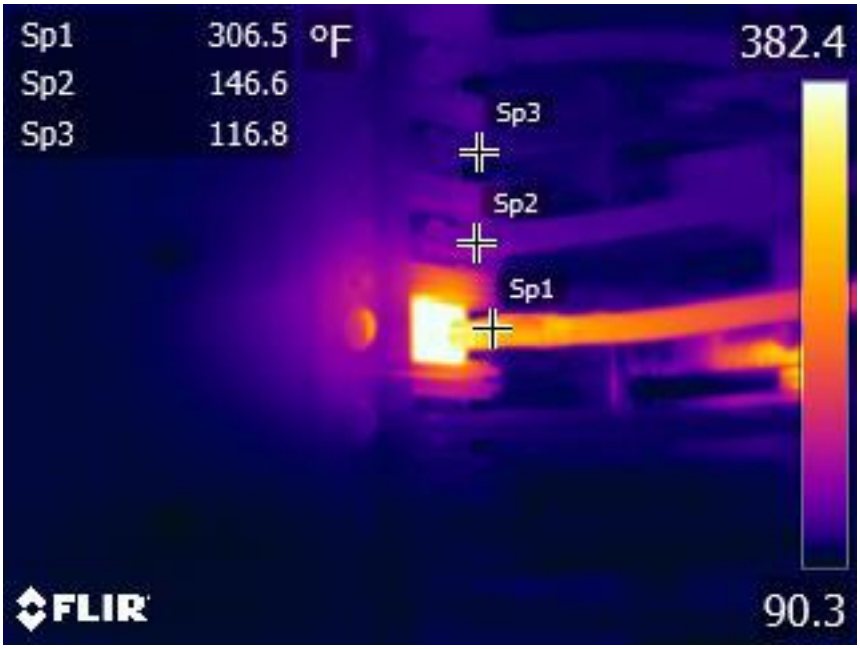


Infrared Thermography Report

American Yeast 2021

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 included in this report. If there are any questions or comments, please feel free to contact us at any time.

HI-SPEED employs a three-tier 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.

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 practical, on a high maintenance priority. Consideration should be given to increase 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 *tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.*

Component	Fusible Switch
Equipment/Bucket ID	**MCC-PR4 RVF2 Vacuum VFD**

Sp1	259.0 °F
Sp2	174.3 °F
Li1 Minimum	100.3 °F
Li1 Maximum	290.0 °F
Areas	-

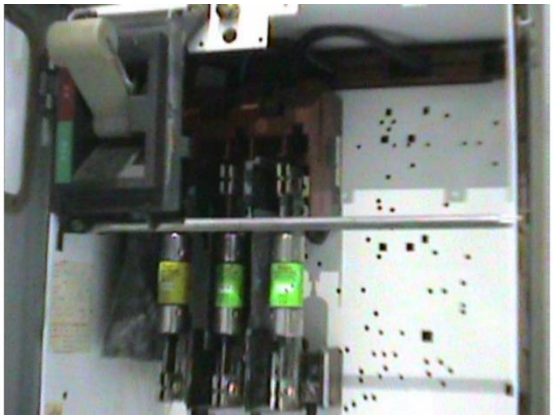
Fault	**Poor contact at switch**
Defect Rating	**Class III**

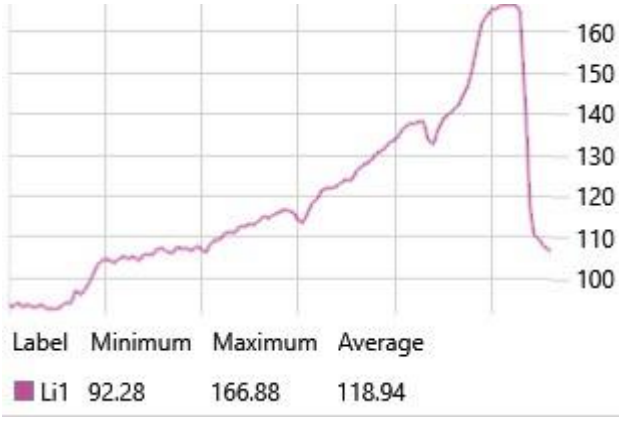
Recommendations

The switch C phase blade connection and adjacent conductor components are generating excessive heat and could fail at any time. Recommend inspecting as soon as possible to avoid unexpected shutdown with the possibility of secondary damage. The Switch assembly will most likely need to be replaced.

Component	Fusible Switch
Equipment/Bucket ID	MCC-PR3 Falling Film Chiller Condenser

Sp1	161.4 °F
Sp2	110.6 °F
Li1 Minimum	92.3 °F
Li1 Maximum	166.9 °F
Areas	-





Fault	Poor contact at switch	
Defect Rating	Class II	

Recommendations

The switch C phase blade connection or adjacent conductor components are generating excessive heat and could fail in the near future. Recommend inspecting as soon as practical to avoid unexpected shutdown with the possibility of secondary damage. The Switch assembly will most likely need to be replaced.

Component	Circuit Breaker Switch Combo
Equipment/Bucket ID	MCC-PR3 York Chiller 1

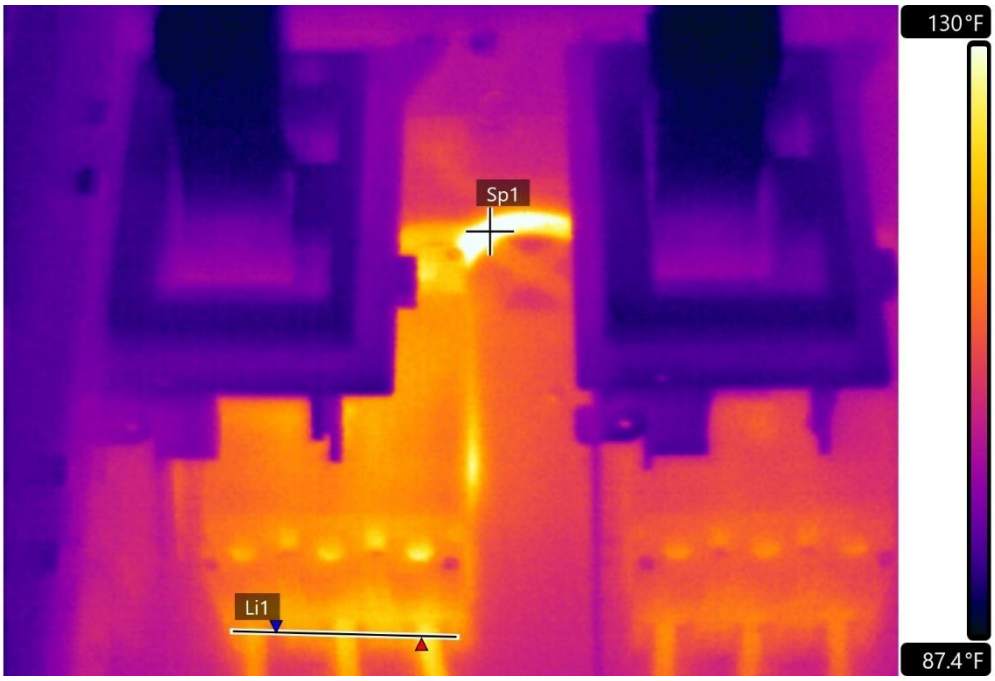
Sp1	132.1 °F
Sp2	112.9 °F
Li1 Minimum	98.7 °F
Li1 Maximum	132.8 °F
Areas	-

Fault	Loose Connection
Defect Rating	Class I

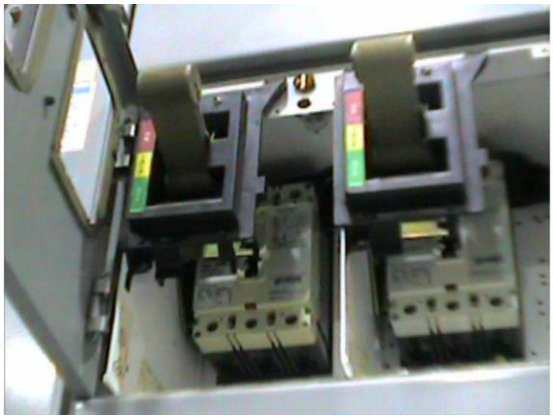
Recommendations

The line side A phase conductor connection at the switch could have a poor connection due to localized heating. Inspect the conductors and connection lugs for heating and oxidation. Clean or replace, as necessary.

Component	Circuit Breaker Switch Combo
Equipment/Bucket ID	MCC-D07 Fermenter Pump F-3



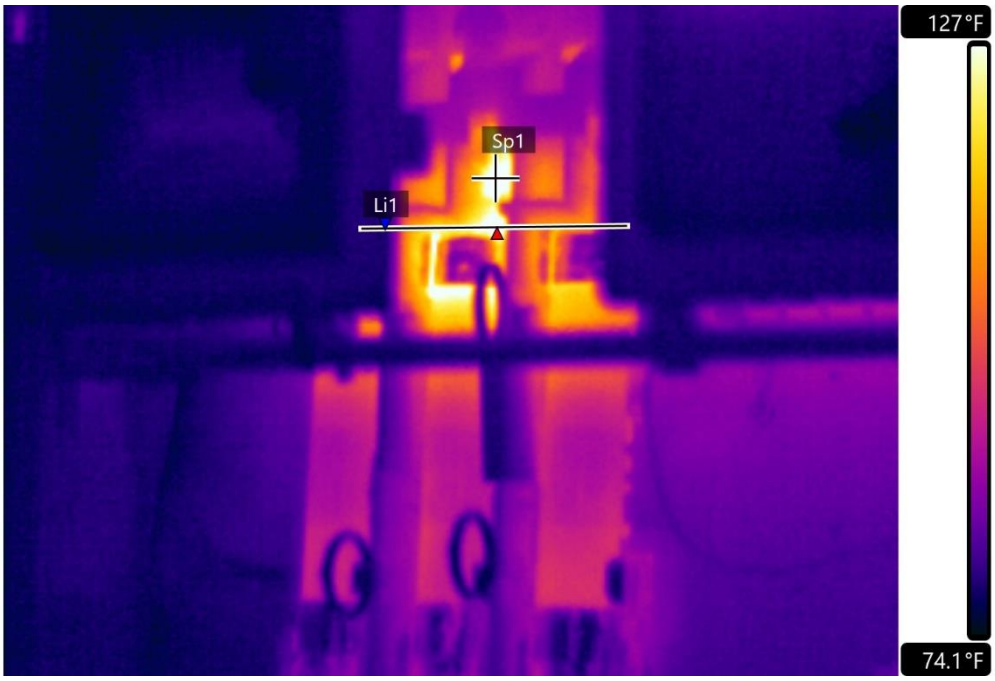
Sp1	135.7 °F
Li1 Minimum	112.4 °F
Li1 Maximum	126.6 °F
Areas	-



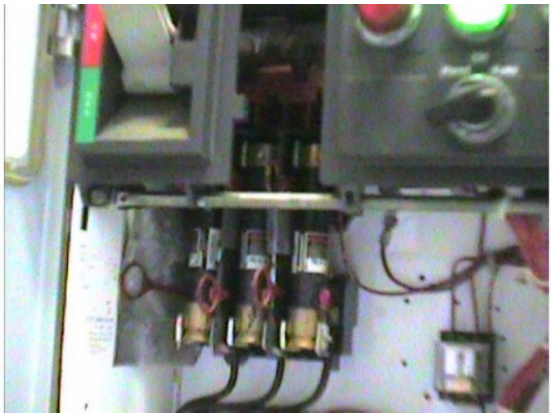
Fault	Loose Connection	
Defect Rating	Class I	

Recommendations
The line side C phase conductor connection at the switch could have a poor connection due to localized heating. Inspect the conductors and connection lugs for heating and oxidation. Clean or replace, as necessary.

Component	Circuit Breaker Switch Combo
Equipment/Bucket ID	MCC-PR1 Warm Well Distribution Pump



Sp1	130.1 °F
Li1 Minimum	78.5 °F
Li1 Maximum	133.2 °F
Areas	-

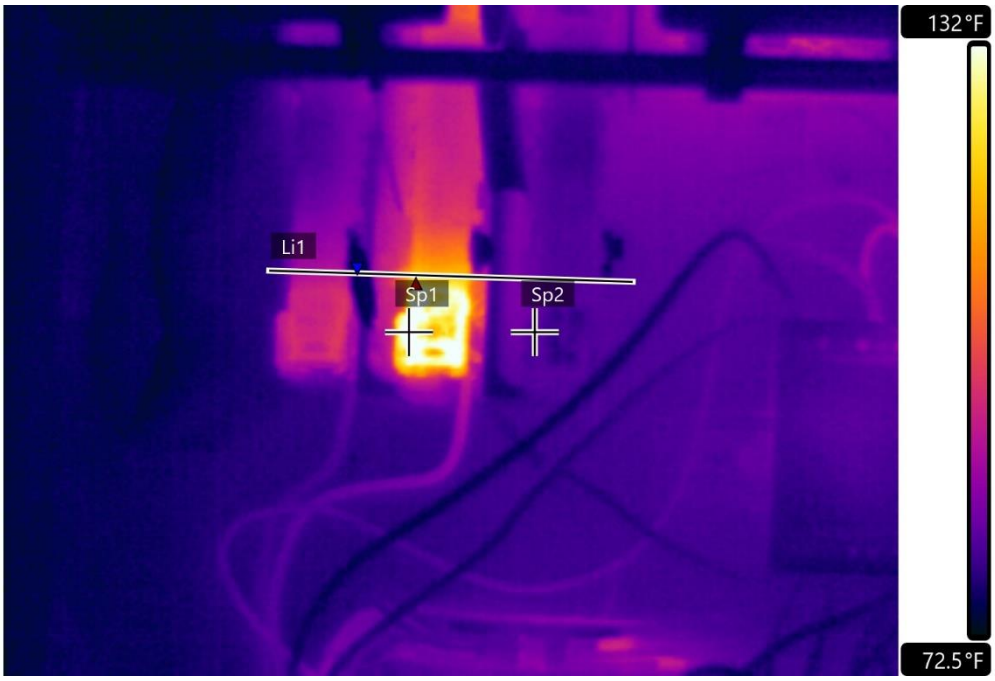


Fault	Poor contact at switch	
Defect Rating	Class I	

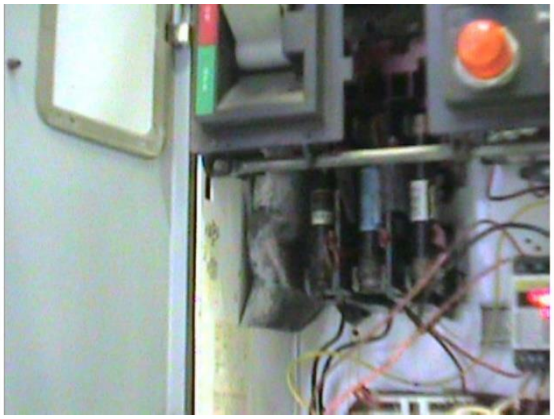
Recommendations

The switch B phase blade connection or adjacent conductor components are generating heat. Recommend inspecting the switch, conductors and connections for looseness and oxidation. Clean and tighten or replace as needed.

Component	Fuse Connection
Equipment/Bucket ID	MCC-PR1 Fermentators 1-4



Sp1	140.0 °F
Sp2	82.6 °F
Li1 Minimum	75.6 °F
Li1 Maximum	121.3 °F
Areas	-



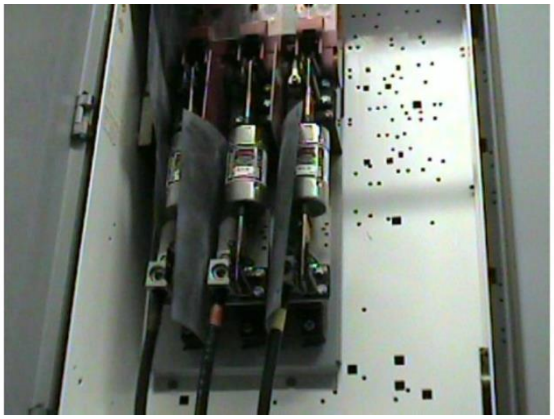
Fault	Poor connection at fuse
Defect Rating	Class I

Recommendations

The fuse holder B phase load side connection is poor. It could be the fuse clips or the wire connection. Inspect, clean , repair or replace as necessary.

Component	Fusible Switch
Equipment/Bucket ID	MCC-PR2 Cooling Tower #1 Fan VFD West

Sp1	141.6 °F
Sp2	113.5 °F
Sp3	111.7 °F
Sp4	105.2 °F
Sp5	102.0 °F
Li1 Minimum	90.1 °F
Li1 Maximum	159.0 °F
Areas	-

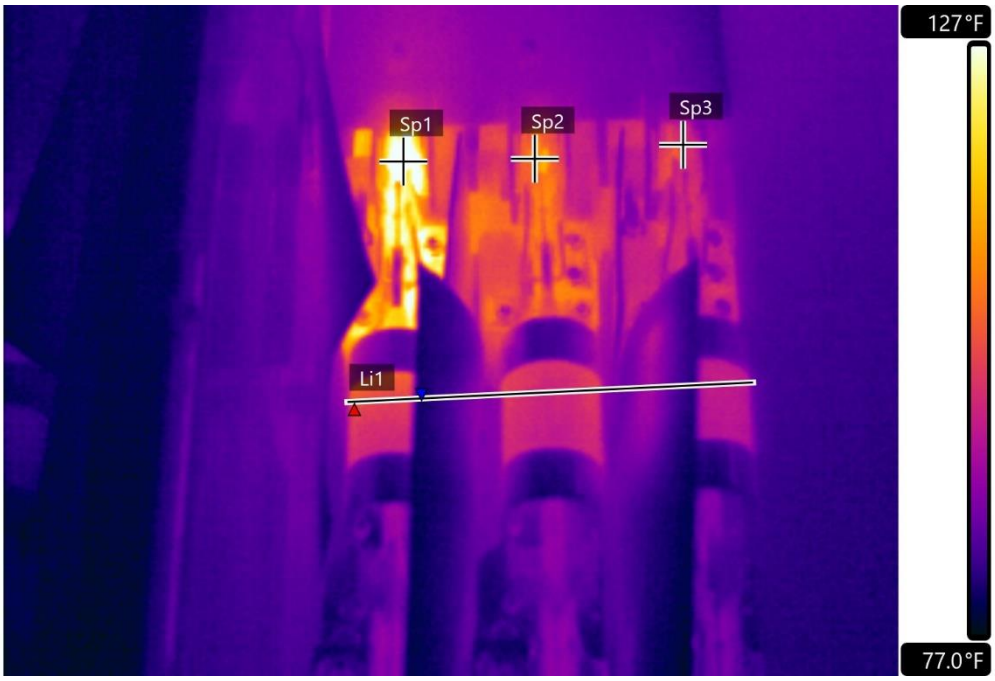


Fault	Poor Contact or connection
Defect Rating	Class II

Recommendations

The B phase line side fuse connection and or switch blade contact is poor. Inspect all the fuse clips and switch blade connections for heat signs and oxidation. Clean and repair or replace as needed.

Component	Fusible Switch
Equipment/Bucket ID	MCC-PR2 Cooling Tower Water Pump VFD #5



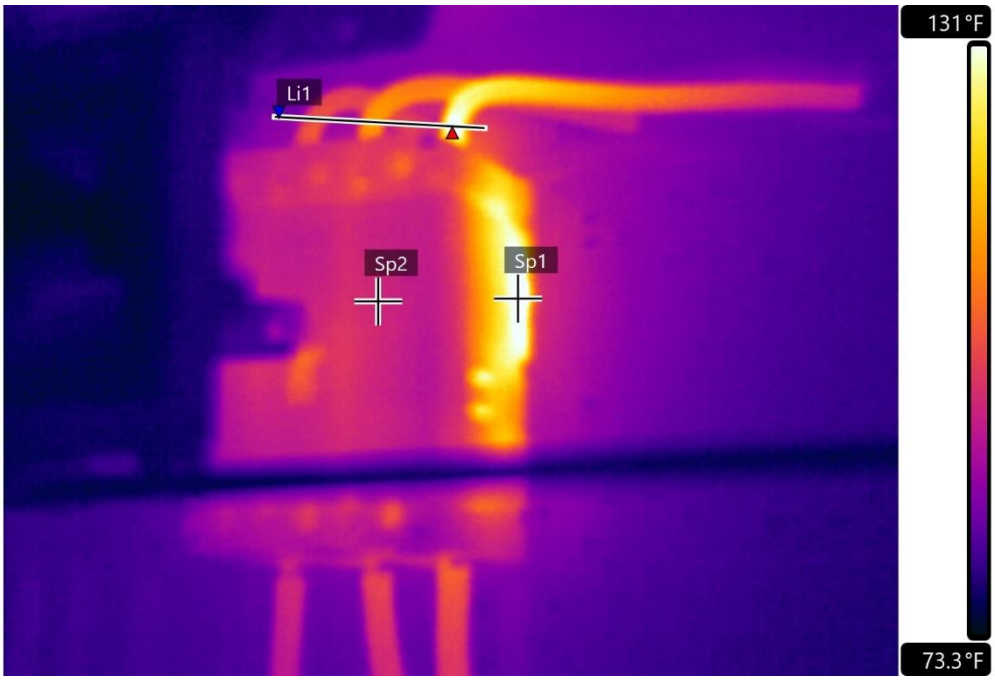
Sp1	140.6 °F
Sp2	110.8 °F
Sp3	97.8 °F
Li1 Minimum	81.1 °F
Li1 Maximum	104.2 °F
Areas	-

Fault	Poor Contact or connection
Defect Rating	Class II

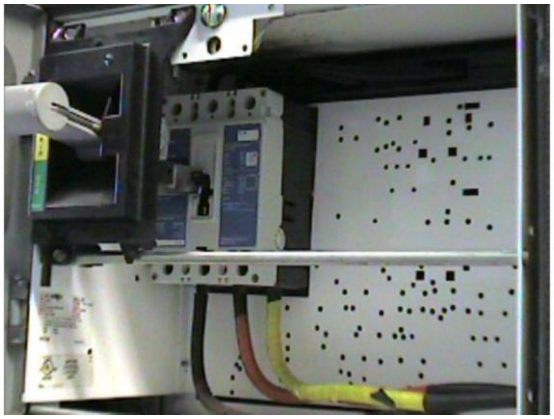
Recommendations

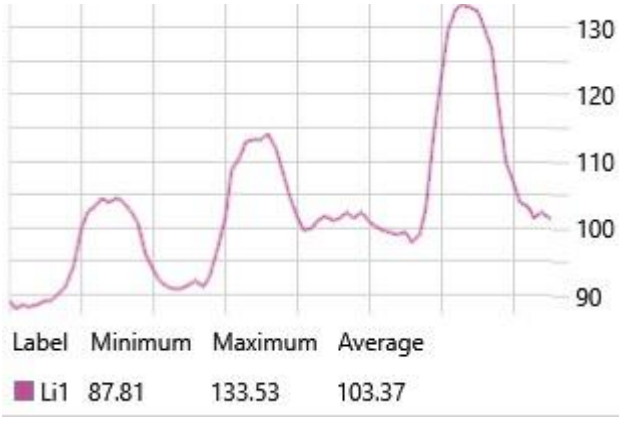
The A phase line side fuse connection and or switch blade contact is poor. Inspect all the fuse clips and switch blade connections for heat signs and oxidation. Clean and repair or replace as needed.

Component	Circuit Breaker Switch Combo
Equipment/Bucket ID	MCC-PR2 Tower 3 Fan VFD/ CT3



Sp1	136.8 °F
Sp2	97.6 °F
Li1 Minimum	87.8 °F
Li1 Maximum	133.5 °F
Areas	-





Fault	Poor connection or contact in switch
Defect Rating	Class II

Recommendations

The C phase seems to be hotter than the other phases. The Switch combo could be defective internally. We recommend replacing the switch combo unit. Note: The switch door was ajar and the unit had tripped occasionally in the past when the door was closed.

Summary

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3/11/2021 8:00:41 AM	8
3/11/2021 1:02:00 PM	9
3/11/2021 8:10:31 AM	10
3/11/2021 8:13:15 AM	11

This concludes our survey report. Please feel free to contact us at any time for question or comments.

Thank you for your business,

David W. Shook

ITC Certified Level II Infrared Thermographer

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