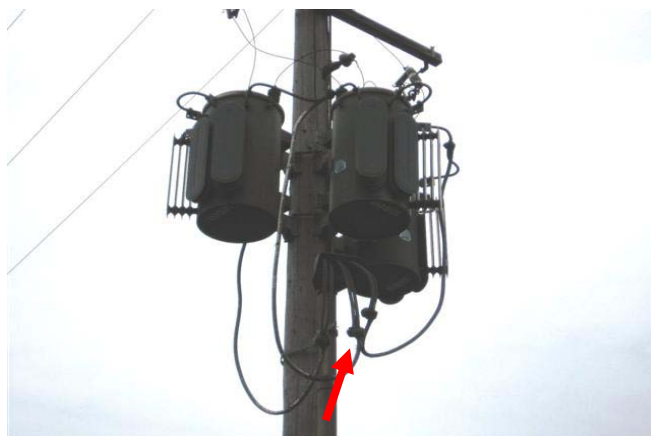
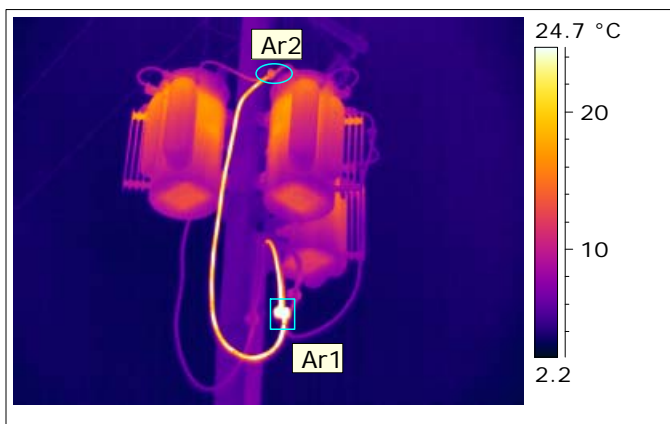
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_1948.jpg
Maximum Temperature	45
Control Temperature	20
Temperature Rise	25
Severity	Serious

Location	Foundry Area North Parking Lot
Equipment	Pole Mount Transformer Secondary Connection
Type	Wye Connection
Image Date	11/12/2008
Image Time	11:03:09 AM
Recommendation	Repair Splice Connection

Analysis & Recommended Action:

The secondary connection from the west transformer shows a 25°C rise. This is an 11°C rise in temperature since the 2007 report. During the next outage this connection wire should be replaced (between the transformer and splice) and a new connection made. Keep in mind that the actual temperature at the connection will be considerably higher after factoring in ambient air temperature and distance.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

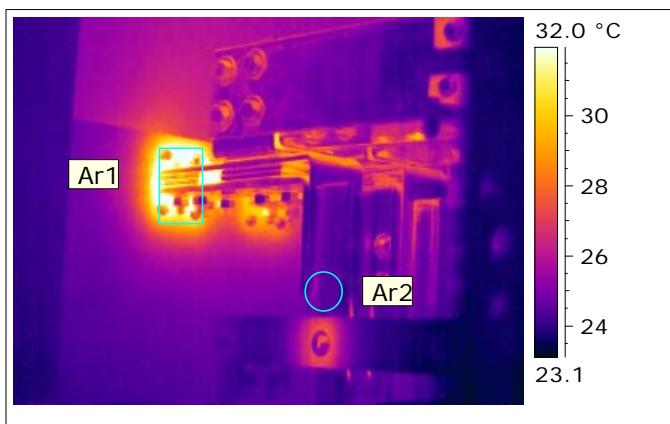
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_1988.jpg
Maximum Temperature	35
Control Temperature	26
Temperature Rise	9
Severity	Intermediate

Location	Basement U.P.S. Room A.T.S. 3 Right Phase Rear Stab
Equipment	A.T.S. 3
Type	RTBD-200003C-VS
Image Date	11/14/2008
Image Time	2:49:33 PM
Recommendation	Clean, Lube And Exercise

Analysis & Recommended Action:

This is the rear view of A.T.S. 3. The right phase line side stab that connects A.T.S. 3 to the switchgear bus assembly shows an external 10°C rise when compared to the bus connected. A.T.S. 3 is critical to the facility, as the life safety panels are being fed from the switch. Clean, lubricate, and exercise the switch at the next available shutdown.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

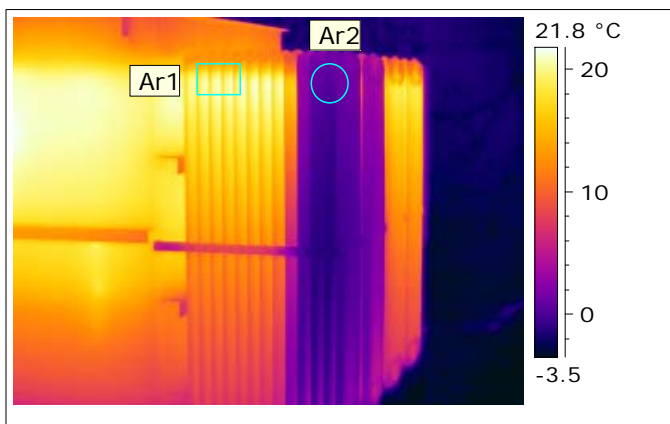
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_2106.jpg
Maximum Temperature	21
Control Temperature	2
Temperature Rise	19
Severity	Intermediate

Location	North Side Of Plant East Cooling Fin
Equipment	2000 KVA Transformer
Type	Oil Cooling Fin
Image Date	12/18/2008
Image Time	1:44:01 PM
Recommendation	Check Fluid Level

Analysis & Recommended Action:

The north end of the oil cooling fin above shows a 19°C rise as compared to the southern most fins. This is most likely due to a low oil level within the transformer or blockage in the tube. The transformer should be serviced by qualified personnel to further validate the infrared inspection. It is also recommended to perform the annual gas in oil analysis while the transformer is de-energized.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

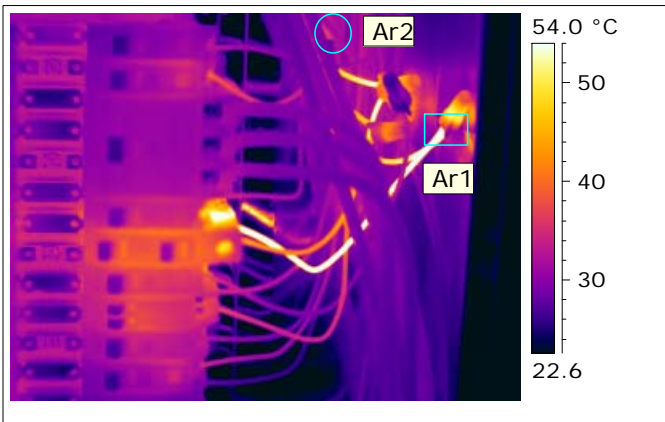
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_4779.jpg
Maximum Temperature	68
Control Temperature	37
Temperature Rise	31
Severity	Serious

Location	Rear Of Facility Electrical Room Panel M Breaker 12
Equipment	Panel M
Type	Wire Splice Connection
Image Date	5/5/2010
Image Time	7:22:36 AM
Recommendation	Repaired During Inspection

Analysis & Recommended Action:

The wire connection to the tandem breaker above shows a 36°C rise. The wire terminated to the breaker was a #14 gauge conductor. Per the National Electrical Code, the minimum size wire that can be connected to a 20 amp breaker is a 12 gauge wire. The conductor and the wire splice were replaced during the inspection. No further action is required.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

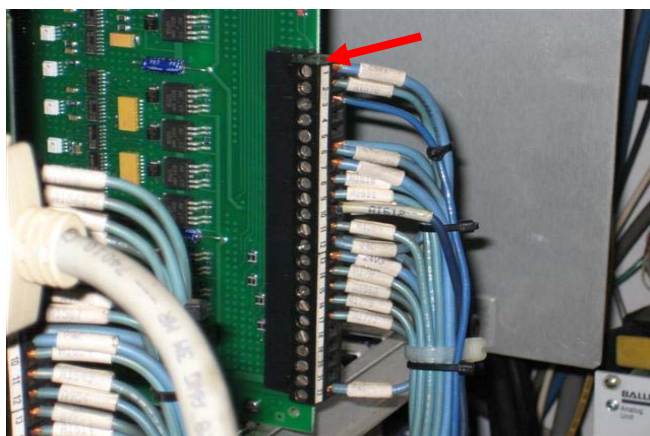
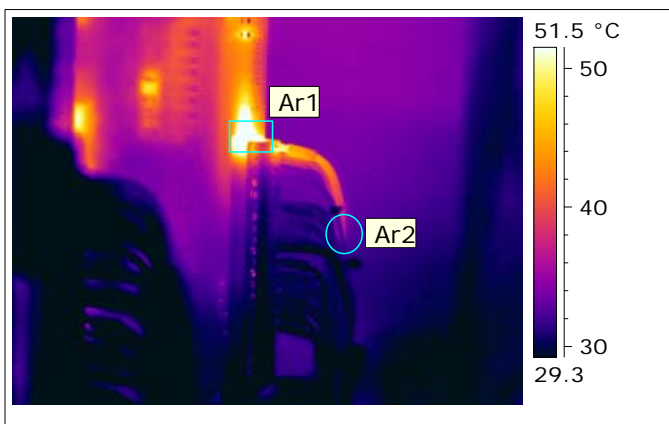
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_2981.jpg
Maximum Temperature	74
Control Temperature	38
Temperature Rise	36
Severity	CRITICAL

Location	Press 60 Main Control Cabinet Far Right Control Board Top Wire Termination
Equipment	Press 60 Control Board
Type	Wire Termination Connection
Image Date	4/16/2009
Image Time	10:02:46 AM
Recommendation	Clean Wire and Termination Lug

Analysis & Recommended Action:

The connector to the PLC input board shows a 39°C rise. It appears that there is a loose solder connection on the input board. Replace the input board to avoid possible down time and subsequent loss of production.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

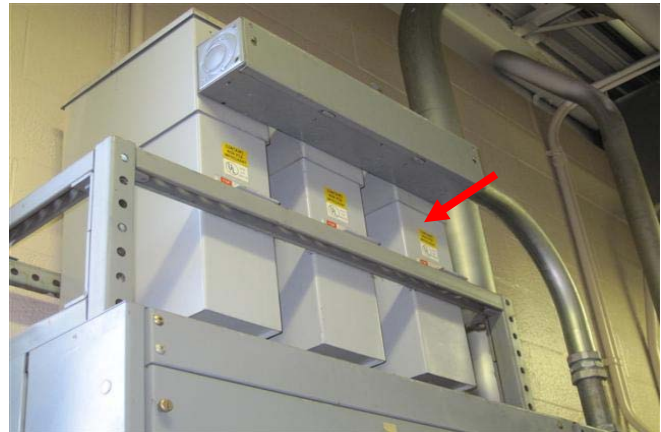
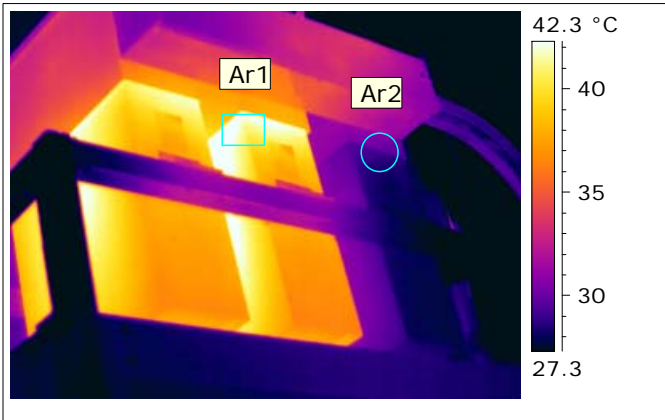
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_3450.jpg
Maximum Temperature	43
Control Temperature	31
Temperature Rise	12
Severity	Intermediate

Location	Main Electrical Room Capacitor Bank Right Capacitor
Equipment	Capacitor Bank
Type	Capacitor
Image Date	8/6/2009
Image Time	7:23:02 AM
Recommendation	Repair Or Replace

Analysis & Recommended Action:

It appears the capacitor on the far right is not functioning as it should. All fuses in the feed switch for the capacitor were functioning at the time of the inspection. Amp readings confirmed that the capacitor is not operational. The capacitor should be serviced and tested to insure that it is functioning properly.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

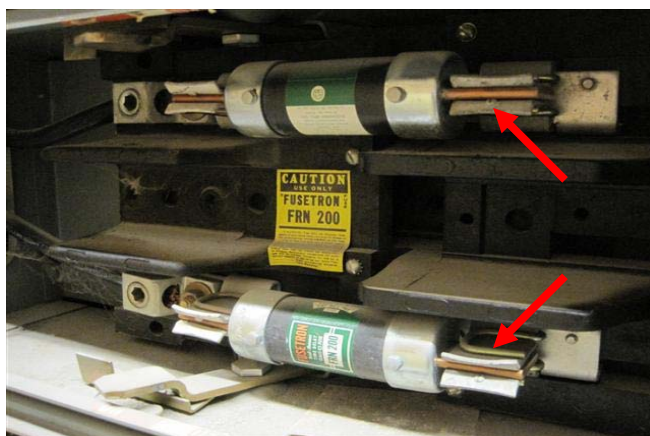
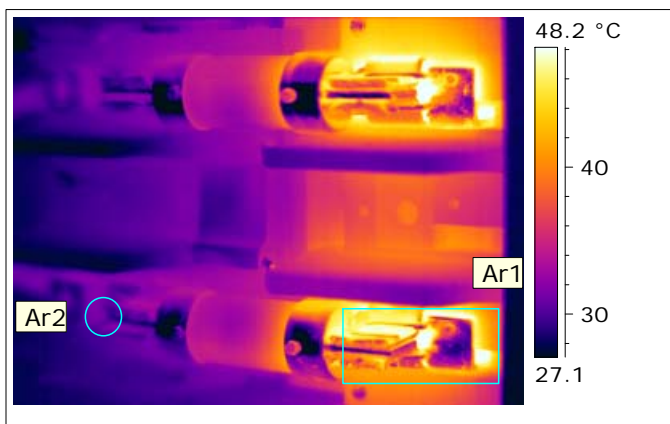
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_4807.jpg
Maximum Temperature	51
Control Temperature	32
Temperature Rise	19
Severity	Intermediate

Location	Rear Of Facility 3d Distribution Section From Left 2nd Switch Down
Equipment	Panel H
Type	QMB-2220
Image Date	5/5/2010
Image Time	12:09:05 PM
Recommendation	"Clean, Lubricate and Exercise"

Analysis & Recommended Action:

The top and bottom phase line side QMB switch to panel bus connection above shows a 19°C rise. Inspect the knife blade and pivot for arcing. Also inspect the connection on the bus of the distribution panel. It appears that the source of the heat is coming from behind the Bakelite This indicates a connection issue either at the bus or at the knife connection.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

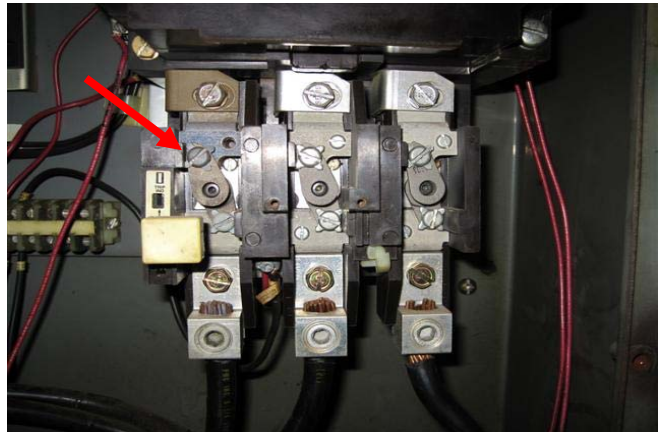
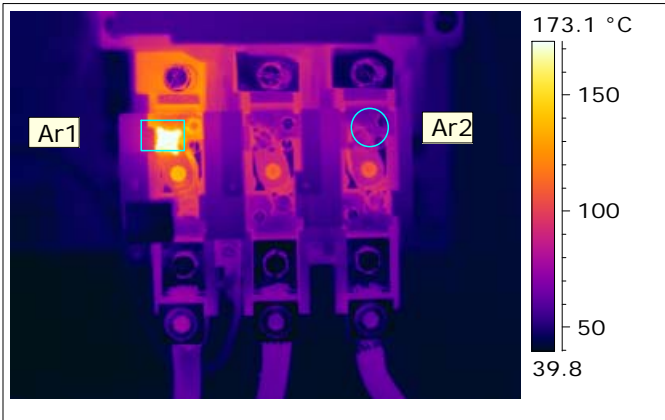
Repaired By:..... Date:.....

Comment:.....

Thermographic and Visual Electrical Inspection Results for:

Company Name

Job Number: 777



Object Parameters	Value
Filename	IR_4615.jpg
Maximum Temperature	191
Control Temperature	89
Temperature Rise	102
Severity	CRITICAL

Location	Compressor Room Compressor 1 Left Phase Overload Connection
Equipment	Compressor 1
Type	Overload Connection
Image Date	4/15/2010
Image Time	10:58:01 AM
Recommendation	Disassemble and Inspect Components

Analysis & Recommended Action:

The top connection of the left phase motor overload heater under the main motor contactor shows a critical 101°C rise. This item was written up in the 1-07 report as a 72°C rise and later in the 1-08 report as a 51°C rise. The repair that was attempted from last years report was only minimally successful. Replace the entire overload block and overload heaters to keep this crucial piece of equipment operating.

Please contact the Buist Electric Service Department to schedule this item for repair
616-878-3315

Inspected by: Certified Thermographer

Repaired By:..... Date:.....

Comment:.....

Summary of Inspection

Equipment	Severity	Temperature Rise	Page Number
250 KVA Transformer	Serious	27	5
Pole Mount Transformer Secondary Connection	Serious	25	6
A.T.S. 3	Intermediate	9	7
2000 KVA Transformer	Intermediate	19	8
Panel M	Serious	31	9
Press 60 Control Board	CRITICAL	36	10
Capacitor Bank	Intermediate	12	11
Panel H	Intermediate	19	12
Compressor 1	CRITICAL	102	13