



Raytheon

Technical Services Company
Polar Services

UNITED STATES ANTARCTIC PROGRAM

2002/2003 Wireless Technology
in
Antarctica



Presentation Overview

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- **Wireless Strategy**
- **Goals**
- **Today in Antarctica**
 - **Services**
 - **2002-2003 Wireless Connectivity**
 - McMurdo
 - South Pole
 - Palmer
- **Tomorrow in Antarctica**
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Wireless Strategy

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- **Implement wireless services to support our customers in Antarctic**
 - “Un-Tether Research and Support”
- **Support wireless initiatives and experiments**
- **Develop and demonstrate new wireless technologies and equipment**
- **Migrate to new wireless technologies and services for users in Antarctica**
- **Be a leader in wireless technology usage in Antarctica**

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Goals

- **Provide Wireless IP (802.11x) connectivity to**
 - **Dry Valleys**
 - **McMurdo Station**
 - MRSF (Mobile Runway Support Facility)
 - **South Pole Buildings and Near Sites**
 - **Palmer Station**
 - **Connectivity to Vessels (Ship to Shore, Ship to Ship)**
- **Provide Satellite Wireless IP connectivity to:**
 - **Iridium Single & Multi channel fixed sites**
 - **Iridium Portable Voice and Data**
- **Radio over IP (RoIP)**
 - **HF Radio for maintenance and support**
 - **Remote site support**



Today in Antarctica Services

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-
- **802.11b Wireless LAN – Ad Hoc Data**
 - **Iridium Voice and Data**
 - Fixed single channel
 - Portable
 - **900 Mhz RF Modem**
 - **Local pager**
 - **HF, VHF, UHF Communications**
 - **GOES3 Portable Terminals**



Today in Antarctica Wireless Data Connectivity

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The IT Communications Department installed and tested several 802.11b wireless data units in the field during the 02/03 summer season in and around McMurdo Station.

This testing was done in order to establish system reliability, area of coverage, data throughput and level of support that IT will be able to reliably provide for future use.

With the limited number of resources available during this time and the instability and unreliability of 802.11b due to testing procedures, we did not offer 802.11b wireless data services as a supported resource in the field for the 02/03 summer season.

Grantees were asked to understand that this is the first step towards providing wireless data services in Antarctica. Providing a poor level of service is something we did not intend on doing.

Current service levels should not be viewed as or confused with a supported resource from RPSC IT department.

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Today in Antarctica 2002-2003 Wireless Connectivity USAP Wide

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- **802.11b - Limited Ad Hoc Services and Testing**
 - **McMurdo**
 - Lake Fryxell
 - F6 Hut
 - Marble Point
 - Lake Hoare
 - Mt. Newall
 - Marble Point
 - Vessels – Coast Guard, Science
 - New Harbor
 - Shear Zone
 - Various Sea Ice Locations
 - Mt. Erebus
 - **South Pole**
 - SPRESSO – Ad Hoc Service
 - **Palmer**
 - Science Vessels – Ship to Shore Testing
- **Iridium Data**
 - **South Pole**
 - South Pole to McMurdo Single-channel RAS – RTTY Replacement Testing
- **900MHz Data Modem**
 - **McMurdo**
 - Lake Bonney – Operational Service

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Tomorrow in Antarctica Future Services

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- **802.11x – i, g**
 - Security and Management
 - VoIP integration
- **Iridium**
 - Single-channel Voice and Data fixed and portable
 - Multi-channel Data fixed and portable
 - Remote Access Services
 - Voice Interface to PSTN
 - Wideband 24x7 (1.5Mbs) fixed from South Pole



Tomorrow in Antarctica Future Investigations

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-
- **Internet Radio Link Protocol (IRLP)**
 - **Echolink**
 - **Bluetooth – PAN services**
 - **3G Cellular**
 - **Radio over IP**
 - **Iridium 9.6 Data**
 - **Mobile IP on 802.11x**
 - **IDEN (Nextel)**
 - **SMS and MMS Applications**

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