

TELESCOPE OPERATIONS NEWS

Terry J. Teays
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OBC Heating Test

On January 21 the Observatory staff conducted a thermal test on the spacecraft's on-board computer (OBC). We parked the satellite for 24 hours in the middle of the β angle range which produces the maximum heating of the OBC. The OBC was stable at 57 ° for quite some time, and no problems were experienced. These results have led to a relaxation of the OBC constraints which we have lived with for so many years. Under the new guidelines the observer has to take time out of his/her shift to cool off the spacecraft much less frequently than in the past.

Gyro 5 Scare

On February 5 telemetry suddenly indicated that there was no current to gyro 5. Needless to say, this caused quite a stir in the TOCC! It is now believed that one of the windings for that gyro opened up (there are two), and that happened to be the one which has the ammeter on it which is monitored by telemetry. There has been no indication of any decreased performance in the gyro, and everything is proceeding normally.

Spacecraft Engineering Test of the One-Gyro System

On March 18 the one-gyro attitude control system was loaded into the OBC, and a number of engineering tests were performed. For the details, see the article by Rich Arquilla. The bugs which were found during the test have been identified and corrected, and we plan to conduct a more extensive spacecraft test in a few months.

The FES Scattered Light Anomaly

The problem was first noted by the VILSPA staff on February 5, when they reported that the entire Fine Error Sensor (FES) was filled with background light, at a level which prevented them from acquiring their target. (Note that this was the same day that we had the scare on gyro 5; it was a very exciting shift.) This began an intense effort by the Observatory staff to characterize the problem and determine the cause and its solution. We performed a battery of tests, which soon established that the level of background light was strongly dependent on β angle, being strongest at high β . This light went away when the sun shutter was closed, so it was not something wrong with the FES electronics. We were also in the middle of shadow season when this occurred, so we performed a test where we observed a small portion of the FES field immediately before going into the earth's shadow, during shadow, and immediately after exiting shadow. The light was present when IUE was

in direct sunlight, and went away when it was in shadow. We also performed tests where we slewed the spacecraft around the roll axis. This established that it was always stronger when the spacecraft was rolled in the negative roll direction, and diminished when moved positive in roll.

All of this naturally led to much speculation and theorizing as to the source of this anomalous light. Unfortunately, we have not yet been able to come up with a definitive explanation. One of the prime candidate theories has been that a piece of tape holding down the insulation that blankets the telescope tube and sun shutter may have come up and be reflecting light into the instrument.

Most of the tests were conducted with minimal loss of time to GOs, since they were fitted in to spare engineering time associated with shadow season. It is important to note that it was not necessary to alter any regularly scheduled observations because of the scattered light. One of the reasons for this was that the additional background was very uniform, and so the FES could lock up on and track a star which was not easily visible on the FES image, providing that we could tell the FES where to look. This means that using a very faint guide star at high β required accurate coordinates, or a previous observation using that guide star, so that its position in the FES could be calculated with TOCC s/w. Use of the HST Guide Star Catalog has been helpful in this respect on several occasions.

We have continued to monitor the changes in the level of the background light. We maintain a program of checking the FES counts on two stars which are near the ecliptic pole (and therefore have a relatively constant β angle of $\approx 90^\circ$. (We also measure the background level at four standard locations in the FES.) In addition, we have looked at the variation of the guide star counts for SN1987a, which is regularly observed, and is near the south ecliptic pole. After the initial period of high background, the overall level has dropped significantly, down by more than 50%. Though it has ceased to be a serious problem for operations, we are continuing to monitor it. To be on the safe side, observers with very faint targets may wish to take the β angle into consideration when planning their shifts.

We, of course, immediately examined the possible effects that could be seen in the spectrograph itself. Both a forty minute and a two hour LWP low dispersion spectrum of background sky at a high β failed to produce any noticeable effect. An \approx eight hour low dispersion LWP image showed a faint continuum. This continuum was present from the long wavelength end of the camera down to about 2600 Å, where it faded out. The spectrum filled the aperture, and was quite uniform perpendicular to the dispersion, at a given wavelength. This spectrum was, aside from a slight overall slope, generally solar in character. This was consistent with the \approx shift-long SWP low dispersion spectrum which was also taken, and which did not reveal any sign of a spectrum.

Replacement of the EDS

The front end of IUE's ground system, the Experiment Display System (EDS) is in a state of decrepitude, and has prompted us to develop a modern replacement. We have presented our proposed solution, which replaces the PDP11/35s with modern workstations, to Project personnel, our VILSPA colleagues, and the IUE Users' Committee, all of whom have given it an enthusiastic endorsement. We are currently working on the very knotty

problems of procurement, and phasing in of the new system while maintaining operations. We also anticipate extensive room modifications to the TOCC and the IUE area in general. Some of the details of the new system are presented in the report by Ron Pitts, elsewhere in this volume.

RIASS Program Successfully Completed

The ROSAT-IUE All Sky Survey Coordinated Program ended in January. One of the more thrilling successes of this effort was the monitoring of a dwarf nova by both satellites shortly after it was reported to have gone into outburst. We prepared for this by setting up a closely coordinated set of plans between the VILSPA and GSFC centers. We were able to get on the target very soon after the outburst was detected, and stayed on it for the next 24 hours. Admittedly, the success was due partly to its cooperation in going off at just the right time, but the careful preparation allowed us to take advantage of the opportunity.

Peer Review Report

The peer review for the fourteenth episode went quite smoothly this past year, finishing in only two days, rather than the customary three. It was the recommendation of this year's panel chairs that future reviews be planned for only two days. A second recommendation was that when the chairs meet to amalgamate the results of the various panels, that the names of the proposers will not be known to them.

New Script Format

The Observatory has improved the format of the observing scripts. If you make use of the Service or Remote observing modes, please take note, and discard old versions of scripts that you still have. If you need copies of the new script forms, please let us know, and we will provide them. The remote script generation software on the Observatory's MicroVAX has been updated so that it generates the new style of script. If you presently use old script files to generate new ones, then you will have to update those files.

Photowrites become Optional

Beginning with the new episode (*i.e.* June 1), the Observatory will no longer automatically generate photowrites for Guest Observers. If you still want this data product, then you need to fill out the appropriate form to request them, for each of your observing runs. A copy of this form was placed in every fourteenth episode GO packet, and is also available from the Resident Astronomers.

Terry's Phone Number

In a recent *Newsletter* article there was a typographical error in the listing for Terry Teays's phone number at Goddard. The correct number is: 301-286-5749.