



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
3550 N. Central Ave, 2nd floor  
Phoenix, AZ, 85012  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the Walter E. Heinrichs, Jr. Mining Collection

#### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

#### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

#### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

**AERIAL MAGNETIC SURVEY  
EASTERN COYOTE MOUNTAINS  
PIMA COUNTY, ARIZONA**

**For**

**Homestake Mining Company**

**October 1967**

**By**

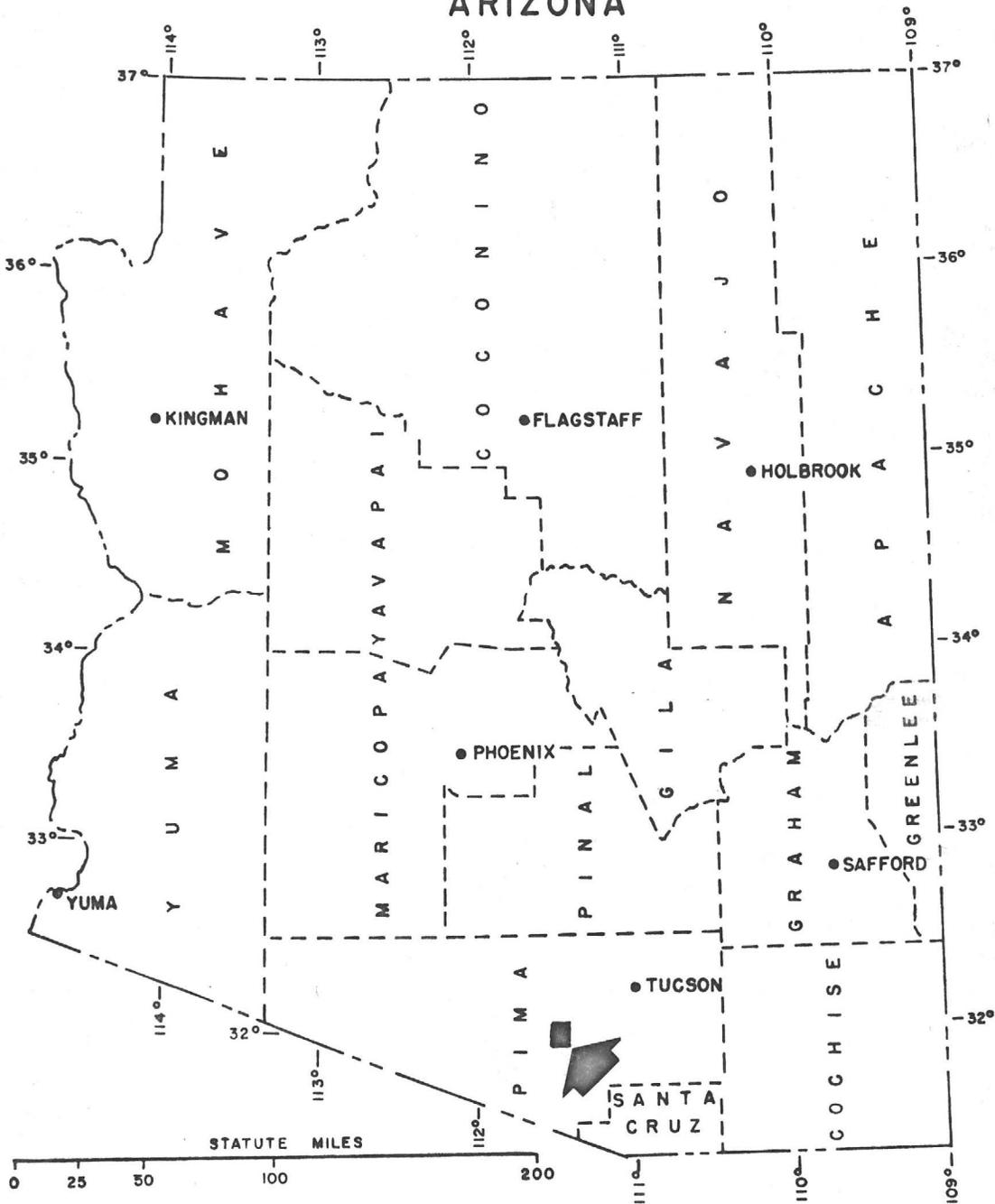
**Heinrichs Geoexploration Company  
P. O. Box 5671 Tucson, Arizona 85703  
Phone: 623-0578 Area Code: 602**

## TABLE OF CONTENTS

	PAGE
INDEX MAP	
INTRODUCTION	1
CONCLUSIONS AND RECOMMENDATIONS	1
PROCEDURE	2
IN MAP POCKET: (Total - 2 pieces)	
Aerial Magnetic Survey of Coyote Mountain Area, Pima County, Arizona	
Topography of Coyote Mountain Area, Pima County, Arizona	

GENERAL LOCATION OF  
COYOTE MOUNTAIN AERIAL MAGNETIC SURVEY

ARIZONA



## INTRODUCTION

At the request of Mr. Ted Rizzi of Homestake Mining Company on September 9, 1967, Heinrichs Geoexploration Company completed an aerial magnetic survey in the eastern portion of the Coyote Mountains, Pima County, Arizona during the month of October 1967.

## CONCLUSIONS AND RECOMMENDATIONS

A magnetic high and its associated lows designated Area A on the map and centered in Section 19 and 20, T16S, R9E, and several lineations designated by shadow lines, are apparent on the magnetic contour plan map.

The magnetic high in Area A is incompletely covered and therefore not fully defined as it is on the eastern edge of the map, but it appears to suggest a theoretical depth of 500 feet  $\pm$  100%. Of equal interest are the associated lows. The northern low is elongated in a northwesterly direction and very possibly may be related to the fault on the northern edge of the Coyote Mountains. The southern magnetic low coincides with what appears to be the intersection of two lineations. With all these possibilities in mind Area A is definitely worth further investigation. The magnetic high should be completely defined and in doing this, overall best results probably would be obtained by using ground magnetics rather than aerial. If sufficient encouragement is indicated from these data, a geologic evaluation and induced polarization work should follow.

Lineations I, II, III, and IV conform to trends that show up on the topography, but Lineation V is not obvious on the topographic maps or aerial photos. It is possibly a parallel structure to the fault that separates the Coyote Mountains from the Quinlan Mountains.

The rest of the magnetic highs and lows on the magnetic contour map appear to be topography related, and should be compared with a detailed geologic map before attaching any other significance to them.

#### PROCEDURE

A model 3947-A Varian proton precession total intensity magnetometer with a  $\pm$  one gamma sensitivity, and a 10 inch rectilinear chart recorder was mounted in a Twin Beechcraft C-45. A speed of 120 miles per hour and a controlled altitude of 500 feet was maintained as near as possible concomitant with safety practices. A precise chart recording radar altimeter with a sensitivity of  $\pm$  1% at 500 feet was used for this purpose.

The chart paper is read from right to left with gamma values increasing toward the 10 on the vertical scale which is 1,000 gammas full scale.

Fifty thousand gammas were subtracted from all values as magnetic interpretation is based on an arbitrary datum level. A regional gradient of 8.3 gammas per mile north and 3.4 gammas per mile east was removed from all magnetic data before plotting.

A total of 179 line miles were flown and the resulting data are presented as a magnetic contour plan map at a scale of 1:2,400 and with a contour interval of 20 gammas. The navigation is good and the flight line recovery very good. In the south central portion of the magnetic contour map a broad zone showing a herringbone pattern is directly related to altitude differences caused by flying over the mountains and being unable to maintain a constant clearance because of related unsafe flying conditions presented. There is nothing practically rigorous that can be done

about this, however it is reasonably acceptable as long as it is recognized and not allowed to unduly influence decisions of lineation placement.

As to more detailed interpretation considerations, it is absolutely essential that these always be checked by ground surveys anyway. This is especially true regarding accurate placement, shape and resultant conclusions, particularly regarding features less than about 2,000 feet deep.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

*Donald B Cooley*

Donald B. Cooley  
Aerial Project Geologist

APPROVED:



October 20, 1967  
Tucson, Arizona

R. 8 E.

R. 9 E.

T. 16 S.

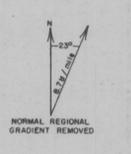
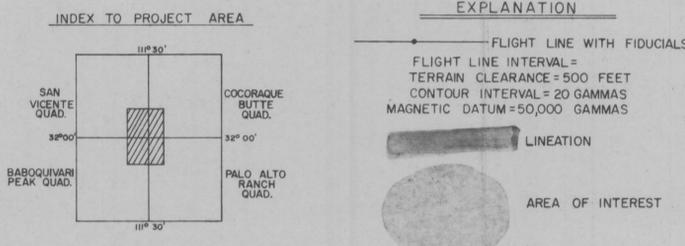
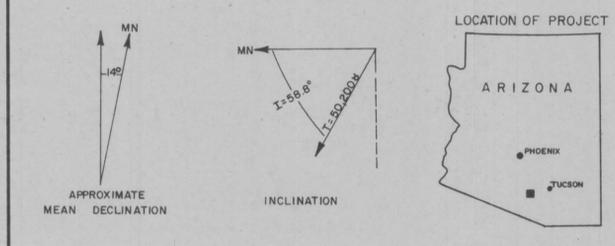
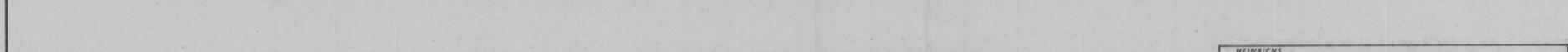
T. 16 S.

T. 17 S.

T. 17 S.

R. 8 E.

R. 9 E.



**HEINRICH'S GEOEXPLORATION COMPANY**  
 POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703  
 Phone: 602/623-0578 Cable: GEOEX, Tucson  
 geophysical engineers vancouver sydney

**AERIAL MAGNETIC SURVEY OF COYOTE MOUNTAIN AREA, PIMA COUNTY, ARIZONA**

PROTON PRECESSION TOTAL MAGNETIC INTENSITY SURVEY FOR **HOMESTAKE MINING COMPANY**

SCALE 1:24000 DRAWN BY B.L.G. DATE OCTOBER 1967



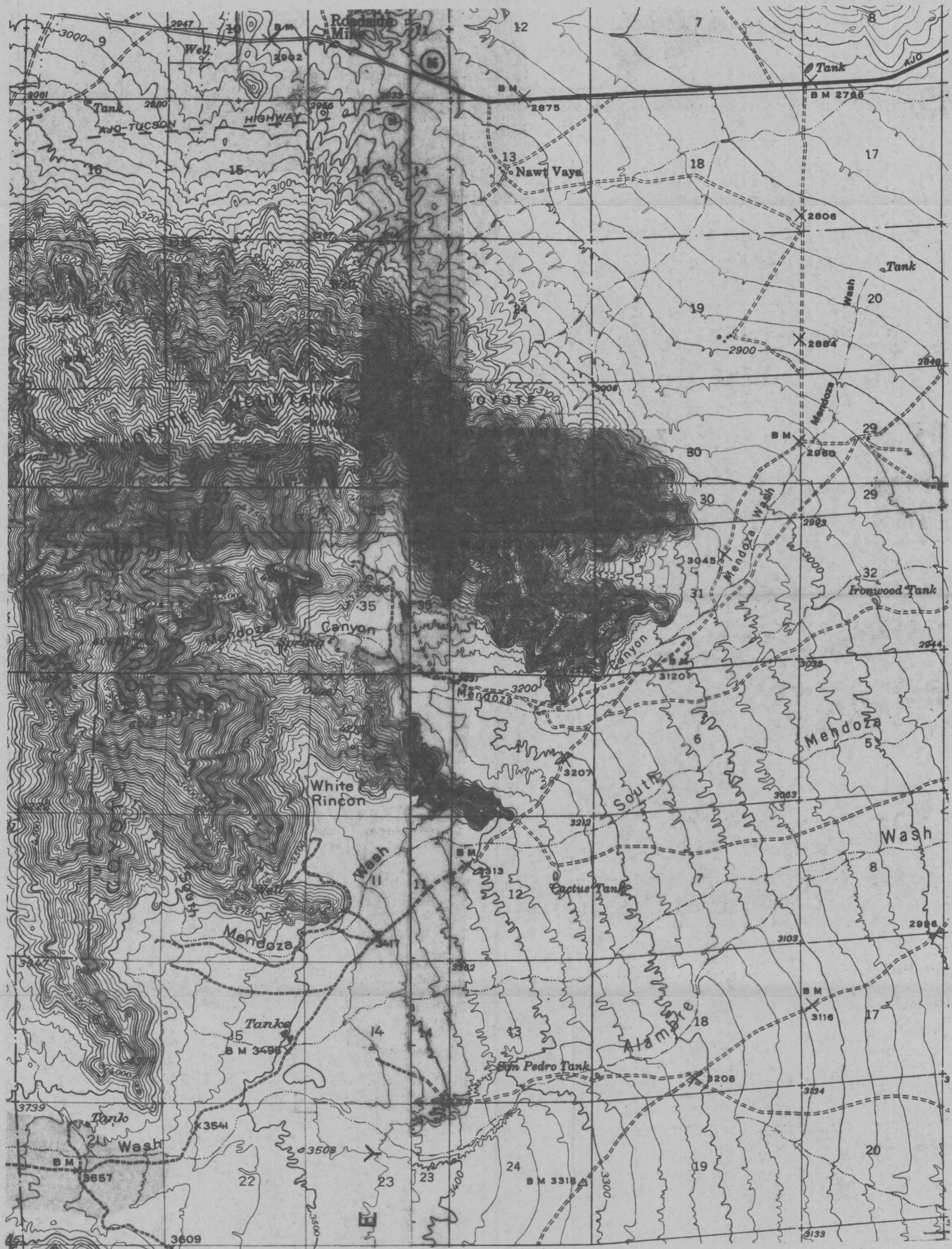
BASE MAP FROM U.S.G.S. QUADRANGLES

T 16 S.

T 16 S.

T 17 S.

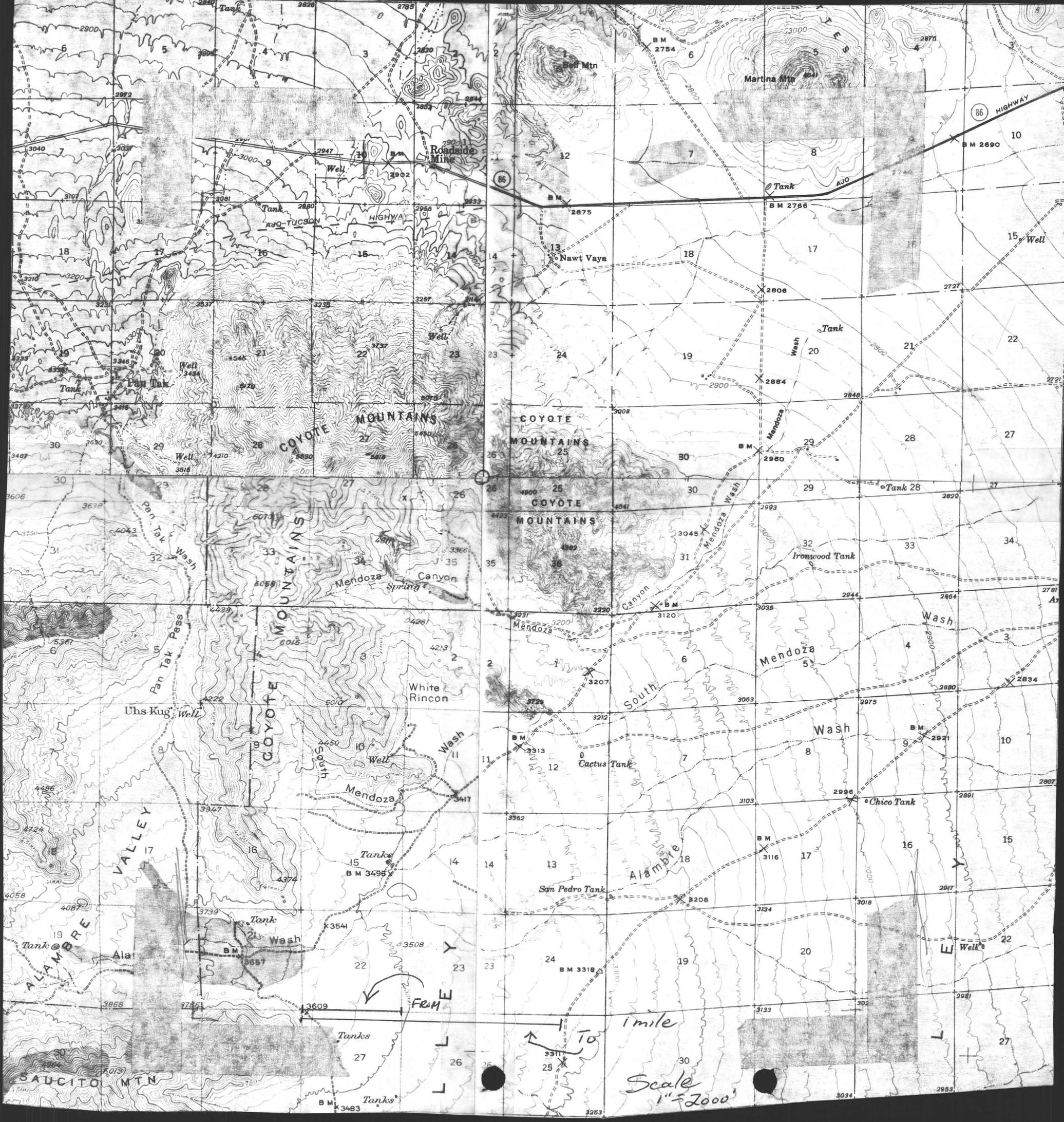
T 17 S.



TOPOGRAPHY OF COYOTE MOUNTAIN AREA  
PIMA COUNTY, ARIZONA

HOMESTAKE MINING COMPANY





RECEIVED SEP 22 1967

**HEINRICHS GEOEXPLORATION COMPANY**

806 WEST GRANT ROAD, TUCSON, ARIZONA, 85703. P.O. BOX 5671. PHONE: (AREA CODE 602) 623-0578

September 20, 1967

Mr. Ted Rizzi  
Homestake Mining Company  
1631 Glenarm Place  
Denver, Colorado 80202

Re: Proposal Airborne Magnetic  
Survey, Coyote Mountains,  
Pima County, Arizona.

Dear Ted:

Confirming our phone conversation of September 13th and 18th, 1967, we propose the following for an Airborne Magnetic Survey located in Pima County, Arizona:

See the attached map for location.

Geoex equipment will consist of a Twin Cessna 411 or Twin Beechcraft C-45 equipped with a Varian one gamma sensitivity proton precession magnetometer and a 35 mm sequential camera for flight path recovery and a Landers and Frary 10" strip chart recorder fiducially keyed to the 35 mm camera and a recording radar altimeter.

Flight crew will consist of a pilot, navigator, and instrument observer.

Terrain clearance will be 500 feet or as safe as practice allows. Lines will be flown approximately north and south and one tie line approximately northeast-southwest as indicated on the enclosed map. Line spacing will approximate 1320 feet with a total number of profile miles estimated at 150 miles. Our pilot informs us that in the rough area, terrain clearance may exceed 1,000 feet.

Our report will consist of:

- a. Magnetic contour map at a scale of 1"=2,000 feet utilizing the existing U.S.G.S. topo sheets as a base, enlarged to scale.

- b. 35 mm strip film of flight lines.
- c. Altimeter records.
- d. Magnetic records

As an interpretation of the results is desired, a charge of \$125.00 per staff day will be charged. Existing published geology will be used for interpretative purposes...this is quoted separately because it can be quite involved due to complex structure, geology, and so forth not previously anticipated. Estimated cost for interpretation is \$500.00.

Reflights will be scheduled at our discretion and expense. Certain flight lines may be longer or shorter than scheduled in order that a good in-flight navigational point will be utilized, (see attached map). This increases data reliability and is in your best interest; therefore, it will be prorated on a mileage basis accordingly, but will not exceed 5% overall in the charges.

Charges will be:

Mobilization.....	\$400.00
\$11.00/profile mile.....	\$1,650.00
(including flight path, recovery, contour map, etc.)	
Photos.....	\$200.00 Est.
Interpretation.....	\$500.00 Est.
TOTAL	<u>\$2,750.00</u>

For navigation purposes, we plan to use Soil Conservation mosaics because you expressed a desire to fly the area within 10 days. We have ordered photos made locally at an estimated cost of \$200.00.

Usually we have a crew and plane available on or about two weeks notice, however, at the moment we can fly immediately on proper authorization.

If you plan to proceed, an advance of \$1,000.00 will be required with \$1,750.00 due upon completion of the flying and receipt of the report.

If desired, an estimate on the cost of interpretation can be made upon completion of the survey.

Geoex will save Homestake Mining Company harmless from all Workmen's Compensation, public liability, and property damage liability incurred by Geoex employees.

Mr. Ted Rizzi  
Homestake Mining Company

Page 3

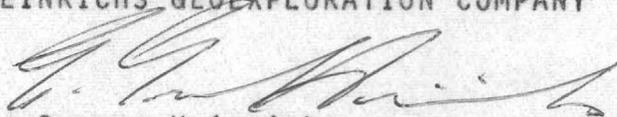
September 20, 1967

If you wish us to proceed, indication of your understanding and approval of the above is made by executing as provided below on the attached copy of this letter and returning it to us will be most appreciated.

If you have any questions, please let us know.

Very truly yours,

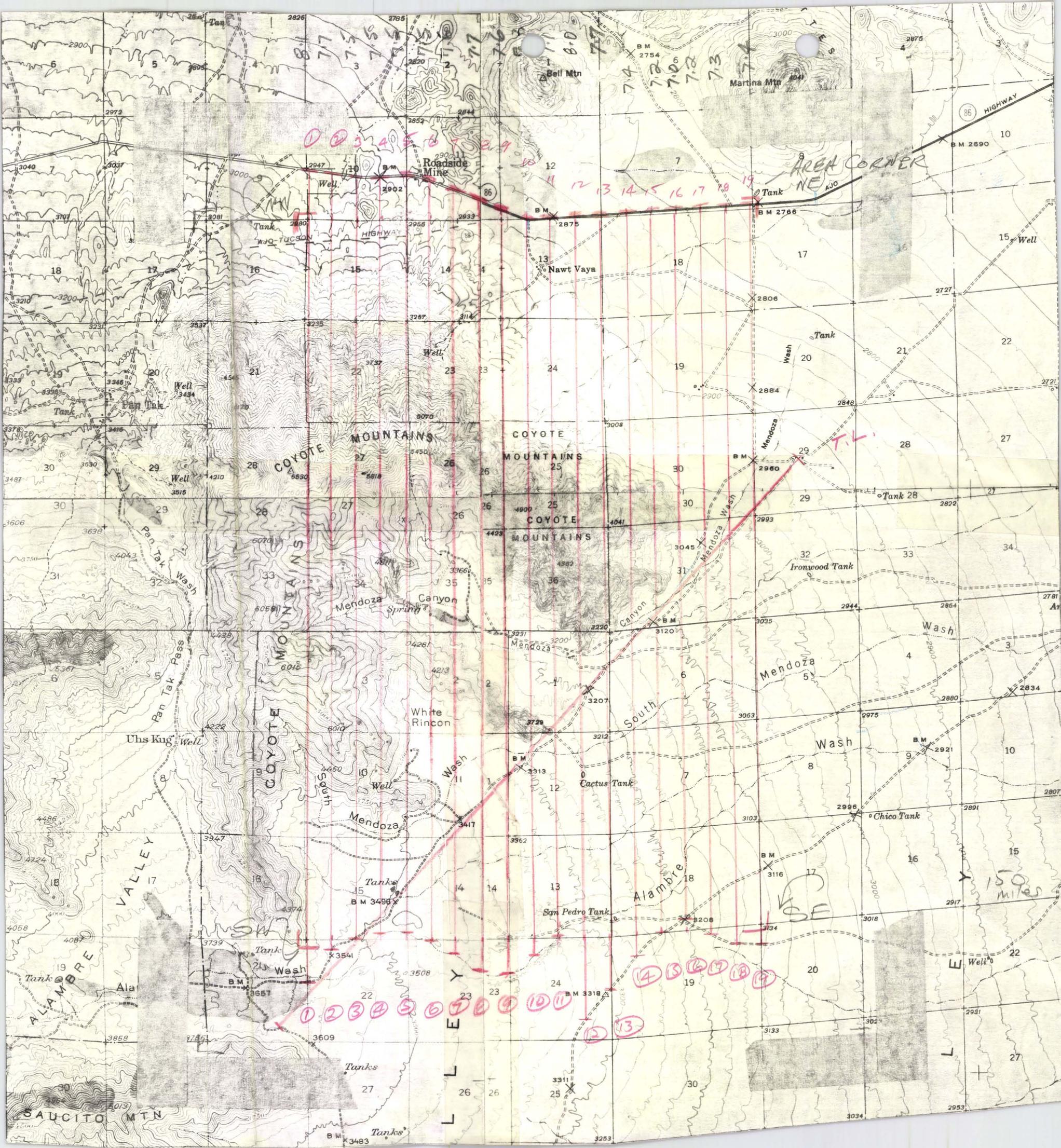
HEINRICHS GEOEXPLORATION COMPANY

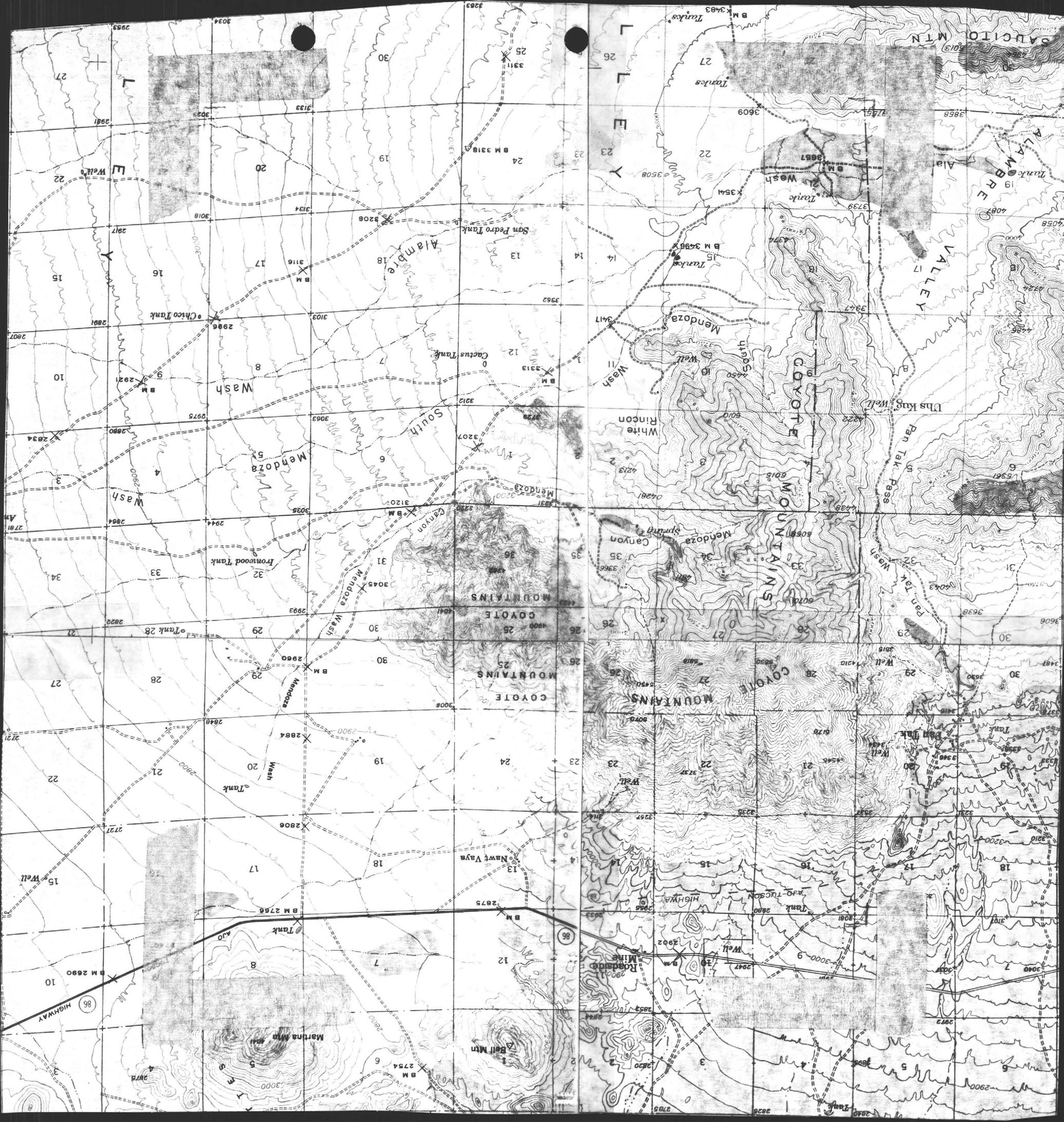
  
E. Grover Heinrichs  
Vice President

EGH:pm  
Enclosure

ACCEPTED BY: *C. Drescher*  
TITLE: *Asst. to V.P. - Exploration*  
DATE: *9-29-67*







Homestake Mag. Co

9/22/67

TED Rizzi -

CONSOLIDATED MINERALS INC

LYLE MURPHY

ARIZONA - REPRESENTATIVE

SPANISH TRAILS - MOTEL - FRIDAY

Holmsten - Rep.

297-4193-

2 N. STAIRS 1200' So. of ROAD.