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(E73-10801) [DEVELOPMENT OF MATHEMATICAL  
MODELS FOR PROCESSING ALTIMETER DATA]

N73-27276

Monthly Progress Report, 1-31 May 1973

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Subject: Contract NAS9-13304 Monthly Progress Report for the Period  
of 1 May - 31 May, 1973.

#### General

As a result of the meeting on 2 May between altimeter investigators and NASA-JSC personnel, this investigation's efforts have been devoted to the development of mathematical models for the processing of altimeter data. In addition numerous telephonic conferences have been conducted this period with JSC personnel for the purposes of ground truth coordination and mission planning. At this time no altimeter data has been obtained over this investigation's test sites.

#### Problem Areas

For the purposes of this investigation, the elimination of all ascending tracks from the class of candidate EREP passes is highly unfortunate but not disastrous. Since this situation is a result of spacecraft problems, our original planning will be modified to consider only descending ground tracks for SL-1.

In light of the reduced number of EREP passes and the magnified need to keep informed on the status of the EREP passes, we are making much greater use of the EREP telecorder telephone numbers in Houston than originally anticipated. It would seem that other EREP investigators are doing likewise. Therefore, we feel that it is appropriate to convert at least some of the EREP telecorder telephones to toll-free numbers. More specifically, we suggest that the EREP Summary (483-2959) and EREP Postpass (488-2603) telephone numbers be converted to toll-free numbers.

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### Investigation Results

Efforts this month have been directed toward revising and expanding data processing charts for Modes I, II and V. In addition we have been defining the actual mathematical models which are necessary in reducing the raw altimeter data into useful information. Upon completion of the data processing charts and the models, this information will be passed to NASA-Wallops Station for computer programming implementation. A review of the pre-processing computations to be conducted by NASA-JSC was completed during this period, and our comments were mailed to NASA-WS.

On 4 June, the S-193 radar altimeter was exercised on track 19 (off the coast of Georgia) in Mode I. Based on readings taken by the astronauts and conversion formulas supplied by GE, we estimate the backscattering cross section per unit area ( $\sigma^0$ ) to be about 13.3 dB with a signal-to-noise ratio of 30 dB in the 100 ns/10 MHz bandwidth case. These numbers must be considered to be only estimates; however, they clearly indicate that the altimeter transmitter, receiver and agc subsystems are operating properly in Mode I.

### Next Period Effort

Efforts will continue toward developing the necessary mathematical models for processing of the altimeter data.

### Travel Summary and Plans

No trips were taken this past month and none are anticipated for the next period.

### Financial Management Report

A financial report for this period is included as Appendix A.

for Harry S. Brown, Co Investigator  
Lee S. Miller, Ph.D.,  
Principal Investigator