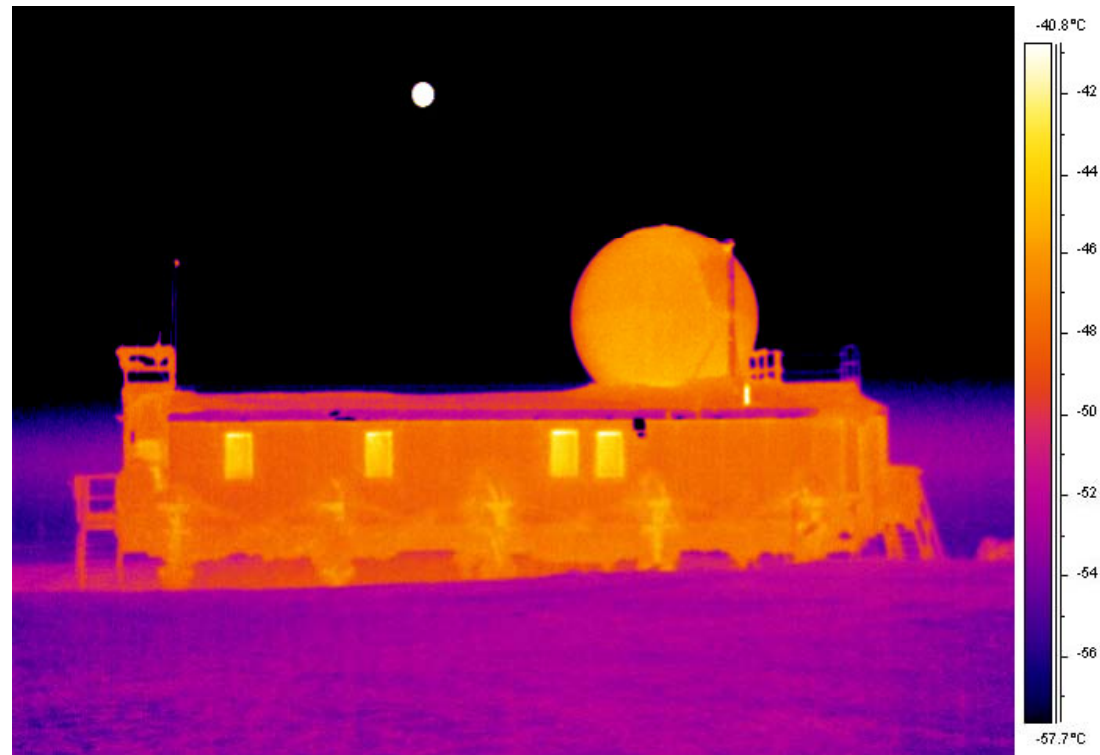

Thermographic Assessment of the Big House At Summit Station, Greenland



Kerry Claffey, Lynette Barna, Jim Buska, Jen Mercer

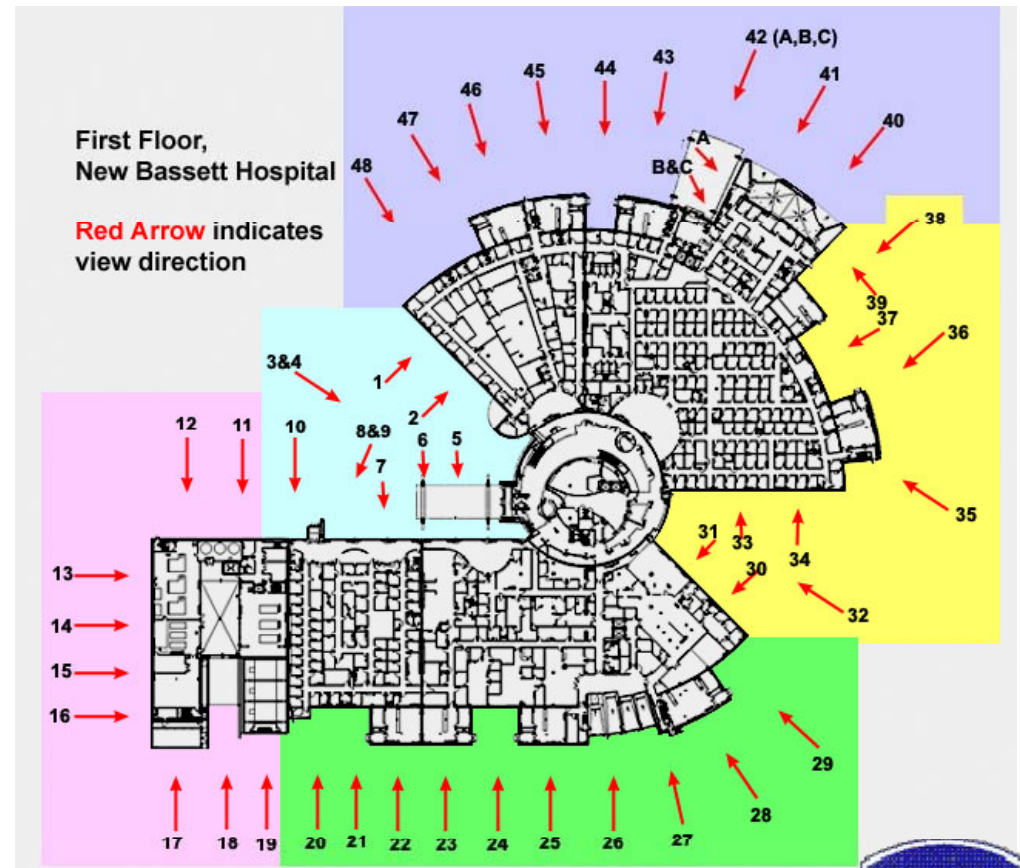
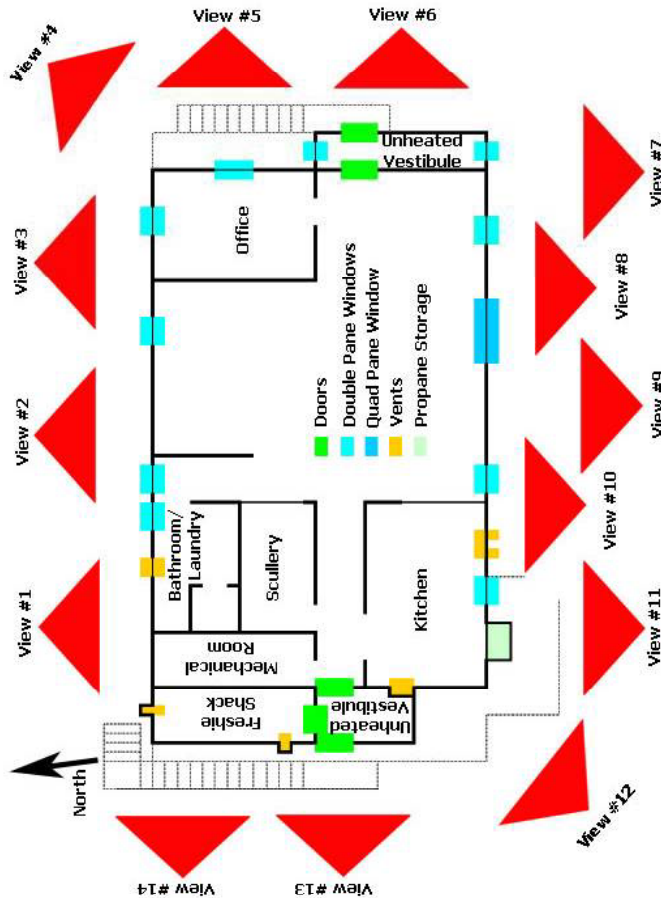
EPOLAR Group

Cold Regions Research & Engineering Laboratory



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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)

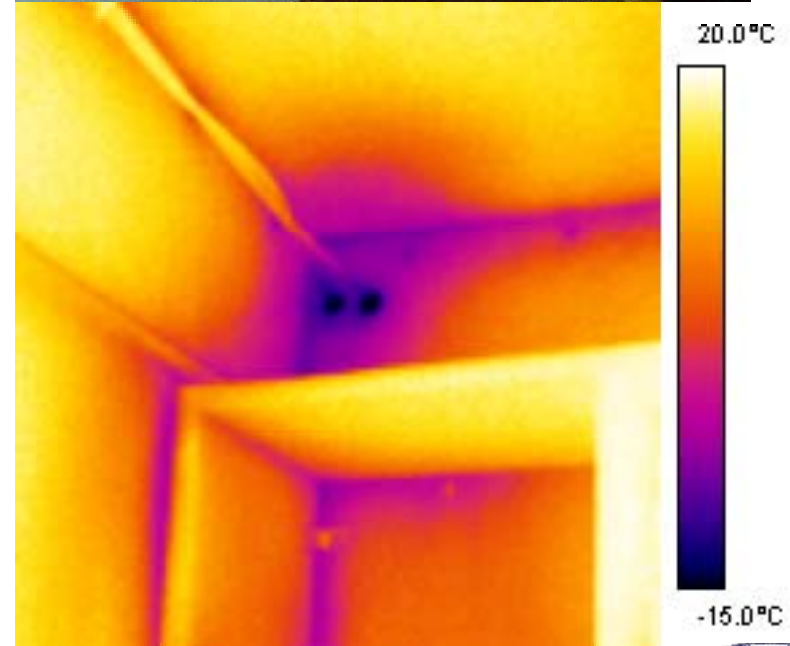
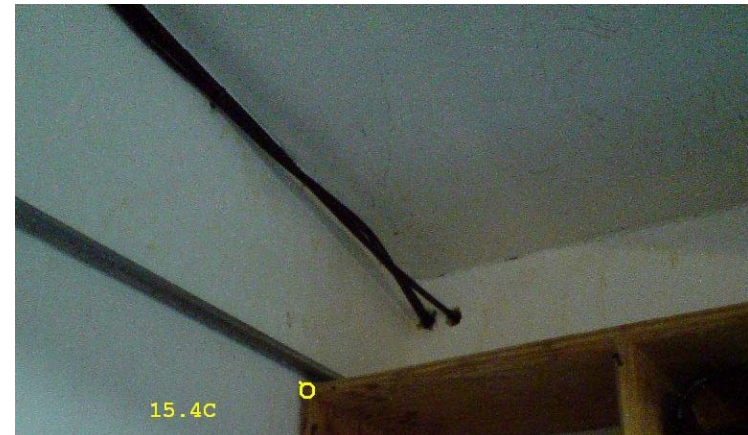
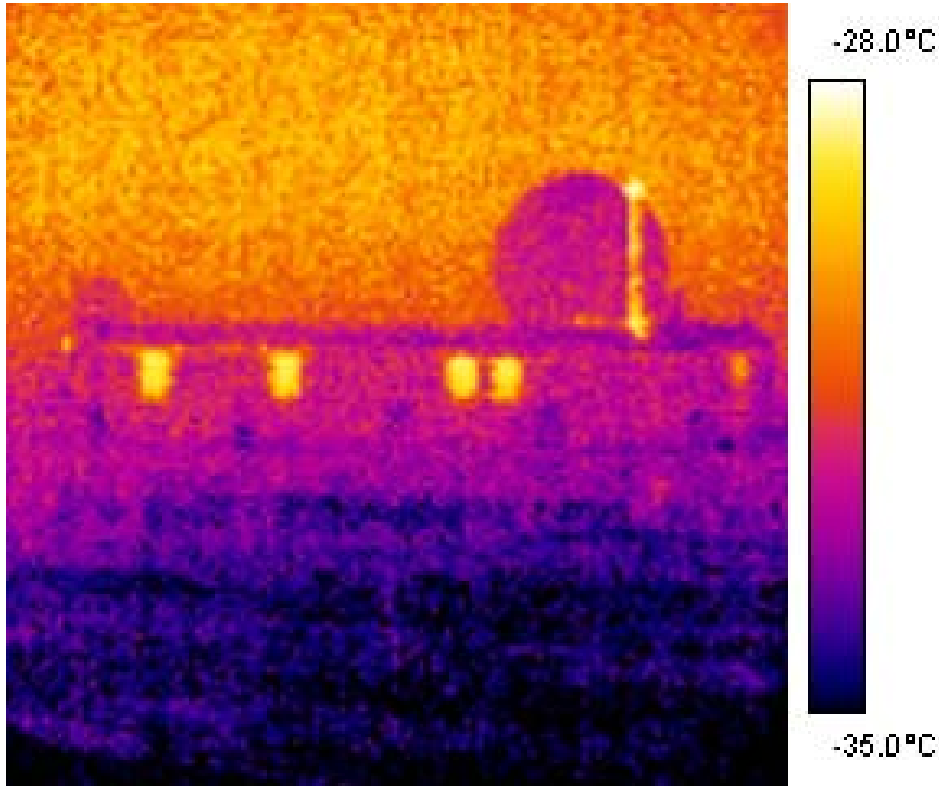
Removable Storage Cards

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

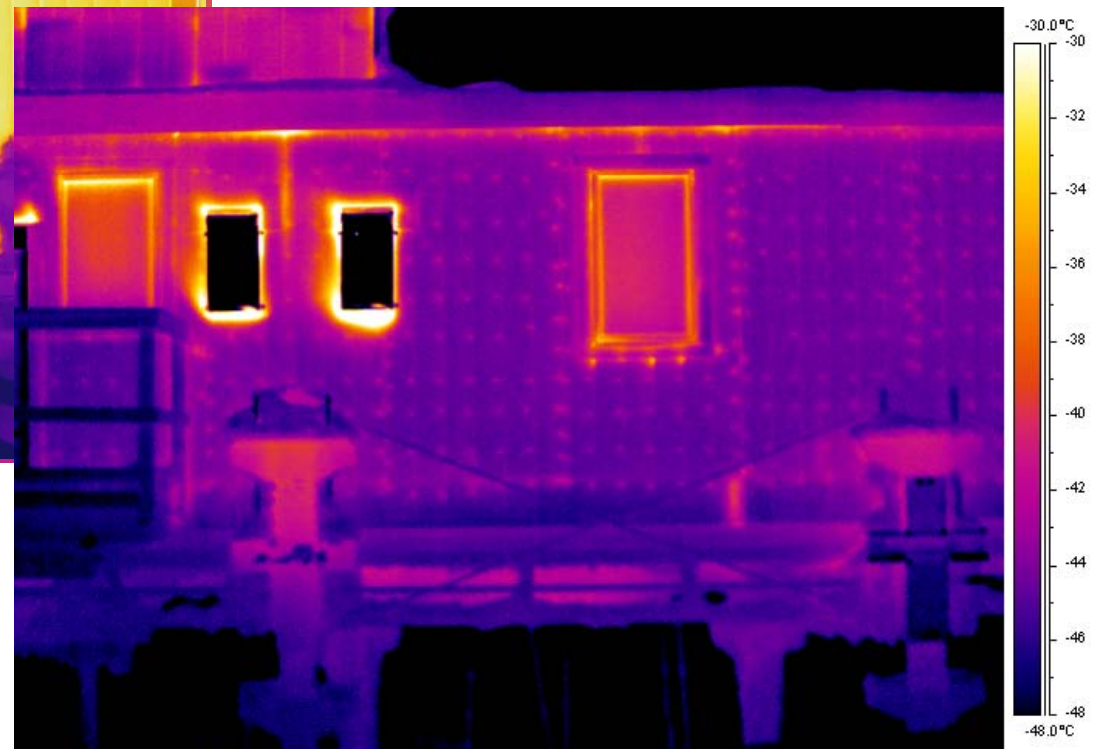


Always take a visual image to go with the IR Image





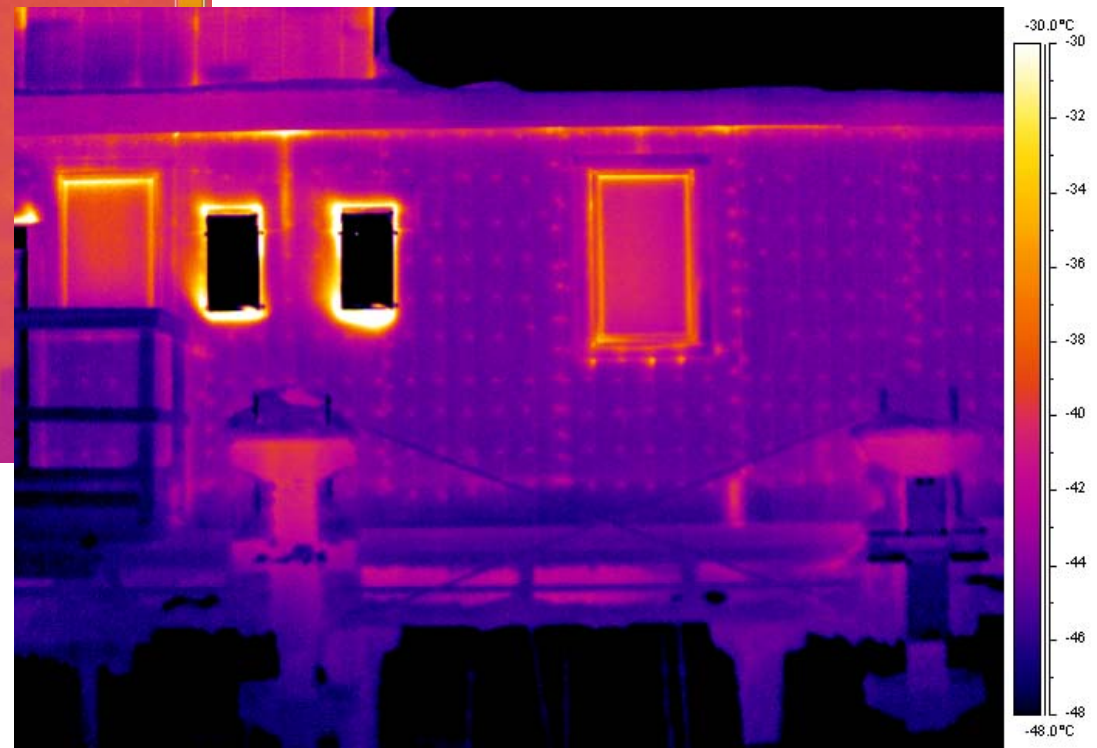
Nighttime Image Below



Daytime Image Above

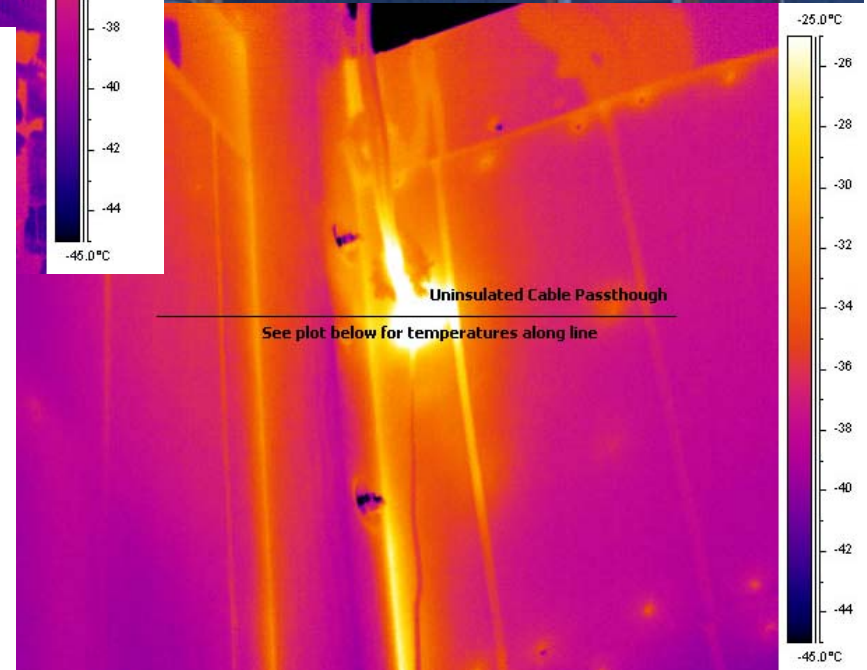
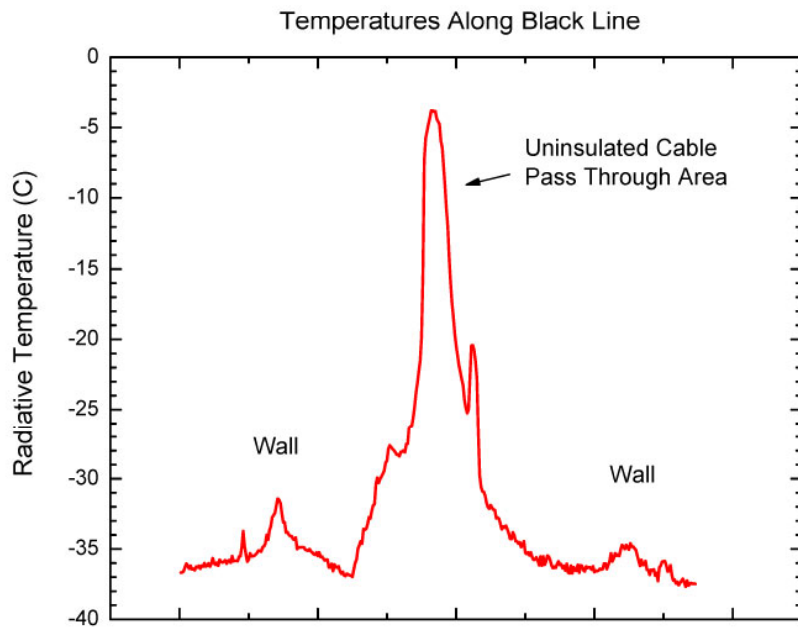
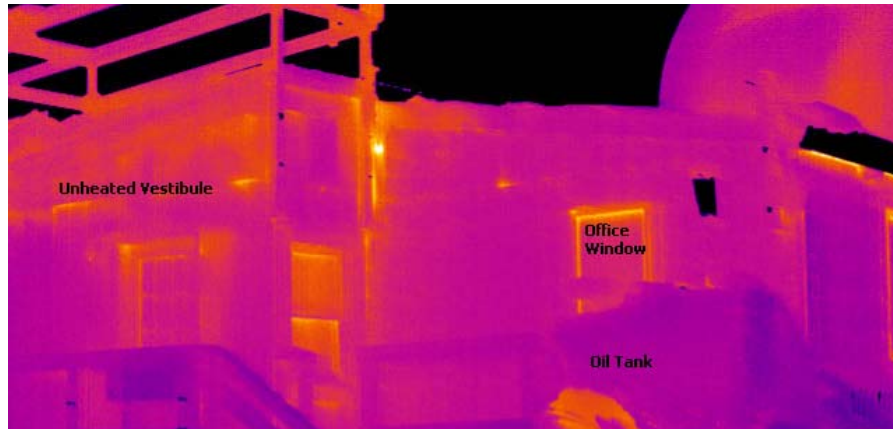


Try to Keep the Same Scale

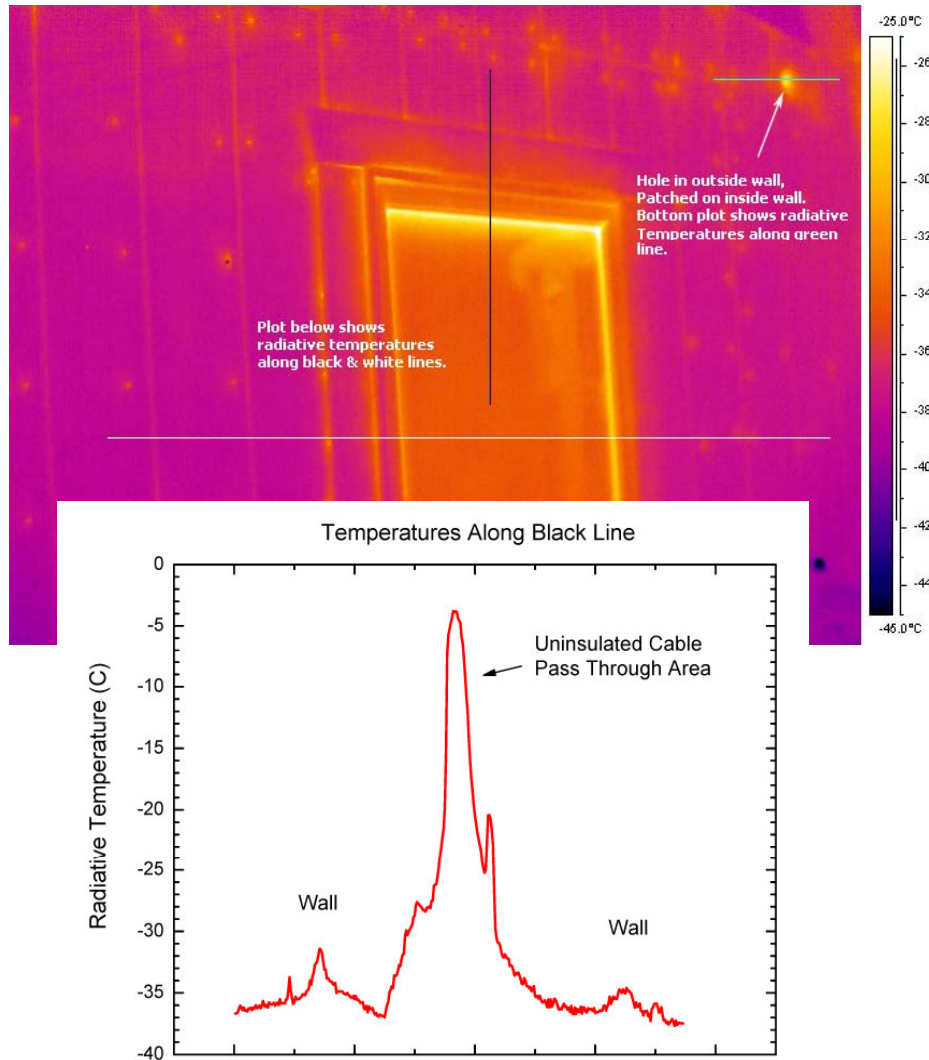


Know what is happening
In and out of the building

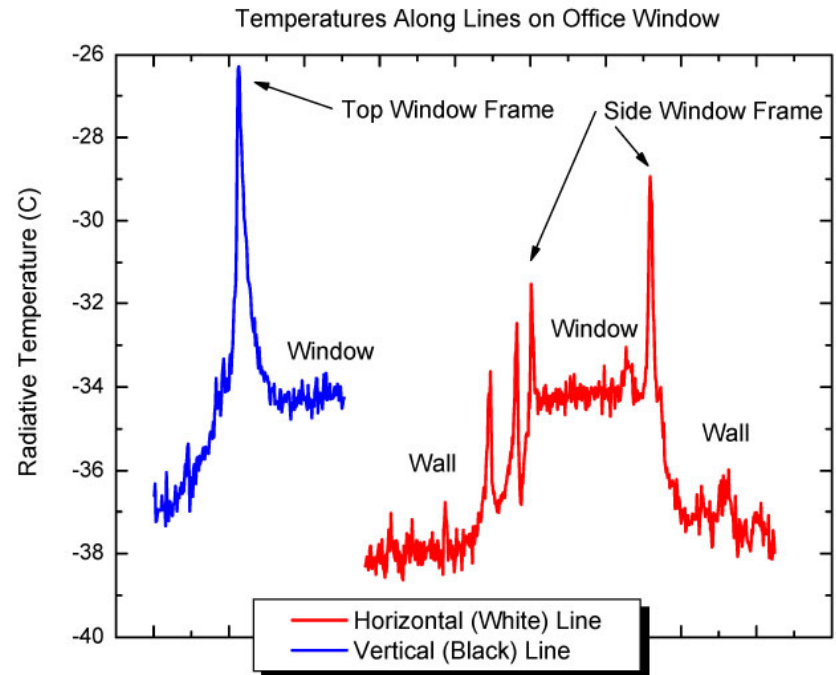
Take Close-ups of problem areas



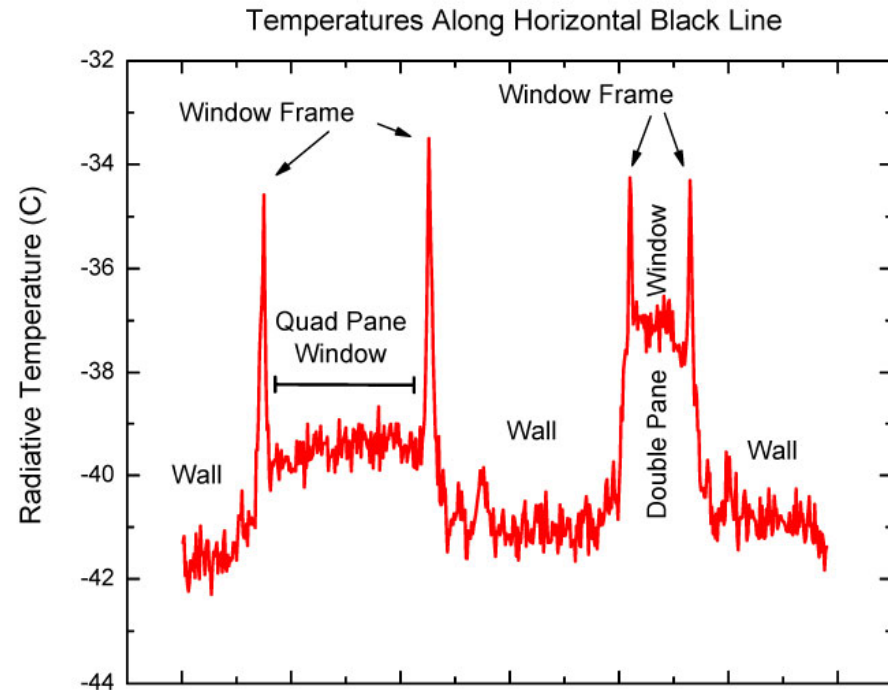
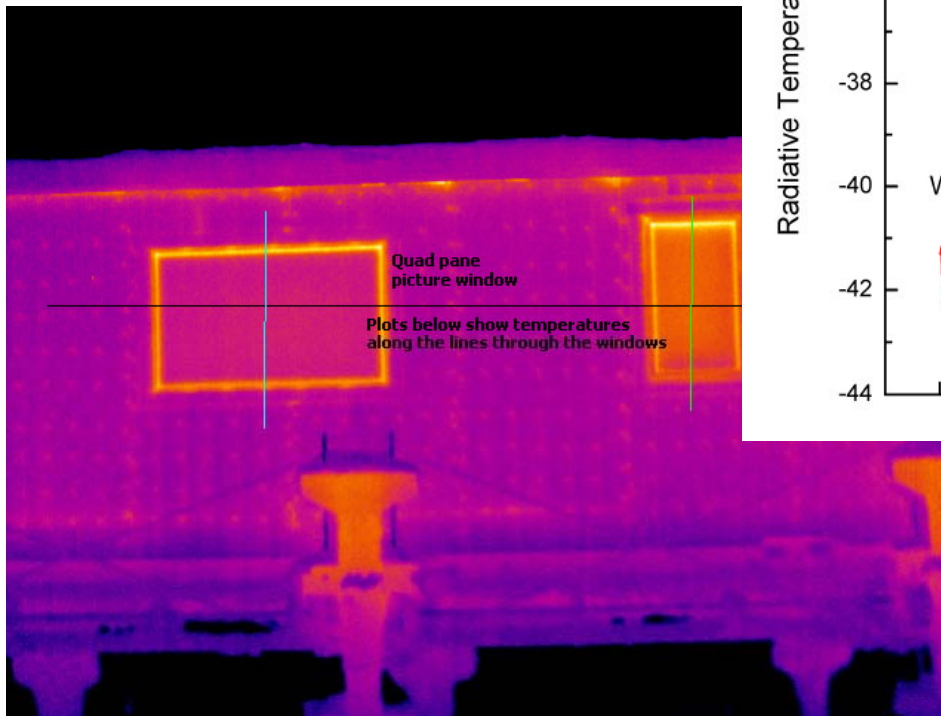
IV. Assessing the Data (the IR Images)



Just looking at the colors
Can fool you

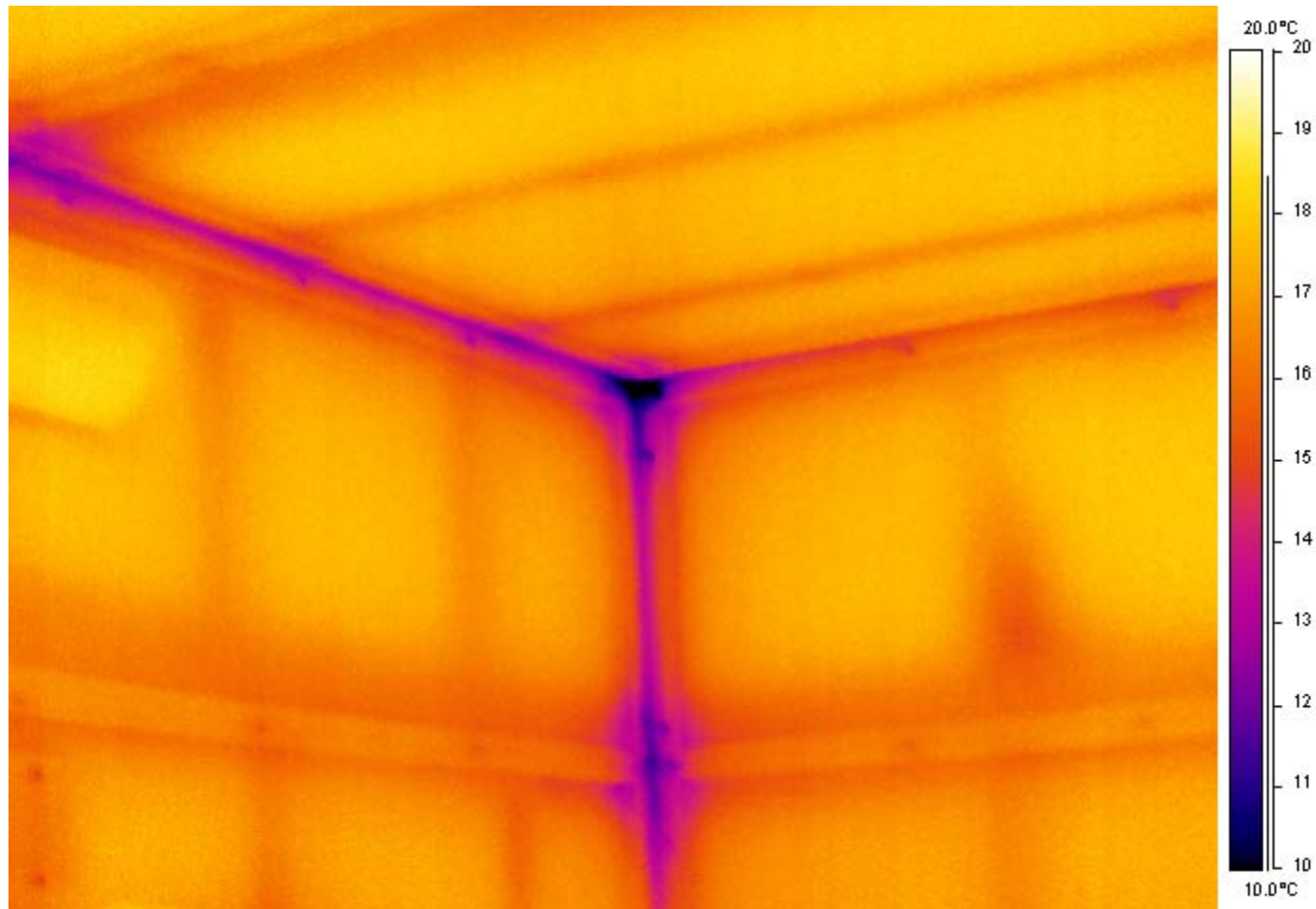


Quad Pane Window vs. Double Pane Window

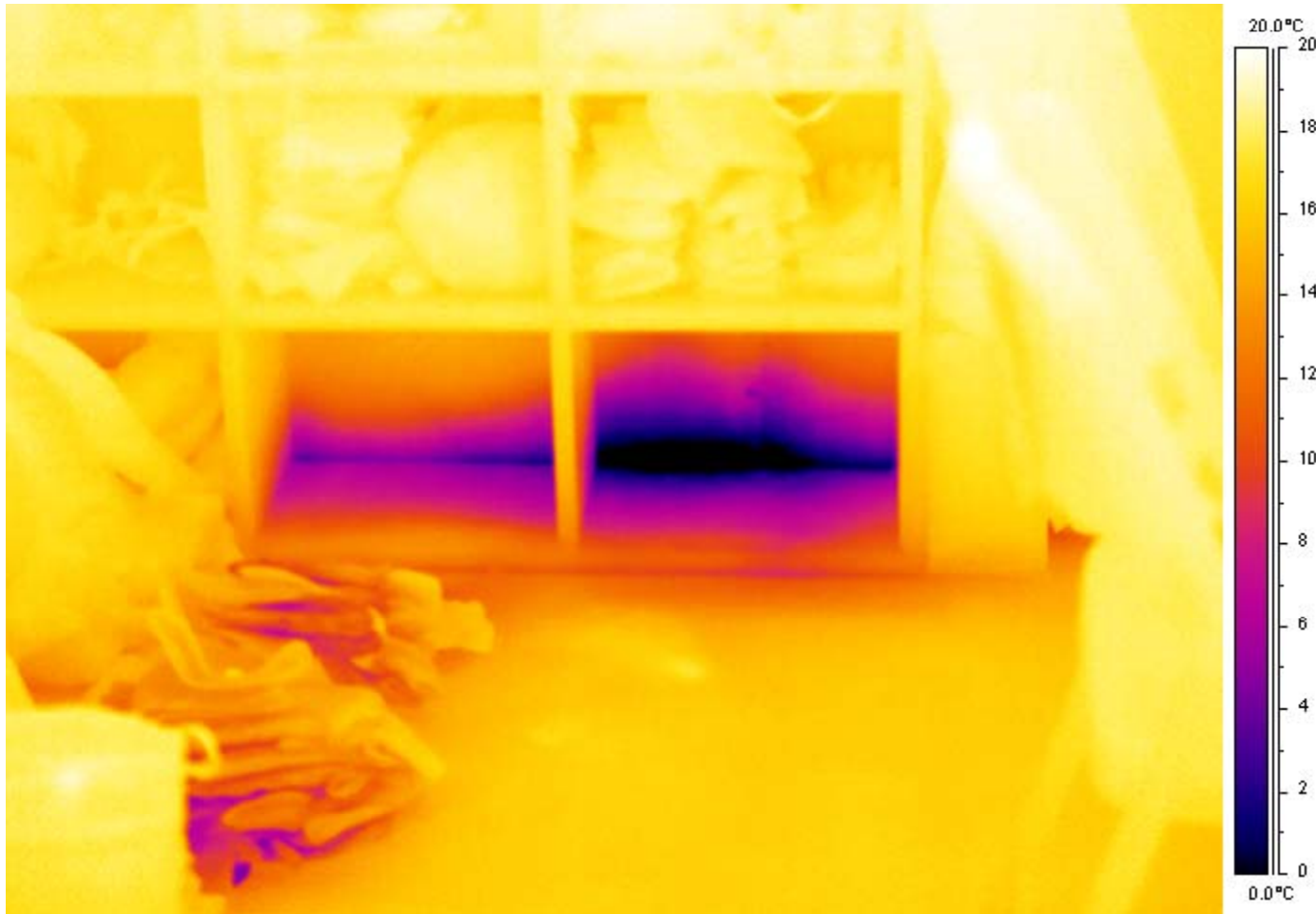


Both Windows show Thermal Bridging around Window Frames

Example of Thermal Bridging in the Green House

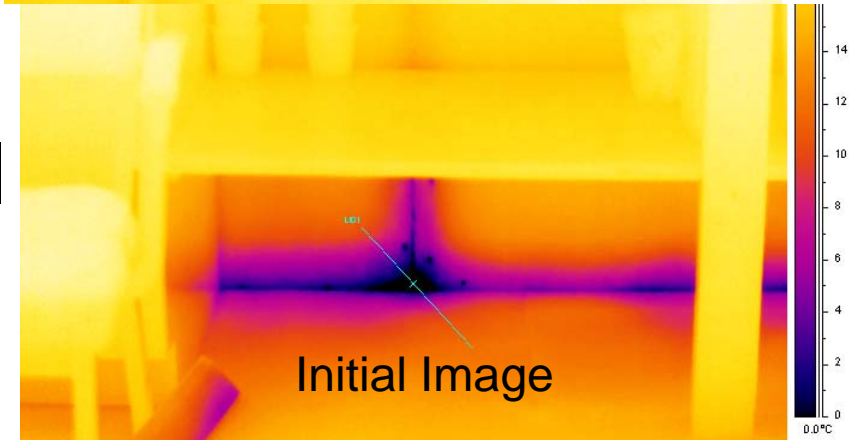
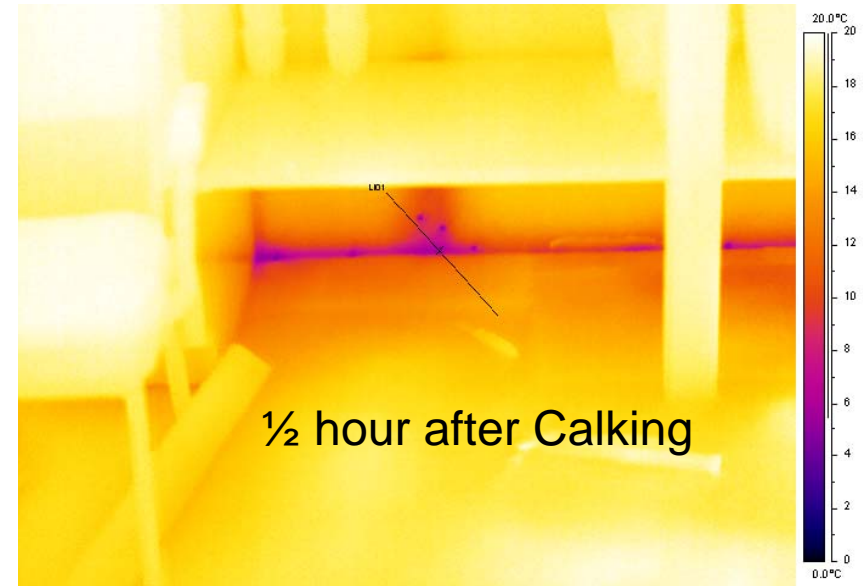
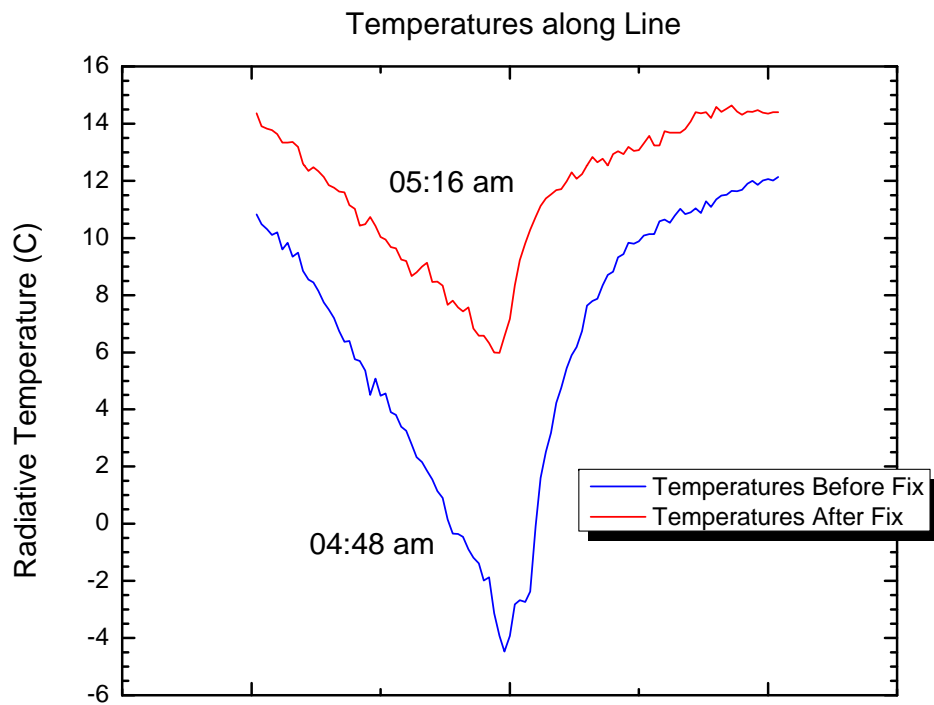


Inside just as important as the outside

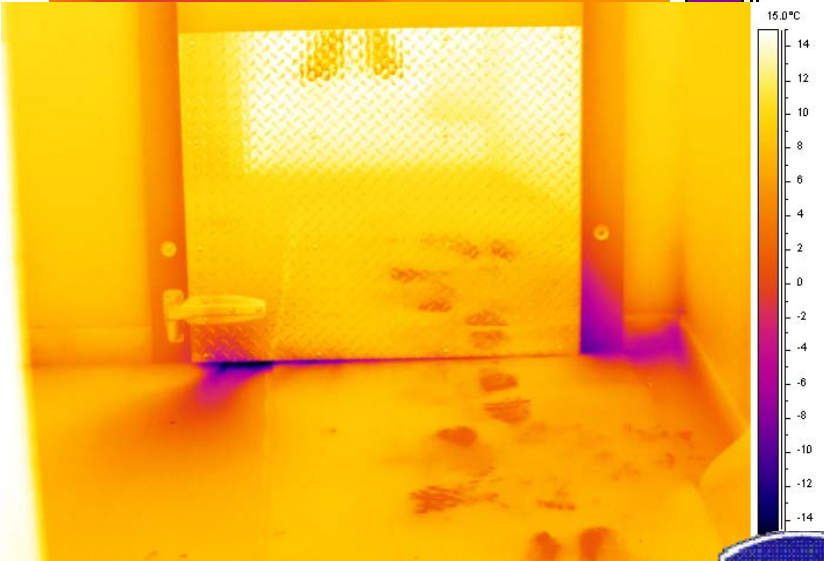
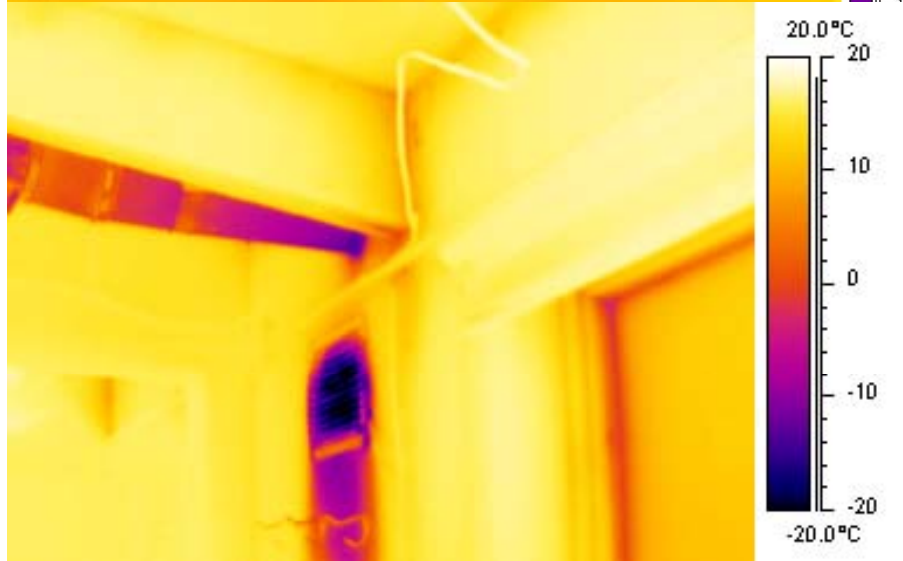
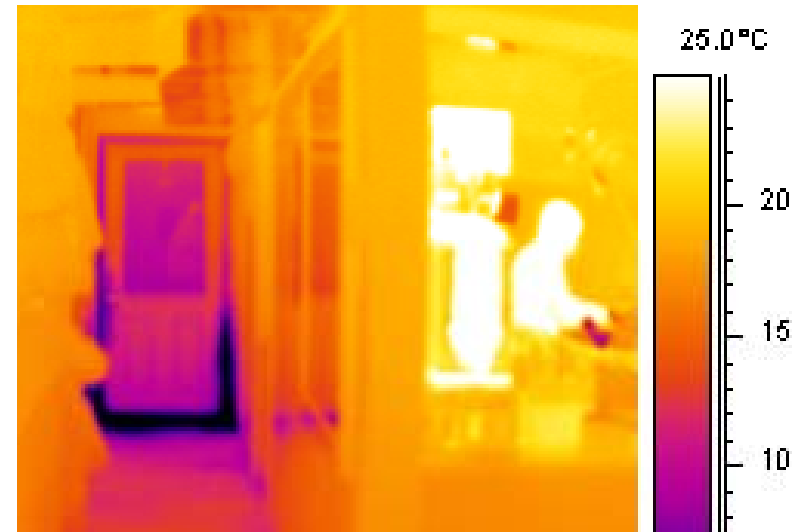


Don't forget to move things out of the way

You can make fixes
as you go along



Don't Forget the Usual Suspects



V. 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 caulking

<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.



Cold Regions Research & Engineering Laboratory

