

## Key Features

- Arctic location provides access to most satellite orbits
- Right-sized station for smallsat and nanosat missions
- Accommodates major downlink frequencies for today's mission operators
- High-speed data links using Canada's newest Arctic fibre infrastructure
- Hosted at a secure Government of Canada facility
- Levelling platform adjusts for ground movement during freeze/thaw cycles, ensuring pointing stability

## Benefits

- Downlink more on-board data, more often
- Major costs savings, especially for higher density constellations with large volumes of data

# C-CORE's Arctic Satellite Groundstations

## Summary

C-CORE's Arctic Ground Stations are an innovative solution that combines extensive downlink capabilities with strong data security and fast, reliable access. Located in Canada's Northwest Territories (Inuvik) and Labrador (Happy Valley Goose Bay), C-CORE's high-latitude ground stations are strategically positioned to support the new generation of satellites. These missions are higher density constellations, and mission operators are demanding more cost-effective solutions optimized for high volumes of smallsat receptions. C-CORE delivers.

Inuvik is an ideal location for polar orbiting satellites, where up to 12 passes per day for each satellite can be downlinked. The Inuvik Satellite Station Facility (ISSF) is the choice for Canadian, German and Swedish mission operators that demand a secure location, reliable high-speed communications and all-season operations. Developed by Natural Resources Canada, the ISSF provides a full-service, secure facility for year-round operations, including access to broadband fibre communications.

### Inuvik Ground Station Details

- Location: Inuvik Satellite Station Facility, developed by NRCAN
- GPS Coordinates: 133W 33 0.58, 68N 19 9.12
- Commissioned in December 2017
- Environmental Specifications:
  - ✧ Temperature: -40°C to +70°C
  - ✧ Wind: 240 km/hr

### Happy Valley Goose Bay Station Details

- Coming in late 2019



# C-CORE's Arctic Satellite Ground Station

## Antenna Specifications

- 3.4m Carbon Fibre Reflector
- Co-polar Reflection Pattern: REC 465-5
- Prime Focus Feeds
- S-band (2.2GHz) Downlink Specifications
  - Net Antenna Gain : 33.4 dBi
  - Noise Temp: 136 Kelvin
  - Beam width: 2.75 degrees
  - System G/T: 11.93 dB/K
  - Polarization: RHCP
- X-Band (8.2GHz) Downlink Specifications
  - Net Antenna Gain : 45.4 dBi
  - Noise Temp: 125 Kelvin
  - Beam width: 0.76 degrees
  - System G/T: 26.2 dB/K
  - Polarization: RHCP

## Radome Specifications

- Fibreglass enclosure consisting of interconnected hexagons
- Access hatch, lightning protection, and safety shut-down switch on exterior
- Interior lighting, web camera, and environmental control
- Ethernet-connected pedestal enclosure for radome monitoring and control equipment

## Positioner & Pedestal Specifications

- Type 1, three-upright Pedestal
- X / Y axis drive configuration giving full hemispheric coverage
- No 'cone of silence' (keyhole) at zenith
- Slew rates up to 5 degrees per second
- Pointing accuracy better than 0.1 degree
- Both axes are controlled simultaneously
- Software autotrack to maintain optimum signal strength
- Ethernet-connected pedestal enclosure for motor drives and control equipment
- Innovative platform compensates for ground movement, ensuring antenna pointing stability during freeze/thaw cycles

## Additional Information

- Data backhaul via VPN connections over MacKenzie Valley Fibre Link
- Local and remote monitoring and control capability
- UPS power and backup generator
- Gated one-kilometer roadway and fenced site with security system and cameras

## Planned for 2019

- S-band (2.1GHz) Uplink
- UHF (450MHz) Uplink and Downlink Ability to switch between RHCP and LHCP polarization

