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GRAVITY SURVEY  
DOS CABEZAS PROJECT (10-25)  
COCHISE COUNTY, ARIZONA  
FOR  
STILL, LOWELL & STILL ASSOCIATES

GRAVITY SURVEY

DOS CABEZAS PROJECT (10-25)

COCHISE COUNTY, ARIZONA

FOR

STILL, LOWELL & STILL ASSOCIATES

PROJECT 0331

mining

geophysical surveys



TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION . . . . .	1
SURVEY PROCEDURE . . . . .	1
INTERPRETATION . . . . .	2

ACCOMPANYING THIS REPORT:

- 1 GRAVITY CONTOUR MAP
- 1 PROFILE PLOT

DISTRIBUTION:

Original & 4 copies: Mr. L. Clark Arnold

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GRAVITY SURVEY  
DOS CABEZAS PROJECT (10-25)  
COCHISE COUNTY, ARIZONA  
FOR  
STILL, LOWELL & STILL ASSOCIATES

INTRODUCTION:

During the period of May 9 through 12, 1973 a reconnaissance gravity survey was performed at the titled project. Three profiles along the west side of the Dos Cabezas Mountains map the position of basin-range faults. The field survey and data reduction was under the supervision of Raymond M. Sadowski, geophysical engineer for Mining Geophysical Surveys.

The recon' gravity survey indicates large gravity contrasts adjacent to outcrop along the east side of the Sulphur Springs Valley. The thickness of basin sediments noted on the plan map is approximate, based on calculations of a semi-infinite horizontal slab model using a density contrast of  $\Delta\rho = 0.3$ .

A buried ridge occurs in the vicinity of the town of Wilcox, but without apparent connection to the outcropping hogback ridge west of the town of Dos Cabezas - as one might wish to extrapolate.

SURVEY PROCEDURE:

A LaCoste & Romberg, Inc. Model G (#259) gravity meter was used for the survey. The gravity data is referenced to the Wilcox, Arizona Base (979096.849  $\pm$  .026 milligals) of the Arizona Base

Station Network. The gravity data was reduced using standard gravity corrections in a modified computer program originally written by R. E. West (University of Arizona, 1970). Terrain and tital corrections were not computed. Terrain correction approximations based on two-dimensional terrain profile models were applied to the data at the east end of Lines 2 and 3.

Elevation values for mountainous portions of the profiles were obtained by barimetric altimeter survey using tight drift control of less than 1 hour duration. The remaining elevation values were obtained from 15 minute topographic maps where the profiles traversed the flat valley floor. Errors in elevation of  $\pm 10'$  result in a gravity variation of  $\pm 0.6$  milligals using a density of  $2.67 \text{ gm/cm}^3$ . The plot of the data in profile suggests elevation control of better than  $\pm 10'$  however, individual stations near the mountains appear erratic and are likely due to elevation errors of  $\pm 15'$  ( $\pm 0.9$  milligals).

The Bouguer gravity is expressed for a density of  $2.67 \text{ gm/cm}^3$  in the computer printout.

#### INTERPRETATION:

The profiles indicate a variation in the shape of the east side of the basin. Line 1 from outcrop to outcrop along Interstate 10 shows a steep sloped boundary to the basin with little room for

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a pediment. The apparent buried ridge at the town of Wilcox could be a bedrock ridge or a reflection of dense material within the basin sediments but relatively near surface.

Line 2 indicates a gently sloping bedrock surface increasing in depth rapidly west of station 30.

Line 3 indicates a steep westerly dipping contact between bedrock and alluvium at about station 16 just west of outcrop. The valley floor appears to be a flat surface west of station 30. There is a possibility that relatively shallow bedrock ( $\approx$  2,000') occurs west of outcrop on line 2 for about 3,000' after which bedrock appears to drop off rapidly into a deep basin.

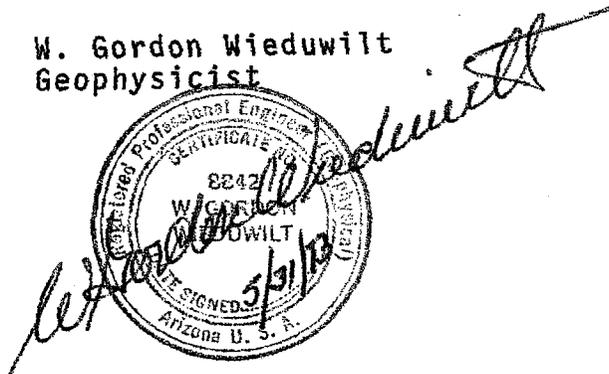
It appears that there is very little room for a large pediment in this area.

Respectfully submitted,

  
Raymond M. Sadowski  
Geophysical Engineer

W. Gordon Wieduwilt  
Geophysicist

May 31, 1973  
Tucson, Arizona


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2400 EAST GRANT ROAD - TUCSON, ARIZONA 85719

TELEPHONE - 602 326-8619

March 1, 1974

Newmont Exploration  
200 W. Desert Sky Road  
Tucson, Arizona 85704

Attn: David MacLean

Dear Dave:

Enclosed are two gravity profiles over the Spike E-Circle I Hills area. The major gravity break occurs west of the Circle I Hills in sections 35, 2, and 11. A minor gravity contrast is suggested in section 6 and strikes SSE'ly from the Circle I Hills towards Spike E Hills. This smaller gravity contrast may reflect the andesite on top of the Precambrian and lying east of the west half of section 6.

Clark has provided us with a sample of the andesite for density measurements. In the meantime, thought you should see the data.

Sincerely,

*WGW (kan)*

W. Gordon Wieduwilt

cc: Clark Arnold

WGW/kan

Enclosures



### LEGEND

- ASARCO DDH
- ⊙ BEAR CREEK DDH *Connect N/A*
- > 0.10 % Cu
- < 0.10 % Cu
- Contours of Induced Polarization

7

8

9

Sec. C

Sec. A

Sec. B

Sec. C

Sec. D

Sec. D

18

17

16

Range-front fault  
(inferred from gravity)

Spike E Hills

4200

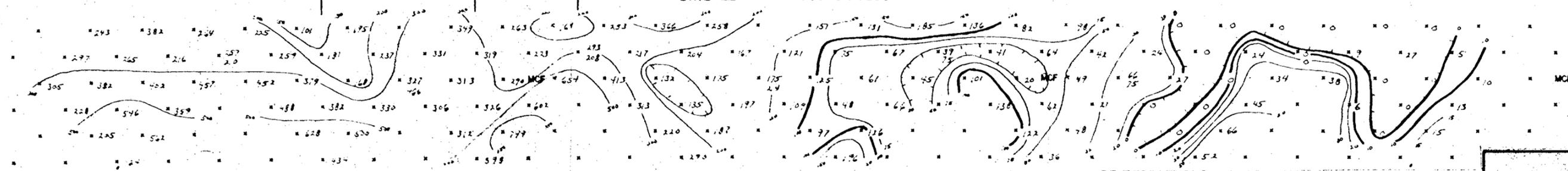
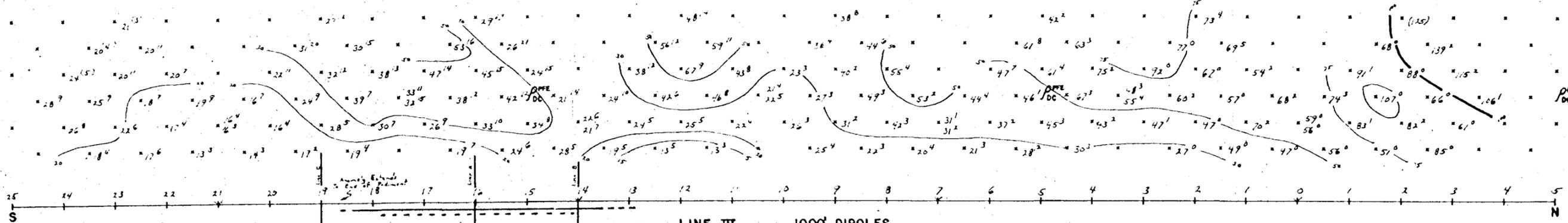
4200

4250

### DRILLING MAP

WILLCOX PROJECT  
COCHISE COUNTY, ARIZ.  
SCALE: 1" = 500' JAN. 1966

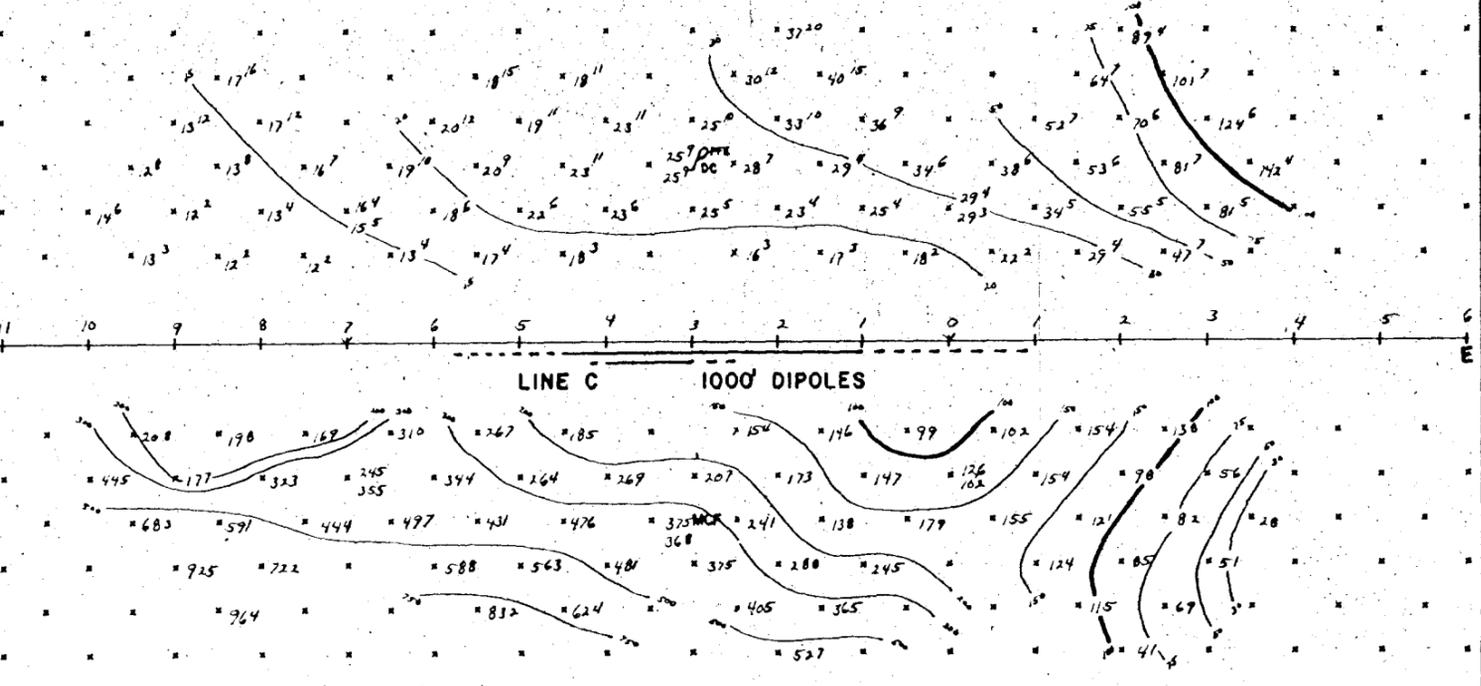
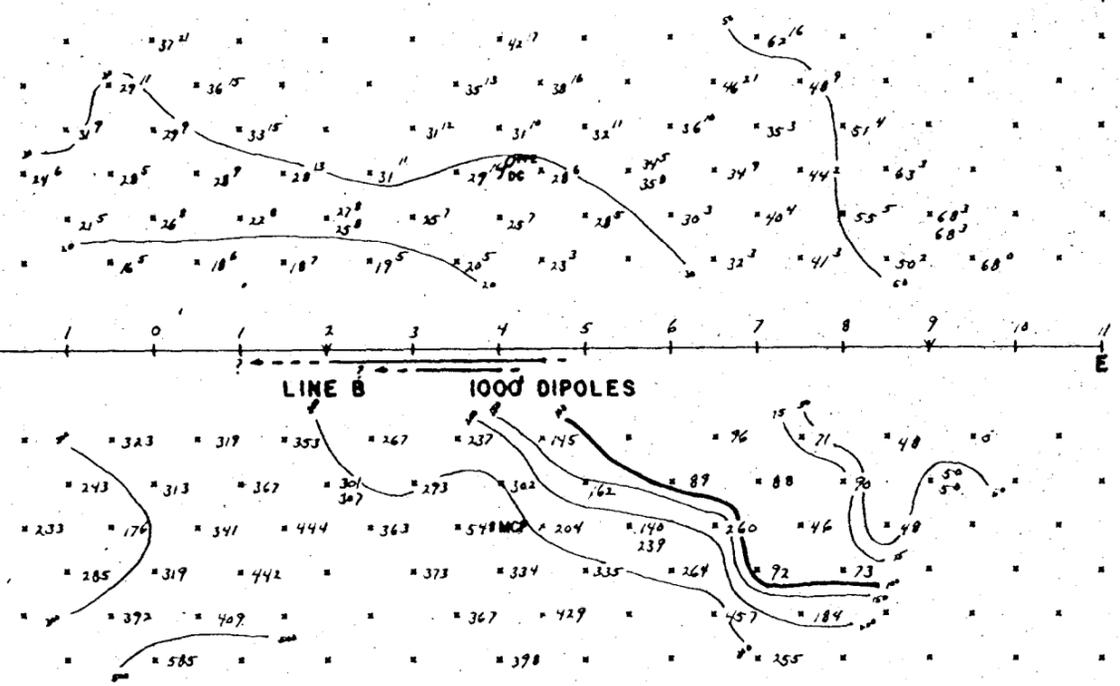
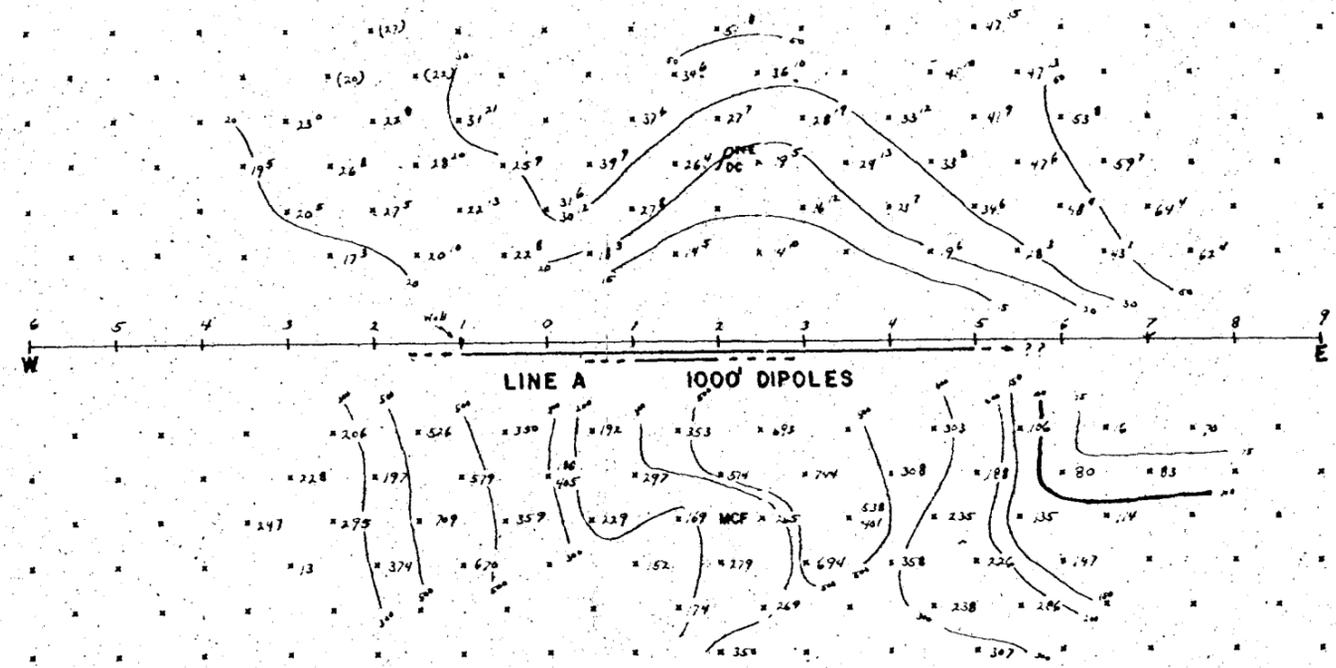




**ANOMALY CLASSIFICATION LEGEND**

- END OF LINE
- NO ANOMALY
- WEAK OR QUESTIONABLE ANOMALY
- MODERATE ANOMALY
- MODERATE TO STRONG ANOMALY
- STRONG ANOMALY
- ANOMALY CONTINUES TO OR BEYOND LAST DATA POINT
- LINE ALONG WHICH DATA WAS TAKEN

GEOPHYSICS DIVISION		BEAR CREEK MINING COMPANY	
<b>INDUCED POLARIZATION PROFILES</b>			
<b>SPIKE E HILLS AREA, ARIZONA (4/0612-525)</b>			
SCALE: AS SHOWN	CONTOUR INTERVAL: LOG	REVISIONS	
500' & 1000' DIPOLES	DATA BY: H.R.E.		
DATE: JULY, 1964	SHEET 2 OF 4		
DRAWN BY: H.R.E., R.I.R.	DRAWING NO.: 537-504	FILE:	



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