

Testing was conducted at Robot City. It was snowing and there was approximately 4 inches of snow on the ground. The average temperature was 20°F (-6°C).

1. There were no apparent thermal issues, and Scarab was able to pose change across its full range.
2. Autonomous driving:
  - a. Could not handle the sharp turns.
    - i. Many of the commands to the maestro were out of bounds so the arc radius was significantly smaller than the navigator commanded.
    - ii. Near the X section of the road Scarab should have moved to a bearing of 11 degrees. Scarab started at a bearing of 6 degrees and ended at a bearing of 27 degrees at which point we stopped the navigator.
      1. Navigator error – “Couldn’t populate arc”
  - b. Scarab seemed to be biased towards the right side of the road.
  - c. Scarab completed over 200m of autonomous driving (no obstacle detection).
3. On first glance the inside of the body stayed dry during regular motion.
  - a. The exception was the section in the drill cavity behind the PC104.
  - b. When removing the carbon shell snow would fall into the body.
  - c. Waterproofing steps
    - i. Placed plastic in the triangular holes on both sides of the differencing rod.
    - ii. Covered the drill chimney with a plastic garbage bag.
    - iii. The hokuyo’s were not covered to allow for data collection
4. The hokuyo with the newer firmware kept faulting (known problem)
  - a. The hokuyo’s are rated down to -10°C.
5. Scarab climbed a vertical wall with no trouble.
  - a. The body angle was about 56°.
    - i. Scarab was still stable, we stopped for safety reasons.

