Programming Changes for the December 2007 IS-701 (POR) to IS-707 (Atlantic) Satellite frequency move for R/V Thompson

Overview
We need to move the Thompson from one set of frequencies on the Pacific HiSeasNet satellite (IS-701) to a set of frequencies on the Atlantic HiSeasNet satellite (IS-701). We also need to change the shore-to-ship data rate since the satellite carriers are not the same data rates. This change requires modification of the shipboard antenna tracking parameters in the SeaTel DAC, the Codan transceiver Tx frequency, and the Comtech modem frequencies and data rates for the Thompson. Additionally, changes need to be made at the earth station to adjust the receive path for the new inbound signals.

Assuming the ship is still online, the changes on the ship needs to be made roughly simultaneously with the changes in San Diego, as we will lose the satellite telephone/data communications during the changeover. We will likely make the changes at the earth station first at the designated time. These changes will knock the ship offline, but the modems should stay synchronized until changes are made on the ship. The ship can make the changes any time before or after the scheduled time, but will only be working online when both shore and ship are both using the same settings. The system should be back online when both earth station and ship changes are complete. Be sure to have an Inmarsat/Iridium phone available if you have any trouble. Steve Foley’s phone number is 858-822-3356. If you are still having trouble 1 hour after the designated time and have not been in touch with Steve, try Geoff Davis at 858-822-5756.

To navigate the Comtech modem's menus, press the back key to go to the previous menu. The enter key should go into the selected menu. The screen with the serial number on it is the first screen. The arrow keys should move the cursor until it is over the desired menu, number, or option. For more information about changing Comtech or DAC settings, see the respective manuals.

Codan Transceiver Changes
1. Connect to the Codan 5700 converter in the dome using the magic RS-422/RS-232 connector in the lab or via the short Codan-supplied DB-9/MIL connector to the Control or M&C port on the transceiver in the dome. The converter is the rectangular box with a clear Plexiglas window on one of the antenna arms.
2. Hit enter a couple of times to get a “>” prompt from the Codan gear. You may not get a prompt if the echo is turned off.
3. Enter the command “VPS” and look for the transmit frequency. It should be “6360”.
4. Enter the command “STF6320” to set the transmit frequency to 6320.
5. Enter the command “VPS” and verify that the transmit frequency is 6320 and the receive frequency is 4095.

DAC Controller Changes
1. Set the DAC's AGC Frequency to “65.852” MHz (it should have been (65.852 MHz)
   a. Note the AGC value before making a change.
   b. Select the SAT/RCVR mode by pressing the “SAT” key.
   c. Select the IF input using the “NS/EW” key.
   d. Key in the frequency (65.852 MHz) by pressing "6", "5", "[enter]", ",", "8", "5", "2", ",[enter]", ",[enter]".
2. Set the DAC’s satellite to 307 degrees East (IS-707’s location)
   a. Select the SAT/RCVR mode by pressing the “SAT” key
   b. Select the IF input using the “NS/EW” key until the satellite longitude is the only thing showing (the old longitude should be “180W”)
   c. Key in the new satellite longitude by pressing “3”, “0”, “7”, “NS/EW”, “[enter]”
3. Search for the new satellite by pressing “MODE”, “MODE”, “[up arrow]”. Wait until the satellite locks. If it does not after 5-10 minutes, you may need to re-enter the satellite longitude, increase the azimuth a few degrees, and search again. If that does not find the satellite, re-enter the satellite longitude, decrease the azimuth a few degrees, and search again. If you are still having trouble finding the satellite, try doing the same adjustments with elevation instead of azimuth. It may also help to set your “SEARCH LIMIT” value to 200 (it may be 120 or so) and try searching again with a wider search limit.
4. Double check the AGC setting (hit the SAT key again). It may be a little lower than your previous AGC, but above your noise floor. If it is about 850, something is very wrong (ie, you are not looking at the right satellite).

**Comtech Satellite Modem and Codan Transceiver Changes**

1. Turn the modem's transmit signal off before we change it (CONFIG / TX / ON/OFF to “OFF”)
   
   Note: it should have said “RTI” (or possibly “ON”) before the change.

2. Set the modem’s new receive frequency (CONFIG / RX / FREQ to “65.8525” MHz)
   
   Note: it should have said “64.8000” MHz before the change.

3. Set the modem’s new receive data rate (CONFIG / RX / DATA to “180.000” kbps)
   
   Note: it should have said “160.000” kbps before the change.

4. Set the modem's error correction (CONFIG / RX / FEC / TURBO to “3/4 Q”)
   
   Note: it should have said “5/16 B” before the change.

5. Set the modem’s new transmit frequency (CONFIG / TX / FREQ)
   
   Thompson should use 65.7250 MHz, (should have said 79.6850 MHz)

6. Verify the modem’s transmit data rate (CONFIG / TX / DATA at “96.000” kbps).
   
   If it wasn’t set to “96.000”, please set it to “96.000”

***Double-check that all of the preceding parameters have been set correctly, and that the modem regains lock before proceeding***

7. Turn on the modem's transmit signal (CONFIG / TX / ON/OFF to “RTI”)

8. Confirm the AGC readings (before and after) from the DAC and Eb/No readings (before and after if possible) from the Comtech to the HiSeasNet earth station staff (hiseasnet-admins@epicenter.ucsd.edu) (MONIT / RX-PARAMS / RX:EbNo = XX.X dB). Additional status values (az/el, lat/lon, threshold, AGC, etc.) would be most appreciated. Thanks!