# Preparation of a Geologic Photo Map and Hydrologic Study of the Yemen Arab Republic

G-21990, I.D. #199

D. F. Davidson

U. S. Geological Survey

Quarterly Report

December, 1975

# Introduction

# Preparation of a Geologic Photo Map and Hydrologic Study of the Yemen Arab Republic

## Objectives

The principal purpose of the investigation is to prepare an improved geologic photo map of the Yemen Arab Republic at a scale of 1:1 million, or 1:500,000 whichever is feasible within the constraints of time, funds, and imagery quality. The work will be performed largely by visual inspection of enlarged copy of the various spectral bands using suitable viewing equipment and interpreting geologic features observed. In country field trips will be made to establish the validity and photo appearances of the rock units, and to verify the interpretation of those units and their structural relations. The trips will also serve as a test of the validity of hydrogeological interpretation, and should be helpful in identifying areas for further detailed work.

All of these objectives are being or have been achieved but the last. In part the failure has resulted from the fact that the seasonal imagery coverage requested has not been available.

## Techniques

The techniques used to this time have largely been interpretation of black and white prints and transparencies on a light table, and compilation of a geologic map based on such interpretation. Field checks have largely been aimed at resolving stratigraphic and structural problems which can not be straightened out by image inspection.

## Accomplishments

The principal accomplishment to date is the virtual completion of 7 1:500,000 geologic and structural interpretations of LANDSAT images which will soon be provided to theGovernment of Yemen for their use. The interpretations are accompanied by copies of the imagery itself. Many but not all of the problem areas shown on the interpretations have been field checked.

It is anticipated that following further field checking the geologic and tectonic interpretations will be recompiled at 1:1,000,000 and published in the format of a colored geologic map.

## Data Quality and Delivery

After a very slow start data delivery has been excellent, and data quality good to excellent. We have no complaints on either score, other than loss of originally requested seasonal data.

## Conclusions

Use of LANDSAT data is permitting us to prepare in a very short time and at low cost a usable geologic map of an area which is largely inaccessible. The fact that we have been as successful as we have has encouraged us to use the same approach in other areas of the world.