

## IMPROVED PHOTOWRITES

We have made a change that will increase the density on reduced Photowrite images and thus improve the visibility of faint spectral features. This enhancement was prompted by feedback from some GO's who asserted that weak spectra visible on the quick-look Photowrite (SOC) images were invisible on the reduced Photowrites. Investigation showed that the function representing density versus intensity, called the transfer function, was the problem. The transfer function on our Photowrite machine has always been hardware adjusted to enhance faint spectral features on the SOC images. A schematic representation of this function is shown in Figure 1. This function does highlight the faint spectral features on SOC images, as it was intended. The reduced Photowrite films delivered to GO's however, are contact prints from film originals which have the complement of the transfer function shown in Figure 1. The reason for contact printing is that more than one copy of the Photowrite is needed (one print for the GO, one print for the Bldg. 21 Browse facility, and the original negative for the National Space Science Data Center). The result of contact printing is that faint spectral features are suppressed rather than enhanced on the prints. Figure 2 shows a schematic representation of the complement to Figure 1, used to make the reduced Photowrite film original, and Figure 3 shows the transfer function of the resulting reduced Photowrite contact print.

We were able to make a software modification on the Photowrite computer to correct for this problem. The software fix replaces a default (linear) set of numbers which controls diode operation with a custom set of numbers called a transfer characteristic or TC. This TC resides in the computer's memory and is invoked by a command as the Photowrite films are generated. After some experimentation and discussions we designed a TC with the property that it yields a contact print with the same transfer function as a SOC Photowrite image. Thus a Photowrite contact print raw image now looks just like a SOC image scaled down in size. The new transfer functions for reduced Photowrite film originals and contact prints are shown in Figures 4 and 5, respectively. The new transfer characteristic was put into production on January 14, 1981. The new Photowrites should be better able to aid the GO's and Browse file users in interpreting their IUE data.

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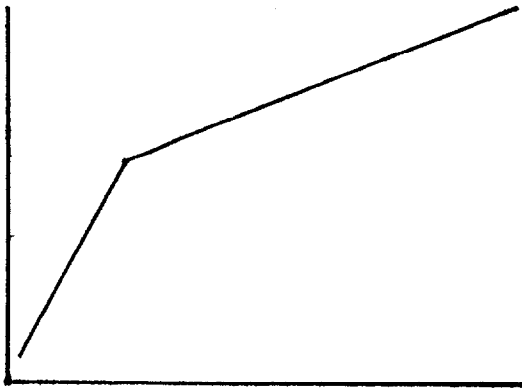


Figure 1 -- Transfer function for SOC images. Note that faint features are enhanced.

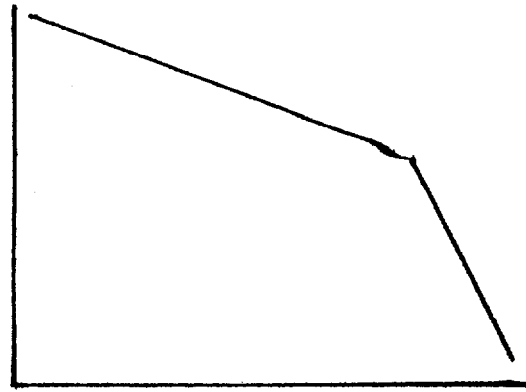


Figure 2 -- Transfer function for reduced Photowrite film original.

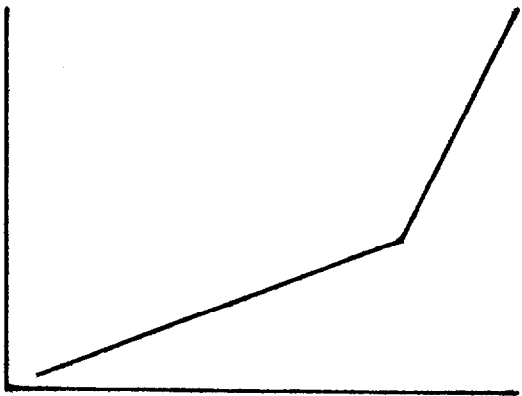


Figure 3 -- Transfer function for reduced Photowrite contact print. Note that faint features are suppressed rather than enhanced.

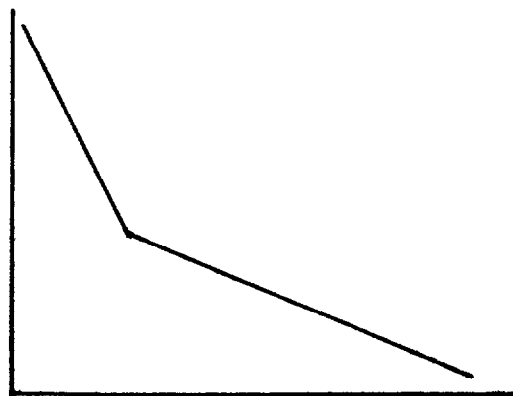


Figure 4 -- New transfer function for reduced Photowrite film original.

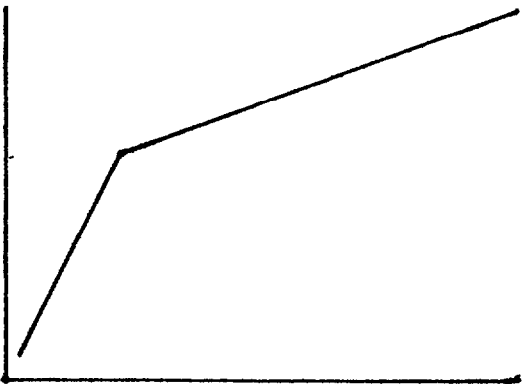


Figure 5 -- New transfer function for Photowrite contact print. Compare to Figure 1.

density ↑

Axes are the same in all graphs.

intensity →