

**Honda Research and Development Center, Ann Arbor – Inspection**

Site Visit: 12/05/2012 Infrared Camera and Thermographer Details Sheet

Infrared Camera Details

Manufacturer	Date	Model	Calibration Date	
FLIR Systems, Inc.	January, 2011	T300	January 26, 2013	
Calibration Standard	Camera Detector Type and Dimensions		Sensitivity	Accuracy
Traceable NIST RD18281, 29281	Microbolometer, 320 x 240 Array		< 0.05 °C	+/- 2 °C

Thermographer Credentials

Name	Certification	Original Certification Date	Recertification Date
Stephen S. Moore	Level III	June 9, 1996	December 9, 2013
Certificate Number	Certifying Agency		Highest Education Level/ Institution
1230	Infrared Training Center, Boston		Bachelor of Arts/Albion College

**Facility Results****Electrical System Reliability and Safety Solutions****Research and Development Center**

Site Visit: 12/5/2012 Field Data Collection Summary Sheet

Electrician	Project Name	IR Tech
Jason	Infrared/Ultrasonic - Inspection	Stephen Moore

ID Tag No.	Component Location	Equipment Type	Problem Temperature	Code Violation	Alert Level
000001	Electrical Room	Switchgear Main Service	26.2 °C	Issue(s) Exist	Normal
000002	Electrical Room	Switchgear Main Service	27.7 °C		Normal
000003	Electrical Room	Switchgear Main Service	29 °C	Issue(s) Exist	Normal
000017	Electrical Room	Individual Molded Case Br	26.6 °C		Normal
000020	Electrical Room	Individual Disconnect	24.8 °C		Normal
000021	Electrical Room	Branch Circuit Panel	27.8 °C	Issue(s) Exist	Normal
000023	Electrical Room	Individual Disconnect	25.2 °C		Normal
000024	Electrical Room	Individual Disconnect	26.3 °C	Issue(s) Exist	Normal
000025	Electrical Room	Transformer-Dry	47.2 °C		Normal
000026	Electrical Room	Transformer-Dry	42.1 °C		Normal
000027	Electrical Room	Transformer-Dry	32.7 °C		Normal
000028	Electrical Room	Transformer-Dry	32.9 °C		Normal
000029	Electrical Room	Individual Disconnect	38.1 °C		Normal
000030	Dyno Access Room	Distribution Switchboard	23.7 °C	Issue(s) Exist	Normal
000035	Dyno Access Room	Wire Trough/Junction Box	20.6 °C		Normal
000038	Dyno Access Room	Branch Circuit Panel	25.5 °C	Issue(s) Exist	Normal
000047	Dyno Access Room	Branch Circuit Panel	25.2 °C	Issue(s) Exist	Normal
000049	Dyno Access Room	Branch Circuit Panel	24.4 °C	Issue(s) Exist	Normal
000052	Dyno Access Room	Branch Circuit Panel	30.3 °C	Issue(s) Exist	Normal
000053	Dyno Access Room	Transformer-Dry	31.6 °C	Issue(s) Exist	Normal
000054	Dyno Access Room	Control Cabinet	27.1 °C		Normal
000055	Dyno Access Room	Control Cabinet	25.2 °C		Normal
000056	Dyno Access Room	Control Cabinet	24.7 °C		Normal
000059	Dyno Access Room	Control Cabinet	26.8 °C		Normal
000061	Chemical Room Wall	Branch Circuit Panel	27.4 °C	Issue(s) Exist	Normal
000063	Chemical Room Wall	Branch Circuit Panel	27.6 °C		Normal
000074	Southeast Garage Area	Individual Disconnect	32.2 °C		Normal
000076	Southeast Garage Area	Control Cabinet	37.5 °C	Issue(s) Exist	Normal
000088	Dyno Cell #1	Control Cabinet	32.8 °C	Issue(s) Exist	Normal

Electrical evaluations or opinions included in this report are the exclusive responsibility of the attendant electrician, not Facility Results.


Facility Results

Research and Development Center

Site Visit: 12/6/2012 Field Data Collection and Inspection Sheet

Type of Inspection/Testing Conducted

ID Tag Number

000119

Infrared Inspection <input checked="" type="checkbox"/>	Condition Assessment <input checked="" type="checkbox"/>	Diagnostics <input type="checkbox"/>	Arc Flash Analysis <input type="checkbox"/>	Equipment DeEnergized <input type="checkbox"/>
Visual Inspection <input checked="" type="checkbox"/>	Ultrasonic Inspection <input checked="" type="checkbox"/>	Oil Analysis <input type="checkbox"/>	Arc Flash Audit <input type="checkbox"/>	Power Quality Analysis <input type="checkbox"/>
Polarity Index - PI <input type="checkbox"/>	Ductor - DLRO <input type="checkbox"/>	Megger <input type="checkbox"/>		Transfmr Trns Ratio - TTR <input type="checkbox"/>

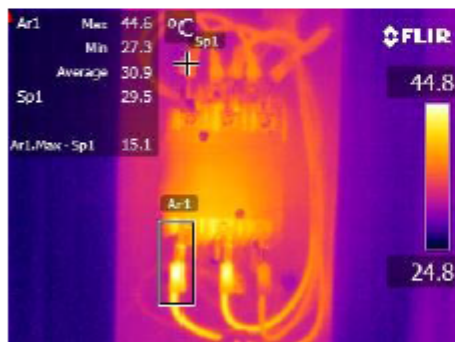
Electrician	IR Tech	Project Name
Jason	Stephen Moore	Infrared/Ultrasonic - Inspection
Location	Equipment Type	Manufacture
Dyno Cell #3	Wire Trough/Junction Box	Square D
Equipment Label Name	Model Number	Serial Number
VT SHED		

Ultrasonic Test: Level (dB)	Ultrasonic Test Results	Work Voltage
< 10 dB	Normal	480 VAC

Thermal Condition

Critical

IR Image Filename	Reference Temperature	Problem Temperature	Temperature Differential
IR_0085.JPG	29.5 °C	44.6 °C	15.1 C°



Action Taken:

- Immediate Hazard
- Customer Notified Immediately
- Repair Equipment
- Replace Equipment
- Fixed During Visit
- Customer Will Correct

Consequence If Not Corrected

- Equipment Failure
- Fire Hazard
- Safety Hazard
- Power Interruption

Maintenance Inspection

- Acknldg Arc Flash Hazard
- Insp Equipment Enclosure
- Insp Loose Missing Items
- Verify Metering, Ind Lts
- Insp Wire Insulation
- Insp Installation
- Verify Prop Gnd, Isolation
- Documnt Live Variables

**Facility Results****Research and Development Center**

Site Visit: 12/6/2012 Field Data Collection and Inspection Sheet

Current Rating	NEMA Type	Box/Gutter Size	Conductor or Bus Size / Type /Al-Cu	ID Tag Number
Amps				000119

Code Violations And Other Significant Issues

C2 Color -Improperly colored phasing tape installed for the nominal voltage supplied. (277/480 Volt requires Brown, Orange, and Yellow)

Application Notes

Box contains a 3 ϕ contactor

Notes Electrical evaluations or opinions included in this report are the exclusive responsibility of the attendant electrician, not Facility Results.

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Recommendation For Repair

Line Wires are RED, Load Wires are Blue Thermal evaluation shows "Critical" here. This may be due to crushing of copper strands inside the crimped wire spade terminals T1 and T2. These will eventually fail.

Electrical Circuit Measurements - Fault Conditions

AC Volts	RMS Volts A-B			RMS Volts B-C			RMS Volts C-A			Other		
	VAC			VAC			VAC			RMS Volts A-N	RMS Volts B-N	RMS Volts C-N
Current/Amps	RMS Current A			RMS Current B			RMS Current C			VAC	VAC	VAC
	Amps			Amps			Amps			RMS Volts G-N	RMS Current N	RMS Current G
Millivolt AC	Voltage Drop A			Voltage Drop B			Voltage Drop C			VAC	Amps	Amps
	mV			mV			mV			Problem Phase	Current Rating at Problem	
												Amps