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QUANTITATIVE DETERMINATION OF STRATOSPHERIC AEROSOL CHARACTERISTICS

MONTHLY REPORT, SEPTEMBER 1975

CONTRACT NUMBER NAS9-13303

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The scheme we developed for analyzing the S191 and S192 data is operating. Results are obtained at will. However, we have severely forced the results to approach a given model by the assumptions and degrees of freedom we were obligated to accept. This was an accumulative process caused by successive discoveries about the data. In order to proceed at all, we accepted these compromises. We would much prefer to reduce as much as possible these constraining assumptions and thereby increase the scientific value of the measurements and of the reported results. Clearly we will not be able to do so for most of the data, else we would not have imposed the assumptions originally. However, albeit we are near the contract end, we feel it important to attempt to maximize the value of the experiment, even with application to only a portion of the data.

Our results reveal the 10-15 Hz noise once reported by NASA as the "herringbone noise". We understand that an attempt by NASA personnel to reduce the noise was ineffective. The stratosphere may be a more simple scene than the general case; in any case, for this investigation the noise is being eliminated by subtracting a model of the scene from the data and Fourier filtering the result which is then added back to the model. This analysis is now suppressing the 10-15 Hz herringbone noise, the 17 Hz low frequency noise, the reported high frequency noise, and the gaussian noise.

The corrected S191 data was not obtained in time so we will use the data we now have. The software system to read the S191 tapes and manipulate the data into the appropriate limb geometry is complete. We appreciate the help of Bob Curran of Goddard Space Flight Center in offering his routine to read and unravel the tapes.

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