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JDS

# ASARCO

**Exploration Department**
Southwestern United States Division

James D. Sell
Manager

November 13, 1990

Ms. Diana P. Kern
President
Bendigo Inc.
3410 W. Plumb Lane
Reno, NV 89509

Stardust Project
Yuma & Maricopa Cos., AZ

Dear Diana:

I thank you very much for the Stardust Project proposal, which I'm returning to you.

Certainly the area is one of many out there that deserves the quality of work which has been performed and Mr. Kern should be complimented on the report.

As winter comes along and we expand outward from BVO, I'm sure we'll stop by and field review the area.

Is the Morgan family, lease holders, the same as the BVO Morgan's?

Thanks again, and keep in touch.

Sincerely,

James D. Sell

JDS:mek

James D. Sell

cc: W.L. Kurtz

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703-0747
1150 North 7th Avenue (602) 792-3010

JDS

# STARDUST PROJECT

## SUMMARY REPORT

Yuma and Maricopa Counties, Arizona

Richard R. Kern

June, 1990

# TABLE OF CONTENTS



## APPENDIX

## LIST OF ILLUSTRATIONS

Plate Number

## SUMMARY AND CONCLUSIONS

During the winter of 1989-1990, Homestake conducted geologic mapping of an area of approximately 18 square miles including the leased claim block. This work confirms the presence of a regional detachment fault with strong brecciation over thicknesses of up to 200 feet. Rock chip sampling indicates only weak gold values associated with the detachment where exposed. However, rock chip and soil sampling of the Stardust shaft area and to the northwest indicates possible buried mineralization along the intersection of a high angle east-west trending shear zone and the detachment fault located beneath Tertiary volcanics. At the Stardust shaft, the high angle shear averages 0.04 oz/ton gold across 75 feet. Amethystine quartz rich hematitic breccia occurs west of the shaft and is thought to be part of the detachment zone.

A grid geochem drilling program(R.A.B.) consisting of 66 shallow air rotary drill holes was conducted through cover in the Stardust shaft area. While this program successfully defined near-east-west trending gold and silver anomalies, these anomalies are too small to be of further interest to Homestake. Only a small area of hematitic breccia was intersected. This unit, which appears to dip gently north, is eroded off to the depths we were able to drill with the small rig used. In addition, Tertiary volcanic rocks exposed 2,000 feet west of the shaft are faulted into position and therefore much thicker than expected.

Geochem drilling through cover was also conducted to the northwest in the area of a possible soil anomaly. Unfortunately, both holes were lost due to caving before bedrock was reached. Only weakly anomalous gold was found in either drill hole.

Two lines of geochem holes were also drilled on the Black Silver prospect. Favorable silver values including 20 feet averaging 4.92 oz/ton were intersected in a gently west dipping low angle structure. Unfortunately, gold values were nil.

The Stardust project has additional potential for bulk minable gold/silver deposits. Mineralized detachment breccia may occur at the base of Tertiary volcanics under cover in the northwest portion of the project area. Open pitable silver targets occur at Black Silver and north of the Stardust shaft. North of Black Silver anomalous rock chip samples indicate other possible targets. Smaller targets may occur near old mines in the southern portion of the claim block. Because this additional potential is not sufficient for the project to compete with our current property queue, the Stardust lease will be terminated.

## LOCATION

The project is located at the western end of the Gila Mountains 70 miles southwest of Phoenix, Arizona. Access is via Interstate 10 and the Harquahala Valley road. Dirt roads in the project area are mostly graded and in good condition.

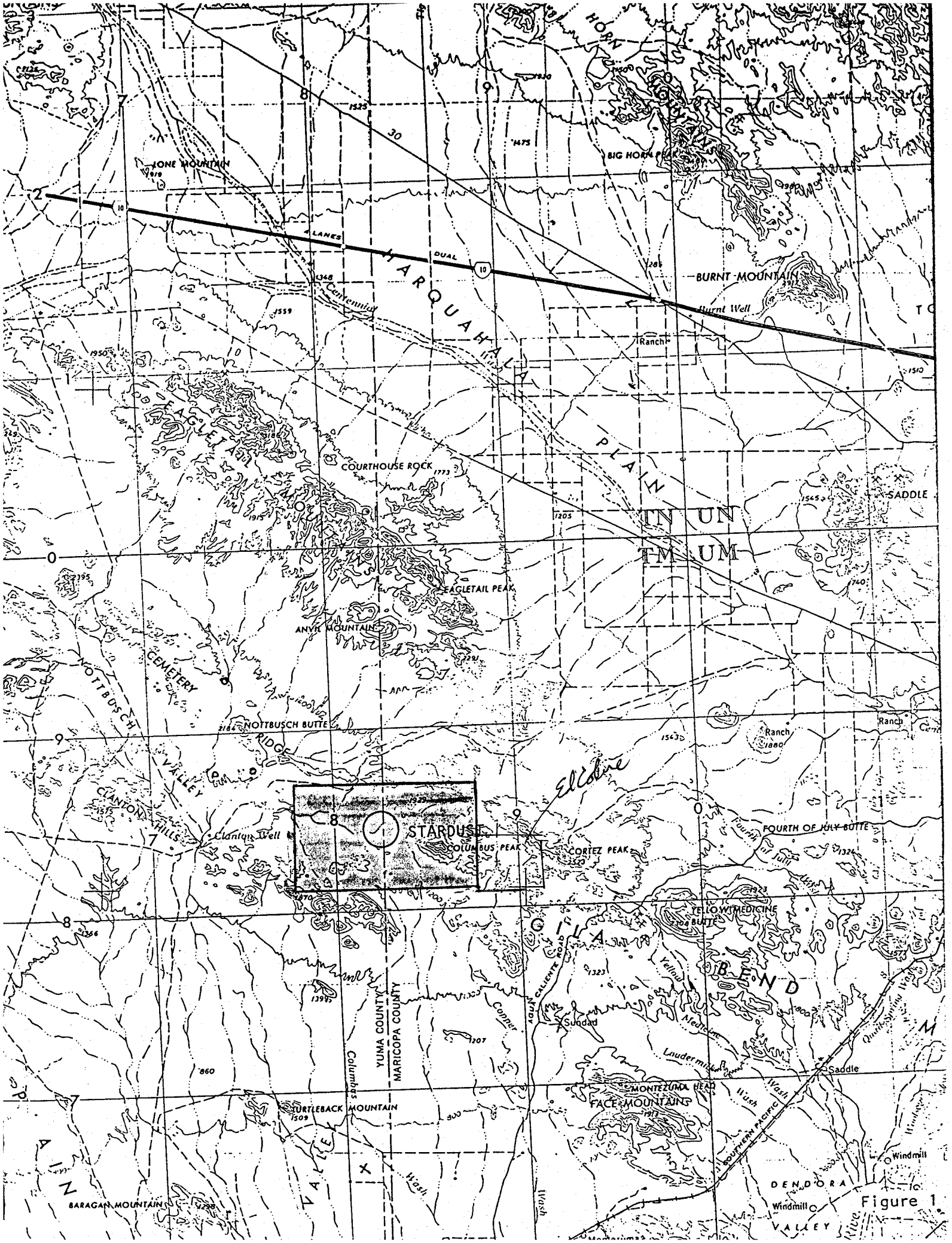

LONE MOUNTAIN
BIG HORN PEAK
BURNT MOUNTAIN
Burnt Well
Ranch
HARQUAHALA
PLAIN
COURTHOUSE ROCK
EAGLETAIL
EAGLETAIL PEAK
ANVIL MOUNTAIN
SADDLE
NOTTBUSCH BUTTE
NOTTBUSCH
CEMETERY
RIDGE
VALLEY
CLANTON HILLS
Clanton Well
STARDUST
COLUMBUS PEAK
CORTEZ PEAK
Elcabe
FOURTH OF JULY BUTTE
YELLOW MEDICINE BUTTE
GILA
BEND
Sundad
Saddle
YUMA COUNTY
MARICOPA COUNTY
Columbus
TURTLEBACK MOUNTAIN
MONTEZUMA HEAD
FACE MOUNTAINS
SOUTHERN PACIFIC
Windmill
DENDORA
VALLEY
BARAGAN MOUNTAIN
PAZ
VALLE
Wash
Conner
Lauderman
Medicine
Yellow
Quartzsite
Ranch

Figure 1

## LAND STATUS

Homestake signed a standard mining lease with the Morgan family, owners of 133 unpatented lode claims in June of 1989. The lease has a 5 percent net returns royalty and monthly payments. The lease has an annual work requirement of $24,000 and a one mile area of interest. In July, 1989, Homestake staked 78 lode claims, mostly on the western end of the claim block. An additional 15 lode claims were staked in March, 1990 to cover possible detachment mineralization on the north flank of Columbus peak. A claim map of the entire block is included in this report as Plates 3 and 4.

Parts of the western and southern area of the project lie within a Wilderness Study Area. However, both the BLM and Arizona congressmen indicate the area has been rejected for wilderness classification.

## GEOLOGY

Basement rocks at Stardust are dominated by schistose metasediments and metavolcanics cut by a coarsely crystalline Cretaceous(?) monzonitic intrusive (see Plates 1 and 2). The Precambrian schistose rocks are largely metavolcanics and include some 2-mica granite intrusives. The monzonite has not been regionally metamorphosed. Tertiary volcanics unconformably overlay the basement rocks. These consist mostly of intermediate composition flows and dikes. Quaternary basalt caps the higher peaks and occurs as west-northwest trending dikes.

A detachment fault breccia up to 200 feet in thickness, occurs near the contact between basement and Tertiary volcanics. This structural host is best exposed on Columbus peak and the butte to the north. Weak gold-copper mineralization occurs intermittently in the breccia on Columbus Peak but the north butte breccias are barren. A subsidiary low-angle breccia is exposed at the Black Silver mine.

The low angle breccia zones are lost under cover as one traverses westerly. One small exposure of Tertiary dacite does occur 2.5 miles west of Columbus Peak 2,000 feet west of the Stardust shaft. A small zone of poorly exposed breccia occurs along the lower contact of the dacite. Banded, amethystine quartz float is found over a wide area between this outcrop and the Stardust shaft.

North-south, northeast, and northwest trending high angle faults are common throughout the project area. A strong east-west shear zone occurs in the area of the Stardust shaft workings. Northeast and east-west faults appear most mineralized.

## ALTERATION AND MINERALIZATION

Alteration is shown on Plates 5 and 6. Epidote is the most widespread alteration mineral present in the project area. In areas of pronounced hydrothermal alteration, especially within the detachment breccias, epidote is replaced by hematite and chlorite.

Significant silicification is found at both the Black Silver and Stardust shaft prospects. At Black Silver, silicification is both present as veinlets of quartz and as flooding. At the Stardust shaft, purple amethystine quartz which is well banded and chalcedonic quartz are both present as veinlets. This material occurs as float over a wide area. Areas of silicification have a direct correlation to gold/silver mineralization.

Gold/silver mineralization correlates poorly with other elements. The hematite which is often an indicator of precious metal mineralization at Stardust may have copper and manganese associated.

## GEOCHEMISTRY

Broadly spaced rock chip sampling and assaying for gold and silver has been conducted over the project area. Results are shown on Plates 7-12. In addition, a 600 feet by 750 feet spaced soil grid was sampled over an area of approximately six square miles. Soil samples were assayed for gold, silver, and partially for copper. The gold detection limit was 10 ppb. Results are shown on Plates 13-20. Several large low amplitude precious metal anomalies were detected. The largest is located in the northwest corner of the claim block. Unfortunately, repeat sampling did not find as many anomalous values. It appears this anomaly is related to micronuggets in the alluvium. Other anomalies represent lower priority targets.

Geochem drilling(R.A.B.) of cover to sample bedrock was conducted in three areas. These are shown on Plates 7 and 8. The bulk of the drilling was done on the Stardust shaft grid. Here 66 holes attempted to reach bedrock. Unfortunately, gravel cover is thicker than expected in the northern and western portions of the grid preventing collection of bedrock information over as large an area as originally planned. Drilling cross sections of geology and gold/silver geochemistry as well as plan maps of geology and contoured geochemistry are shown on Figures 2-21.

The Stardust geochem drilling found only a remnant of mineralized detachment breccia. Although covered by a topographic high, the northern portion of the grid was a canyon before covered by gravel. During formation of this canyon, the breccia was eroded off as far north as we drilled. To the west, Tertiary volcanics which may have a detachment breccia beneath were found to be much thicker than expected probably because they were faulted into their current position. Two distinct east-west gold/silver anomalies occur at Stardust and probably represent the location of feeder structures.

Two geochem holes were drilled in the northwest part of the claim block in the area of our large soil anomaly(SA). Results are shown on Figures 22-24. Because of caving, the holes did not reach bedrock. Weak gold was detected in alluvium in both holes.

Seven geochem holes were drilled in two areas at Black Silver. Results are shown on Figures 25-29. The two most northwesterly holes of line 2 intersected a 30-60 feet thick low angle breccia containing significant silver values. The top 20 feet of this breccia assayed 4.92 oz/ton silver in the most northwesterly hole.

66
2
7
75 holes

Stardust ~~Range~~

| | yuma Co | | | maricopa Co | | | |
|---|---|---|---|---|---|---|---|
| ~~R[illegible]~~ | 34 | 35 | 36 | 31 | 32 | 33 | T1S |
| | 3 | 2 | 1 | 6 | 5 | 4 | T2S |
| | 10 | 11 | 12 | 7 | 8 | 9 | |
| | 15 | 14 | 13 | 18 | 17 | 16 | |

R1~~[illegible]~~ R1~~[illegible]~~W

Eagle Tail

Gila Bend
Mtg Clear
Feb.

10. ASARCO Eagle Sheet.

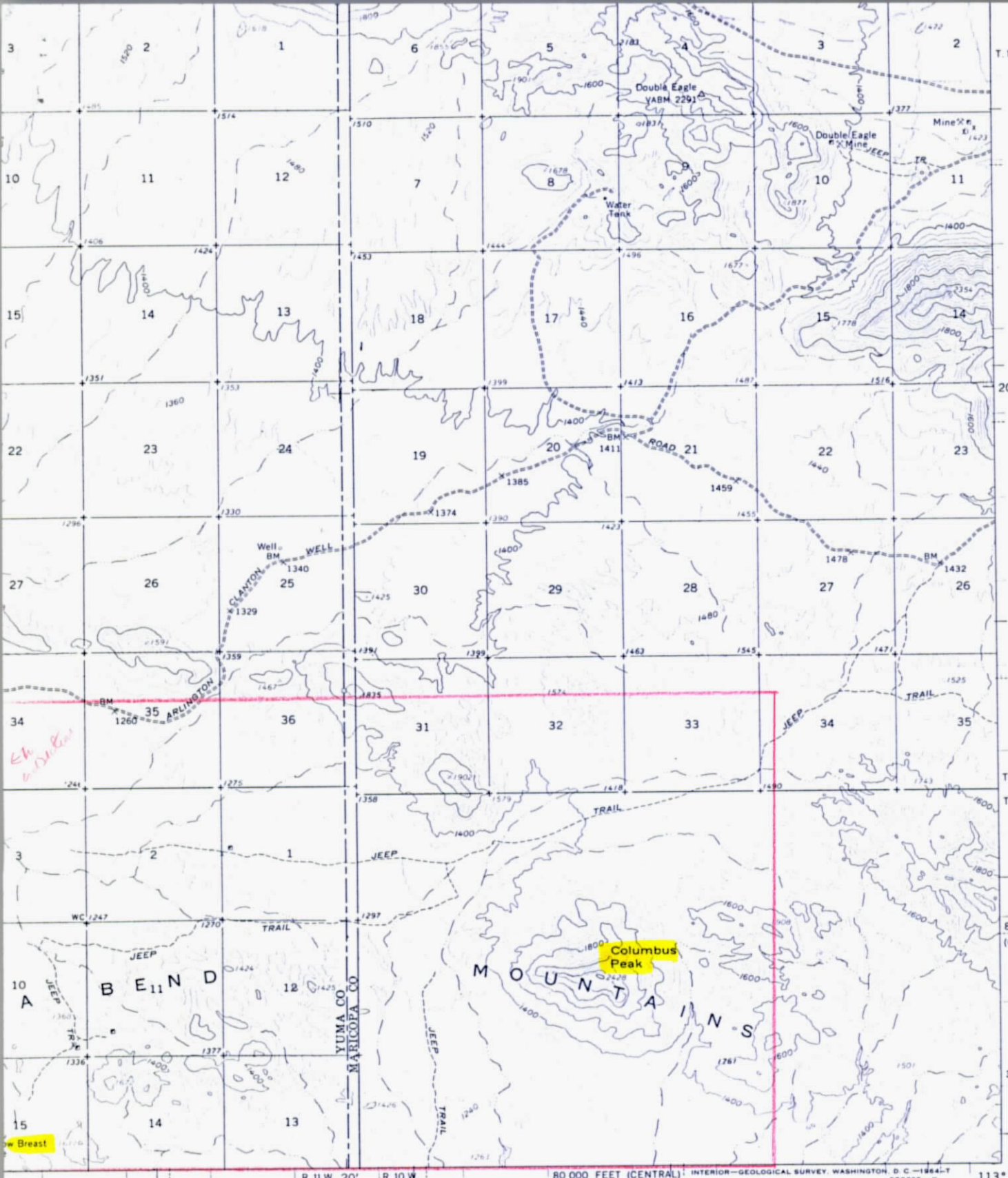
ch. B&H group. (Adayana Mine)
Center of unsurvey sec 18 T 2S R 6W.
Cu-Au-Ag records. Au 0.1 oz±.
Woolsey Pedi Quad Cu 2-4%
Ag 1-2 oz

Same w/ Rowley Mine
Sec 25-26-30 ~~T5S R8W~~ ~~R8W~~ T4S, R 7 8W.

Same Gold Bug
cyanide leach. Sec: 1,2,3,10,11,12
T 4S R5W.
Cottom Center Quad.

El Cobre just SE of Star West.
1 drill core 787 ft. CuO no Au assay.
Sec 10-11,12,14,15 T2S R10W

4th July Prop. Dixie Mine Sec 12,7 T 2S, R 7 8W
Monarco Sheet. lots of shallow holes ±20' deep.
to Cu 10 sections
No Au assay. Dixie in middle.




INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964—T

1:62500

2 3 4 MILES

9000 12000 15000 18000 21000 FEET

2 3 4 5 KILOMETERS

INTERVAL 40 FEET
PRESENT 20-FOOT CONTOURS
MEAN SEA LEVEL

NATIONAL MAP ACCURACY STANDARDS
DENVER 25, COLORADO OR WASHINGTON 25, D. C.
MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ARIZONA

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Unimproved dirt

# EAGLETAIL MTS., ARIZ.

N3315—W11315/15

1962

JDS

# ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☒ Submittal

## Section I General Indexing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ① Name(s) of Property or Area: Stardust Project | | | | | | ② Country: USA | ③ State or Province: Arizona |
| | | | | | | ④ USGS Quad.: Eagletail Mtn, 15' | ⑤ File or Gore No.: |
| ⑥ Latitude: 33°15'N-33°18'N | ⑦ Longitude: 113°16'W-113°23'W | ⑧ AMS Sheet: Phoenix | Township: 2 S | Range: 10 W | Section: 5 et al | ⑨ Examined by: J.D. Sell | ⑩ Date: 11-13-90 |
| | | | | | | ⑪ Office: Tucson SWED | ⑫ Field Days: None |

## Section II Sources of Information

Date Typed 11/19/90

⑬ References

| Author | Date | Title | Publications | Vol. No. |
|---|---|---|---|---|
| Kern, Richard R. | June 1990 | Stardust Project, Yuma & Maricopa Cos., AZ | | |
| | | Project report of Homestake Mining Co. activities | | |

## Section III Appraisal

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ No gold in drill hole.

⑮
- ☐ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☒ ProspectS
- ☒ Drilling
- ☐
- ☒ Geologic Concept
- ☒ Geochem Anomaly
- ☐ Geophy Anomaly
- ☐

⑯ Production

| Commodity | Tons | Grade |
|---|---|---|
| Ag-Mn | Minor | |

⑰ Reserves ☐ Measured ☐ Estimated

| Commodity | Tons | Grade |
|---|---|---|
| None | | |

⑱ Num. Drill Holes 75
Approx Total Footage 5,669

⑲ Excavations previous mine shafts etc.

⑳ ☐ Spectro. Analysis Attached

㉑ ☒ Assays Attached in report Au-Ag

㉒ ☒ Geochem Results Attached in report Au-Ag-Cu

## Section IV Geologic Data

㉓ Commodity or Contained Metals: Silver, manganese, looking for gold (only smell found)

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: PЄ schist & 2-mica gr intruded by cretaceous monzonite Minor: Tert. Volcanics

㉖ Age of Host Rocks: as above

㉗ Nature of Exposures: Basin/Range Mtn area, fair exposures.

㉘ Alteration: Epidote, hematite, chlorite in detachment structure

㉙ Total Extent:

㉚ Structure: Detachment zone mapped and high angle qtz veins.

㉛ Ore Occurrence: Minor silver-manganese produced from high-angled qtz veins.

㉜ Age of Mineralization: Laramide - Late Tertiary

㉝ Conclusions & Recommendations: Homestakes exploration over 18 sq. miles and 75 drill holes failed to find a viable follow-up target. Values in detachment zone and high angled quartz veins not of sufficient size and extent.

Good mapping adds another piece to the W AZ puzzle.

(For additional space use extra sheets)

Form Revised-June 1980-J.H.C. MVK-5193