HiSeasNet Case Studies
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

- 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

- 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

- 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
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- 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 multiplexer**
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

- **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

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

- 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

- **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

Symptoms:

- System generally works when antenna is tracking.
- Antenna needs 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 doesn't move.
- Occasional errors (pedestal, stability limit, etc.)
- Pedestal error decodes to elevation
Case 11

- **Symptoms:**
  - System generally works when antenna is tracking.
  - Antenna needs 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 doesn't move.
  - Occasional errors (pedestal, stability limit, etc.)
  - Pedestal error decodes to elevation.

- **Resolution:** *Level cage motor is wearing out, antenna cannot reliably find level*