HiSeasNet Case Studies

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Case 1

Case 1

- Symptoms:
  - AGC fluctuates in port for a short periods of time (seconds or minutes) fairly often, but not all the time
  - Tracking trouble as a result of the AGC fluctuations
  - EbNo goes between 0 and normal during fluctuations when antenna is still on the sat
  - Problem seems to clear up outside of port

Case 1

- Symptoms:
  - AGC fluctuates in port for a short periods of time (seconds or minutes) fairly often, but not all the time
  - Tracking trouble as a result of the AGC fluctuations
  - EbNo goes between 0 and normal during fluctuations when antenna is still on the sat
  - Problem seems to clear up outside of port
- Resolution: Interference

Case 2

Case 2

- Symptoms:
  - Tracking is bad, but still functional in flat seas
  - Tracking gets worse over time
  - Pedestal error decodes to cross-level axis
  - Upon dome inspection, audible grinding, visible metal filings on antenna frame

Case 2

- Symptoms:
  - Tracking is bad, but still functional in flat seas
  - Tracking gets worse over time
  - Pedestal error decodes to cross-level axis
  - Upon dome inspection, audible grinding, visible metal filings on antenna frame
- Resolution: Cross-level bearing grinding

Case 3

Case 3

- Symptoms:
  - 4 green lights on modem
  - Sometimes data doesn't go through
  - Contacting earth station shows signal off sometimes despite 4 green lights
  - Transmit power level may be super high at times
  - Weather is hot outside

Case 3

- Symptoms:
  - 4 green lights on modem
  - Sometimes data doesn't go through
  - Contacting earth station shows signal off sometimes despite 4 green lights
  - Transmit power level may be super high at times
  - Weather is hot outside
- Resolution: Converter transmit is tripping on and off due to heat
  - Close dome, check A/C, correct Tx attenuation

Case 4

Case 4

- Symptoms:
  - Antenna tracking is fine but cannot talk to Codan transceiver through lab cable
  - Connector in lab is fine
  - Cabling is verified good
  - Codan has no errors

Case 4

- Symptoms:
  - Antenna tracking is fine but cannot talk to Codan transceiver through lab cable
  - Connector in lab is fine
  - Cabling is verified good
  - Codan has no errors
- Resolution: Bad multiplexor

Case 5

Case 5

- Symptoms:
  - Antenna tracking is lousy, but may work at times, sometimes shows errors
  - Antenna initializes okay
  - Cabling is verified good
  - Codan transceiver communication is fine

Case 5

- Symptoms:
  - Antenna tracking is lousy, but may work at times, sometimes shows errors
  - Antenna initializes okay
  - Cabling is verified good
  - Codan transceiver communication is fine
- Resolution: Bad multiplexor

Case 6

Case 6

- Symptoms:
  - Antenna has trouble tracking at certain relative headings, but does okay in most cases
  - Problems get significantly worse in bad sea state
  - Bit errors continually count up, 1 every few seconds
  - Size of bad relative heading may get worse

Case 6

- Symptoms:
  - Antenna has trouble tracking at certain relative headings, but does okay in most cases
  - Problems get significantly worse in bad sea state
  - Bit errors continually count up, 1 every few seconds
  - Size of bad relative heading may get worse
- Resolution: Bad rotary joint

Case 7

Case 7

- Symptoms:
  - Antenna cannot find satellite
  - Sweeping a huge range of Az and El shows no satellite where it is supposed to be
  - Gyro and GPS are correct
  - Initial startup of antenna does not complete
  - PCU is programmed to correct antenna type

Case 7

- Symptoms:
  - Antenna cannot find satellite
  - Sweeping a huge range of Az and El shows no satellite where it is supposed to be
  - Gyro and GPS are correct
  - Initial startup of antenna does not complete
  - PCU is programmed to correct antenna type
- Resolution: PCU is busted

Case 8

Case 8

- Symptoms:
  - AGC is fine
  - Modem has 4 green lights, EbNo on ship is fine
  - EbNo at the earth station is low
  - Signal shape is good on spectrum analyzer

Case 8

- Symptoms:
  - AGC is fine
  - Modem has 4 green lights, EbNo on ship is fine
  - EbNo at the earth station is low
  - Signal shape is good on spectrum analyzer
- Resolution: Converter unit is flickering high frequency stage on and off faster than spec analyzer can show. Signal is strong, but too many errors brings EbNo down.

Case 9

Case 9

- Symptoms:
  - Antenna appears to work fine, data is flowing
  - Azimuth slowly creeps up a few degrees during normal operations over a period of days
  - Ships gyro feed is correct, DAC sees gyro feed
  - After long blackout, antenna finds satellite and Az is correct again
  - Resolution: Antenna is fine and in satellite reference mode

Case 10

Case 10

- Symptoms:
  - System sometimes works, but tracking is sloppy in all but glassy seas
  - Frequent pedestal errors, stability limit errors, rate errors
  - DacRemP plots are exaggerated, limits hit in feedback loops
  - Visual inspection of antenna shows larger movements
  - Resolution: Antenna is out of balance

Case 11

Case 11

- Symptoms:
  - System generally works when antenna is tracking.
  - Antenna eeds manual repointing or restarting sometimes
  - Normal operations sometimes have the antenna search off in space
  - Elevation while locked seems to change a bit even though the ship doesnt move.
  - Occasional errors (pedestal, stability limit, etc.)
  - Pedestal error decodes to elevation

Case 11

- Symptoms:
  - System generally works when antenna is tracking.
  - Antenna eeds manual repointing or restarting sometimes
  - Normal operations sometimes have the antenna search off in space
  - Elevation while locked seems to change a bit even though the ship doesnt move.
  - Occasional errors (pedestal, stability limit, etc.)
  - Pedestal error decodes to elevation
- Resolution: Level cage motor is wearing out, antenna cannot reliably find level