

REDEFINITION OF "HOT OBC" BETA ANGLES

by

George Sonneborn

It has been recognized for several years that the On Board Computer (OBC), and in fact the entire IUE spacecraft, runs cooler during the summer months (near Earth's aphelion) and hotter in the winter (perihelion). Analysis of spacecraft data from 1978 to 1984 shows that the range of Beta angles ("Hot OBC Betas") within which the OBC will exceed its maximum operating temperature (55.8°C) at different times of the year has been stable throughout the IUE mission. In fact, for most of the year the actual "Hot OBC Beta" region is narrower than the 55°-95° Beta angle limits where observing activities have been limited by a hot OBC.

IUE Project policy concerning OBC-temperature related restrictions on science operations was discussed at the IUE Three-Agency Coordination Meeting in April 1985. It was proposed and approved that the Beta angle region with OBC temperature constraints be allowed to vary during the year. This policy change was initiated to increase scheduling and real-time observing flexibility and does not reflect any change in spacecraft status or performance. The revised "Hot OBC" Beta angle region changes monthly and conforms to the Beta angle limits, as determined from spacecraft data, where the OBC will reach its maximum allowed temperature. The following table lists the upper and lower Beta angle limits within which science operations can be constrained by a hot OBC. Operationally the rules have not changed: if the OBC temperature reaches 55.8°C and the telescope is at a Beta angle within the limits for the month in question, the spacecraft must be slewed to a cooler Beta. The revised policy took effect on 29 April 1985.

Monthly Beta Angle Regions with OBC
Temperature Constraints

<u>Month</u>	<u>Lower Beta Limit</u>	<u>Upper Beta Limit</u>
January	55.0°	100.0°
February	55.0°	95.0°
March	60.0°	95.0°
April	65.0°	90.0°
May	--	--
June	--	--
July	--	--
August	--	--
September	70.0°	85.0°
October	65.0°	90.0°
November	60.0°	90.0°
December	60.0°	95.0°

Significantly, there are normally no observing restrictions related to OBC temperature during May, June, July, and August. The Beta angle limits for January have increased by 5°. While the "cool Beta" regions have increased, there is now increased likelihood that the OBC will not be cool at the start of a given shift since more observations may be made at Betas where the OBC will heat up, but not reach 55.8°C.