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CR-136883

TITLE: Remote Sensing Geophysics from Skylab

INVESTIGATION NO.: 487

PERIOD COVERED: January 1974

P. I. Management Office: NASA Johnson Space Center  
Houston, Texas 77058

TECHNICAL MONITOR: Timothy White

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FROM SKYLAB  
(Geological Survey)  
REMOTE SENSING GEOPHYSICS  
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## Status during January

1. The computer thermal model for analysis of rock discrimination and geothermal heat source detection has been used to compute models for varying thermal inertia, albedo, emissivity, latitude, solar declination, topographic slope (dip and azimuth), cloud cover, and geothermal heating. The least optimum times for the acquisition of thermal data for rock type discrimination are about 0900 and 1700 hours in the diurnal cycle. Acquisition times removed from these are satisfactory with 0600 and 1800 being optimal.

2. The model study of microwave radiometric emission from a homogeneous, nonuniform layer over a halfspace is now complete. The computer program written for the homogeneous layer model will be used in the study of emission from a scattering layer over a halfspace. The program calculating the  $2n$  positive roots of the characteristic equation in the scattering model for the  $n^{\text{th}}$  approximation is operating successfully through  $n=8$ . The nesting of the roots and the algorithms used by either of two available subroutines in the SSP combine to form unstable solutions for polynomials greater than degree 16. Degree 30 was considered but that refinement may not be worth the effort.

3. A reflectivity curve from  $.55-2.5\mu\text{m}$  for some of the Old Dad Cinders in the southern Calif. site was received from Alex Goetz of the JPL which closely matches the reflectivity extracted from aircraft scanner data and matches that inferred from visual observation of S192 bands of the western Nevada site anomalies. Goetz has agreed to run several other spectra of both anomalous and nonanomalous rocks

from the Calif. test site.

**Requirements.**

No S192 thermal data has been received for analysis.