As most of you folks are aware by now on 15 Oct 2010 (10/287) at 15:23:21 UTC the AVHRR scan motor on NOAA-17 has stalled but not failed. The reason that it has not completely failed is because the motor is continuing to draw current but at a higher level. Engineers at NOAA speculate that the resistance caused by the break down in the lubrication within the scanner Subsystem as depicted in the diagram below (see figure 1.7)

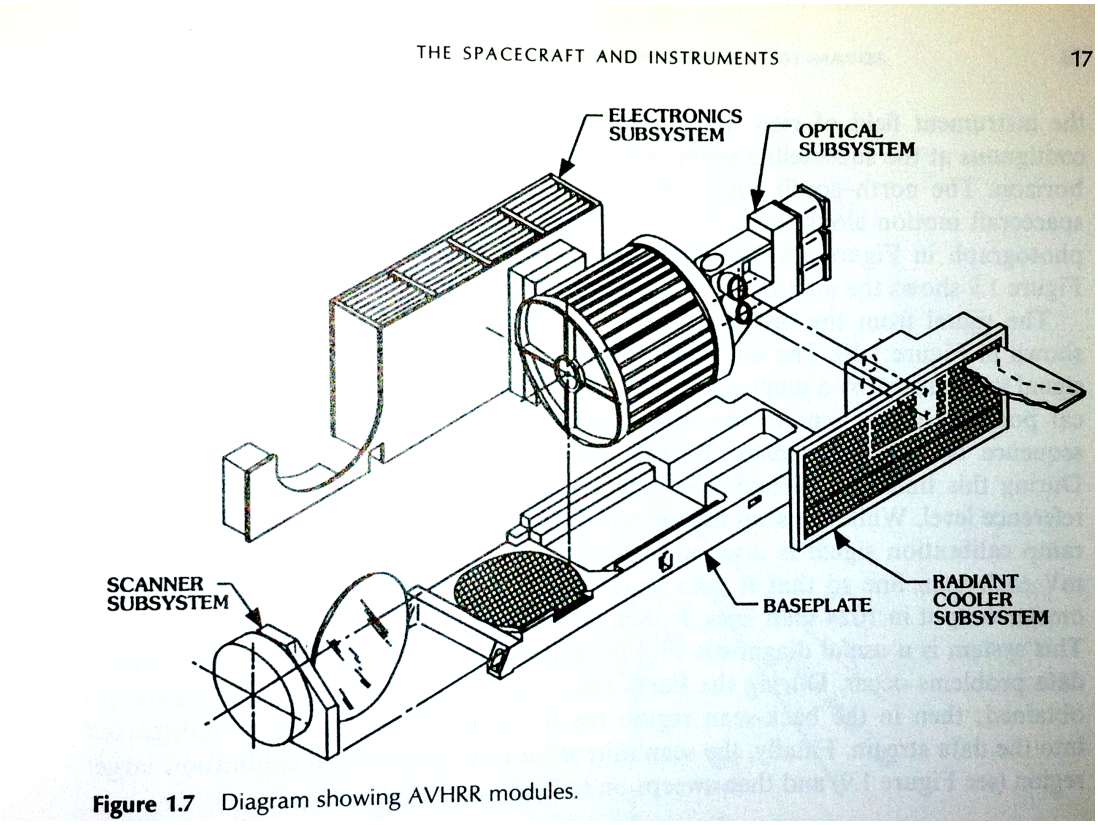

Figure 1.7 Diagram showing AVHRR modules.

On 28 Sep 2010 (10/271) at 20:11:19 UTC the NOAA-17 AVHRR Scan Motor performance notably changed and is represented in the chart below from Oct 12. (see Figure 1). Motor resistance increased resulting in the current saturating above 270 mA and the Temperature rising 2 C. Science Data became unusable due to the unstable rotational rates.

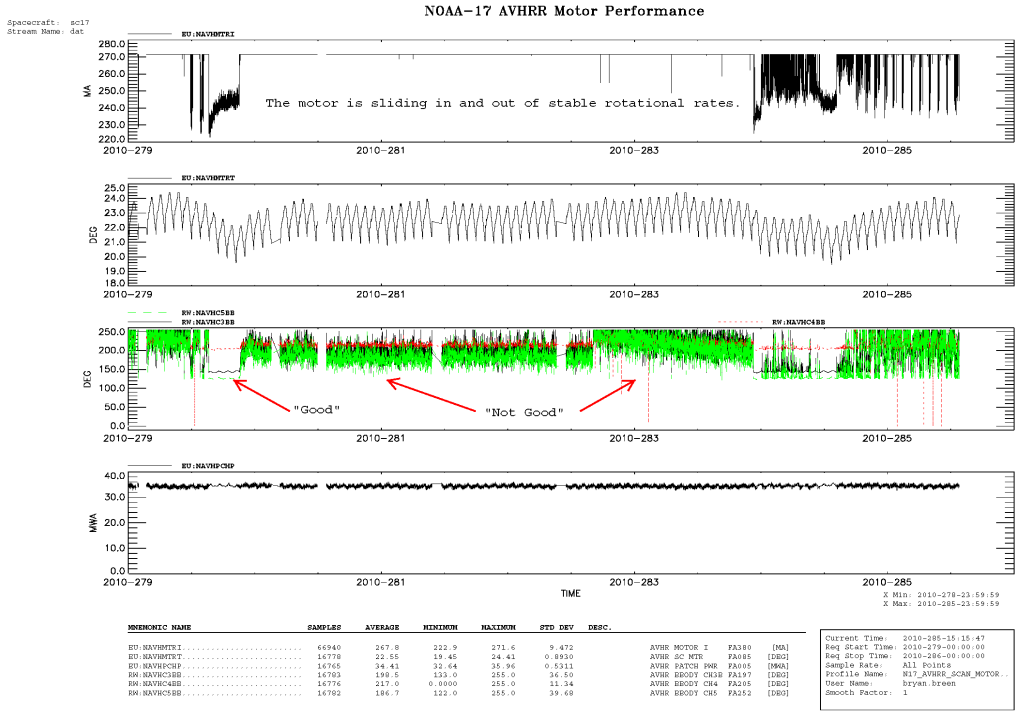

Figure-1

This data is clearly supported in the anomaly currently observed in the AVHRR data by the user community. At the present NOAA has no plan to attempt any recovery procedures, as this effort would only prove to be ineffective. What we do know from previous missions is that some instruments like the NOAA-14 AVHRR did recover after 18 months that is represented in (Figure 2).

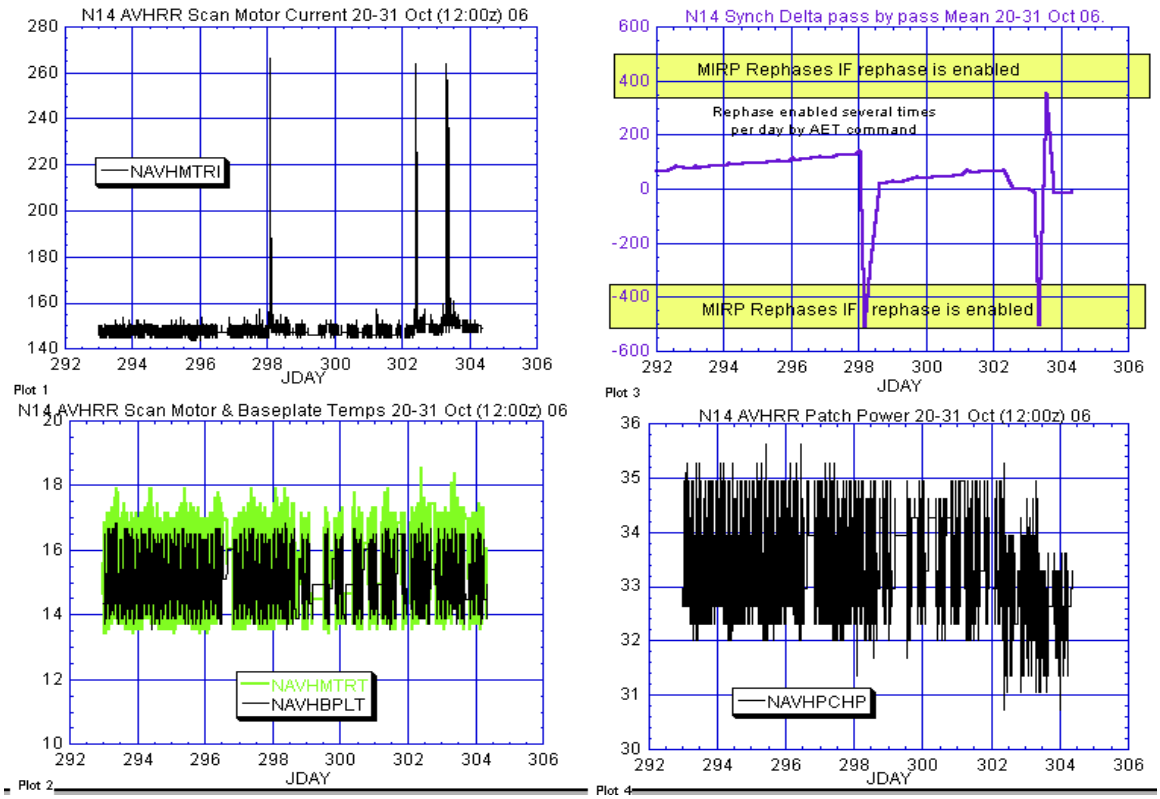

Figure-2

Now some spacecrafts are not so lucky like NOAA-9 and NOAA-11 and these instruments were eventually turned off. What scientists at NASA have pointed out is that the lubricants inside these and other instruments onboard all spacecrafts become viscose to the point in which the particulates inside the fluid became hard and shellac like. This renders the scan motor useless. The problem in determining the time to failure relies on several key points. First, the nature of the spacecraft operating environment and the hostel temperatures that the instrument is exposed to. Next is the age of the instrument itself. NOAA and NASA set a guide line for most of their Low Earth Orbit or LEO spacecraft instruments to have a set operational life of up to 4 years but in most cases greatly exceeding by 8 or more. Another key point that contributes to instrument failure is the contaminations in space. Beside the dust and particles that float around in the vacuum of space is the radiation for the sun. Often times when there is a solar storm or great flare such as the one in December of 2006, instruments or sensors onboard spacecrafts are affected. In one such case GOES-13 lost the Solar X-ray Imager or SXI. Lastly, design of an instrument is a major factor in determining the life. Because there is a lot of unknown about what a instrument may be exposed to while operating in space, engineers must take into consideration the many years of data collected from previous mission and make any changes to the new system to extend its life span. Over the years we have leaned how to construct better detectors or sensors that can handle the hostility of space as well as designing better protection from Gama rays and radiation. All in all nothing is perfect and we are constantly updating and perfecting the spacecrafts that we build.

Per request by the user community and the engineering staff at NOAA, the operational configuration of the AVHRR APT downlinks were swapped on to NOAA-15 and NOAA-17. On 12 Oct 2010 (10/285), NOAA-17's VTXs was swapped from VTX2 to VTX1 and a few hours later on NOAA-15 was swapped from VTX1 to VTX2. This will remain as the final configuration for these spacecraft. Also to note there is a reduction of the STX2 operational power on NOAA-15 which affects the HRPT signal being received. No plans are in the works at this time to swap HRPT transmitters because of the effects that STX1 and STX3 has on the AMSU-B instruments on-board but NOAA is monitoring the situation.

So now we enter a period of uncertainty. If the NOAA-17 AVHRR recovers how long will it take and if it does not what will be the plan from there? Well as I have stated in my previous report that if NOAA determines that the instrument is unsalvageable then the next step is to turn it off. NOAA will be letting us know in the coming weeks as to what decisions will be made as to the fate of the AVHRR onboard NOAA-

17. I will be issuing an update on Monday Oct 18, 2010 after the NOAA Anomaly Review Board convenes Monday morning.

Update 10/18: NOAA engineers are currently looking at a contingency plan for the NOAA-17 AVHRR anomaly. In the meeting this morning the engineering staff are considering to changing HRPT transmitters on NOAA-16 to a RHCP antenna so that users can use their current configuration. Also NOAA has express interest in changing the APT transmitter on NOAA-17 back to 137.620 but leave NOAA-15's APT transmitter alone. Another option that NOAA is exploring is to try a last attempt to revive the APT system on NOAA-16 but engineers have stated that due to the hybrid failure that connects the to VTX transmitter to the antenna that its probably unlikely that it would ever recover. In the mean time NOAA is making plans to make the LRIT data from METOP covering both East and West coasts of the United States available via the data collection system. More on this when a process is defined in greater detail.

NOAA is comparing the current situation with the one that occurred on NOAA-14 many years ago to see if any of the procedures used then could be applied in this case. The data obtained from the PACS system show similar signature in the current draw and base plate temperature but the way the anomaly presented itself in the past few months may make it impossible to determine if anything could be done. This may be a wait and see game like before.

Over the next few days NOAA will make and evaluation of the anomaly and report to the users what the plan of attack will be. They ask that we all be patient while the process take place and are doing their best to fill the gap caused by this failure. I should more to pass over to you all in the coming days.

Thank you,
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