HR-1001ULL Wind Tower Inspection Robot

Renderings, Photos, and Information

www.helicalrobotics.com

v1/4/13

HR-1001ULL Information

- Summary: This robot is designed for carrying payloads up to 15 lb up large diameter cylinders (> 8 ft) or walls of ferrous material
  - Focus is carrying Axis camera up a wind tower
  - Minimalist design for lightest chassis possible while being quick/simple to manufacture in-house and disassemble in the field
  - "Up" direction is all wheels forward to increase stability and allow weld passage
    - 90 degrees from past designs
- Physical Specifications
  - Assembled LxWxH Approximately 30"x21"x17"
  - Mass <45 lb w camera + wireless + batteries → <36 lb drivable robot mass
  - Number of Magnets: 5 Ring Magnets
  - Wheels on Pivot: Yes
  - Motor/Gearbox: 256:1 P60 w RS-775 motor powered by Talon Speed controllers (TBR)
    - Nominal Operating Voltage: 12-18 V
    - Battery/Batteries (TBR): Lithium Iron Phosphate OR Lithium Polymer
- Controller Specifications
  - Arduino based control system
    - System is self correcting to automatically keep robot pointed "up" while in operation
      - Accelerometers and gyros used (no omni-wheel encoder use planned)
    - CANipede can be used until Arduino system is ready if need be

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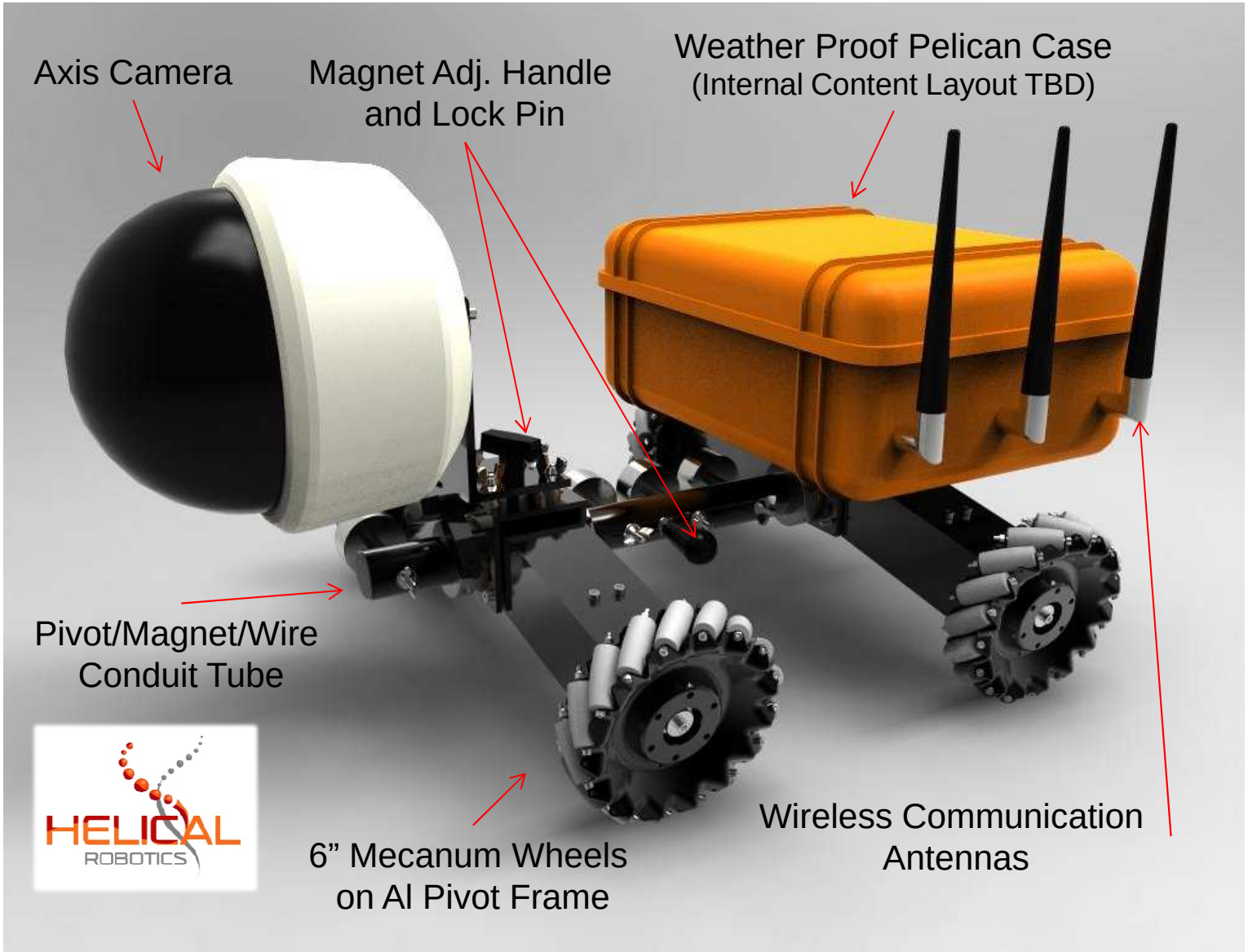
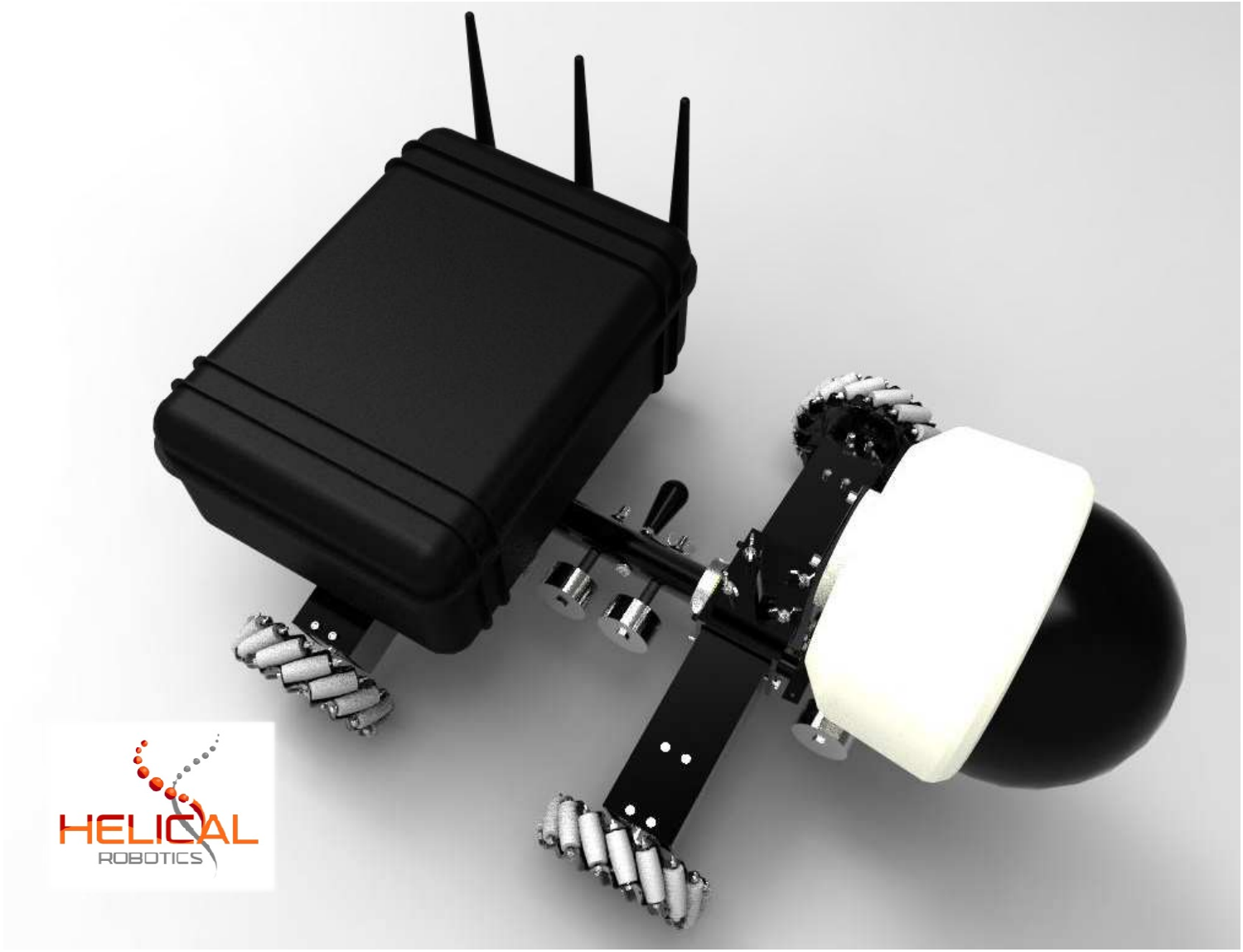
Renderings

Information View



HR-1001ULL Side View

HR-1001ULL Top View



HR-1001ULL Back View

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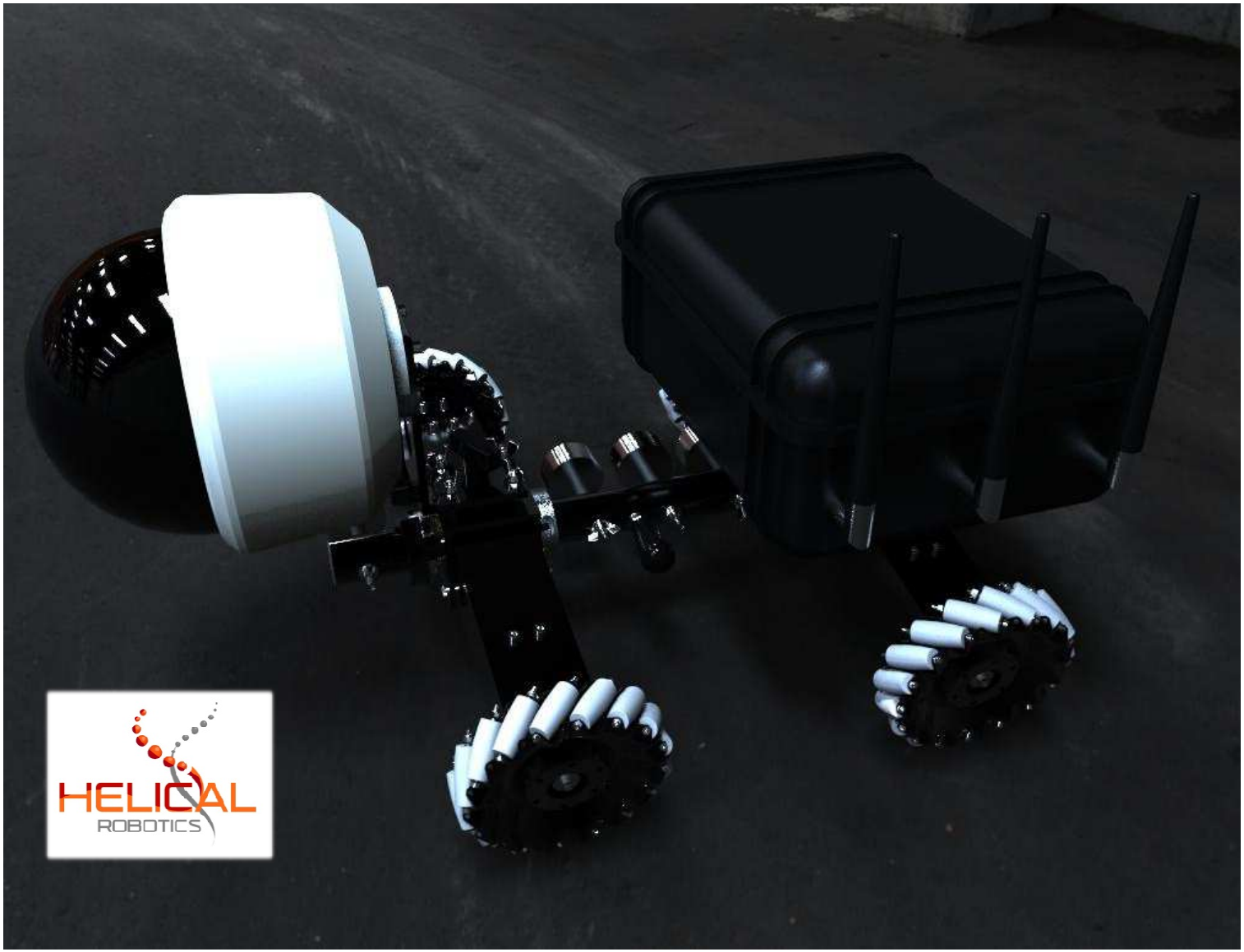
HR-1001ULL Floor View



HR-1001ULL On 80M Tower

HR-1001ULL On 80M Tower

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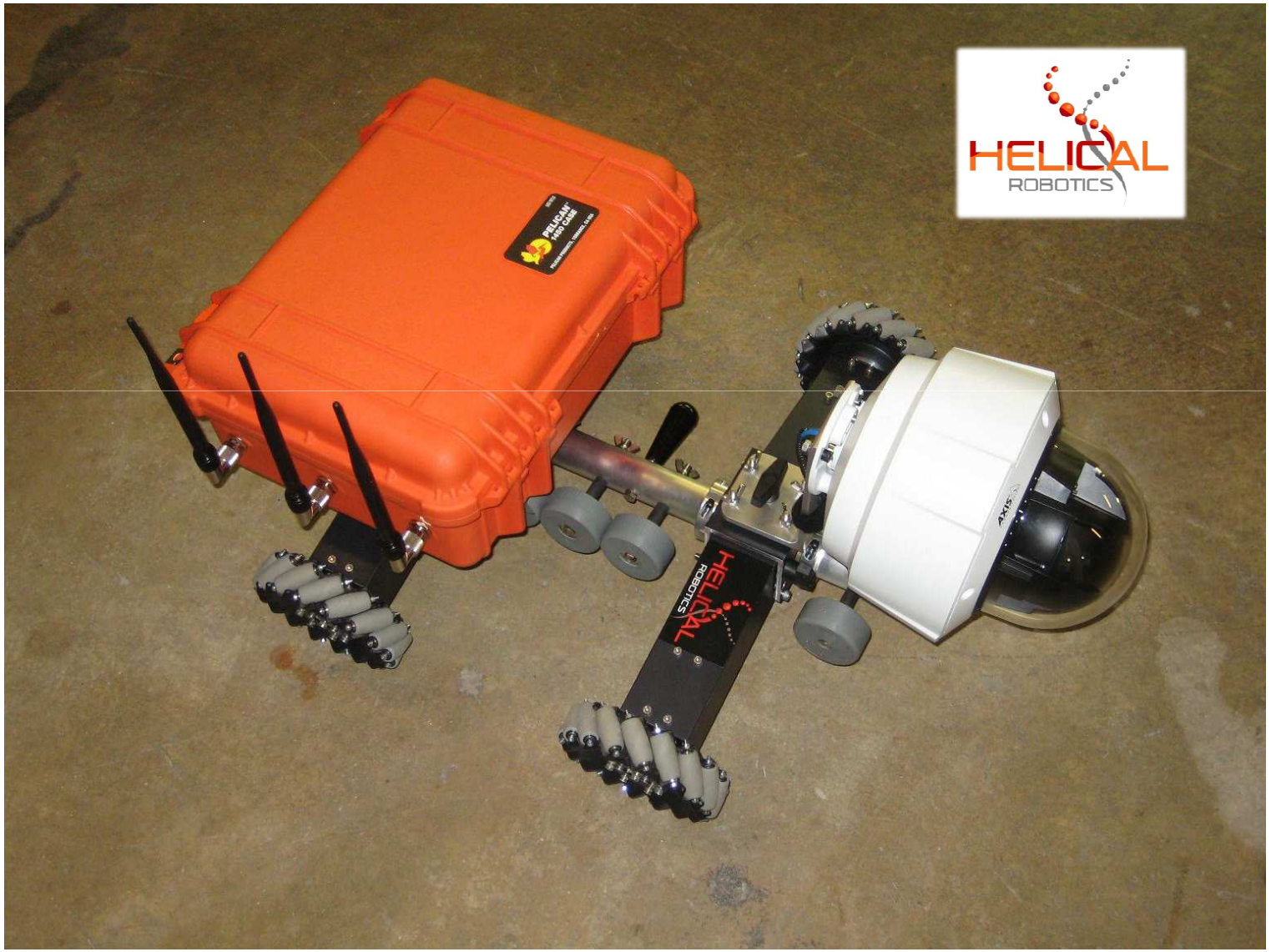
Photos

Videos Located at:

www.helicalrobotics.com/video

HR-1001ULL Magnets Stowed



HR-1001ULL Magnets Deployed

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HR-1001ULL Bench View

HR-1001ULL Back View

HR-1001ULL On Wind Tower

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HR-1001ULL On Wind Tower

HR-1001ULL Climbing Tower

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HR-1001ULL Climbing Tower

HR-1001ULL Tilt Stability

HR-1001ULL On Wind Tower

Adverse Winter Weather

- HR-1001ULL was tested during winter storm Draco in Michigan on December 21, 2012
  - Sustained winds of 30 mph gusting to 50 mph
  - Snow and blowing snow conditions
- No adverse affects in operation observed

HR-1001ULL Winter Storm Testing

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HR-1001ULL Winter Storm Testing

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HR-1001ULL Winter Storm Testing

Contact Information

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