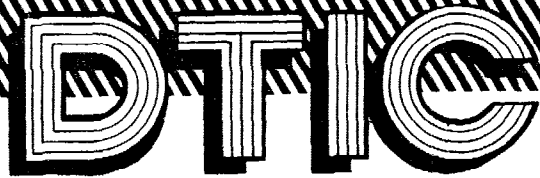


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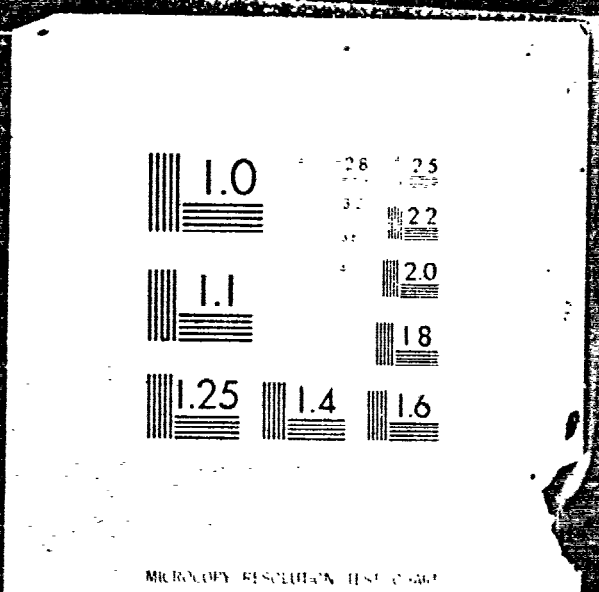
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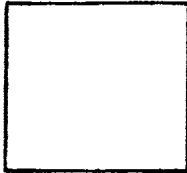
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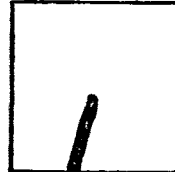
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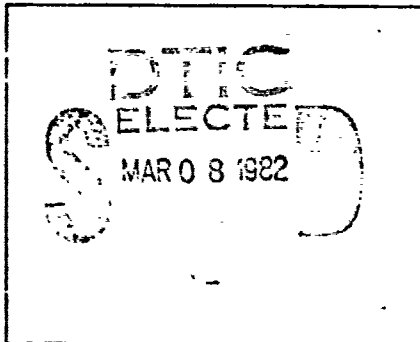
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THE CHORD EXPERIMENT

W. B. Fussell

Radiometry I Branch
Optics Division

Repld 27

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SIGMA CATEGORY III

OPERATION CASTLE

Project 18.6

THE CHORD EXPERIMENT

W. B. Fussell

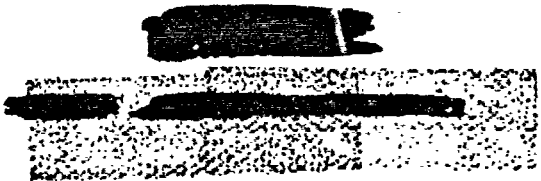
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ABSTRACT

The variation in the transmission of the atmosphere over an optical path passing 2900 ft from ground zero of Nectar (Mike crater) was measured as a function of time by a modified high-speed spectrograph located at Engebi in Station 1841. The spectral resolution was about 75A at 4000A and the time resolution was about 800 μ sec. The spectrograph looked with a narrow field of view at two 60-in. carbon-arc searchlights on Ruchi. The spectrograph and searchlights were timed so as to start running before zero time. In this way a reference base was obtained from which variations in the atmospheric transmission over the 3500-4500A region could be measured.

Sensitometry of the photographic data obtained reveals that, except for some Teller emission either scattered or induced in the atmosphere between the source and the spectrograph, transmission of the atmosphere in the above wavelength region started to decrease immediately after zero time, but that stable values were not reached until after about 50 msec had elapsed. These values thereafter remained essentially constant until the fireball intersected the field of view of the spectrograph at about 435 msec past zero time. The transmission declined by approximately 1.2 density units (D.U.) at 4300A. At shorter wavelengths the