

# Analysis of Photometric Standards following July, 1992 FOS Overlight Safing Event

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## ABSTRACT

A comparison of flux-calibrated observations of photometric standards G191-B2B (obtained in September, 1992) and BD+28D4211 (obtained in June, 1992) has been performed in order to evaluate possible effects of the July, 1992 overlight safing event on FOS sensitivity. The ratio of G570H September /June count rate ratio to G650L September/June count rate ratio shows that within formal errors there was no absolute or wavelength-dependent degradation in instrumental sensitivity.

## 1.INTRODUCTION

On July 8, 1992, the FOS overlight limit of  $120 \times 10^6$  counts summed over all diodes per minute was exceeded by observations in proposal 1080. FOS/RED G650L spatial scans of a stellar occultation by Jovian ring material crossed the disk of the planet. Overlight events of magnitude  $140 \times 10^6$  counts/min and  $400 \times 10^6$  counts/min occurred on successive exposures and the FOS safed according to normal procedures.

## 2.DISCUSSION

The cumulative effect of these overlight events was to expose the G650L y-base portions of the photocathode to nearly one billion counts in a period of nine minutes - normally, about one billion counts are accumulated on the **entire** photocathode in one year of typical operation (Fitch, private communication, 1992). Despite anecdotal evidence that essentially identical pre-flight photocathodes had been exposed to an order of magnitude greater overlight with no serious degradation (Hartig, private communication, 1992) it is clearly imperative to assess quantitatively the magnitude of any possible IVS changes wrought by the overlight safing event. We shall compare the absolute photometry monitor observations (proposal 4059) made closest in time before and after the safing.

Spectrophotometric standard BD+28D4211 was observed as part of routine FOS absolute photometry monitoring, proposal 4059, in June, 1992. An identical sequence of observations of spectrophotometric standard G191-B2B was obtained in September, 1992. At each epoch, observations were made with all useful FOS spectral elements including G570H and G650L, which have substantial spectral overlap (4800-6700Å), but which illuminate substantially different y-bases on the photocathode.

First ratio of G570H September to June count rates and G650L September to June count rates were calculated. Then each ratio was resampled to the wavelength range of 4800-6700Å.

Ideally, any difference in the overlap-region count rate ratios between the two epochs should reveal any G650L IVS change. Lastly the overall ratio of these count rate ratios was obtained (Figure 1).

### 3.CONCLUSION

The mean of the overall ratio is 1.006 with a formal standard deviation of 0.037. We find that within these formal errors there is no indication of any absolute or wavelength-dependent degradation in instrumental sensitivity caused by the July, 1992 overlight event.

Figure 1: [G570H(Sept/June)]:[G650L(Sept/June)] Count Rate Ratio



