Thermographic Assessment of the Big House
At Summit Station, Greenland

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I. Introduction – Preparing for a Thermographic Survey

II. Equipment – Infrared Cameras

III. Taking the Images – do’s and Don’t’s

IV. Assessing the Data (the IR Images)

V. Follow-Up
I. Introduction – Why perform a Survey
Preparing for a Thermographic Survey
II. Equipment – Infrared Cameras

Wide Variety of Cameras Available:
- Lower Scale to -40 C
- For Large area coverage – Good Pixel Count
- Good Batteries – 2 to 3 hours of battery life (2 or 3)
- Removable Storage Cards

FLIR SC640 - 480x640 Pixels

FLIR S-60 - 240x320 Pixels

Both Cameras 24 degree lens & 45 degree lens, -40 to +120C
These images taken with FLIR I40
180x180 Pixels, -20C to 350C
III. Taking the Images – Do’s and Don’t’s

Plan on Staying up Nights – Avoid Solar Heating
End of April was perfect for Summit Greenland

Always take a visual image to go with the IR Image
Try to Keep the Same Scale

Know what is happening
In and out of the building
Take Close-ups of problem areas

Uninsulated Cable Pass Through

Temperatures Along Black Line

Uninsulated Cable Pass Through Area

Wall

Wall

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IV. Assessing the Data (the IR Images)

Just looking at the colors
Can fool you

Plot below shows radiative temperatures along black & white lines.

Hole in outside wall. Patched on inside wall. Bottom plot shows radiative temperature along green line.

Temperatures Along Lines on Office Window

Wall

Uninsulated Cable Pass Through Area

Radiative Temperature (°C)

Wall

Wall

Top Window Frame
Side Window Frame

Window

Window

Wall

Wall

Radiative Temperature (°C)

Horizontal (White) Line
Vertical (Black) Line

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Quad Pane Window vs. Double Pane Window

Both Windows show Thermal Bridging around Window Frames
Example of Thermal Bridging in the Green House
Inside just as important as the outside

Don’t forget to move things out of the way

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You can make fixes as you go along

Temperatures along Line

05:16 am

04:48 am

Initial Image

½ hour after Calking

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Don’t Forget the Usual Suspects

Cold-Outside Air enters kitchen through stove vents when they are not in use
Follow-Up

You have all of these pretty images – NOW WHAT

Report finding – Including prioritizing possible fixes

Many fixes are inexpensive – Shutting off air flow with calking

http://polar.crrel.usace.army.mil/
http://www.crrel.usace.army.mil/sid

Special Thanx to the Crew
And Researchers at Summit
during our April Visit.

All Assisted and Advised us
During our stay –

But, they were all camera shy.