MFRSR Troubleshooting

I. Purpose:

The MFRSR consists of the actual instrument (head w/attached steppermotor rotating band) and logger/controller. The logger resides in an electrical enclosure attached to the SkyRad Stand. Power (fused 12VDC) is provided to the logger board from the DC Power System. The Distribution Box that is typically located near the logger enclosure. The MFRSR logger also has onboard circuit protection. The logger interfaces to the ADaM system via an assigned serial port on the Cisco Terminal Server. The ADaM data collection process uses xtty to collect data from the MFRSR every hour. This procedure outlines how to recognize and troubleshoot MFRSR problems.

II. Cautions and Hazards:

None.

III. Requirements:

None.

IV. Procedure:

A. Troubleshooting steps if the MFRSR including the Skyrad, Gndrad, and Smet are "red" on the Health & Status:

1. This is a periodic problem with the terminal server itself. All serial instruments will be hung including the modem that provides any remote PPP connection.

Troubleshooting Steps:

2. Dial in via the SatPhone data connection. The landline PPP will not work. After logging in as adammgr execute "reboot_termsvr". This is a script that controls the individual power outlets on the APC master switch to power cycle the terminal server. ***This script is available only on Manus.*** For Nauru, you will have to use the terminal server comands to reload. To do this, use the following sequence. This will also work on Manus. Refer to the **"Terminal Server Reboot"** procedure.

> **Type: telnet termsvr**
> **Password: cy6lock**
> **Type: enable**
> **Password cy4lock**

Type: reload

3. If you can't connect via SatPhone, then FAX instructions to the site requesting a power cycle for the terminal server. See "Terminal Server Reboot" Procedure.

B. Troubleshooting steps if the MFRSR is "red" on the Health & Status, other serial instruments are green and/or observers report misaligned or no band rotation:

1. For <u>Cause #1</u> – a hung xtty process on AdaM.

   - First, eliminate other causes such as power or communications by dialing into ADaM and telnet'ing to the instrument.

     telnet mfrsr

   - If telnet fails to connect go to **Cause2**, otherwise, after connecting, hit a few returns. You should see "**Hello**:" several times. This verifies that the instrument is powered and the serial connection is OK. After exiting from telnet you can check for old xtty processes.

ps –delaf | grep xtty	*looks for old, more than several hours, xtty processes*
kill –9 xxxx	*if old processes found, kill them*

   - If you did not find any old xtty processes then go to <u>Cause3</u>. If you found and killed the old processes then ADaM to automatically start the next xtty data collection session.

2. For <u>Cause #2</u> – telnet failed and there may be a power or communication hardware problem.

   - Any further diagnostics will require contacting the observer. Have them check the DC power Distribution Box fuse. It's labeled MFRSR. Inspecting/replacing this fuse will automatically reboot the MFRSR. If the MFRSR shadowband fails to rotate but the fuse is OK, try telneting to the MFRSR again. If still unsuccessful, have the observers open the MFRSR logger enclosure and check the onboard fuses. They are easy to see. If the fuses are good and you still cannot telnet to the logger have the observers verify that the bit-drivers are connected and the status LEDs are on. There will be one bit-driver in the MFRSR enclosure and another plugged into the terminal server interface board in the back of the ADaM rack. If everything checks out OK and you still cannot connect then there is an instrument hardware failure. Contact the MFRSR Mentor, John Schmelzer (509-375-3729).

3. For <u>Cause #3</u> – data collection process, instrument communications and power are all OK and poor data quality is reported or the band does not shade properly.

- Look at instrument parameters. Typically, in the past, we've only had to adjust time and location, although this is rare because the MFRSR is configured via a configuration file on ADaM.

- Here are the passwords and a few commands to look at instrument parameters.

  After telnet'ng to mfrsr:

  Hello: Langley!

  !> s 0   *status*

  $BFD8 $C0CA 7Y [7] 35.0463 106.5399
  16:41:43 06-29-2001 35596.69563 (1997)
  $20 $00000101 $00000000 $000000
       20   **20**
      117   **3**

- The pertinent parameters to check when troubleshooting are the site coordinates (lat & long) contained at the end of the first line, time and date (beginning second line), and memory bytes and records (last line). If "?>" appears when you log on, it is a sure bet that the system time is invalid.

- If any of aforementioned parameters are incorrect, it is recommended to look at the MFRSR configuration file in **/files0/config/mfrsr** or contact one of the ADaM software developers.

- When finished inspecting the parameters, hang up with the MFRSR logger using:

  !>**h 0**

  Also, properly terminal your telnet session with:

  Ctrl } *press both keys at the same time*
  Ctrl d *press both keys at the same time*

4. Cause4

- Occasionally, the connector attached to the instrument head will become slightly corroded (usually nauru) No rotation of the shadowband is usually reported by the observers although other

symptoms of poor or intermittent electrical connection may result. Have the observers detach and clean the plug and receptacle, carefully.

V. References:

1. Terminal Server Reboot Procedure

VI. Attachments:

None.