



7030 Ryburn Drive Millington, TN 38053 Office: 901-873-5300 Fax: 901-873-5301
gohispeed.com

QualiTest IR Radiometric Survey Report



Chemours
HCN

David W. Shook

ITC Certified Level I Infrared Thermographer
dshook@gohispeed.com

Job Number	141407
Survey Date	12/17-18/19
Report Date	12/23/19

QualiTest IR Radiometric Survey Report



All electrical panels were scanned using a FLIR P60 infrared camera. The following report only contains defects that were found during the survey. Below is our classification system for each defect contained in this report. If there are any questions or comments, please feel free to contact us at any time.

Hi-Speed Industrial Service QualiTest Diagnostics employs a three-step defect rating system:

CLASS I - A defect or defects are present that are likely to cause a problem in the long term (2-6 months). Should be addressed in the normal course of maintenance scheduling; continue to monitor.

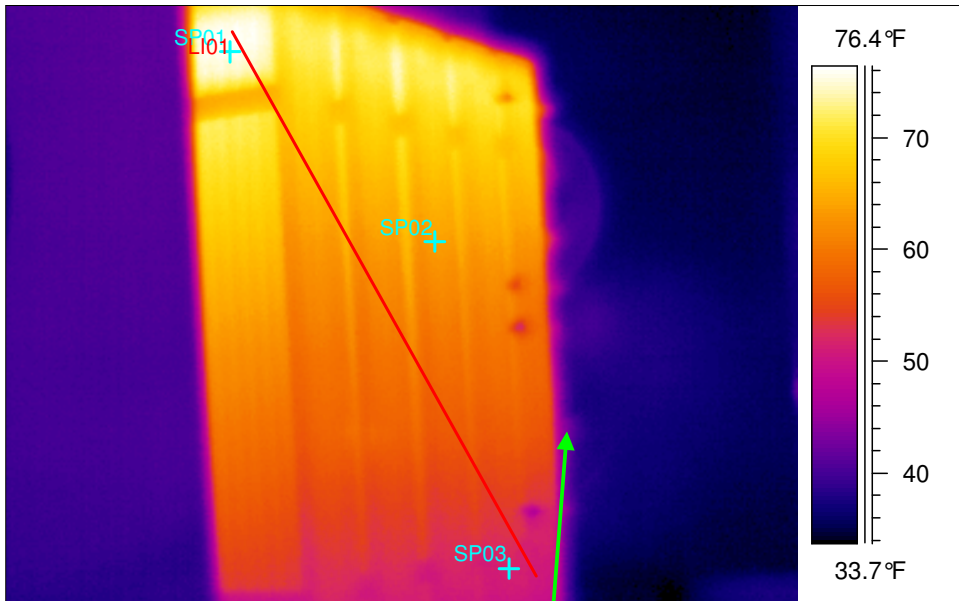
CLASS II - A defect or defects are present that are likely to cause a failure in the short term (less than 2 months). Should be addressed as soon as is practical, on a high maintenance priority. Consideration should be given to increased monitoring frequency.

CLASS III - A defect or defects are present that make continued component reliability unpredictable, and likelihood of secondary damage is high. Consideration should be given to an unscheduled shutdown to correct.

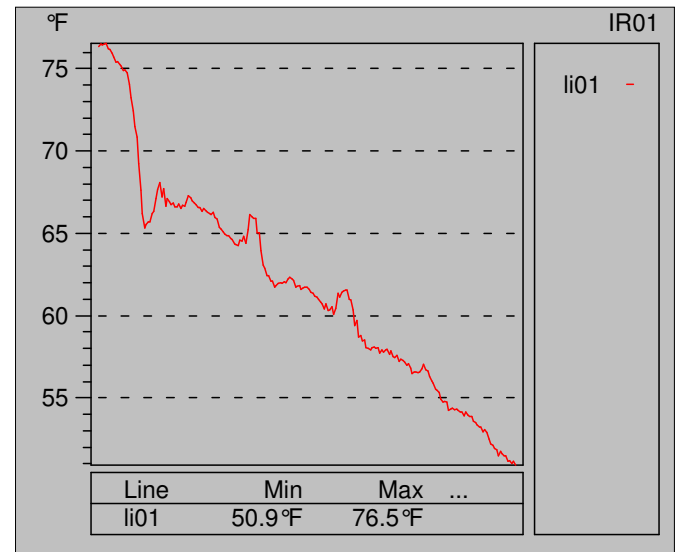
Hi-Speed Industrial Service tests and inspects industrial and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information provided herein is provided as an opinion only, not as a guaranty or warranty of.



Component	Equipment/Bucket ID	Plant/Area	Date
South Radiator	SUB 247	HCN	12-26-19



Label	Value
IR : max	76.7°F
IR : min	33.4°F
SP01	75.7°F
SP02	63.8°F
SP03	51.8°F
LI01 : max	76.5°F
LI01 : min	50.9°F



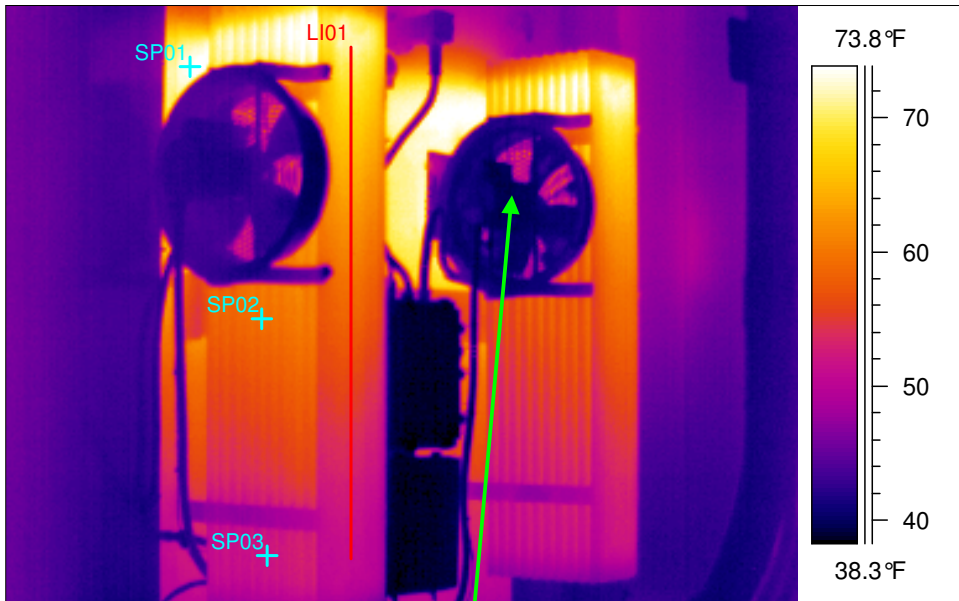
Fault	None
Defect Rating	NA

Recommendation

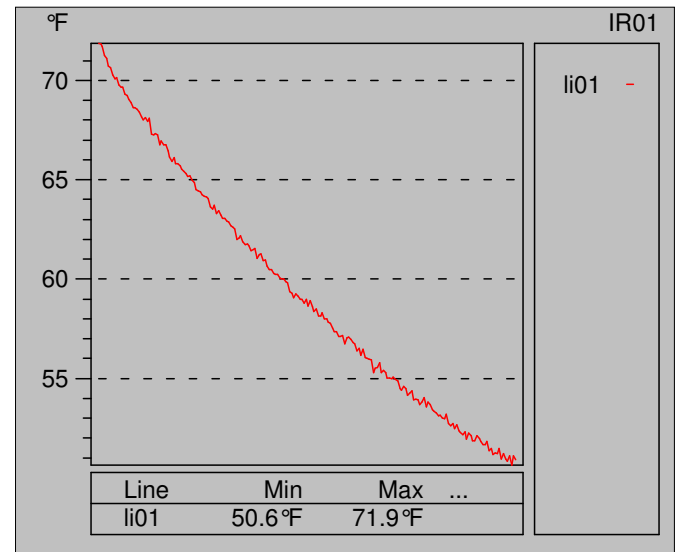
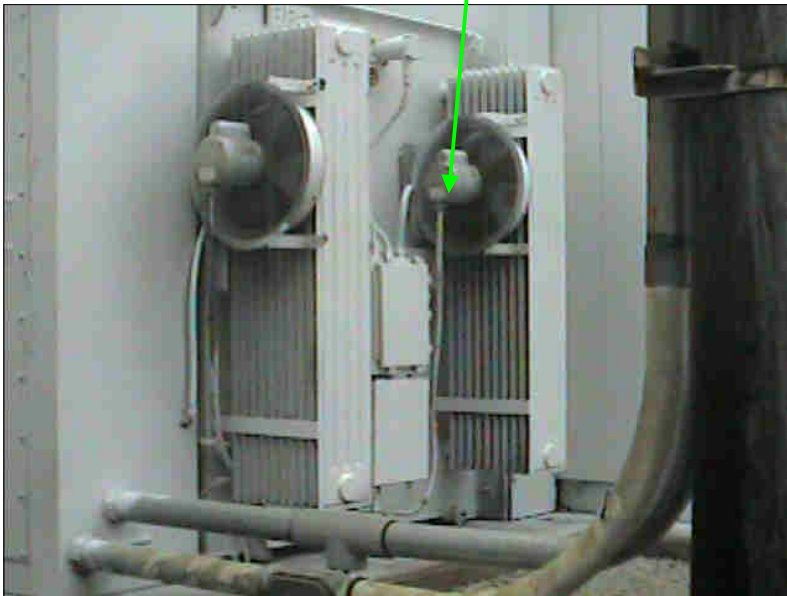
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
North Radiator	SUB 247	HCN	12-26-19



Label	Value
IR : max	75.7°F
IR : min	37.9°F
SP01	73.3°F
SP02	59.7°F
SP03	52.1°F
LI01 : max	71.9°F
LI01 : min	50.6°F



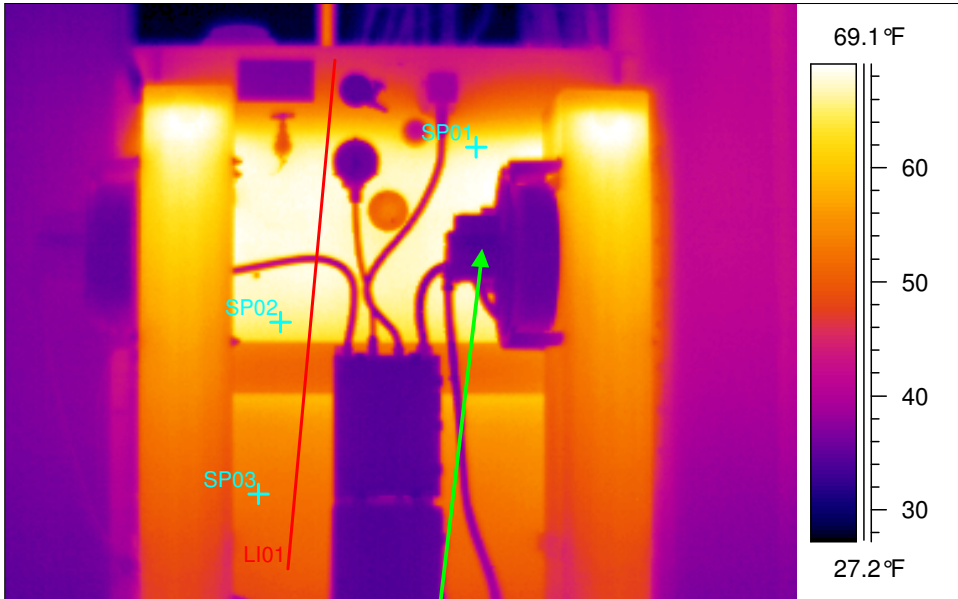
Fault	None
Defect Rating	NA

Recommendation

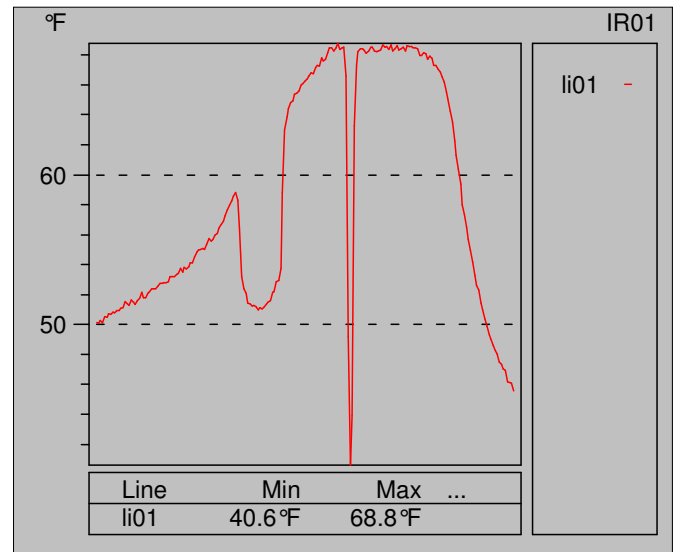
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
Body	SUB 247	HCN	12-26-19



Label	Value
IR : max	69.7°F
IR : min	27.1°F
SP01	66.2°F
SP02	65.5°F
SP03	52.6°F
LI01 : max	68.8°F
LI01 : min	40.6°F



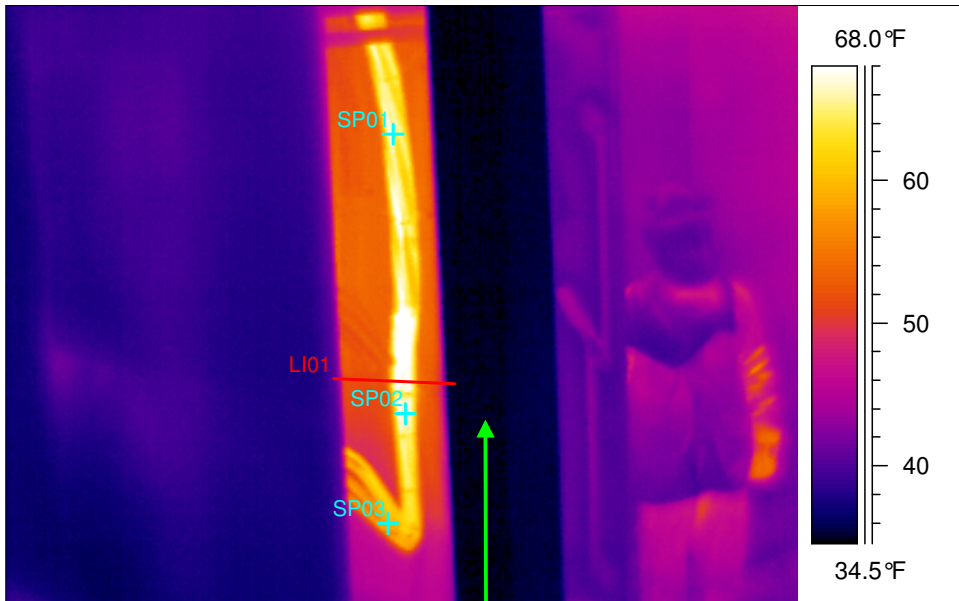
Fault	None
Defect Rating	NA

Recommendation

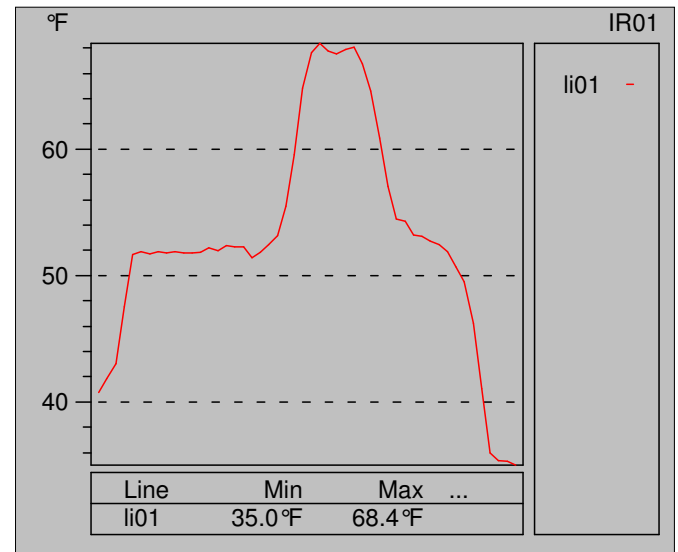
Operating normally, no issues.
Check fluid anyway.



Component	Equipment/Bucket ID	Plant/Area	Date
Left Panel	SUB 247	HCN	12-26-19



Label	Value
IR : max	70.9°F
IR : min	34.2°F
SP01	65.3°F
SP02	66.4°F
SP03	59.0°F
LI01 : max	68.4°F
LI01 : min	35.0°F



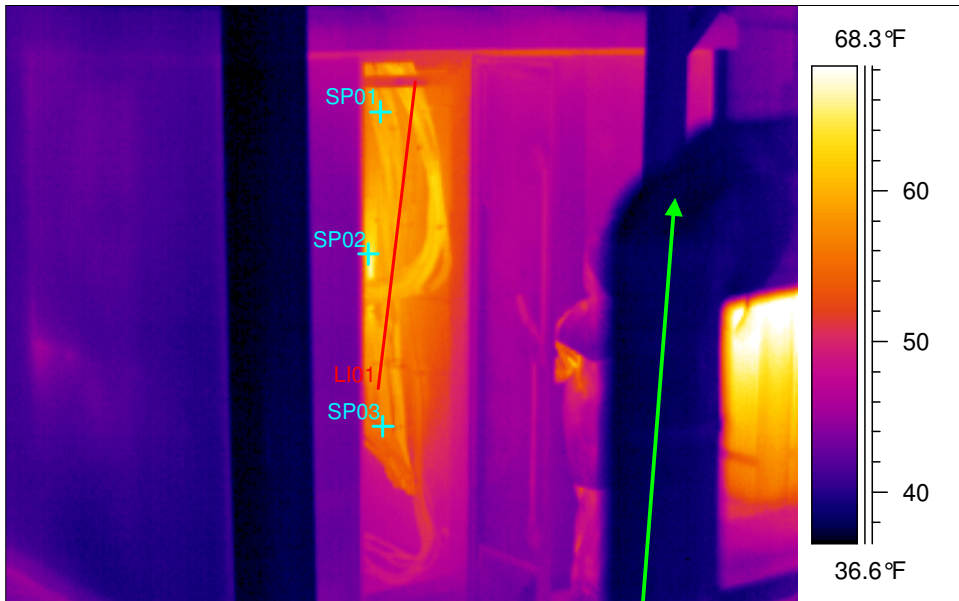
Fault	None
Defect Rating	NA

Recommendation

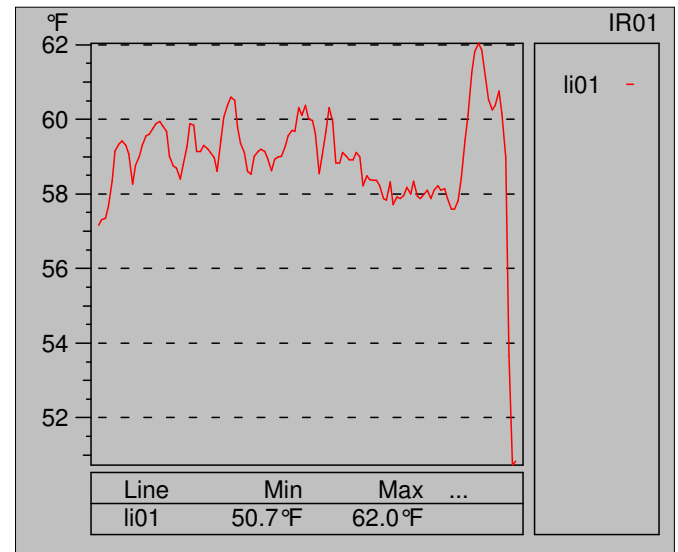
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
Left Middle Panel	SUB 247	HCN	12-26-19



Label	Value
IR : max	71.7°F
IR : min	35.4°F
SP01	60.6°F
SP02	64.2°F
SP03	55.9°F
LI01 : max	62.0°F
LI01 : min	50.7°F



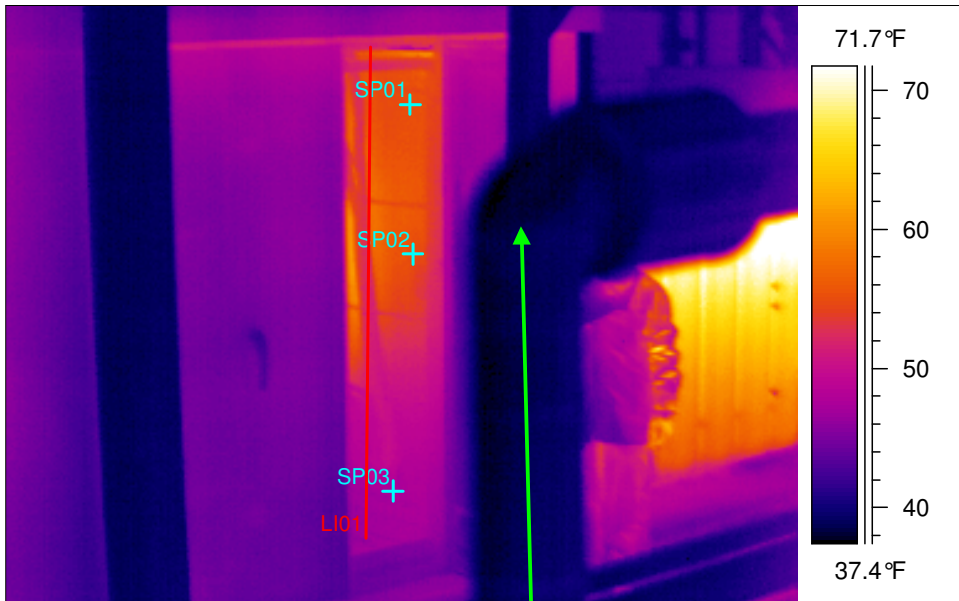
Fault	None
Defect Rating	NA

Recommendation

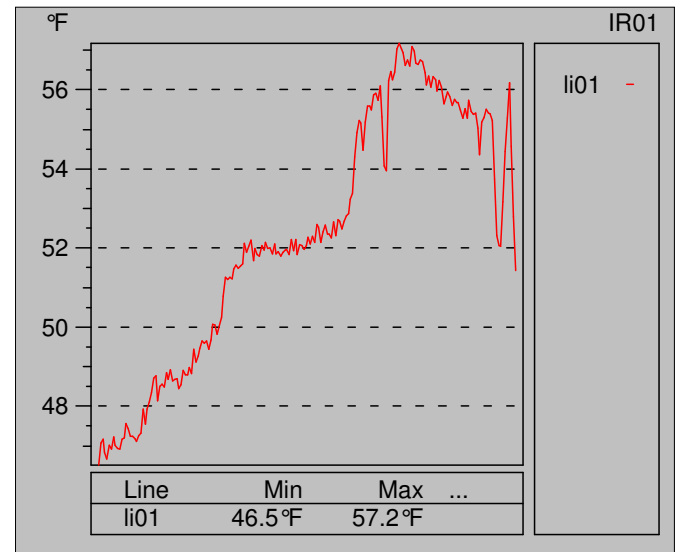
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
Right Middle Panel	SUB 247	HCN	12-26-19



Label	Value
IR : max	75.7°F
IR : min	37.2°F
SP01	55.3°F
SP02	55.1°F
SP03	47.8°F
LI01 : max	57.2°F
LI01 : min	46.5°F



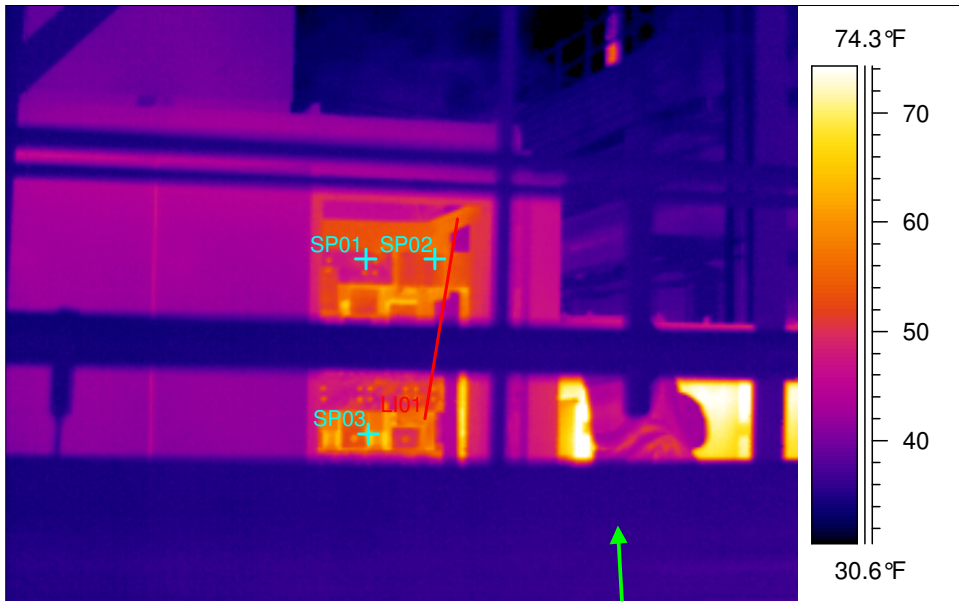
Fault	None
Defect Rating	NA

Recommendation

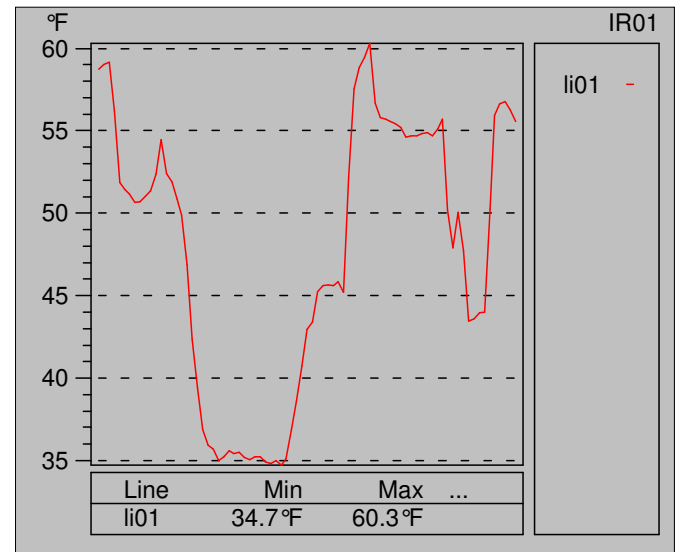
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
Right Panel	SUB 247	HCN	12-26-19



Label	Value
IR : max	77.5°F
IR : min	29.1°F
SP01	52.0°F
SP02	53.3°F
SP03	65.7°F
LI01 : max	60.3°F
LI01 : min	34.7°F



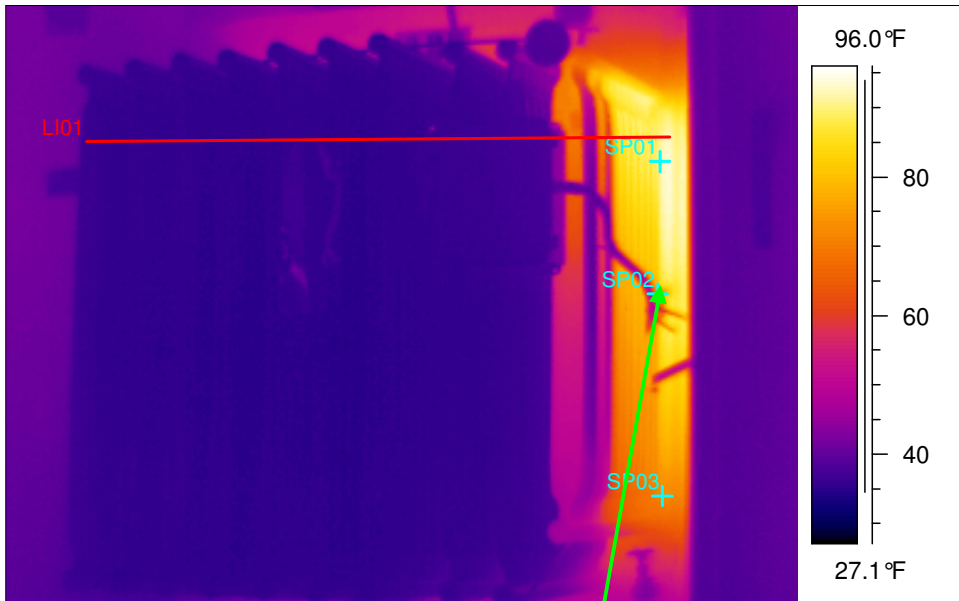
Fault	None
Defect Rating	NA

Recommendation

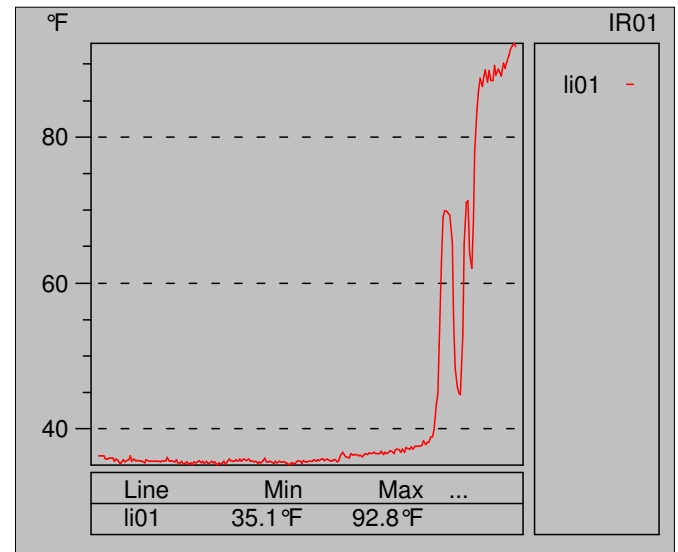
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
North Radiator	SUB 260	HCN	12-26-19



Label	Value
IR : max	94.4°F
IR : min	34.4°F
SP01	92.1°F
SP02	73.1°F
SP03	71.8°F
LI01 : max	92.8°F
LI01 : min	35.1°F



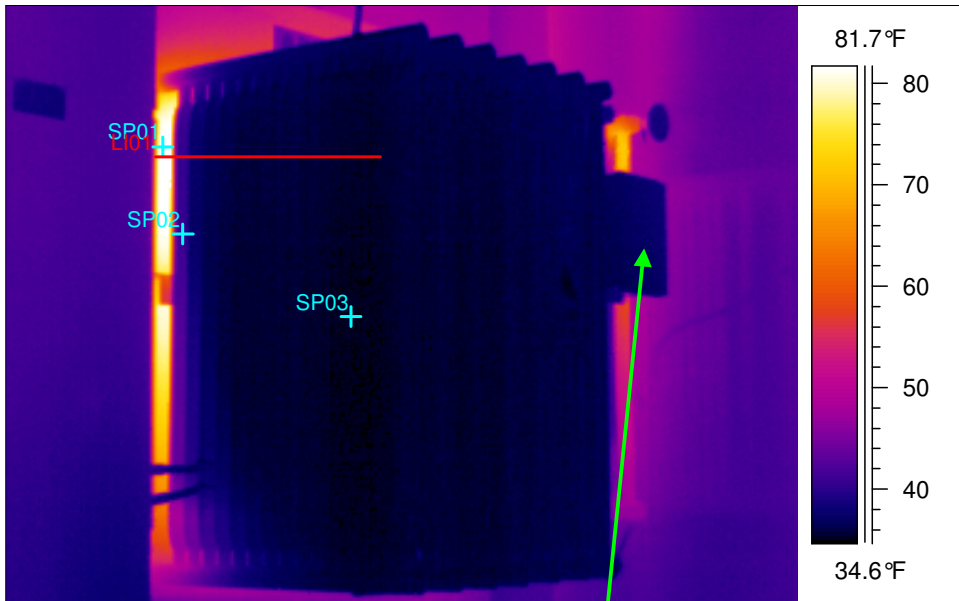
Fault	Cooling Fault
Defect Rating	Class 2

Recommendation

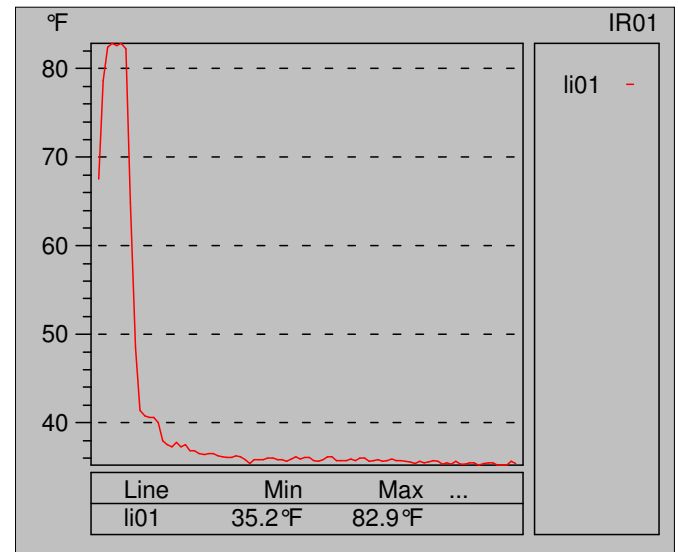
Suspect low fluid level. Check coolant; add or replace as necessary. Possible blockage in cooling fins.



Component	Equipment/Bucket ID	Plant/Area	Date
North Radiator (E view)	SUB 260	HCN	12-26-19



Label	Value
IR : max	83.7°F
IR : min	34.6°F
SP01	82.3°F
SP02	41.0°F
SP03	35.0°F
LI01 : max	82.9°F
LI01 : min	35.2°F



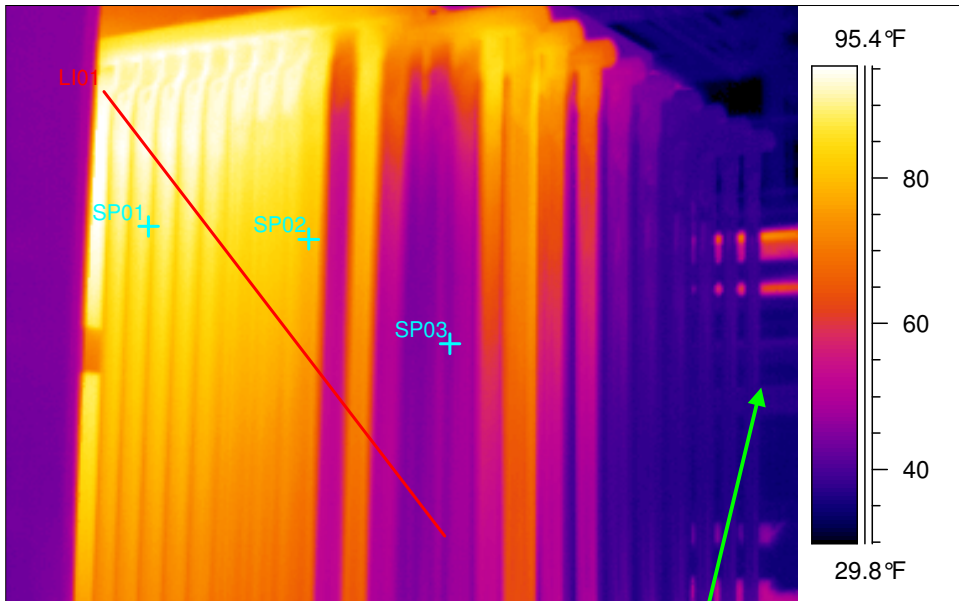
Fault	Cooling Fault
Defect Rating	Class 2

Recommendation

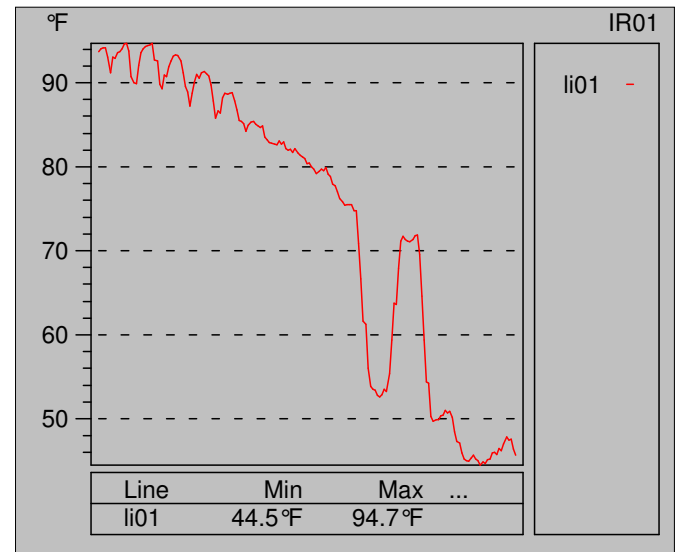
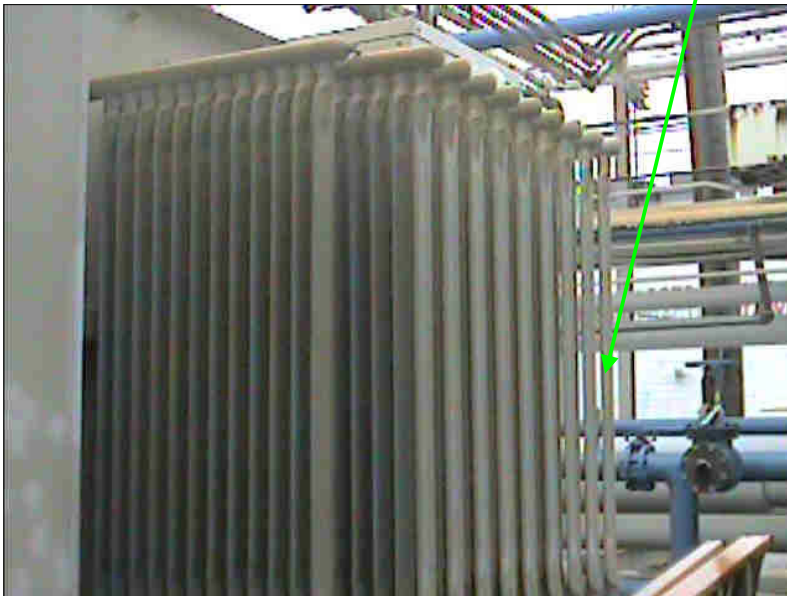
Suspect low coolant level. Check coolant; add or replace as necessary. Possible blockage in coolant fins.



Component	Equipment/Bucket ID	Plant/Area	Date
South Radaitor (West)	SUB 260	HCN	12-26-19



Label	Value
IR : max	96.7°F
IR : min	28.9°F
SP01	88.1°F
SP02	80.4°F
SP03	46.1°F
LI01 : max	94.7°F
LI01 : min	44.5°F



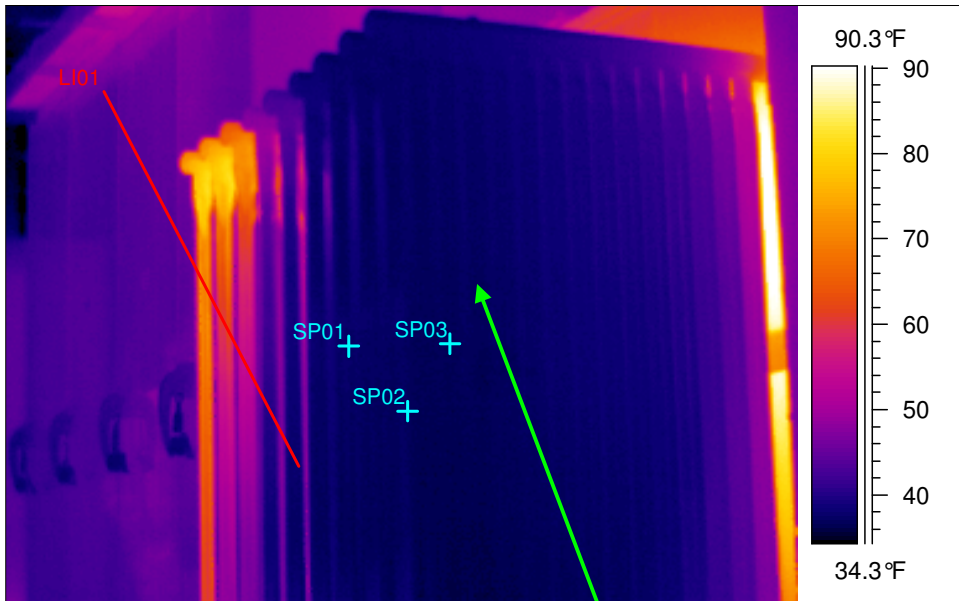
Fault	Cooling Issue
Defect Rating	Class 2

Recommendation

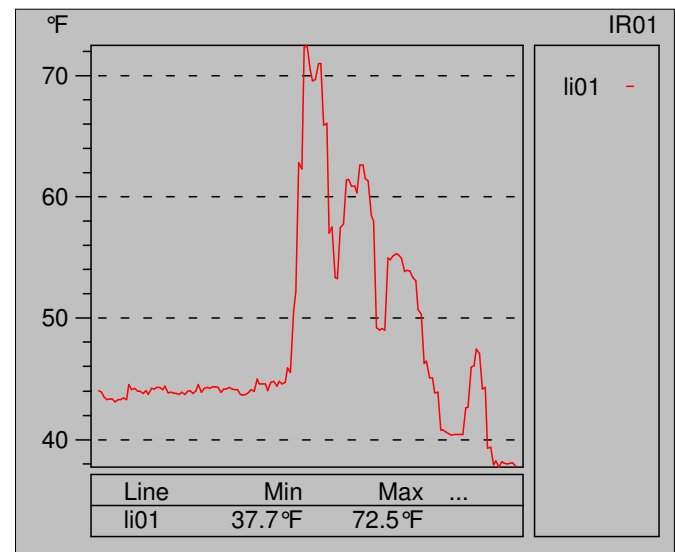
Possible blocked fins and low coolant. At the next opportunity check coolant level and inspect fins for defects. This West view shows more operating fins than the East view.



Component	Equipment/Bucket ID	Plant/Area	Date
South Radiator (East)	Sub 260	HCN	12-26-19



Label	Value
IR : max	93.1°F
IR : min	30.4°F
SP01	37.2°F
SP02	37.0°F
SP03	36.6°F
LI01 : max	72.5°F
LI01 : min	37.7°F



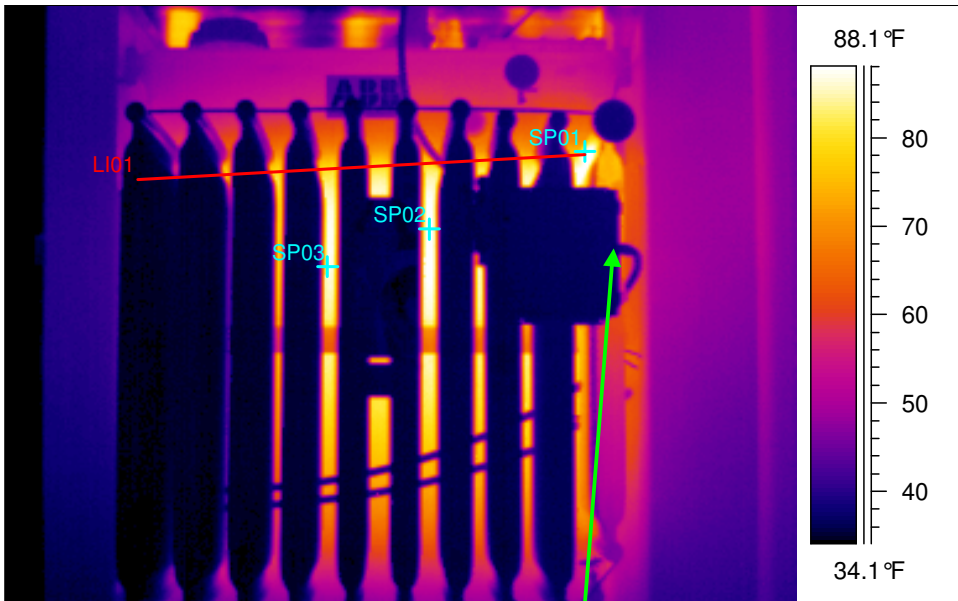
Fault	Cooling Issue
Defect Rating	Class 2

Recommendation

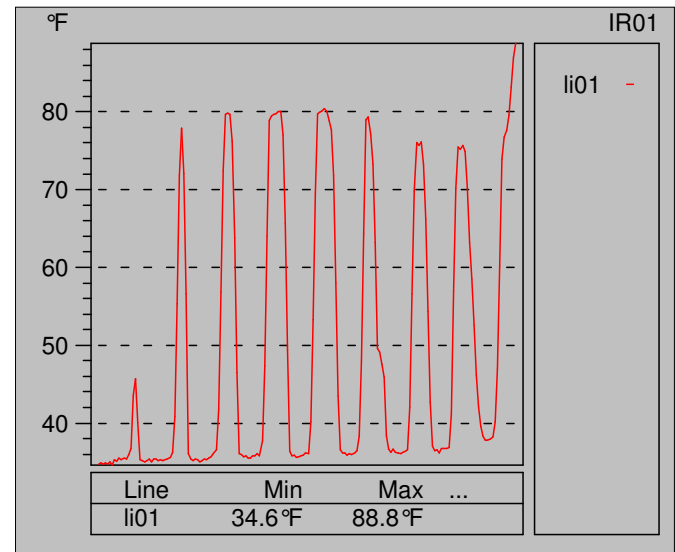
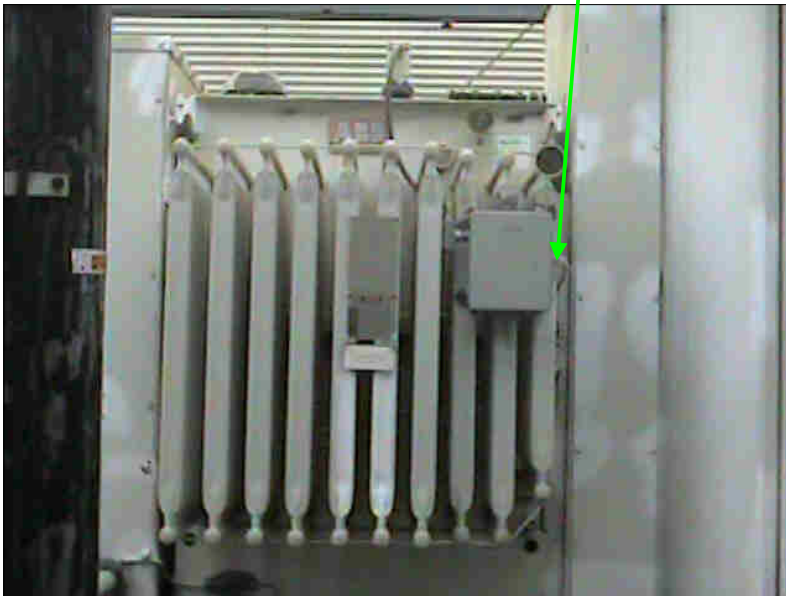
Possible blocked fins and low coolant level. At the next opportunity check coolant level and inspect fins for defects. This East view show less properly functioning fins than the West view.



Component	Equipment/Bucket ID	Plant/Area	Date
South Radiator NBody	SUB 260	HCN	12-26-19



Label	Value
IR : max	90.7°F
IR : min	31.2°F
SP01	86.9°F
SP02	89.2°F
SP03	87.2°F
LI01 : max	88.8°F
LI01 : min	34.6°F



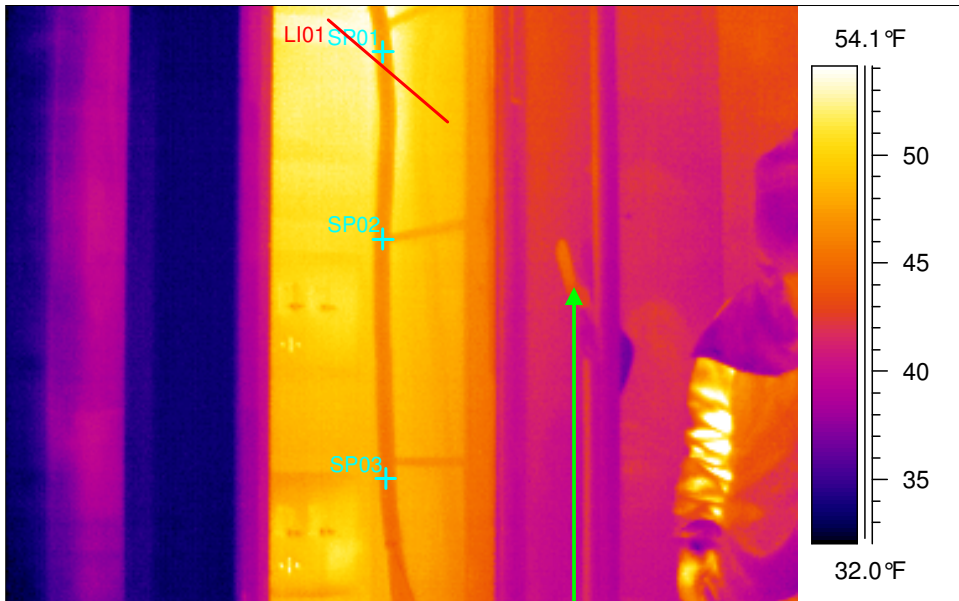
Fault	Cooling Issue
Defect Rating	Class 2

Recommendation

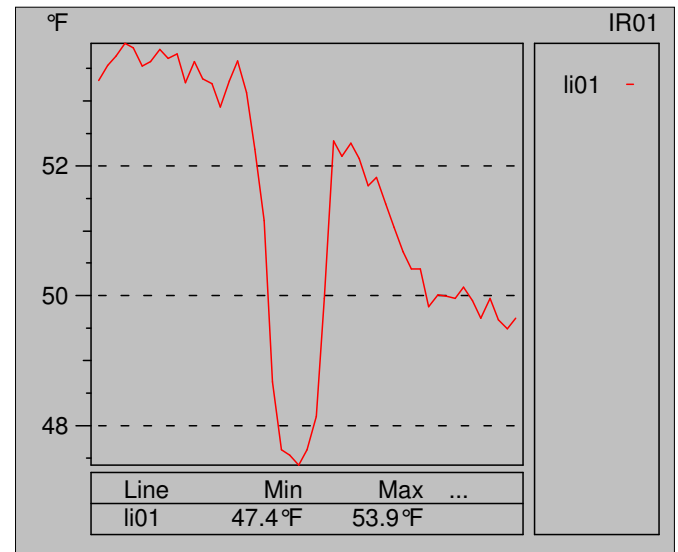
Possible blocked fins and low coolant levels. At the next opportunity check coolant level and inspect fins for possible defects. This North body view shows the possibility of low levels.



Component	Equipment/Bucket ID	Plant/Area	Date
West Panel	SUB 260	HCN	12-26-19



Label	Value
IR : max	70.2°F
IR : min	32.0°F
SP01	47.4°F
SP02	46.9°F
SP03	45.3°F
LI01 : max	53.9°F
LI01 : min	47.4°F



Fault	None
Defect Rating	NA

Recommendation

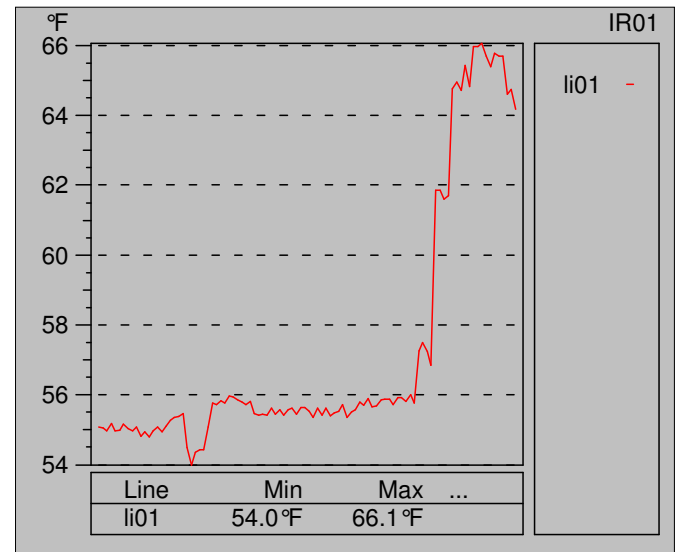
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
West Middle Panel	SUB 260	HCN	12-26-19



Label	Value
IR : max	69.5°F
IR : min	36.4°F
SP01	65.6°F
SP02	65.0°F
SP03	60.2°F
LI01 : max	66.1°F
LI01 : min	54.0°F



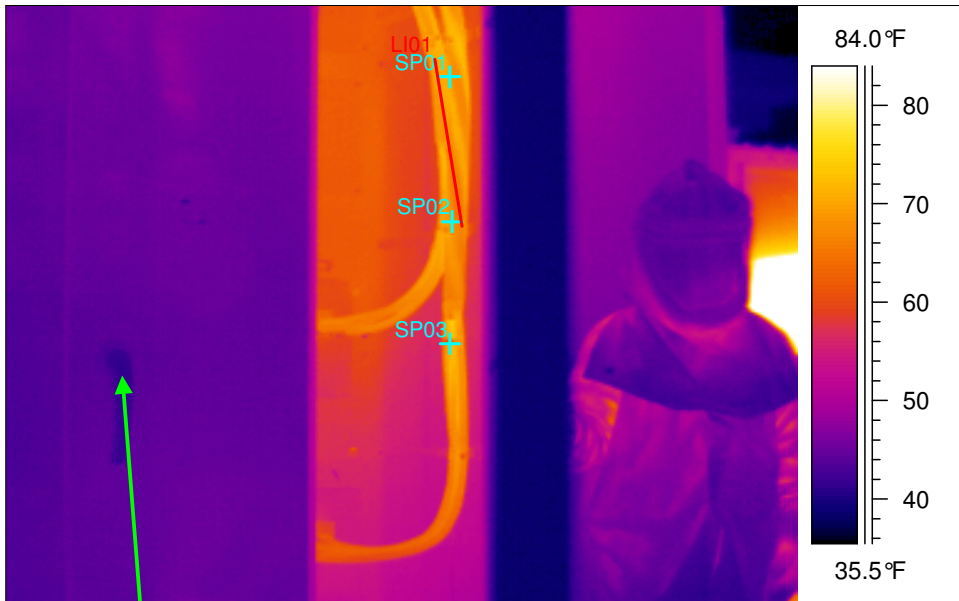
Fault	None
Defect Rating	NA

Recommendation

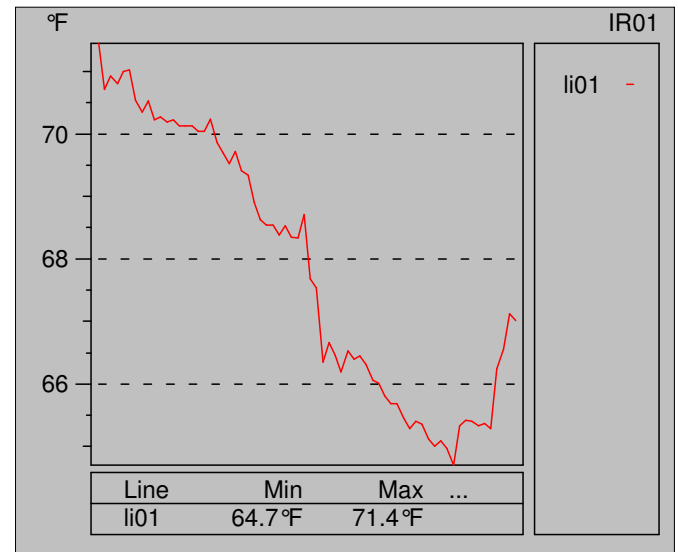
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
East Middle Panel	SUB 260	HCN	12-26-19



Label	Value
IR : max	93.9°F
IR : min	34.1°F
SP01	69.4°F
SP02	67.5°F
SP03	69.5°F
LI01 : max	71.4°F
LI01 : min	64.7°F



Fault	None
Defect Rating	NA

Recommendation

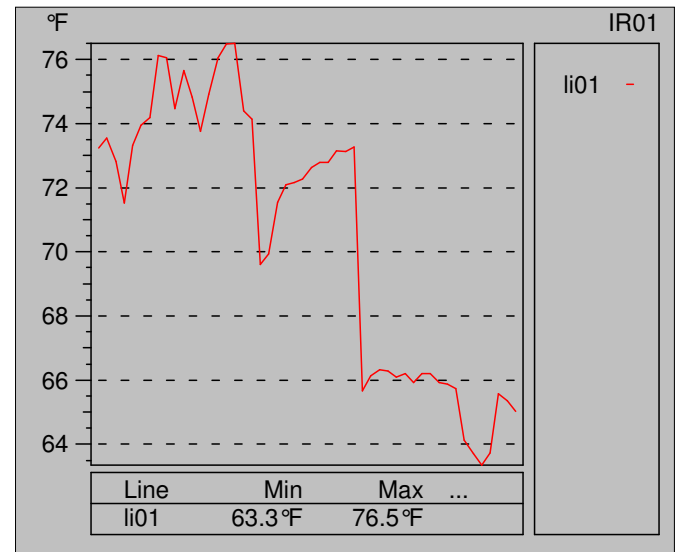
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
East Panel	SUB 260	HCN	12-26-19



Label	Value
IR : max	95.1°F
IR : min	38.5°F
SP01	73.4°F
SP02	64.9°F
SP03	53.2°F
LI01 : max	76.5°F
LI01 : min	63.3°F



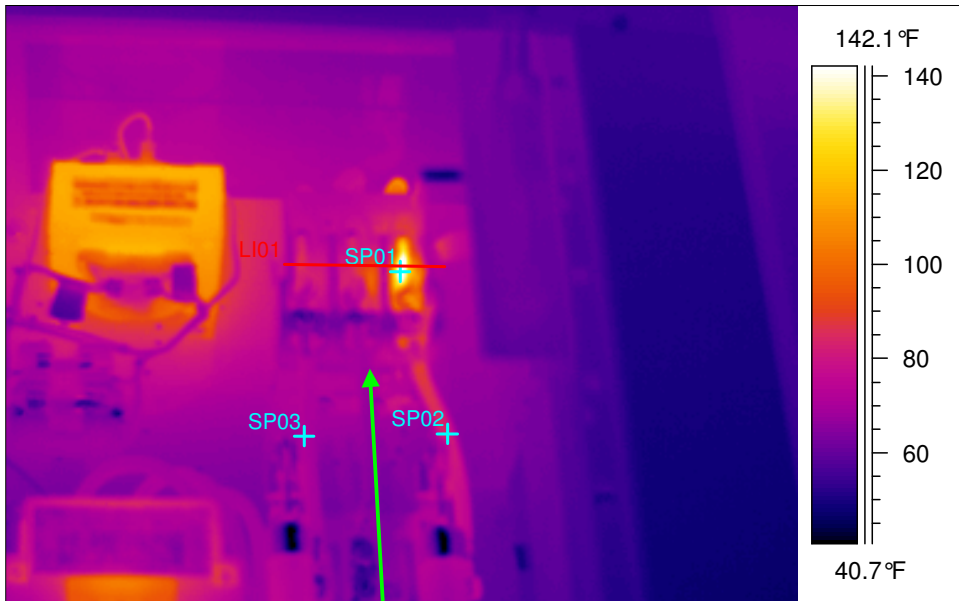
Fault	None
Defect Rating	NA

Recommendation

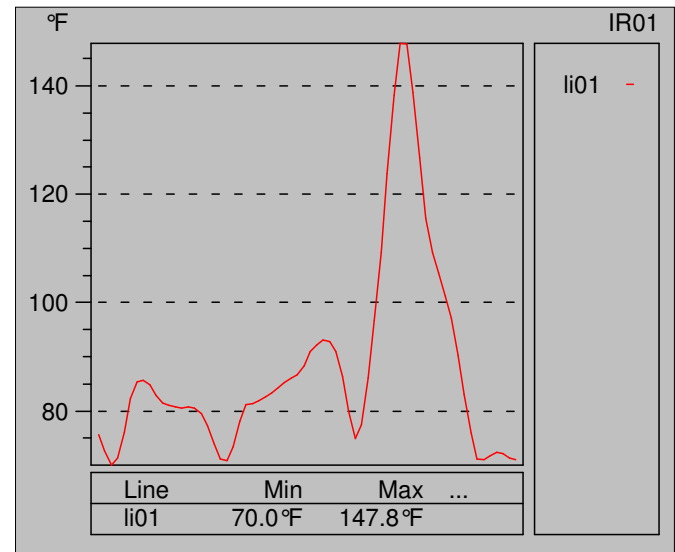
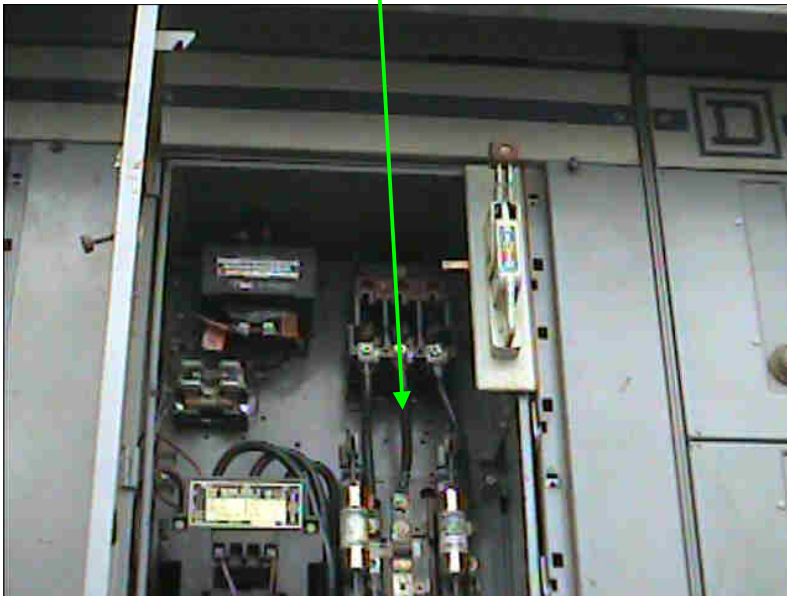
Operating normally, no issues.



Component	Equipment/Bucket ID	Plant/Area	Date
Comb. Air Blower	MCC 10	HCN	12-26-19



Label	Value
IR : max	148.8°F
IR : min	39.3°F
SP01	146.9°F
SP02	82.7°F
SP03	71.4°F
LI01 : max	147.8°F
LI01 : min	70.0°F



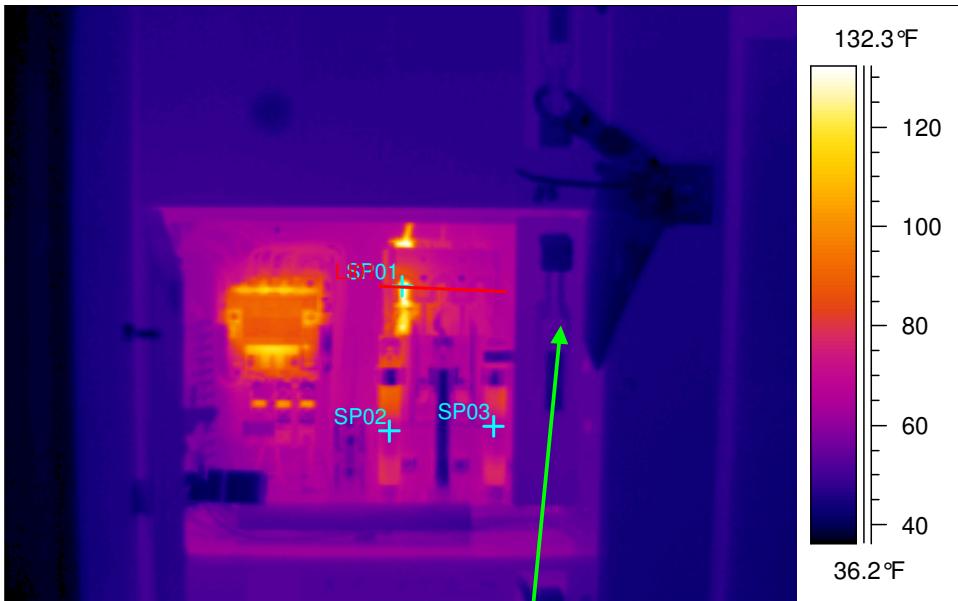
Fault	Poor Contact at Switch
Defect Rating	Class 2

Recommendation

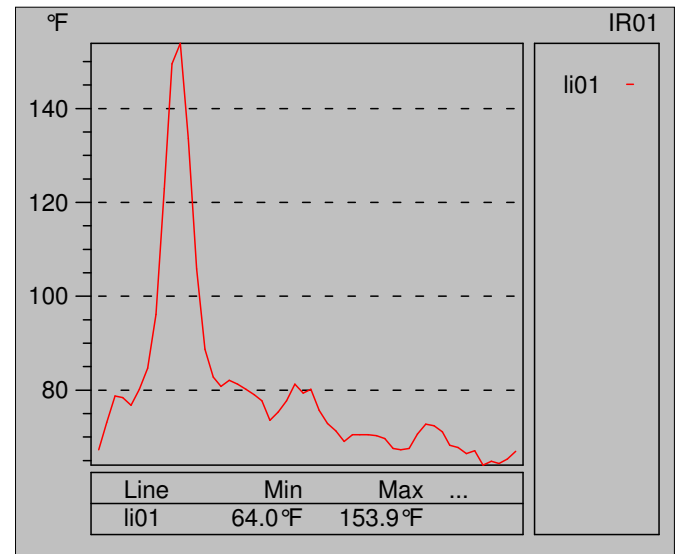
C phase shows what appears to be poor contact at the switch. Recommend inspection, repair and replace at the next opportunity.



Component	Equipment/Bucket ID	Plant/Area	Date
Methanol Pump	MCC B	HCN STO, TK.	12-26-19



Label	Value
IR : max	153.9°F
IR : min	33.7°F
SP01	149.5°F
SP02	66.8°F
SP03	65.4°F
LI01 : max	153.9°F
LI01 : min	64.0°F



Fault	Switch Contact
Defect Rating	Class 2

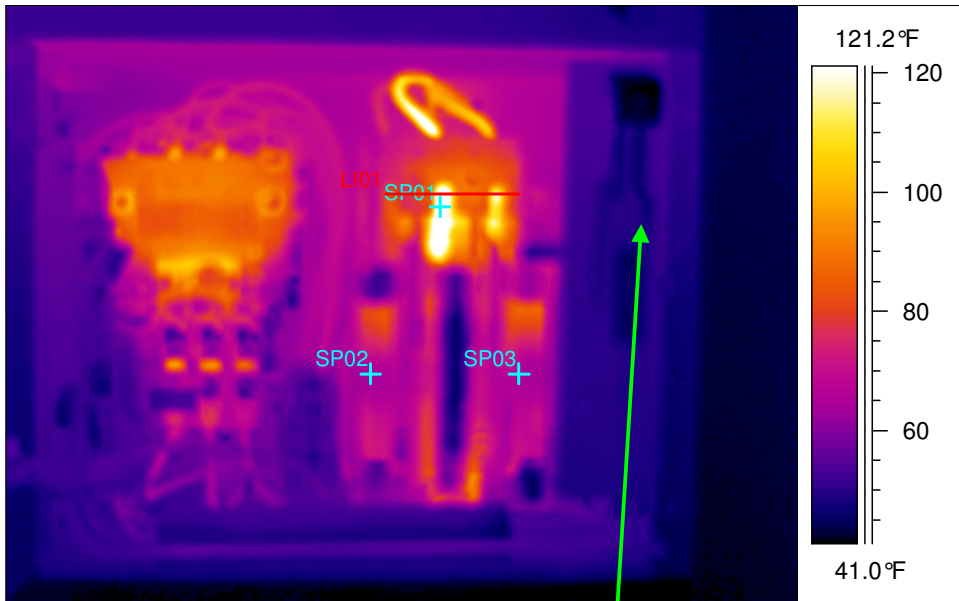
Recommendation

FA3-12-09//EP118B

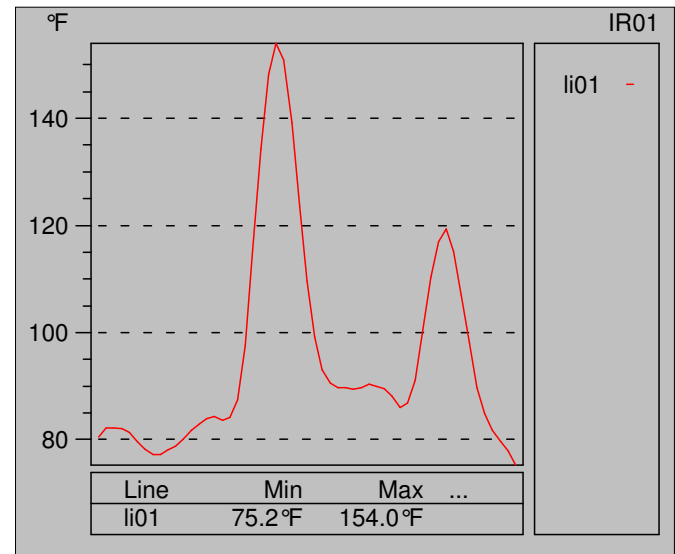
A phase appears to have poor contact at the switch. Recommend inspecting and repair/replace at the next opportunity.



Component	Equipment/Bucket ID	Plant/Area	Date
TK TRANS. PUMP	MCC B	HCN STO. TK.	12-26-19



Label	Value
IR : max	155.0°F
IR : min	40.6°F
SP01	139.2°F
SP02	64.9°F
SP03	66.2°F
LI01 : max	154.0°F
LI01 : min	75.2°F



Fault	Switch Contact Area
Defect Rating	Class 2

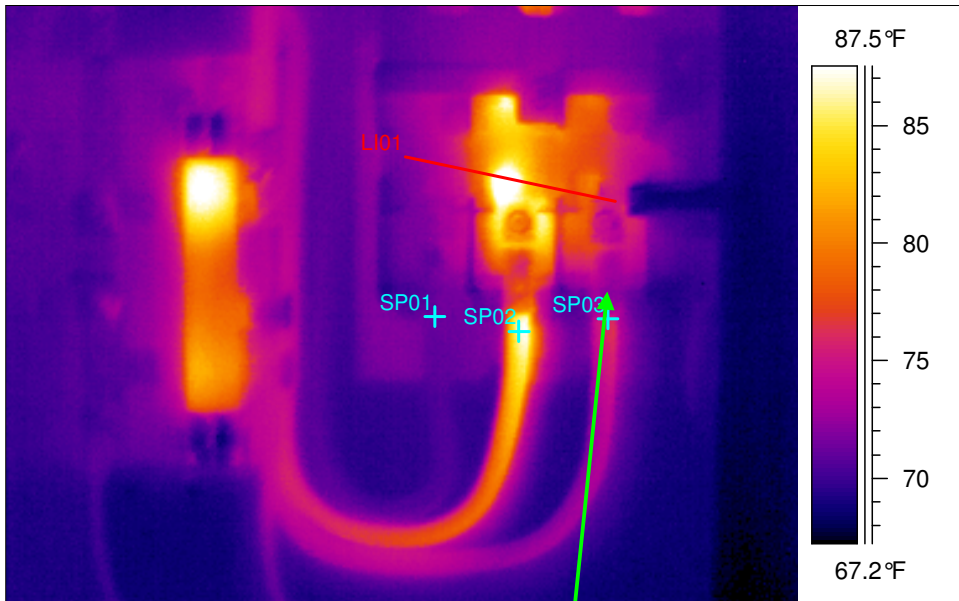
Recommendation

FA3-11-99//EP108B

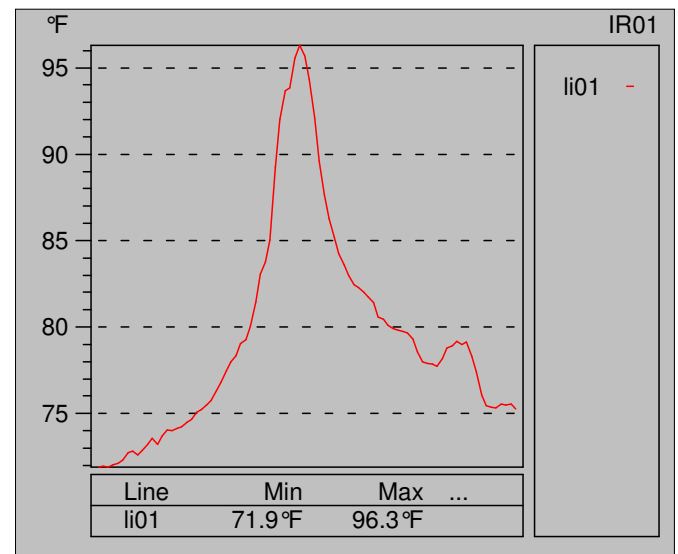
Phase B is showing poor contact at the top of the switch. Recommend repairing/replacing at the next opportunity.



Component	Equipment/Bucket ID	Plant/Area	Date
Switch	DH-2	HCN BLD. 800	12-26-19



Label	Value
IR : max	96.8°F
IR : min	66.8°F
SP01	71.0°F
SP02	86.8°F
SP03	75.7°F
LI01 : max	96.3°F
LI01 : min	71.9°F



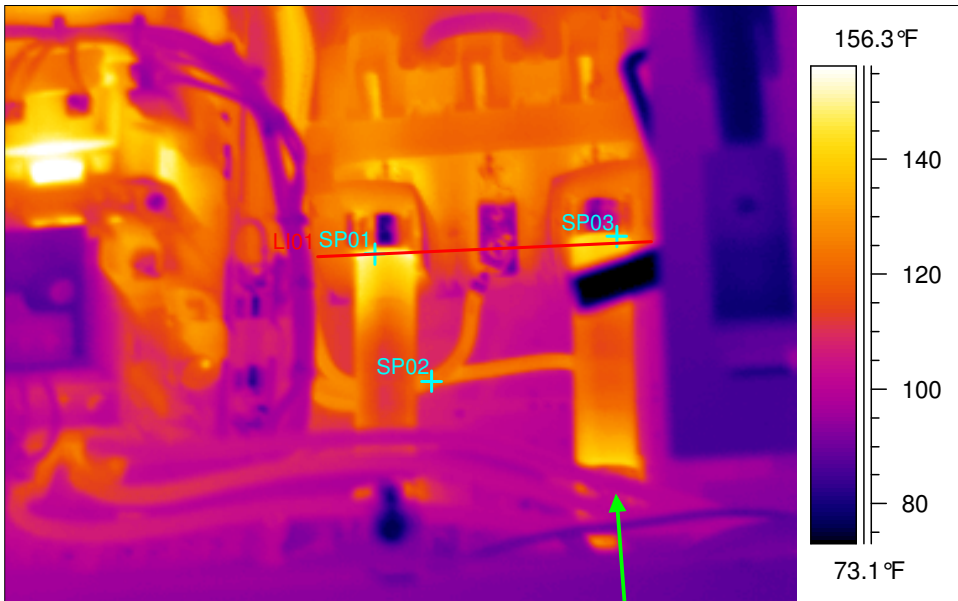
Fault	Poor Conection
Defect Rating	Class 1

Recommendation

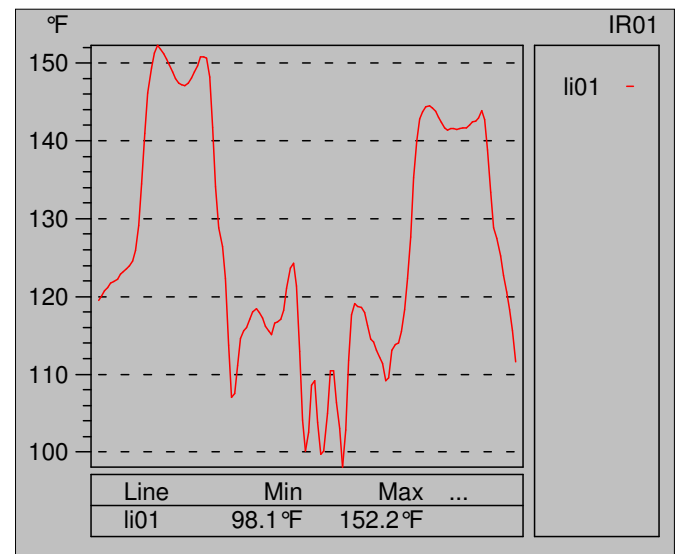
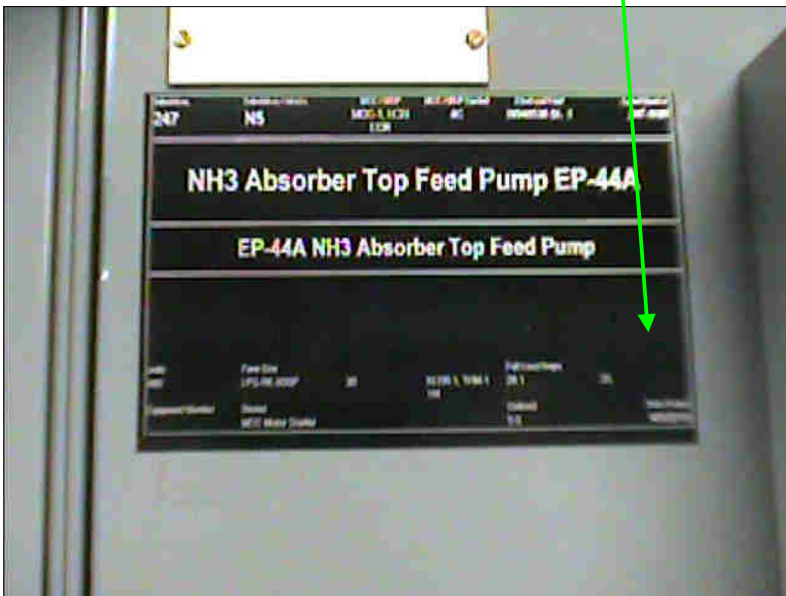
B phase is showing a possible poor connection causing increased tempature. Recommend inspecting and repairing in the near future.



Component	Equipment/Bucket ID	Plant/Area	Date
Top Feed Pmp.EP44A	MCC1 NH3	HCN ECR	12-26-19



Label	Value
IR : max	169.0°F
IR : min	72.6°F
SP01	149.7°F
SP02	122.3°F
SP03	142.4°F
LI01 : max	152.2°F
LI01 : min	98.1°F



Fault	Poor connection at fuse clips
Defect Rating	Class 1

Recommendation

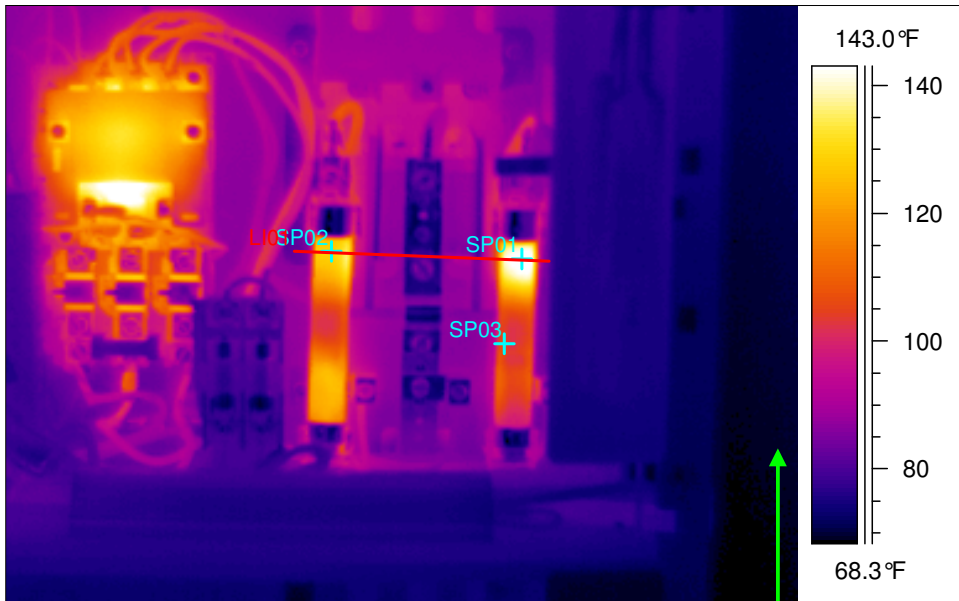
Showing an increased temperature at top of both fuse clips. Recommend inspection. Clean, repair and replace at the next opportunity.



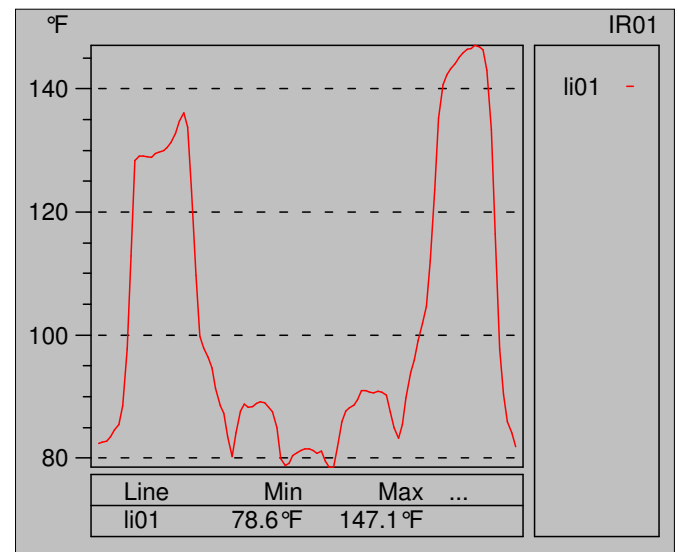
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Component	Equipment/Bucket ID	Plant/Area	Date
EP 930D	MCC 1	HCN Trade Waste	12-26-19



Label	Value
IR : max	150.0°F
IR : min	68.0°F
SP01	146.6°F
SP02	129.3°F
SP03	104.8°F
LI01 : max	147.1°F
LI01 : min	78.6°F



Fault	Poor connection at fuse clips
Defect Rating	Class 1

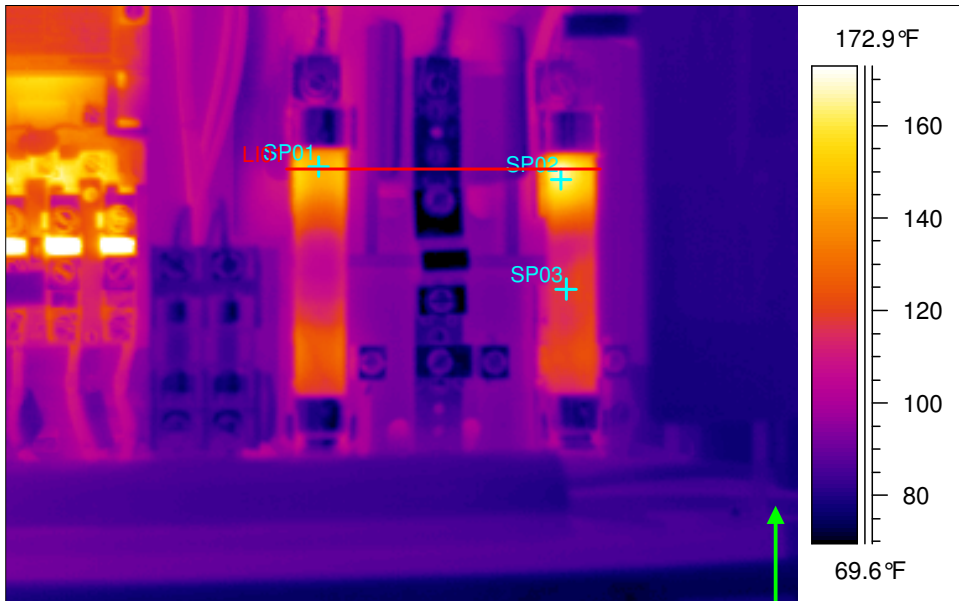
Recommendation

EP930D

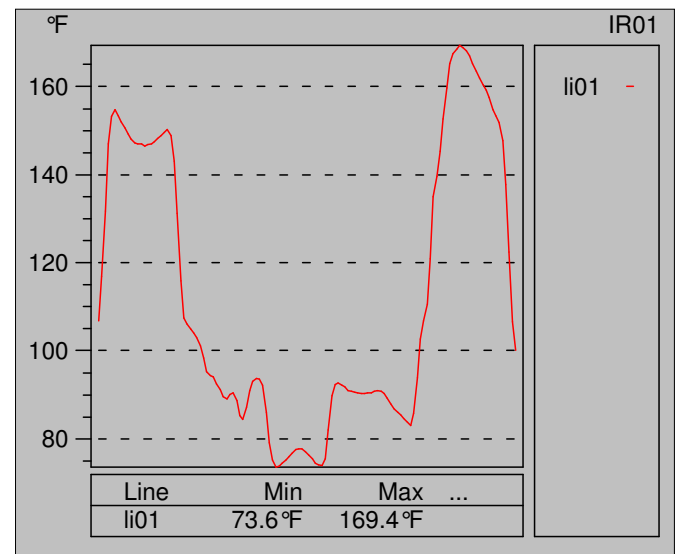
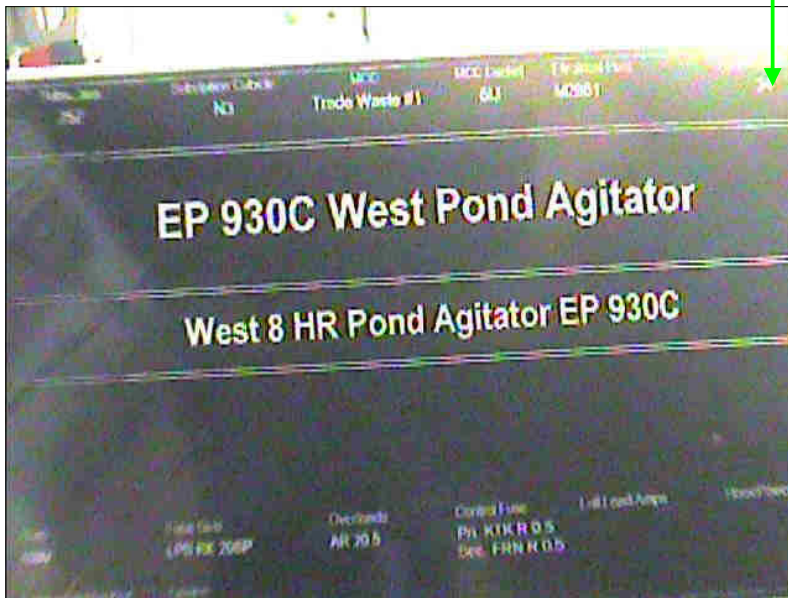
Possible poor connection at fuse clips. Recommend inspection, cleaning, and possibly replacing in the near future.



Component	Equipment/Bucket ID	Plant/Area	Date
EP 930C	MCC1	HCN Trade Waste	12-26-19



Label	Value
IR : max	228.5°F
IR : min	68.3°F
SP01	147.2°F
SP02	166.7°F
SP03	118.0°F
LI01 : max	169.4°F
LI01 : min	73.6°F



Fault	Connection at fuse clips
Defect Rating	Class 2

Recommendation

EP 930 C

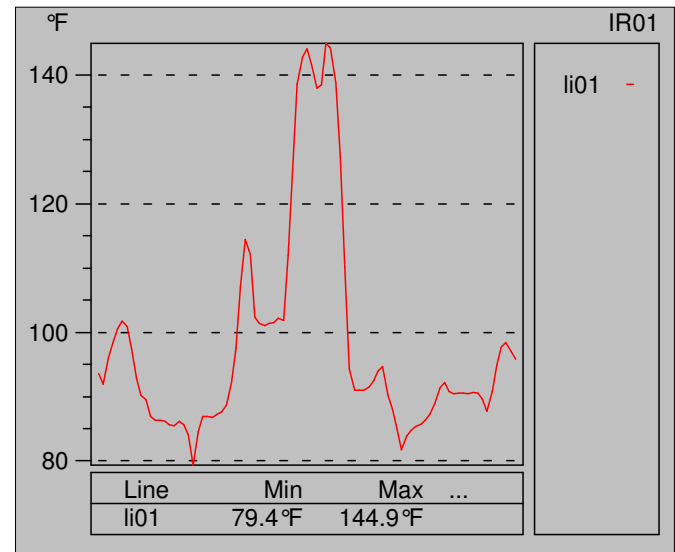
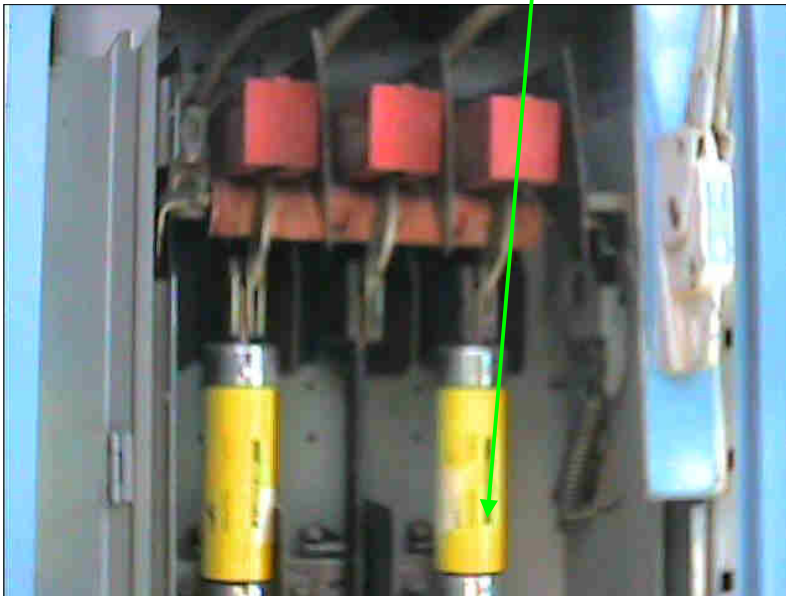
Possible poor connection at fuse clips. Recommend inspection. Clean, repair and replace at the next opportunity.



Component	Equipment/Bucket ID	Plant/Area	Date
#1 Lift pump	MCC1 ECF	HCN	12-26-19



Label	Value
IR : max	145.9°F
IR : min	52.9°F
SP01	100.6°F
SP02	144.9°F
SP03	88.1°F
LI01 : max	144.9°F
LI01 : min	79.4°F



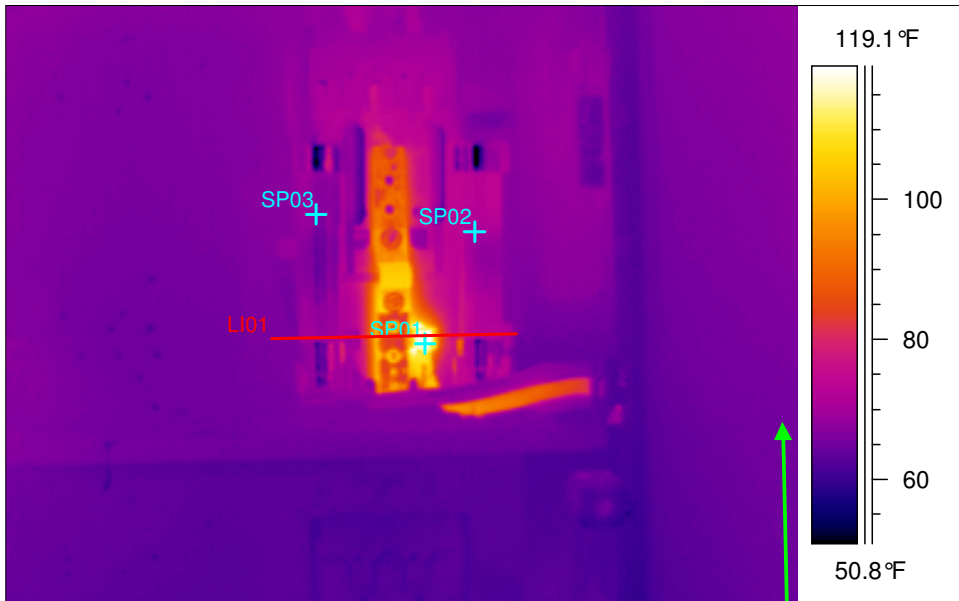
Fault	Bad Connection
Defect Rating	Class 2

Recommendation

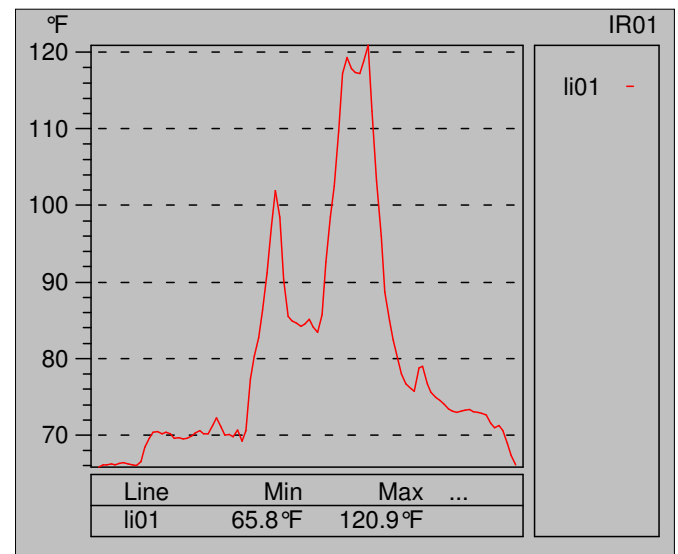
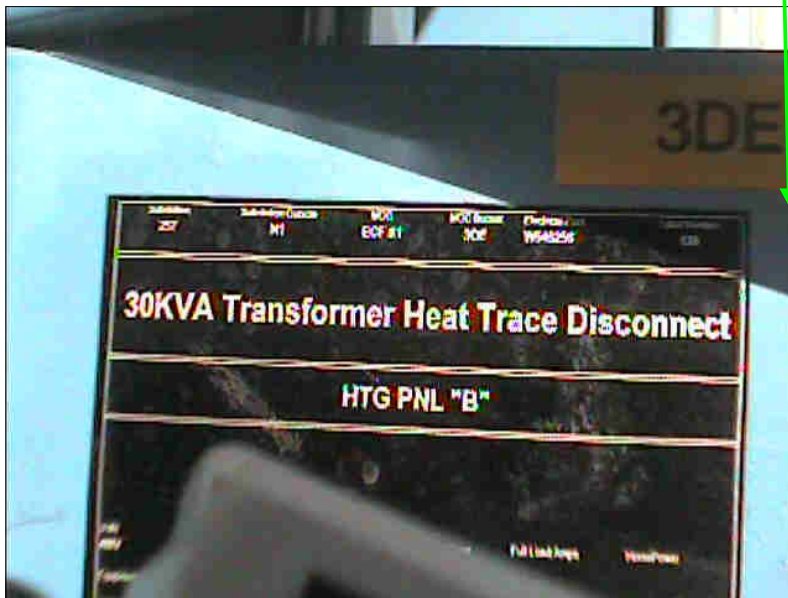
Poor contact at switch in B phase. Recommend cleaning and inspecting. Repairing/replacing at the next opportunity. Make sure all connections are tight after maintenance.



Component	Equipment/Bucket ID	Plant/Area	Date
Heat Trace Disc.	MCC 1 ECF	HCN	12-26-19



Label	Value
IR : max	121.1°F
IR : min	47.6°F
SP01	120.9°F
SP02	70.8°F
SP03	65.5°F
LI01 : max	120.9°F
LI01 : min	65.8°F



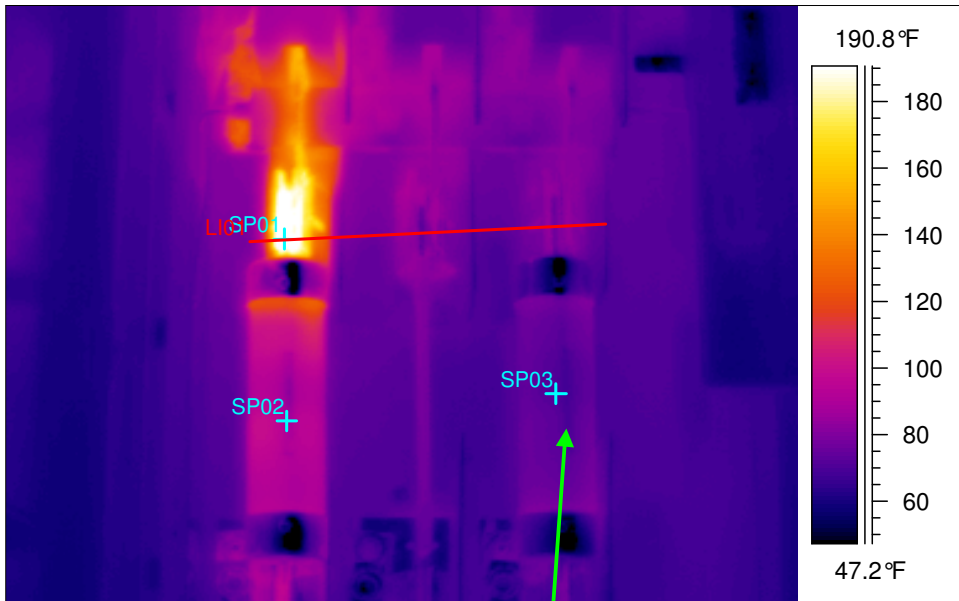
Fault	Bad Connection
Defect Rating	Class 1

Recommendation

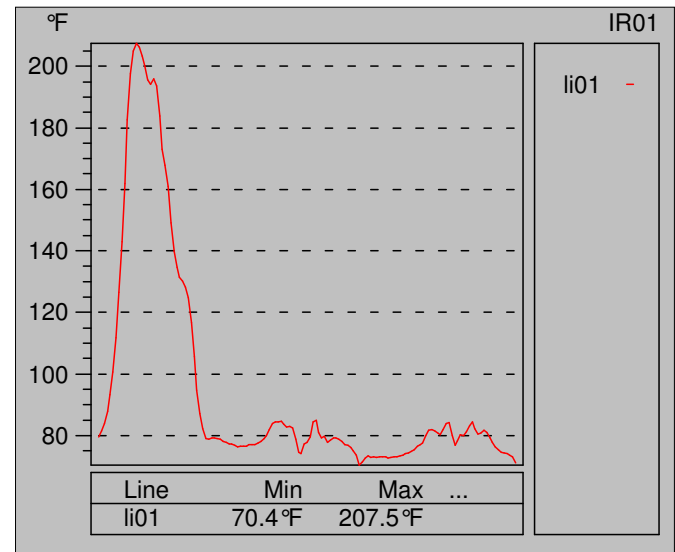
Poor contact at switch in B phase. Recommend inspecting and cleaning, repairing/replacing in the near future.



Component	Equipment/Bucket ID	Plant/Area	Date
2nd Neut. TK Agi.	MCC 1 ECF	HCN	12-26-19



Label	Value
IR : max	207.5°F
IR : min	22.2°F
SP01	206.1°F
SP02	89.8°F
SP03	70.8°F
LI01 : max	207.5°F
LI01 : min	70.4°F



Fault	Bad Switch Connection
Defect Rating	Class 3

Recommendation

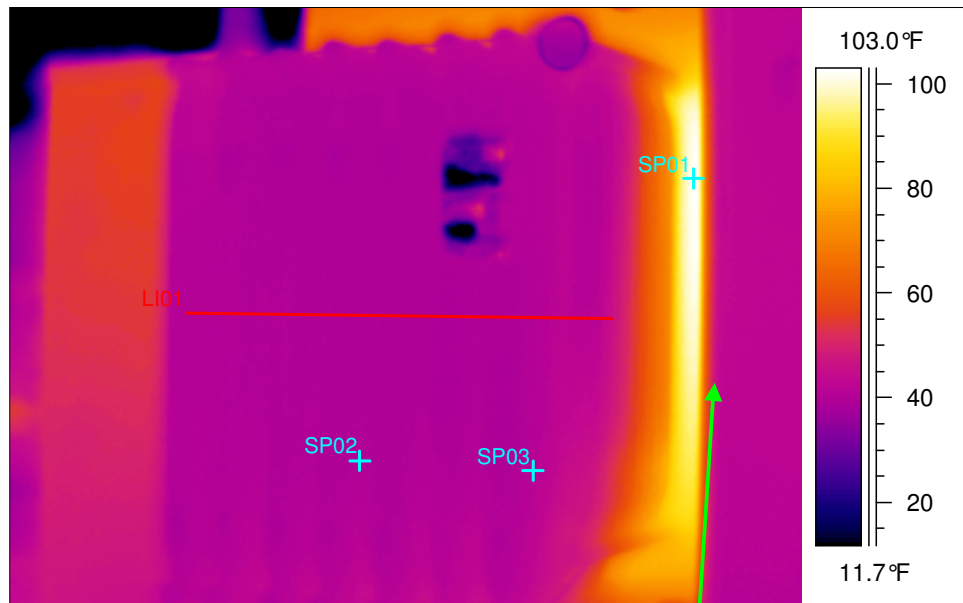
Bad connection at the switch in A phase. Excessive heat. Recomend cleaning, inspecting, and repairing/replacing ASAP.



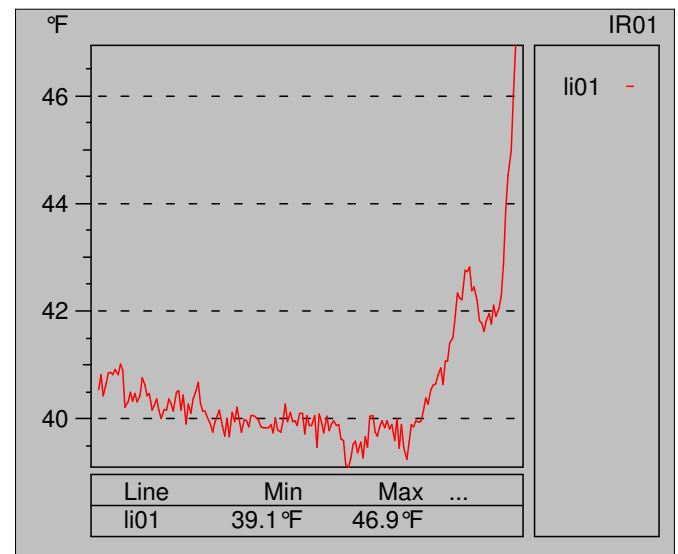
QualiTest IR Radiometric Survey Report



Component	Equipment/Bucket ID	Plant/Area	Date
North Radiator	SUB 257	HCN	12-26-19



Label	Value
IR : max	103.3°F
IR : min	-31.3°F
SP01	103.3°F
SP02	40.3°F
SP03	41.5°F
LI01 : max	46.9°F
LI01 : min	39.1°F



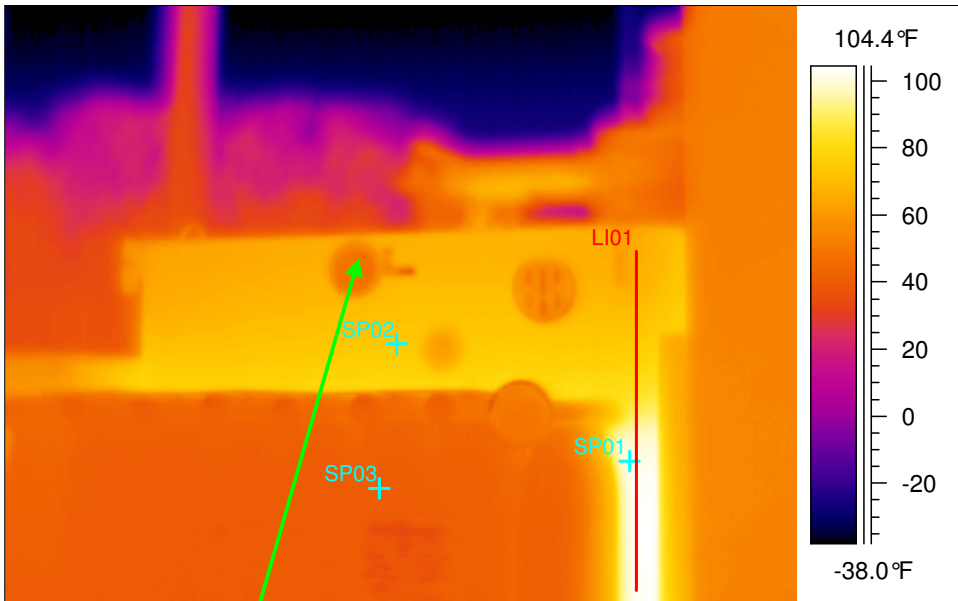
Fault	Cooling Issue
Defect Rating	Class 2

Recommendation

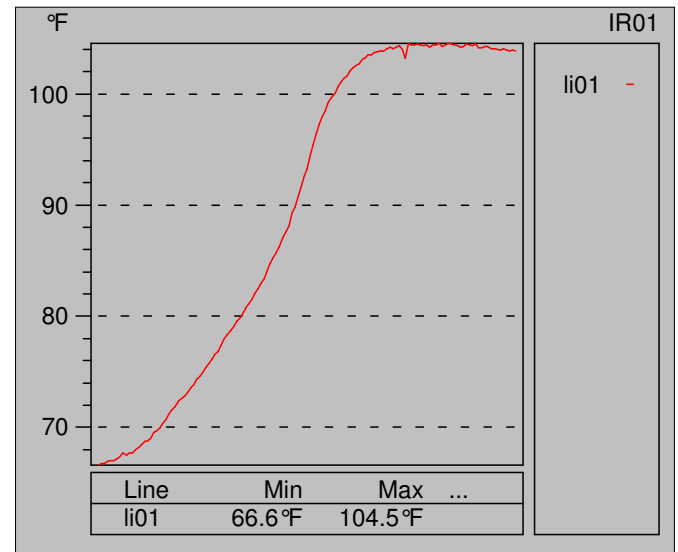
Level appears to be below top tubes of radiator. Recommend checking coolant level.



Component	Equipment/Bucket ID	Plant/Area	Date
North Trans Body	SUB 257	HCN	12-26-19



Label	Value
IR : max	105.0°F
IR : min	*-40.6°F
SP01	102.2°F
SP02	75.1°F
SP03	41.0°F
LI01 : max	104.5°F
LI01 : min	66.6°F



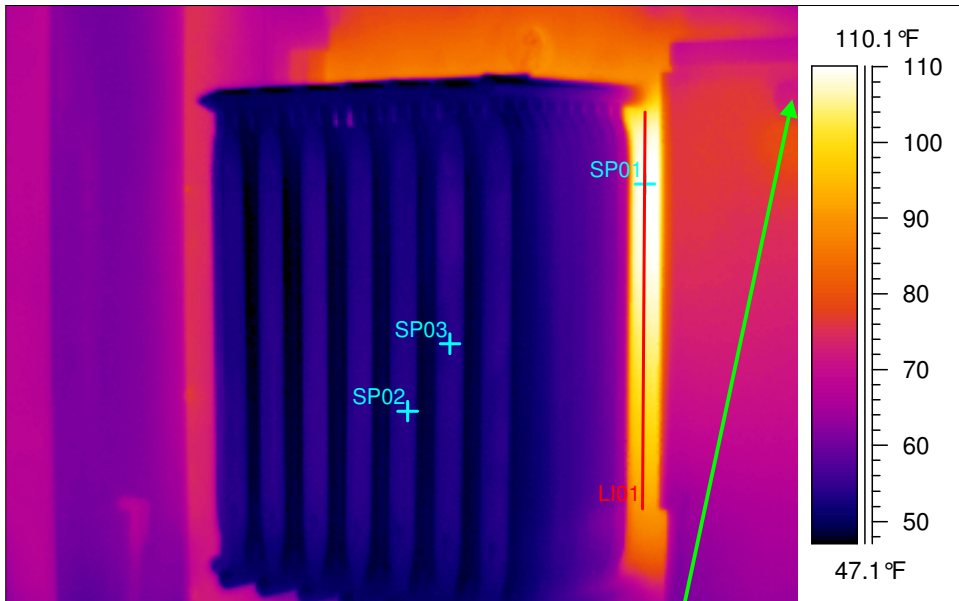
Fault	Coolant issue
Defect Rating	Class 2

Recommendation

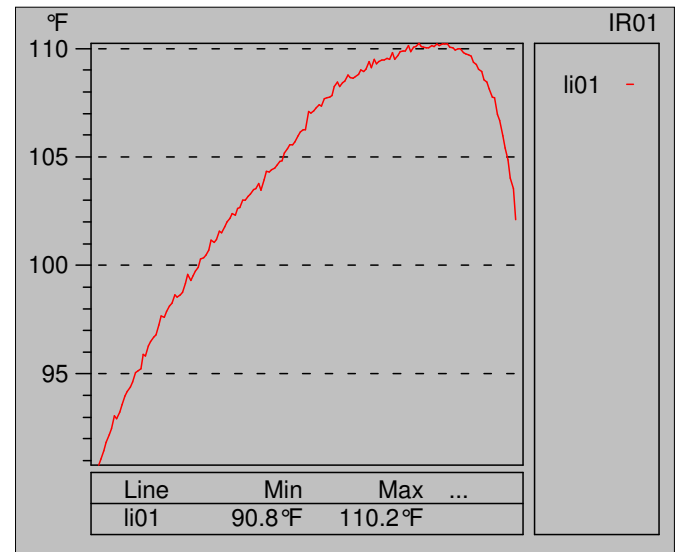
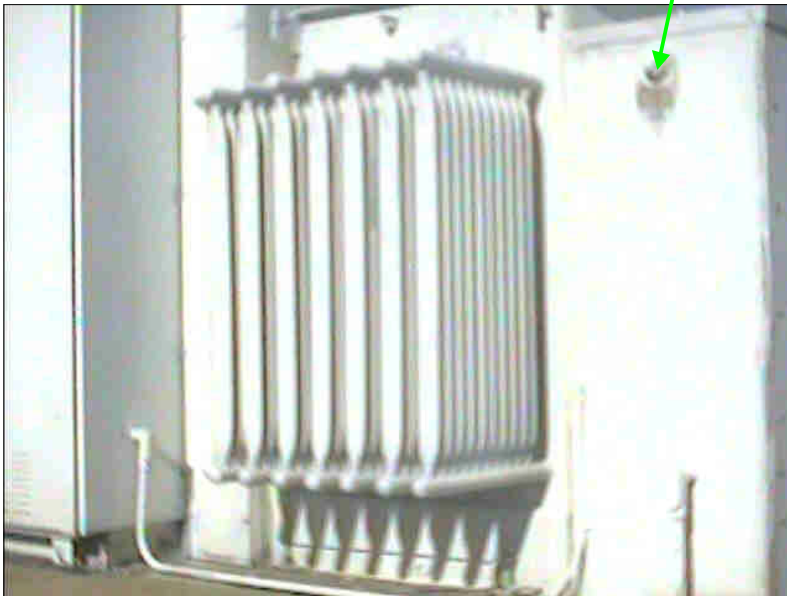
Level appears to be slightly low at bottom of top tubes. Recommend checking coolant level.



Component	Equipment/Bucket ID	Plant/Area	Date
South Radiator	SUB 257	HCN	12-26-19



Label	Value
IR : max	111.2°F
IR : min	43.0°F
SP01	110.1°F
SP02	53.8°F
SP03	53.8°F
LI01 : max	110.2°F
LI01 : min	90.8°F



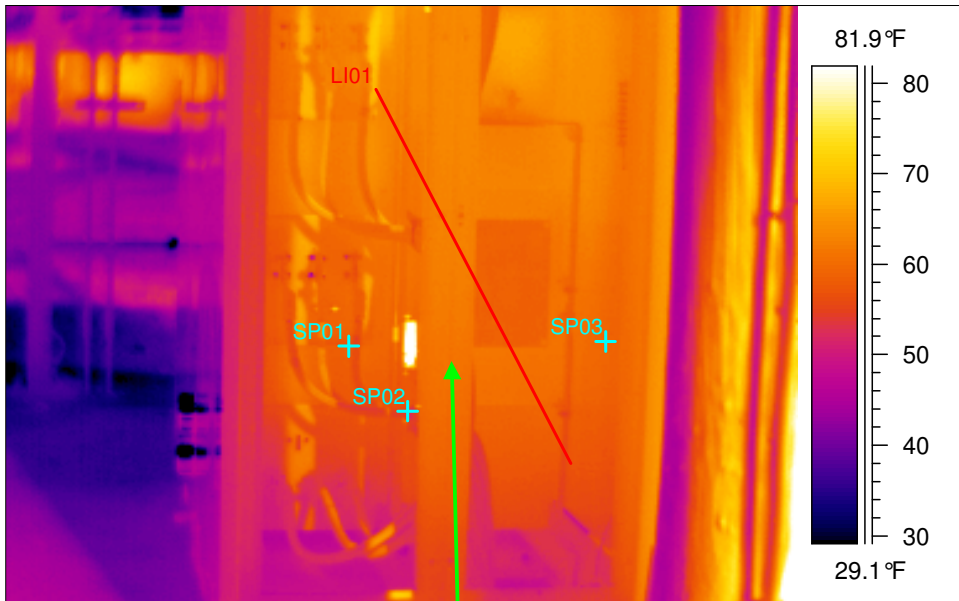
Fault	Coolant issue
Defect Rating	Class 3

Recommendation

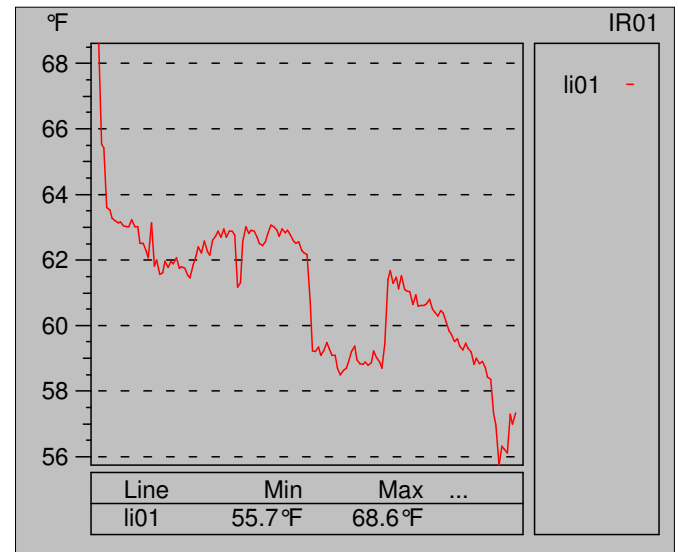
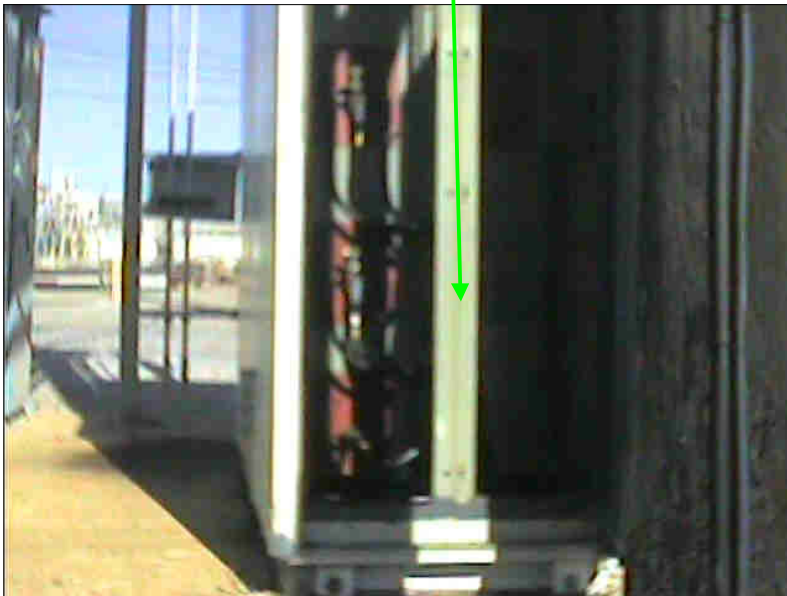
Coolant level appears to be low. Recommend checking coolant level ASAP.



Component	Equipment/Bucket ID	Plant/Area	Date
Electrical Pannel	SUB 257	HCN	12-26-19



Label	Value
IR : max	105.8°F
IR : min	0.1°F
SP01	58.6°F
SP02	55.1°F
SP03	59.4°F
LI01 : max	68.6°F
LI01 : min	55.7°F



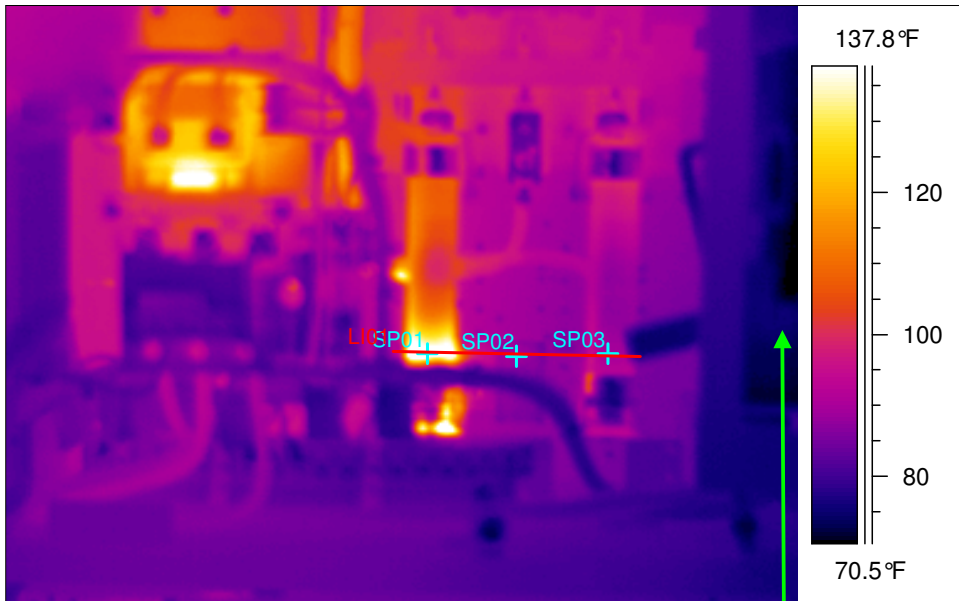
Fault	None
Defect Rating	NA

Recommendation

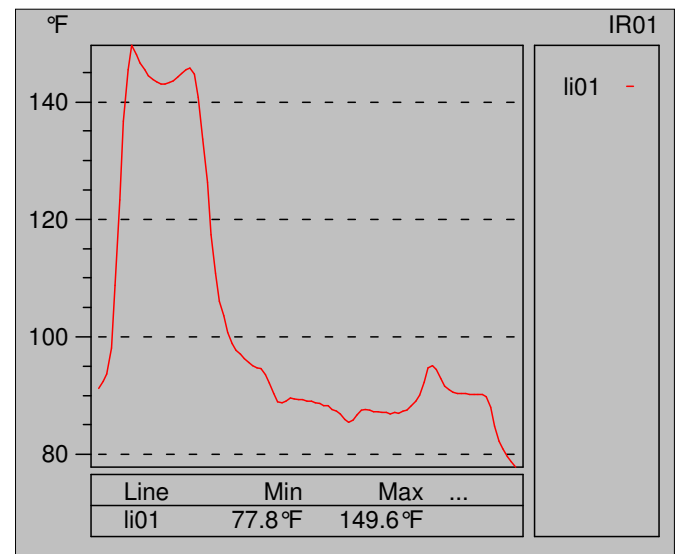
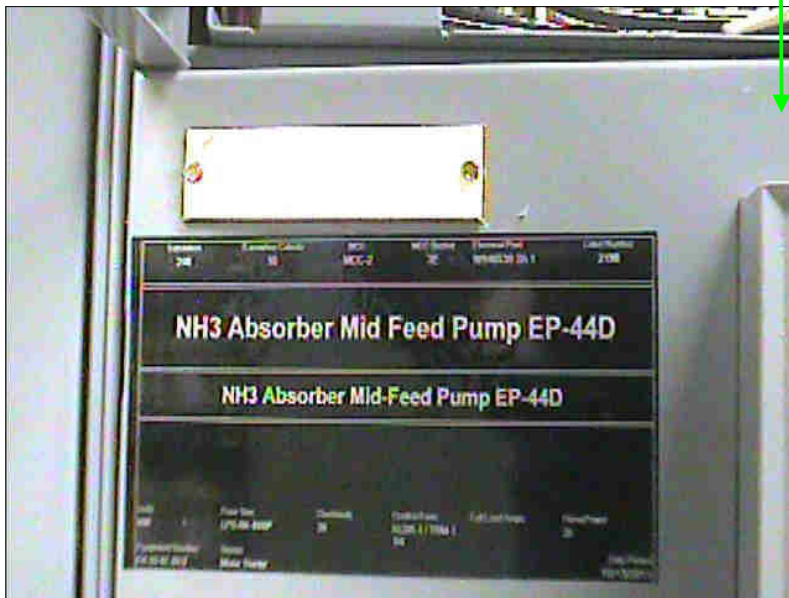
Appears to be operating normally. No issues



Component	Equipment/Bucket ID	Plant/Area	Date
Abs. Mid Feed Pmp.	EP-44D	HCN	12-26-19



Label	Value
IR : max	160.7°F
IR : min	70.3°F
SP01	145.3°F
SP02	89.0°F
SP03	90.3°F
LI01 : max	149.6°F
LI01 : min	77.8°F



Fault	Bad Fuse Connection
Defect Rating	Class 2

Recommendation

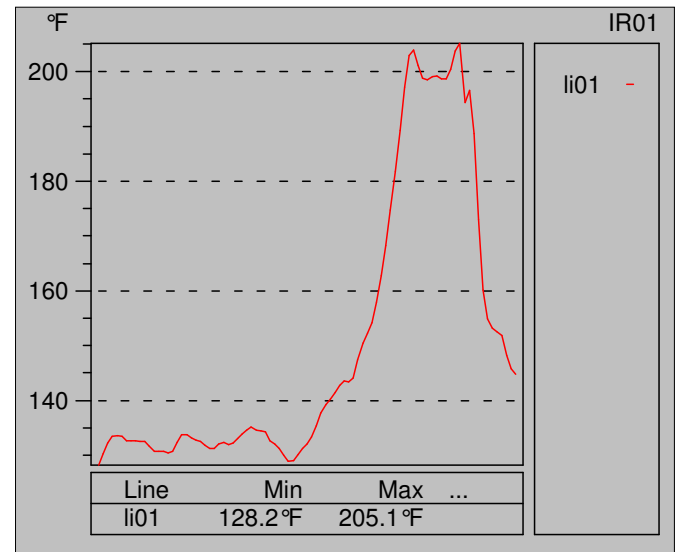
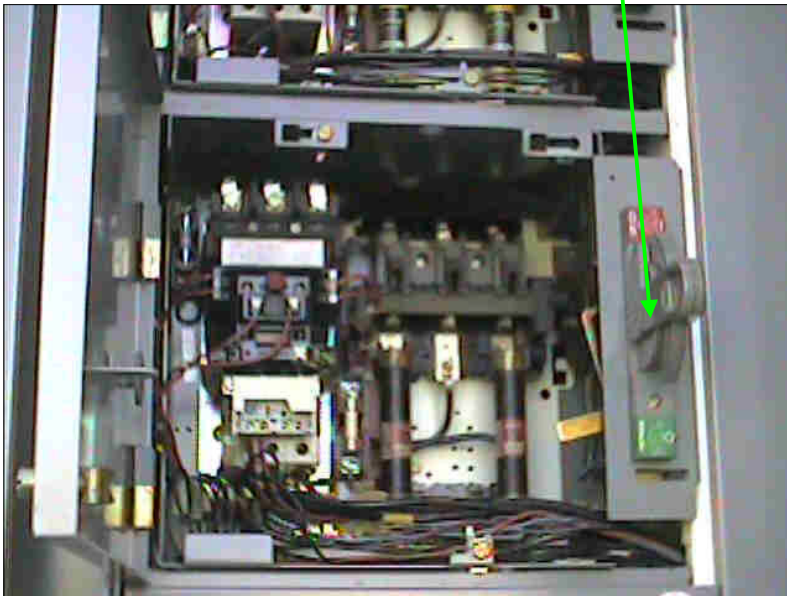
Connection at A phase lower fuse clip appears to be bad. Recommend inspecting, cleaning, and repairing/replacing at the next opportunity.



Component	Equipment/Bucket ID	Plant/Area	Date
E HCN Circ. Pump	MCC E	HCN Tank Farm	12-26-19



Label	Value
IR : max	221.9°F
IR : min	15.2°F
SP01	119.3°F
SP02	114.6°F
SP03	206.3°F
LI01 : max	205.1°F
LI01 : min	128.2°F



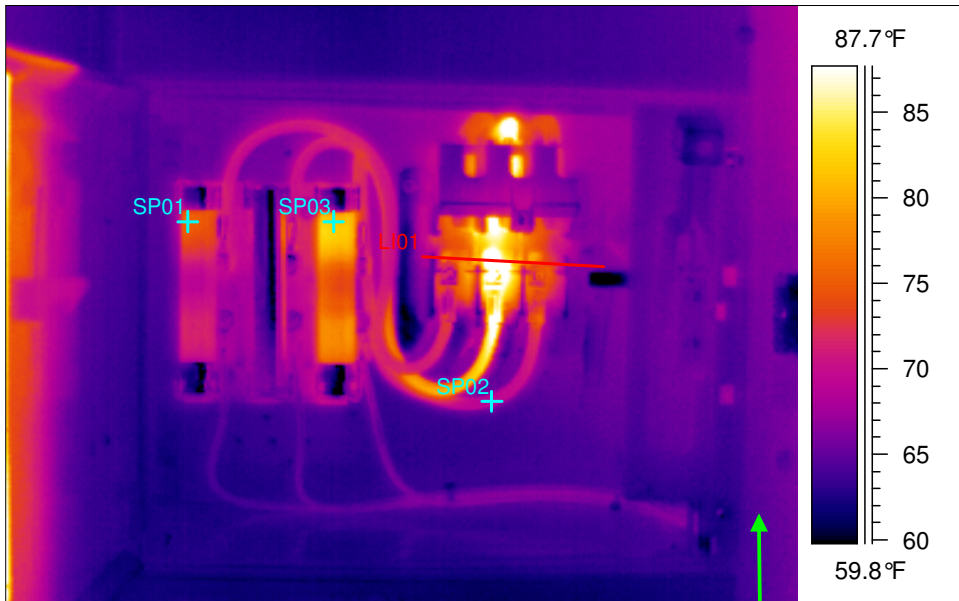
Fault	Bad Switch Connection
Defect Rating	Class 3

Recommendation

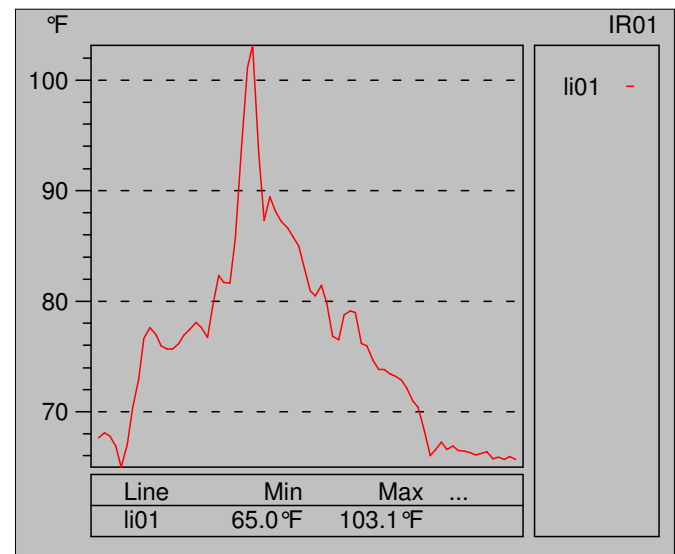
Excessive heat in C phase switch. Recommend inspecting, cleaning, repairing/replacing ASAP



Component	Equipment/Bucket ID	Plant/Area	Date
Lighting Trans.	MCC 501A	HCN TK. Farm	12-26-19



Label	Value
IR : max	103.5°F
IR : min	55.6°F
SP01	75.6°F
SP02	69.4°F
SP03	81.6°F
LI01 : max	103.1°F
LI01 : min	65.0°F



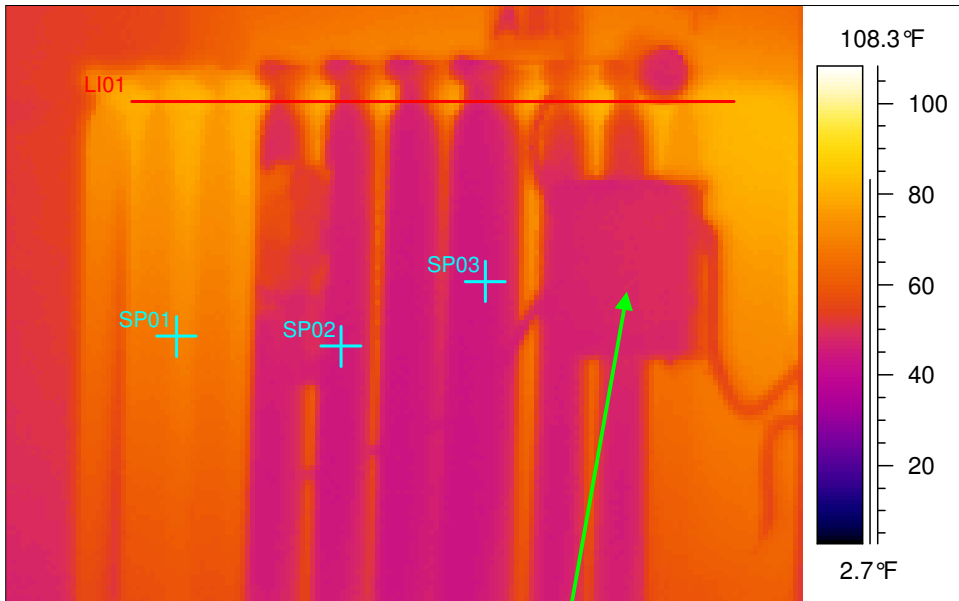
Fault	Poor Connection
Defect Rating	Class 1

Recommendation

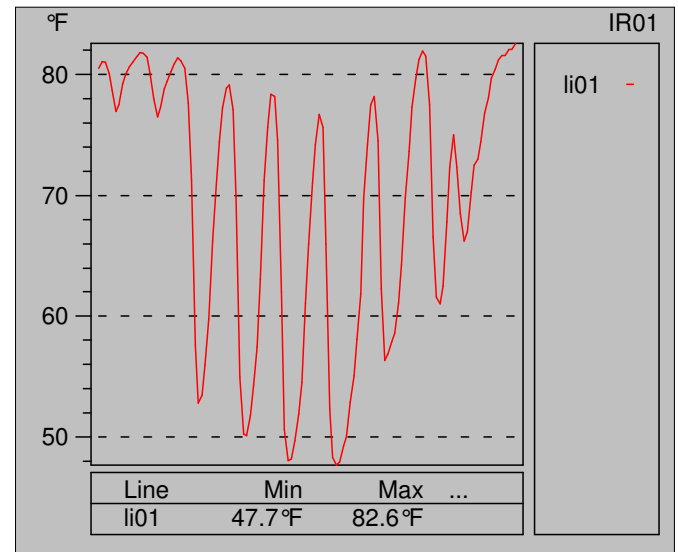
Minor heat increase in B phase switch. Showing a 25 degree Delta. Recommend inspecting, cleaning; repair or replace as necessary in the near future.



Component	Equipment/Bucket ID	Plant/Area	Date
North Radiator	SUB 248	HCN	12-26-19



Label	Value
IR : max	83.5°F
IR : min	-27.9°F
SP01	69.6°F
SP02	45.6°F
SP03	45.1°F
LI01 : max	82.6°F
LI01 : min	47.7°F



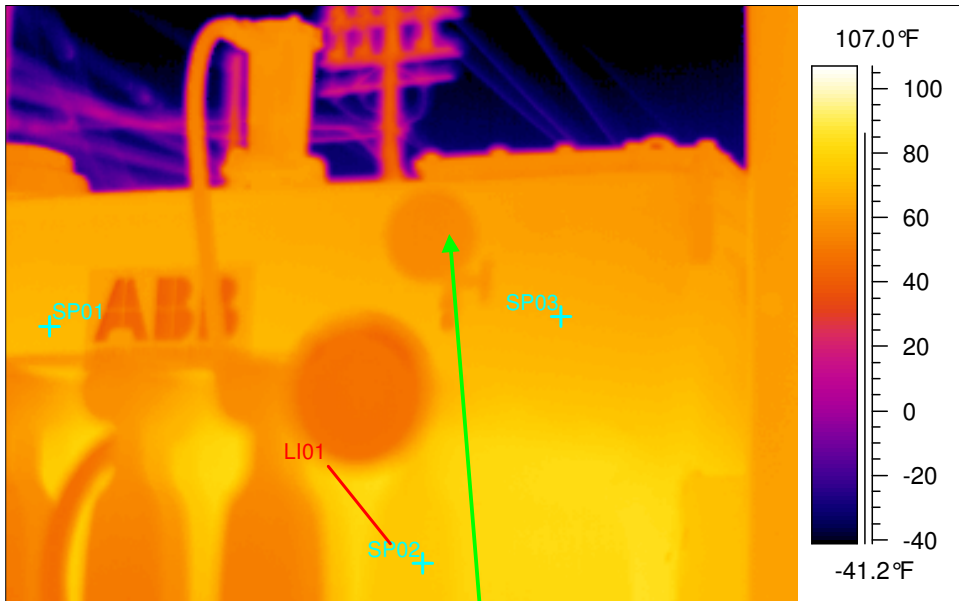
Fault	Possible Low Coolant
Defect Rating	Class 1

Recommendation

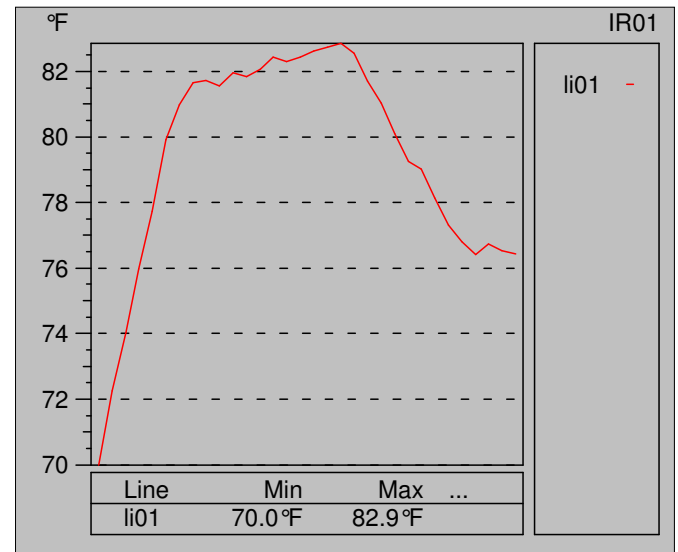
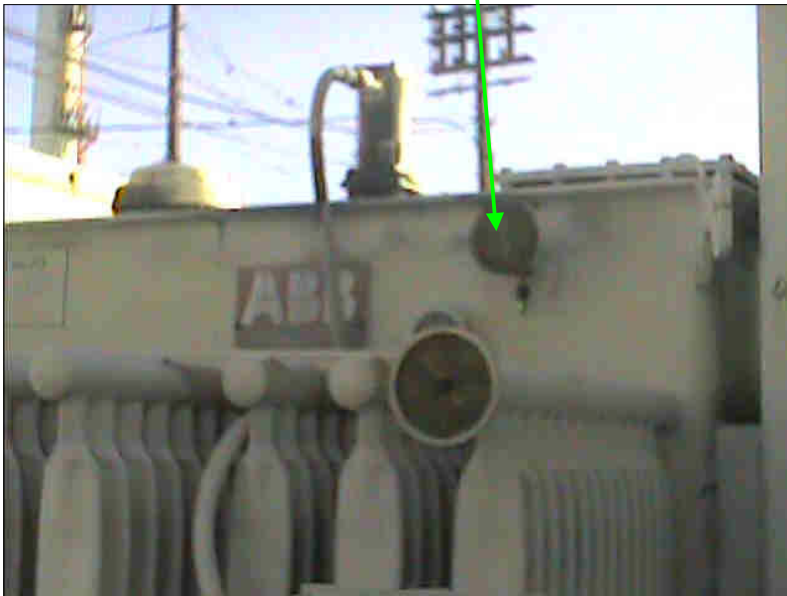
Check coolant level. Cooling but only across half. Recommend checking coolant levels.



Component	Equipment/Bucket ID	Plant/Area	Date
North Rad. Body	SUB 248	HCN	12-26-19



Label	Value
IR : max	86.4°F
IR : min	<-45.4°F
SP01	71.3°F
SP02	77.2°F
SP03	68.2°F
LI01 : max	82.9°F
LI01 : min	70.0°F



Fault	Possible Low Coolant
Defect Rating	Class 1

Recommendation

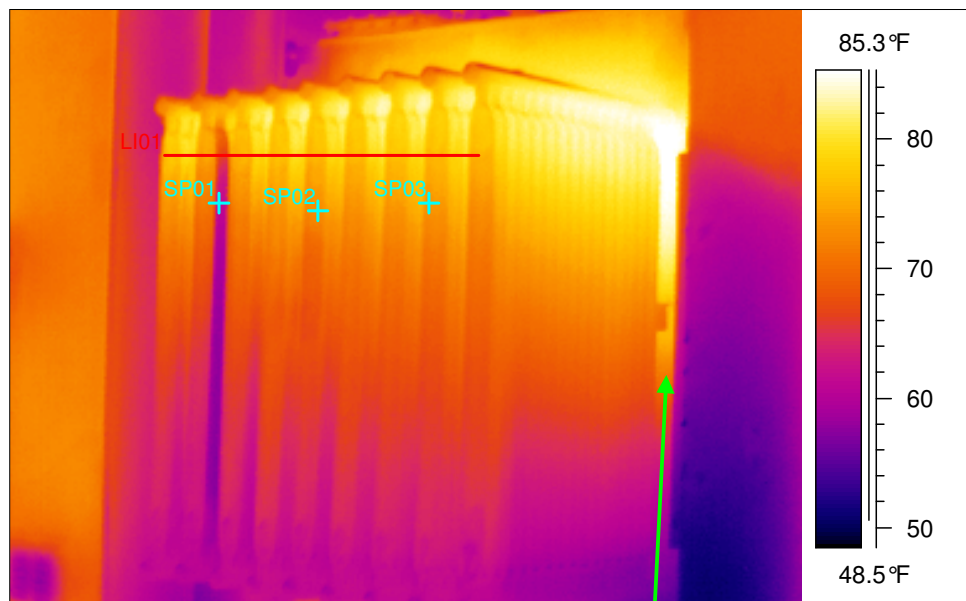
Recommend checking coolant level.



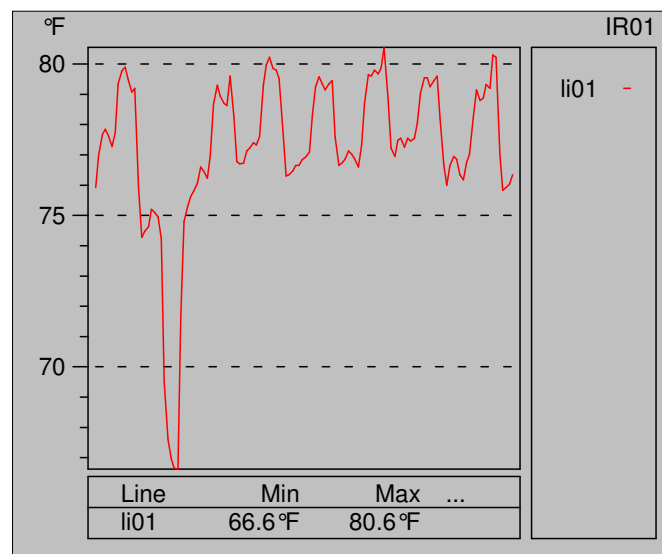
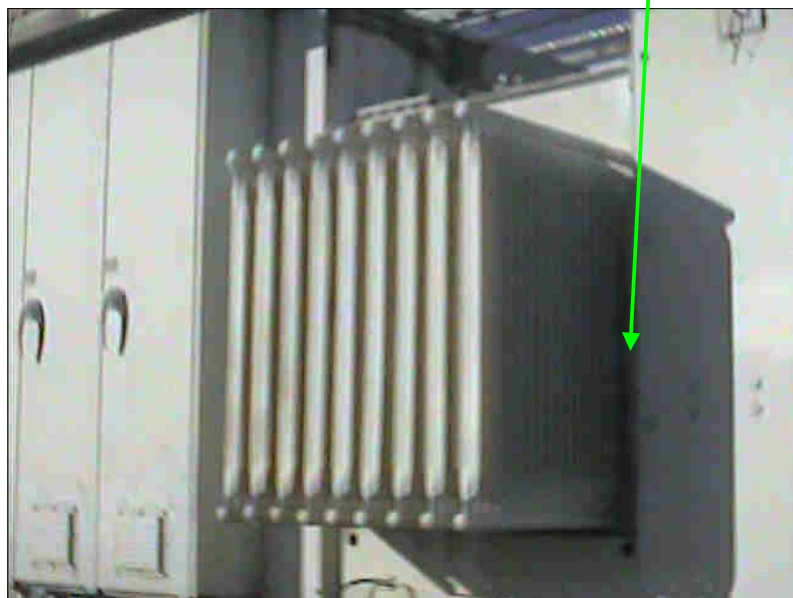
QualiTest IR Radiometric Survey Report



Component	Equipment/Bucket ID	Plant/Area	Date
South Radiator	SUB 248	HCN	12-26-19



Label	Value
IR : max	86.8°F
IR : min	50.4°F
SP01	61.6°F
SP02	73.0°F
SP03	73.7°F
LI01 : max	80.6°F
LI01 : min	66.6°F



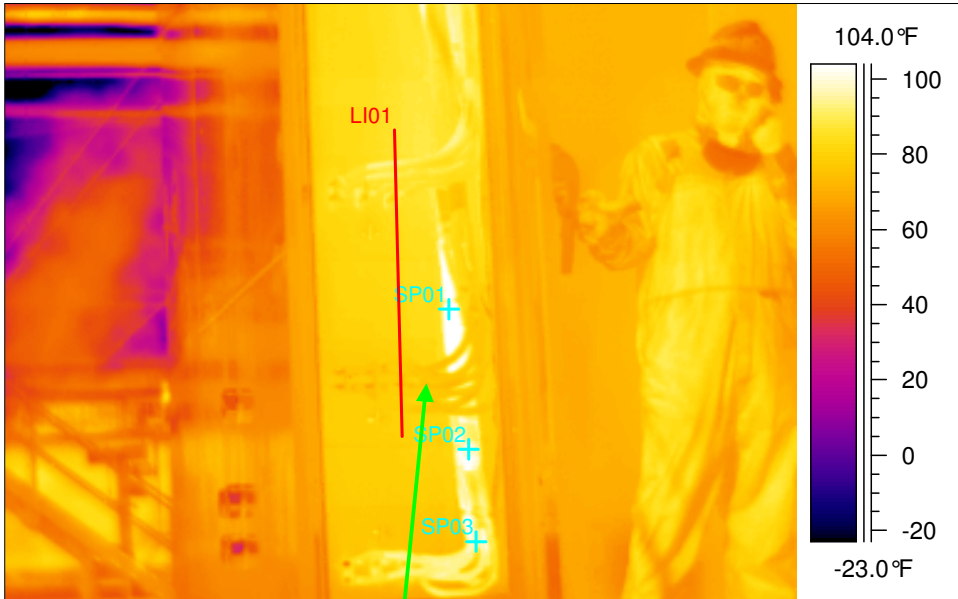
Fault	Possible Blocked Tube
Defect Rating	Class 1

Recommendation

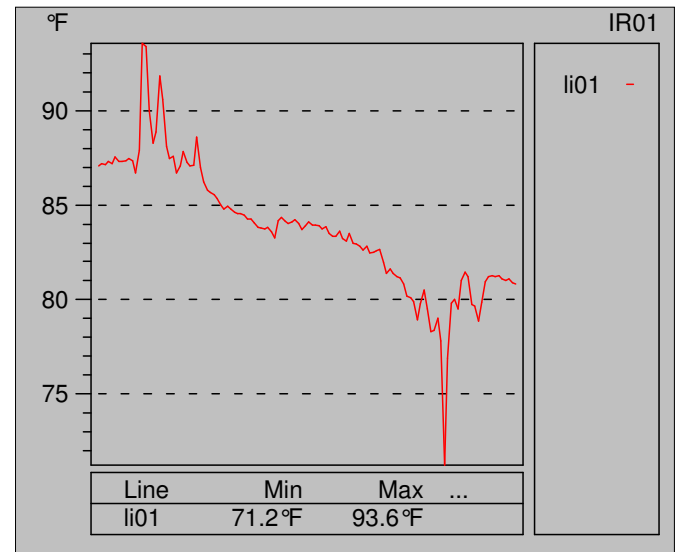
Operating normally; however, one or more tubes may be blocked. Recommend inspecting and checking coolant levels.



Component	Equipment/Bucket ID	Plant/Area	Date
West Panel	SUB 248	HCN	12-26-19



Label	Value
IR : max	109.6°F
IR : min	*-40.3°F
SP01	109.3°F
SP02	101.8°F
SP03	94.6°F
LI01 : max	93.6°F
LI01 : min	71.2°F



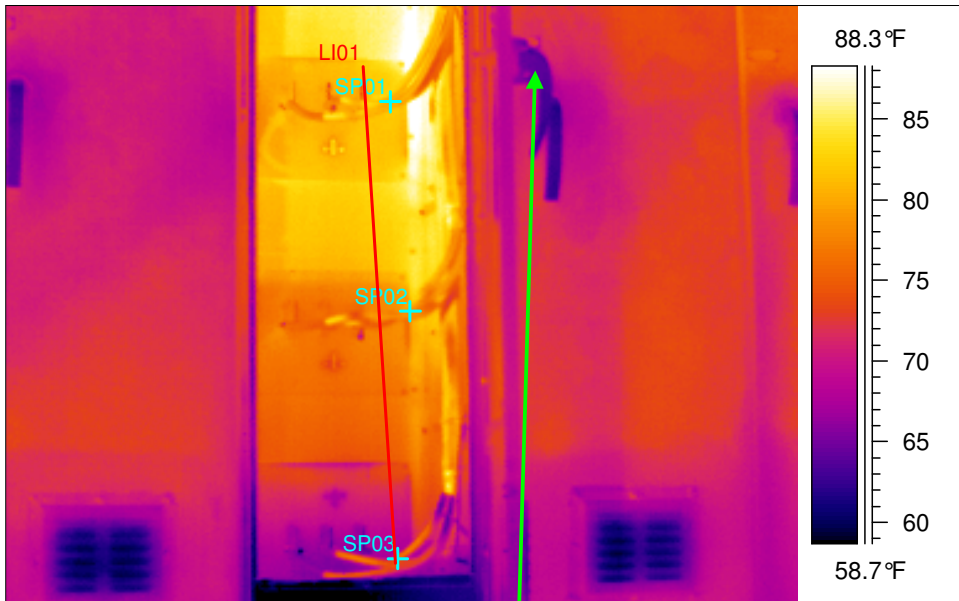
Fault	None
Defect Rating	NA

Recommendation

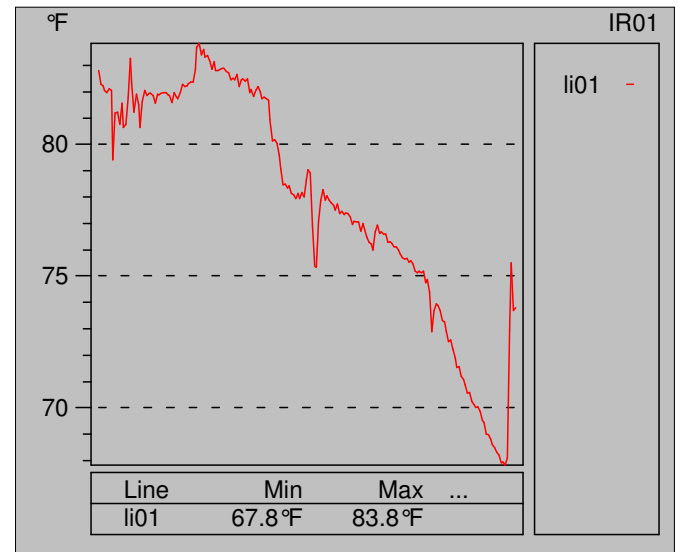
Appears to be operating normally. No issues



Component	Equipment/Bucket ID	Plant/Area	Date
West Middle Panel	SUB 248	HCN	12-26-19



Label	Value
IR : max	90.8°F
IR : min	56.7°F
SP01	80.0°F
SP02	78.5°F
SP03	75.7°F
LI01 : max	83.8°F
LI01 : min	67.8°F



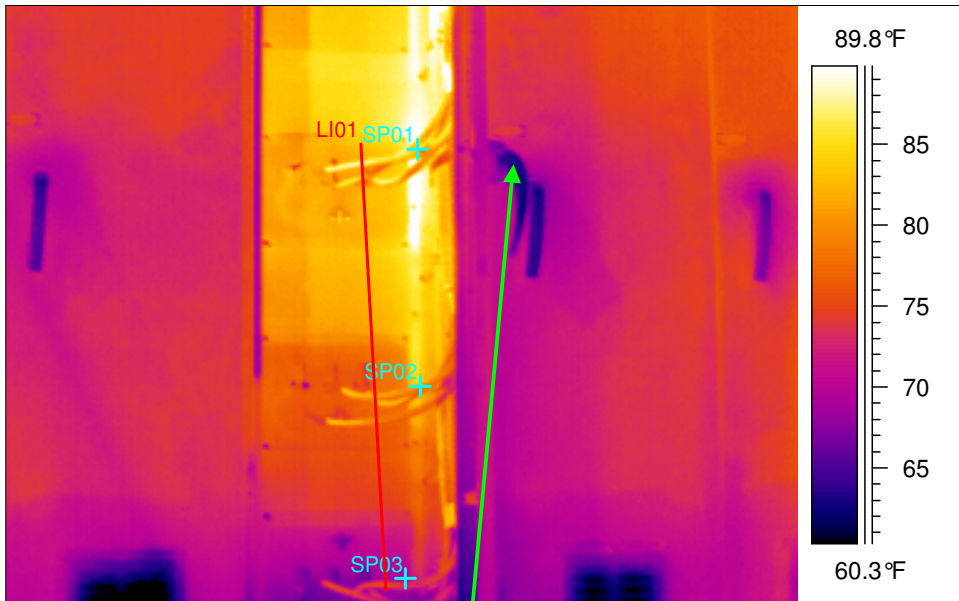
Fault	None
Defect Rating	NA

Recommendation

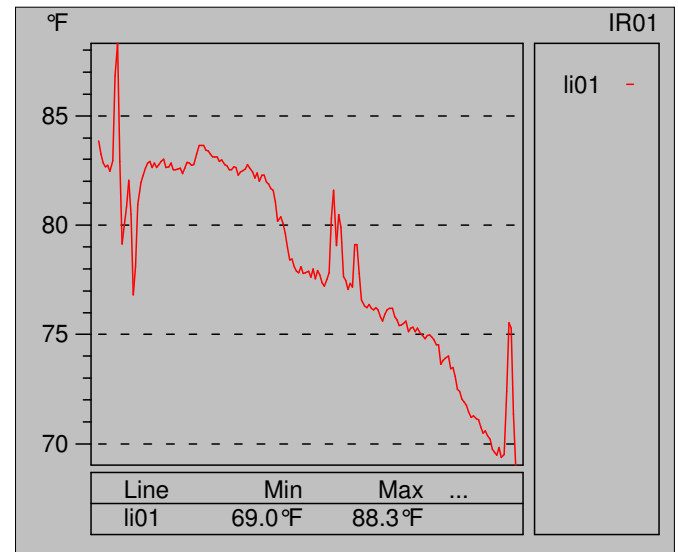
Operating normally. No issues



Component	Equipment/Bucket ID	Plant/Area	Date
Middle Panel	SUB 248	HCN	12-26-19



Label	Value
IR : max	93.7°F
IR : min	57.9°F
SP01	85.2°F
SP02	80.7°F
SP03	69.6°F
LI01 : max	88.3°F
LI01 : min	69.0°F



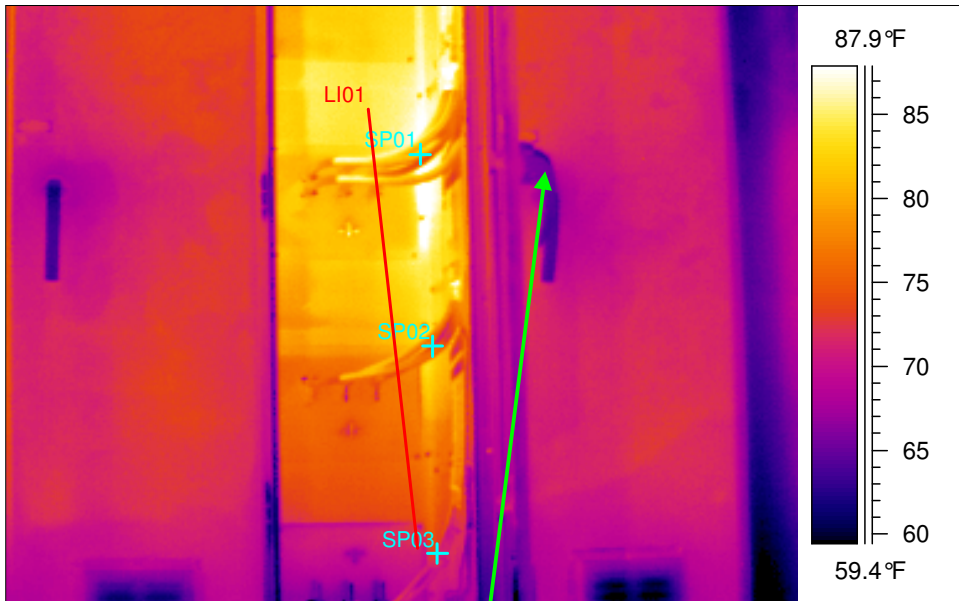
Fault	None
Defect Rating	NA

Recommendation

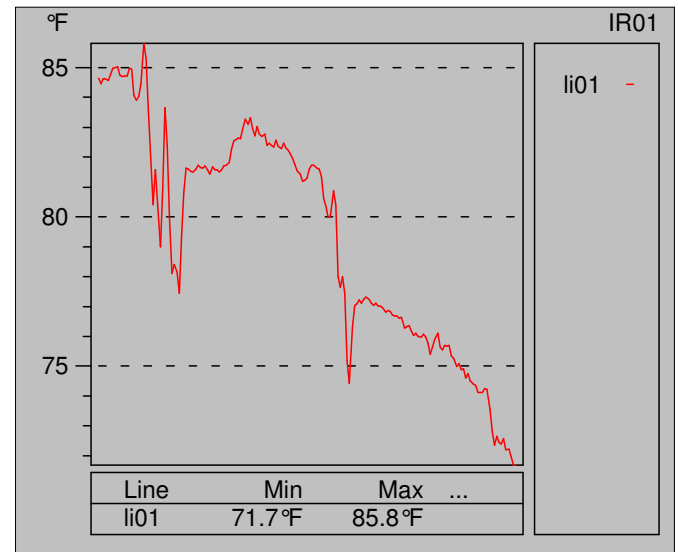
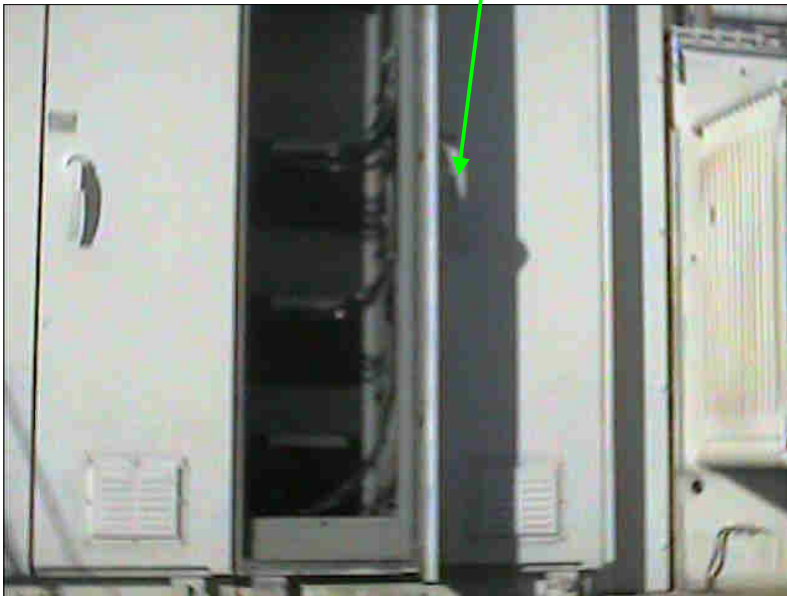
Operating normally. No issues.



Component	Equipment/Bucket ID	Plant/Area	Date
East Middle Panel	SUB 248	HCN	12-26-19



Label	Value
IR : max	93.2°F
IR : min	53.2°F
SP01	81.6°F
SP02	72.9°F
SP03	72.2°F
LI01 : max	85.8°F
LI01 : min	71.7°F



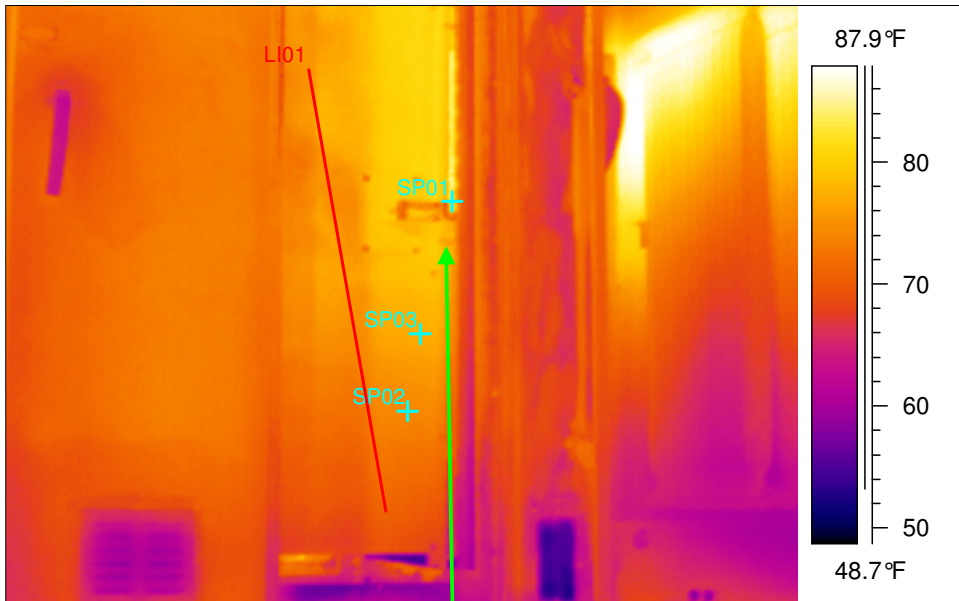
Fault	None
Defect Rating	NA

Recommendation

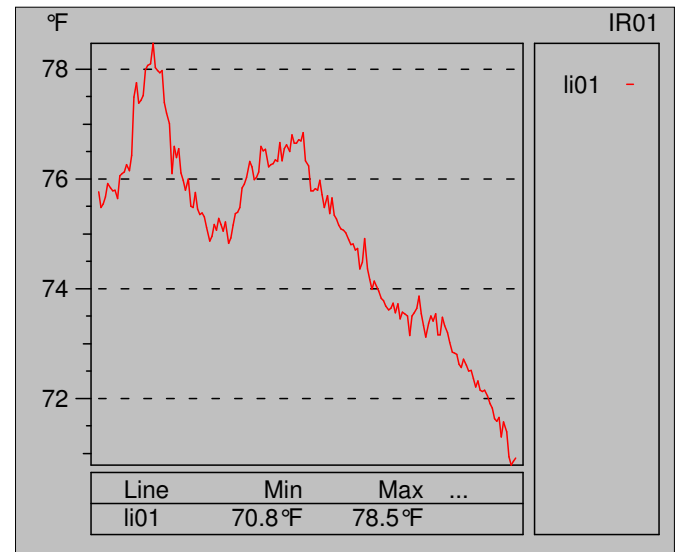
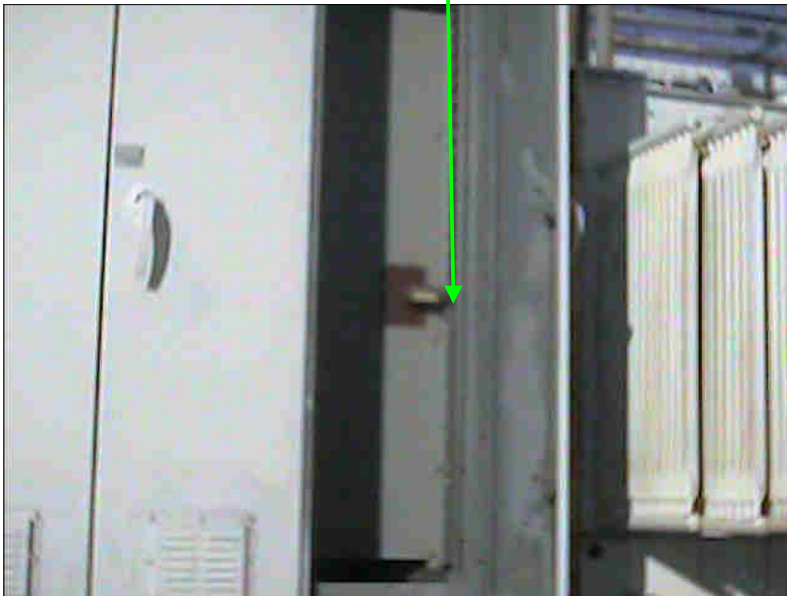
Operating normally. No issues.



Component	Equipment/Bucket ID	Plant/Area	Date
East Panel	SUB 248	HCN	12-26-19



Label	Value
IR : max	88.9°F
IR : min	52.6°F
SP01	84.0°F
SP02	74.4°F
SP03	77.2°F
LI01 : max	78.5°F
LI01 : min	70.8°F



Fault	None
Defect Rating	NA

Recommendation

No Issues.