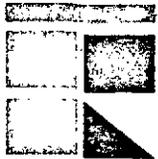


ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.



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ERT Document No.: P-410-2

19 December 1973

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058

Attention: Dr. Timothy T. White, Code TF6
Principal Investigations Management Office

Subject: Second Quarterly Progress Report
Experimental Evaluation of Atmospheric Effects
on Radiometric Measurement Using the EREP of
SKYLAB (EPN No. 439)
Contract No. NAS 9-13343

Gentlemen:

This is the second Quarterly Progress Report prepared and submitted by Environmental Research & Technology, Inc. (ERT) under Contract NAS 9-13343. The reporting period is for the three months between 7 August and 7 November 1973. The purpose of the study is to evaluate the effects of the atmosphere on radiometric measurements using the EREP sensors of SKYLAB.

1. Progress During the Reporting Period

Due to the delay in receipt of hard data, work during the reporting period has been directed toward further problem formulation and preparation for analysis. An extensive literature search for surface spectral reflectance properties in the regions of interest has been conducted, concentrating especially on the availability of natural surface measurements. These studies have led to the development of an algorithm for determining the geological character of the study region surface based on "quick look" S190 imagery, its corresponding field view tabulation, and the "Geological Quadrangle Map of the United States" series. Lateral distribution of surface mineral species yielded in this manner is then correlated with available spectral reflectance data for site selection based on homogeneity criteria, etc.

E74-10139)	EXPERIMENTAL EVALUATION OF	N74-13065)
	ATMOSPHERIC EFFECTS ON RADIOMETRIC	
	MEASUREMENT USING THE EREP OF SKYLAB	
Quarterly (Environmental Research and		Unclas
Technology, Inc.)	2 p HC \$3.00 CSCL 05B	G3/13 00139

NASA
Dr. Timothy T. White, Code TF6

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Preliminary analysis has focused on gaining skill in utilizing the AFCRL atmospheric transmittance program LOWTRAN 2 (Selby and McClatchey, AFCRL, ERT No. 427, 1972) which is a basic study tool. Suggestions for extension of the basic study have been generated during this analysis relating to fundamental assumptions concerning interaction of cloud presence and reflectance phase effects due to solar angle-sensor angular relationships.

Studies have led to a practical format for a suggested atmospheric correction nomograph for a given EREP S192 channel based on a surface type classification and a given atmospheric model. Theoretical analysis using empirical surface types have suggested the practicality of this approach.

Finally, an elaborate data classification format for handling incoming EREP data has been conceived to speed actual analysis.

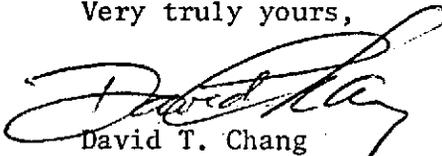
2. Future Plans

Computations to generate theoretical S192 radiances based on surface type and atmospheric model will be carried out for correlation with SKYLAB measurements. Data analysis will focus on assessment of S191 data for atmospheric profile input to the transmittance programs and use of received S190 and S192 "quick look" imagery for exact test site selection. Final analysis of S192 data usability based on a study of the noise problem vs. solar elevation angle at selected test sites will be completed and the required S192 digital product will be ordered. Final analyses can then commence.

3. Financial Report

In accordance with Appendix A of the Work Statement of the subject contract, the Financial Management Report is being submitted as a separate document.

Very truly yours,



David T. Chang
Project Scientist

DTC/1s