



5309 Mohican Rd., Bethesda, Md. 20816 301-320-2870

Aerial Infrared Steam System Survey

CLIENT: Major Widgets

ADDRESS: 1000 Industrial Blvd.
Milltown, MD 20035

DATE: October 6, 1999

SUBJECT: Aerial infrared steam system survey of undergrounds
team and condensate lines.



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Our aerial infrared steam survey report consists of several sections.

Section 1 provides a discussion of the survey methodology and techniques for interpreting the thermal image.

Section 2 provides a prioritization of problems based on temperature rise and problem length.

Section 3 presents specific discussions of each suspected problem area.

Sample problem discussion are presented below.

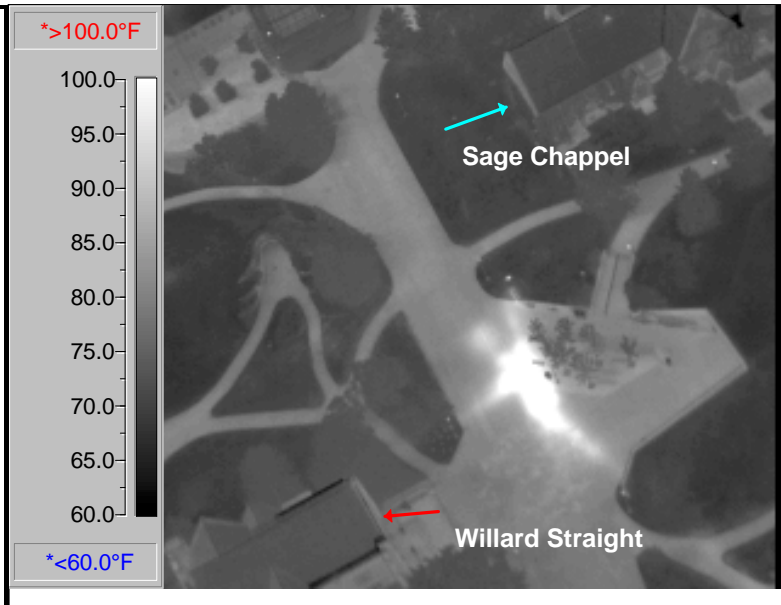
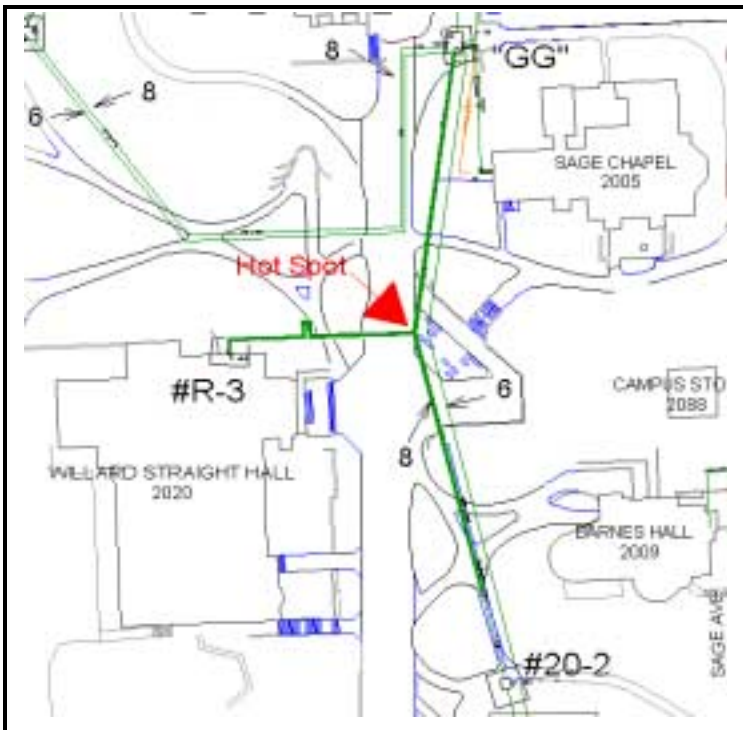
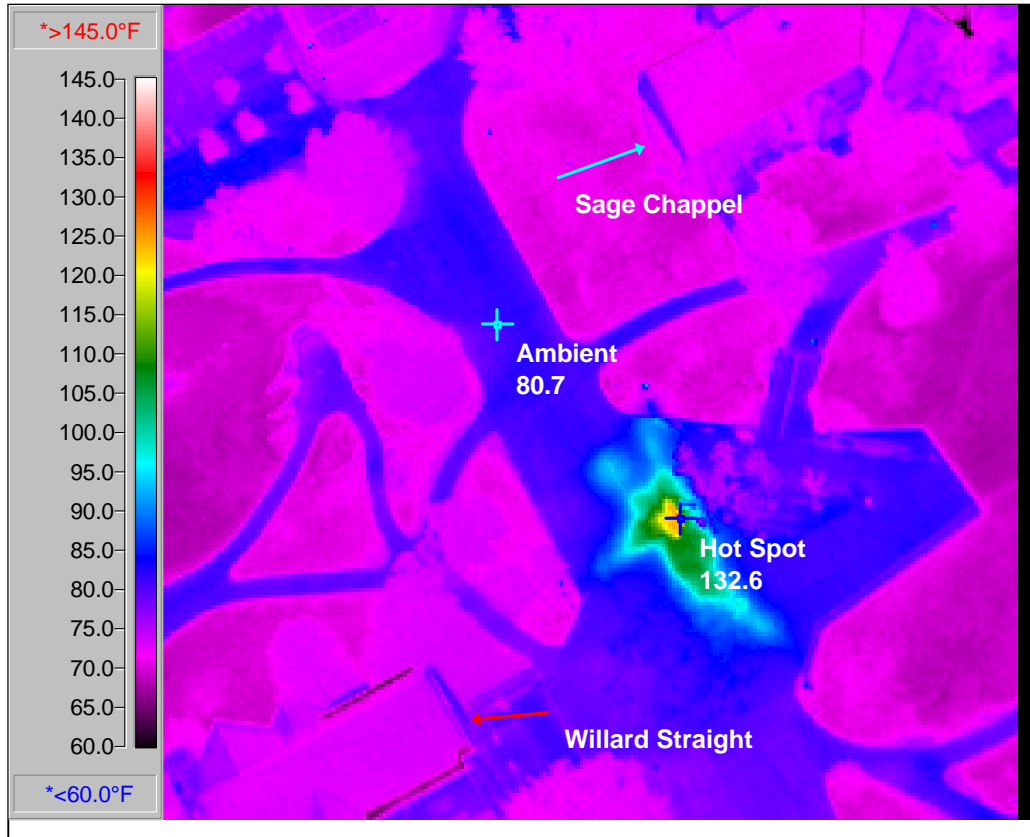
Problem #:1

Location: Intersection of line to Willard Straight and 8" main line

Problem Analysis: Since this hot spot occurs at what appears to be the intersection of the service to Willard Straight, a pipe coupling may have failed, producing a very high ground surface temperature and significant heat bloom. When viewed on the ground, the point of highest heat achieves a temperature of 153oF.

Time: 11:07:30

Note: Subsequent excavation revealed a leak at the hot spot.



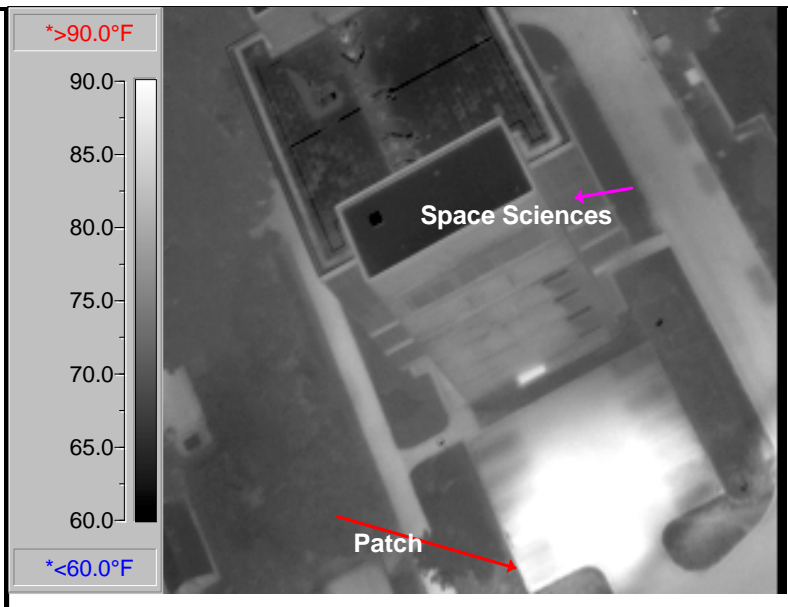
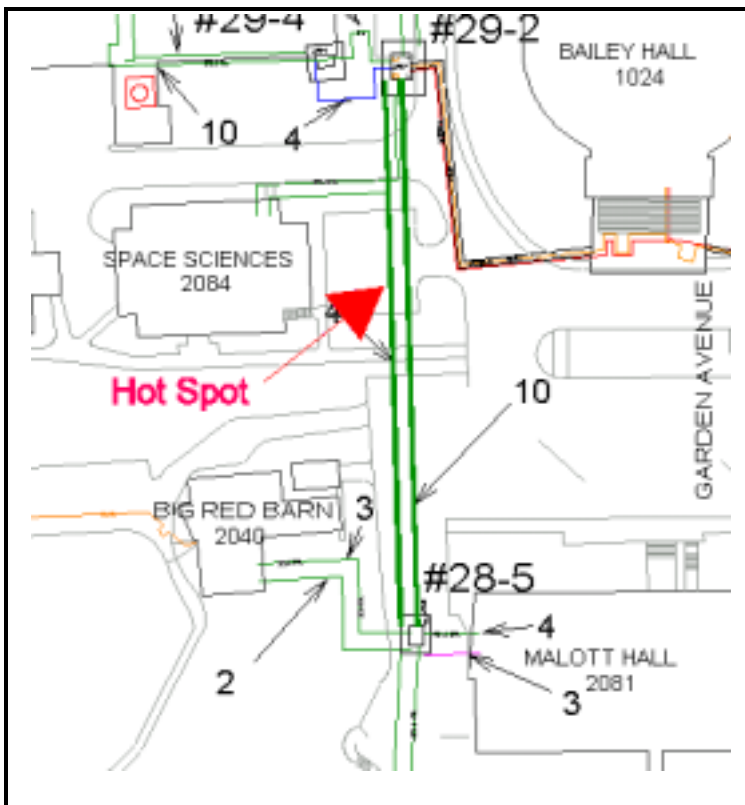
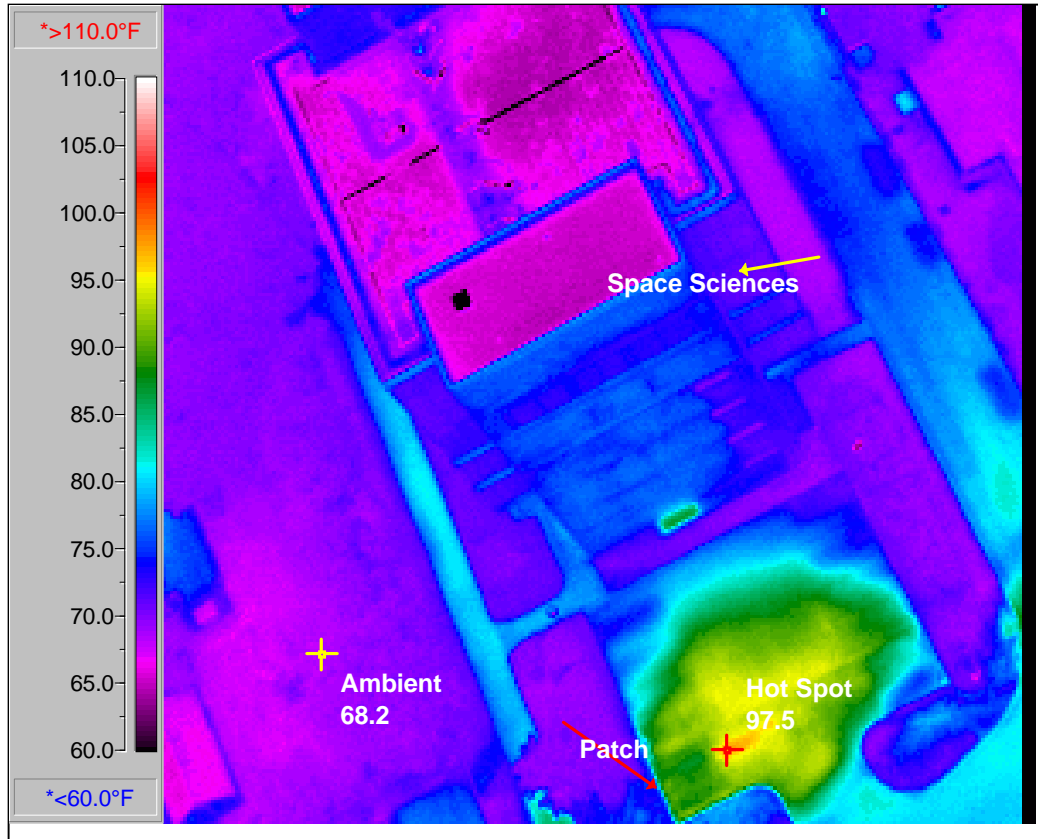
Problem #2

Location: Parking lot on east side of Space Sciences

Problem Analysis: This is a known leak area. It was previously excavated. The patch from the excavation is several feet from the hottest spot. The hottest spot may contain the leak. However, when the adjacent line area was excavated previously, there was no physical leak evidence. Thus, this hot spot may be where hot water is accumulating after running between the insulation and the pipe.

Time: 11:29:15

NOTE: Subsequent excavation revealed that the leak was, in fact, at the hot spot.



Problem #:4

Location: Main entrance to Roberts Hall and grass area in quad

Problem Analysis:A large area of heating extends along the main entrance. The heat is hottest along the building but extends beyond the concrete sidewalk to the grass. An additional hot spot is located in the grass. This area was found in the 1993 tape at 23:38:37. None of the hot spots in the current images were present in 1993. All are new, likely leaks.

Time: 22:41:56

