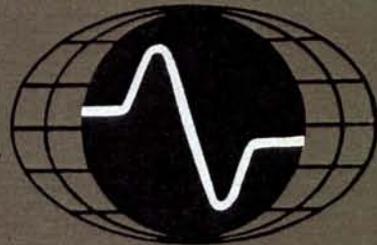


HEINRICH'S

GEOEX



GEOPHYSICAL ENGINEERS
TUCSON, ARIZONA

RECONNAISSANCE TOTAL INTENSITY AIRBORNE MAGNETIC TRAVERSES
OF
SELECTED PORTIONS OF ARIZONA

for
MIAMI COPPER COMPANY

NOVEMBER 1966

by
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Area D (Submitted as a separate report and under separate cover.)	
Inventory: Total job material forwarded to Miami Copper Co. November 21, 1966 includes: Report on Areas A,B & C and Report on Area D with associated final maps, work maps (7.5", 15" and 1:250,000) and final aerial magnetic flight records.	
In Map Pocket: (3 pieces)	
Aerial Magnetic Location Plan and Geology of Area A, B. and C.	

AREA D

ENCLOSED UNDER SEPARATE COVER

INTRODUCTION

At the request of Miami Copper Company, Heinrichs Geoexploration Company conducted a reconnaissance airborne magnetic survey covering 2106.4 miles in 4 areas, (A, B, C, & D) of southern and western Arizona. For general area location see the Flight Area Index Map (front piece). For detailed locations, refer to the Location Plan and Geologic Maps for individual areas.

<u>Area</u>	<u>Miles Flown</u>	<u>General Location</u>
A	432.6	Mostly Mohave County
B	654.3	Mostly Yuma
C	949.2	Cochise-Pima, Southern Graham-Pinal
D	70.3	Tortolita and Picacho Mountains, Southern Pinal County (Detail, interpretation and report submitted under separate cover).

Flying and interpretation were accomplished in the interim from May into November 1966.

PRIORITY CONCLUSIONS AND RECOMMENDATIONS

The following seven areas listed in order of priority for immediate further considerations were selected on a basis of correlation with known and projected mineral exposure, rock type, structure and relative maximum depths to bedrock, magnetic profile character and shape. Specific interpretation is discussed later in the text. To a degree, these conclusions are unavoidably somewhat academic or abstract in the best economic geologic sense. This is because they are derived from only a partial regional sampling of a single physical parameter, necessarily correlated with published geology, mostly of a semi-regional nature.

In order to gain maximum real value from these results, it is of paramount importance that some post submittal client and contractor staff seminars be held as soon as clients' staff has preliminarily assimilated the report contents and formulated some initial reactions. To the maximum degree feasible and practical, this should be done formally and in writing.

1.

Area C

Line 23, Checkpoint 2.9 (Page 77 of text)

Line 24, Checkpoint 9.4 (Page 78 of text)

These are possible magnetic expressions of the Dividend fault on which Bisbee occurs. Because of the apparent importance of this feature, possible east and west extensions traced with aerial magnetics could prove valuable. Once the extent is known, more exact ground magnetics should precede further geophysics or drilling and ultimate geological correlation. When following structure east of Bisbee, two or three additional longitudinal lines should be considered to help define structural grain between Checkpoint 1 and 6 of Line 23. When following structure west of Bisbee, consideration should be given to flying a magnetic grid connecting Bisbee with geology at Tombstone.

2.

Area C

Line 32, Checkpoints 7.0-7.3 (Page 86 of text)

Major structural breaks in conjunction with a 300 + gamma low west of Mineral Mountain, roughly seven miles SE of Florence Junction, Pinal County offers a possible area of hydrothermal alteration. An aerial magnetic grid should first be run to determine character and extent of anomaly as well as adjacent shallow structure. Ground magnetics should then be used to varify areas of interest. Reconnaissance induced polarization should be planned using projected geologic magnetics, if economic potential correlation with sulfide location, grade and distribution is deemed feasible.

3.

Area C

Line 11, (Page 62 of text)

Shallow pediments are apparent southwest and west of Dos Cabezas mineralization. Known mineralization is associated with north striking diabase dikes and east-west striking faults. Both the faults and dikes have a good chance of showing up magnetically. The intersections of these faults and dikes if located with ground

magnetics and not too deep should offer good targets for reconnaissance I.P. Depth may be most efficiently checked by reconnaissance gravity or other geophysical methods. A geologic check is recommended to first establish proper age relationships and apparent trends of mineralizers and acquire samples for magnetic susceptibility testing. Then an aerial magnetic grid should be planned to encompass zones to the west and south of prominent mineralization. Lines again should be run as normal to pertinent structure as possible.

4.

Area B

Line 23, Checkpoint 4.5 (Page 40 of text)

This is an isolated magnetic feature indicating shallow alluvium opposite known mineralization, (southwest flank of the Kofa Mountains, Yuma County). A few additional aerial magnetic profiles would show if similar features are nearby. Ground magnetics would quickly show an exact location. A reconnaissance I.P. profile along strike would show if, where and how much sulfide were present.

5.

Area A

Line 11, Checkpoint 0-F3.0 (Page 15 of text)

Shallow alluvium in conjunction with varied geology is west of and regionally associated with Ithaca Peak mineralization.

At 0.3 a fault and/or contact appears which should be traceable with ground magnetics. Between 0.9 and 1.0 appears what may be a buried plug. If land is available an aerial magnetic grid with 1/4 and 1/2 mile line spacing and 500' elevation is recommended. Flight paths should be planned normal to projected structure and extend over known mineralization for control. As mineralization is also evident on the northern extension of Sacramento Valley, additional flight paths to the east should be considered. Over deeper pediment near the center of the Sacramento basin, line spacing should be extended to 1/2 mile to lessen expense.

6.

Area C

Line 8, Arivaipa District, western flank of the Santa Teresa Mountains (Page 57 of text)

Shallow alluvium, good magnetic variations and significant mineralization over considerable potential area indicate additional aerial magnetics could delineate most favorable zones for more detailed exploration.

A geologic study of the area with magnetic susceptibility testing of known mineralization and rock types involved is recommended to precede any other additional work.

7.

Area B

Line 26, Checkpoint 4.8, western flank of Castle Dome Mountains, Yuma County (Page 43 of text)

Probable fault and/or mineralized contact between Cretaceous Kofa volcanics to the north and Mesozoic sediments to the south. Area should be briefly ground checked by a geologist using a magnetometer. Fault and/or contact should be traceable under alluvium where induced polarization would then be applicable because economic possibilities may be in the covered or concealed portions of the favorable structure.

INTERPRETATION PROCEDURE

Owing to the somewhat preliminary broad reconnaissance nature of this project involving single profiles rather than gridded coverage, such details as strike direction could only be inferred by geologic projection. Factors related to shape and depth, etc. are dependent on true anomaly character normal to strike and, therefore estimates regarding these are very approximate and are likely subject to considerable revision either way in the event additional coverage is obtained. Otherwise, conventional applied magnetic geophysical interpretation methods were used.

Flight path recovery was performed by coordinating the pilot and navigator and using topographic maps for visual or ground recognition.

Chart paper is specially designed by Geoex and is read from right to left with increasing values in gammas with the top of the record indicated by 10 on the vertical scale and is 1000 gamma across the chart. The vertical scale is printed each six inches across the record.

The horizontal scale is 5" or 6" per minute. Checkpoints are as indicated on the record in a brown ink. These points are called out on the intercom by the navigator and plotted in flight on the chart by the observer.

Magnetic data is presented in profile form and on location plan and geology maps. Checkpoints were numbered from points located on the ground. An F preceding a checkpoint indicates a false checkpoint which was not actually located but is entered on the record and plan location for convenience only. Geologic maps are enlargements of county geology maps to a scale of 1:250,000 which overlay the USGS topographic maps on the same scale.

Interpretation was by John Langs, Harvey Durand, Don Cooley, and John McDonnell; geophysicists and geologists of the Geoex staff. Other personnel were Jack Vanderkolk and Dick Barrett, pilots; Jim Bauersachs and Richard Carter, navigators, and Jim Bush, instrument observer. E. Grover Heinrichs directed general operations, Walter Heinrichs, Jr. provided supervisory assistance throughout the project and in completion of final report, and Chris Ludwig gave occasional technical support.

AREA A

SUMMARY CONCLUSIONS, RECOMMENDATIONS AND DETAIL INTERPRETATION

October 19, 1966

Miami Copper Company
Aerial Magnetic Survey

Area A

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 1

CHECKPOINT

Considerable alluvium of less than 1000' depth is indicated between Checkpoints 3 and 8. Mineralization is noted east of Point 8 and 9. If favorable geology is regionally noted, additional aerial coverage of the Detrital Valley should be considered.

2.3 High probably related to basalt. Surface or near surface outcrop.

3.0-3.6 Shallow alluvium.

3.7-8.0 Shallow alluvium.

3.7 Possible fault in granite outcrop.

F5.6 Possible fault contact between Precambrian granite gneiss to south and Cretaceous volcanics to north.

6.5 Possible fault.

7.0 200+ gamma low corresponding to NE trending structure.

9.5 Probable fault coincident with mineral lineation noted on 1:250,000 U.S.G.S. topo series.

10.4 Possible fault.

11.0 Probable fault and/or contact.

12.0 Probable fault.

October 19, 1966

Miami Copper Company
Aerial Magnetic Survey

Area A

Line 2 N

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

CHECKPOINT

The southeastern pediment of the Cerbat Mountains and north and eastern pediments of the Hualapai Mountains warrant interest. These areas are characterized by much shallow alluvium, good proximity to mineralization and frequent structural variation is noted in sub-alluvial topography. Additional aerial coverage is recommended to outline areas of fault intersection amenable to geophysical prospecting.

- | | |
|---------|--|
| 0.35 | Possible fault. |
| F1.05 | Possible fault. |
| 1.1-4.0 | Apparent shallow alluvium. Topography indicates E-W structural trend showing mineralization to the west. Magnetics indicate faulted sub-alluvial topography. |
| F1.4 | Possible fault and/or contact. |
| F1.6 | Possible fault and/or contact. |
| F2.0 | Possible contact between granite gneiss to North and Quaternary basalt to south. |
| F2.4 | Possible fault and/or contact. |
| 3.5 | Possible fault and/or contact. |
| 4.3 | Probable fault and/or contact. |
| 4.7 | Probable fault and/or contact. |
| 5.0 | Probable fault and/or contact. |
| 5.2 | Probable fault. |

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Area A

Line 2 N continued

F6.35-7.4	Possible basalt flows.
F9.0	Probable basalt.
F10.7	Probable fault.
F10.8	Probable fault.
F10.9	Probable fault.
11.7	Low possibly related to railroad.
12.1	Possible NE trending faults. Possible basalt flows.
12.3	Possible NE trending faults. Possible basalt flows.
12.5	Possible NE trending faults. Possible basalt flows.
12.7	Possible NE trending faults. Possible basalt flows.
13.5	Probable fault contact.
13.5-End	Apparently granite gneiss.
15.1	Probable fault.
15.7	Probable fault.
16.0	Probable fault.
16.7	Probable fault.

October 20, 1966

Area A

Line 2 S

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
MISCELLANEOUS INTERPRETATION

0-2	Shallow alluvium (mineralization noted to west on U.S.G.S. 1:250,000 topography).
0.2	Probable fault and/or contact.
3.4	Probable fault.
3.8-4.2	Probable laramide granite.
4.2	Contact between gneiss to south.
4.6	Probable fault.
5.4	Probable fault.
6.2	Deep seated fault.
6.9	Probable fault.
7.4	Probable fault in gneiss.
8.5	Probable basalt dike.
10.3	Probable fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area A

Line 3

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

<u>CHECKPOINT</u>	
	Checkpoint 3 is of interest.
1.0	Probable contact between Precambrian granite and gneiss.
1.6	Probable basalt flow.
1.7-5.2	Probable schist; shallow to surface alluvial depths.
2.7	Probable fault.
3.0	Mineralization appears on U.S.G.S. topo 1:250,000 series. Several small fluxuations are noted on magnetic record which may be traceable with ground magnetics. A ground check by geologist with magnetic capability is recommended.
5.3	Probable contact of Precambrian gneiss with granite or schist.
5.35	Possible Tertiary Rhyolite.
5.45	Probable fault contact between Precambrian gneiss to south and granite to north.
F.6	Possible contact.
F6.6	Possible fault and/or contact.
7.2	Probable fault and/or contact.
F8.8	Probable fault with basin probably becoming deep to the North.

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Aerial Magnetic Survey

Area A

Line 4

CHECKPOINT

- | | |
|-------|---|
| 0-3 | Shallow alluvium. |
| F1.45 | Probable basalt flow; possible contact between Quaternary basalt and Precambrian granite. |
| F2.4 | Probable contact between older Precambrian granite and schist. |
| F2.95 | Contact between Tertiary andesite and probable older Precambrian schist to north. |
| 3.2 | Probable fault in andesite. |
| 3.5 | Possible fault, contact, or dike. |

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Miami Copper Company
Aerial Magnetic Survey

Area A

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 5

<u>CHECKPOINT</u>	
	Checkpoints 9.7 and 9.9-10.0 are of interest.
0.35	Probable fault.
2.3	Probable contact between Precambrian gneiss and schist.
6.5-F7.6	Possible Precambrian gneiss or Laramide granite under alluvium.
8.3	Apparent deep fault and/or contact.
8.8-8.9	Approaching outcrop.
8.8	Probable fault.
9.7	Probable fault (shallow).
9.9-10.0	Probable fault apparently associated with Music Mountain Mine. Geology is recommended to correlate mineralization with structure and possibly to trace this structure with ground magnetics. Warning: this mag low may simply reflect a topographic high. The gneiss between 10.0 and 10.2 should, however, be checked for hydrothermal alteration.
10.5	Probable deep seated fault.
10.7-10.9	Shallow, faulted sub-alluvial topography.
End of line	Magnetic high likely due to topography.

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Aerial Magnetic Survey

Area A

Line 6 A

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
0.0-0.02	Probable basalt dike.
0.1-0.19	Probable granite overlain by shallow alluvium.
0.25	Probable contact between basalt to north and granite to south.
0.37	Probable fault and/or contact.
0.52	Probable fault.
0.56	Probable fault in basalt.
0.77	Probable contact between granite to north and basalt to south.
0.9	Probable fault in Precambrian granite.

Area A

Line 6 B

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
	According to topography, faults at 1.4, 1.55, and 1.85 seem to be projecting from Hualapai Mountains to the west.
	Laramide granite and mineralization in Hualapai Mountains between points 1 and end of line may add interest to this area.

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Area A

Line 6 B continued

Start	Possible fault and/or contact.
1.0	Probable fault in gneiss.
1.25	Probable fault in gneiss.
1.4	Probable fault in gneiss.
1.55	Probable fault in gneiss.
1.85	Probable fault in gneiss.
3.0	Probable fault in gneiss.
3.15	Probable fault in gneiss.
3.4	Probable fault in gneiss.

Area A

Line 6 C

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

1.4	Probable fault in gneiss.
2.4-2.45	Probable basalt dike.

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Aerial Magnetic Survey

Area A

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 7

CHECKPOINT Checkpoint 8.99 is of interest.

- 0.0 Probable fault contact between Tertiary and rholite to north and Cretaceous Gold Road volcanics to south.
- 0.3 Possible fault and/or contact between Gold Road volcanics to north and Precambrian gneiss to south.
- 0.8 Probable fault in Precambrian gneiss.
- 1.4 Probable fault in Precambrian gneiss.
- 1.9 Probable fault in Precambrian gneiss.
- 2.4 Probable fault in Precambrian gneiss.
- 4.0 Probable fault.
- 4.6 Shallow alluvium (possibly Gold Road volcanics).
- 5.0-5.6 Shallow alluvium. Apparent reflection of structure extending from NW topographic and geologic lineation.
- 5.1 Probable fault and/or contact.
- 5.55 Probable fault and/or contact.
- 8.18 Relative maximum depth 1700. Apparent projection of fault contact from NW.
- 8.49 Apparent shallow alluvium.
- 8.89 Possible fault and/or contact.
- 8.99 This possible fault and/or contact is associated with magnetic low NE of NE trending structure apparently

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Area A

Line 7 continued

associated with mineralization. Possible magnetic interference from the railroad. A ground check of area by geologist is recommended to determine if mineralization or structure associated with mineralization is traceable magnetically. Hydrothermal alteration should be noted.

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Miami Copper Company
Aerial Magnetic Survey

Area A

Line 8

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

CHECKPOINT

- Shallow alluvium is noted south and east of mineralization in the southern portion of the Black Mountains.
- 1.0 Possible fault and/or contract.
 - 1.75 Possible fault and/or contact shallow alluvium.
 - 2.0 Topographic low probably coincident with fault; shallow alluvium.
 - 2.1 Probable SW extention of SW trending fault noted on county geology.
 - 2.25&2.35 Shallow alluvium; probable faults and/or contacts.
 - 2.6 Shallow alluvium; probable near surface Rhyolite.
 - 2.75 Possible basalt flow.
 - 2.9 Probable fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area A

Line 9

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 0.45 and 2.0-6.0 are of interest.

- 0.45 Probable contact between Precambrian gneiss to north and Cretaceous andesite to south possibly associated with Laramide intrusive. A ground check for hydrothermal alteration is recommended.
- 0.55 Probable fault in Cretaceous andesite.
- 0.75 Probable fault in Cretaceous andesite.
- 0.7-1.5 Continued andesite with characteristic flow or fault boundaries at 0.9, and 0.95.
- 2.0-6.0 Opposite mineralization. Many individual flows, faults, and contacts are magnetically traceable. A geologic check to determine value of this information is recommended.
- 7.05 Probable contact between volcanics to the north and basalt to the south.
- 7.1 Probable contact between volcanics to the south and basalt to the north.
- 8.0 Possible contact volcanics to the north, basalt to the south.
- 8.7 Possible contact basalt to the north, volcanics to the south.
- F9.1 Possible contact basalt and volcanics.
- F9.65 Possible fault.
- 10.0 Possible fault.

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Miami Copper Company
Aerial Magnetic Survey

Area A POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 10

CHECKPOINT Checkpoint 2.75 in the vicinity of Boulder Mine is of interest. Checkpoint 8.28 in the vicinity of mineralization.

2.3 Shallow alluvium.

2.5 Probable fault.

2.75 Possible fault or intrusive apparently associated with Boulder Mine, may be associated with andesite. A ground check is recommended to correlate geology with magnetics.

3.0 Probable fault.

3.15 Probable fault and/or contact.

7.0-8.5 Basalt noted on county geology probably very thin.

7.15 Possible contact between gneiss to NW and basalt to southeast.

8.28 Probable near surface fault and/or contact (mineralization noted near 8.2 on U.S.G.S. 1:250,000 series).

7.15-8.45 Apparent basalt.

8.45-end Probable schist.

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Area A

Line 11

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

CHECKPOINT

- 0-F3.0 Shallow alluvium in conjunction with varied geology regionally associated with Ithaca Peak mineralization merits a primary recommendation for additional aerial magnetic coverage.
- 0.3 Fault and/or contact possibly associated with Laramide granite.
- 0.4-0.5 Apparent shallow alluvium.
- 0.45 Fault and/or contact.
- 0.9 Magnetic high indicates possible shallow alluvium opposite significant mineralization to east.
- F3.1 Possible fault and/or contact.
- F3.9 Shallow alluvium.
- 40.5 Probable contact between Quaternary basalt to south and older Precambrian gneiss to north.
- 5.3 Probable basalt under shallow alluvium.
- 5.7 Possible contact between basalt to north and younger Precambrian granite to south.
- 5.95 Probable contact between Tertiary Rhyolite to south and younger Precambrian to south.
- 6.25 Shallow alluvium, probable contact; possible basalt.
- 7.8 Shallow alluvium.
- 8.0 Possible fault and/or contact.
- 8.5 Possible fault and/or contact in granite gneiss shallow alluvium.

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Area A

Line 11 continued

- 8.87 Probable contact between granite and gneiss.
9.0 Near surface to surface fault and/or contact.
9.3 Contact between granite gneiss and granite.
F10.8-11.3 Probable granite covered by shallow alluvium.
12.5 Probable fault in granite.
12.7 Probable fault in granite.
13.0 Probable fault in granite.
13.2 Shallow alluvium.
14.9 Shallow alluvial cover, possible dike or fault.
F15.4 Probable contact between granite gneiss and granite
to north.
17.5 Probable fault and/or contact.
17.8-F19.0 Shallow alluvium.
F19.3 Probable fault.

AREA B

SUMMARY CONCLUSIONS, RECOMMENDATIONS AND DETAIL INTERPRETATION

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Miami Copper Company
Aerial Magnetic Survey

Area B

Line 1

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

0.05	Possible fault and/or contact.
0.3	Possible fault and/or contact.
1.1-2.8	Probable basalt.
4.2	Probable fault and/or contact.
4.75	Probable fault and/or contact.
5.7	Probable fault in gneiss.

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Area B

Line 2

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 1.35 Probable fault and/or contact.
- 2.2 Probable contact between older Precambrian granite gneiss to the NW and Mesozoic granite to the SE.
- 2.7 Probable fault in Mesozoic granite.
- 2.85 Probable fault in Mesozoic granite; or possible fault contact between Mesozoic granite to the NW and older Precambrian granite to the SE.

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Aerial Magnetic Survey

Area B

Line 3

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Area from 5.4 to end of line merits consideration.

- 2.1 Probable fault in older Precambrian granite gneiss.
- 2.8 Probable fault in older Precambrian granite gneiss.
- 5.0 Probable contact between Mesozoic sediments to the NE and Mesozoic intrusive to the SW. Possible dike.
- 5.4 Probable contact between Mesozoic intrusive to the NE and Cretaceous andesite to the SW. Note: andesite is mineralized to the south.
- 5.8 & 5.92 Probable basalt dikes; however, if magnetite content of mineralization in andesite is high, these anomalies could be significant.

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Area B

Line 4

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 2.1 Probable contact between Laramide granite to
east and older Precambrian gneiss to the west.
- 2.35 Projection of granite under alluvium.

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Aerial Magnetic Survey

Area B

Line 5

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 1.3 Contact between Cretaceous andesite to the east and older Precambrian gneiss to the west.
- 2.5 Probable contact between Cretaceous andesite and older Precambrian gneiss.
- 3.02 Probable contact; Cretaceous andesite to the east and older Precambrian gneiss to the west.

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Aerial Magnetic Survey

Area B

Line 6

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 6.3 has significance.

- 2.4 Probable faults - gneiss.
- 2.9 Probable faults - gneiss.
- 4.4 Probable fault in older Precambrian gneiss.
Possible contact with Laramide granite.
- 4.8 Probable fault or contact.
- 5.3 Probable contact between Laramide granite to the
SW and older Precambrian gneiss to the NE.
- 6.3 Probable fault topographically expressed by
Cunningham Pass. Laramide granite and numerous
small mines to the northwest. Recommend geologic
check.
- 10.6 Probable fault in gneiss.
- 11.95 Possible projected contact between Laramide
granite to the north. Mesozoic granite to the south.

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Miami Copper Company
Aerial Magnetic Surveys

Area B

Line 7

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

0.8-1.3 Possible shallow Cretaceous andesite.

End Probable contact between Cretaceous andesite
and Precambrian granite. Prospect pits noted
on U.S.G.S. 1:250,000 series topographic sheet.

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Miami Copper Company
Aerial Magnetic Survey

Area B

Line 8

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- | | |
|------|--|
| F1.0 | Probable fault. |
| 3.0 | Probable fault trending NW in gneiss. Laramide granite associated to the SE. |
| 4.9 | Probable fault. Laramide granite outcrop to the SE of the fault. Mineralization noted regionally. Possible magnetite in fault. |
| 5.6 | Shallow alluvium. |

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Aerial Magnetic Survey

Area B

Line 9

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 2.8 Probable contact between schist to the east and Mesozoic and Paleozoic undivided to the west.
- 3.3 Possible fault associated with mineralization at Hidden Treasure Mine area. Recommended ground check to correlate magnetics with geology at Hidden Treasure Mine.

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Aerial Magnetic Survey

Area B

Line 10

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
1.03	Probable fault.
1.18	Probable contact between Laramide granite to the SW and Precambrian gneiss to the NE.
1.3	Probable contact between Precambrian gneiss to the SW and Laramide granite to the NE.
1.55	Probable fault.
1.6-1.9	Shallow alluvium.
1.83	Probable contact between Precambrian schist to the SW and gneiss to the NE.

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Area B

Line 11

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
0.2	4.2 and 6-end are of interest. Probable andesite flow.
0.4	Contact between Quaternary basalt to the NW and Cretaceous andesite to the SE.
0.6	Contact between Cretaceous andesite to the NW and Quaternary basalt to the SE.
0.9	Possible fault and/or contact.
3.1-4.0	Probable shallow andesite.
3.25	Probable fault.
3.55	Probable fault and/or contact.
3.8-3.9	Flow or dike like feature.
4.2	Contact between Cretaceous andesite to the SE and Mesozoic granite to the NW. The Southern Cross Mine and Tough Nut Shafts appear associated with this feature about two miles SW of flight line. A ground check is recommended to correlate geology and magnetics.
5.0	Probable contact between Tertiary undivided sediments to the north and Mesozoic granite to the south.
5.9	Probable contact between Cretaceous andesite to the south and Laramide dikes and plugs to the north.

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Area B

Line 11 continued

- 6.0-8.6 Shallow alluvium, mineralization and magnetic variation are evident. A ground check is recommended, to correlate magnetics with geology.
- 6.0 Probable contact between Laramide dikes and plugs to the south and Mesozoic granite to the north.
- 6.4 Possible Tertiary dike or fault containing magnetite.
- 6.8 Probable fault - Mesozoic granite.
- 7.4 Probable fault and/or contact.
- 8.0 Probable fault and/or contact.
- 8.5 Probable fault and/or contact.
- 9.8 Possible dike, or fault containing magnetite.

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Area B

Line 12

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 5.75-5.85 is of interest.

- 1.0 Probable contact between Quaternary basalt to the SE and Cretaceous Kofa volcanics to the NW.
- 2.9 Probable dike.
- 5.2 Probable contact between Quaternary basalt to the SE and Cretaceous andesite to the NW.
- 5.75-5.85 Laramide intrusive. Contacts at 5.75 and 5.85 are associated with mineralization noted on Vicksburg quadrangle. These contacts should be traceable with ground magnetics. A geology check is recommended.

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Area B

Line 13

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

0.5	Probable fault and/or contact.
0.9	Probable Quaternary intrusive.
1.85	Probable basalt dike.
2.1-2.35	Probable basalt.
2.9	Probable fault in Quaternary basalt.
2.9-end	Probable basalt.

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Area B

Line 14

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 0-0.7 Many structures (faults, contacts or dikes) should be traceable with ground magnetics. Geology check is recommended to correlate structures and mineralization with magnetics, particularly near the start of the record.
- 0.03 Fault and/or contact in the vicinity of Little Butte Mines area.
- 0.12 Possible dike - shallow alluvium, Little Butte Mines area.
- 0.21 Possible fault and/or contact, shallow alluvium, Little Butte Mine area.
- 0.45 Probable fault.
- 0.7 & 0.95 Probable faults.
- 3.0-4.0 Shallow alluvium.
- 3.7 Probable shallow fault.
- 4.1 Area of possible contact between Cretaceous andesite to the south and Mesozoic sediments to the north.
- 4.2-4.4 Possible faults in andesite.
4.6-4.8
- 5.25 Possible fault in andesite.
- 5.45, 8.0,
13.1, 13.44,
10.9, 13.54 Probable faults.
- 13.64 Contact between basalt to the south and andesite to the north.

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Area B

Line 15

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- | | |
|----------|--|
| 1.35-2.9 | Probable basalt flows. |
| 5.1 | Probable basalt flow. Possible fault and/or contact. |
| 5.7&5.9 | Probable basalt flows. |
| 6.5 | Projection of Mesozoic gneiss. |
| 7.3 | Possible fault. |
| 8.7 | Possible fault and/or contact. |

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Area B

Line 16

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 16 is characteristic of volcanics without
apparent significant anomalism.

- 1.1 Possible fault and/or contact.
- 1.3 Shallow fault and/or contacts.
- 1.4 Shallow fault and/or contacts.
- 1.56 Shallow fault and/or contacts.
- 1.71 Shallow fault and/or contacts.
- 2.55 Probable dike.
- 2.6 Probable fault and/or contact.
- end Probable fault and/or contact.

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Area B

Line 17

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 0.1 Probable contact between recent basalt to the
NW and Cretaceous intrusives to the SE.
- 0.35 Magnetic high due to Cretaceous intrusive.
- 0.45 Probable contact between Cretaceous intrusive
to the NW and Precambrian granite to the SE.
- 0.95 Probable fault in Precambrian granite.
- 2.6 Magnetic high associated with a Precambrian gneiss.

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Area B

Line 18

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
0.7	Probable dike.
2.1	Probable contact between basalt to the east and andesite to the west.
2.3	Probable volcanic flow.
2.9	Probable contact between basalt to the east and Precambrian granite to the west.
5.2	Probable contact; Precambrian gneiss to the east and Precambrian granite to the west.
5.8	Probable contact between Precambrian granite to the east and Cretaceous andesite to the west.
7.3	Probable fault.
8.4	Probable contact between Cretaceous andesite to the east and Tertiary-Cretaceous sediments to the west.
9.7	Possible contact between Cretaceous-Kofa volcanics to the east and Quaternary basalt to the west.
9.7-12.5	Record is anomalously quiet reflecting a very thin layer of volcanics.
12.6	Probable contact between Quaternary basalt to the east and Cretaceous-Kofa volcanics to the west.

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Area B

Line 19

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

The entire length of Line 19 with the exception of Checkpoints 0.1, 4.2-4.7 and 6.7-end, either is very deep alluvium or is a very thin layer of basalt.

- 0.1 Probable basalt dike.
- 1.25 Probable fault and/or contact.
- 2.75 Probable fault and/or contact.
- 4.2-4.7 Probable thickening or shallowing of basalt.
- 6.7-end Shallow alluvium.

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Area B

Line 20

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Start	Probable basalt dike.
1.15	Probable fault and/or contact.
1.45	Probable contact between Quaternary basalt to the SE and Cretaceous-Kofa volcanics to the NW.
1.67	Possible contact between Cretaceous-Kofa volcanics to the west and Quaternary basalt to the east.
1.98	Possible basalt dikes.
2.0-end	Probable thin layer of basalt.
3.2	Possible basalt dikes.

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Area B

Line 21

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

The record does not have characteristic magnetic relief for basalt indicating that flow direction was parallel to flight lines or that the basalt is thin.

- 0.1 Possible basalt flow.
- 0.25 Probable fault and/or contact.
- 0.4 Probable fault and/or contact.
- 0.55 Probable fault and/or contact.
- 0.95-1.0 Probable shallow basalt dike.
- 1.35 Probable thin basalt over outcrop.

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Area B

Line 22

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

1.3-1.7 Probable near surface basalt flows.

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Area B

Line 23

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 4.5 has a priority recommendation.
Checkpoint 3.5 is of interest.

- 0.85 Probable basalt.
- 1.0-1.4 Probable basalt.
- 1.8 Probable contact between Quaternary basalt to the NW and Cretaceous-kofa volcanics to the SE.
- 3.0 Probable contact between Cretaceous-kofa volcanics to the NW and Cretaceous andesite to the SE.
- 3.5 Probable contact between Cretaceous andesite to the NW and Mesozoic sediments to the SE. Possible mineralizer in contact with older host. Contact should be traceable with ground magnetics if geology shows this is warranted. Recommend a geologic check.
- 4.5 Probable contact between Mesozoic sediments to the NW and Cretaceous andesite to the SE. Mineralization (King of Arizona Mine, Rob Roy Mine, etc.) about 2 miles to NE is associated with andesite breccia. This magnetic high may be due to andesite on or near the contact. Although this is possibly only an isolated volcanic flow, a priority recommendation is given for area.
- 4.98 Probable Cretaceous volcanics.
- 5.7-5.93 Probable near surface this basalt.

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Area B

Line 23 continued

- 5.93 Probable contact between Quaternary basalt to the NW and Kofa Cretaceous volcanics to the SE.
- 6.1 Probable contact between Kofa volcanics to the NW and Mesozoic granite to the SE.

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Area B

Line 24

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- | | |
|--------------------|---|
| 1.22 | Probable basalt. |
| 1.67 | Probable contact between Mesozoic schist to the south and Kofa volcanics to the north. |
| 1.96 | Probable basalt. |
| 2.35 | Probable contact between Cretaceous Kofa volcanics to the south and Quaternary basalt to the north. |
| 2.65 | Probable contact between Quaternary basalt to the south and Kofa volcanics to the north. |
| 3.2 | Probable fault in Cretaceous-kofa volcanics. |
| 3.45 | Probable fault in Cretaceous-kofa volcanics. |
| 3.75 | Probable fault in Cretaceous-kofa volcanics. |
| 4.05 | Probable fault in Cretaceous-kofa volcanics. |
| 4.15 | Probable fault in Cretaceous-kofa volcanics. |
| 4.65-4.85 | Probable shallow in Cretaceous-kofa volcanic flow. |
| 5.2 | Probable contact between Quaternary rhyolite to the north and Cretaceous-kofa volcanics to the south. |
| 5.4 | Probable contact between Kofa volcanics to the north and Quaternary rhyolite to the south. |
| 5.75, 5.85&
End | Probable faults in Kofa volcanics.
Probable faults in Kofa volcanics. |

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Area B

Line 26

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 4.8 is a priority recommendation.

- 1.1 Probable contact between Cretaceous andesite to the north and Cretaceous-kofa to the south.
- 1.1-4.7 Typical record over thick sections of volcanics.
- 1.8 Probable fault in Cretaceous-kofa volcanics.
- 3.1 Probable thick basalt flow with high magnetite content.
- 4.0 Probable fault.
- 4.8 Probable fault or contact between Cretaceous-kofa volcanics to the north and Mesozoic sediments to the south. Feature should be traceable with ground magnetics and is associated with known mineralization (Hall Mine). Priority recommendation is given for a reconnaissance geologic check with ground magnetic facility.

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Area B

Line 27

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
0.1	Probable fault in Cretaceous andesite.
0.78	Possible fault.
1.6	Probable contact between Cretaceous andesite to the north and Quaternary Rhyolite to the south.
2.5	Probable contact between Quaternary Rhyolite to the north and Cretaceous andesite to the south.

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Area B

Line 28

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
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1.6	Possible fault.
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1.85	Possible fault.
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Area B

Line 29

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- | | |
|------|---|
| 0.4 | Possible fault and/or contact. |
| 2.05 | Probable fault in Mesozoic gneiss. |
| 2.36 | Probable contact between Mesozoic gneiss to the north and Cretaceous andesite to the south. |
| 2.65 | Probable contact between Cretaceous andesite to the north and Mesozoic schist to the south. |
| 3.0 | Probable contact between Cretaceous andesite to the south and Mesozoic schist to the north. |
| 4.5 | Probable fault in andesite. |
| 5.35 | Probable contact between Cretaceous andesite to the north and Mesozoic gneiss to the south. |
| 7.1 | Probable contact between Mesozoic gneiss to the north and andesite to the south. |

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Area B

Line 30

CHECKPOINT

POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 30 was flown in two segments due to rough topography. Between Checkpoints 6.0 and 7, no record was flown.

- 0.3 Probable fault in Quaternary rhyolite.
- 0.55 Probable fault in Quaternary rhyolite.
- 0.95 Rholite flow.
- 1.3 Probable fault in Quaternary rhyolite.
- F2.5 Possible contact between Quaternary rhyolite and Cretaceous andesite.
- 3.4 Probable contact between Quaternary rhyolite to the north and Cretaceous andesite to the south.
- 4.0 Probable contact between Cretaceous andesite to the north and Quaternary rhyolite to the south.
- 5.1 Probable contact between Mesozoic gneiss to the north and Cretaceous andesite to the south.
- 5.45 Probable contact between Cretaceous andesite to the north and Mesozoic gneiss to the south.
- 5.7 Probable contact between Mesozoic sediments to the north and Cretaceous andesite to the south.

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Area B

Line 30 continued

- 11.4 Probable contact between Mesozoic gneiss to the north and Mesozoic granite to the south.
- 11.7 Probable fault in Mesozoic gneiss.

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Area B

Line 31

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 4.3 Probable NW trending fault contact between
Mesozoic schist to the north and Mesozoic
gneiss to the south.

- 4.8 Probable fault in gneiss.

AREA C

SUMMARY CONCLUSIONS, RECOMMENDATIONS AND DETAIL INTERPRETATION

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 1

<u>CHECKPOINT</u>	<u>POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION</u>
0.3	Probable andesite at, or near surface.
0.8-2.8	Probably rhyolite beneath thin alluvial cover. Magnetic highs probably related to variations within the flow and/or topography.
3.1	Contact or fault.
3.7	Probable fault and/or flow structure in andesite.
6.05	Possible andesite flow near surface.
10.0	Probable fault.
10.2-11.0	Probable andesite under shallow alluvium.
F11.9	Possible fault or contact at shallow depth.
13.0-17.0	Continued magnetic relief characteristic of volcanics.
17.0-25.0	From here to end of line, the magnetic profile shows subdued relief, which is not consistent with basalt noted on county geology. Basalts may mask more interesting rock type and be thin. Additional aerial magnetic coverage extending SW from the area of known mineralization immediately to the NE may delineate an area of further interest. A geologic check is recommended to determine merit of this area.

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Area C

Line 2

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Record typical of volcanics under shallow alluvium.

10.3-10.7 Quaternary basalt at, or near surface.

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Area C

Line 3

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Record shows no apparent areas of interest.

- 0.7 Probable andesite.
- F1.3 Possible fault and/or contact.
- 2.2 Possible fault and/or contact.
- 5.8 Probable fault in basalt.
- 6.8 Fault contact between Quaternary basalt to east
and Tertiary rhyolite to west.

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Area C

Line 4

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

0.5 Deep fault and/or contact.

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Area C

Line 5

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

- 0.7 Possible fault and/or contact.
- 1.05 Possible andesite-Precambrian granite contact.
- 5.45 Probable fault in Precambrian granite.
- 9.5 Probable fault in Precambrian granite gneiss.

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Area C

Line 6

<u>CHECKPOINT</u>	POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND MISCELLANEOUS INTERPRETATION
1.85	Probable contact between Tertiary rhyolite to west and Tertiary andesite to east.
2.5	Probable flow structure in volcanics.
3.3	Probable contact between Tertiary-Cretaceous volcanics to west and Precambrian granite to the east.

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Area C

Line 7

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 0.3 Possible contact or fault; shallow alluvium.
- 3.8 Probable contact between Cretaceous andesite to south and Precambrian granite to the north.
- 4.0 Probable shallow andesite.
- 4.6 Probable fault and/or contact.
- 5.0-5.5 Magnetic highs possibly due to topography and structure within the rhyolite.
- 5.5 Possible fault or contact; shallow alluvium.

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Area C

Line 8

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Line 8 crosses the Arivaipa mineral district from the starting point through Checkpoint 6 showing strong magnetic variation combined with shallow alluvium. These variations appear ideal for tracing structures possibly related to mineral control. It is recommended that additional aerial magnetic coverage be flown over areas of past production and extended over indicated shallow pediments. Flight lines should be flown on a 1/4 mile grid pattern perpendicular to known structural lineation.

- 0.5 Low probably related to Paleozoic limestone.
- 2.0-3.0 Probably related to structure Cretaceous and Tertiary Horse Mountain volcanics.
- 3.1 Probable dike.
- 3.4 Probable dike of Horse Mountain volcanics.
- 3.75 Possible dike or fault apparently volcanic.
- 4.2 Probable fault and/or contact.
- 4.8 Probable fault and/or contact.
- 7.6 Probable fault.
- 8.2 Possible contact between Tertiary andesite to NW

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Area C

Line 8 continued

and Precambrian granite to the SE. Mineralization noted along topographic lineation four miles to NE.

- 8.75 Possible faults in granite.
- 8.9 Possible faults in granite.
- F9.2 Possible fault and/or contact.
- F9.7 Possible northern contact of schist.
- F9.9 Probable fault structure in schist, shallow alluvium.
- 10.5 Possible southern contact of Precambrian schist.

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Area C

Line 9

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- | | |
|------|--|
| 0.7 | Probable fault and/or contact. |
| 1.9 | Probable fault and/or contact. |
| F4.8 | Probable fault and/or contact. |
| 6.25 | Probable contact between Precambrian
granite to west and Precambrian gneiss
to east. |
| 6.9 | Probable fault in Precambrian gneiss. |

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Area C

Line 10

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 3.0 High related to topography.
- 6.0 Granitic outcrop and topography responsible for magnetic feature.
- 6.0-11.0 Probably less than 500' of alluvium.
- 10.0-11.0 Highs due to topography.
- 12.6 Apparent alluvium of less than 500' depth.
- F15.8 The high is approximately three miles east of the Willie Rose Mine. It indicates possible alluvial depths of less than 1000'. Favorable broken geology is enhanced by the contact metamorphic mineralization at the Willie Rose Mine. This type of deposit is frequently traceable magnetically. A ground magnetic survey could better discern the character and depth of anomalism. Additional experimental ground magnetics and self-potential are also recommended over known local mineralization. Positive correlation with structure and, or mineralization by these techniques, might facilitate rapid land evaluation.
- 6.0-29.0 This is an area of favorable broken geology and most alluvium is less than 1000' deep. Several small mines and prospects along the eastern flank of the Chiricahua Mountains indicate base metal potential. The flat topography of this pediment

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Area C

Line 10 continued

lends itself particularly well to a low level aerial magnetic survey which could then outline specific areas for continued exploration.

28.2 Anomaly in the vicinity of Grace Mine; a small lead prospect, 50-60 tons total production, unknown grade, limestone or dolomite replacement deposit with volcanics adjacent to the sedimentary strip to the south. As the Grace Mine projection is on northern extension of anomaly, this magnetic high may relate to an andesite-limestone contact near which mineralization occurs. An evaluation of this relationship including normal gamma variation along contact bears examination by a geologist with hand magnetic facility.

27.0-62.0 No apparent significant magnetic features.

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Area C

Line 11

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Favorable geology and past production makes Dos Cabezas an interesting area. Line 11 indicates shallow alluvium across pediments to the south and west. Mineralization at the Central Mine contains magnetite associated with copper. Other mines may show similar mineralogy if checked. Economic mineralization in this area has strong structural controls such as north striking diabase dikes and east striking faults which are frequently traceable with aerial magnetics. Anomalism is evident for the length of line. Additional aerial magnetic coverage is recommended.

- F1.3 High probably due to topography or Tertiary dikes and plugs.
- 2.6 Apparent fault or contact.
- 4.5 Near surface feature apparently on strike with three (3) shafts noted on topo sheet Cochise Head, Arizona.
- 6.0-10.0 Broad magnetic high probably due to granite and not topography.
- 7.0 Slight magnetic high probably due to topography.
- 9.0 Slight magnetic high probably due to topography.

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Area C

Line 11 continued

- 13.2 Possible shallow subsurface projected contact of carboniferous and Devonian sediments with Laramide volcanics.
- F13.7 Collectively, these features indicate shallow
14.65 alluvium in an area of projected volcanics which
14.95 are associated with mineralized zones to the east.
F15.0
F15.6
F15.9
- 16.6 Probable near surface fault and/or contact.

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Area C

Line 12 North

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION.

- 0.45 Probable fault in Tertiary rhyolite.
- 1.0 Probable fault in Tertiary rhyolite.
- 1.4 Probable fault in Tertiary rhyolite.
- 2.0-3.0 Shallow alluvium.

Area C

Line 12 South

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION.

- 2.2 Probable fault and/or contact.
- 3.05 Probable fault and/or contact.
- 8.8 Possible near surface rhyolite flow.
- 10.2 Probable faults in rhyolite.
- 10.4
- 10.6
- 11.0-11.6 Probable basalt dikes.

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Area C

Line 13

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 1.8 Possible fault and/or contact.
- 3.35 Probably due to normal magnetic fluctuations
in Tertiary rhyolite; shallow or surface outcrop.
- 5.5 Fault and/or contact.
- 6.0-10.0 Less than 1000' to crystalline rock.
- 12.35 Probable fault in Tertiary rhyolite or basalt.
- 15.0 Possible basalt or other crystalline rock type
in shallow or surface contact with sediments.
Approximately 2-3 miles east of Chance and
Mountain Queen Mines.
- 15.5 High probably due to basalt.

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Area C

Line 14

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 2.0 Small magnetic high noted and interpreted as a possible near surface extension of the rhyolite intrusive outcrop approximately 1 mile to the east.
- 5.65 Possible fault and/or contact.
- 8.2 Possible fault and/or contact.
- 12.0-F16.2 Line is not characteristic of sediments but of igneous crystalline rock which may underlay or contact sediments to east of flight path. (Note: A few miles to SE are Mountain Queen and Chance Mines with total metal production of approximately one million dollars.) Additional aerial magnetics may show western contact of Paleozoic sediments to the east. A geologic check of literature, etc., is recommended to precede additional work.
- F16.2-End Probable volcanics.

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Area C

Line 15

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Magnetic anomalism from about Checkpoint 17 to the end of the line may tie in with Tiger-Copper Creek-Arivaipa district magnetic-mineral lineation. Although no specific anomaly can be correlated with known mineralization. An aerial magnetic grid connecting these districts may delineate more specific zones of interest.

- 0.4 Possible projection of Tertiary andesite beneath shallow alluvium.
- 4.4 Probable contact between Tertiary andesite to north and Tertiary rhyolite to south.
- 6.0 Probable near surface basalt.
- 6.9 Fault or contact.
- 7.9 Possible fault and/or contact.
- 8.8 Probable rhyolite.
- 10.4-16.5 Basalt outcrop/ volcanics present at or near surface.
- 14.8 Probable basalt flow.
- 15.9 Probable basalt flow.
- 16.7 Probable contact between Quaternary basalt to south and Tertiary andesite to north.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 15 continued

- 17.8 Fault or contact having 400-500' of relative maximum alluvial depth. 600 gamma relief.
- 19.0 Possible fault or contact on stream trending NE.
- 19.0-20.0 Possible Tertiary intrusive.
- 20.15 Possible projection of Tertiary intrusive beneath shallow sediments along projected zone of weakness from Copper Creek lineation (?). (Possible fault.)
- 20.3 Possible fault and/or contact.
- 20.5 Possible fault and/or contact.
- 20.75 Possible volcanic dike.
- 20.95 Possible fault.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 16

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION.

Record is uniform beyond Checkpoint 4.5 reflecting either deep alluvium or thick sediments of low magnetic susceptibility. Johnson Camp area contains contact deposits with substantial past production; however, no intrusives are evident.

- 0.9 Probable dike.
- 1.9 Possible andesite beneath shallow alluvium.
- 3.0 Andesite outcrop at surface.
- 3.8 Apparent fault or contact.
- 4.5 Deep seated fault and/or contact.

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Aerial Magnetic Survey

Area C

Line 17

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Nothing of interest magnetically appears on
the record.

- 1.0-6.2 Continued sediments of low magnetic susceptibility.
- 6.2 Deep seated fault and/or contact.
- 6.2-10.5 Probable deep alluvium.
- 10.5 Probable deep seated fault or contact.
- 11.5-End Shallow alluvium.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 18

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Nothing of apparent interest on record.

- 1.6 Apparent fault or contact - Tertiary rhyolite
at surface.
- 1.9 Apparent fault or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 19 North

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 6 to 8.7 is included on U.S.G.S. Aeromagnetic map of the Mammoth quadrangle, Pinal and Pima Counties (map GP-419, 1963). Because San Manuel and Tiger mineralization occur on strong aerial magnetic lineation intersections and similar intersections are regionally evident (Ref. GP-419), consideration should be given to a detailed evaluation of published data as well as additional aerial magnetic coverage to the north and east.

- 0.1 Probable fault and/or contact between diabase and Apache.
- 0.3 Possible fault and/or contact with Apache group.
- 1.8 Possible Tertiary andesite.
- 2.8 Magnetic high possibly related to projection of Tertiary intrusions along zone of weakness.
- 3.9 Possible fault and/or contact.
- 4.1 Small low on trend indicated by U.S.G.S. aeromagnetic map to the southwest which may be traceable to small mine three miles northeast.
- 4.8-6.8 Same magnetic feature on magnetic lineation trending northeast from San Manuel and Tiger complex as shown on GP-419. Feature thought to have been drilled by Bear Creek Mining Company to depth of 1700' in acidic (?) volcanics. Recommend research for conformation of drilling, also continued aerial magnetic grid to north and east of GP-419 to further define Tiger-Copper Creek lineation.
- 8.6-9.0 Magnetic high on E-W projected fault or contact extending through San Manuel Mine Area (Ref. GP-419).
- 9.1-9.7 Tertiary andesite at or near surface.
- 9.7-14.2 Shallow alluvium.
- 10.6,11.5,12.3 Probable fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 19 South

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent magnetic anomalies of interest
on this record.

- 0.8 Possible fault in Precambrian granite.
- 1.1 Possible fault in Precambrian granite.
- 1.9 Possible fault in Precambrian granite.
- 4.1 Near surface rhyolite apparently thin.
- 7.05 Fault and/or contact under shallow alluvium.
- 7.7 Possible fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 20

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION.

Several features of only slight magnetic variation were considered because of the district involved and general uniformity of the magnetic profile.

- 2.0 Possible fault in Paleozoic section.
- 4.2 Possible fault
- 5.0 Possible contact between schist to south and Cambrian sediment to the north.
- 6.0 Probable fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 21

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 0.5 Probable fault and/or contact.
 - F2.8 Possible fault.
 - 9.2 Possible fault and/or contact.
 - 9.8 Possible fault and/or contact.
 - 13.8 Possible fault and/or contact.
- End of Line Probable fault.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 22

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 1 may be of interest.

- 1.0 Possibly due to Juniper granite under shallow alluvium.
- 4.0 Probably due to Jurassic and Triassic granite.
- 4.8 Probable fault.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 23

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 2.9 is priority recommendation.
- 2.9 Possible fault contact, dike on projection of fault from about three miles to the west. On Cochise County geologic map this fault runs through Bisbee. Recommended ground magnetics to define location and character.
- 7.9 Indicated shallow alluvium.
- 9.1 Probable fault.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 24

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 9.4 is a priority recommendation.

- 0.5 Profile confused by artificial effects including railroad. May reflect crystalline rock at depth. (?)
- 7.5 Possible fault and/or contact.
- 9.4 Possible fault and/or contact could be a westward extension of zone of weakness on which Bisbee occurs. Recommended ground magnetic followup.
- 15.7 Probable fault and/or contact.

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Aerial Magnetic Survey

Area C

Line 25

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

- 5.6 is a probable fault contact which could be projected towards known mineralization. A ground check is recommended.
- 5.6 Probable fault contact 1.5 miles northeast. of known mineralization.
- 6.5 Possible fault and/or contact.
- 8.5 Possible fault and/or contact.
- 9.6 Possible deep seated fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 26

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No areas of apparent interest.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 27

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Mineralization is noted to the west between
Checkpoints 1.8 and 3.5.

- 0.2 Possible fault and/or contact near projection of
fault contact noted on Cochise geology map.
- 0.95 Possible contact between Precambrian granite to the
north and Precambrian schist to south.
- F2.0 Apparent fault in Precambrian schist possibly
associated with Lone Star Mine mineralization to
west. Recommended ground check to correlate magnetics
with geology. With favorable results, additional
aerial magnetic coverage should be considered.
- 4.1 Possible fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 28

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

- 1.0 Probable fault and/or contact possibly between Cretaceous sediments and Carboniferous-Devonian limestone. 200 gamma relief appears high for this type of contact indicating possible volcanics associated with Cretaceous sediments.
- 2.7 Probable fault in Precambrian gneiss.
- 3.7 Probable fault and/or contact between gneiss and schist; 600' relative maximum depth.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 29

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No anomalies of apparent interest.

3.0 Projected near surface granite ridge.

10.2 Probable fault.

F11.7 Probable fault or contact between Laramide granite
to south and schist to the north.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 30

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Strong magnetic relief in area of San Manuel-Tiger mineralization suggests a detailed evaluation of GP-419. Of note are broad magnetic features to the north indicating possible extensions of favorable broken geology.

- 0.2 Possible granite underlying gneiss.
- 1.5-3.5 Probable Laramide granite.
- F8.85 Apparent dike; very slight possibility of this being an artificial feature associated with the railroad, not the track.
- 10.15 Possible fault and/or contact.
- 12.4 Basement rock apparently under shallower alluvium. Maximum relative depth 2000'+. If area warrants interest, additional magnetic profiles may indicate feature is nearer surface.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 31

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Anomalism noted near Checkpoints 1, 2, 9 and 10 appears similar to anomalism in the Magma Copper Creek and Aravaipa Areas and may represent part of this NE trend. An additional aerial magnetic survey of T9S, R14E, and T10S, R14E with partial coverage extending into adjacent townships is recommended.

- 1.5 This is a probable fault contact or rock type of higher susceptibility apparently within a thousand feet of the surface, near the projected intersection of major faults. 400+ gamma high.
- 7.3 Possible fault and/or contact probably within a thousand feet of surface.
- 8.6 Possible fault and/or contact probably within 1400 feet of surface.
- 9.2 Probable fault and/or contact within 600 feet of surface.
- 10.05 Probable fault and/or contact. 300 gamma.
- 10.26 Crossing granite outcrop.
- 10.2-10.6 Probable shallow alluvium.
- 10.96 Probable shallow alluvium. Possible near surface dike.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 32

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Checkpoint 4.7 to 4.78 and 7 to end merit interest.

- 1.4-3.0 Apparent shallow alluvium over older Precambrian granite.
- 2.0,2.2,2.3 Probable faults.
- 4.0 Possible fault and/or contact.
- 4.65 Possible fault and/or contact.
- 4.7-4.78 Possible projection of Laramide granite from east which is associated with mineralization as noted on Pinal County geology map.
- 5.25 Possible fault.
- 5.6 Probable dike.
- 5.8 Possible fault.
- 7.0 & 7.3 Major faults and/or contacts bracketing a 300 gamma low. Mineralization noted to east at Mineral Mountain and to the SE in Laramide granite. Additional aerial magnetics are recommended to determine character and possible association of this feature with known mineralization.
- 7.64 Fault and/or contact.
- 8.5 Fault and/or contact.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 33

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

Record ends in shallow alluvium. Much structural variation, probably volcanics, is indicated in an area of favorable regional geologic projections.

- 0.38 Probable fault in Laramide granite.
- 1.35 Possible fault and/or contact.
- 4.2 Possible contact between Tertiary volcanics to the north and Laramide granite to the south.
- 4.2-9.35 Record shows characteristic magnetic relief for volcanics.
- 4.5-4.75 Probable fault and/or contacts.
- 5.75-F6.05
- F7.1-F7.45-
- F7.7
- 8.6 Surface outcrop of basalt.
- 9.1 Possible projected fault.
- 9.35 Possible projected fault and/or contact.
- 9.35-10.2 Possible Cretaceous sediments.
- 10.3 Probable fault or contact.
- 10.9 Probable near surface fault and/or contact. No obvious geological explanation noted.

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Miami Copper Company
Aerial Magnetic Survey

Area C

Line 34

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

0.4 Probable fault in Laramide granite.

0.7 Probable fault in Laramide granite.

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Aerial Magnetic Survey

Area C

Line 35

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

4.0 Possible fault or contact.

F5.9 Possible fault or contact.

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Aerial Magnetic Survey

Area C

Line 36

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES
AND MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

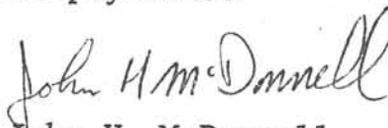
3.9 Probable fault and/or contact in Laramide granite.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY



John W. Langs
Geophysicist



John H. McDonnell
Geologist

APPROVED: _____

Walter E. Heinrichs, Jr.

November 18, 1966
P. O. Box 5671
Tucson, Arizona

November 21, 1966

INVENTORY OF TOTAL JOB MATERIAL FOR REPORT ON AREAS A, B, & C
and REPORT ON AREA D

- I. Report: (Areas A, B & C) One original and two copies.
- II. Final Maps: Plan location on county geology scale 1:250,000
Three reproducibles (one each Area A, B, C
in map tube)
Nine copies (one each Area A, B, C folded
and attached to each report)
- III. Work Maps (15" & 7.5" U.S.G.S. topographic series quad-
angles)

Area A (none)

Area B	Line Number	Name of Quad Sheet
	1 & 2 in part	Black Peak, Ariz. Calif.
	1	Buckskin Mts. W, SW Ariz.
	4, 6 & 8	Aquila, Ariz.
	9	Lone Mt. Ariz.
	10	Aquila, Ariz.
	11	Utting, Ariz.
	12 & 13	Little Horn Mts., Ariz.
	14	Livingston Hills, Ariz.
	15	Cortez Peak, Ariz.
	16 & 17	Eagletail Mts. Ariz.
	18 part	Dendora Valley, Ariz.
	19, part 18	Eagletail Mts. Ariz.
	20	Polomas Mts., NW Ariz.
	23 part 22 all	Stoval, Ariz.
	23 & 24 part	Kofa Butte, Ariz.
	24	Castle Dome Mts. SE Ariz.
	26	Castle Dome Mts. SW Ariz.
	27 & 28	Laguna, Ariz. - Calif.
	29	Picacho, Ariz. - Calif.
	30 & 31	Trigo Peaks, Ariz.

Area C

1	Fort Thomas, Ariz.
1 & 2	Guthrie, Ariz
3	Bowie, Ariz
3	Duncan SE Arizona.
5	Tanque, SW Ariz.
4 & 8	Sierra Bonita Ranch, Ariz.
5,6,7, & 9	Willcox, Ariz.
10	Apache, Ariz. - N. Mex.
10 & 11	Dos Cabezas, Ariz.
12	Pedregosa Mts. Ariz.
13, 14	Pedragosa Mts., Ariz.
15	Winchester Mts. Ariz.
16, 17, 18	Dragoon, Ariz
19	Reddington, Ariz.

Inventory (Cont'd)

Area C (Cont'd)

<u>Line Number</u>	<u>Name of Quad Sheet</u>
20,21,22	Gleeson, Arizona
23	Bisbee, Ariz.
24	Herford, Ariz.
25	Wrightson, Ariz.
	(south end only)
25 (N.part)	Wrightson, Ariz
26 & 27	" "
28 & 29	Happy Valley, Ariz.
29 & 30	Bellota Ranch, Ariz.
31	Oracle, Ariz.
33,34,35,36	Presumido Peak, Ariz.

- IV Master Maps, U.S.G.S. Topography scale 1:250,000 on Linen
 Area A, Lines 1 - 11
 Area B, Lines 1 - 31 (Line 25 omitted because it was
 in a restricted military zone.)
 Area C. Lines 1 - 36

V. Final aerial magnetic flight record by area.

AREA A

Line Number	Date flown
1	9/6/66
2 North	8/8/66
2 South	8/8/66
3	8/8/66
4	8/8/66
5	8/8/66
6a	9/29/66 Rerun
6B	9/29/66 Rerun
6C	9/29/66 Rerun
7	8/9/66
8	8/9/66
9	9/29/66
10	9/22/66 Rerun
11	8/8/66

AREA B

1	8/9/66
2	8/9/66
3	9/28/66 Rerun
4	9/28/66 Rerun
5	9/28/66 Rerun
6	9/28/66 Rerun
7	9/28/66 Rerun
8	9/2/66
9 & 10	9/2/66
11	9/28/66 Rerun

Inventory (Cont'd)

AREA B (Cont'd)

<u>Line Number</u>	<u>Date Flown</u>
12	9/2/66
13	9/2/66
14	9/28/66 Rerun
15	9/2/66
16	9/2/66
17	9/2/66
18	9/2/66
19	9/28/66 Rerun
20	9/2/66
21	9/2/66
22	9/2/66
23	9/2/66
24	9/28/66 Rerun
25	Not flown (Military restricted zone.)
26	9/28/66 Rerun
27 & 28	9/2/66
29	9/2/66
30	9/2/66
31	9/2/66

AREA C

1	5/23/66
2	10/3/66 Rerun
3	5/23/66
4	10/3/66 Rerun
5	5/23/66
6	5/13/66
7	5/18/66
8	10/3/66 Rerun
9	10/3/66 Rerun
10	5/19/66
11	5/23/66
12	10/3/66 Rerun
13	5/23/66
14	5/14/66
15	5/17/66
16	5/17/66
17	5/17/66
18	5/17/66
19	5/18/66 Rerun
20	5/14/66
21	5/14/66
22	5/14/66
23	10/3/66 Rerun
24	5/14/66
25	7/23/66
26	7/23/66
27	5/14/66
28	5/18/66

MIAMI COPPER COMPANY
Aerial Magnetic Survey

'66

Inventory (Cont'd)

<u>Area C (Cont'd)</u>	<u>Date Flown</u>
29	7/23/66
30	10/28/66 Rerun
31	8/7/66
32	10/28/66 Rerun
33	5/13/66
34	5/13/66
35	5/13/66

VI Report (Area D)
One original and two copies

VII Final Maps: Plan location on county geology scale 1:250,000
One original and two copies

VIII Work Maps (15" and 1:250,000 U.S.G.S. topo Series)

<u>Area D</u>	<u>Name of Map</u>
1 - 3 & 6 part	Tortolita Mts. Ariz.
3, part 4	Cortaro, Ariz.
part 4 & 5	Mt. Lemmon, Ariz.
Part 5 & 6	Oracle, Ariz.
7,8,9,10	Tucson, Ariz. 1:250,000

IX. Final Aerial Magnetic Flight Records

<u>Line Number</u>	<u>Date Flown</u>
1 - 3	6/10/66
4,5,6,	9/10/66
7	9/10/66
8	9/10/66
9	9/10/66
10	9/10/66

TABLE OF CONTENTS

Cover A

1. Supplementary Recommendations of Interest
2. The following preliminary interpretations with their corresponding magnetic profile are numbered sequentially: 1-8, 15-17
3. Map pocket includes plan locations of portions of Graham, Cochise, Pinal and Pima Counties which show flight paths, check points, and zones of interest.

Cover B

1. The following preliminary interpretations with their corresponding magnetic profiles are numbered sequentially: 18-20, 22-24, 27, 28, 30, 33-36.

MIAMI COPPER COMPANY
Aerial Magnetic Survey
Preliminary Report

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Area C:

Lines 8, 15, 19, 30

Supplementary Recommendations

The northern portions of Lines 8, 15, 19, 30 show strong magnetic variations. These variations are traceable on U.S.G.S. aeromagnetic map of Mammoth Quadrangle, Pinal and Pima Counties, Arizona, (GP-419). This trend of magnetic variation corresponds to a trend of mineralization as shown on the maps. This correlation indicates a further, more detailed investigation of the area. A closely spaced aeromagnetic grid pattern in conjunction with field investigations along the mountain fronts and adjacent pediments should detail these features for a more intensive investigation.

Checkpoint 3, Line 23 and Checkpoint 9.2 Line 24, Area C are of primary interest. Both are related to projected zone of weakness on which Bisbee occurs.

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MIAMI COPPER COMPANY
Aerial Magnetic Survey Interpretation
Preliminary Report

Area C:

Line 1

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 0.3 Probable andesite at or very near surface.
- 0.8-2.8 Probably rhyolite beneath thin alluvial cover. Magnetic highs probably related to variations within the flow and, or topography.
- 3.1 Contact or fault.
- 3.7 Andesite contact with shallow alluvium.
- 6.3 Fault and or volcanic flow.
- 10.0 Probably volcanic flow.
- 10.4 Possible fault beneath shallow alluvium.
- 11.5 Possible fault or contact at shallow depth.
- 13-17 Continued magnetic relief characteristic of volcanics.
- 17-25 From here to end of line, the magnetic profile shows subdued relief. State geologic map shows basalt here but the magnetic record is not in accord with this. Basalts may mask more interesting rock type and be thin. Additional aerial magnetic coverage extending SW from the area of known mineralization immediately to the NE may delineate an area of further interest.

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Aerial Magnetic Survey
Preliminary Report

Area C:

Line 2

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Record typical of volcanics under shallow alluvium.

8.9-9.2 1000 gamma low but characteristic of basalt.

10.0-10.4 Quaternary basalt at surface.

Line 2 A

Southerly extension of Line 2, Area C.

Similar to rest of Line 2.

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Aerial Magnetic Survey Interpretation
Preliminary Report

Area C:

Line 3

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Record shows no apparent areas of interest

5.8 Probable basalt beneath alluvium.

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Aerial Magnetic Survey
Preliminary Report

Area C:

Line 4

CHECPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest and shallow
alluvial depths.

- 1.0 Alluvium-schist contact.
- 5.1 Alluvium-schist contact.
- 5.1 Alluvium-schist contact.
- 7.8 Alluvium-schist contact.
- 13.7 Alluvium-Precambrian granite contact.

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Aerial Magnetic Survey
Preliminary Report

Area C:

Line 5

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

0.6 Alluvium-tertiary andesite contact.

1.0 Andesite-precambrian granite contact.

5.5 Fault or contact, probably fault in granite gneiss.

9.5 Fault or contact, probably fault in gneiss

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Aerial Magnetic Survey
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Area C:

Line 6

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 1.8 Fault or contact.
- 2.2 Fault or contact.
- 3.3 Fault or contact, probably tertiary-cretaceous
volcanics-precambrian granite contact.

No magnetic interesting areas on rest of record
alluvium apparently shallow.

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Aerial Magnetic Survey
Preliminary Report

Area C:

Line 7

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 0-3 Apparent shallow alluvium
- 0.3 Possible contact or fault
- 3.8 Probable contact of cretaceous andesite; shallow alluvium
- 4.2 Probable contact or fault, andesite-rhyolite contact
- 5.0-5.5 Magnetic highs possibly due to topography and local variations within the rhyolite
- 5.5 Possible fault or contact-alluvium shallow

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Aerial Magnetic Survey
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Area C:

Line 8

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Line 8 crosses the Arivaipa mineral district from the starting point through checkpoint 8 showing strong magnetic variation combined with shallow alluvium. Magnetic lows noted at check points 4.9, 5.3, 6.4 are of increased interest if local mining production is associated with hydrothermal alteration. Magnetic variations appear ideal for tracing structures- possibly related to mineral control. It is recommended that additional aerial magnetic coverage be flown over areas of past production and extended over indicated shallow pediments. Flight lines should be flown on a 1/4 mile grid pattern perpendicular to known structural lineation.

- 1.3 Near surface feature - 400 gamma high-relative maximum depth - surface to 500' - no obvious explanation. Further magnetic investigation indicated from checkpoint 1.1 to 1.7.
- 4.8 Possible contact, cretaceous rhyolite at surface
- 4.9-5.6 General small low in vicinity of nearby mines.
- 5.7 Possible projection of cretaceous rhyolite beneath shallow alluvium.
- 6.3 Possible fault in schist beneath shallow alluvium; 300 gamma variation; mine 0.5 miles to east.
- 13.3 Possible fault or contact beneath shallow alluvial fill.
- 14.4 Possible fault or contact at shallow depth.
- 15.5- Possible schist below shallow alluvium.
end of line

MIAMI COPPER COMPANY
Aerial Magnetic Survey
Preliminary Report

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Area C:

Line 15

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURE AND
MISCELLANEOUS INTERPRETATION

Magnetic anomalism from about check point 17 to the end of the line may tie in with Tiger-Copper Creek-Arivaipa district magnetic-mineral lineation. Although no specific anomaly can be correlated with known mineralization. An aerial magnetic grid connecting these districts may delineate more specific zones of interest.

- 0.4 Possible projection of tertiary andesite beneath shallow alluvium.
- 4.4 Contact tertiary andesite at surface.
- 5.9 Tertiary andesite outcrops at surface.
- 6.9 Fault or contact.
- 7.9 Fault or contact; shallow alluvium.
- 8.8 Basalt outcrop.
- 10.4-18 Basalt outcrop; volcanics present at or near surface.
- 15.9 Possible fault in volcanics.
- 16.8 Possible fault in volcanics.
- 17.8 Fault or contact having 400-500' of relative maximum alluvial depth.
- 19.0 Possible fault or contact on stream trending NE.
- 20.1 Possible projection of tertiary intrusion beneath shallow sediments along projected zone of weakness from copper creek lineation (?).
- 20.7 Possible fault or contact beneath shallow alluvium.
- 20.9 Fault or contact.

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Area C:

Line 16

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURE AND
MISCELLANEOUS INTERPRETATION

- 1.0 Apparent contact or fault.
- 1.9 Possible andesite beneath shallow alluvium.
- 3.0 Andesite outcrop at surface.
- 3.8 Apparent fault or contact.

Rest of record anomalously uniform reflecting either deep alluvium or thick sediments of low magnetic susceptibility, such as projected limestones to the east. Similar limestones in Johnson Camp area contain contact deposits with substantial past production. No crystalline rock, however, is evident from this magnetic record.

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Area C:

Line 17

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Nothing of interest magnetically appears on
the record.

1-6.2 Continued sediments of low magnetic susceptibility.

6.2-end of line General magnetic variation probably due to
tertiary volcanics beneath deep alluvium.

TABLE OF CONTENTS

Cover A

1. Supplementary Recommendations of Interest
2. The following preliminary interpretation with their corresponding magnetic profile are numbered sequentially: 1-8, 15-17
3. Map pocket includes plan locations of portions of Graham, Cochise, Pinal and Pima Counties which show flight paths, check points, and zones of interest.

Cover B

1. The following preliminary interpretations with their corresponding magnetic profiles are numbered sequentially: 18-20, 22-24, 27, 28, 30, 33-36.

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Area C:

Line 18

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Nothing of apparent interest on record.

1.6 Apparent fault or contact - tertiary rhyolite
at surface.

1.9 Apparent fault or contact.

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Area C;

Line 19 North

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Checkpoint 6 to 8.7 is included on U.S.G.S. Aeromagnetic map of the Mammoth quadrangle, Pinal and Pima Counties (map GP-419, 1963).

Because San Manuel and Tiger mineralization occur on strong aerial magnetic lineation intersections and similar intersections are evident regionally (Ref. GP-419), consideration should be given to a detailed evaluation of published data as well as additional aerial magnetic coverage to the north and east.

- 0.1 Probably crossing diabase, Apache Group contact.
- 0.2 Possible contact Apache Group-schist (?), or fault.
- 1.8 Possible diabase projection from east under shallow alluvium or possible Tertiary andesite.
- 2.8 Magnetic high possibly related to projection of Tertiary intrusions along zone of weakness.
- 3.9 Possible fault and, or contact.
- 4.2 Small low on trend indicated by U.S.G.S. aeromagnetic map to the southwest which may be traceable to small mine three miles northeast.
- 4.8-6.8 Same magnetic feature on magnetic lineation trending northeast from San Manuel and Tiger complex as shown on GP-419. Feature thought to have been drilled by Bear Creek Mining Company to depth of 1700' in acidic (?) volcanics. Recommend research for conformation of drilling, also continued aerial magnetic grid to north and east of GP-419 to further define Tiger-Copper Creek lineation.
- 8.6-9.2 Magnetic high on E-W projected fault or contact extending through San Manuel Mine area (Ref. GP-419).
- 9.3-9.7 Tertiary andesite at surface.
- 9.7-14.2 Shallow alluvium.

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Area C:

Line 19 South

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent magnetic anomalies of interest on
this record.

- 0.8 Possible faults in precambrian granite.
- 1.1 Possible faults in precambrian granite.
- 1.9 Possible faults in precambrian granite.
- 7.05 Fault and, or contact under shallow alluvium.
- 7.7 Possible fault and, or contact.

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Area C:

Line 20

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Several features of only slight magnetic variation were considered because of the district involved and general uniformity of the magnetic profile.

- 2 Possible schist projection beneath alluvium.
- 4.2 Possible granite extention under alluvium.
- 5 Possible schist alluvium contact at surface or projected schist Tertiary-granite contact at shallow depth.
- 6 Probable fault and/ or contact.

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Area C:

Line 22

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 1 Probably due to tertiary andesite outcropping at surface.
- 4 Probably due to Jurassic and Triassic granite.
- 4.9 Due to mapped fault.

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Area C:

Line 23

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 3 Possible fault contact, dike on projection of fault from about three miles to the west. On Cochise County geologic map this fault runs through Bisbee. Recommended ground magnetic to define location and character.
- 9.8 Indicated shallow alluvium.
- 12.2 Probable fault.

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Area C:

Line 24

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

- 0.5 Profile confused by artificial effects including
railroad. May reflect crystalline rock at depth. (?)
- 7 Possible fault and, or contact, or telephone line.
- 9.2 Possible fault and, or contact could be a westward
extention of zone of weakness on which Bisbee
occurs. Recommended ground magnetic followup.
- 15.9 Probably due to railroad.

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Area C:

Line 27

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Mineralization is noted to the west between
Checkpoints 1.8 and 3.5.

- 0.2 Possible fault and, or contact near possible projected
fault intersection noted on Cochise geology map.
- 0.95 Probable fault and, or contact.
- 2.1 Strong fault and, or contact mapped as fault
contact between Cambrian Bolsa and Devonian-
Carboniferous limestones.
- 3 Possible contact between Carboniferous-Devonian
limestone and Precambrian schist. Mine noted in
schist one mile to the west.
- 4.1 Possible fault and, or contact mapped as projected
contacts of Tertiary intrusive with Cambrian Bolsa.
Relative maximum depth to magnetic basement
approximately 2000'.

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Area C:

Line 28

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

- 1 Probable fault and or contact possibly between Cretaceous sediment and carboniferous-Devonian limestone.
- 2.7 Projected gneiss beneath sediments.
- 3.5 Probable fault and or contact between gneiss and schist; 600' relative maximum depth.

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Area C:

Line 30

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Station 4.6 to 11.7 are included on U.S.G.S. aeromagnetic map of the Mammoth Quadrangle, Pinal and Pima Counties, Arizona. (GP-419), 1963

Strong magnetic relief in area of San Manuel-Tiger mineralization suggests a detailed evaluation of GP-419. Of note are broad magnetic features to the north indicating possible extensions of favorable broken geology.

- 0.3 Possible contact between granite and Carboniferous-Devonian limestones.
- 5-7 Broad magnetic response from San Pedro Valley; deep alluvium.
- 7.3-7.6 San Manuel smelter complex.
- 8.0 Strong lineation intersection of Copper Creek lineation probably due to faulting. Ground magnetics are indicated for better definition of this feature. An excellent area for reconnaissance induced polarization if not already undertaken.
- 8.5 High also noted on GP-419. No obvious geological explanation; adjacent San Manuel Mine low.
- 11.8 Possible fault and, or contact. Of note is projected fault trace along Tucson Wash. Mine 2.5 miles to west.
- 12-14 Deep alluvium.
- 15 Possible broad suboutcrop of diabase or Tertiary andesite. Depth to basement 1500 feet if feature has been crossed perpendicularly. Of interest is possible relationship with Aravaipa Creek which may follow deep seated fault.
- 16.6 Possible shallowing of alluvium; on line with a series of N-NW trending small Tertiary andesite outcrops.

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Area C:

Line 33

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

Record ends in shallow alluvium. Although no interesting projections are evident from one magnetic profile, much broken geology is indicated in an area of favorable regional geologic projections.

- 0.9 Probable fault.
- 1.4 Possible fault and, or contact.
- 4.2-8 Possible Tertiary volcanics beneath shallow alluvium.
- 8.6 Surface outcrop of basalt.
- 9.1 Possible projected fault.
- 9.35 Possible projected fault and, or contact.
- 9.35-10.2 Possible Cretaceous sediments.
- 10.3 Probable fault or contact.
- 11(end of) Probable near surface fault and, or contact.
(line) No obvious geological explanation.

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Area C:

Line 34

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

0.33 Probable fault.

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Aerial Magnetic Survey
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Area C:

Line 35

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest

- 4 Possible fault or contact.
- 5.2 Possible fault or contact.



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2510 16th Avenue S.W.

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Area C:

Line 36

CHECKPOINT POSSIBLE SIGNIFICANT MAGNETIC FEATURES AND
MISCELLANEOUS INTERPRETATION

No apparent anomalies of interest.

- 3 Apparent alluvium of less than 500' in depth.
- 3.9 On alluvium/ granite contact.

RECONNAISSANCE TOTAL INTENSITY AIRBORNE MAGNETIC TRAVERSES
OF
SELECTED PORTIONS OF ARIZONA

for
MIAMI COPPER COMPANY

NOVEMBER 1966

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

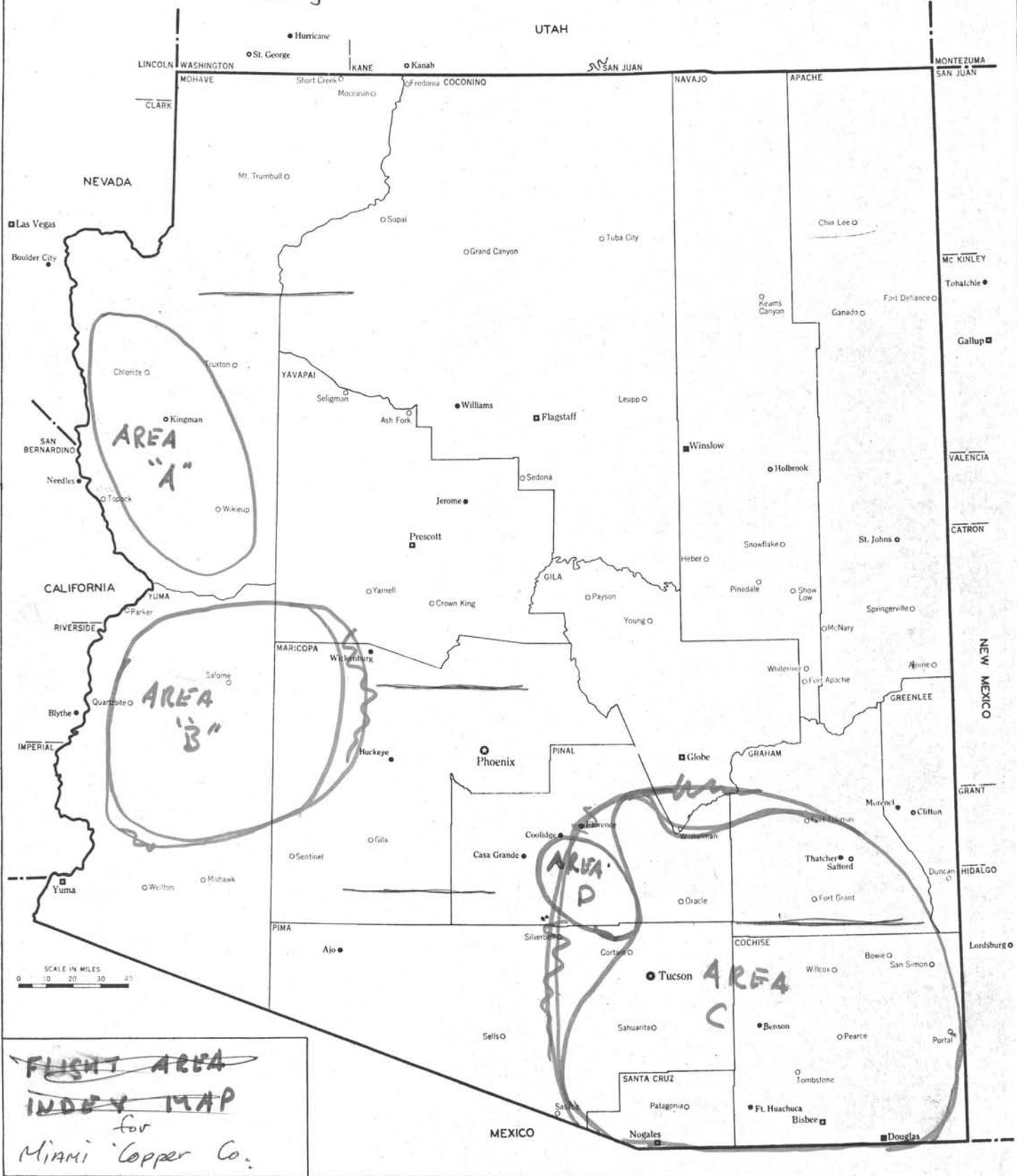
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Interpretation Procedure	IV
Operational Procedure, Equipment & Personnel	V
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Area D (Submitted as a separate report and under separate cover.)	
Inventory: Total job material forwarded to Miami Copper Co. November 21, 1966 includes: Report on Areas A,B & C and Report on Area D with associated final maps, work maps (7.5", 15" and 1:250,000) and final aerial magnetic flight records.	
In Map Pocket: (3 pieces)	
Aerial Magnetic Location Plan and Geology of Area A, B. and C.	

AREA D

ENCLOSED UNDER SEPARATE COVER

Flight Area Index Map



~~FLIGHT AREA INDEX MAP~~
for
Miami Copper Co.
by

Heinrich Geoporation Co. by
Nov. 1966



INTRODUCTION

At the request of Miami Copper Company, Heinrichs Geoexploration Company conducted a reconnaissance airborne magnetic survey covering 2106.4 miles in 4 areas, (A, B, C, & D) of southern and western Arizona. For general area location see the Flight Area Index Map (front piece). For detailed locations, refer to the Location Plan and Geologic Maps for individual areas.

<u>Area</u>	<u>Miles Flown</u>	<u>General Location</u>
A	432.6	Mostly Mohave County
B	654.3	Mostly Yuma
C	949.2	Cochise-Pima, Southern Graham-Pinal
D	70.3	Tortolita and Picacho Mountains, Southern Pinal County (Detail, interpretation and report submitted under separate cover).

Flying and interpretation were accomplished in the interim from May into November 1966.

PRIORITY CONCLUSIONS AND RECOMMENDATIONS

The following seven areas listed in order of priority for immediate further considerations were selected on a basis of correlation with known and projected mineral exposure, rock type, structure and relative maximum depths to bedrock, magnetic profile character and shape. Specific interpretation is discussed later in the text. To a degree, these conclusions are unavoidably somewhat academic or abstract in the best economic geologic sense. This is because they are derived from only a partial regional sampling of a single physical parameter, necessarily correlated with published geology, mostly of a semi-regional nature.

In order to gain maximum real value from these results, it is of paramount importance that some post submittal client and contractor staff seminars be held as soon as clients' staff has preliminarily assimilated the report contents and formulated some initial reactions. To the maximum degree feasible and practical, this should be done formally and in writing.

1.

Area C

Line 23, Checkpoint 2.9 (Page 77 of text)

Line 24, Checkpoint 9.4 (Page 78 of text)

These are possible magnetic expressions of the Dividend fault on which Bisbee occurs. Because of the apparent importance of this feature, possible east and west extensions traced with aerial magnetics could prove valuable. Once the extent is known, more exact ground magnetics should precede further geophysics or drilling and ultimate geological correlation. When following structure east of Bisbee, two or three additional longitudinal lines should be considered to help define structural grain between Checkpoint 1 and 6 of Line 23. When following structure west of Bisbee, consideration should be given to flying a magnetic grid connecting Bisbee with geology at Tombstone.

2.

Area C

Line 32, Checkpoints 7.0-7.3 (Page 86 of text)

Major structural breaks in conjunction with a 300 + gamma low west of Mineral Mountain, roughly seven miles SE of Florence Junction, Pinal County offers a possible area of hydrothermal alteration. An aerial magnetic grid should first be run to determine character and extent of anomaly as well as adjacent shallow structure. Ground magnetics should then be used to varify areas of interest. Reconnaissance induced polarization should be planned using projected geologic magnetics, if economic potential correlation with sulfide location, grade and distribution is deemed feasible.

3.

Area C

Line 11, (Page 62 of text)

Shallow pediments are apparent southwest and west of Dos Cabezas mineralization. Known mineralization is associated with north striking diabase dikes and east-west striking faults. Both the faults and dikes have a good chance of showing up magnetically. The intersections of these faults and dikes if located with ground

magnetics and not too deep should offer good targets for reconnaissance I.P. Depth may be most efficiently checked by reconnaissance gravity or other geophysical methods. A geologic check is recommended to first establish proper age relationships and apparent trends of mineralizers and acquire samples for magnetic susceptibility testing. Then an aerial magnetic grid should be planned to encompass zones to the west and south of prominent mineralization. Lines again should be run as normal to pertinent structure as possible.

4.

Area B

Line 23, Checkpoint 4.5 (Page 40 of text)

This is an isolated magnetic feature indicating shallow alluvium opposite known mineralization, (southwest flank of the Kofa Mountains, Yuma County). A few additional aerial magnetic profiles would show if similar features are nearby. Ground magnetics would quickly show an exact location. A reconnaissance I.P. profile along strike would show if, where and how much sulfide were present.

5.

Area A

Line 11, Checkpoint 0-F3.0 (Page 15 of text)

Shallow alluvium in conjunction with varied geology is west of and regionally associated with Ithaca Peak mineralization.

At 0.3 a fault and/or contact appears which should be traceable with ground magnetics. Between 0.9 and 1.0 appears what may be a buried plug. If land is available an aerial magnetic grid with 1/4 and 1/2 mile line spacing and 500' elevation is recommended. Flight paths should be planned normal to projected structure and extend over known mineralization for control. As mineralization is also evident on the northern extension of Sacramento Valley, additional flight paths to the east should be considered. Over deeper pediment near the center of the Sacramento basin, line spacing should be extended to 1/2 mile to lessen expense.

6.

Area C

Line 8, Arivaipa District, western flank of the Santa Teresa Mountains (Page 57 of text)

Shallow alluvium, good magnetic variations and significant mineralization over considerable potential area indicate additional aerial magnetics could delineate most favorable zones for more detailed exploration.

A geologic study of the area with magnetic susceptibility testing of known mineralization and rock types involved is recommended to precede any other additional work.

7.

Area B

Line 26, Checkpoint 4.8, western flank of Castle Dome Mountains, Yuma County (Page 43 of text)

Probable fault and/or mineralized contact between Cretaceous Kofa volcanics to the north and Mesozoic sediments to the south. Area should be briefly ground checked by a geologist using a magnetometer. Fault and/or contact should be traceable under alluvium where induced polarization would then be applicable because economic possibilities may be in the covered or concealed portions of the favorable structure.

INTERPRETATION PROCEDURE

Owing to the somewhat preliminary broad reconnaissance nature of this project involving single profiles rather than gridded coverage, such details as strike direction could only be inferred by geologic projection. Factors related to shape and depth, etc. are dependent on true anomaly character normal to strike and, therefore estimates regarding these are very approximate and are likely subject to considerable revision either way in the event additional coverage is obtained. Otherwise, conventional applied magnetic geophysical interpretation methods were used.

Flight path recovery was performed by coordinating the pilot and navigator and using topographic maps for visual or ground recognition.

Chart paper is specially designed by Geox and is read from right to left with increasing values in gammas with the top of the record indicated by 10 on the vertical scale and is 1000 gamma across the chart. The vertical scale is printed each six inches across the record.

The horizontal scale is 5" or 6" per minute. Checkpoints are as indicated on the record in a brown ink. These points are called out on the intercom by the navigator and plotted in flight on the chart by the observer.

Magnetic data is presented in profile form and on location plan and geology maps. Checkpoints were numbered from points located on the ground. An F preceding a checkpoint indicates a false checkpoint which was not actually located but is entered on the record and plan location for convenience only. Geologic maps are enlargements of county geology maps to a scale of 1:250,000 which overlay the USGS topographic maps on the same scale.

Interpretation was by John Langs, Harvey Durand, Don Cooley, and John McDonnell; geophysicists and geologists of the Geox staff. Other personnel were Jack Vanderkolk and Dick Barrett, pilots; Jim Bauersachs and Richard Carter, navigators, and Jim Bush, instrument observer. E. Grover Heinrichs directed general operations, Walter Heinrichs, Jr. provided supervisory assistance throughout the project and in completion of final report, and Chris Ludwig gave occasional technical support.

AREA A

SUMMARY CONCLUSIONS, RECOMMENDATIONS AND DETAIL INTERPRETATION

AREA A

Summary Conclusions, Recommendations
& detail Interpretation

Tabbed