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Digital Diagnostics Report

Infrared Thermography Report

Prepared for:

Customer

Prepared by:
Travis Beattie, Reliability Specialist

Date Prepared:
June 29, 2013

Survey Date
June 26-28, 2013

Travis Beattie
Reliability Specialist

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June 29, 2013

Re: Thermography Report

Mark,

Please find the following report from the Predictive Maintenance Services performed on June 26-28, 2013. The following pages contain a summary of the machinery analyzed followed by diagnosis pages for identified problems. Issues were identified the following equipment.

PECC 2 Turbine Compt Heater
PECC 3 Cooling Water Fan Motor 88FC-4

Thank you, for choosing Electrical Equipment Company. If there are any further questions or concerns please contact me at 804-219-0130.

Sincerely,

J. Travis Beattie

Travis Beattie
Reliability Specialist

Equipment Summary

SEVERITY RATINGS

NONE The equipment should be operated as normal, with confidence. There are no indications of failure.

LOW The equipment should be operated as normal, with confidence. There are indications/conditions that are evident but not critical.

MEDIUM The equipment may be operated/operable, but should be monitored closely. There are issues that will effect performance/reliability. The item will need maintenance soon.

HIGH The equipment should not be operated to prevent the risk of extensive damage or catastrophic failure.

Equipment	Problem Area	Severity
PECC 1 MCC 1		>
MCC Incoming Line		>
Liquid Fuel Forwarding Pump	Equipment Not Available	
Battery Charger 1		>
Spare 30A Feeder		>
Air Conditioner 88KA-1		>
Undervoltage Relay 27MC-1		>
Evap Cooler 88AC-1A, 2A		>
Switchgear Compartment		>
Turbine Compartment Heater 23-IT-1		>
ACC. Compt Space Heater 23HA-1		>
23VS-1 Gas Valve Compt Space Heater		>
Exhaust Frame Blower 88TK-1		>
Lube Mist Separator Motor 88QV-1A		>
Gen Bearing Evac Pump 88BQ-1		>
Lube Tank Immersion Heater 23QT-1.2		>
24 CKT Panelboard		>
Transformer 480-240/120 1PH		>
Cooling Water Pump 88WC-1		>
Brushless Exciter EX2000BR		>
Gas Compt Vent Fan 88VL-1		>

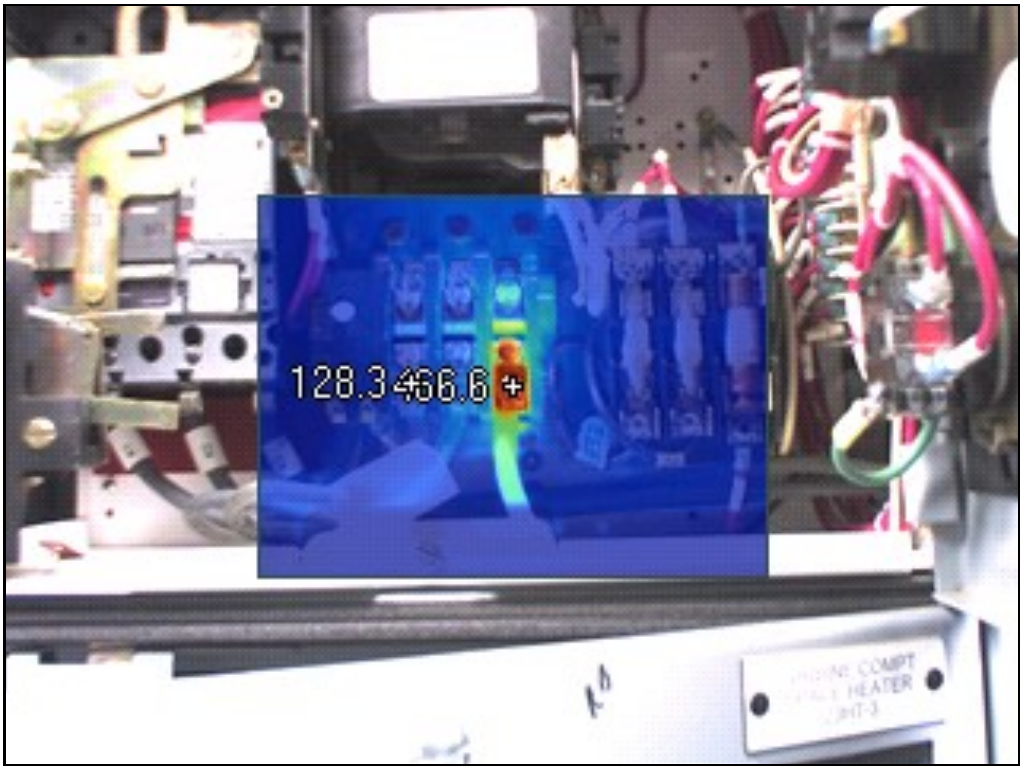
Equipment Summary

Equipment	Problem Area	Severity
PECC 2 MCC 1		>
MCC Incoming Line		>
Liquid Fuel Forwarding Pump		X
Battery Charger 1		>
Spare 30A Feeder		>
Air Conditioner 88KA-1		>
Undervoltage Relay 27MC-1		>
Evap Cooler 88AC-1A, 2A		>
Switchgear Compartment		>
Turbine Compartment Heater 23-IT-1	Hot C Phase at Overload Component	HIGH
ACC. Compt Space Heater 23HA-1		>
23VS-1 Gas Valve Compt Space Heater		>
Exhaust Frame Blower 88TK-1		>
Lube Mist Separator Motor 88QV-1A		>
Gen Bearing Evac Pump 88BQ-1		>
Lube Tank Immersion Heater 23QT-1.2		>
24 CKT Panelboard		>
Transformer 480-240/120 1PH		>
Cooling Water Pump 88WC-1		>
Brushless Exciter EX2000BR		>
Gas Compt Vent Fan 88VL-1		>
Cooling Water Fan Motor 88FC-3		>
Cooling Water Fan Motor 88FC-1		>
Turbine Compt Cooling Air Fan 88BT-1		>
Fire Protection Relay Panel		>
Load Compt Vent Fan 88VG-1		>

Equipment Summary

Equipment	Problem Area	Severity
PECC 3 MCC 2		
Incoming Line		>
Evap Cooler Water Pumps 88AC-1A, 2A		>
ACC Compt Space heater 23HA-2		>
Battery Charger 2		>
Air Conditioner 88KA-2		>
Undervoltage Relay 27MC-2		>
Exhaust frame Blower 2 88TK 2		>
ACC Compt Space Heater 23HA-3		>
Turbine Compt Space heater 23HT-3		>
Turbine Compt Heater 23HT-2		>
Auxiliary Lube Oil Pump 88QA-1		>
Torque Adjuster Drive Motor 88TM-1		>
Hydraulic Supply Pump 88HG-1		>
Co2 Skid LP Tank Heater 88RC-1A		>
Cooling Water Fan Motor 88FC-4	Hot C Phase at Overload Component	**MEDIUM**
Atomizing Air Compressor 88AB-1		>
Spare 30A Feeder		>
Control Compt Heater 23HG-1.20 23KE-1		>
Load Compt Vent Fan 88VG-2		>
Cooling Water Fan Motor 88FC-2		>
Cooling Water Pump 88WC-2		>
Turbine Compt Cooling Air Fan 88BT-2		>
Gas Compt Vent Fan 88VL-2		>
PECC 3 Batteries		
Incoming Line		>
Emerg Lube Oil Pump		>
Panelboard & DSW 125V DC		>
Battery Chargers 1&2		>
Battery Compartment		>

Exceptions Detailed Analysis



EQUIPMENT
PECC 2 Turbine Compt Heater

COMPANY

DATE
6/26/2013

ANALYST
Travis Beattie

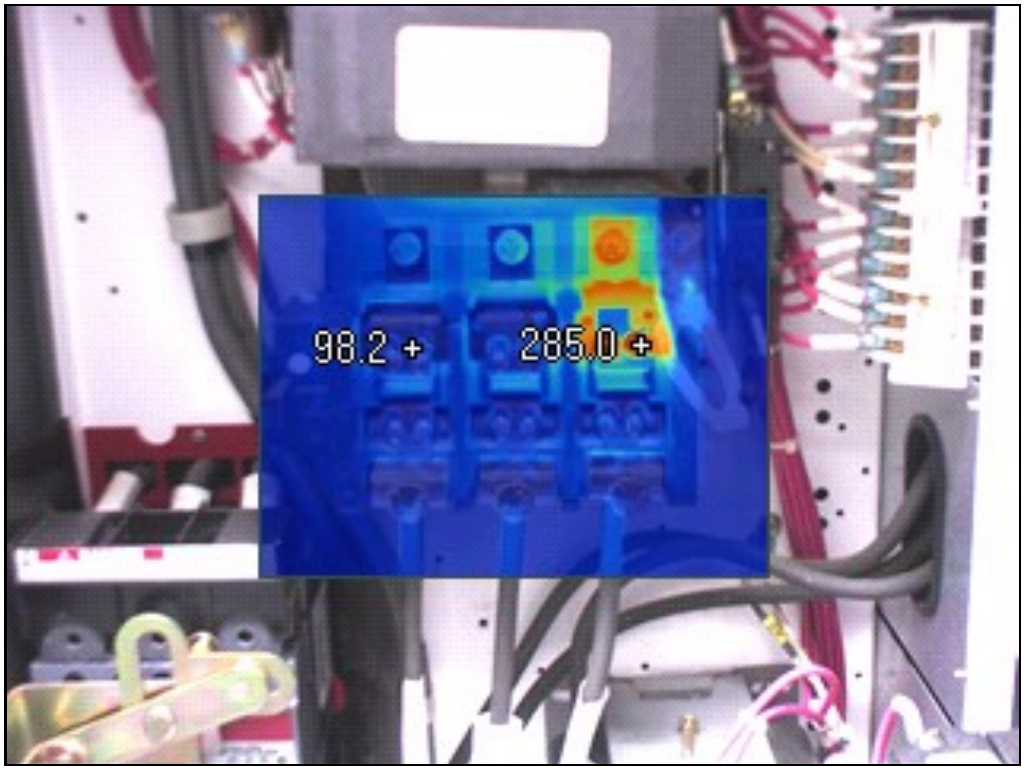
SEVERITY
HIGH

Explanation:

C Phase on overload component is 358F hotter than A and B Phases. Evaluate overload for replacement. Prep conductor and re-terminate.

File Location	E:\Images\IR20130626_0833.is2
Image Time	6/26/2013 11:55:45 AM
Emissivity	0.95
Background Temp	68.0 °F
Image Range	83.8 °F to 481.0 °F
Average Temp	128.6 °F
Camera Model	Ti45FT
Camera Manufacturer	Fluke
Calibration Range	-4.0 °F to 662.0 °F
Camera Serial Number	Ti45FT-0807261
Lens Description	20mm/F0.8
Lens Serial Number	40948-8922
DSP Version	4.7.0.0
OCA Version	3.0.6.12

Exceptions Detailed Analysis



EQUIPMENT
PECC 3 Cooling Water Fan Motor 88FC-4

COMPANY

DATE
6/26/2013

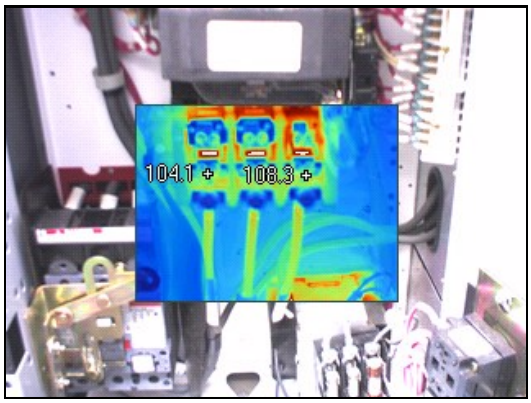
ANALYST
Travis Beattie

SEVERITY
MEDIUM

Explanation:

Problem corrected in the field. Had a very short screw holding the component in place. Replaced with longer screw and tightened.

File Location	**E:\Images\IR20130626_0834.is2**
Image Time	**6/26/2013 2:55:31 PM**
Emissivity	**0.95**
Background Temp	**68.0 °F**
Image Range	**86.0 °F to 285.0 °F**
Average Temp	**114.7 °F**
Camera Model	**Ti45FT**
Camera Manufacturer	**Fluke**
Calibration Range	**-4.0 °F to 662.0 °F**
Camera Serial Number	**Ti45FT-0807261**
Lens Description	**20mm/F0.8**
Lens Serial Number	**40948-8922**
DSP Version	**4.7.0.0**
OCA Version	**3.0.6.12**



After Scan