Iridium - How to establish Iridium communications from an XP computer to a UNAVCO polar remote GPS station

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How to establish Iridium communications from an XP computer to a UNAVCO polar remote GPS station

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This document contains instructions on how to establish an Iridium communications link between an XP computer and a remote Trimble NetRS GPS receiver. An Iridium test call must be performed before leaving newly-installed remote GPS site, or a site which has had its communications hardware modified during a site visit.

It is also essential to perform this check before going to the field. Various bugs have been observed with specific Iridium modems and XP computers, and it is not guaranteed that the procedure below will hold for all cases. Also, these instructions also assume a connection made using NSF-supplied DOD Iridium SIM cards. Be aware that subtle differences exist between commercial and DOD Iridium service. Ultimately, be sure you know how to establish an Iridium comms link with your equipment before going to the field. Do not assume that you will simply figure it out once you get there.

Finally, although this procedure assumes the call is originated from an NAL Research A3LA series modem, it is also possible to establish a data connection to the GPS receiver using an Iridium telephone handset such as a Motorola 9505A with the Data Kit accessories.

I. Configure the Iridium PPP Dialup Connection

A. Install the modem driver

1. 1. Choose Start > Control Panel.
2. Double click on Phone and Modem Options.
3. Select the Modems tab and click Add...
4. Check “Don’t detect my modem; I will select it from a list.” Then, click Next >.
5. Click Standard 19200 bps Modem, and then click Next>.
6. Click the “Selected ports” button. Click port COM1. This is the port to which you will connect your Iridium modem. If your computer does not have a serial port you must use a USB-serial adapter. In this case the serial port may appear as a different port, say COM3 or COM4. Click Next >.

7. Click Finish.
8. Click the Standard 19200 bps Modem to highlight it and then click Properties.
9. Select the Advanced tab.
10. In the “Extra initialization commands” box, enter AT+CBST=71,0,1
11. Click OK, OK.

B. Configure Dial-up Networking

1. Choose Start > All Programs > Accessories > Communications > Network Connections.
2. Click “Create a new connection” then Next>.
3. Select “Connect to the Internet” and click Next>.
4. Select “Set up my connection manually” and click Next>.
5. Select “Connect using a dial-up modem” and click Next>.
6. If a “Select a Device” window appears, check the box next to “Standard 19200 bps modem”, and uncheck all other devices. Click Next>.
7. Enter a connection name (e.g., “Iridium PPP”) and click Next>.
8. In the Phone Number box, enter 00881676300000 and click Next>. This is a placeholder phone number for a US DOD Iridium SIM card. You can enter the site’s unique phone number (last 5 digits) later, when dialing the site.
9. If using XP Professional Edition, a window may appear to select either “Anyone’s use” or “My use only”. Choose either selection and click Next>.
10. A username and password are not necessary. Uncheck the “Use this account name and password…” and “Make this the default internet connection” boxes. Click Next> then Finish.

C. Configure Iridium modem

A list of configuration settings are given in the Documentation section at kb.unavco.org/polartechnology. Since this modem originates the call, essentially serving as a base modem, this modem should be configured with “Base Modem” settings.

II. Place Iridium Phone Call and Verify Connectivity to GPS Receiver

A. Set up Iridium modem and antenna.

Connect the Iridium modem to the computer's serial port. Connect the Iridium antenna and place it in a location where it has an unobstructed view of the sky. Iridium satellites can carry a call nearly from horizon to horizon, so the antenna sky view should not be obstructed above ~8 degrees.

B. Place an Iridium phone call.

1. Choose Start > Control Panel, double click on Network Connections, then under Dial-up, double click your Iridium dial-up connection, e.g. Iridium PPP.

2. Do not enter a username or password and uncheck the "Save this username and password…" box.

3. Enter 14-digit Iridium phone number and click Dial. Include leading zeros, e.g. 008816763xxxxx.

4. Once you receive a message saying your computer is connected to the network, you can contact the GPS receiver in two ways.

    - Ping the GPS receiver from the DOS prompt. Choose Start > All Programs > Accessories > Command Prompt. Then type

      ping 192.168.xxx.2

      and hit enter. Note that xxx is a one to three digit number unique to each remote site. This is the IP address used for PPP connections on the GPS receiver's serial port, as defined in its configuration file.

      Any packets received in response to this ping are proof positive that the Iridium link to the GPS receiver is operational.

    - Pull up the GPS receiver's web interface by opening any web browser and entering the receiver's PPP IP address 192.168.xxx.2

      The web interface loads very slowly over Iridium, however once you see the blue Trimble NetRS screen begin to appear, this is proof positive that the link is working.

Dropped calls are a fact of life with Iridium, and it may take several dialing attempts to establish successful communications with the GPS receiver. Also, if the Iridium modem appears unresponsive during a call attempt, it may be necessary to reboot it. Allow the modem to remain off for 20 seconds before powering it again.

Online URL:

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