How to use netcat to read and interpret such things as temperature and power measured by the STI cryo controller.

Low-level monitoring of the STI cryo controller requires a software upgrade (rimboxucntrlrfilesystem.bin) to version 1.6 (or greater) for the rim box control board. This upgrade supports a virtual interface between TCP port 1518 of the rim box controller to the 19200 baud (N 8 1) asynchronous 3-wire link between the rim box controller and the STI cryo controller. Until the various STI cryo controller monitor points we are interested in are automatically polled by antenna "items," which will require further development (by Gerry or Rob) after the Oct. 11 ATA dedication, low-level access can be accomplished with the "netcat" utility:

netcat rimbox 1518

All STI cryo controller requests and responses are in XML (which is explained in more detail in the attached document). For example, the request for power measurements is issued as follows:

<PW OP="GT" LC="MS"/>

the corresponding response should look something like this:

<PW OP="GT" LC="MS">8AB C8C 5FD 2D77 3D90 909 4DD 15DF 8AA 4000</PW>

The request for temperature measurements:

<TP OP="GT" LC="MS"/>

and its corresponding response:

<TP OP="GT" LC="MS">35FF 7627 3FC0 4DDF 35FC 7627 7CB7</TP>

The returned values are base 16 ADC counts out of 2^15.

The first and second values of the temperature response represent "cold stage narrow range temp." and "cold stage wide range temp." respectively. The values shown were measured on ant3e during the morning of Oct. 04. They are converted to Kelvin as follows:

35FF (base 16) = 13823 (base 10)
(13823.0 / 32768.0) * 5.0v = 2.109v
(2.109 - 12.627174) / -0.169651 = 62.0K

7627 (base 16) = 30247 (base 10)
(30247.0 / 32768.0) * 5.0v = 4.615v
(4.615 - 5.652571) / -0.016232 = 63.9K

The second and third values of the power response represent compressor voltage and current respectively. The values shown were measured at the same time as the temperature values above. They are converted as follows:

C8C (base 16) = 3212 (base 10)
(3212.0 / 32768.0) * 5.0v = 0.4901v
0.4901 / 0.075 = 6.53v

5FD (base 16) = 1533 (base 10)
(1533.0 / 32768.0) * 5.0v = 0.234v
0.234 / 0.1 = 2.34A

6.53v * 2.34A = 15.3W