

## IUE SPACECRAFT STATUS

The health of the spacecraft continues to be good:

### Power Subsystem

The solar array power output decreased by an average of about 9 watts during the past year. The effect of this on operations was offset when the two Panoramic Attitude Sensors (PAS) were turned off in April. The PAS is used for coarse attitude determination, but due to other techniques that have been developed over the years, has not been needed since very early in the mission. If the PASs are required in the future, they can be turned on and utilized with little effort.

IUE's 16th shadow season ran from February 20 to March 17. The maximum depths of discharge for the eclipse were 51.5% and 51.2% for batteries 1 and 2. Recent data indicates that the batteries are experiencing minimal aging, and no problems are foreseen. As the solar array degrades further, the batteries will be called upon more and more during normal operations, so their good health is crucial to the extended life of IUE.

### Attitude Control Systems

The three remaining active gyros are performing nominally. However, the overall temperature of the gyros has slowly increase over the last year as the thermistor in gyro 4's temperature control loop has gradually deteriorated. This temperature change has adversely affected the calibration of gyro data, and thus the accuracy to which the spacecraft can be maneuvered. A rescaling of the gyro output was done in late January, another one in May, and a third one in July. More updates will probably be needed until the gyro temperatures stabilize, which is expected to occur later this year. It is felt that with this failure of the last working temperature control loop, the gyro temperatures will now be influenced much more by Beta and seasonal changes, and the accuracy of maneuvers will probably go down by about a factor of 2. To what extent this is true will only be known after gyro 4's controller fails completely and loses all ability to regulate the gyro's temperature.

If another gyro failure occurs, the 2-gyro/FSS system is ready to be put into operation. Simulations with the system are continuing on a regular basis in order to refine operating procedures, and to keep the operations personnel familiar with the system. Confidence is high that science will be able to continue, at least in a limited capacity and efficiency. The initial test plan for bringing the system on-line has been written and training continues in case the 2-gyro/FSS system must be implemented.

### Thermal

The primary thermal constraint on science operations is the temperature of the On Board Computer. The constraint regions were recently redefined so that instead of a blanket constraint for the entire year, the restricted betas are now dependent on the time of year. This not only permits more of the sky to be available for

observations in real time, but also facilitates a more realistic approach to scheduling programs. The following chart shows the new constraints by month.

Prohibited Beta ranges when the OBC temperature is >55.8°C					
JAN	FEB	MARCH	APRIL	MAY	JUNE
55-100	55-95	60-95	65-90	-	-
JULY	AUG	SEPT	OCT	NOV	DEC
-	-	70-85	65-90	65-90	60-95

### On Board Computer

The OBC has performed well the last six months. There were a few recurrences of previously seen minor problems, and each was recognized and corrected by OCC personnel with little impact to science.

### Command & Data Handling System

Fluctuations in the power output of S-band antenna #4 have been occurring since September 1984. This has caused a general reduction in the usable coverage of the antenna. With the viable coverage of PA 4 shrinking, the impact to science often means delaying reads until the signal improves, or maneuvering to an attitude that gives better antenna angles. Similar behavior was seen on two occasions on other antennas, but it is not certain that those were actually caused by the spacecraft, or if they were ground system problems.

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