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Subject: EXPLORATION RECORD SHEETS #5 (SWED)

TYPED FROM: JANUARY 1984 TO: DECEMBER 30, 198

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

J. H. C.

JAN 22 1985

☒ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐

Section I General Indexing

① Name(s) of Property or Area: NUMBER 9 MINE					② Country: USA	③ State or Province: CA	
					④ USGS Quad.: Hornitos 7½'	⑤ File or Gore No.: Mariposa Co.	
⑥ Latitude: 37°31'	⑦ Longitude: 120°11'	⑧ AMS Sheet: San Jose	Township: 5S	Range: 16E	Section: 10	⑨ Examined by: HGKreis/GJStathis	⑩ Date: 9/1984
						⑪ Office: SWED	⑫ Field Days: 1

Section II Sources of Information

Date Typed 12/27/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Bowen & Gray, 1957, Mines & Min. Dep.,Mariposa Co.; CDM Report 53, p.143-145.				
Stathis, G.J., 1984, No. 9 and No. 5 Mines; Asarco ERS				
Watson, B.N., 1968, Recon. report on Mother Lode; Asarco files, p.24-29.				

Section III Appraisal

⑭ Recommendations

- ☐ Action Now
- ☐ Too Law Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ No further work

⑮

- ☒ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☐ Prospect
- ☐ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly
- ☐

⑯ Production

Commodity	Tons	Grade
Small, underground past production		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
None known		

⑱ Num. Drill Holes: None

Approx Total Footage:

⑲ Excavations: Dozen shallow cuts & open adits

⑳ ☐ Spectro. Analysis Attached ㉑ ☒ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: Native Au Minor:

㉕ Host Rocks-Major: Bio. schist Minor: Qtz. dio.

㉖ Age of Host Rocks: Upper Jurassic-Lower Cretaceous

㉗ Nature of Exposures: Extensive thin cover with fair to poor exposures as outcrops and in excavations.

㉘ Alteration: No extensive alteration. Local weak to moderate clay-sericite immediately adjacent to veins.

㉙ Total Extent:

㉚ Structure: N0-10°W striking, 10°-45°E dipping veins are locally up to 10' in thickness. Above Bowen & Gray reference notes up to 12 veins.

㉛ Ore Occurrence: Ore shoots up to 4' in thickness occur in the main quartz vein with erratically distributed auriferous pyrite.

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: This prospect evaluation was terminated when the lessee of the grazing rights strenuously objected to our presence on the property; however, enough outcrops were examined and enough samples were taken to form a reconnaissance opinion of the property.

Outside the ore shoots, the quartz veins carry 0.01 or more oz. Au per ton, and the wall rocks within 10' of the vein commonly run 0.01-0.02 oz Au. This is

(continued on p. 2)

(For additional space use extra sheets)

33. Conclusions & Recommendations (continued)

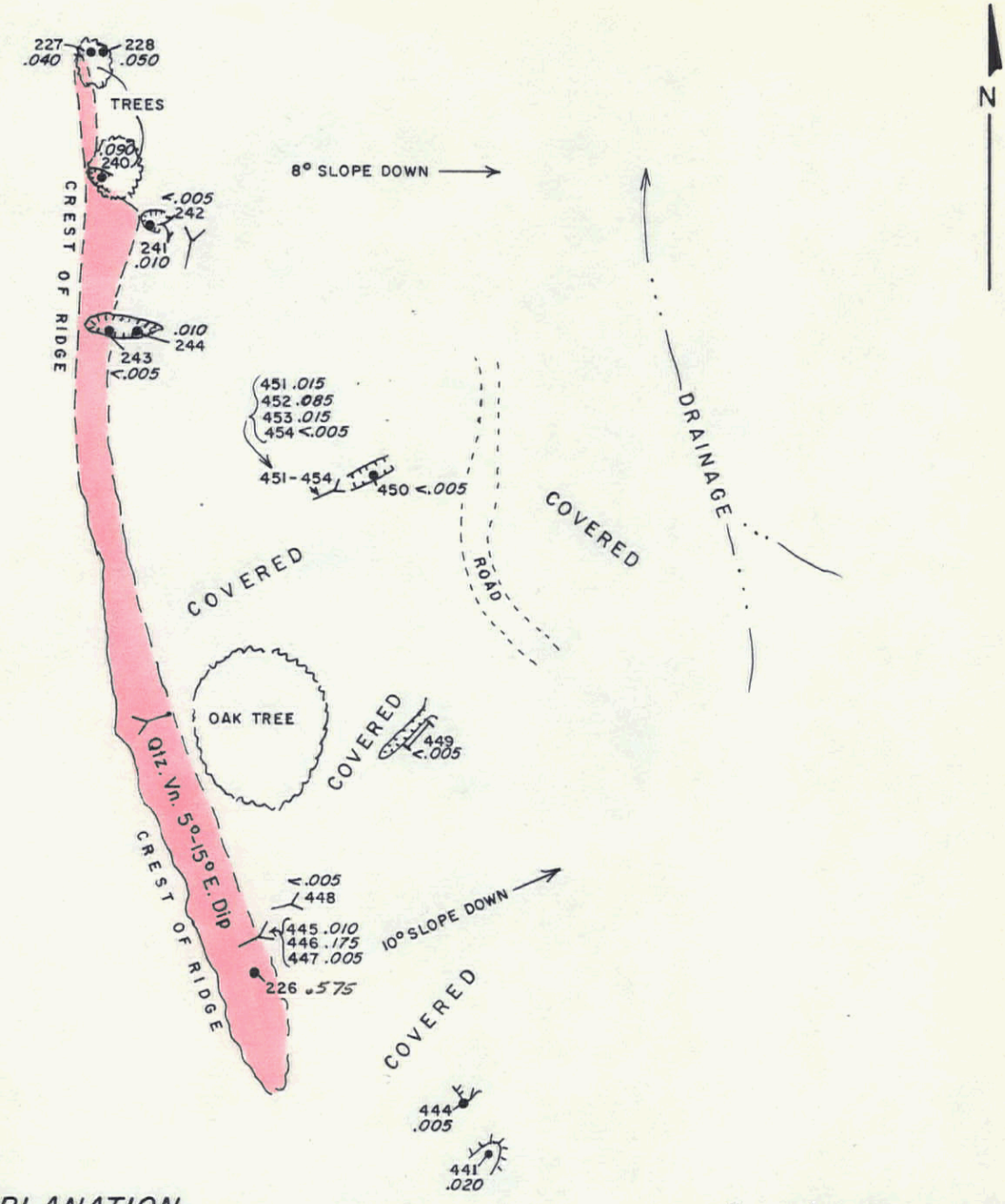
seen in samples such as K-84-445 to -447, -451 to -453, and also in the dumps of the workings which presumably followed the better mineralization. Samples further from the veins, such as K-84-444 & K-84-448 to -450 and K-84-454, suggest a lack of pervasive gold mineralization. This is further suggested by a lack of pervasive alteration.

There are several anomalous gold values in the north end of the area sampled. They range from 0.01 oz Au to 0.05 oz Au except for one sample of 0.09 oz Au (84-CA-240). Because of cover, the extent of this anomalous mineralization is not known.

The environment of a shallow, 10°-45° dipping, multiple vein system is explorationally attractive. Numerous samples of 0.01-0.02 oz Au and local 0.05 oz Au are encouraging, but most of these samples are immediately adjoining quartz veins. In the middle and south end of the area sampled, there are a number of samples and a lack of pervasive alteration that suggest the gold mineralization does not exist far from the quartz veins.

Although reconnaissance in nature, the results suggest a shallow dipping, quartz vein system, with a 10' to 50'(?) thickness, averaging ≤0.01-0.02 oz. Au per gon. The grade and tonnage potential is insufficient to justify more work at this time.

Attachments: Plan maps, field notes, and assay sheets.



EXPLANATION

GOLD VALUES in oz. / ton

K-84 Prefix Omitted From
441-454

84-CA Prefix Omitted From
240-244
227-228

Shallow dipping quartz vein, outcrop & suboutcrop.

1" = 100' (Brunton and Pace)

NOTE: Prospect examination was not completed because of the objection of the lessee of the grazing rights.

ASARCO Incorporated

Sample Location Map

NUMBER NINE MINE

Mariposa Co., Ca.

SCALE: 1" = 100'

H.G.Kreis & G.J.Stathis

October, 1984

MVK-6076

H.G.Kreis
Sept. 1984

NUMBER 9 MINE

Mariposa County, California

Au (opt)	Sample No.	Rock Type	% Qtz. Vns.	% Ank.	% FeOx	Py	Remarks
.020	K-84-441	Bio. Sch.	5	≤1	≤2	--	Dump Sample
.010	K-84-442	Bio. Sch.	8	≤1	≤2	Tr	" "
.015	K-84-443	Bio. Sch.	8	≤1	≤2	Tr	" "
.005	K-84-444	Bio. Sch.	0	0	3	--	
.010	K-84-445	Bio. Sch.	<1	0	3	--	7-10' ⊥ to vn, FW; 4" flt. gge, 30°E dip; partially clay alt.
.175	K-84-446	Bio. Sch.	<1	0	3	--	0-7' ⊥ to vn, FW; partially clay alt.
.005	K-84-447	Qtz. Vn.	100	--	--	--	2-3' thick, 10°E dip.
<*.005*	K-84-448	Qtz. Dio.	0	Fresh Rock		--	5' cut, 10-15' beneath projection of vein. Nearly fresh biotite.
<*.005*	K-84-449	Bio. Sch.	0	Weathered	Tr	--	4' (vert.) x 25' exposure.
<*.005*	K-84-450	Bio. Sch.	0	0	1 (mafics)	--	Weathered
.015	K-84-451	Qtz. Vn.	100	0	0	--	1' thick, 25°E dip; 25' beneath ground surface.
.085	K-84-452	Bio. Sch.	30	0(?)	3	--	Clay altered; F.W., 0-1' beneath #453.
.015	K-84-453	Qtz. Vn.	100	0	0	--	3' thick; 45°E dip; 5' from #451 (same vn.)
<*.005*	K-84-454	Bio. Sch.	<10	0	<4	--	Partly clay alt.; H.W., 0-20' from vn (#451).

Remark: Prospect examination was terminated when the lessee of the grazing rights objected to our presence on the property.

GJStathis

NUMBER 9 MINE

May 1984

84-CA-226 Qtz. vn., bull qtz., 50' wide (dip slope), wk. goeth. & hem. stn.
0.575 opt Au, 60 ppm As

-227 Stringer quartz zone, 20' wide, 0.5% leach. py.
0.040 opt Au, 90 ppm As

-228 Diorite h.w., wk. sericite alt. & wk. ankerite.
0.050 Au, 60 ppm As

Sept. 1, 1984

84-CA-240 Cut located 635' N-5'E collected 3½' vert. section of f.w. qtz-sericite schist with wk. goeth stn. Random 1"-6" qtz. vnlts.
.090 opt Au

-241 Same locale, cut located 600' N-30'E. 8°slope.
& -242 #241 breccia zone of qtz-sericite schist with qtz vnlts. Sampled 4½-5' wide zone. Schist dips approx. 65° easterly. 2-4% dissem. leached pyrite. *.010 opt Au*

#242 massive, qtz-sericite-biotite schist, <1 vol. % leached py. sampled 3-3½' wide zone. *<.005 opt Au*

-243 Same locale, cut located 550'N--0-40' E.
& -244 #243 bull qtz vn., locally vuggy, 4'? thick, <1% dissem., coarse pyrite cubes, wk. goeth. & hem. stn. *<.005 opt Au*

#244 Hangwall rock-qtz-sericite/minor biotite schist. Sampled 4-5' wide zone. 35 vol. % consists of qtz. stringers. Moderate goeth-hem. stn. 1% leached py. (mostly in qtz stringers). Rock is brecciated. *.010 opt Au*

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 372
June 21, 1984
84-CA-213 THRU 84-CA-228
JAMES D. SELL
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. George J. Stathis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 16 Rock Chip Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	As (ppm)
14	84-CA-226	.575	60.
15	84-CA-227	.040	90.
16	84-CA-228	.050	60.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell
Mr. H.G. Kreis

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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Tucson, Arizona 85703
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ITEM	SAMPLE NUMBER	FIRE ASSAY Au* (oz/t)
44	K-84-441	.020
45	K-84-442	.010
46	K-84-443	.015
47	K-84-444	.005
48	K-84-445	.010
49	K-84-446	.175
50	K-84-447	.005

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ITEM	SAMPLE NUMBER	FIRE ASSAY Au* (oz/t)
51	K-84-448	<.005
52	K-84-449	<.005
53	K-84-450	<.005
54	K-84-451	.015
55	K-84-452	.085
56	K-84-453	.015
57	K-84-454	<.005

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ITEM	SAMPLE NUMBER	FIRE ASSAY Au* (oz/t)
84	84-CA-240	.090
85	84-CA-241	.010
86	84-CA-242	<.005
87	84-CA-243	<.005
88	84-CA-244	.010

*NOTE: Analysis based on one assay-ton sample.

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

cc: Asarco Incorporated
Attn.: Mr. George J. Stathis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

~~JHC~~ - ERS File

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE

Submittal by
[x] B.J. & S. Goldsmith
1523 Sherman Place
Long Beach, CA 90804
213-439-4068

Section I General Indexing

① Name(s) of Property or Area: GOLDDUST-STARDUST CLAIMS, Rademacher District, El Paso Mountains					② Country: Kern Co.	③ State or Province: CA	
					④ USGS Quad.: Ridgecrest S. 7½'	⑤ File or Gore No.	
⑥ Latitude: 35°32'N	⑦ Longitude: 117°42'W	⑧ AMS Sheet: Trona	Township: 27S / 28S	Range: 40E	Section: 32 / 5	⑨ Examined by: FRKoutz	⑩ Date: 8/18-19/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1½

Section II Sources of Information

Date Typed 9/26/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Troxel & Morton	1962	Mines/Min. Res. Kern Co.	CA Div. Mines Geol. (Rept. 1)	
Jennings, et al.	1963	Trona 1:250,000 Geol. Map	CA Div. Mines Geol.	
Goldsmith, B.J.	1984	Submittal letters, maps, assays		

J.H.C.

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Addtl.Recon.

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect (heap leach)
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Au ore	Nil < 100	0.X-1+ opt

SEP 28 1984

⑰ Reserves None
[ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes 0?
Approx Total Footage --

⑲ Excavations Numerous shallow shafts, recent

⑳ [x] Spectro. Analysis Attached
㉑ [x] Assays Attached TAJ-386
㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au > Ag, Cu, (W?) Au: 28% >1 ppm, 82% >.02 ppm: 65 assays

㉔ Ore Minerals-Major: Au (Ag) Chalcopyrite Minor: Pyrite Cu,Fe,Mn Oxides

㉕ Host Rocks-Major: Qtz. Monzonite, diorite dikes, & inclusions Minor: Gneiss and schistose zones

㉖ Age of Host Rocks: Mesozoic (Tertiary?)

㉗ Nature of Exposures: Fair: 10-20% outcrop, 40% rotten subcrop-grus. Valleys: thin transported grus cover. 200-300' relief in low rolling hills. Dikes, silic. outcrops form ridges.

㉘ Alteration: Mod. weathering (clay). Biotite in dikes, QM chlor. Loc. qtz-kfs-epid. Weak dissem. ser. clay away from qtz vnlts, loc. silicification.

㉙ Total Extent: 2000'(E-W)x3000'+(N-S) + extensions.

㉚ Structure: N±30° dikes, faults, shearing. Also E-W±20° mineralized structures, often low angle. Many northerly schistose zones in granite (± around mafic inclusions, septa, roof pendants?).

㉛ Ore Occurrence: Au w/cpy-py in thin weakly silicified stringers in skarn zones generally marginal to narrow diorite dikes loc. fracture zones without diorite also mineralized. Some Au enrichment in surface by lag/illuvial processes in rotten grus.

㉜ Age of Mineralization: Tertiary(?)

㉝ Conclusions & Recommendations: Widespread Au mineralization continues to N & S, but is spotty & "dissemination" appears confined to a few tens of feet from structures or dikes. Mineralized structures & dikes "dice-up/lace" the altered area but are not frequent enough to develop significant tonnage of +.03 opt (1ppm) heap-leachable Au. However such areas may exist under thin grus cover or elsewhere in the district/El Paso Mtns. Additional trenching/airtrack drilling necessary to evaluate covered areas. Only 2-3 miles S of Ridgecrest "suburbs".

(For additional space use extra sheets)

ASARCO

Southwestern Exploration Division

September 26, 1984

To: J. D. Sell

From: F. R. Koutz

Golddust and Stardust Claims
Sec. 32, T27S; Sec. 5, T28S, R40E
Rademacher Mining District
Kern County, CA

Summary and Conclusions

The above 10 claims cover a weathered, weakly altered zone some 2000' E-W x 3000' N-S in Mesozoic medium to coarse grained porphyritic quartz monzonite. The quartz monzonite contains local xenoliths, segregations, and/or septa/roof pendants of more dioritic material generally in more gneissic or schistose-sheared zones. The area is cut by a widely spaced generally north-trending network of chloritized diorite dikes generally less than 10 feet wide which intrude schistose zones or faults and/or have been subsequently faulted. Associated with the margins of these dikes and a number of E-W to ENE shears are stringers containing weak disseminated gold mineralization accompanying several percent pyrite and chalcopyrite and their oxidation products with minor silicification, argillization and chloritization-propylitization.

Of 65 samples taken over the central portion of the claims 53 showed >0.02 ppm Au with 18 > 1 ppm although several of these latter were character or high-graded grab samples. Six trenches marginal to a dike zone over a 130' x 60' area showed a weighted mean of 0.33 ppm Au (range 2.5-<0.02 ppm) from 18 samples of up to 35' length. Au grades decreased away from the dioritic dike. Other usually grussy zones marginal to higher grade (+1 ppm) stringers usually showed low (<0.3 ppm) or nil Au although outcrop is often poor. The better mineralized, silicified zones and dikes often preferentially outcrop.

Although many of the values obtained are above the lower range of cutoffs for heap-leachable Au deposits the better values are in zones seldom more than a few feet wide with wide intervals of at the most only a few tenths ppm or less Au between usually associated with weak stockwork quartz veinlets. The higher grade stringers as exposed are just not frequent enough to make any significant tonnage averaging above 1 ppm. In addition I expect that Au has been somewhat enriched in outcrop-subcrop by illuvial-lag processes caused by heavy weathering. Nevertheless although there are no apparent high priority drill targets shown at this time I believe the district needs a more complete examination as values such as

encountered are rather uncommon. Trenching or airtrack drilling would be necessary to sample many of the thinly covered areas. If further reconnaissance work shows better more continuous areas of mineralization geophysical work might prove useful for evaluating extensions into covered areas as the mineralization appears to be associated with mafic dikes and zones of sulfidation of magnetite within granitic rocks. A return sampling and mapping trip to the district is planned for this fall-winter.

Golddust-Stardust Prospect

The above claims came to our attention in a letter sent to the N. Y. office by Mr. Billy Goldsmith and his son Steve, the claim owners. After requesting additional information in mid-April I received a number of maps, letters and 2 rock samples which I sent for assay. The Goldsmiths did "enough" trenching for assessment work and inundated this office with a number of progress reports and rock samples while I was in Utah until early June. The two hand samples contained 0.3 and 1.9 opt Au with very minor Ag, Cu, Ba, Bl, Co, Mo, Pb and V. I informed the Goldsmiths in mid-July that I would try to sample their property before September. It was obvious from the letter, maps, and previous information in our files on the area that Goldsmith's samples were high-graded and mineralization would probably be spotty.

After checking the Hobo claims in August I spent parts of 2 days, interrupted by heavy rains and winds, collecting 65 samples from Goldsmiths' trenches and the area of their claims to the south. The samples are described in the attached geologic notes with assays and shown with assays color-coded on the attached 1" = 1000' map. Some of the associated dikes and mineralized fissures and shears are also indicated on the map although most features are too small to be shown clearly. The effort was intended to be a pilot-reconnaissance sampling only to check whether mineralization was as widespread or as strong as the Goldsmiths had indicated. Only Au and Ag were assayed for initially to save money but 12 samples are being E-speced and analyzed for Hg and Te for character.* (See addendum.)

The El Paso Mountains are of interest because of similarities to the Goldstone District with a Late Mesozoic Granitic batholith intruding pelitic and limey Paleozoic Sediments (a roof pendant) with accompanying gold mineralization with some possible Carlin affinities. The Golddust-Stardust claims are within the exposed batholith at the NE end of the El Paso Mountains, but the number of xenoliths and reports of local roof pendants suggest that the intrusive has only been shallowly unroofed. The El Paso Mountains and the claims are also only 10-15 miles north of Randsburg--one of the major gold districts in southern California and with a number of similarities although lacking Precambrian schists.

I know of no detailed geologic map of the district. The Trona 1:250,000 map shows Mesozoic granitics cut by a number of major NW faults north of the Garlock fault which may be offset extensions of the major NW fault systems such as the Calico fault in the Mohave. One of these NW faults

must pass through the center of Sec. 5 a few hundred feet south of the area examined on the sample map but its trace was not evident through the alluvium and grus. The Kern County Geologic Report (Troxel and Morton, 1962, p. 46-47) shows a number of the veins in the Rademacher District striking NW and is the best compendium on old prospects in the district.

Some 90-95% of the outcropping rock in the claim area is a medium to coarse-grained porphyritic quartz monzonite with a number of aplitic to pegmatoid zones of very coarse-grained quartz and feldspar with epidote. Dioritic xenoliths and sheared-gneissic to schistose zones are also dioritic possibly from smeared xenoliths or septa of intruded wall rock. The whole area on the scale of hundreds of feet is diced-up by narrow discontinuous dioritic dikes (Tertiary?) which intrude shears or are themselves sheared. In the sampled area most of these dikes trend within a few tens of degrees of north as do a number of fractures and schistose-gneissic zones in the quartz monzonite.

Most of the mafics, primarily biotite, in the dikes and in the quartz monzonite have been more or less chloritized. In the quartz monzonite chloritization decreases somewhat away from the sampled area and areas of diorite dikes but clear-cut boundaries of a chloritic zone do not appear to be present. Epidote is quite common--usually associated with chlorite and coarse-grained K-feldspar-quartz pegmatoid zones. Most clay appears due to weathering of feldspars and development of grus from the quartz monzonite. There is clay and sericite development associated with faults and quartz veinlets. Silicification is not pronounced but it is clear that the ridges and hills are slightly more silicified than the valleys although some of this is desert case-hardening. Quartz veinlets and minor silicification are associated with the margin of mineralized dikes, mafic zones and shears. General alteration-mineralization appears to be controlled by the ± N-S fracturing and schistosity developed in the quartz monzonite although ENE to NE structure is locally prominent. In a few cases silicification and iron oxides feather into the schistosity from stronger structures which cut the grain of the quartz monzonite gneiss-schist at an acute angle.

Gold mineralization is clearly related to iron oxides after pyrite although some goethite is after mafics. Hematite is usually after goethite and shows a better correlation to Au values than goethite, i.e. the higher the hematite/goethite ratio the higher the Au value. Most of the +1 ppm Au samples also show at least minor malachite and black Cu-Mn oxides. In a few dump samples from depth minor pyrite and chalcopyrite are present--both of which replace magnetite and mafics. The distribution of gold and silver values in the 65 samples is as follows:

TAJ-386

Au				Ag			
No. of Values	Range	Mean	%	No. of Values	Range	Mean	%
18	≥ 1 ppm	5.2 *	28	6	> 1 ppm	3.9	9
6	1 - .5 ppm	0.69	9	15	1 - .2 ppm	.4	23
19	.5 - .1 ppm	0.26	29	44	<0.2 ppm	--	68
10	.1 - ≥.02 ppm	0.05	15	65			100
12	<0.02 ppm	--	19				
65			100				

*See Addendum.

81% of the samples showed detectable (≥.02 ppm) Au and 31% detectable (≥.2 ppm) Ag. The 18 gold values over 1 ppm included 3 over 10 ppm* although one of these and several of the +1 ppm samples were high-graded dump samples. Silver values are low but show a close correlation with gold values suggesting that much of the Ag is in electrum.

The sample map shows that Au values are widespread over the sampled area except for a NNW striking ridge in the central portion. Although the marginal zones of diorite dikes show good gold values the dikes themselves are often barren. Other Au mineralization appears to be related to N and ENE shears and schistose zones in the quartz monzonite. In the 6 sampled trenches the weighted mean of 18 samples is 0.33 ppm but in each trench the Au grade decreases westerly away from the diorite and in general to the south. The easternmost cuts with higher Au in the trenches contain more mafic segregations or dikelets. Only a rough correlation with Goldsmiths' marked mineralized zones from which they high-graded a number of +1 opt Au assays were noted. Replicate samples SAU-46, 47, 48 show rather similar assay values and trends but the variance suggests a considerable "nugget" effect.

In sampling the trenches the upper rotten portions of the granite-grus with weak incipient soil formation were avoided with samples cut from the walls in the lower portions of the trenches. Nevertheless I have an extremely strong suspicion that particulate gold is physically moved around--enriched and depleted--by weathering processes in this desert environment. Weathered solid outcrop material near the collars of shafts are usually higher grade than fresher less oxidized samples on the dump--or in workings--here and elsewhere in the Mohave. A number of the rotten subcrop areas sampled showed silicified and iron oxide-rich lag fragments which usually contained gold. Deeper digging showed much fewer of these fragments although no systematic study was done to determine gold distribution with depth and weathering/soil formation.

A major problem with the Golddust-Stardust area is the strong weathering and grus development with the covering of the lower relief areas with a few feet or more of transported grus. About 50% of the sampled area is thus covered and probably another 30-40% is rotten subcrop-"saprolite." It appears that the better mineralized-silicified areas preferentially stand higher but considerable trenching or airtrack drilling would be necessary to truly evaluate the lower relief areas. The widely spaced prospect pits north of the sampled area along the railroad and highway were attempts to penetrate the alluvium and grus to bedrock.

I believe the present data show that there is no large tonnage of outcropping heap leach grade (say +.03 opt average, .01 opt cutoff) Au mineralization in the sampled area. Most of the higher grade samples are from narrow stringers less than 10 feet wide with only weak disseminations in wall rock. The area of the sampled trenches some 60 feet wide and 130 feet long (up to 200' if the main Stardust #1 shaft and area samples 57-60 are included) only averages 0.01 opt Au which may be largely due to thin higher-grade stringers. The stringers and dikes are just not frequent enough to develop any kind of a tonnage above 0.01 opt Au. This leaves open the potential elsewhere in the district, under cover or at depth.

The area to the north and east of the sampled area toward the Rademacher and Goldbug Mines (see attached Fig. 21, Kern County Report) shows a larger number of closer-spaced prospects associated generally with NW diorite and rhyolite dikes. A quick drive-thru confirmed a large number of dumps--also several inhabited houses, shacks and trailers as this area is only a mile or two south of the Ridgecrest city limits.

The Rademacher Mine (2 pat. claims) is developed in a N30E schistose-shear zone about ½ mile north of the sampled area. A 1940 map in our file shows workings to just below 200 feet with 35 assays over a 180' x 170' cross section of workings averaging 0.15 opt Au over 6 foot average width or about 9000 tons for the area developed.

The Goldbug-Yellow Treasure property about 2 miles east of the sampled area contains at least five N40W, 60-70°NE dipping schistose shears about 1-8' wide with discontinuous quartz veins. The deepest ore shoot was 300 feet deep with minor production of about ½ opt Au. In 1932 15 samples 1-4' wide contained two 1.1 opt Au samples with the rest averaging 0.05 opt Au. The 15 Ag values averaged 0.7 opt.

Other veins in the area are described in the County Report as similar although usually less well developed. If such structures with associated dikes were close enough together with +1 ppm Au average grades, enough tonnage might be available for a small heap leach operation. Although most of the low-lying areas around the area sampled did not appear to be as strongly altered as some of the ridges the thinly-covered grus areas in the sampled area need to be backhoe trenched or shallowly airtrack

drilled to be sampled. A brief drive-thru of the hills to the SW of the sampled area (NE/4 Sec. 6) shows much less chloritization, shearing and better defined diorite dikes. The central zone ¼-½ mile wide north through the W/2 of Sec. 5 and 32 toward the Rademacher Mine appears to be a locus of alteration--possibly because of more shearing or more intense dike swarms.

Potential drill target areas at depth are nebulous at this time. Most descriptions of the Rademacher District describe the mineralization as relict root zones of the carapace over a batholith. If this is so then better areas might be "upsection" to the south into premineral carapace rocks. Since the mineralization is spatial related to Tertiary(?) diorite and rhyolite dikes the source of these would be a prime target to be prospected. However the surface results so far probably justify a small (100-200' maximum) airtrack drilling program around and to the north of the trenched area and north of samples SAU 1-9 toward SAU 20-24. This would determine whether mineralization dies at depth below an enriched surface or whether deeper mineralized zones are present.

Since mineralization shows a close spatial association with sulfidized diorite dikes and disseminated although weak sulfides after disseminated magnetite in granite, geophysical methods might be useful in tracing such zones beneath relatively shallow cover such as the area between the sampled area and the Rademacher Mine. If additional sampling and mapping is favorable geophysics should be considered.

I intend to return to the Rademacher District later in the fall and examine, sample and map (paying particular attention to weathering depth-cover thickness) areas to the south and N-NE of the presently sampled area. I have not been in contact with the Goldsmiths since mid-July but it might be time to ask what they would want for an option agreement on their claims. This is one of the better areas examined in the Mohave so far with widespread strong but presently spotty gold mineralization. It deserves a number of days of additional work.

F. R. Koutz

F. R. Koutz

FRK/cg

Attachments: Map MVK 6064
Sample Descriptions - Addendum
Assays: TAJ-386
District Map
AMS Xerox
ERS

Addendum - Because of a number of snafus related to moving their laboratory across the road Skyline has not completed the E-spec analyses nor the Fire-Assay determinations of the >10 ppm Au values. These should be completed in a week or so. The average Au grade of the ≥1 ppm Au values includes the 3 rough Au estimates >10 ppm by AA. Without these 3 values the remaining 15 would average 2.9 ppm.

The 12 samples for additional work showed only <.01-.04 Hg and <.005-0.2 ppm Te. Except for the one 0.2 ppm Te value other values were ≤0.07 ppm but did show a fair correlation with Au values. From several mentions of tellurides in the district I had thought that Te might be a useful element for geochemical prospecting. Hg values appear to be useless in contrast to the work by Stathis and Michel (and Briscoe-Watson) in the Randsburg District. The 2 high-grade samples of Goldsmith showed interesting although not necessarily anomalous E-spec values for Fe, Ag, Ba, Bi, Co, Cr, Cu, Ga, Mn, Mo, Pb, Sn, Sr, Ti, V, and Zr (TAJ-364). Tungsten has been mined in the district although <50 ppm was noted in E-spec.

In hounding Skyline about the above unfinished assays I learned that for their routine (≥0.02 ppm) Au AA analyses they use a 10 gm. sample compared to slightly less than 15 gm (½ assay-ton) for fire-assay. If the results are >5 ppm a second only 5 gm sample is dissolved to stay within the best instrumental range and if >10 ppm: 2 gm--although they do not like to formally report on a 2 gm sample. They routinely run duplicates or triplicates of all >3 ppm assays and report the mean unless a high variance "nugget effect" is noted. It is always worth asking the lab manager for the individual values of all >3 ppm samples.

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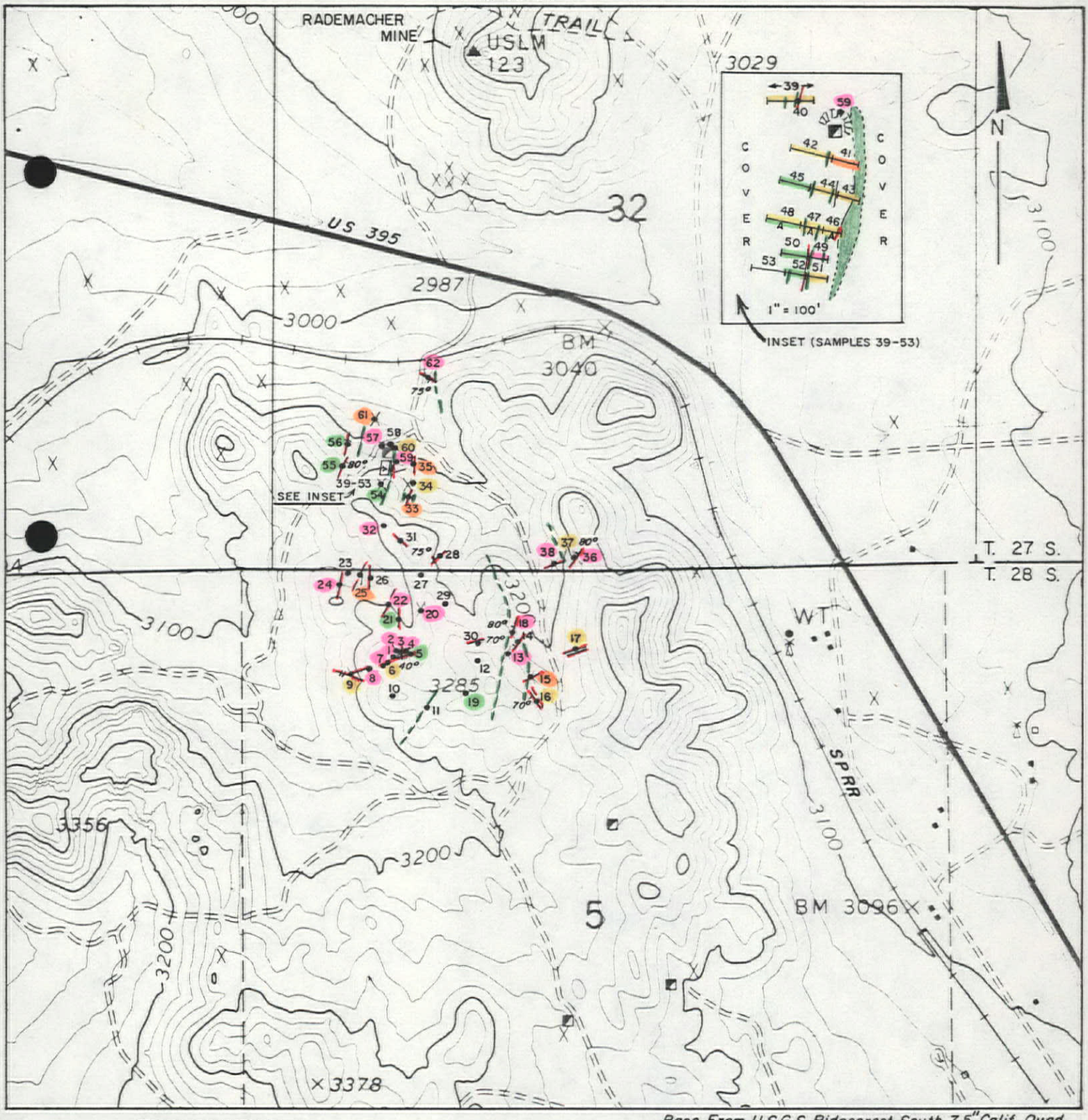


Base From U.S.G.S. Ridgecrest South 7.5" Calif. Quad.

EXPLANATION

12 SAU-SAMPLE SERIES (1-62) (TAJ-386)

Diorite Dike

80° Mineralized Fracture or Shear

Au ppm	
38	≥ 1 ppm
15	0.5-1 ppm
34	0.1-0.5 ppm
19	0.02-0.1 ppm
Blank	<002 ppm

TO ACCOMPANY Report
to J. D. Lee
DATED 9/26/84
BY F. R. Koutz

Sample Location Map

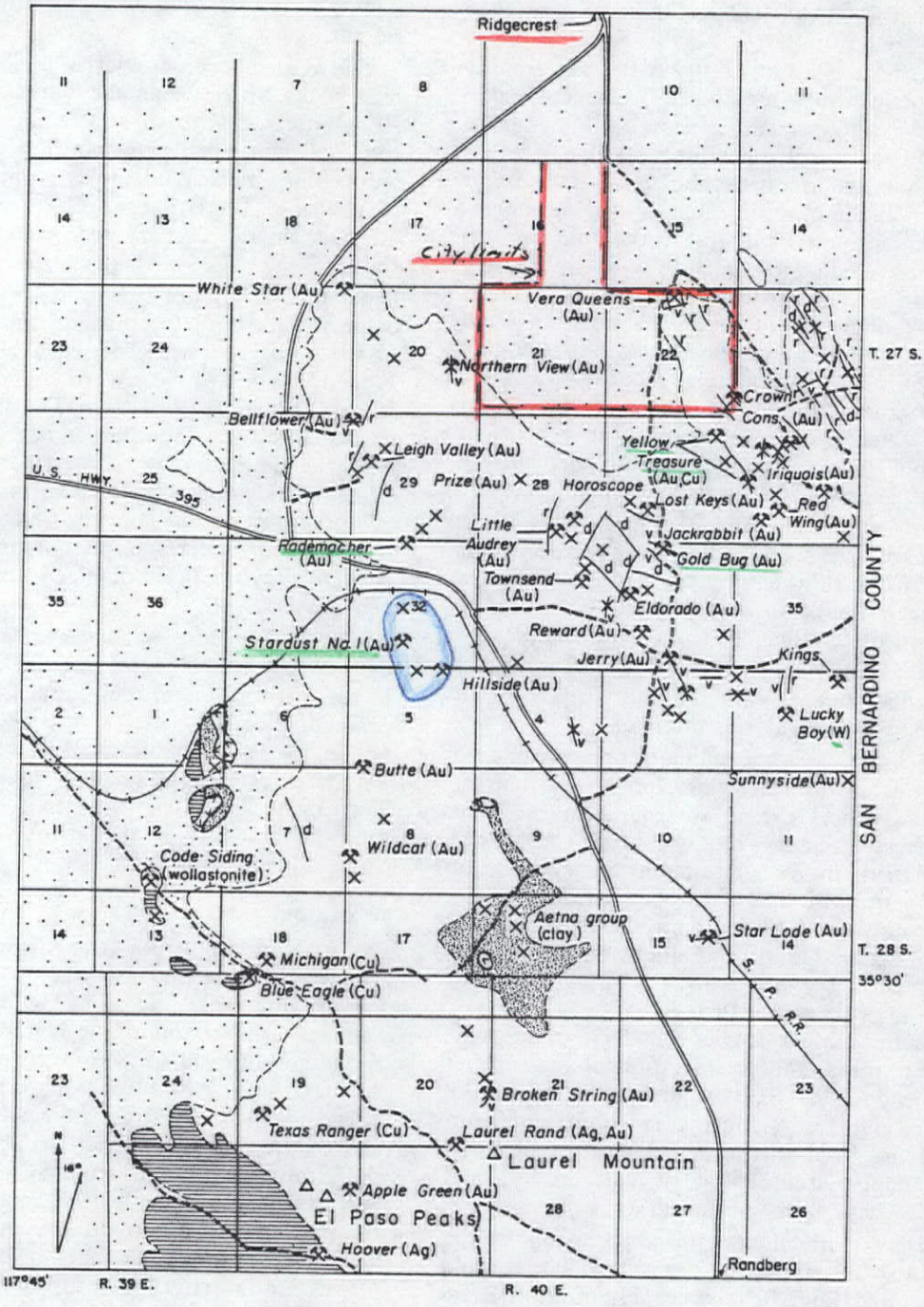
GOLDUST-STARDUST CLAIMS

KERN COUNTY, CALIFORNIA

SCALE: 1" = 1000'

F.R. KOUTZ AUG. 18-19, 1984

MVK-6064



Recent — Qal

Plio-Pleistocene ? — basalt; tuff and clay

Tertiary — r rhyolite dike; d diorite dike; v vein (some with quartz.)

Mesozoic — granitic rocks, mostly quartz diorite.

Paleozoic — Metasedimentary rocks. (main mass is part of Garlock series of Dibblee, 1945)

fault, approx. located.

mine or prospect described in report.

× prospect pit.

Au=gold, Ag=silver, Cu=copper, W=tungsten

1 1/2 0 1 MILE

(Main mass of Paleozoic rocks after Dibblee, 1952, p. 20.)

TO ACCOMPANY SAW-Sample Area Report to J. D. Lee DATED 9/26/84 BY M. R. Koutz

Figure 21. Geology, mines, and prospects of the Rademacher district.

three mines—since about 1950, and antimony valued at $1[illegible]00 was mined from the Jenette-Grant mine in 1918 (Goodwin, 1957, p. 529).

Most of the district is underlain by Mesozoic granitic rocks which contain a pendant of pre-Cretaceous metasedimentary rock. The pendant is from half a mile to 2 miles wide and is several miles long.

The gold deposits are in a belt about 2 miles wide that trends northwest in the granitic rocks, and north-northwest in the metamorphic rocks. Most of the gold deposits are in quartz veins which occupy shear zones and closely spaced joints, and trend mostly northeast. In most mines the gold is free-milling. Sulfide mineralization is evident in the deeper parts of some of the mines. According to U. S. Bureau of Mines production records, ore from some of the mines contained from 1/6 oz. to 1½ oz. of gold per ton, which accompanied silver at a ratio of about 2:1. About ½ oz. of gold per ton is probably an approximate average for all mines.

The tungsten deposits are of two types: scheelite in gold-bearing quartz veins, and scheelite in tactite bodies in limestone. Most of the tungsten deposits explored in mid-1959 yielded pods of ore rarely more than a few feet in maximum dimension.

Antimony was mined along a north-trending contact between limestone and phyllite at the Jenette-Grant mine. The principal mineral was stibnite.

Carbonate rocks, in masses as much as several hundred feet long, several tens of feet wide, and several tens of feet in exposed vertical extent are found in the roof pendant of metasedimentary rocks. A few small open cuts have been made in the whitest portions of some of the bodies along the east side of the pendant. Rocks exposed in these cuts are white enough to be utilized as roofing-granule material, and some might be suitable for filler material.

Rademacher District

The Rademacher mining district (fig. 21) of approximately 50 square miles embraces a group of low hills at the northeast end of El Paso Mountains. It is 3 to 8 miles south of Ridgecrest, along the east border of Kern County. Gold has been the principal mineral product, though silver, copper, tungsten, clay, volcanic ash, and wollastonite also have been produced.

The district was formally organized, probably in the 1890s. The oldest and apparently most productive gold mines are the Gold Bug, Bellflower (Huntington), and Rademacher. Others include the Wildcat, Red Wing (Haunita, Crown Consolidated), Stellar, Jerry, Gold Pass, and Yellow Treasure mines. Silver and copper have been obtained from some of the gold mines and tungsten has been mined from the Lucky Boy mine. Deposits of clay and volcanic ash have been explored since about 1940 and wollastonite was mined and marketed during the 1930s. The district was probably most actively prospected for gold before 1904 when many claims were located and developed by short adits and shafts. Even the most productive gold mines have histories of intermittent operation and production. In 1957, only the Bellflower mine was equipped with a mill, and it was being rebuilt.

The Rademacher district is underlain mostly by granitic rocks, of Mesozoic age, which range in composition from quartz diorite to quartz monzonite. The granitic rocks contain small pendants of Upper Paleozoic metasedimentary rocks and also rhyolitic and dioritic dikes of probable Tertiary age. The crystalline rocks locally are overlain by Tertiary sedimentary and volcanic flow rocks.

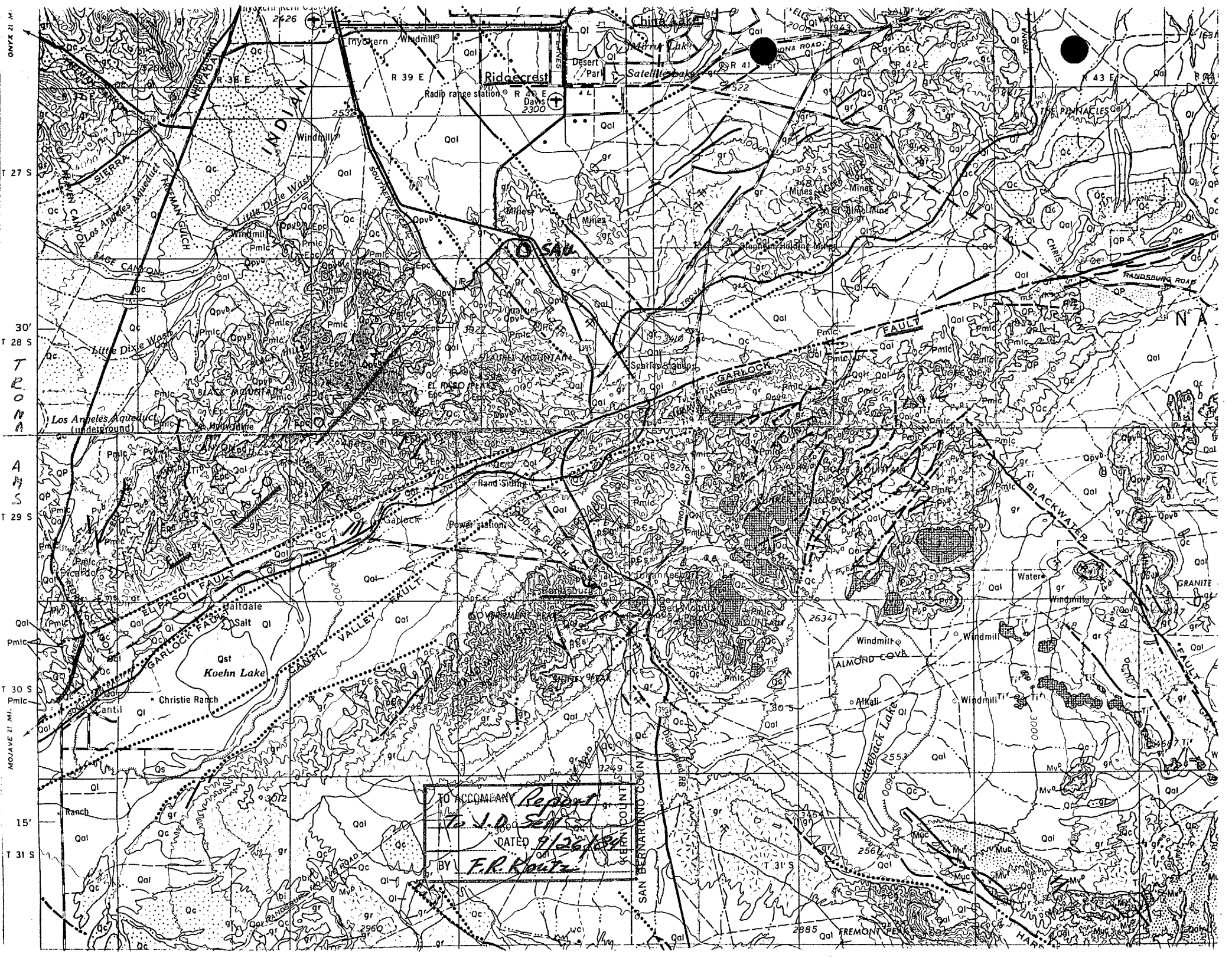
Minute particles of free gold are in quartz veins which occupy faults and fractures in the granitic rocks. Most of the gold veins strike between N. 40° W. and N. 40° E. and dip steeply eastward. They range in thickness from a few inches to 8 feet. The largest and richest ore shoots have been found at or near intersections of veins with the dikes or with cross fractures. Most veins also contain oxides of copper and iron derived from coarse to fine grains of chalcopyrite and pyrite. At the Lucky Boy mine an undetermined, but probably small, amount of scheelite has been obtained from one of the small pendants.

The wollastonite is associated with calcareous rocks of probable late Paleozoic age in the southwestern part of the district. These rocks appear to be a northwestern projection of the rocks of the Garlock series that crop out in El Paso Mountains. Bentonitic clay and volcanic ash are present as sedimentary layers in nearly flat-lying Tertiary sedimentary rocks in a small area within the south-central part of the district.

Rand District

The Rand district (fig. 22, pl. 3) is on the eastern border of Kern County at the northeast end of the Rand Mountains. It includes about 50 square miles in Kern County and several additional square miles to the east in San Bernardino County. It is commonly referred to as the "Randsburg district" and includes one area, of about 4 square miles 2 to 4 miles south of the town of Randsburg, which is called the "Stringer district". The south end of the Stringer district overlaps the western end of the Atolia tungsten district which lies almost wholly in San Bernardino County. The most productive mines of the Rand district are in an area of about 10 square miles which includes the "Stringer district". The gold output of the Rand district has been valued at about $20,000,000, and exceeds that of any other district in Kern County with the possible exception of the Mojave district. In addition, it is the principal source of tungsten in Kern County.

Silver ore was sought with little success in the Kern County portion of the Rand district following the discovery of high-grade silver ore a few hundred yards east of the Kern County-San Bernardino County boundary near Red Mountain. All of the gold from the Rand district, however, contains silver and ranges from 730 to about 900 fine (Hulin, 1925, p. 88). Small quantities of


China Lake
Mirror Lake
Ridgecrest
Satellite Lake
Desert Park
Inyokern
Windmill
Radio range station
Daws
R 38 E
R 39 E
R 40 E
R 41 E
R 42 E
R 43 E
T 27 S
T 28 S
T 29 S
T 30 S
T 31 S
30'
15'
INDIAN
SIERRA
Los Angeles Aqueduct
Little Dixie Wash
SAGE CANYON
SOUTHERN PACIFIC
Mines
Quarries
LAUREL MOUNTAIN
EL PASO PEAKS
BLACK MOUNTAIN
Los Angeles Aqueduct (underground)
Rand Siding
Gaskeck
Power station
GARLOCK
FAULT
EL PASO
GARLOCK FAULT
CANTIL VALLEY FAULT
Saltdale
Salt
Koehn Lake
Christie Ranch
Cantil
Ranch
RANDSBURG ROAD
TRONA ROAD
THE PINNACLES
BLACKWATER
GRANITE
Water
ALMOND COVE
Alkali
Cuddeback Lake
FREMONT PEAK
SAN BERNARDINO COUNTY
KERN COUNTY
Disposal RR
TRONA
ONYX 21 MI.
MOJAVE 21 MI.
TO ACCOMPANY Report
No. J.D. Sell
DATED 9/26/54
BY F.R. Routz

F.R.Koutz
Aug. 18, 1984

Sample-Geologic Notes

Goldsmith's Stardust and Golddust Claims - El Paso Mountains, Kern Co., CA
Ridgecrest South (7½') Quad Sec. 32, T27S, Sec. 5, T28S, R40E
U.S. 395 & Southern Pacific R.R. through S½ of Sec. 32.
Billy J & son Steven Goldsmith - restaked, repapered in 1983

- - - - - - - - - - - - - - - - - - - -

Appear to be thin mineralized stringers in m.g. granite to qtz monzonite with local mafic (diorite) segregations and xenoliths. Cut by a series of N±30° trending diorite dikes which have intruded faults and/or have been subsequently faulted. Most visible mineralization is near mafic contacts. At first glance looks too spotty. Near mineralized zones rock is well chloritized (ex-biot). Generally well weathered rotten grus--mostly subcrop. A little more silicified-less weathered on ridges. Low, rolling, well rounded hills. 2-4 lb. samples.

SAU-Series (Steven Au (Goldsmith))

Skyline Assays: TAJ-386 *Au/Ag in ppm*

SAU- 1. Sample from hi-grade pile (200#) weakly sheared granitic rock, weakly silicified stained with 10% hem., 5-10% vugs after sulfides, T. malach. At west lip of inclined workings. *>10.00/4.6*
About 20 ppm Au See Addendum.*

SAU- 2. 6' E-W horiz. cut in FW of struct. below SAU-1: crushed and clayey bleached granite (30% clay), 2-3% bk Cu-MnOx, 1% malach., 2% goeth, ¼% hem. 6' below surface. *>10.00/1.2*
About 7 or 11 ppm Au See Addendum.*

SAU- 3. (Prob. source of #1) 2.5' horiz. cut across weakly silicif. granite N75E, 40°N struct. + gg zone, 6' thick below surface. Incline follows this structure for about 100' down dip with dip gradually flattening near bottom. Sample is 6' below surface. *3.30/2.2*

SAU- 4. 6' cut. 3.5' FW gg-crushed + 2.5' silicif. HW. 25' down incline at 1st set and drift to W. Similar to #2 & 3. ~½% bk Cu-MnOx with local green. 2% goeth, ½% hem., local qtz. veinlets. Maybe 400-500 T on dump--mostly m.g. granite. *1.00/.2*

SAU- 5. 6' horiz. cut of both walls of 6' deep pit at east end of shaft (cut parallel to strike of structure). Rotten grus. 1-5% chl. or green clay. ½% hem, 2% goeth., 1-2% qtz vnlts. Sample is below most rotten surface-soil zone (red stake: marked CuAS: red stakes indicate high grade and were especially marked by Goldsmith for my "benefit"). *.06/<.2*

SAU- 6. 10' sample from 15' cut across structure 50' west & uphill from SAU-1. Rotten chloritic, epidotized granite. T+ MnOx, 2% goeth, T+ hematite. *.26/<.2*

SAU- 7. 10' diam. sample 20' E of hilltop on west extension of SAU 1-5 structure, weakly silicif., grus, 5% qtz vnlts, T green-black CuOx, ½% hem, 3% goeth, 1-2% vugs. Stockwork fracture, MnOx on fractures. Note that #1-7 structure probably holds up ridge.
62. + 7.6 = mean 6.90/.6

SAU- 8. "L"-shaped trench ~30' sample. Mostly chloritic granite with shaley-schistose N20W shears. 80% subcrop + grus. T CuOx + black Cu-MnOx, 1% goethite (after mafics).
1.70/<.2

SAU- 9. Rep. dump sample, N-S±20°, 90-70°E schistose zone in granite-gneiss. Weak N70W joints, 5% chlorite, some mafics included. 20' deep shaft follows structure. *.11/<.2*

SAU-10. 10' diameter sample. Coarse-grained felsic granite with 1-5% epidote veins, coarse-grained pink k-feldspar + quartz, ¼% goeth + MnOx after epidote. Epidote follows stockwork fractures. Note: on the scale of 100's of feet the granitic terrain for a mile around is diced up by such felsic-epidote-and chloritic schist zones plus chloritic mafic dikes. The zones generally stand high with a thin grus cover of m.g. granite elsewhere.
<.02/<.2

SAU-11. 8-10' wide sample of width of chloritized diorite dike zone N40W, chl. clots after mafic phenocrysts plus dissem. chl. in groundmass. Local dikelets of kfs-qtz-epidote. ¼% goeth on Fx (weathering) on crest of ridge. *<.02/<.2*

SAU-12. 6 x 20' area of chips & grabs on ridgecrest. Weakly silicified (case hardened?) granite gneiss with mafics mostly chloritized. 3% white qtz vnlts to 1" N60-80W, ½% goeth on Fx, ½% epidote.
<.02/<.2

SAU-13. 8' diameter pit, 3' deep. Granitic gneiss with N20E dioritic segregations with dike to west. Rep. sample of pit walls. 2% goeth, T qtz vnlts. Granite more rotten than diorite.
1.80/<.2

SAU-14. 10 x 8 x 8' deep pit on N40E, 70°N structure in granite gneiss. Sampled 3 x 10' area of structure in outcrop--somewhat high graded. Goeth > hem - 8-10% N70W FeOx stringer zone to SW of pit. Dark green dike runs through stringer zone--about N-S. A red stake put here by Goldsmiths so I wouldn't waste my time sampling the many feet of barren rock between mineralized stringers (minor relict pyrite in stringers). *<.02/.2*

SAU-15. N60E stringer zone in granite. 1-3% qtz veinlets in rotten grus. 2% goeth, 1% hem, T MnOx, recent excavations. 5' sample across stringers. Red stake + wood in pit to east. *.81/<.2*

SAU-16. At monument "Stardust Quartz Gold" claim in grus-granite. Hole 15' diam, logging sticks up through caved grus of shaft. N20W, 70W shears-schist zones in granite, rep. samples of pit walls. *.25/.2*

SAU-17. 10' diam. pit, 3' deep in grus next to dike stringers (pit to NNE), 3% goeth, ¼% hem, T MnOx. N20E stringers with chl-epidote. *.11/<.2*

SAU-18. 10 x 10 x 20' deep shaft along sheared dike-granite contact. Shear is N20E, 80N. Most of dump is dike material. Sampled 3' crushed granite plus some dike on west side of shaft at collar opposite dump. *2.60/<.2*

SAU-19. 30' circle sampled. Weakly stained subcrop-float, goeth 2%, hematite ½%. 1-2% qtz veinlets. Rock is m.→x.g. granite with local chl-epid-k-feld-quartz + mafic segregations. A low patch of ground between wash channels. Is there disseminated Au in such zones away from strong structures?: *.05/<.2*

SAU-20. 6 x 8 x 25' deep shaft, 100 T dump (rep. sample). N55E shear in granite with minor quartz-vein stringers. 1-2% epidote, 2-4% chl., local rock k-feldspar. Loc. Notice of Stardust Gold #3 here, 14 Nov 83 reloc. - Billy J. & Steven Goldsmith (2528 #B Anaheim St., Long Beach 90804). *2.10/.2*

SAU-21. 4 x 6' outcrop sampled. m.-x.g. granite with N-S±10°, 90°Fx plus E-W quartz vein (5%) ex-sulfides at margin: 1% goeth area to N, 5-8% chl., loc. epid.-kfs. *.08/<.2*

SAU-22. N20E Fx, subcrop, 5' diam. area sampled. Granite with 2-3% goeth on fractures, mostly float in area-has qtz veinlets--some included in sample. 25' N of red stake & 1' pit (not sampled). *1.30/<.2*

SAU-23. Two E-W adjacent pits--5' deep. 20' sample of schistose granite gneiss. Locally grus contains 3-5% chl., local epid., minor quartz veinlets. *.36/<.2*

SAU-24. Goethite (5%) stained area in weakly sheared granite gneiss. N10E fractures in subcrop, hematite (3%), bugs (5%), local quartz veinlets, vugs mostly after sulfides. Sample: 20' diam. circle ~½ lag & float only >½" material sampled. *>10.00/2.4*
About 13 or 27 ppm Au See Addendum.*

SAU-25. 15' diam. pit x 5' deep. N20E fractures & shears. Chloritic granite, weakly silicif. 5% goeth, 1% hem--mostly after mafics, grussy where not well silicif. *.69/<.2*

SAU-26. 8' pit x 3' deep. Schistose granite, N-S Fx. More mafic than elsewhere, 3-5% goeth--mostly on fractures. Rep. sample of pit walls. *.36/<.2*

SAU-27. On ridge. 10' diam. pit x 4' deep in white feldspar-rich granite "pegmatic" zone with chl. segregations + epidotes on fractures. -5% hem > goeth. on Fx probably after mafics. Moderate 5-8 mm pegmatite-graphic texture. Loc. monument for Golddust #1 (NW corner nearby). *<.02/<.2*

SAU-28. Loc. monument Stardust Gold #4. Bleached white m.g. granite (bleached & leached) with N40E 75°N shear zone ¼-1' wide with heavy (5%) goethite preferentially sampled goeth. Loc. epidote, 10' shaft. *<.02/<.2*

SAU-29. Sheared, silicified granite from pit - 5% goethite. *<.02/<.2*

SAU-30. N70E mod. to strongly silicified zone in granite cuts across ridge. Local drusy quartz-filled vugs, on strike with SAU-19. ¼% MnOx, 1% hem, 2-3% goeth. Local epidote. *<.02/<.2*

SAU-31. 4' diam. x 1' deep cut, N40W shear + fracturing. In schistose granite. Most shearing in chloritized mafic bands. 4% goeth.> hem. (red stake). *<.02/.2*

SAU-32. On west side of road. 10' diam. x 2' deep pit in rotten granite with chloritic-mafic stringers. 5% goeth, 1% hem. Some vugs after sulfides. 25' N of red stake with pit & water jug.
6.1 + 8.5 = mean 7.30/.6

SAU-33. 40' sample of N65W trench (backhoe)--recent in rotten granite. With local silicified granite patches. Some mafic segregations and dark green chloritized dikelets. Weak N20E fracture.
.60/<.2

SAU-34. 10' trench sample parallel to #33 but 20' to N. Weakly sheared & locally silicified rotten granite as above in SAU-33 but with cut dikelets. 5-8% goeth. *.16/<.2*

SAU-35. 25' trench sample N70W. N±10° fractures. ½ is grus, rest is weakly silicified chloritic granite with 5-7% goethite.
.55/.6

SAU-36. 50' shaft N30E 80-85°W. Sample of qtz vein material on dump ½-2' wide in shear in shaft. Minor siderite plus oxidized sulfides. T malachite, chloritic stringers in vein material.
1.60/.4

SAU-37. Random dump material (w/o qtz vn) chloritic schistose granite. From top & sides of dump including fines. *.46/<.2*

SAU-38. 25' shaft in silicified granite. Sheared N60-70E qtz veinlets, minor grus pods, T green CuOx, ½% MnOx (CuO), local epidote. Silicified granite on E collar + dump sampled.
6.4 + 5.8 = mean 6.10/.4

Samples SAU-39 thru -53 taken from 6 backhoe cuts by the Goldsmiths this spring across an altered zone some 40-60' wide and some 150-250' N-S. The trenches run WNW to E-W and are up to 4' deep. Trench walls were sampled. SAU-ELP & AUD #1 (TAJ-364) from trenches contained 1.9 & .3 opt Au.

The rock in the trenches is primarily rotten granite to sheared granite gneiss with local N-S chloritic mafic stringers and/or dikes especially in the east ends of the trenches. There is a poorly exposed chloritic diorite dike east of the trenches which strikes N-S±20° with the strike swinging to the west to the north end of the dike. Within the trenches are a number of N-S to NNE fractures with FeOx after sulfides and minor silicification. The assays submitted by Goldsmith of up to 6 oz Au/T are probably high-graded from these silicified stringers or the mafic/dike zones. Goldsmith had marked a number of zones with red stakes to indicate high-grade Au in the east ends of the trenches. I paid no particular attention to these stakes. Samples are located on the attached sketch map. Duplicate samples from 46, 47, 48.

SAU-39. 35' sample of 35' E-W backhoe trench (3-4' deep, 30" wide). Several weathered mafic bands - dikes near east end. *.10/<.2*

SAU-40. 2' mafic dike (strongly weathered from east end of #39 trench (10' from E end of trench). Goldsmith reports +1 oz Au from this dike. *<.02/<.2*

SAU-41. Second trench to S. 20' sample in east end of trench includes red stake and 2-5' of mafic dike. *.62/<.2*

SAU-42. 25' in west end of 2nd trench (45' total). Trends N75W. *.36/<.2*

SAU-43. Third trench to S. 20' on east end. About 1/3 dike material. Includes red stake. Trench trends N80W (67' total). *.12/<.2*

SAU-44. Middle 22' of trench about ¼ mafic material. *.14/<.2*

SAU-45. West end of trench 25'. Mostly grus-granite. *.03/<.2*

SAU-46 & 46A. Fourth trench 56' long - N85W: 46 & 46A duplicates. 16' east end of trench several sets of red stakes 3-4, 1-3' mafic dikes. Includes a 1½' zone that Goldsmith got a 5.0 opt Au assay.
.49/.4
.27/.2

SAU-47 & 47A. Middle 15' of trench. Mostly grus-granite gneiss minor mafic dikes. *.21/<.2*
.26/<.2

SAU-48 & 48A. West 25' of trench. Mostly grus-granite gneiss. *.15/.2*
.06/<.2

SAU-49. Fifth trench to S. East 15' of trench mafic gneiss and dikes with minor granite. *2.50/.6*

SAU-50. West 20' of 5th trench mostly grus-granite gneiss. *.03/<.2*

SAU-51. Sixth and last trench to S (57' N80W). East 16 feet--granite grus with several mafic dikes. *.25/<.2*

SAU-52. Middle 16' of 6th trench. Only minor mafic zones in gneiss. Several red stakes. *.07/<.2*

SAU-53. West 25 feet of trench mostly granite-grus. *<.02/<.2*

SAU-54. 6 x 8 x 30' shaft 115' S of 6th trench (shaft has 2"x 4" homemade ladder). Rep. dump sample of rotten m.-x.g. granite with large K-feldspar crystals, plagioclase stained green. ¼% goeth., T qtz veinlets N10W±10 vertical fractures in shaft. *.06/<.2*

SAU-55. To NW of road. N20E, 80°E schistose granite. 10' sample in recent trench, perpendicular to foliation. 10% K-feldspar, 1% epidote, ½% hem., 2% goeth. Two red stakes at pit. *.05/<.2*

SAU-56. N10°E, 90±10° schistose granite in grussy pit (much slope wash). Sample is subcrop only - over 10' diameter circle. 3% goeth, ½% MnOx, 10% chl., 1-3% qtz veinlets. *.04/<.2*

SAU-57. From dump of main shaft (50' deep to H_2O). Dump is 400-500 T. Mineralized weakly sheared m.-x.g. granite. 5-10% quartz, 1-3% dissem. py now mostly hematite and goethite in much of dump but unoxidized specimens selected as much as possible. Minor chalcopyrite, T malachite, 5% chl., 15% K-feldspar megacrysts. Dissem. pyrite > veinlet. ½% goethite, ¼% hematite in samples. "Stardust #1 shaft." *2.70/1.8*

SAU-58. "Fresh" dump material (most of dump). Porphyritic granite to quartz monzonite with 10-15% pink K-feldspar phenocrysts, 10% chlorite, 10-15% qtz, trace magnetite very weakly sulfidized to pyrite. 1-3% epidote. Local qtz-epidote K-feldspar veinlets with minor carbonate. Very weakly sheared. Chlorite after biotite in part--also muscovite and some weak sericite flooded selvages in plagioclase. *<.02/<.2*

SAU-59. Rep. sample of dump to 20' deep shaft between (at east end) first and second trenches. 7/8 f.g. chloritic dike material, 5% chloritized phenocrysts--prob. 60-70% chl., 1/8 is weakly sheared granite-quartz monzonite with green stained feldspars. T-1% pyrite, 1-2% goethite, N-S vertical fracture in shaft.
1.80/.8

SAU-60 Rep. sample of 10' diameter x 3' deep old pit at NE lobe of #57-58 shaft dump. Mostly weathered sheared dike outcrop. 5-8% goeth, ½% hematite (originally 3-4% pyrite-ex cubes) 10% of pit is granite xenoliths. Minor quartz veinlets (50' N40E of 50'+ shaft).
.46/<.2

SAU-61. 40' shaft in granite, weakly bleached. Dump sample (150 T). N30E Fx in shaft, quartz monzonite with 10% chlorite, very weak shear & weakly silicif. T pyrite after magnetite, ½% goeth, T hematite., T CuOx. Also 100E a 10' shaft shows a granite/diorite dike contact (N15E). Dike on E side not sampled. Area mostly slope wash. *.89/<.2*

SAU-62. (Next to S.P. R.R. @ MP 434) N60W 75°S shear in 40' shaft at granite-mafic dike contact. Only dike sampled. (Dike is 20-30' wide to east of shaft on the surface). Most of shaft is dike with slices of granite. Minor goeth. Granite generally to west but area is pediment. Dike trends N10W±20°. *1.20/11.0*

- - - - - - - - - - - - - - - -

SAU-63. At Goldsmith's "Mica Moly Skarn" claims in Sec. 28, T9N, R3W near Mohave River SW of Barstow. From shaft in NE/4 NE/4, NW/4 Sec. 28 just west of Hinkley Road. Quartz vein material in sericite schist 2-3% goeth, T MnOx. Shaft is 60-70' deep to water, 200 T dump. Goldsmith's claims ½ mile to SW are in muscovite schist (see TAJ-364 assay SAU-BTW). *<.02/<.2*

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 386
September 6, 1984
PROJECT NO.: SAV-ELP
SHIPMENT NO. 1
JAMES D. SELL

ASARCO INCORPORATED
Attn: Mr. Fleetwood Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 66 Rock Chip Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
1	SAV 1	>10.00*	4.6
2	SAV 2	>10.00*	1.2
3	SAV 3	3.30	2.2
4	SAV 4	1.00	.2
5	SAV 5	.06	<.2
6	SAV 6	.26	<.2
7	SAV 7	6.90	.6
8	SAV 8	1.70	<.2
9	SAV 9	.11	<.2
10	SAV 10	<.02	<.2
11	SAV 11	<.02	<.2
12	SAV 12	<.02	<.2
13	SAV 13	1.80	<.2
14	SAV 14	<.02	.2
15	SAV 15	.81	<.2
16	SAV 16	.25	.2
17	SAV 17	.11	<.2
18	SAV 18	2.60	<.2
19	SAV 19	.05	<.2
20	SAV 20	2.10	.2
21	SAV 21	.08	<.2
22	SAV 22	1.30	<.2
23	SAV 23	.36	<.2
24	SAV 24	>10.00*	2.4
25	SAV 25	.69	<.2

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Tucson, Arizona 85703
(602) 622-4836

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
26	SAV 26	.36	<.2
27	SAV 27	<.02	<.2
28	SAV 28	<.02	<.2
29	SAV 29	<.02	<.2
30	SAV 30	<.02	<.2
31	SAV 31	<.02	.2
32	SAV 32	7.30	.6
33	SAV 33	.60	<.2
34	SAV 34	.16	<.2
35	SAV 35	.55	.6
36	SAV 36	1.60	.4
37	SAV 37	.46	<.2
38	SAV 38	6.10	.4
39	SAV 39	.10	<.2
40	SAV 40	<.02	<.2
41	SAV 41	.62	<.2
42	SAV 42	.36	<.2
43	SAV 43	.12	<.2
44	SAV 44	.14	<.2
45	SAV 45	.03	<.2
46	SAV 46	.49	.4
47	SAV 46A	.27	.2
48	SAV 47	.21	<.2
49	SAV 47A	.26	<.2
50	SAV 48	.15	.2

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 386
September 6, 1984

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
51	SAV 48A	.06	<.2
52	SAV 49	2.50	.6
53	SAV 50	.03	<.2
54	SAV 51	.25	<.2
55	SAV 52	.07	<.2
56	SAV 53	<.02	<.2
57	SAV 54	.06	<.2
58	SAV 55	.05	<.2
59	SAV 56	.04	<.2
60	SAV 57	2.70	1.8
61	SAV 58	<.02	<.2
62	SAV 59	1.80	.8
63	SAV 60	.46	<.2
64	SAV 61	.89	<.2
65	SAV 62	1.20	11.0
66	SAV 63	<.02	<.2

*NOTE: Fire assay analysis to follow.

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
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REPORT OF ANALYSIS

JOB NO. TAJ 386B
September 18, 1984
PROJECT NO.: SAV-ELP
SHIPMENT NO. 1
JAMES D. SELL
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. Fleetwood Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 12 Pulp Samples

ITEM	SAMPLE NUMBER	Hg (ppm)	Te (ppm)
1	SAV 1	.03	.060
7	SAV 7	.01	.200
19	SAV 19	.03	.020
20	SAV 20	.04	.040
24	SAV 24	.03	.070
31	SAV 31	<.01	.020
36	SAV 36	.06	.020
46	SAV 46	.02	.020
47	SAV 46A	.02	<.005
48	SAV 47	.02	<.005
49	SAV 47A	.02	<.005
57	SAV 54	.03	<.005

NOTE: Spectrographic analysis pending.

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona

William L. Lehmbeck
Manager

Photos - Golddust-Stardust Claims

Kern County, CA

View from about 300 feet W of sample SAU-56 ESE towards shaft dump (truck) and Goldsmith May 1984 trenches (samples SAU 39-53). Dump of sample SAU-54 on right. Note topography-relief. Slight goethitic color anomalies (weathered mafics and pyrite) in trenches and locally. Foreground is grus-covered.

View from about 500 feet S of sample SAU-62 toward SSE. Note weakly silicified outcrop (dike zone) up ridge to SW of grey dump and E-W trenches. Thin alluvium in foreground. Only weakly oxidized dump (50' to water) suggests oxidation although strong is not very deep.

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [x]

Submittal by
B. Goldsmith
Apt. C, 1523 Sherman P
Long Beach, CA 90804

Section I General Indexing

① Name(s) of Property or Area: Goldsmith Mica-Moly-Skarn Claims Kramer (Hodge) Hills Area					② Country: San Bernardino	③ State or Province: CA	
					④ USGS Quad: Hodge 7½'	⑤ File or Gore No.	
⑥ Latitude: 34°51'N	⑦ Longitude: 117°12'W	⑧ AMS Sheet: San Bernardino	Township: 9N	Range: 3W	Section: W/2 28	⑨ Examined by: FRKoutz	⑩ Date: 8/10/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1 Hr.

Section II Sources of Information

Date Typed 9/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Diblee, T.W.	1960	Barstow Quadrangle Map	USGS MF 233 (Map)	
Bowen, O.E.	1954	Barstow Quadrangle Report	CA Div. Mines Bull 165, p.151	
Kramer Hills Ares (Surprise Group)		Asarco Files		

J. H. C.
OCT 12 1984

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No values

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [x] Promotion

- [x] Dissem. Au
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Muscovite schist	1-2	
Ornamental Rock		

⑰ Reserves Nil
[ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes 0
Approx Total Footage 0

⑲ Excavations ½ doz. backhoe trenches to 10' deep

⑳ [x] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Muscovite. No MoS_2 nor wulfenite present. No Au or Ag.

㉔ Ore Minerals-Major: Muscovite trace malachite + Minor: tr. cpy-py, minor barite

㉕ Host Rocks-Major: Sericite-muscovite schist (Hodge Volcanic Group)

㉖ Age of Host Rocks: Paleozoic?

㉗ Nature of Exposures: Pediment/river terraces, deeply weathered & rotten (3/4 Mi. W of Mohave riverbed) - low rolling hills covered with broken liquor bottles & several tons of small caliber brass shell casings.

㉘ Alteration: (Metamorphic) - muscovite - sericite

㉙ Total Extent: To 50' wide, spotty zones over several thousand feet srike length.

㉚ Structure: Foliation NNW: steep NW dip. Some undulations

㉛ Ore Occurrence: Tabular zones of pearly white muscovite quartz schist. Locally iron oxide stained partially after pyrite. Qtz-FeOx stringers even if contain Au with former py-cpy too widespread to pick up any grade.

㉜ Age of Mineralization: Paleozoic?

㉝ Conclusions & Recommendations: Grayish carbonaceous coatings on muscovite-sericite mistaken for molybdenite. Area to SW shows bull qtz float & qtz segregations--bonding in schist with local hem goeth stain, trace malachite after chalcopyrite. Goldsmith's muscovite is too stained w/iron oxide to be used for filler except possibly ornamental rock. No evidence of molybdenite or skarn minerals. Main Surprise area in NE/4 Sec. 31 not visited; only tr. of malachite float along road in N/2 Sec. 29. To SW in Sec. 29 are Riverview claims of B. Flowers, Victorville.

(For additional space use extra sheets)

~~JHC~~ ERS

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐ J. H. C.

AUG 27 1984

Section I General Indexing

① Name(s) of Property or Area: SILVER MOUNTAIN PROSPECT, Loray District					② Country: Elko Co.	③ State or Province: NV	
					④ USGS Quad.: Cobre SE 7½'	⑤ File or Gore No.	
⑥ Latitude: 41°06'N	⑦ Longitude: 114°17½'W	⑧ AMS Sheet: Wells	Township: 37N	Range: 68E	Section: 8,9	⑨ Examined by: JDSell	⑩ Date: 8/1/84
						⑪ Office: SWED Tucson	⑫ Field Days: ½

Section II Sources of Information

Date Typed 8/22/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Int'l. Metals & Energy, 1984. Unreleased assay-mapping data.				
Granger, A.E., et al., 1957, Geol. & Min. of Elko Co., NV, NBM Bull 54.				

Section III Appraisal

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ☐ Too Small
- ☒ Ownership Problem
- ☐ Access Problem
- ☒ Review

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

⑯ Production

Commodity	Tons	Grade
Minor		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
Minor		

⑱ Num. Drill Holes --

Approx Total Footage

⑲ Excavations A number of shafts & pits.

⑳ ☒ Spectro. Analysis Attached ㉑ ☒ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Copper-Silver

㉔ Ore Minerals-Major: Tetrahedrite Minor: Chalcocite tennantite

㉕ Host Rocks-Major: Carbonate sequence Minor:

㉖ Age of Host Rocks: Probably Cambrian

㉗ Nature of Exposures: Low rolling hills, fair exposure

㉘ Alteration: Minor carbonate alteration zones with discrete quartz veins throughout.

㉙ Total Extent: ¼ mile wide by ½+ mile long

㉚ Structure: NW trending quartz veins of 1" to 2-3' wide scattered throughout zone.

㉛ Ore Occurrence: As cc-tetrahedrite-tennantite(?)

㉜ Age of Mineralization: Probably Tertiary

㉝ Conclusions & Recommendations: Review Int'l. Metals & Energy Co. (C. Sewell, Consultant) data to see extent of veins, alteration, and assays. NSM-1 & -2 show 25 opt silver in hi-graded samples of cc-tetrahedrite. Doubtful if bulk quartz veins and limestone wall rock will carry sufficient values to be of interest. Full data from IME should be available later.

(For additional space use extra sheets)

ASARCO

Southwestern Exploration Division

August 22, 1984

File Memorandum

Silver Mountain Prospect
Loray District
Elko County, NV

The property is held by International Metals and Energy, Suite 1020, The Wichita Towers, Wichita, TX 76301 of which Mr. Chuck Sewell, Consulting Geologist, Tucson, is a part.

A half day was spent on the property and two hi-graded samples were taken on each end of the half mile long system of quartz veins in a carbonate sequence.

Sewell Consultants are sampling and mapping the area and their report will be available later.

The obvious mineralized kernels have 25 ounce silver but no gold to speak of. It is doubtful that the barren looking quartz veins and the barren appearing limestone host rock will carry sufficient values to make the property of interest.

James D. Sell

JDS/cg

Attachments

Silver Mountain Prospect
Loray District, NV
Elko County, NV
Wells AMS
Cobre SE 7½' Quad
J. D. Sell August 1, 1984
Nevada Silver Mountain (NSM-) Series

NSM-1. NE¼ SE¼ Sec. 8 (protracted), T37N, R68E. Hi-graded samples of quartz with copper stain and chalcocite-tetrahedrite kernels in vicinity of old workings.
Cu 0.15%, Ag 24.8 opt, Au 0.001 opt, Sb +1.0%

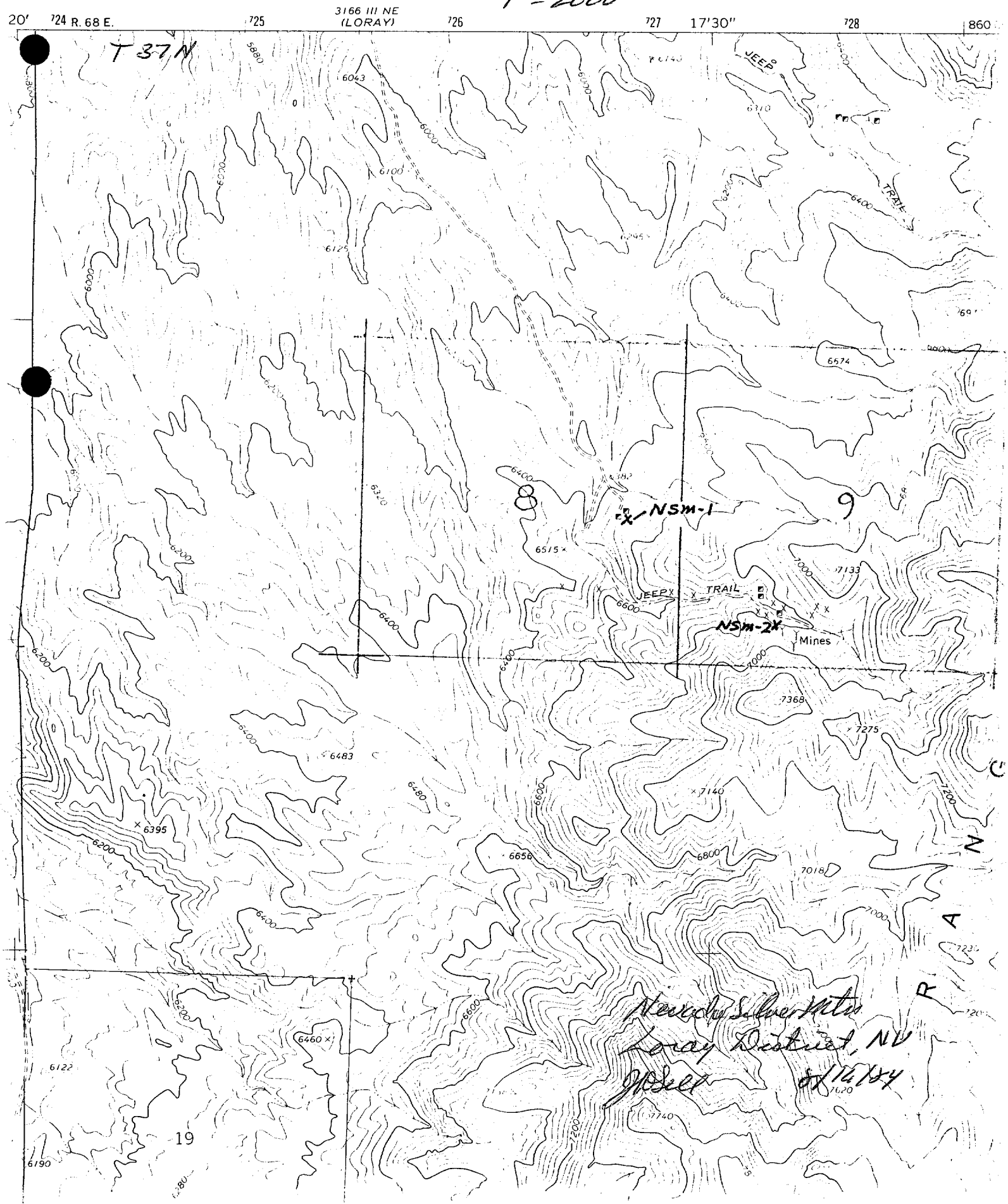
NSM-2. SE¼ SW¼ Sec. 9 (protracted), T37N, R68E. Hi-graded samples of quartz with copper stain and kernels of chalcocite-tetrahedrite in vicinity of old workings.
Cu 0.20%, Ag 25.7 opt, Au 0.0001 opt, Sb 0.3%

Numerous discrete quartz veins of 1" to 3' in altered and unaltered carbonate units. Shafts and pits generally in altered zones of 30 to 200 feet in width, separated by 100 to 300 feet of unaltered carbonate. Quartz veins tend to crosscut carbonate beds in strike and dip at a small angle of deviation.

Attachment A

Cobre SE 7½' Quad., Elko Co., NV

1" = 2000'



WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-232

MR J D SELL
ASARCO INC
P O BOX 5747
TUCSON AZ 85703

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

Dear Mr. Sell:

Transmitted herewith are the analytical data for the two samples delivered to our laboratory for semi-quantitative 35 element emission spec. analysis. Fe, Mg, Ca, Ti, Na, K, Si, Al, and P are reported in %; all other elements in ppm. The results for the two samples for Ag* and Au analysis are also included.

Element	NSM-1 ppm %	NSM-2 ppm %	Lower Detection Limit
Au	N	N	10
Ag	500	700	0.5
Cu	1500	2000	5
Pb	10000	500	10
Zn	200	200	200
Mo	20	5	5
Fe	1%	1%	0.05%
W	N	N	50
Ni	20	20	5
Co	N	N	10
Cr	N	N	20
Cd	N	N	20
As	2000	500	200
Sb	>10000	3000	100
Mn	100	100	10
V	10	70	10
Bi	N	N	10
Sn	20	N	10
Zr	N	N	10
B	N	N	10

Element	NSM-1 ppm %	NSM-2 ppm %	Lower Detection Limit
Ba	N	N	10
Be	N	N	1
La	N	N	20
Nb	N	N	10
Sc	N	N	5
Sr	N	N	100
Y	N	N	10
Ca	0.05%	0.3%	0.05%
Mg	N	0.2%	0.02%
Ti	N	N	.001%
Na	N	N	0.2%
K	N	N	0.5%
Si	30%	30%	1%
Al	N	N	0.5%
P	N	N	.1%

N = Not Detected
L = Detected but below limit of Determination
> = Greater than value shown

SAMPLE NUMBER	Ag* ppm	Au (FA/AA) ppb
NSM-1	850	48
NSM-2	880	5
BLANK		<3

E. H. Phillips
Laboratory Director

Charges: $69.00

EHP/we

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [ ] J. H. C.

AUG 27 1984

Section I General Indexing

① Name(s) of Property or Area: Gold Hill Area: "Gold Hill Mine" Clifton Mining District					② Country: Tooele Co.	③ State or Province: UTAH	
					④ USGS Quad.: Gold Hill 7½'	⑤ File or Core No.: Gold Hill	
⑥ Latitude: N40°10'	⑦ Longitude: W113°48½'	⑧ AMS Sheet: Tooele	Township: 7S, 8S	Range: 17W	Section: 31, 6	⑨ Examined by: JDSell & WLKurtz	⑩ Date: 7/29 & 8/4/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 8/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco File Data: Western Utah Copper Mine				
Nolan, T.B., 1935, Gold Hill Mining Dist: USGS PP 177, 172 p.				
El-Shatoury, H.M. & Whelan, J.A., 1970, Mineraliz. at Gold Hill Dist, UGMS Bull.83, 37 p.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [x] Asarco Pat. Claims

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production (old mine)

Commodity	Tons	Grade
Au-Ag	87,000	0.006-3.4 opt
As	"	15.6%
Pb-Cu	"	2.2-0.27%

⑰ Reserves (old mine) [ ] Measured [ ] Estimated

Commodity	Tons	Grade
2 or 3 times above at similar grade		

⑱ Num. Drill Holes 0 known

Approx Total Footage

⑲ Excavations Several pits & shafts in shale outside mined area.

⑳ [ ] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold

㉔ Ore Minerals-Major: Micron gold Minor:

㉕ Host Rocks-Major: Manning Shale Minor:

㉖ Age of Host Rocks: Penn-Miss

㉗ Nature of Exposures: Rubble covered slopes & low hills, poor.

㉘ Alteration: Black sooty shale with pyrite

㉙ Total Extent: 1000' x 1000'

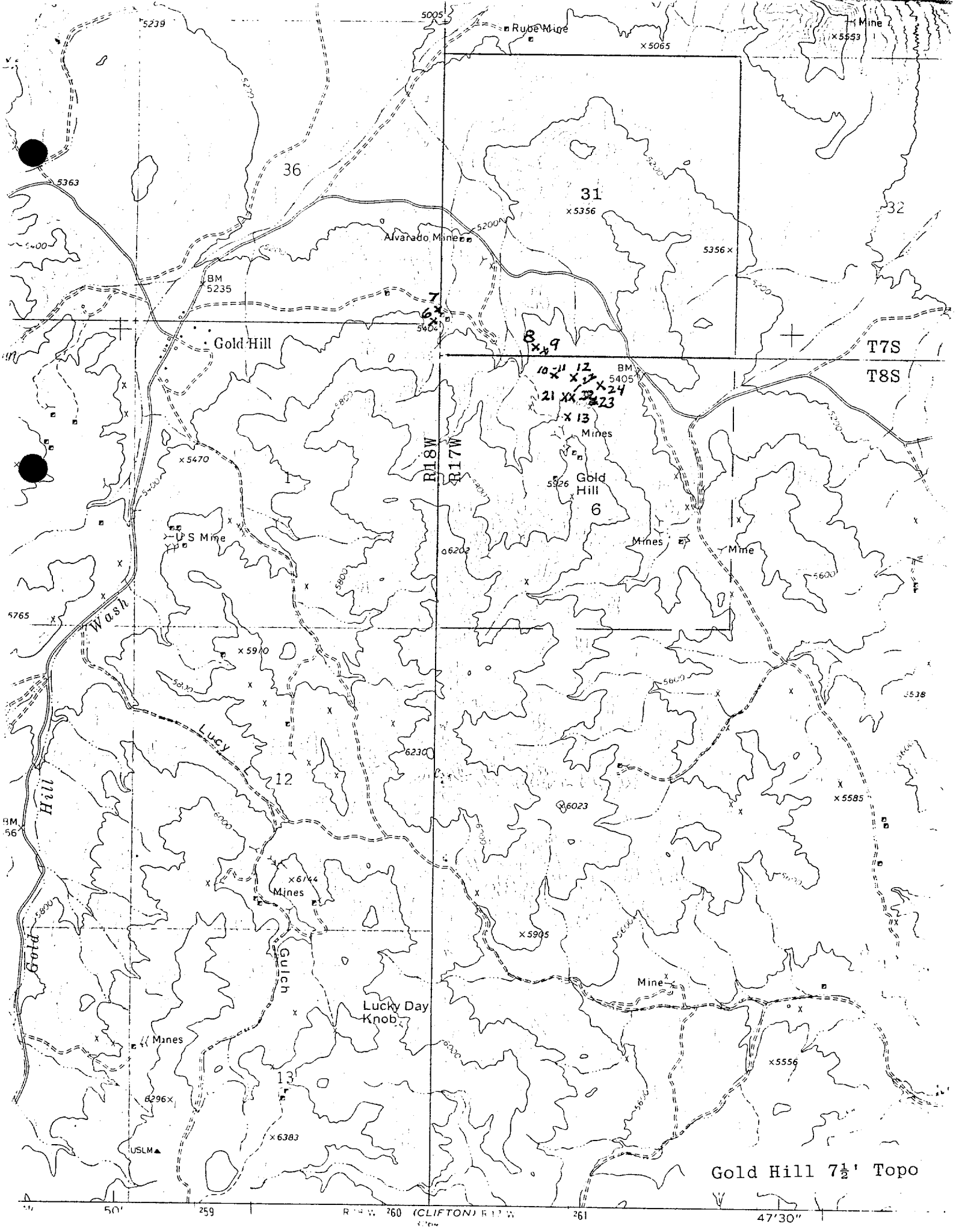
㉚ Structure: Minor faulting and shear zone trending NW subparallel to major bedding trends in Ochre Limestone.

㉛ Ore Occurrence: Old production in Ochre Mountain Limestone in proximity to qtz porphyry dikes & cross faults (NE). Potential micron gold in black shale northeast of old workings.

㉜ Age of Mineralization: Tertiary?

㉝ Conclusions & Recommendations: Samples UGH-8 thru 13, and 21 thru 24 show low level silver values in the quartz-jasperoid and all but one is nil in the shale. Our ten-claim patented group encompasses the quartz-jasperoid and part of the shale and is useful to any adjacent claims. Recommend holding the claims and checking into the ownership of the adjacent Gem claims.

(For additional space use extra sheets)


Rube Mine
Mine
5005
5239
5065
5553
36
31
32
5363
5356
Alvarado Mine
BM
5235
Gold Hill
T7S
T8S
BM
5405
Mines
R18W
R17W
Gold
Hill
6
1
5470
5926
LPS Mine
Mines
Mine
6202
5765
Wash
5910
Lucy
12
6230
6023
5585
5538
Hill
Gold
6144
Mines
5905
Gulch
Mine
Lucky Day
Knob
Mines
13
5556
6296
6383
USLM
Gold Hill 7½' Topo
50'
259
260
(CLIFTON)
261
47'30"

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-230

Gold Hill Area
Clifton Mining Dist.
Tooele Co., UT

MR J D SELL
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the 13 samples delivered to our laboratory for Ag* and Au analysis.

SAMPLE NUMBER	Ag* ppm	Au (FA/AA - 20 grams/2 ml) ppb
UGH-1	3.3	<3
2	0.6	<3
3	0.8	78
4	1.7	<3
5	0.5	<3
6	263	5600
7	60	380
8	2.3	30
9	0.9	7
10	0.6	61
11	0.5	63
DUPLICATE	~~0.5~~	67
12	0.4	20
13	0.7	38
BLANK		<3

*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $214.50

EHP/we

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 384
August 23, 1984
W. L. KURTZ
UGH-14 THRU UGH-24
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 11 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au* (ppm)	FIRE ASSAY Ag (oz/t)
1	UGH-14	<.02	.04
2	UGH-15	<.02	<.01
3	UGH-16	<.02	.04
4	UGH-17	<.02	<.01
5	UGH-18	<.02	.06
6	UGH-19	<.02	<.01
7	UGH-20	.02	<.01
8	UGH-21	<.02	<.01
9	UGH-22	<.02	<.01
10	UGH-23	<.02	<.01
11	UGH-24	<.02	<.01

RECEIVED
AUG 24 1984
EXPLORATION DEPARTMENT

*NOTE: Method of analysis by combination fire assay and atomic absorption.

cc: Asarco Incorporated
Attn.: W.L. Kurtz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK FACSIMILE SIGNED Arizona U.S.A.

William L. Lehmbeck
Manager

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

ASARCO EXPLORATION RECORD

J. H. C.

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [ ] ~~AUG 27 1984~~

Section I General Indexing

① Name(s) of Property or Area: Gold Hill Area: "Ochre Springs" Clifton Mining District						② Country: Tooele County	③ State or Province: UTAH
						④ USGS Quad.: Gold Hill 7½'	⑤ File or Core No.: Gold Hill
⑥ Latitude: N40°8½'	⑦ Longitude: W113°51'	⑧ AMS Sheet: Tooele	Township: 8S	Range: 18W	Section: 11	⑨ Examined by: JDSell & WLKurtz	⑩ Date: 7/28 & 8/3/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 8/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco File Data				
Nolan, T. B., 1935, Gold Hill Mining Dist: USGS PP 177, 172p.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [x] Asarco Pat. Claim

⑮

- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [x] Drill Hole
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Minor		

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown		

⑱ Num. Drill Holes 1

Approx Total Footage 200'?

⑲ Excavations Pits & adits to tap springs

⑳ [ ] Spectro. Analysis Attached

㉑ [x] Assays Attached

㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold

㉔ Ore Minerals-Major: Micron Gold Minor:

㉕ Host Rocks-Major: Ochre Mtn. Lms. & Manning Shale Minor:

㉖ Age of Host Rocks: Miss. and Miss.-Penn.

㉗ Nature of Exposures: Rubble covered slopes (shale) with limestone-jasperoid outcrops

㉘ Alteration: Jasperoid in lms; sooty shale with pyrite

㉙ Total Extent:

㉚ Structure: Minor faulting, some thrusting--bx along lms-shale contact.

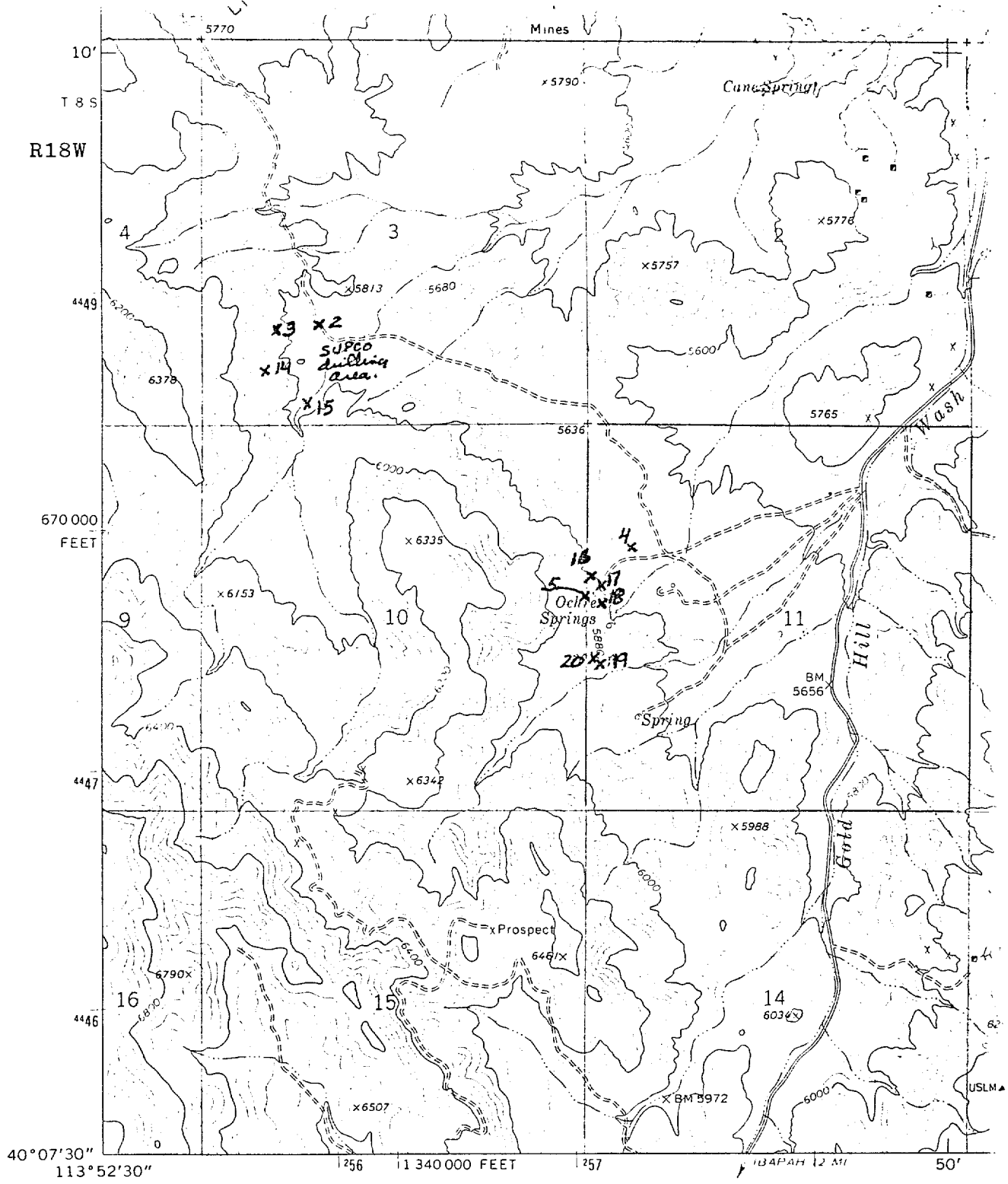
㉛ Ore Occurrence: Jasperoid development at lms-shale contact and in black shale

㉜ Age of Mineralization: Tertiary(?)

㉝ Conclusions & Recommendations: UGH-4,5,16 thru 20 samples are low level anomalous in silver, similar to the SUPCO results to the northwest. Our one patented claim is probably sufficient to allow a preliminary test prior to talking with Freeport Minerals which apparently surround us and has drilled at least one hole near the boundary.

(For additional space use extra sheets)

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



(IBAPAH)
3264 III SW

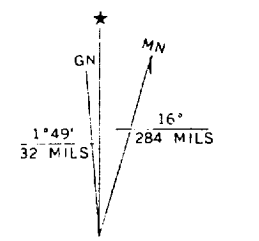
Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1973. Field checked 1973

Projection and 10,000-foot grid ticks: Utah coordinate system, central zone (Lambert conformal conic) 1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue. 1927 North American datum

Where omitted, land lines have not been established



UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Gold Hill, UT 7½' Topo

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-230

Gold Hill Area
Clifton Mining Dist.
Tooele Co., UT

MR J D SELL
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the 13 samples delivered to our laboratory for Ag* and Au analysis.

SAMPLE NUMBER	Ag* ppm	Au (FA/AA - 20 grams/2 ml) ppb	
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4	1.7	<3	
5	0.5	<3	
6	263	5600	5.6 ppm
7	60	380	.38 ppm
8	2.3	30	
9	0.9	7	
10	0.6	61	
11	0.5	63	
DUPLICATE	0.5	67	
12	0.4	20	
13	0.7	38	
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*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $214.50

EHP/we

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 384
August 23, 1984
W. L. KURTZ
UGH-14 THRU UGH-24
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 11 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au* (ppm)	FIRE ASSAY Ag (oz/t)
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5	UGH-18	<.02	.06
6	UGH-19	<.02	<.01
7	UGH-20	.02	<.01
8	UGH-21	<.02	<.01
9	UGH-22	<.02	<.01
10	UGH-23	<.02	<.01
11	UGH-24	<.02	<.01

RECEIVED
AUG 24 1984
EXPLORATION DEPARTMENT

*NOTE: Method of analysis by combination fire assay and atomic absorption.

cc: Asarco Incorporated
Attn.: W.L. Kurtz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona U.S.A.

William L. Lehmbeck
Manager

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

ASARCO EXPLORATION RECORD

J. H. C.

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ]

AUG 27 1984

Section I General Indexing

① Name(s) of Property or Area "Superior Oil Co. Drilling" HOG Area, Clifton Mining District					② Country Tooele Co.	③ State or Province UTAH	
					④ USGS Quad. Gold Hill 7½'	⑤ File or Core No. Gold Hill	
⑥ Latitude N40°9½'	⑦ Longitude W113°52'	⑧ AMS Sheet Tooele	Township 8S	Range 18W	Section 3	⑨ Examined by JDSell & WLKurtz	⑩ Date 7/28 & 8/3/84
						⑪ Office SWED Tucson	⑫ Field Days 1

Section II Sources of Information

Date Typed 8/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Matson, H.E., 1982, GRC Expl. Co. report, Gold Hill Project: Asarco Files, 11 p.				
Nolan, T.B., 1935, Gold Hill Mining Dist.: USGS PP 177, 172 p.				
Asarco File Data				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [x] Drilled Area
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Minor		

⑰ Reserves
[ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown		

⑱ Num. Drill Holes 30 Est.
Approx Total Footage 6000 Est.

⑲ Excavations Several old adits.

⑳ [ ] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals Gold

㉔ Ore Minerals-Major Micron Gold Minor

㉕ Host Rocks-Major Ochre Mtn. Lms. & Manning Shale Minor

㉖ Age of Host Rocks Miss. & Miss.-Penn.

㉗ Nature of Exposures Rubble covered slopes (shale) with limestone outcrops.

㉘ Alteration Jasperoid in limestone; sooty shale with pyrite

㉙ Total Extent 1500' x 2000'

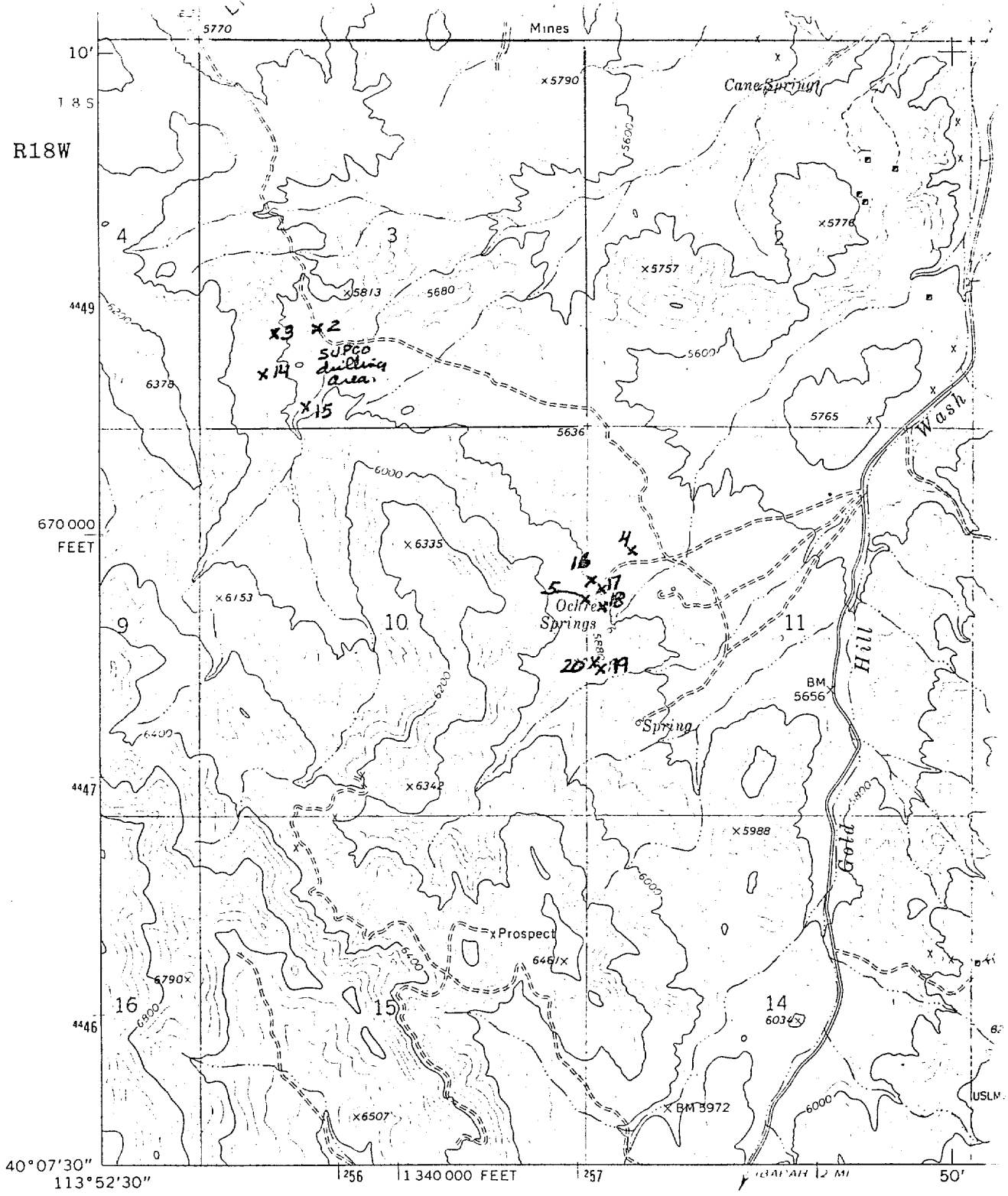
㉚ Structure Minor faulting, some thrusting--bx along limestone-shale contact.

㉛ Ore Occurrence At limestone-shale contact and in black shale.

㉜ Age of Mineralization Tertiary (?)

㉝ Conclusions & Recommendations UGH-2,3,14, & 15 samples show low level silver and one anomalous gold value. The thirty or so holes suggest more than general interest. WLKurtz (verbal) reports that SUPCO says it is not a "mine" but they are willing to hold on to the property position. Freeport Minerals has adjacent claims and extends southeast to the Ochre Springs area.

(For additional space use extra sheets)



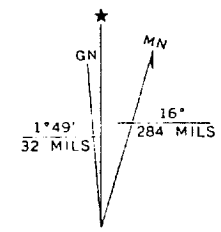
Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1973. Field checked 1973

Projection and 10,000-foot grid ticks: Utah coordinate system, central zone (Lambert conformal conic) 1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue. 1927 North American datum

Where omitted, land lines have not been established



UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Gold Hill, UT 7½' Topo

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-230

Gold Hill Area
Clifton Mining Dist.
Tooele Co., UT

MR J D SELL
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the 13 samples delivered to our laboratory for Ag* and Au analysis.

SAMPLE NUMBER	Ag* ppm	Au (FA/AA - 20 grams/2 ml) ppb
UGH-1	3.3	<3
2	0.6	<3
3	0.8	78
4	1.7	<3
5	0.5	<3
6	263	5600
7	60	380
8	2.3	30
9	0.9	7
10	0.6	61
11	0.5	63
DUPLICATE	0.5	67
12	0.4	20
13	0.7	38
BLANK		<3

*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $214.50

EHP/we

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 384
August 23, 1984
W. L. KURTZ
UGH-14 THRU UGH-24
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 11 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au* (ppm)	FIRE ASSAY Ag (oz/t)
1	UGH-14	<.02	.04
2	UGH-15	<.02	<.01
3	UGH-16	<.02	.04
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5	UGH-18	<.02	.06
6	UGH-19	<.02	<.01
7	UGH-20	.02	<.01
8	UGH-21	<.02	<.01
9	UGH-22	<.02	<.01
10	UGH-23	<.02	<.01
11	UGH-24	<.02	<.01

RECEIVED
AUG 24 1984
EXPLORATION DEPARTMENT

*NOTE: Method of analysis by combination fire assay and atomic absorption.

cc: Asarco Incorporated
Attn.: W.L. Kurtz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK Arizona U.S.A.

William L. Lehmbeck
Manager

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

J. H. C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [ ] ~~AUG 27 1984~~

Section I General Indexing

① Name(s) of Property or Area	② Country	③ State or Province
Gold Hill Area: "Alvarado Mine" Clifton Mining District	Tooele Co.	UTAH
	④ USGS Quad. Gold Hill 7½'	⑤ File or Core No. Gold Hill

⑥ Latitude	⑦ Longitude	⑧ AMS Sheet	Township	Range	Section	⑨ Examined by	⑩ Date
N40°10'	W113°49'	Tooele	7S	18W	36	JDSell	7/29/84
						⑪ Office SWED Tucson	⑫ Field Days ½

Section II Sources of Information

Date Typed 8/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco File Data: Woodman Mining Company				
Nolan, T.B., 1935, Gold Hill Mining Dist.: USGS PP 177, 172 p.				
El-Shatoury, H.M. & Whelan, J.A., 1970, Mineraliz. at Gold Hill Dist., UGMS Bull.83, 37p.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Gold		"$120,000"

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown, minor?		

⑱ Num. Drill Holes _____ Approx Total Footage _____

⑲ Excavations Shaft, 200' deep. 5 Levels

⑳ [ ] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold with Cu, Pb

㉔ Ore Minerals-Major: Gold Minor: cc, cpy, galena

㉕ Host Rocks-Major: Ochre Limestone Minor: quartz monzonite

㉖ Age of Host Rocks: Mississippian Tertiary

㉗ Nature of Exposures: Low hills, saddle area, poor.

㉘ Alteration: Recrystallization & skarn in limestone, sericite & silicification in mz.

㉙ Total Extent: 600' long(?) parallel to bedding

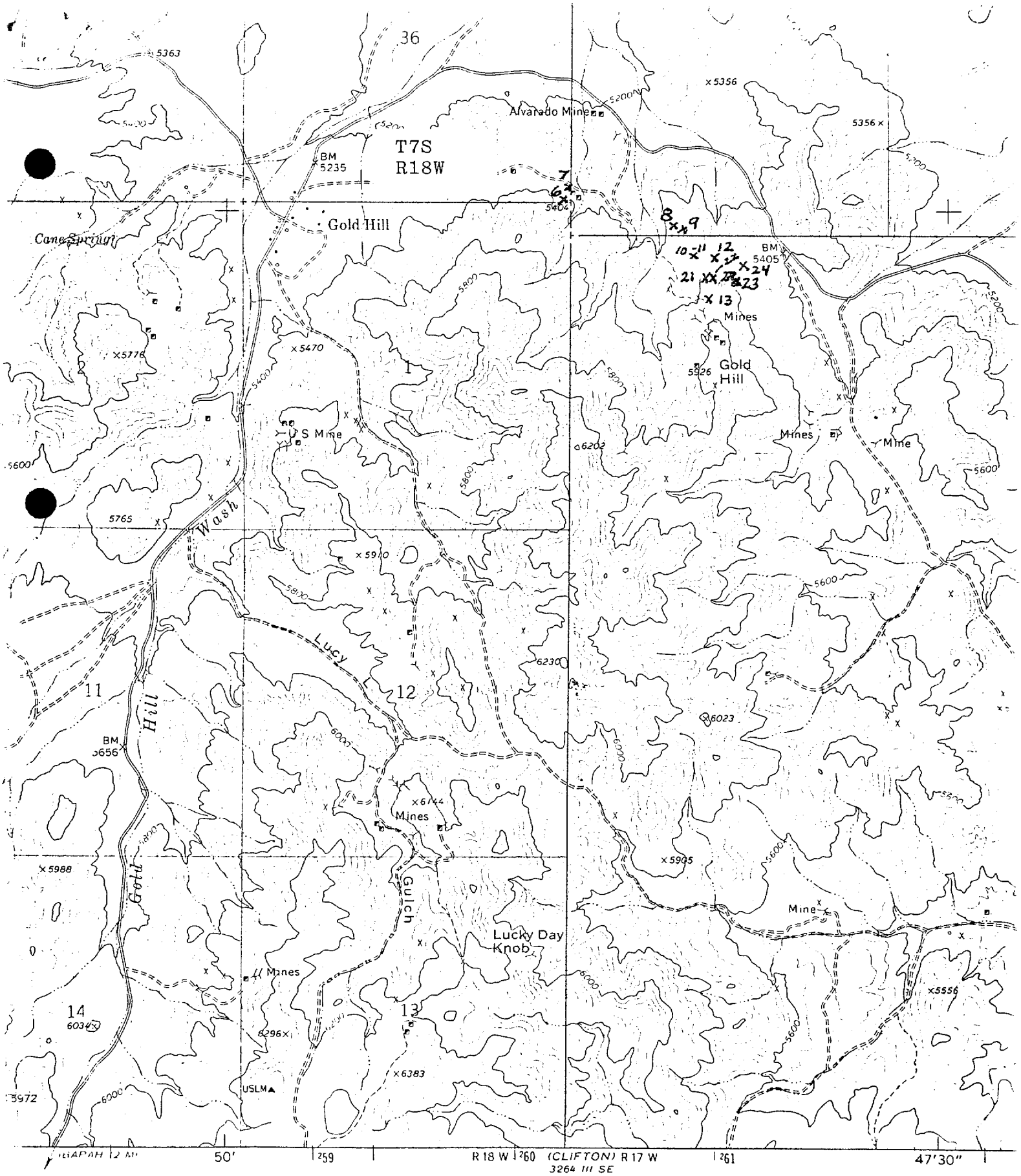
㉚ Structure: Minor NE cross faults cutting NW trending, +65°E dipping limestone units.

㉛ Ore Occurrence: Ore shoots in metamorphosed limestones, probably along cross faults.

㉜ Age of Mineralization: Tertiary(?)

㉝ Conclusions & Recommendations: Samples UGH-6 & 7 show viable gold and silver values but tonnage may be limited in the limestone-skarn. El-Shatoury Figure 10 indicates Tr.-0.1 opt Au and Tr-2.0 opt Ag. C. Woodman verbally reported visible gold in shears. Lease-option to party in SLC with first right of refusal then to Freeport Minerals (verbal CW, 1984).

(For additional space use extra sheets)



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

GN MN

1°49' 32 MILS

16° 284 MILS

CONTOUR INTERVAL 40 FEET

DOTTED LINES REPRESENT 20-FOOT CONTOURS

NATIONAL GEODETIC VERTICAL DATUM OF 1929

Gold Hill, UT 7½' Topo

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-230

Gold Hill Area
Clifton Mining Dist.
Tooele Co., UT

MR J D SELL
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TUCSON AZ 85703

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DUPLICATE	0.5	67
12	0.4	20
13	0.7	38
BLANK		<3

*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $214.50

EHP/we

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

ASARCO EXPLORATION RECORD

[X] FIELD EXAMINATION [ ] LITERATURE SEARCH [X] ASARCO FILE [ ] J. H. C.

AUG 27 1984

Section I General Indexing

① Name(s) of Property or Area: Gold Hill Area: "Cactus Bell" Clifton Mining District						② Country: Tooele Co.	③ State or Province: UTAH
						④ USGS Quad.: Gold Hill 7½'	⑤ File or Core No.: Gold Hill
⑥ Latitude: N40°11½'	⑦ Longitude: W113°52½'	⑧ AMS Sheet: Tooele	Township: 7S	Range: 18W	Section: 28	⑨ Examined by: JDSell	⑩ Date: 7/28/84
						⑪ Office: SWED Tucson	⑫ Field Days: ½

Section II Sources of Information

Date Typed 8/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco File Data				
Nolan, T.B., 1935, Gold Hill Mining Dist.: USGS PP 177, 172p.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [X] Ownership Problem
- [ ] Access Problem
- [ ]

⑮

- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [X] Jasperoid zone
- [ ] Geologic Concept
- [ ] Geochem Anomoly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Unknown		

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown		

⑱ Num. Drill Holes ____ Approx Total Footage ____

⑲ Excavations: Several shafts in area.

⑳ [ ] Spectro. Analysis Attached ㉑ [X] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: Micron Gold Minor:

㉕ Host Rocks-Major: Jasperoid from limestones Minor:

㉖ Age of Host Rocks: Penn-Perm Oquirrh Fm.

㉗ Nature of Exposures: Good

㉘ Alteration: Marble plus jasperoid development

㉙ Total Extent: 200' x 500'

㉚ Structure: Stratiform within limestone sequence

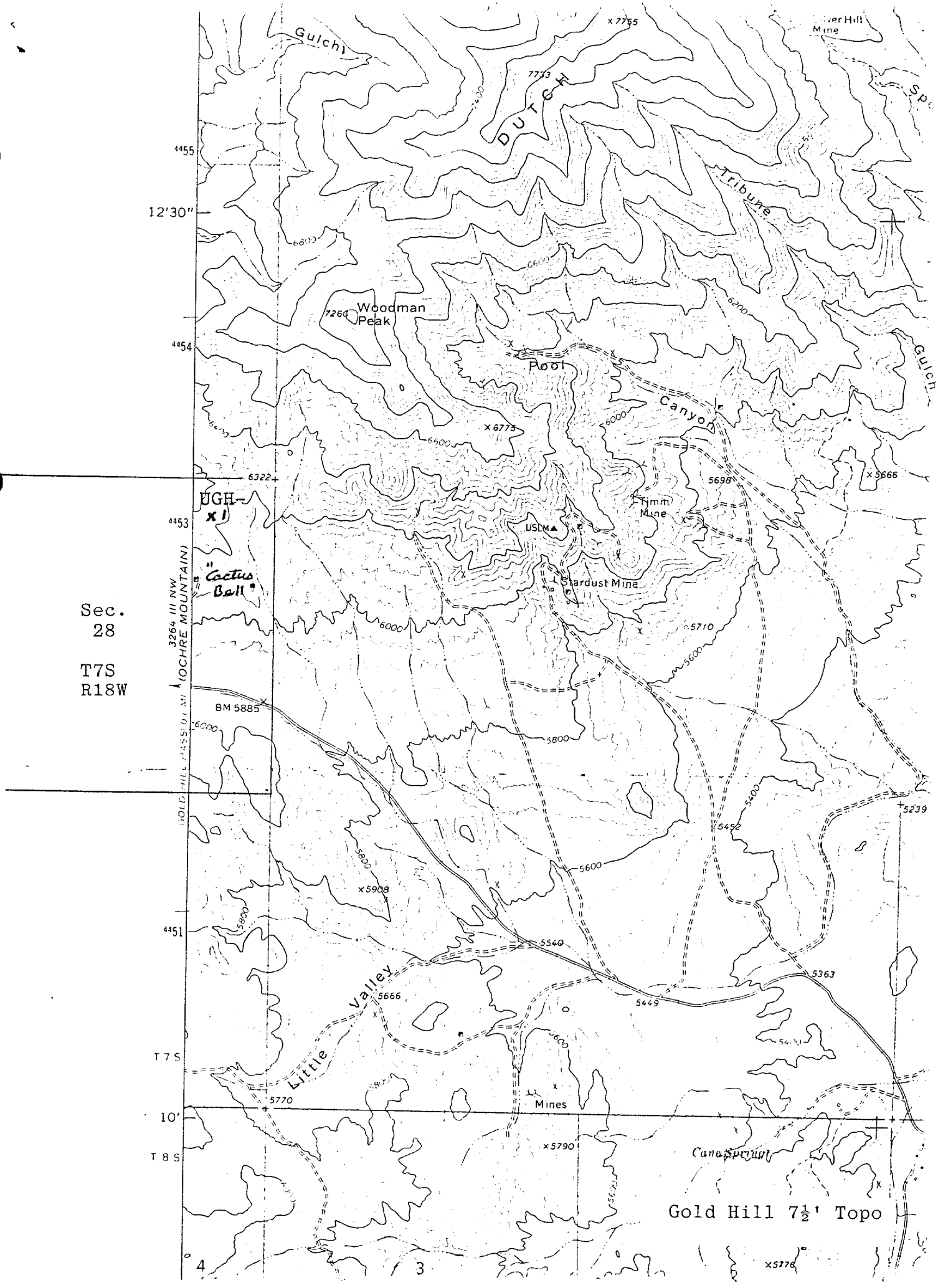
㉛ Ore Occurrence: Micron gold in jasperoid sequence

㉜ Age of Mineralization: Tertiary(?)

㉝ Conclusions & Recommendations: Sample UGH-1 returned 0.1 opt silver and nil gold suggesting very low values for the jasperoid-marble zone. No further work recommended at the Cactus Bell zone.

(For additional space use extra sheets)

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



Gold Hill 7½' Topo

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-230

Gold Hill Area
Clifton Mining Dist.
Tooele Co., UT

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P O BOX 5747
TUCSON AZ 85703

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2	0.6	<3
3	0.8	78
4	1.7	<3
5	0.5	<3
6	263	5600
7	60	380
8	2.3	30
9	0.9	7
10	0.6	61
11	0.5	63
DUPLICATE	0.5	67
12	0.4	20
13	0.7	38
BLANK		<3

*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $214.50

EHP/we

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

JHC - ER File
J. H. C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [ ] AUG 22 1984

Section I General Indexing

① Name(s) of Property or Area: LUCIN DISTRICT					② Country: Box Elder Co.	③ State or Province: UT	
					④ USGS Quad.: Patterson Pass 7½'	⑤ File or Core No.: Lucin District	
⑥ Latitude: 41°14'N	⑦ Longitude: 114°01½'W	⑧ AMS Sheet: Wells	Township: 6N	Range: 19W	Section: 16	⑨ Examined by: JDSell	⑩ Date: 7/31/84
			Utah			⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 8/15/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco files, Lucin District, Box Elder Co., UT: Various properties.				
Miller, D.M., et al, Geol. Patterson Pass-Crater Island NW Quads, Box Elder Co., UT, O.F. 82-834, and Geol. Tecoma-Lucin Quads, Box Elder Co., UT, O.F. 83-725.				
International Metals & Energy Co, 1984: NICOR data.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [x] Review

⑮

- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [ ]
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Copper	18.2 mill#	
Lead	5.9 mill#	
Silver	260,000 oz.	

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade
Minor reserves known		

⑱ Num. Drill Holes 10
Approx Total Footage 5330

⑲ Excavations Numerous, plus two open pits

⑳ [x] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag, other Cu, Pb, Zn

㉔ Ore Minerals-Major: Micron gold, chalcocite, galena Minor:

㉕ Host Rocks-Major: Paleozoic section Minor: Intrusives

㉖ Age of Host Rocks: Mainly Dev.-Miss. Cretaceous-Tertiary

㉗ Nature of Exposures: Good

㉘ Alteration: Jasperoid along thrust for more than two miles.

㉙ Total Extent

㉚ Structure: N-S thrusts and high angle faults cut by E-W shears.

㉛ Ore Occurrence: Often at intersection of E-W shears and N-S structures.

㉜ Age of Mineralization: Tertiary

㉝ Conclusions & Recommendations: Review of entire assay data package when it is available. Sample ULSS-1 returned 10 ppb Au and 1.8 ppm Ag. A micron gold potential in proximity of jasperoids (bx on map) and overlying Chainman Shale (MPcd on map) of Attach. A. A quartz eye porphyry occurs at Copper Mountain (Attach. B) and similar porphyry is undoubtedly related to the copper mineralization.

(For additional space use extra sheets)

ASARCO

Southwestern Exploration Division

August 15, 1984

To: W. L. Kurtz

From: J. D. Sell

Lucin District
Box Elder County, UT

A checkerboard section pattern of claims and state leases are held by International Metals and Energy (IME), a private investor group. Chuck Sewell, Tucson geologic consultant, is a part of that investor group (see file data).

Chuck has spent a considerable amount of time the past two years putting the claim groups in order and doing the assessment work. I visited the property on July 30-31, 1984.

This summer IME has sampled much of the region on wide spaced lines and covering all their claim blocks. This data base will be available later this fall.

Besides the copper pit area mined in the past, and the NICOR drilled gold-silver area, several other attractive targets appear to be in need of additional work and interpretation.

1) A band of jasperoid extends from Patterson Pass (Sec. 33, T6N, R19W) on the south, to near Black Butte on the north (Sec. 28, T7N, R19W)--a distance in excess of five miles--as replacement along a regional thrust plate and along bedding in units with which the thrust is in contact. Sample ULSS-1 was taken in the largest bulge of mapped jasperoid where an east-west shear cut the zone on Mineral Mountain. Textures in the jasperoid suggest replacement along steeply dipping north-south limestone fragments as well as eastward dipping shale units--the latter corresponding to the apparent bedding in the overlying Chainman Shale unit (which outcrops very poorly). Thus a more detailed sampling of the jasperoid and soil sampling of the shale cover (or any other favorable unit) might reveal a target.

2) As shown by Sewell (Attachment B, NICOR data), a small zone of quartz eye porphyry in a star pattern of intersection faults is found north of the copper pit at Copper Mountain. The porphyry was mapped as "altered" blobs on Miller's Open File 83-725 map. It is weakly altered with sericite and clays and contains variable limonite mainly along fractures. The intrusive must have been quite dry as only a few tens of feet of marble are found in the limestone wall rocks along

with iron and manganese. Structural-stratigraphic relationships are complex, but it appears that more favorable carbonates are available at depth and perhaps these would exhibit better alteration and mineralization hosting copper-lead-zinc-gold-silver in excess of what was mined just south of the outcrop. As noted, NICOR's drilling in the old open pit, LU-3 & -4, did penetrate through the Simonson Formation dolomite, a thrust and into Fish Haven dolomite, a favored replacement unit, without finding assayable material.

The large stock of Tertiary monzonite, shown on the Open File cross sections, was not penetrated by the NICOR drilling though LU-2 may have intercepted dikes of the stock; thus little is known of the stock under the claim area.

Attached are the AER sheet, assay data, and maps.

James D. Sell

James D. Sell

JDS/cg

Attachments

cc: FTGraybeal

Lucin District

Box Elder County, UT

Mineral Mountain Area
Crater Island NW 7½' Quad
Sec. 16, T6N, R19W
Sampled July 31, 1984
Utah Lucin Sewell Sell Series (ULSS)

ULSS-1. Large jasperoid mass, chip sampling over 25' square area. Sugary, silica replacement units of limestone, with barite, sericite, and hematite-limonite FeOx, adjacent to quartz eye porphyry intrusion.

WESTERN ANALYTICAL, INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

Aug. 16, 1984
P84-231

RECEIVED
AUG 20 1984
EXPLORATION DEPARTMENT

MR J D SELL
ASARCO INC
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the sample delivered to our laboratory for semi-quantitative 35 element emission spec. analysis. Fe, Mg, Ca, Ti, Na, K, Si, Al, and P are reported in %; all other elements in ppm. The results for the sample for Ag* and Au are also included.

Element	ULSS-1 ppm %	Lower Detection Limit
Au	N	10
Ag	2	0.5
Cu	50	5
Pb	100	10
Zn	200	200
Mo	N	5
Fe	1%	0.05%
W	N	50
Ni	15	5
Co	N	10
Cr	N	20
Cd	N	20
As	N	200
Sb	N	100
Mn	100	10
V	10	10
Bi	N	10
Sn	N	10
Zr	20	10
B	N	10

Element	ULSS-1 ppm %	Lower Detection Limit
Ba	>5000	10
Be	N	1
La	N	20
Nb	N	10
Sc	N	5
Sr	100	100
Y	N	10
Ca	0.1%	0.05%
Mg	0.05%	0.02%
Ti	0.02%	.001%
Na	N	0.2%
K	N	0.5%
Si	>30%	1%
Al	0.5%	0.5%
P	N	.1%

N = Not Detected
L = Detected but below limit of Determination
> = Greater than value shown

SAMPLE NUMBER	Ag* ppm	Au (FA/AA) ppb
ULSS-1	1.8	10
BLANK		<3

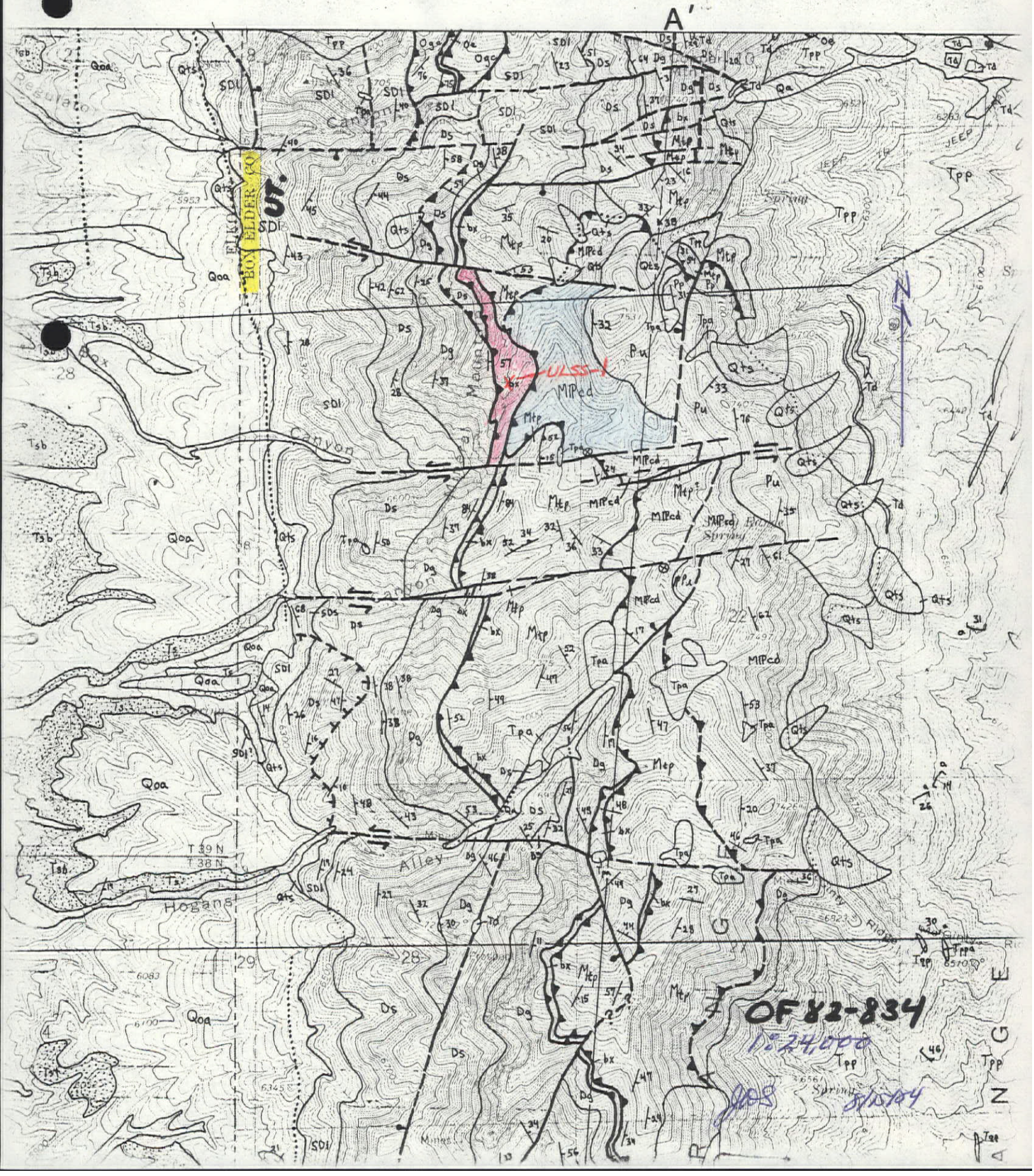
*Background Corrected

E. H. Phillips
Laboratory Director

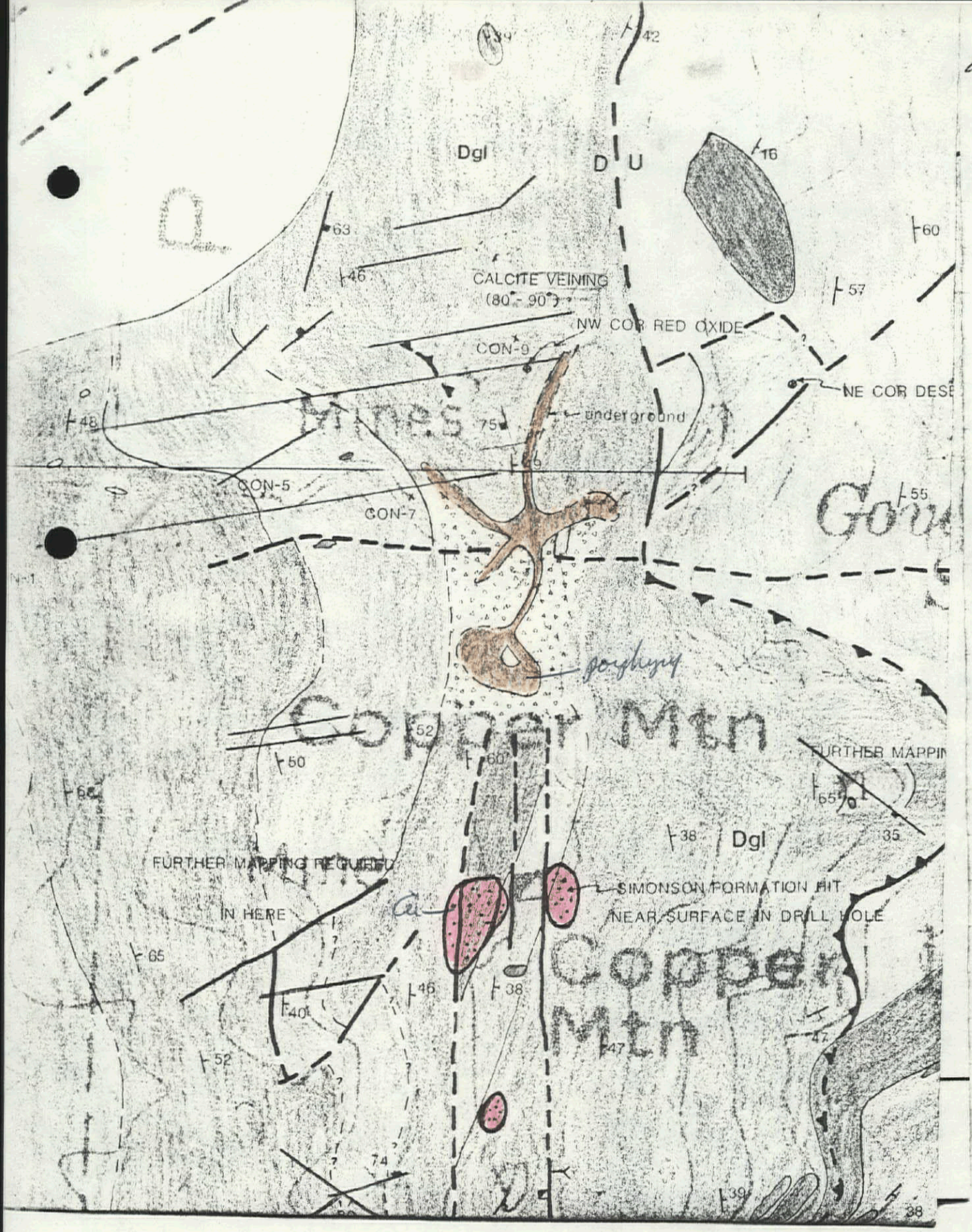
Charges: $35.50

EHP/we

Attachment A



att. B



Copper Mtn Zone
Lucin Dist., UT
from NICOR map.
1" = 400'
JLDS 8/15/04

~~TH~~ - ER

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [x] Submittal by Lord John S. Whatley 602-623-4522

Nil except on Florida Mine

Section I General Indexing

① Name(s) of Property or Area: DOUBLE TOUGH CLAIMS (Double Tuff) Claims (42+); incl. 'Old' Florida Mine Old Baldy Distrist					② Country: Pima	③ State or Province: AZ	
					④ USGS Quad.: Helvetia-Mt.Wrightson 7½'	⑤ File or Gore No.	
⑥ Latitude: 31°45'N	⑦ Longitude: 110°49'W	⑧ AMS Sheet: Nogales	Township: 19S	Range: 15E	Section: 28,29 32,33 +	⑨ Examined by: FRKoutz	⑩ Date: 7/12/84
					⑪ Office: SWED Tucson	⑫ Field Days: 3/4	

Section II Sources of Information

Date Typed 8/3/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Drewis, H.,	1971,	Sahuarita & Mt. Wrightson Quads: USGS Maps I-613 & 614.		
ASARCO File,	1968,	Old Florida Mine (Old Baldy District) Pima Co.		
Whatley, J.S.,	1984,	Submittal info. incl. Denison Mines data.		

J. H. C.

AUG 20 1984

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [x] Access Problem Rare II-WSA Nearby

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [x] Flux? Sorted only
- [ ]
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Au/Ag ore	few hundred	0.X opt Au

⑰ Reserves

[ ] Measured Commodity	[x] Estimated Tons	Grade
Dump	800	.04-.1 opt Au
Au (max)	Several 1000	.2-.5 opt

⑱ Num. Drill Holes 0

Approx Total Footage --

⑲ Excavations Several 100 feet horizontal

⑳ [x] Spectro. Analysis Attached

㉑ [x] Assays Attached

㉒ [x] Geochem Results Attached Skyline TAJ-381

Section IV Geologic Data

<.02-.12 opt Au

㉓ Commodity or Contained Metals: Au, Ag, Pb, Cu, Zn

㉔ Ore Minerals-Major: Au°, acanthite, gn, cpy, sl, pyrite Minor: bn, cov, malach.

㉕ Host Rocks-Major: Mt.Wrightson volc. (middle member - ash flow tuffs) Minor: Ft.Crittenden clastics to NE

㉖ Age of Host Rocks: Triassic Cretaceous

㉗ Nature of Exposures: Fair. Heavy brush & talus. Veins not well exposed except in stream cuts, ridges but can be traced by malachite + FeOx float. On N slopes of Mt. Wrightson (~6000' elev.)

㉘ Alteration: Weak epidote, chlorite, carbonate ± qtz. stringers locally. Clay & silicification along structure.

㉙ Total Extent: ±1000' structure traced--discontinuous.

㉚ Structure: WNW vein zone, dips 65°S, other subparallel veins. Volcanics dip steeply SW to vertical. ½-1 mile SW of Sawmill Canyon fault zone. Silicified fault (+ss bed?) between Ft. Crittenden and Mt. Wrightson Fm.

㉛ Ore Occurrence: Silicified fissure vein w/spotty low-percentage sulfides, partially oxidized: Au & Ag values spotty. Veins as exposed narrow: 3-6' wide max although weak silicification up to 10-15' wide veins subparallel to ash-flow tuff host rock.

㉜ Age of Mineralization: Laramide

㉝ Conclusions & Recommendations: Veins narrow discontinuous widely spaced w/spotty metal values & ash flow tuffs between veins & stringers shows little or no alteration. No potential for bulk tonnage. Small operator could develop several 1000 tons ¼-½ opt Au-bearing rock. Mostly a promotion. Attempts @ road building, drilling or major operation will bring problems from USFS & environ. groups. Area of interest because ~1 mi. SW of Sawmill fault zone, widespread shows of Au and 3-4 miles W of Greaterville Au Camp. Local minor placer production in west Sawmill Canyon.

(For additional space use extra sheets)

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

ASARCO

Southwestern Exploration Division

August 14, 1984

To: J. D. Sell

From: F. R. Koutz

Double Tough Claims
Old Baldy District
Pima County, AZ

Last month I examined the Double Tough claims of Lord John S. Whatley (apparently an honorary Australian title) and Jim Olmstead on the north side of Mount Wrightson. Although I was doubtful whether their veins were as wide and continuous as promoted, the environment; ½ - 1 mile SW of the Sawmill Canyon fault zone in the Mt. Wrightson ash-flow tuffs and Ft. Crittenden clastics and 3-4 miles west of the Greaterville gold camp was of interest for potential disseminated mineralization. They also advertised (incorrectly) that they had several hundred feet of new work in a crosscut through a number of new veins and that they had several hundred tons of fluxing ore ready for shipment and have contacted SW Ore Purchasing several times.

I collected 10 samples from the dumps and outcropping veins. The assays (Au, SiO_2 , E-Spec), sample descriptions and geologic notes with ERS are attached. The results confirm that the dumps do not contain enough Au (.0X opt) nor SiO_2 (65%) especially with Fe and Al_2O_3 deductions to ship as flux although .X opt Au specimens can be high graded from the dumps and old workings. Although the Double Tough structure can be roughly traced for about 1000' of strike, mineral values are discontinuous and spotty and the volcanics between vein zones show little or no alteration/ mineralization. There is also no specific favorable lithology or structural situation which might favor disseminated mineralization. There is therefore no potential for bulk tonnage. In addition the gougy veins in the old workings are narrow with spotty mineralization and I doubt whether even an expert miner could develop more than a few thousand tons of 0.X opt Au especially with problems from the USFS, various environmental and marijuana-growing groups.

Whatley plans to ship some of the dump material to the "Hell-Rock mill" (promotion) near Twin Buttes if he can come up with $6000. He also owes several thousand dollars to Mountain States for test work and has a number

of angry "investors" on his tail. I have informed Mr. Whatley that we are not interested in his property and unless he can come up with some higher-grade representative material the smelter will not be interested in his dumps. The district to the north and east probably deserves some low-priority reconnaissance for precious metals due to the nearness of Greaterville with production of 30,000 oz (mostly placer) Au.

F. R. Koutz

FRK/cg

Attachments: Assays TAJ-381
Sample Descriptions
Geologic Notes
ERS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 381
August 8, 1984
SHIPMENT NO. DBT
JAMES D. SELL
DBT 1 THRU 10
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 10 Rock Chip Samples

ITEM	SAMPLE NO.	Au (ppm)	SiO2 (%)
1	DBT 1	4.00	63.0
2	DBT 2	.425opt >10.00*	54.5
3	DBT 3	.29	65.0
4	DBT 4	1.50	64.0
5	DBT 5	<.02	66.5
6	DBT 6	.61	76.5
7	DBT 7	.37	68.0
8	DBT 8	1.20	67.0
9	DBT 9	<.02	79.0
10	DBT 10	2.50	62.0

*NOTE: Fire assay analysis to follow.

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9427 CHARLES E. THOMPSON Arizona U.S.A.

Charles E. Thompson
Chief Chemist 8/8/84

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 381
August 8, 1984
SHIPMENT NO. DBT
JAMES D. SELL
DBT 1 THRU 10

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 10 Rock Chip Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

REGISTERED ASSAYER
CERTIFICATE NO. 9427
CHARLES E. THOMPSON
DATE SIGNED
Arizona U. S. A.

William L. Lehmbeck
Manager

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 381
PAGE 2

ITEM NO.	SAMPLE NO.
1	DBT 1
2	DBT 2
3	DBT 3
4	DBT 4
5	DBT 5
6	DBT 6
7	DBT 7
8	DBT 8

ITEM	1	2	3	4	5	6	7	8
ELEMENT								
Fe	5%	10%	5%	7%	3%	2%	2%	5%
Ca	.03%	<.02%	.07%	.03%	.05%	.02%	.05%	.07%
Mg	.2%	.1%	.2%	.2%	.5%	.15%	.2%	.5%
Au(ppm)	4.00	0.425 OPT	.29	1.50	<.02	.61	.37	1.20
Ag	70	200	1.5	100	30	30	10	50
As	10000	>10000	<500	2000	<500	<500	<500	1000
B	20	50	30	50	<10	10	15	15
Ba	70	<10	500	15	500	500	700	300
Be	2	2	2	5	<2	<2	3	2
Bi	20	<10	<10	<10	<10	<10	<10	<10
Cd	150	500	<50	50	<50	<50	<50	<50
Co	30	15	<5	5	5	<5	<5	<5
Cr	100	150	100	100	<10	200	100	100
Cu	1000	3000	100	1000	1500	700	70	500
Ga	10	10	10	10	10	<10	10	10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	30	<20	<20	<20	<20	<20	<20	<20
Mn	300	200	500	700	500	300	700	700
Mo	10	3	<2	2	<2	70	10	<2
Nb	20	30	20	30	<20	<20	20	20
Ni	<5	<5	<5	<5	<5	<5	5	5
Pb	>10000	>10000	3000	>10000	3000	10000	5000	10000
Sb	<100	150	<100	<100	<100	<100	<100	<100
Sc	10	<10	10	10	<10	<10	<10	<10
Sn	15	15	10	20	<10	<10	10	10
Sr	100	<100	100	100	<100	100	100	<100
Ti	3000	3000	3000	3000	2000	2000	3000	2000
V	30	30	50	30	30	50	100	50
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	10	15	15	15	<10	<10	20	20
Zn	>10000	10000	3000	10000	<200	5000	500	3000
Zr	300	150	200	200	150	150	200	200

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 381
PAGE 3

ITEM NO.	SAMPLE NO.
9 =	DBT 9
10 =	DBT 10

ITEM	9	10
ELEMENT		
Fe	.7%	5%
Ca	.03%	.2%
Mg	.2%	.2%
Au	<.002	2.50
Ag	<1	20
As	<500	<500
B	10	10
Ba	70	150
Be	<2	<2
Bi	<10	<10
Cd	<50	<50
Co	<5	<5
Cr	100	<10
Cu	200	300
Ga	<10	<10
Ge	<20	<20
La	<20	<20
Mn	200	300
Mo	<2	<2
Nb	<20	<20
Ni	<5	<5
Pb	20	7000
Sb	<100	<100
Sc	<10	<10
Sn	<10	<10
Sr	<100	<100
Ti	500	3000
V	50	20
W	<50	<50
Y	<10	<10
Zn	<200	3000
Zr	<20	150

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 381A
August 9, 1984
SHIPMENT NO. DBT
JAMES D. SELL
DBT 1 THRU 10
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 1 Pulp Sample

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)
2	DBT 2	.425

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER CERTIFICATE NO. 9427 CHARLES E. THOMPSON STATE OF ARIZONA U.S.A.

Charles E. Thompson
Chief Assayer 8/10/84

DouBle Tough Samples - Skyline TAJ-381

Au/Ag opt / SiO_2 %

DBT-1: At adit portal 6' sample across vein in greenish grey volcanic silicified minor sphalerite, galena and pyrite. *.12/2./63*

DBT-2: Selected dump (800T ±) material silicified volcanic (± ash-flow tuff) with 3-5% sulfides, py > cpy = gn, sl(?) + malachite, cerussite-anglesite, pyromorphite-mimetite, 3% goethite > hematite, ¼% MnOx visible Au°(?). *.425/6./54.5*

DBT-3: Fairly heavily silicified volcanic wall rock: greenish porphyritic flow laced with 1-3 mm galena filled fractures with covellite coatings, minor sphalerite(?). *.008/.04/65*

DBT-4: Fairly representative dump sample, silicified volcanic with several percent sulfides and oxides as above #2 & 3. Difficult dump to sample because fines have washed from surface. *.043/2.9/64*

DBT-5: Volcanic conglomerate-breccia (ash-flow tuff) S25E quartz stringers ± vertical 1-2" about parallel to flow banding (vertical ± 15° but mostly steep S dip). Zone with increased silicification is 5-10' wide and shows spotty traces of malachite and 2-3% hematite > goethite. 3' sample across structure. About 250' S50E from adit (DBT-1) and 100' uphill. *<.001/.9/66.5*

DBT-6: N80W, 60°W structure in open cut with strong goeth > hematite stain. Connects to caved workings (± perpendicular to structure?) below. Several 100 ton dump. Sample is jarositic with 3-5% pyrite ≫ galena (1-2" wide) on dump - not sampled. *.012/.9/76.5*

DBT-7: Wall rock over 50' area of open cut at DBT-6. 3% goeth > hematite, ¼% MnOx. Trace malachite - mostly in fractures. Volcanic almost looks like schist (ash-flow tuff). *.011/.3/68*

DBT-8: Dump sample at end of skip tram at end of road. Greyish-green volcanic, moderate silicification (est. 75-80% SiO_2) with local cerussite, pyromorphite and CuOx on fractures. 2-3% FeOx. Rep. sample - all 1". Reported ¼ opt Au, 11 opt Ag. *.035/1.5/67*

DBT-9: N40W silica zone (silicified sandstone?) at portal of new adit to run below Double Tough vein. N35E fractures filled with ¼% MnOx, ¼-½% goethite, trace malachite, 90-95% SiO_2, 6' x 4' sample across back. Adit 6' deep (2nd round). *<.001/<.03/79*

DBT-10: Crushed gray volcanic with 2% FeOx. Reportedly 1.45 opt Au, 5 opt Ag but Tombstone Mill only found 0.08 opt Au. From ore pile at camp. *.073/.6/62*

FRKoutz
12 July 1984

Sample-Geologic-Property Notes

Double Tough Claims

Old Baldy Mining District

Pima County, AZ

42 lode, unpat. +2 mill sites. N. side Mt. Wrightson, mostly Sec. 28, 29, 32, 33, T19S, R15E. (Lord) John S. Whatley and Jim Olmstead (on-site caretaker). Samples from SE/4 Sec. 29. Mt. Wrightson and Helvetia 7½' sheets. Reference: Sahuarita and Mt. Wrightson Quads by Drewes (1971): USGS Maps I-613, 614.

Road into camp is 2.6 miles long: turn-off Box Canyon-Sawmill cyn at E¼ corner Sec. 18 (2WD). Camp of Jim Olmstead on limestone blocks in Sawmill Canyon fault. Road uphill beyond camp is 4WD and ends at pad-ore chute end on S edge of Helvetia 7½' sheet. At pad is N40°W, 80°S silicified fault zone on contact Fort Crittenden Fm to NE and the middle member of the Mt. Wrightson Fm. 4WD road up shows NW striking very steeply SW-dipping, contorted shales, siltstones, sandstones, and cgl-bx-probably a minor volcanic component. Local weak iron oxide stain. Whatley reports ½ oz Ag and trace Au at 1st switchback north. There are numerous ± bedding plane minor faults through the Ft. Crittenden plus local strong NNE fractures. At the pad an adit is being started S35W through the silicified fault zone at the Mt. Wrightson contact (sample DBT-9). The zone looks like a silicified quartzite. Fourteen Denison Mine samples along this zone 5-30' wide show .001-.09 opt Au and <.05-1.7 opt Ag (mostly <.005 opt Au).*

At the pad is end of flume-skip and new dump (sample DBT-8) of old dump material brought down from above. The skip-flume is quite interesting. It is made of 3/4" x 12" boards braced with 4" x 4" and 2" x 4" studs in flume fashion and extends some 1100 feet WSW then SSW up to the old Double Tough (or Double Tuff) dumps. The skip consists of 8 or 10 rectangular steel pans on casters into which fit steel ore containers about the size of a rectangular office wastebasket. The cars are joined by chains and pulled up the flume by ¼" cable from a drum attached to a small gasoline engine. The skip-"train" holds one ton total and cycle time is 12 minutes with a 3 or 4 man crew. They have moved 25 tons a day down the hill with the skip. Halfway up the skip are the remains of an old miner's shack with the usual beer and condensed milk cans, bed springs, etc.--now a USFS "historical-site" according to Whatley and cannot be touched. The USFS would not allow a new road to be built to the Double Tough dump--hence the flume-skip. This area was formerly a Rare II Wilderness Study Area but the boundary has been moved S and E.

The dump at the Double Tough vein contains some 600-800 T with 100-200 tons trammed down the hill. The rock on the dump is a dark greyish green volcanic flow (latitic or andesitic). It is locally silicified and shows

---

*9 Aug.: Only one Denison sample from this zone: .013 opt Au/14 samples from over whole prospect.

minor clay, 3-5% goethite, hematite and 1-5% sulfides. Sulfides in thin seams and fractures are pyrite, galena, chalcopyrite and sphalerite with minor bornite, covellite. Pyromorphite-mimetite, cerussite-anglesite and malachite are also common. Rare traces of Au° are present--generally associated with pyrite or galena although most of what the owners think is gold is tarnished chalcopyrite. Values in the dump are reportedly 0.1-1+ opt Au and several opt Ag. Whatley says the dump runs 92% SiO_2 but Phelps Dodge says 74%--which appears to be more reasonable. Three 2 lb. dump samples (DBT 2-4) were taken as well as a 1' sample (DBT-1) across the vein at the adit portal. The Double Tough vein is opened along the strike by 2 adits: one extending 191' S60E, another 71' N60W on either side of the streamcut. The structure dips 60-70°S. There are a number of N30E quartz stringers and NNE cross fractures. The structure is rather narrow--3-6' wide with a maximum explored width of about 10'. The sulfides, iron oxides, and silica are spotty along the structure although it has been locally stoped up 12-15' with removal of only a small part of the muck. No samples were taken in the ratty workings because of its narrow width and extensive previous sampling: 10 high-graded grab samples by Whatley average 0.33 opt Au and 4.5 opt Ag. A number of cuts by Denison are considerably less. Whatley will send the data. We traced the structure to the SE. A sample (DBT-5) 250' S50E of the adit was cut across 3' of a 5-10' silicified zone with a number of 1-2" S25E quartz stringers. The structure is parallel to the steeply SW-dipping foliation of the ash-flow tuff. Some 500 feet more SE 2 samples (DBT 6 & 7) were taken at an open cut/adit into the apparent Double Tough structure. The structure can be very roughly traced by malachite on float and slightly increased amount of iron and manganese oxides on fractures. There are also a number of narrow sub-parallel structures in the area but unfortunately there is a large distance between structures showing relatively fresh mostly ash flow tuffs with minor lava flows and breccias with only minor epidote, chlorite and carbonate. A traverse to the south and west of the Double Tough vein also showed mostly fresh ash flow tuff although minor malachite and iron oxides could be noted several hundred feet NW of the adit along the Double Tough structure. Altogether there are indications of the Double Tough structure or nearby sub-parallel structures for about a thousand feet of strike length.

Whatley and Olmstead's present plans are to remove and ship some 800 tons of Double Tough dumps if they can find a way to sell the rock or concentrate it. They have sent 50 tons to Tombstone which turned out according to the mill operators to have only 0.08 opt Au. They plan to make a shipment to a mill at Twin Buttes(?). They plan to continue their new adit some 800-1000' SSE to cut the Double Tough structure at depth and a number of other stringers on the way. Their actual total work so far has been to clean up and widen the road, build up the flume-skip, move about 200 tons of rock downhill and clean out the entrances to several old workings. The money for the work has come from a number of small "investors" as Olmstead or Whatley seem to have no other visible means of support and owe several thousand dollars to Mt. States for metallurgical test work. Whatley has a number of other claims along the Sawmill Canyon fault, near Helvetia and the Glove Mines and around the slate.

The owners may be able to make a few dollars from shipping the dumps but I doubt whether they will be able to develop more than a few thousand tons of +0.1 opt Au mineralization in the Double Tough or nearby structures and no doubt the USFS will insist on primitive methods of moving it out. (However Whatley has used a helicopter to move some equipment.) I see no indications of bulk tonnages of Au-Ag or even a strong high-grade vein. The general area is of interest though because of widespread, although spotty, Au mineralization (Greaterville is 3-4 miles E). I indicated to Whatley and Olmstead that I might be back to look over the area in general but that the specific Double Tough structure as now exposed was not of interest to us. I also indicated that if they wished to get a 50-100 lb. representative sample of a lot of 20 tons or more that our Ore Purchasing Department might consider a trial shipment.

The property has been visited this year by Kerr-McGee (Quinlan), Felmont (Homestake) Norm Lewis, Dennison Mines, Getty, Qube Resources, Power Resources, Leadville Corp. and several Vancouver geologists.

ASARCO

Exploration Department
Southwestern United States Division

August 14, 1984

John S. Whatley
P. O. Box 5105
Tucson, AZ 85703

Double Tough Claims
Old Baldy District
Pima County, AZ

Dear Mr. Whatley:

Thank you for sending the Denison Mines information on your claims. I have finally received all assays back from the samples I collected on your Double Tough claims last month. I am sorry to inform you that, although one selected dump sample ran 0.4 oz/T Au and 6 oz/T Ag, the others only contained .008-.04 oz/T Au. The dump at the bottom of the chute ran .035 oz/T Au. Other samples collected ran <.001 to 0.12 oz/T Au with the sample from the crushed ore pile at Jim Olmstead's Camp running 0.073 oz/T Au.

Silica content ranged from 64 to 68% and with the relatively high iron and alumina contents most of your dump material would not be of interest to a smelter. At present there is not enough higher-grade mineralization present to interest us but we certainly appreciate your bringing it to our attention. Thank you for the chance to examine your claims. Please feel free to bring other properties to our attention.

Very truly yours,

Fleetwood R. Koutz

FRK/cg

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

~~File~~ ER file

Contact: Dave Taylor, Roddy Res. 604-374-2447 (Westland Tractor, Kamloops, B.C.)

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☒ ASARCO FILE ☒ Vancouver Office sent info

Section I General Indexing

Furlough Pat. Lode Claims 1-10 (Pat. in 1966)

① Name(s) of Property or Area: BIG HORN PROPERTY (Roddy Resources) (U.S. or Hauxhurst Mine) Big Horn District - Big Horn Mountains			② Country: Maricopa Co.			③ State or Province: AZ	
			④ USGS Quad.: Big Horn Mtns.15'			⑤ File or Gore No.	
⑥ Latitude: 33°43'	⑦ Longitude: 113°01.5'	⑧ AMS Sheet: Phoenix	Township: 4N, 4N, 5N	Range: 8W, 7W, 7W	Section: 1, 6, 31	⑨ Examined by: FRKoutz	⑩ Date: July 1984
						⑪ Office: SWED Tucson	⑫ Field Days

Section II Sources of Information

Date Typed 8/2/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Roddy Res. Inc.,	5/16/84	Big Horn Property, Statement of Material Facts, Vancouver Stock Ex. #57/84.		
Watson, B.N.,	8/30/66,	Burney (Hauxhurst) Pros., Big Horn Dist. (review) Asarco files.		
Stevens, F.M.,	5/5,6/6/44,	Hauxhurst Mine / 1951: E. Wisser (U.S. Copper-Gold Prospect)		

J.H.C.

Section III Appraisal

SEP 17 1984

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ? Too Small
- ☒ Ownership Problem
- ☐ Access Problem
- ☒ Visit

⑮
- ☒ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☒ Prospect Au°
- ? Heap Leach
- ☐ Detachment?
- ☒ Geologic Concept
- ☒ Geochem Anomaly
- ☐ Geophy Anomaly
- ☐

⑯ Production

Commodity	Tons	Grade
Au/Cu (WWII)	4500	.13 opt/.5-.75%
Au/Cu 1961	133	.09 opt/2.0%
		±70% SiO_2

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
Roddy reports 10 holes av:	80-100'	of 0.176 opt Au (mid July 84) - drilling in progress. Gary Belick, Geol.

⑱ Num. Drill Holes 4+ old DDH 10+ new; Approx Total Footage ?

⑲ Excavations 2 shafts to 486' & 600'; 1 shaft 100'; numerous pits, adits

⑳ ☐ Spectro. Analysis Attached ㉑ ☐ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au, Cu, Ag 28 sample cuts (10-60') av: 0.06 opt Au

㉔ Ore Minerals-Major: Cu oxides, carbonates, silicates Au° Minor: Wulfenite

㉕ Host Rocks-Major: Db, rhy.+and. tuffs & flows, lahars, Bx Minor: gn, schist, qtzite (Yavapai)

㉖ Age of Host Rocks: Tertiary Tertiary-Laramide to east p€ basement to west

㉗ Nature of Exposures: 2300-2800' El.-open desert, shafts oxidized to TD--all oxides. Regional dip 20-30°E in volc. On NE-trending "Wickenburg Lineament," local structures NW in Big Horn Mountains.

㉘ Alteration: Stockwork qtz. vn. + silica Bx zones to 16', drusy & banded qtz. Hem. (red & specular)+jarosite. Locally 5% calc., kaolinite in wall rocks. ㉙ Total Extent: 4500'N-S, 130' wide, ±600' deep (max)

㉚ Structure: N-S tabular zone ± vert. up to 130' E-W faults offset N-S zone(s): part of N-trending, possibly arcuate (caldron?) fault/fracture zone - // to T/p€ contact. Narrow Db dikes/sills intrude fx zones.

㉛ Ore Occurrence: CuOx in vn/bx zones: Au does not necessarily correlate w/qtz or Cu-Ag. Rather narrow; prefer. deposition in mafic Rx. No $S^{=}$ remain. Heavy FeOx: 5-10%.

㉜ Age of Mineralization: Tertiary (Laramide?)

㉝ Conclusions & Recommendations: Rather narrow structure & high angle but potential for 2+ m.t. .05-.1 opt Au. Possibly flat fault-detachment situation cut by "microdiorite" (Db) dikes which are mineralized. Environment w/listric mineral faulting occurs in Vulture Mine area to N. Worth contacting Roddy Res. (sold: $700,000 in stock to finance drilling here & elsewhere) and field visit.

.13 Au, .11 Ag, .67 Cu, .2 Zn, 11 Fe, 1.0 CaO, 72 SiO_2, 5.4 Al_2O_3, 0.8 S - 1944 shipments, mostly chrysocolla Cu.

(For additional space use extra sheets)

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

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☒ LITERATURE SEARCH ☒ ASARCO FILE ☒ Submittal

Everett Cohoe
5361 N. 61st Ave., Glendale AZ 85301

Section I General Indexing

① Name(s) of Property or Area: Sea-Y Claims (1-6) Battleship Copper Lodes, Mammoth Mine Area Midway Mining District						② Country: La Paz Co.	③ State or Province: AZ
						④ USGS Quad.: Swansea 15'	⑤ File or Gore No.:
⑥ Latitude: 34°04'N	⑦ Longitude: 113°49'W	⑧ AMS Sheet: ~~Phoenix~~ PRESCOTT	Township: 8N	Range: 14W	Section: 3,4	⑨ Examined by: FRKoutz	⑩ Date: 7/31/84
						⑪ Office: SWED Tucson	⑫ Field Days: 0

Section II Sources of Information

Date Typed 8/2/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Submittal packet (1982 & 72) Sea-Y Copper Claims (Harvey Smith & Coggin, P.E.) + photos				
Keith, S.B.	1978	Midway District, AZ Bur. Geol. Bull. 192, p. 135,162.		
Wilkens, J. & Hendrick, T.L.	1982	Base & Precious Metal Mineraliz./Low-Angl. Tec./Buckskin Mtns/MZ-CZ Tect. Evolution of Colo. Riv. Region (Frost & Martin), p.182-204 (GSA Fld.Trip		

Section III Appraisal

J. H. C.

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ☒ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ Visit to study environment

⑮
- ☐ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☒ Prospect

Detachment
- ☒ Fault Zone?
- ☒ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly
- ☐

⑯ Production

Commodity	Tons	Grade
Cu (oxide)	±15	
Midway: 212 T: 4.5 T Cu, 45 oz Au, 35 oz Ag		
Dist.		

AUG 3 1984

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
Nil		

⑱ Num. Drill Holes 0
Approx Total Footage 0

⑲ Excavations 15' adit
Several dozer cuts

⑳ ☐ Spectro. Analysis Attached ㉑ ☒ Assays Attached AZ Testing ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

4-6% Cu, 48-58% SiO_2, .05-.15 opt Ag, nil-T:Au (high graded)

㉓ Commodity or Contained Metals: Cu (Ag>Au)

㉔ Ore Minerals-Major: Chrysocolla Azurite, (cpy-py) Minor: chalcanthite, tenorite(?)

㉕ Host Rocks-Major: gneiss-phyllite, marble, quartzite Minor: cgl - all banded

㉖ Age of Host Rocks: p€? Mesozoic Local dikes & sills(?)(m Tert)

㉗ Nature of Exposures: Look fairly good from photos - on SE flank of Battleship Peak

㉘ Alteration: Minor silicification, hand specimens show blue-green chlorite in brecciated fragment ± red hematite

㉙ Total Extent: 1500' contact, 600' wide, ±3' thick(all max

㉚ Structure: Specimens in sheared-banded & locally brecciated phyllite-gneiss. On crest-flank of NE trending antiform. Mylonite below(?) or within detachment.

㉛ Ore Occurrence: Horizontal zone in flat-lying zone hosts multiple stringers of Cu oxide minerals after chalcopyrite>pyrite w/local heavy hematite (red>specular). Possibly a mylonitized zone in metamorp. pkg of MZ metaseds over p€ schist-gneiss.

㉜ Age of Mineralization: 25-15 m.y.(?) - detachment

㉝ Conclusions & Recommendations: Probably associated w/Buckskin detachment faulting. Copper mineralization is discontinuous & 3 prospect cuts are somewhat supergene enriched near outcrop. Nil to trace Au-Ag. Only minor potential for economic tonnage. Not worth a specific visit to evaluate prospect but a visit to study the environment would be valuable to understanding the detachment mineralization complex environment in the Buckskin Mountains.

(For additional space use extra sheets)

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

ASARCO

Southwestern Exploration Division

August 2, 1984

To: J. D. Sell

From: F. R. Koutz

Sea-Y Claims (1-6)
Battleship Copper Lodes
Midway Mining District
Sec. 3,4, T8N, R14W
La Paz County, AZ

Mr. Everett Cohoe and wife stopped by July 31 to offer us an examination of his 6 Sea-Y claims on Battleship Peak in the Buckskin Mountains about 7 miles SSE of the Swansea Mine and about 18 mi. by road NE of Bouse. Our files show that an examination of Cohoe's claims was turned down twice in 1978 by G. J. Stathis and G. W. Pickard and a visit by A. S. Payne in 1952 suggested only spotty copper mineralization. Mr. Cohoe, a retired Mt. Bell supervisor, apparently had a number of dealings concerning the phone ROW across the Sacaton Water Farm with M. E. Melcher & T. Edwards 10 years ago. I copied for our files 2 generally negative Arizona P.E. reports (nil Au-Ag potential) on the property and a number of photos. The bucket of hand specimens I examined showed a weakly sheared, locally brecciated banded phyllite with minor blue-green chlorite showing minor silicification and 5-10% chrysocolla and other oxide copper minerals with about 5% red hematite after chalcopyrite (some relict) and pyrite. Mr. Cohoe has done no work on the property except opening up the road SE from Midway to the claims and scraping around on the old cuts. Phelps Dodge apparently was not interested in the flux potential after examination and Mr. Cohoe had a number of turn down letters from other companies. I told Mr. Cohoe that we might visit his property in the next several months but did not promise to do so. Mr. Cohoe says that the area is part of some wilderness study area and he has been contacted several times by the BLM.

I do not presently see any economic potential in these claims but the environment--one of Mid-Tertiary detachment faulting off the metamorphic core complex of Mesozoic metasediments (± Tertiary volcanics) over Precambrian gneisses and schists ± Mid-Tertiary microdiorite dikes is part of the Whipple-Buckskin "type-section" of detachment fault mineralization described by Wilkens, Heidrick and others in a number of recent AGS field trips, digests and GSA field trips and publications on the Mohave. As such the claims are worthy of a low priority visit to study the environment although Gulf, Conoco and a number of others have broken their picks in the Buckskins. Production in the Buckskins has been some 1.6 million tons averaging 2% Cu and containing 12,000 oz Au and 35,000 oz Ag and with few exceptions has been marginally profitable judging from Asarco's 1937 experience at Swansea.

F. R. Koutz

F. R. Koutz

FRK/cg

Attachments: ERS
Submittal Data

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J. H. C.

JHC - ERS

AUG 20 1984

Section I General Indexing

① Name(s) of Property or Area: NUMBER 9 and NUMBER 5 MINES, Hornitos Mining District					② Country: USA Mariposa Co.	③ State or Province: CA	
					④ USGS Quad.: Hornitos 7½'	⑤ File or Gore No.	
⑥ Latitude: 37°31'	⑦ Longitude: 120°11'	⑧ AMS Sheet: San Jose	Township: 5S	Range: 16E	Section: 2,10 & 11	⑨ Examined by: GJStathis	⑩ Date: 4/12-13, & 5/23/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1½

Section II Sources of Information

Date Typed 7/30/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Bowen, O.E. Jr., & Gray, C.H. Jr., 1957; Mines & Mineral Deposits of Mariposa Co., CA; Calif. Div. Mines Rept. 53, pp 76-77, 142-145, and 179-181.				
Watson, B.N., 1968; Reconnaissance for Large Tonnage Precious Metal Deposits in the Sierra Nevada of Calif., ASARCO Report, pp. 24-29.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Re-examine No. 9 Mine area.

⑮

- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
<$150,000 gold mostly from Badger (Prescott Mine).		

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes ---

Approx Total Footage

⑲ Excavations About 8 shafts, (continued on p. 2)

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: Free gold Minor:

㉕ Host Rocks-Major: Andesite & diorite Minor:

㉖ Age of Host Rocks: Upper Jurassic - Lower Cretaceous

㉗ Nature of Exposures: Good to fair. Ground around the Prescott vein disturbed by shallow surface placering of thin blanket, qtz. vein-veinlets.

㉘ Alteration: Weak ankerite-sericite alt. at 227-228 sample site area - absent elsewhere.

㉙ Total Extent: ----

㉚ Structure: Regional northwest strike and northeast dip of the Mesozoic rocks.

㉛ Ore Occurrence: Mostly ore shoots in the qtz. Prescott (Badger) vein, 1-3' wide, 30-45° dip east & associated blanket qtz. vein-veinlets. Some production from the 3-30' wide No. 5 quartz vein. (Continued p. 2)

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: a) Gold assay results from sampling of the No. 5 vein were discouraging. This is the longest and most continuous qtz. vein in the area.

b) With exception of sample #141, results of the Badger (Prescott) Mine vein are not of interest. The Badger vein is discontinuous and narrow (1-3' wide). Origin of dump sample No. 141 is uncertain. There was some surface placer mining of thin blanket veins in the area in the past. It is believed that this particular anomaly is due to a "nugget" effect. (continued on p. 2)

(For additional space use extra sheets)

19. Excavations

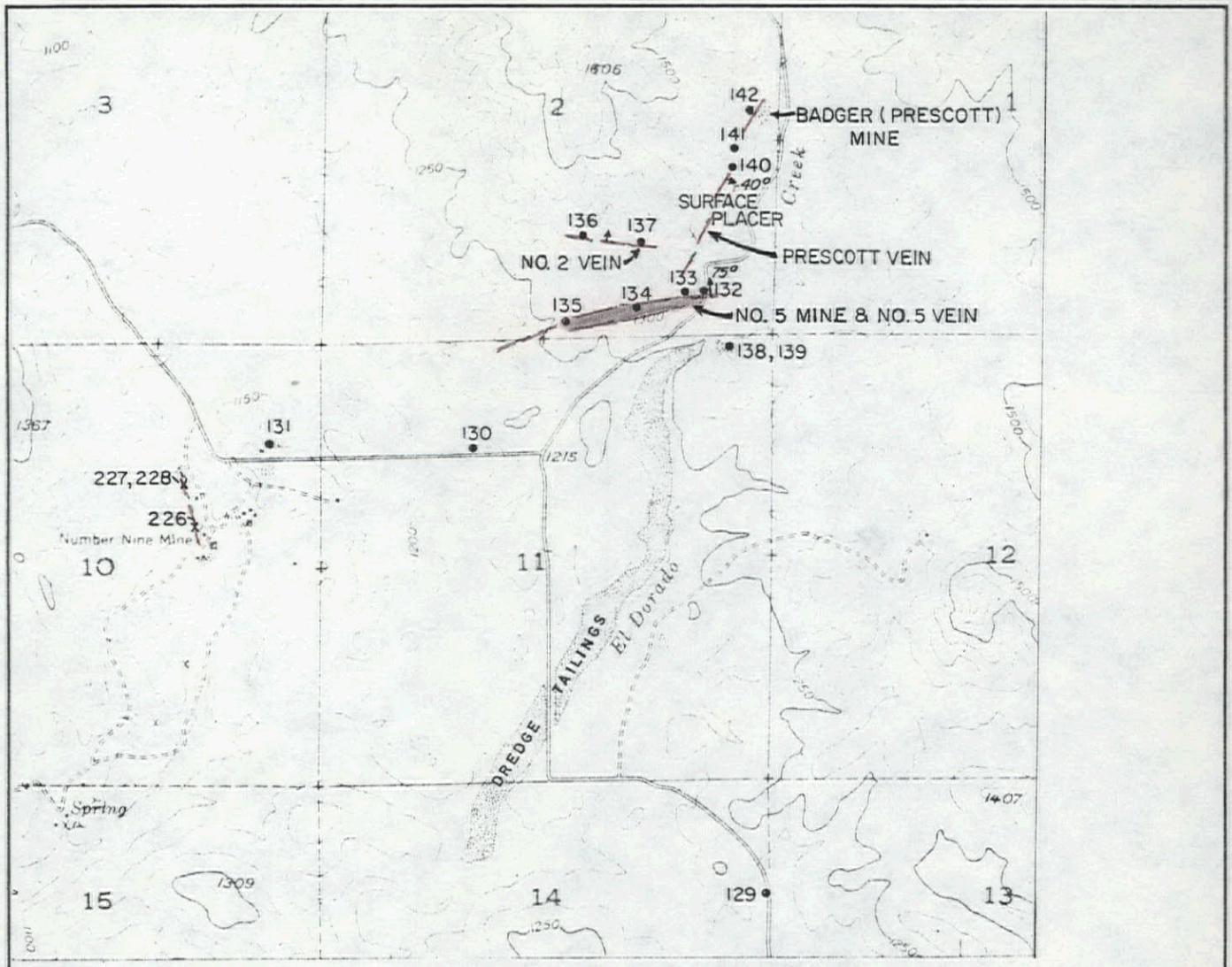
6 or so adits, several widely scattered pits, $<$2000' of underground workings.

31. Ore Occurrence

Recorded production from the No. 9 Mine occurred 1873-74, 1909-1911, minor production 1924-1930, and moderate production 1930-36. One run of 2000 tons from the 1873-74 period yielded $7.38 per ton. Main vein N20°W, 25-30°NE dip, 1½'-4' wide. Property has 6 shafts (387, 150, 140, 125, and two 30' deep) and one 350' long adit.

33. Conclusions and Recommendations

No gold was seen on re-examination of sample site 141. c) All three rock samples of the main vein-stringer zone at the Number 9 Mine (20-50' wide, 800' or so long) are anomalous in gold. Follow-up detailed sampling and mapping of the Number 9 Mine is recommended. A dozen or so lesser veins are said to occur on the property. Ownership should be looked into.



135 ● Rock Sample Location & Number

Quartz Vein

BASE FROM USGS HORNITOS 7.5' QUAD.

ASARCO INCORPORATED

area: NUMBER 5 - NUMBER 9 MINES	data by: GJS	state: CALIFORNIA	township-range: T. 5 S., R. 16 E.	revisions—date
title: LOCATION MAP	drawn by: GJS	county: MARIPOSA	map number	PLATE 1
mining district: HORNITOS	date: JUNE 1984	1000' 0 2000' 4000'	contour interval: 50 FEET	

mn 2910 dam

NUMBER 9 and NUMBER 5 MINES

Sample No.	Description and Au-As Assay Summary
84-CA-130	Biot.-qtz. diorite, rel. fresh, surface alt. of biot. to musc. *-.005 Au, -10 ppm As*
-131	Dump grab, shaft, qtz. vein, massive 2-3'? wide, N10°W, vert., locally vuggy. *-.005 Au, 10 ppm As*
-132	Quartz vein, 5' wide, N70°E, 75°NW dip, bull qtz., tr. py., locally fract., minor goeth. *-.005 Au, 20 ppm As*
-133	Dump grab, shaft >100' deep, qtz. vein 15-20' wide, N70°E, 1-3% dissem. oxid. py. *-.005 Au, 270 ppm As*
-134	Dump grab, 20' incl. shaft, qtz. vein as above. *-.005 Au, 20 ppm As*
-135	Outcrop & dump grab (4' deep trench) of 3'-5' wide qtz. vein, speck gold noted, 1-2% dissem. tr. py., tr. gal.? *.005 Au, 130 ppm As*
-136	Qtz. vein, 3-5' wide, E-W, vert., <1% leach. py., massive, bull qtz., vein ends 50-75' west, w.r. fresh andesite. *.010 Au, 20 ppm As*
-137	Qtz. vein as above, sampled in 2' deep pit. *.005 Au, -10 ppm As*
-138	Dump grab, qtz. vein, 20" wide, flat, locally 2-3% dissem. fr. py.-overall -1% py. collected from 3 pits 4'-7' deep. *.080 Au, 340 ppm As*
-139	Andesite w.r., located above #138 vein, 1-3% dissem., oxid., py. on fracts. *.030 Au, 100 ppm As*
-140	Dump grab, qtz. vein material, origin? transported?, vuggy, drusy qtz., -1% dissem. leach. py., several shallow trenches in area, filled in. *.010 Au, 160 ppm As*
-141	Dump grab, qtz. vn. material similar to #140, less vuggy, more limn., several shallow pits. *.465 Au, 30 ppm As*
-142	Dump grab, qtz. vein - 2' wide, 6' strike length, E-W. *.010 Au, -10 ppm As*
-226	Qtz. vn., bull qtz., 50' wide, wk. goeth. & hem. stn. *.575 Au, 60 ppm As*
-227	Stringer qtz. zone, 20' wide, <0.5% leach. py. *.040 Au, 90 ppm As*
-228	Diorite h.w., wk. sericite alt. & wk. ankerite. *.050 Au, 60 ppm As*

Notes:

a) All gold assays reported in oz./ton.

b) All assays by Skyline Labs, Inc. of Tucson, AZ. Lab. Job Nos. TAJ-359 and 372.

c) Silver assayed $<$ 0.01 oz./T except for sample nos. 84-CA-138 (0.02 oz./T) and 84-CA-141 (0.16 oz./T). Silver was not assayed for sample nos. 84-CA-226 through 84-CA-228.

d) Mercury geochemed 0.03 ppm or less for all samples except sample nos. 84-CA-226 through 228 where mercury was not assayed.

JHC - ERS

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J. H. C.

AUG 20 1984

Section I General Indexing

① Name(s) of Property or Area: PINE TREE - JOSEPHINE MINES, Bagby Mining District						② Country: USA, Mariposa Co.	③ State or Province: CA
						④ USGS Quad.: Hornitos & Bear Valley 7½'	⑤ File or Gore No.
⑥ Latitude: 37°35'	⑦ Longitude: 120°07'	⑧ AMS Sheet: San Jose	Township: 4S	Range: 17E	Section: 8, 17	⑨ Examined by: GJStathis	⑩ Date: 4/17 & 5/22/84
						⑪ Office: SWED Tucson	⑫ Field Days: 2

Section II Sources of Information

Date Typed 7/30/84

⑬ References

Author	Date	Title	Publications	Vol. No.
a) Logan, C. A.,	1935;	Mother Lode Gold Belt of Calif.,	Calif. Div. of Mines Bull.	
No. 108 (pp. 186-189).				

Continued on p. 2

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Possible residual deep target.

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
+ $4,000,000 gold av. (pre-1939); 0.2-0.3 oz/T. Last (1939-44) underground operation av. 0.14 oz/T.		

⑰ Reserves
- [ ] Measured
- [ ] Estimated

Commodity	Tons	Grade
Unknown		

⑱ Num. Drill Holes ____ Approx Total Footage ____

⑲ Excavations 11 adits, 3 shafts (continued p. 2)

⑳ [x] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Recoverable Au, Ag, Cu; present Zn, Pb, Ni, Co

㉔ Ore Minerals-Major: Gold Minor: ccp, sph, gal, niccolite, millerite, erythrite, danaite

㉕ Host Rocks-Major: Andesite, serpentine, slate Minor: diorite, gabbro

㉖ Age of Host Rocks: Upper Jurassic to Lower Cretaceous for all rocks.

㉗ Nature of Exposures: Fair to good. Locally heavy manzanita cover.

㉘ Alteration: Andesites regionally alt to chlorite; qtz-ankerite (magnesite)-mariposite-talc altered zone (continued p. 2)

㉙ Total Extent: Qtz-carbonate-mariposa-talc alt has a length of 3000' (continued on p. 2)

㉚ Structure: Qtz. vein, alt. zone and wall rocks N25-35°W dip 55-70°NE.

㉛ Ore Occurrence: Higrade (0.2 oz/T Au plus) ore shoots were mined (underground) from hw side (east of qtz. vein adjacent to serpentine-andesite & diorite wall rocks and fw (continued p. 2)

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: Surface examination & sampling of vein & altered wall rock material failed to define any sizeable zone of potential near surface gold mineralization. Rumor has it that when the mine shut down in 1944, it was not exhausted of ore (Bowen & Gray, p. 153). An attempt will be made to obtain the underground data. However, based on brief, published descriptions of earlier mining, the size of the higrade ore shoots within the qtz. vein(s) is somewhat restricted.

(For additional space use extra sheets)

13. References

b) Julihn, C. E. & Horton, F. W., 1940; Mines of the Southern Mother Lode Region, Part II - Tuolumne & Mariposa Counties, USBM Bull. 424, pp. 107-110.

c) Bowen, Jr., OE., & Gray, Jr., C.H., 1957; Mines & Mineral Deposits of Mariposa Co., Calif., Calif. Div. of Mines Rept. 53, pp. 151-155.

d) Watson, B.N., 1968; Reconnaissance for Large-Tonnage Precious Metal Deposits in the Sierra Nevada of Calif., ASARCO Report, pp. 33-38.

e) Evans, J.R. & Bowen, O.E., 1977; Geology of the Southern Mother Lode, Tuolumne & Mariposa Counties, Calif., Calif. Div. of Mines & Geol. Map Sheet 36.

19. Excavations

Reported to have over 8 miles of underground workings.

28. Alteration

along northwest trend of main Mother Lode vein zone.

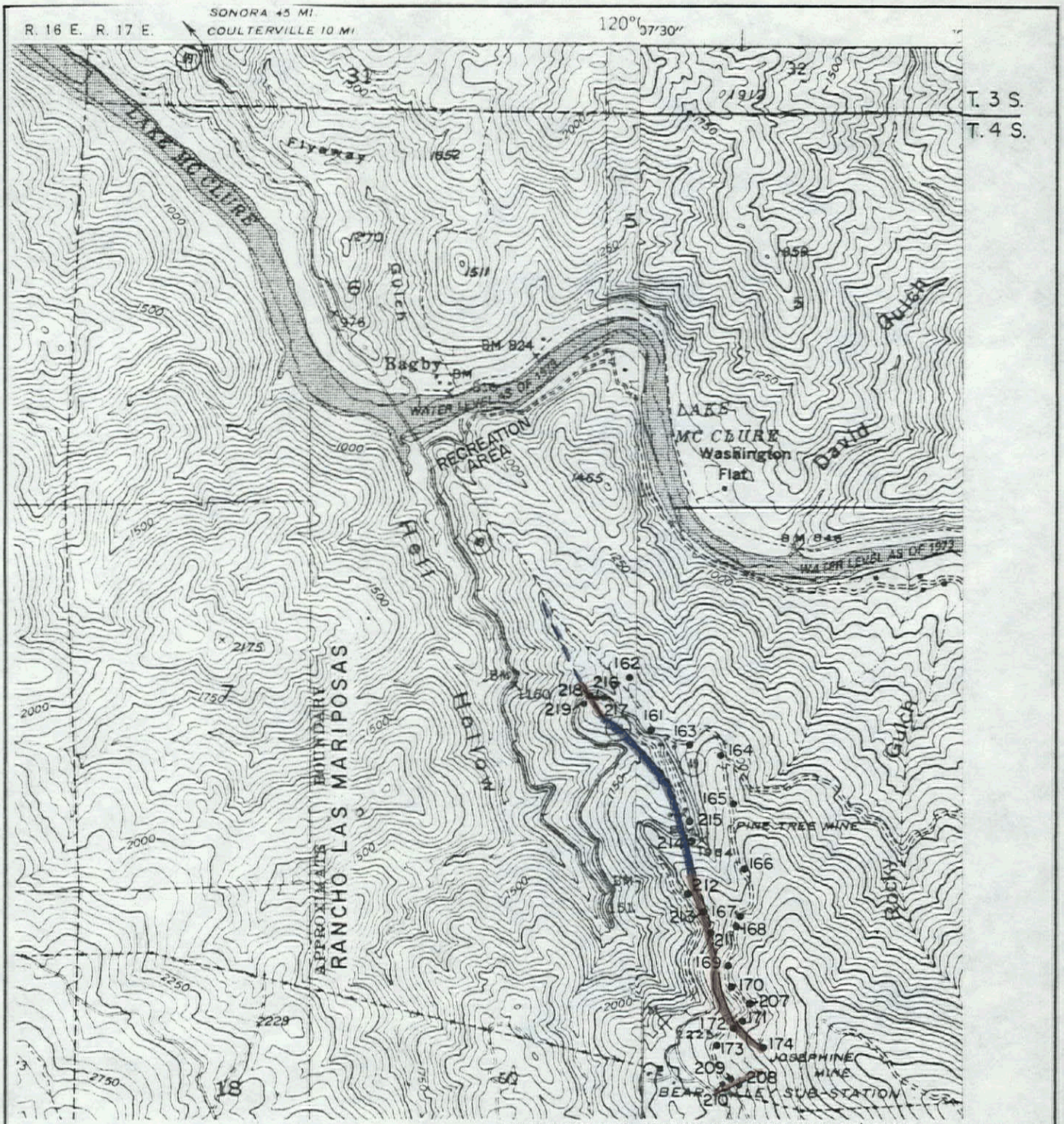
29. Total Extent

maximum width about 125' and tapers off north & south.

31. Ore Occurrence

side (west) adjacent to the black Mariposa fw slates. The hw vein also referred to as the Pine Tree vein av. 20' wide while the fw vein referred to as the Josephine vein av. 10-15' wide. A 60'or so wide, carbonatized zone occurs between the 2 quartz veins (referred to as the "inter vein") is said to average 0.08 oz/T Au. Underground mining has been carried on intermittently along a 3000' length between the Josephine Mine on the south and the Pine Tree Mine on the north. The bulk of the production has come from the Pine Tree Mine where the inclined Mackenzie shaft reached the 1300' level. Mineralization pinches out north of the Pine Tree Mine and south of the Josephine Mine.

The main ore shoot of the Pine Tree was said to be "150 to 200 feet long and of substantial width within the bull quartz that surrounds it. ... This ore shoot is not continuous but comprises a succession of curved lenses having cross sections shaped like an elongated or flattened S that begin and end sharply but swell to a fairly constant thickness in the middle. They are 25 to 40 feet long and tend to overlap. Their vertical section is characterized in the same way." (Julihn & Horton.)



BASE FROM USGS BEAR VALLEY & HORNITOS 7.5' QUADS.

166 ● SAMPLE LOCATION & NUMBER

QUARTZ VEIN & ANKERITIZED WALL ROCKS

ANKERITIZED WALL ROCKS, LOCAL QUARTZ VEINLETS

ASARCO INCORPORATED

area: PINE TREE-JOSEPHINE MINES	data by: G.J.S.	state: California	township-range	revisions-date
		county: Mariposa	map number	PLATE 1
title: LOCATION MAP	drawn by: G.J.S.	1000' 0 2000' 4000'		
mining district: BAGBY	date: June 1984	contour interval: 50 FEET		

MN 2910 dam

PINE TREE - JOSEPHINE MINES

Sample No.	Description and Au-As Assay Summary
84-CA -161	Ankerite alt., 30'+ wide, E-W, tr. mariposite, after serp.? *.015 Au, 220 ppm As*
-162	Contact zone, serp. & Peno Blanco greenstone, mod. to str. chl. andesite. *-.005 Au, -10 ppm As*
-163	Serpentine, foliated, N30°W, vert., local tremolite asbestos. *-.005 Au, -10 ppm As*
-164	Augite andesite & fine gr. diorite dike. And. is wk. to mod. chl. 0.5% dissem., oxid. py., and/or mgt. *-.005 Au, -10 ppm As*
-165	Augite andesite, fresh to wkly. chl. *-.005 Au, -10 ppm As*
-166	Pyroxenite? alt. to tremolite & serpentine. 5% dissem., oxid. py. on fracts. *-.005 Au, -10 ppm As*
84-CA-167	Serpentine, locally str. oxid. to goeth. & jarosite, local supergene qtz. vnlts., ankerite? Some dissem. oxid. chromite. *-.005 Au, 90 ppm As*
-168	Bull qtz. vn. float. *-.005 Au, -10 ppm As*
-169	Serpentine & pyroxenite/str. jaro.-goeth. stn. Few qtz. vnlts. ¼" av. (supergene), 1% dissem. mgt. and/or chromite. *-.005 Au, -10 ppm As*
-170	Rock as above, 2-3% dissem. py.? cubes, ¼"-½" qtz. vnlts. *.010 Au, 80 ppm As*
-171	Desilicified rock, cellular/str. goeth. soaking, str. clay alt. Minor residual serpentine. *-.005 Au, 260 ppm As*
-172	Qtz. vn. float, approx. 25' wide, N40°W, vert.? *.650 Au, 60 ppm As*
-173	Carb. shale, Mariposa Fm., tr. dissem. py. on fracts. *-.005 Au, 40 ppm As*
-174	Qtz. vn., 5-6' wide, N15°W, pinches out 15' NW, tr. ankerite & mariposite. *.145 Au, 500 ppm As*

84-CA-207 Gabbro? mod. to coarse grained, 25' wide zone on h.w., local str. silicif., ankerite alt. & goeth. stn., local qtz. stringers. *-.005 Au, 20 ppm As*

-208 Quartz vein, 6' wide, bull qtz, tr. leach. py., minor ankerite & mariposite. Vein narrows to 1-2' wide eastward next 200'. *.005 Au, 20 ppm As*

-209 Quartz vein, 6-7' wide, bull qtz., tr. ankerite. *.050 Au, 40 ppm As*

-210 Qtz.-ankerite-mariposite rock, 5' x 7' outcrop. *-.005 Au, 1000 ppm As*

-211 Qtz. vein (1-3' wide lenses) & qtz. stringer zone, 50' wide zone, N10°W, 70°NE, slate w.r./mod. to str. goeth. stn. *.010 Au, 330 ppm As*

-212 Rock as above, 70' wide zone, <1% oxid. py. *.040 Au, 350 ppm As*

-213 Andesite, 100' wide zone, well fract., mod. goeth. stn., rare -1" qtz. stringers. *-.005 Au, 820 ppm As*

-214 Serpentine, 125' wide zone, sheared, ankerite, rare qtz. vnlts. *-.005 Au, 890 ppm As*

-215 Serpentine & slate, 50' wide zone, flooded adit portal area, rk. is sheared, argilliz., pyritized. *-.005 Au, 100 ppm As*

-216 Ankerite schist/qtz. stringers, 80' wide zone, h.w. rk. next to 3' qtz. vn., rk. sheared, pyritized. *-.005 Au, 260 ppm As*

-217 Qtz. vein - stringer zone as #211, 40' wide zone, qtz. vein terminates to the east. *-.005 Au, 120 ppm As*

-218 Qtz. vein, 3' wide, 65°NE dip, bull qtz., tr. to 0.5% leach. py. *.100 Au, 110 ppm As*

-219 "Mixed zone" 65' wide, grd. dike, andesite & mariposa slate, minor ankerite & qtz. stringers ½" wide or less, tr. oxid. py., f.w. rock sequence. *.025 Au, 160 ppm As*

Notes:

a) All gold assays reported in oz./ton.

b) All assays by Skyline Labs, Inc. of Tucson, AZ. Lab. Job Nos. TAJ-363, 371 and 372.

c) Silver assayed <0.01 oz./T except for sample nos. 84-CA-171 (0.02 oz./T) and 84-CA-172 (0.11 oz./T). Silver was not assayed for sample nos. 84-CA-207 through 84-CA-219.

d) Mercury geochemed 0.05 ppm or less for all samples except sample nos. 84-CA-207 through 84-CA-219 where mercury was not assayed.

WESTERN ANALYTICAL INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

July 19, 1984
P84-204

MOTHER LODE RECONNAISSANCE, CALIFORNIA
Pine Tree - Josephine Mines

MR GEORGE STATHIS
EXPLORATION DEPT
ASARCO INC
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Stathis:

Transmitted herewith are the analytical data for the 26 samples delivered to our laboratory for semi-quantitative 35 element emission spec. analysis. Fe, Mg, Ca, Ti, Na, K, Si, Al, and P are reported in %; all other elements in ppm.

84-CA

Element	161 ppm %	163 ppm %	166 ppm %	167 ppm %	Lower Detection Limit
Au	N	N	N	N	10
Ag	N	N	N	N	0.5
Cu	15	15	30	70	5
Pb	N	N	N	10	10
Zn	N	N	N	N	200
Mo	N	N	N	N	5
Fe	2%	2%	1.5%	3%	0.5%
W	N	N	N	N	50
Ni	700	700	150	200	5
Co	30	30	10	30	10
Cr	700	700	100	700	20
Cd	N	N	N	N	20
As	200	N	N	N	200
Sb	N	N	N	N	100
Mn	500	500	500	500	10
V	50	70	50	150	10
Bi	N	N	N	N	10

Element	161 ppm %	163 ppm %	166 ppm %	167 ppm %	Lower Detection Limit
Sn	N	N	N	N	10
Zr	N	10	10	20	10
B	N	20	N	20	10
Ba	N	N	N	100	10
Be	N	N	N	N	1
La	N	N	N	N	20
Nb	N	N	N	N	10
Sc	N	N	N	10	5
Sr	N	N	N	N	100
Y	N	N	N	N	10
Ca	0.1%	1.5%	2%	0.7%	0.5
Mg	5%	5%	1%	2%	0.2%
Ti	0.001%	0.01%	0.03%	0.1%	0.001%
Na	N	N	0.5%	3%	0.2%
K	N	N	N	2%	0.5%
Si	25%	30%	30%	>30%	1%
Al	N	N	1%	7%	0.5%
P	N	N	N	N	0.1%

Element	169 ppm %	171 ppm %	173 ppm %	174 ppm %	Lower Detection Limit
Au	N	N	N	N	10
Ag	N	N	N	L	0.5
Cu	10	70	70	30	5
Pb	10	N	10	10	10
Zn	N	L	N	N	200
Mo	N	N	N	N	5
Fe	3%	5%	2%	1%	0.5%
W	N	N	N	N	50
Ni	200	1000	50	150	5
Co	30	30	N	N	10
Cr	300	700	20	200	20
Cd	N	N	N	N	20
As	N	200	N	300	200
Sb	N	N	N	N	100
Mn	500	1500	200	100	10
V	150	150	150	50	10
Bi	N	N	N	N	10

Element	169 ppm %	171 ppm %	173 ppm %	174 ppm %	Lower Detection Limit
Sn	N	N	N	N	10
Zr	N	10	10	10	10
B	N	N	50	N	10
Ba	10	N	100	N	10
Be	N	N	2	N	1
La	N	N	N	N	20
Nb	N	N	N	N	10
Sc	20	5	N	N	5
Sr	N	N	N	N	100
Y	10	N	N	N	10
Ca	0.2%	0.05%	0.15%	L	0.5
Mg	3%	1.5%	0.5%	0.1%	0.2%
Ti	0.2%	0.1%	0.2%	0.02%	0.001%
Na	3%	N	0.3%	N	0.2%
K	N	N	0.5%	N	0.5%
Si	>30%	30%	>30%	>30%	1%
Al	7%	1%	2%	N	0.5%
P	N	N	0.1%	0.1%	0.1%

Element	207 ppm %	211 ppm %	Lower Detection Limit
Au	N	N	10
Ag	N	N	0.5
Cu	30	50	5
Pb	N	10	10
Zn	N	N	200
Mo	N	N	5
Fe	3%	1.5%	0.5%
W	N	N	50
Ni	500	100	5
Co	50	N	10
Cr	500	200	20
Cd	N	N	20
As	N	300	200
Sb	N	N	100
Mn	700	300	10
V	100	100	10
Bi	N	N	10

Element	207 ppm %	211 ppm %	Lower Detection Limit
Sn	N	N	10
Zr	10	50	10
B	N	30	10
Ba	50	70	10
Be	N	2	1
La	N	N	20
Nb	N	N	10
Sc	10	N	5
Sr	N	N	100
Y	N	N	10
Ca	0.2%	0.05%	0.5
Mg	3%	0.2%	0.2%
Ti	0.1%	0.2%	0.001%
Na	3%	N	0.2%
K	L	N	0.5%
Si	30%	>30%	1%
Al	5%	2%	0.5%
P	N	N	0.1%

Element	213 ppm %	214 ppm %	216 ppm %	217 ppm %	Lower Detection Limit
Au	N	N	N	N	10
Ag	N	2	N	N	0.5
Cu	70	30	50	20	5
Pb	10	N	10	N	10
Zn	L	L	N	N	200
Mo	N	N	N	N	5
Fe	3%	2%	5%	2%	0.5%
W	N	N	N	N	50
Ni	150	500	1000	500	5
Co	20	50	100	30	10
Cr	300	700	1000	700	20
Cd	N	N	N	N	20
As	500	700	200	200	200
Sb	N	N	N	N	100
Mn	500	1000	1000	500	10
V	150	30	70	50	10
Bi	N	N	N	N	10

Element	213 ppm %	214 ppm %	216 ppm %	217 ppm %	Lower Detection Limit
Sn	N	N	N	N	10
Zr	50	10	N	20	10
B	20	N	20	N	10
Ba	20	N	N	N	10
Be	1	N	N	N	1
La	N	N	N	N	20
Nb	N	N	N	N	10
Sc	10	N	N	N	5
Sr	N	N	N	N	100
Y	10	N	N	N	10
Ca	0.2%	0.07%	L	0.5%	0.5
Mg	0.5%	5%	5%	3%	0.2%
Ti	0.5%	0.05%	0.002%	0.1%	0.001%
Na	2%	N	N	N	0.2%
K	N	N	N	N	0.5%
Si	30%	25%	25%	30%	1%
Al	3%	N	N	N	0.5%
P	0.2%	0.1%	N	N	0.1%

Element	218 ppm %	219 ppm %	Lower Detection Limit
Au	N	N	10
Ag	N	N	0.5
Cu	15	50	5
Pb	10	10	10
Zn	N	N	200
Mo	N	N	5
Fe	0.5%	3%	0.5%
W	N	N	50
Ni	100	150	5
Co	N	10	10
Cr	150	200	20
Cd	N	N	20
As	N	L	200
Sb	N	N	100
Mn	300	500	10
V	20	150	10
Bi	N	N	10

Element	218 ppm %	219 ppm %	Lower Detection Limit
Sn	N	N	10
Zr	10	20	10
B	N	20	10
Ba	N	100	10
Be	N	1	1
La	N	N	20
Nb	N	N	10
Sc	N	10	5
Sr	150	N	100
Y	N	N	10
Ca	2%	0.2%	0.5
Mg	1%	1.5%	0.2%
Ti	0.01%	0.2%	0.001%
Na	N	2%	0.2%
K	N	0.5%	0.5%
Si	>30%	>30%	1%
Al	N	7%	0.5%
P	N	N	0.1%

N = Not Detected
L = Detected but below limit of Determination
> = Greater than value shown

E. H. Phillips
Laboratory Directory

Charges: $468.00

EHP/we

cc J. D. Sell
H. G. Kreis

~~JHC~~ - ERS

ASARCO EXPLORATION RECORD

J. H. C.

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] _____

AUG 20 1984

Section I General Indexing

① Name(s) of Property or Area: RED CLOUD MINE (AKA Washington, Jenny Lind Mines) Hornitos Mining District						② Country: Mariposa Co. USA	③ State or Province: CA
						④ USGS Quad.: Hornitos 7½'	⑤ File or Gore No.
⑥ Latitude: 37°32'	⑦ Longitude: 12°14'	⑧ AMS Sheet: San Jose	Township: 5S	Range: 16E	Section: 4,5	⑨ Examined by: GJStathis	⑩ Date: 4/14 & 5/22/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1½

Section II Sources of Information

Date Typed 7/30/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Bowen, O.E. Jr., & Gray, C.H. Jr., 1957; Mines & Mineral Deposits of Mariposa Co., CA; Calif. Div. Mines Rept. 53, pp. 179-181.				
Watson, B.N., 1968; Reconnaissance for Large Tonnage Precious Metal Deposits in the Sierra Nevada of Calif., ASARCO Rept. pp. 22-23.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [x] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No further work.

⑮

- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
$2,400,000 (gold)		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
None Reported		

⑱ Num. Drill Holes ---

Approx Total Footage ----

⑲ Excavations 4 shafts, e.g. Jenny Lind (cont. p. 2)

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au, Cu

㉔ Ore Minerals-Major: Native gold, auriferous pyrite Minor: ccp

㉕ Host Rocks-Major: Andesite, siltstone Minor:

㉖ Age of Host Rocks: Upper Jurassic

㉗ Nature of Exposures: Fair to good. Qtz. vein under cover between Washington shaft (sample site 153) & Jenny Lind shaft (sample site 148).

㉘ Alteration: Andesite wall rock chloritized. Quartz-ankerite-mariposite alt. adjacent to Red Cloud quartz vein.

㉙ Total Extent: Avg. width 10' of qtz-ankerite-mariposite alt.

㉚ Structure: Regional northwest strike of the Mesozoic rocks.

㉛ Ore Occurrence: Vein N40°W, 3-8' wide for about 1200', 70-75° SW dip qtz. vein narrows (2-5') & becomes discontinuous for next 1200' NW between sample sites Nos. 150 & 225.

(Continued on p. 2)

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: Surface examination and rock chip sampling of altered wall rocks and quartz vein matter failed to define any zone of potential near surface gold mineralization. No further work recommended.

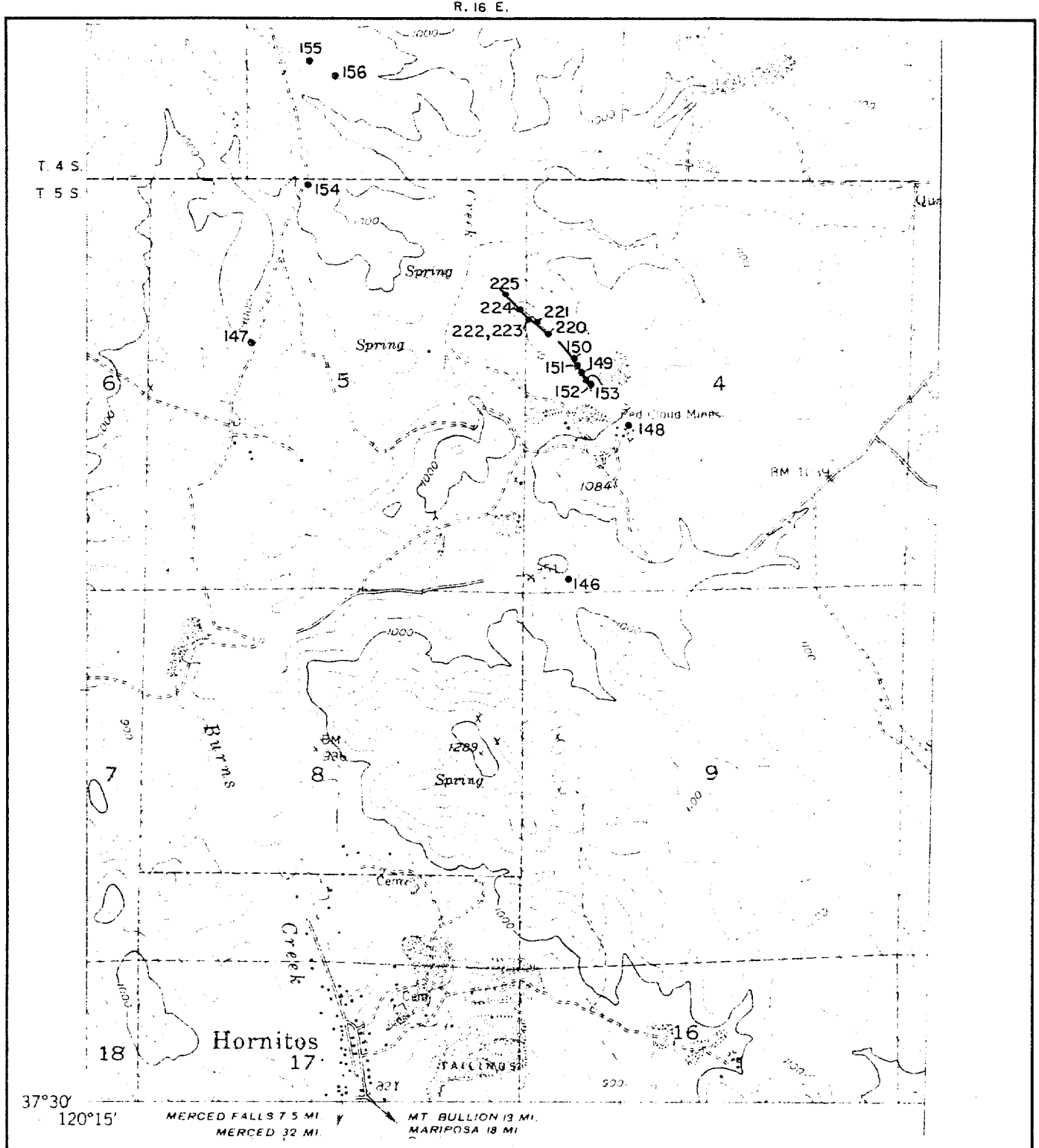
(For additional space use extra sheets)

19. Excavations

(1500' deep, 68° incl.), Washington (1000' deep), Franklin (200' deep), unnamed shaft (100-150' deep). Plus approx. 8000' of underground workings.

31. Ore Occurrence

Bulk of production underground has come from ore shoots in the quartz veins. Auriferous pyrite (gray ore) occurs in the qtz-carbonate-mariposite alteration envelopes and is said to have run 0.09 oz/T Au.



150 ● Rock Sample Site & Number

Quartz Vein & Veinlets.
Local Ankeritized Wall Rocks

BASE FROM USGS HORNITOS 7.5' QUAD.

ASARCO INCORPORATED

area: RED CLOUD MINE (WASHINGTON, JENNY LIND)	data by: G. J. S.	state: CALIFORNIA	township-range	revisions-date
		county: MARIPOSA	map number	PLATE 1
title: LOCATION MAP	drawn by: G. J. S.	1000' 0 2000' 4000'		
mining district: HORNITOS	date: June 1984	contour interval: 50'		

mn 2910 dcm

RED CLOUD MINE

Sample No.	Description and Au-As Assay Summary
84-CA-146	Qtz. vein, 10'+ wide, approx. 25°SW dip, N70°E, -1% leached py. *-.005 Au, 20 ppm As*
-147	Bull qtz. vein outcrop, vein 3-3½' wide, 35-40' long. N10°W, vert. no sulf. *-.005 Au, -10 ppm As*
-148	Dump grab, qtz.-ankerite-sericite alt.-andesite. *.065 Au, 10 ppm As*
-149	Qtz. vein, N35°W, vert., 4'-6' wide, including qtz. stockwork zone & w.r. breccia. -1% dissem. leach. py., light to mod. goeth. *.150 Au, 70 ppm As*
-150	Qtz. vein, 3' wide, -1% leached py. Collected in 3' deep pit. *.140 Au, 70 ppm As*
-151	Qtz. stringer zone (50%) ½"-6" wide vein-vnlts. & andesite (50%) w.r., chl. alt. *.030 Au, 50 ppm As*
-152	Massive ankerite alt. on h.w., tr. mariposite. *.010 Au, 360 ppm As*
-153	Higraded ½" to 4" qtz. vnlts. on same h.w. section as #152. Qtz. vnlts. <5% of rk. vol. *.060 Au, 380 ppm As*
-154	Bull qtz. vn., 3' wide, 30' long, N10°E, no sulf. or limn. *-.005 Au, -10 ppm As*
-155	Qtz. vein as above, 5-6' wide, 20' long, N25°W. *-.005 Au, -10 ppm As*
-156	Qtz. vein as nos. 154 & 155, boulder zone ("blow out") 35' x 75'+. *-.005 Au, -10 ppm As*
-220	Siltstone, 6' x 12' outcrop, 2-3% stringer qtz. 1" or less wide, tr. ankerite, <1% leach. py. *.005 Au, 90 ppm As*
-221	Qtz. vn. - ankerite zone, 10' wide, qtz. vns. 2'-3' wide, up to 2% fresh to leach. py. *.035 Au, 250 ppm As*
-222	Qtz. vn., 5' wide, bull qtz., N50°W, 60°SW dip. *.025 Au, 50 ppm As*
-223	Siltstone, h.w., wk. ankerite alt., 4' wide, tr. qtz. vnlts., musc. parallel to bedding. *-.005 Au, 40 ppm As*
-224	Qtz. stringer zone, 10' wide, siltstone w.r./wk. ankerite alt. *-.005 Au, 50 ppm As*
-225	Qtz. vn., bull qtz., 5' x 8' outcrop, locally chalcedonic, supergene lens in siltstone? *-.005 Au, -10 ppm As*

Notes:

a) All gold assays reported in oz./ton.

b) All assays by Skyline Labs, Inc. of Tucson, AZ. Lab. Job Nos. TAJ-359, 363 and 372.

c) Silver assayed <0.01 oz./T except for sample nos. 84-CA-148 (0.04 oz./T) and 84-CA-149 (0.07 oz./T). Silver was not assayed for sample nos. 84-CA-220 through 84-CA-225.

d) Mercury geochemed 0.05 ppm or less for all samples except sample nos. 84-CA-220 through 84-CA-225 where mercury was not assayed.

JHC - ERS File

ASARCO EXPLORATION RECORD

Submittal:
K. W. Foote
297-4057
7781 N. Avenue de Carlotta, Tucson 85704

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [x]

Section I General Indexing

① Name(s) of Property or Area: UNION-BURGESS MINES (AKA Union Cordova, Guttinger, & Union-Rathgeb) San Andreas Mining District					② Country: USA Calaveras Co.	③ State or Province: CA	
					④ USGS Quad.: San Andreas 7½'	⑤ File or Gore No.	
⑥ Latitude: 38°09'	⑦ Longitude: 120°39'	⑧ AMS Sheet: Sacramento	Township: 3N	Range: 12E	Section: 3,4, 9	⑨ Examined by: HGKreis/GJStathis	⑩ Date: 5/9, 10, 16, 1984
					⑪ Office: SWED Tucson	⑫ Field Days: 3	

and Sec. 28,29,32,33, T4N,R12E

Section II Sources of Information

Date Typed 7/30/84

⑬ References

Author	Date	Title	Publications	Vol. No.
a) Logan, C. A., 1935; Mother Lode Gold Belt of Calif., Calif. Div. of Mines Bull. 108 (see p. 147).				
b) See attached p. 2.				

J. H. C.

AUG 20 1984

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No further work

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [x] Promotion
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Approx. $250,000 gold (Union Mine); insignificant production (Burgess Mine)		

⑰ Reserves
[ ] Measured [ ] Estimated

Commodity	Tons	Grade
None		

⑱ Num. Drill Holes: None
Approx Total Footage:

⑲ Excavations: See Attached p. 2

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au, U

㉔ Ore Minerals-Major: Free gold, auriferous pyrite Minor: Uraninite (Union Mine, 1887), ccp

㉕ Host Rocks-Major: Andesite, schist, shale, slate Minor: Serpentine, qtz. monz. dike

㉖ Age of Host Rocks: Upper Jurassic & Cretaceous. Unknown Paleozoic rks W½ of Plate 1.

㉗ Nature of Exposures: Fair to good "tombstone" exposures of meta-andesite rock. Moderate to heavy vegetation cover. Hard, CaO coating of outcrops on western edge (continued p. 2)

㉘ Alteration: Regional chloritization of andesite. Locally chlorite & sericite schists/ dissem. pyrite along (continued p. 2) ㉙ Total Extent: Alteration alongside Union (cont. p.2)

㉚ Structure: Rocks strike NW regionally and dip 55°-80° NE. Union vein N30°W, 70°NE dip, Burgess vein N55°W, 65°NE dip.

㉛ Ore Occurrence: Production said to have come almost entirely from Union Mine. Pockety ore in quartz vein and in qtz. stringer zone in fw. Gold said to occur in auriferrous pyrite disseminated (cont. p. 2) ㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: 1. Poor assay gold-arsenic results from sampling quartz veins, altered wall rocks, and dump grabs. 2. Narrow (<5' wide), discontinuous nature of the Union & Burgess veins. 3. No significant width of altered, pyritized wall rocks noted along either the Union or the Burgess veins. The above observations indicate there is no near surface potential of vein or wall rock gold mineralization in the Union-Burgess Mines area. No further work is recommended at this area.

(For additional space use extra sheets)

13. References

b) Logan, C. A. & Franke, H. A., 1936; Mines & Mineral Resources of Calaveras Co., Calif.; Calif. Div. Mines Rept. 32, p. 283 & pp. 291-292.

c) Clark, W. B. and Lyndon, P. A., 1962; Mines & Mineral Resources of Calaveras Co., CA; Calif. Div. Mines & Geology County Rept. No. 2, pp. 71-72.

d) Henderson, J. R. Jr., et al, 1966; Aeromagnetic Map of Parts of the Mother Lode Gold & Sierra Foothills Copper Mining Districts, Calif., and its Geologic Interpretation, USGS Map GP-561.

e) Clark, L. D., 1970; Geology of the San Andreas 15-Minute Quadrangle, Calaveras Co., CA; Calif. Div. of Mines & Geology Bull. 195 (see Plate 1).

f) Asarco San Andreas Mining District Report File. "Mixed bag" of reports, memos & promotional items.

19. Excavations

Main shaft at Union Mine, 2 compartment, is 455' long inclined 72°. Levels developed 120, 160, 220, 350 & 430. A total of about 800' of underground level workings. Three other shafts & one adit at the Union Mine are filled in. Four shafts at the Burgess Mine of which 2 were 120' & 200' in depth. Widely scattered, shallow pits at both the Union and Burgess Mines.

27. Nature of Exposures

of property. The lime being transported by the prevailing winds from the large cement plant operation to the northwest at Kentucky House (Plate 1).

28. Alteration

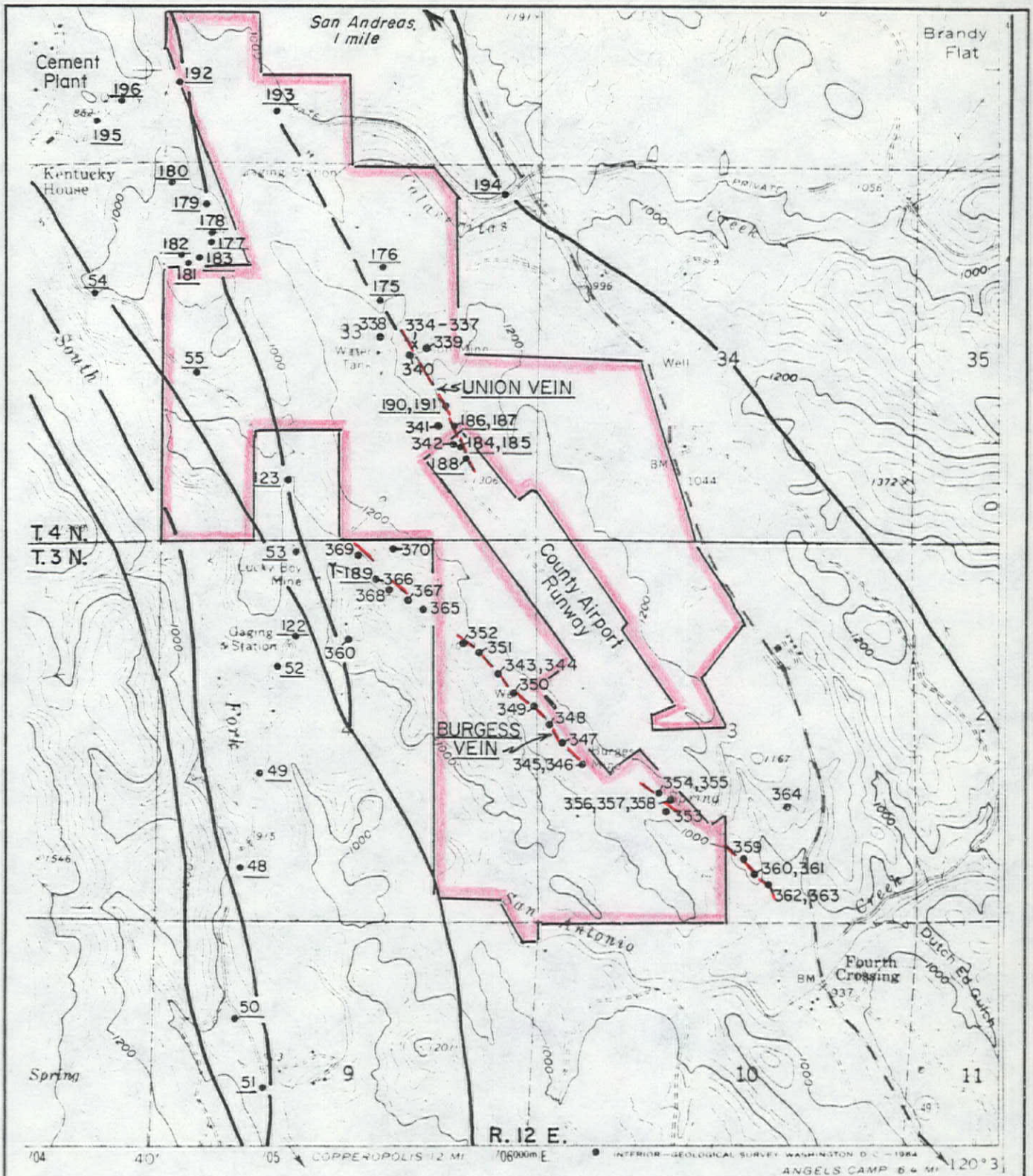
portions of the Union and Burgess veins.

29. Total Extent

and Burgess veins is narrow (<10' wide) and discontinuous. Largest zone of pervasive alteration (mod to strong argillization) occurs along fault at sample sites 183 to 192 (private ground of Calaveras Cement Co.). This is a strike length of at least 3000' northerly with a 20-60' width.

31. Ore Occurrence

in the schist. Combined altered schist/qtz stringers and quartz vein said to be 30' wide on 120 level of Burgess Mine.



Outline of Patented Land
Richard T. Stephens

Quartz Vein

Fault (after USGS Map GP-561)

176 • Rock Sample Location & Number

NOTE: Sample numbers over 300 collected by H.G. Kreis. Sample numbers below 300 collected by G.J. Stathis.

BASE FROM USGS SAN ANDREAS 7.5' QUAD.

ASARCO INCORPORATED

area: UNION - BURGESS MINES	data by: HGK & GJS	state: California	township-range	revisions-date
		county: Calaveras	map number	PLATE 1
title: LOCATION MAP	drawn by: GJS	1000' 0 2000' 4000'		
mining district: SAN ANDREAS	date: June 1984	contour interval: 40 Feet		

mn 2910 dsm

UNION-BURGESS MINES

Sample No.	Description and Au-As Assay Summary
84-CA -48	Slate and phyllite, flt., fract., wk. surf. goeth. stn. tr. ½" qtz. lenses. *-.005 Au, 10 ppm As*
-49	Slate/minor black chert lenses, mod. to wk. goeth. stn. 30' zone. *-.005 Au, -10 ppm As*
-50	Fissile slate, 50' wide zone, locally argilliz., wk. goeth. stn. *-.005 Au, 10 ppm As*
-51	Fissile slate & phyllite, 80' zone, N20°W, vert. wk. surface goeth. stn. *-.005 Au, -10 ppm As*
-52	Rock as above, 25' wide zone, N30°W, 80°SE dip. *-.005 Au, 20 ppm As*
-53	Serpentine, fract., 20' wide zone. *-.005 Au, -10 ppm As*
-54	Slate (2/3), andesite (1/3), 30' wide zone wk. goeth. stn., 2-3% dissem. oxid. py./or mgt. *-.005 Au, -10 ppm As*
-55	Slate, 15' wide zone, str. brecc. & fract., wk. to mod. goeth. *-.005 Au, -10 ppm As*
-122	Slate, black, 40' wide zone, adj. to serp. contact (sampled 2' in to serp.). Tr. py. in slate. *-.005 Au, -10 ppm As*
-123	Slate, 80' wide zone near serp. contact. ½" to 2" qtz. vnlts. parallel to cleavage. Wk. goeth. stn. *-005 Au, 20 ppm As*
-175	Shale, fract., sheared, gouge, sericite, 30'+ wide, in between chl. andesite. *-.005 Au, 12 ppm As*
-176	Andesite, 10' x 20' outcrop, mod. silicif., bleached, local chl., tr. dissem. oxid. py. *-.005 Au, -10 ppm As*
-177	Fault zone, 60' wide, in meta seds., platy, fract., silicif., random qtz. stringers. 2-5% dissem., oxid., leached py. *-.005 Au, -10 ppm As*
-178	Fault brecc. zone, 40' wide, mostly shale, bleach., mod. to str. argilliz., local up to 2% dissem. oxid. py., *-.005 Au, 12 ppm As*
-179	Rock as 177, 40' wide zone, less silicif. & qtz. stringers, mod. silicif., & goeth. stn. 2% or less dissem., leach., py. *-.005 Au, -10 ppm As*
-180	Quartz monzonite, coarse grained, dike, 10'+ wide, wk. to mod. argilliz., 1-2% dissem. oxid. py. Some qtz. stringers. *-.005 Au, -10 ppm As*
-181	Quartz monzonite dike, coarse grained, 15' wide mod. clay-sericite alt., 1-2% dissem. oxid. py. *-.005 Au, -10 ppm As*

84-CA-182 Quartz monz. dike, finer gr. than 180 & 181, 3'-4' wide, wk. to mod. argilliz., -1% dissem. py. *-.005 Au, -10 ppm As*

-183 Carb. sh., 40' wide zone, mod. goeth. stn. *-.005 Au, 34 ppm As*

-184 Qtz. vn., 6' wide, bull qtz., locally vuggy, <0.5% leach py. *-.005 Au, -10 ppm As*

-185 Shale, unmin. *-.005 Au, 14 ppm As*

-186 Qtz. vn., lens 18" x 24", vuggy, second. feld., 2% dissem. py. *-.005 Au, -10 ppm As*

-187 Shale, buff, 8% dissem. py. *-.005 Au, 20 ppm As*

-188 Qtz. vn., bull., 5', wk. goeth. stn. *-.005 Au, -10 ppm As*

-189 Shale, adit portal, buff, folded, gougy. *-.005 Au, -10 ppm As*

-190 Qtz. stringer zone, 3' wide, postmin. movement, stringers ¼"-1" wide. Shale w.r. *-.005 Au, -10 ppm As*

-191 Shale h.w. & f.w., 10' wide zone, 6% dissem., oxid. py. *-.005 Au, 22 ppm As*

-192 Epidote-mgt. schist, 20'+ wide zone, alt. greenstone, local alt. of mafics to serp. *-.005 Au, -10 ppm As*

-193 Fault zone, 3' wide gouge, N25°W. *-.005 Au, -10 ppm As*

-194 Greenstone, 10'-12' wide fract. zone, mod. goeth. stn. *-.005 Au, 20 ppm As*

-195 Shale, thin bed., N10°W, vert., local wk. to mod. goeth. stn. 10' wide zone. *-.005 Au, 10 ppm As*

-196 Rock as above, 1-3% leach. py. 35-40' wide zone rare qtz. stringers, ½" wide. *-.005 Au, 10 ppm As*

Notes:

a) All gold assays reported in oz./ton.

b) Samples collected by G. J. Stathis and assayed by Skyline Labs, Inc. of Tucson, AZ. Lab. Job Nos. TAJ-343, -346, -369, and -371.

c) Silver assayed <0.01 oz./T for all samples except nos. 84-CA-175 through 84-CA-196 where silver was not assayed.

d) Mercury geochemed 0.11 ppm for sample 84-CA-49. Mercury ran 0.06 ppm or less for rest of samples except sample nos. 84-CA-175 through 84-CA-196 where mercury was not assayed.

H.G.Kreis
May 1984
(Also see GJS sampling)

Union and Burgess Mines

San Andreas, Calaveras County, CA

K-84-334 Dump sample, Union Mine, 100' S of shaft. Sample of white bull quartz with local white calcite (coarsely crystalline) and local dissem. chalcopy. (<¼%). Rare small vugs. Owner describes gold occurrence being pocket ore. *.05 ppm Au, <10 ppm As*

-335 Same dump as 334. Strongly sericitized schist with 10% v.f.g. pyrite cubes and finely dissem. calcite. No quartz veining or wholesale silicification. Sample. *.06 ppm Au, 20 ppm As*

-336 Same dump as 334. Chlorite schist with 0-2% diss. pyrite. Sample. *<.02 ppm Au, <10 ppm As*

-337 Same dump as 334. Weakly sericitic chlorite schist with 2-8% dissem. pyrite. Sample. *.02 ppm Au, 30 ppm As*

-338 No sample. Metavolc., green colored, chlorite-epid.-calcite, appears andesitic. Immediately south is nearly fresh augite andesite.

-339 Sample; closest H.W. outcrops to shaft and vein. F.-g. metabio. dio.(?) and further to east is v.f.g. metavolc. (appears similar to metavolc. immediately west of Jackson). *<.02 ppm Au, <10 ppm As*

-340 Sample, v.f.g. metavolc; sheared, cataclastic texture. F.g. green mineral (epidote?). Approx. 200', S36°E of shaft. Road bed exposure. *<.02 ppm Au, <10 ppm As*

-341 Soft, friable, weathered, iron stained schist in bottom of wash. Poss. contamination by alluvial gold. Sample. *<.02 ppm Au, 30 ppm As*

-342 Sample. Chlorite schist with weak sericitization and 0-4% F.T.S. (pyrite). Large prospect pit. *<.02 ppm Au, 20 ppm As*

-343 White bull quartz with traces of pyrite. Attitude and width of vein are not easily determined. Thickness is >2' and there is a 6'x10'x2' exposure of quartz. Sample. *.96 ppm Au, <10 ppm As*

-344 Partially sericitized chlorite schist with dissem. limonite suggesting possible 0-3% F.T.S. Sample taken within 5' of qtz. vein of 343. *<.02 ppm Au, <10 ppm As*

-345 Chloritic or amphibolitic schist. Sample taken off dump of shaft (≥30' deep). *<.02 ppm Au, <10 ppm As*

K-84-346 Qtz (white bull) and calcite vein material on dump (same dump as 345), sample. Suggestion of thin vein in dump material but large 6' diam. outcrop of qtz above shaft. *<.02 ppm Au, <10 ppm As*

-347 Sample of float. Float of white bull quartz. All quartz float <1' in diam. Excellent exposures of metavolc. starting approx. 100' above qtz. float and continuing 200' up hillside. *.06 ppm Au, <10 ppm As*

-348 Sample qtz vn float. White bull quartz, 6"-1' diam. boulders. Possible suboutcrop in small pit-like depression 20' north of drainage. *.09 ppm Au, <10 ppm As*

-349 Sample qtz float. White bull quartz with ¼% pyrite. Only a few ≤6" diam. pieces of qtz to sample. *<.02 ppm Au, <10 ppm As*

-350 Sample white bull qtz with <¼% pyrite on dump. *.54 ppm Au, <10 ppm As*

-351 Sample. White bull quartz vein. Thickness appears to be on order of 4' to 20'. Dip not readily apparent. *<.02 ppm Au, <10 ppm As*

-352 Sample of white bull quartz in and about prospect pit. *<.02 ppm Au <10 ppm As*

-353 White bull quartz on dump of adit. <¼% pyrite which occurs locally. *.32 ppm Au, <10 ppm As*

-354 White bull quartz and minor white feldspar vein 1' thick with steep dip to east. Sample. *<.02 ppm Au, <10 ppm As*

-355 Sericite and bleached metavolc. schist with weak iron stain and <1% F.T.S. Sample. *<.02 ppm Au, 30 ppm As*

-356 White bull quartz vein, >4' thick. Sample. *<.02 ppm Au, <10 ppm As*

-357 Weathered and weakly altered metavolcanic, the immediate east wall of 356 for a 5' thickness. (Weak ser-py?). Sample. *<.02 ppm Au, <10 ppm As*

-358 Altered metavolcanic with a couple 1" quartz veins, the nearly immediate west wall of 356 for a 10' thickness. Sericite alteration and 0.5-3% F.T.S. (py). Sample. *<.02 ppm Au, <10 ppm As*

-359 Float sample of white bull quartz that appears to be very close to its source. *<.02 ppm Au, <10 ppm As*

-360 Sample of white bull quartz in dump of old prospect pit under tree. *.04 ppm Au, <10 ppm As*

-361 Weathered and partially sericitized schist with 0 to loc. 2%(?) F.T.S. and several 1" to 6" veins of white quartz. Sample for 15' length across schistosity; outcrop in trench. *.09 ppm Au, 10 ppm As*

-362 Sample white bull quartz vein(s) with trace chalcopyrite in pit. There appears to be two veins exposed, each being 4'+ in thickness. *.30 ppm Au, <10 ppm As*

K-84-363 Sample partially sericitized schist with loc. dissem. goethite. 3' long sample between qtz veins of 362. *.32 ppm Au, <10 ppm As*

-364 Sample white bull quartz float in drainage. *<.02 ppm Au, <10 ppm As*

-365 Sample of quartz pebble (<½" in diam.) float. *<.02 ppm Au, <10 ppm As*

-366 Sample site 75' SE of in-ground cement tank and 30' west of road. Small 1'x3' outcrop of ≈1' thick vein structure. *<.02 ppm Au, <10 ppm As*

-367 Sample from few small outcrops of partially bleached and/or sericitized schist with common white quartz veinlets/lenses and local minor former sulfide(?). *<.02 ppm Au, 20 ppm As*

-368 Sample of quartz stringers in schist (qtz only in sample). Approx. 5-10% quartz veins over 5' width of outcrop. *<.02 ppm Au, <10 ppm As*

-369 Sample 1' wide white bull quartz and white feldspar vein. Small pit on edge of road. *.65 ppm Au, 20 ppm As*

-370 Sample. Partially bleached and/or sericitized schist with 1% F.T.S. and 2-6% stringer quartz. At least 5' wide, the width of exposure in small pit under two small trees. *.04 ppm Au, 20 ppm As*

file: SWED

~~JHC~~ - ER file

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [x] Rumor J. H. C.

JUL 19 1984

Section I General Indexing

① Name(s) of Property or Area: TREASURE HILL (Exxon drill sites & area)					② Country: Juab Co.	③ State or Province: UT	
					④ USGS Quad.: Eureka 7½'	⑤ File or Core No.	
⑥ Latitude: 39°53.8'N	⑦ Longitude: 112°6.3'W	⑧ AMS Sheet: Delta, UT	Township: 11S	Range: 2W	Section: 5,6	⑨ Examined by: JDSell	⑩ Date: 6/17/84
						⑪ Office: Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 7/17/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Morris, H.T., 1964, Geology of the Eureka Quadrangel, Utah & Juab Cos., UT, USGS Bull. 1142-K, 29p.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [x] Too Small ?
- [X] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]

- [ ]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [x] Rumor

⑯ Production

Commodity	Tons	Grade
Silver-lead	Minor	

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown, but probably limited		

⑱ Num. Drill Holes None
Approx Total Footage None

⑲ Excavations Numerous shafts, cuts, and openings

⑳ [ ] Spectro. Analysis Attached ㉑ [x] Assays Attached UETH Series ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Silver - lead - gold

㉔ Ore Minerals-Major: Argentiferous galena Minor: gold

㉕ Host Rocks-Major: Tuffs of Laguna Springs latite Minor: Mz porph. of Sunrise Peak stock

㉖ Age of Host Rocks: Eocene Eocene

㉗ Nature of Exposures: Bold, excellent

㉘ Alteration: Silicification of conflake breccia, cut by NE veins.

㉙ Total Extent: 500' x 1000'

㉚ Structure: Cut by NE trending vein(s). Avg. 2' wide, but up to 10 feet.

㉛ Ore Occurrence: Only in well defined qtz-barite veins.

㉜ Age of Mineralization: Eocene

㉝ Conclusions & Recommendations: Exxon drill sites of 1983, not drilled as of 6/17/84. Vein material (UETH-1 & -3) report 3 to 20 opt silver with 0.07 to 0.21 opt gold. The silicified cornflake breccia wallrock (UETH-2) have 5 ppm Ag & <0.05 ppm Au, while drill pad rock (UETH-4 & -5) contain even less. Narrow veins for narrow miners. No open pit potential in units exposed. Good assays to start rumor, but poor rock for open pit potential.

(For additional space use extra sheets)

Utah Eureka Treasure Hill (UETH-Series) - Assay sheet marked VETH
South Tintic District
Sec. 5,6, T11S, R2W
Juab County, UT

J. D. Sell - June 17, 1984

UETH-1 Dump sample. Black slaggy, some yellow-orange, FeOx in brecciated, weakly altered, rhyolite. 7.05 ppm Au; 90.0 ppm Ag, from narrow vein workings.

UETH-2 Wall rock in area of dump sample. Silicic rhyolite, coarse cornflake breccia, 1" - 3" slabs, with minor yellow-orange FeOx. <0.05 ppm Au; 5.0 ppm Ag.

UETH-3 Dump sample from N45°E trending, vertical vein zone, 2' x 5' wide, of siliceous FeOx, quartz, trace barite. Wall rock is cornflake breccia unit. 2.33 ppm Au; 650 ppm Ag.

UETH-4 Westerly drill pad, not drilled as of this date. North-south shear zone with black FeOx. <0.05 ppm Au; 3.2 ppm Ag.

UETH-5 Easterly drill pad, not drilled as of this date. General sample of rubble dozed during pad construction. Weakly altered rhyolite with minor yellow-brown stain on fractures. <0.05 ppm Au; 1.0 ppm Ag.

WESTERN ANALYTICAL INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

July 2, 1984
P84-174

MR J D SELL
ASARCO INC
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the five samples delivered to our laboratory for Ag* and Au analysis.

SAMPLE NUMBER	Ag* ppm	Au ppm
VETH-1	90.0	7.05
VETH-2	5.0	<.05
VETH-3	650	2.33
DUPLICATE	640	2.24
VETH-4	3.2	<.05
VETH-5	1.0	<.05

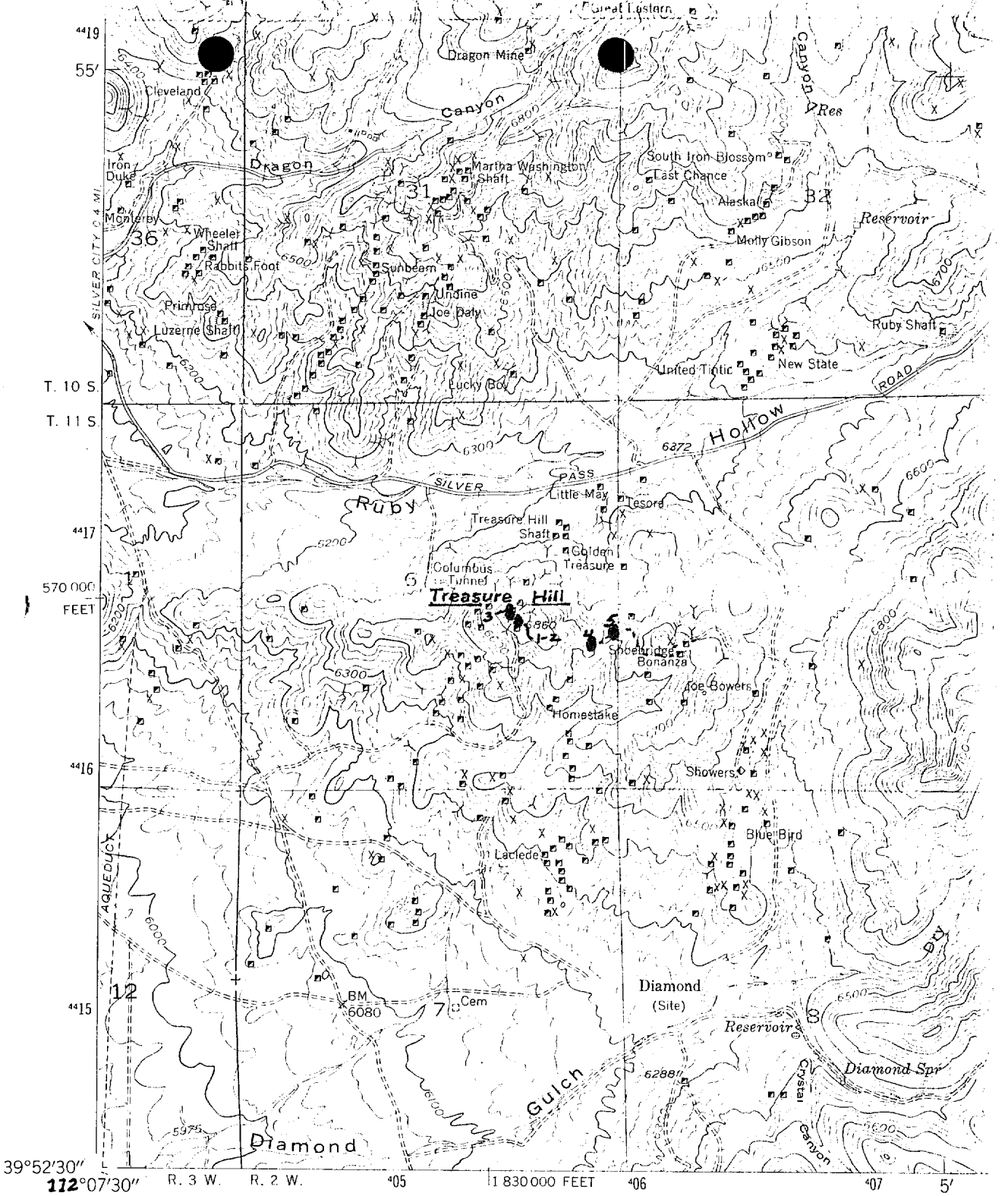
*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $29.25

EHP/we

RECEIVED
JUL 5 1984
EXPLORATION DEPARTMENT



(MC INTYRE) 3963 I SW

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography from aerial photographs by multiplex methods 1946
Aerial photographs taken 1943. Culture revised 1954

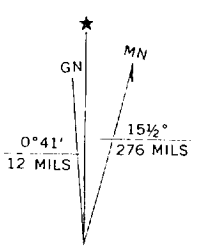
Polyconic projection. 1927 North American datum
10,000-foot grid based on Utah coordinate system, central zone

Dashed land lines indicate approximate locations

1000 meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Revisions shown in purple compiled from aerial photographs taken 1975. This information not field checked

Eureka, Utah 7½' Quad.
Scale 1:24,000



UTM GRID AND 1975 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

FOR

~~The~~ ERS file

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] Submittal

Section I General Indexing

① Name(s) of Property or Area: FIVEMILE PASS PROSPECT (Kentron Industries) - Thorpe Hills					② Country: Utah Co.	③ State or Province: UT	
					④ USGS Quad.: Fivemile Pass 7½'	⑤ File or Gore No.	
⑥ Latitude: 40°13'N	⑦ Longitude: 112°09'W	⑧ AMS Sheet: Tooele, UT	Township: 7S	Range: 3W	Section: 10, 11	⑨ Examined by: JDSell	⑩ Date: 6/18/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 7/12/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Kentron Industries 1983-84, Fivemile Pass Precious Metal Deposit (in-house) 16 p. plus addendum.				
Bissell, H.J., 1959, Strat. of 5 Mile Pass in UGA GB#14. Geol. of S. Oquirrh Mtn., etc				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
None		

J. H. C. JUL 13 1984

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Reported	548,000 tons	@ 0.971 opt Au

⑱ Num. Drill Holes 38
Approx Total Footage ±4000

⑲ Excavations 2 backhoe pits

⑳ [ ] Spectro. Analysis Attached ㉑ [x] Assays Attached (w/descrip ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag

㉔ Ore Minerals-Major: Unknown Minor: Unknown

㉕ Host Rocks-Major: Oquirrh Fm. Minor:

㉖ Age of Host Rocks: Pennsylvanian

㉗ Nature of Exposures: Excellent in hills; grass-rubble covered lower slopes.

㉘ Alteration: None

㉙ Total Extent: ½ sq. mile

㉚ Structure: Axis of syncline, minor faulting

㉛ Ore Occurrence: None known

㉜ Age of Mineralization

㉝ Conclusions & Recommendations: Field sampling failed to confirm Kentron prepared laboratory pulp samples. Field samples were less than 3 parts per billion Au and 0.3 ppm Ag or less; while the lab assay values ranged from less than 3 to 63 parts per billion Au. None of the above samples and pulps confirmed what Kentron had reported from other laboratories.

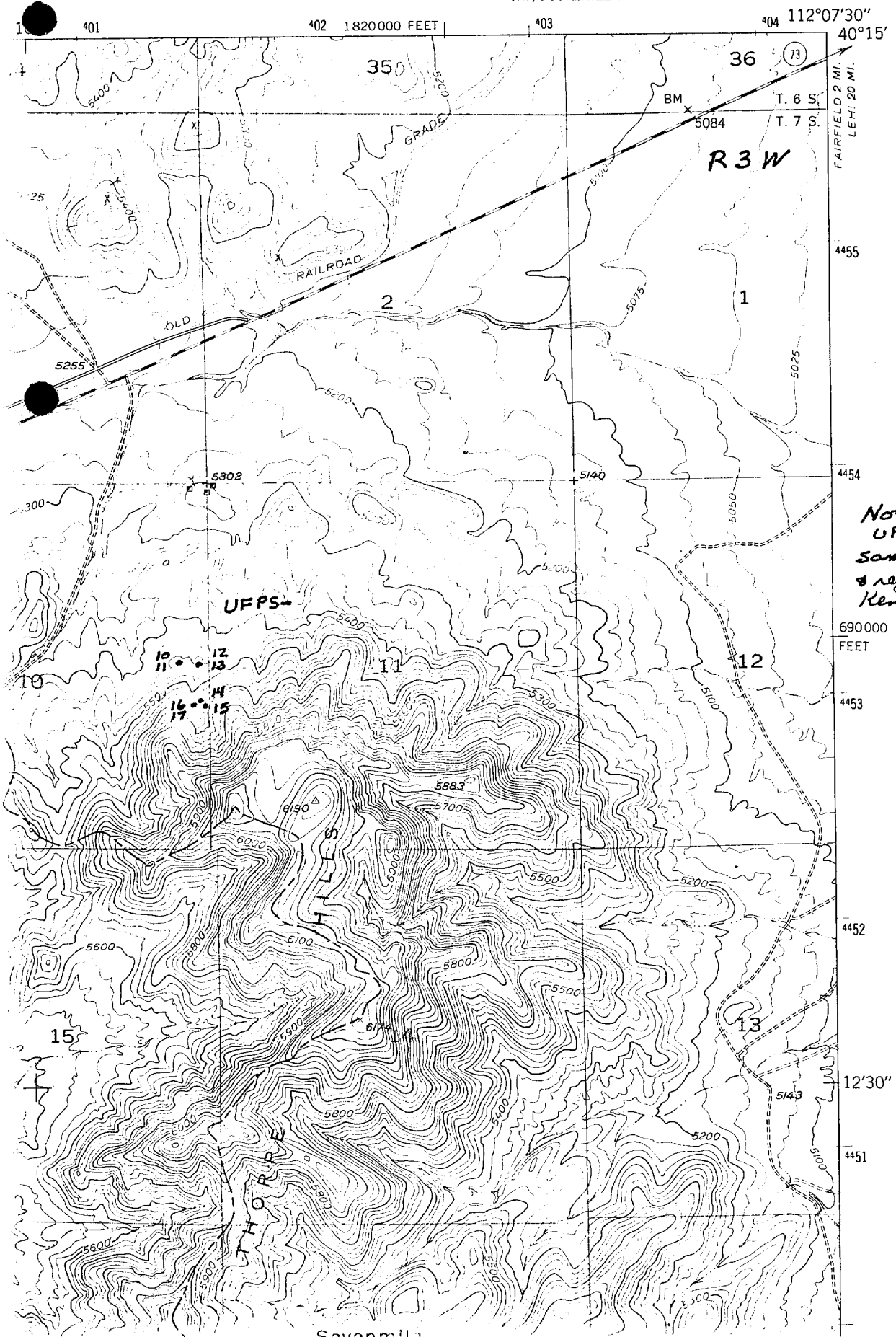
(For additional space use extra sheets)

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

Scale 1:24,000

FIVEMILE PASS QUADRANGLE
UTAH
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW/4 FIVEMILE PASS 15' QUADRANGLE

3564 I SE (CEDAR FORT)



Note:
UFPS- 1 thru 9
samples were pulps
& rejects from
Kenton Lucl. laboratory.

Sample Descriptions

UFPS-Series - Utah Fivemile Pass South
Fivemile Pass Area, Fivemile Pass 7½' Quad
Sec. 10, 11, T7S, R3W
North end of Thorpe Hills
Utah County, UT

James D. Sell
June 18, 1984

Note: Sample UFPS-1 was collected from a prepared pulp by Kentron Industries.

UFPS-1 - Kentron drill holes composite pulp. <3 ppb Au; 0.3 ppm Ag

Note: Samples UFPS-2 through UFPS-6 were collected by Kentron from a backhoe sample from which the large boulders were removed, then the sample sieved to the various sizes.

UFPS-2 - Kentron backhoe sample; +¼" sieve sample pulp. 18 ppb Au; 0.6 ppm Ag.

UFPS-3 - Kentron backhoe sample; -1¼" + 1" sieve sample pulp. <3 ppb Au; <0.2 ppm Ag.

UFPS-4 - Kentron backhoe sample; -1" + ½" sieve sample pulp. 16 ppb Au; <0.2 ppm Ag.

UFPS-5 - Kentron backhoe sample; -½" + 1/8" sieve sample pulp. 49 ppb Au; <0.2 ppm Ag.

UFPS-6 - Kentron backhoe sample; -1/8" sieve sample pulp. 63 ppb Au; <0.2 ppm Ag.

Note: Samples UFPS-7 through UFPS-9 were collected by Kentron from a backhoe sample from which the large boulders were removed. These three samples were taken from 3 of 9 barrels of the "raw" material.

UFPS-7 - Kentron bulk sample of backhoe material; large black barrel (55 gallon drum). <3 ppb Au; <0.2 ppm Ag.

UFPS-8 - Kentron bulk sample of backhoe material; small black barrel (25 gallon drum). <3 ppb Au; <0.2 ppm Ag.

UFPS-9 - Kentron bulk sample of backhoe material; large green barrel (55 gallon drum). <3 ppb Au; <0.2 ppm Ag.

Note: The samples UFPS-10 through UFPS-16 were collected in the field. No Kentron representative present.

UFPS-10 - In surface backhoe pit; -½" sand & silt material - all surface wash zone. <3 ppb Au; <0.2 ppm Ag.

UFPS-11 - In same backhoe pit; rock only of black carbonaceous limestone. Probably Oquirrh Formation, Meadow Canyon Member, upper units (MCU). <3 ppb Au; <0.2 ppm Ag.

UFPS-12 - East side of gulch, 300 feet east of backhoe pit. A one foot bed of red-brown siliceous carbonate. Probably upper units of Meadow Canyon Member of Oquirrh Formation (MCU). <3 ppb Au; <0.2 ppm Ag.

UFPS-13 - Just south of sample UFPS-12, in shaley equivalent of silicic carbonate (MCU). <3 ppb Au; <0.2 ppm Ag.

UFPS-14 - A Kentron wagon-drill air hole. Sample of cuttings around collar. In area of fine black carbonaceous limestone unit (MCU). <3 ppb Au; <0.2 ppm Ag.

UFPS-15 - One and one-half foot bed of outcrop, highly fossiliferous, medium dark grey, medium coarse limestone, somewhat carbonaceous (MCU). <3 ppb Au; 0.3 ppm Ag.

UFPS-16 - Old deep rotary drill hole. Large pile of carbonaceous black limestone chips. Sample of main pile. Possibly Manning Shale Unit. <3 ppb Au; <0.2 ppm Ag.

UFPS-17 - Same rotary cuttings pile as UFPS-16, next to hole. <3 ppb Au; 0.3 ppm Ag.

&ESTERN ANALYTICAL INC.
2417 South 2700 West
Salt Lake City, Utah 84119
(801) 973-9238

CERTIFICATE OF ANALYSIS

July 2, 1984
P84-174

MR J D SELL
ASARCO INC
P O BOX 5747
TUCSON AZ 85703

Dear Mr. Sell:

Transmitted herewith are the analytical data for the 17 samples delivered to our laboratory for Ag* and Au analysis. The samples for Au were accomplished with a F.A. fussion and a A.A. finish.

SAMPLE NUMBER	Ag* ppm	Au ppb
UFPS-1	.3	<3
UFPS-2	.6	18
UFPS-3	<.2	<3
UFPS-4	<.2	16
UFPS-5	<.2	49
UFPS-6	<.2	63
UFPS-7	<.2	<3
UFPS-8	<.2	<3
UFPS-9	<.2	<3
UFPS-10	<.2	<3
UFPS-11	<.2	<3
DUPLICATE	<.2	<3
UFPS-12	<.2	<3
UFPS-13	<.2	<3
UFPS-14	<.2	<3
UFPS-15	.3	<3
UFPS-16	<.2	<3
UFPS-17	.3	<3
STANDARD		50
BLANK		<3
STANDARD VALUE		50

*Background Corrected

E. H. Phillips
Laboratory Director

Charges: $278.50
EHP/we

ASARCO Incorporated
JUL 5 1984
SW Exploration

ASARCO

Southwestern Exploration Division

July 12, 1984

F. T. Graybeal
New York Office

Fivemile Pass Prospect
Northern Thorpe Hills
Kentron Industries, Inc.
Utah County, UT

I am returning your packet of information submitted by Clarence Morrison.

On June 18, 1984 I went to the office and laboratory of Kentron Industries and talked with Mr. Richard Benson, President of Kentron. Mr. Benson was very open on the problems of the property and assaying, and allowed me free access to the pulps and reject barrels. No core and no sections are available. No air hammer cuttings are available as all were picked up, composited, and pulped. It is quite obvious that Kentron has been led astray by various assayers and/or prepreparation of samples prior to assaying.

The backhoe sample of several tons was brought to the laboratory, spread out on a concrete floor, the large +3" material removed, then was quartered and sieved and the various sieve sizes were pulped. The raw backhoe three quarters reject was placed in nine barrels ranging from 25 to 55 gallon size.

The consulting metallurgist, Mr. Jack Ruckman, works out of the Kentron office and he was given a 15 pound sack of pulp which was reported to be the remains of all the composited drill hole material. Mr. Ruckman split out, by a Jones riffle splitter, two 50 gram samples; one he gave to me, the other he kept for assay.

My sample of the composite Kentron drill holes is submitted as sample UFPS-1, and returned less than 3 parts per billion gold, and 0.3 ppm silver. The gold assay was run by Fire Assay Fusion with A.A. determination and preconditioned for the carbon content. Thus, I believe the Western Analytical values are correct throughout. These low values make all the Kentron individual drill hole assays very suspect.

Samples UFPS-2 through UFPS-6 are Kentron pulps from the quartered and sieved backhoe bulk sample. Note that these values range from less than 3 to as high as 63 parts per billion gold with mostly less than 0.2 ppm silver. The backhoe material is from wash debris from the hillside erosion and does not represent bedrock in place. The low values also suggest no viable gold-bearing material.

Samples UFPS-7 through -9 were collected from three of the nine barrels of "bulk" backhoe pit material collected by Kentron. My sampling of these barrels shows less than 3 parts per billion gold and less than 0.2 ppm silver. These values make the values in the prepared pulps suspect, but again the prepared pulp values are so low as to be of no interest.

In the field, by myself, I sampled the backhoe pit with samples UFPS-10 and -11, both of which returned the same zilch assays as the bulk backhoe samples at the Kentron laboratory.

I then sampled several outcrops, some cuttings found around one of the Kentron holes, and two from an unknown rotary hole which may have penetrated the Manning Shale--a potential Carlin-type host. All returned zilch values. This unknown (as to who drilled it) rotary hole is the one mentioned by Kentron on page 8 of their report from which they got very good gold-silver values in 21 samples from this rotary pile (Exhibit 2-D, p. 1 of 12).

A map of the sampled area is attached, along with an Exploration Record Sheet, sample descriptions, and assays.

James D. Sell

James D. Sell

JDS/cg

Attachments: Location Map
ERS
Sample Descriptions
Assays

cc: WLK

ASARCO

Southwestern Exploration Division

~~JHC~~ ERS file

Note: There are 6 ERS in this package. cg

May 21, 1984

To: W. L. Kurtz

From: J. D. Sell

Jasperoid Sampling
Monte Cristo Area
Umont Mining Inc.
White Pine Mining District
White Pine County, NV

Conclusions

The Umont drill hole #14, Monte Cristo (Addendum A), shows high barium and titanium in the non-jasperoid (NMC-1 & -2) and jasperoid (NMC-3) Chainman Shale with only the decarbonized Chainman sample (NMC-2) showing any suggestion of moly and zinc values. The Joana jasperoid (NMC-3 and -4) does not have any addition of the elements above. None of the five samples has any detectable gold or silver. Thus I would place a low priority on the significance of this hole as being in proximity to an ore system.

The Treasure Hill samples (Addendum B) all show ore characteristics except for the non-jasperoid Joana Limestone sample. Additional ore runs are probable in this district which is now being extensively tested.

The Seligman Phillips area (Addendum C) jasperoid samples are all indicative of being within an ore system as expressed by the drilling results.

The Little Antelope Summit area (Addendum D) jasperoids and non-jasperoids all have good barium values (1500 ppm or greater) but little else to suggest a better target area. The area is staked and had a geologist on it last year (1983).

The single jasperoid sample from North Ridgey (Addendum E) had 3000 ppm barium with little else to suggest it is associated with a mineralized system.

The single jasperoid from within the pit at Jerritt Canyon is geochemically dead but did have 0.02 opt gold. The pit geologist stated that they have had little luck in separating out productive from non-productive jasperoids. I have no further insight as to why this "productive-looking jasperoid" was so geochemically dead--except for gold which is the name of the game at Jerritt Canyon.

Jasperoid and Related Sampling

A total of twenty-four samples of jasperoid and related units have been collected from drill hole Umont #14 and similar outcropping units lying from 3 to 13½ miles distant from the drill hole. See Location Map A for the sample site locations. An additional sample of jasperoid was collected from the Jerritt Canyon gold operation north of Elko, NV.

These sample sites are:

A. Nevada Monte Cristo, NMC-series, 1 thru 5. Collected from Chainman Shale and Joana Limestone in Umont hole #14.

B. Nevada Treasure Hill, NTH-series, 1 thru 8. Collected from Joana Limestone, Pilot Shale, and Guilmette Limestone. This area is around 7 miles in a S60°E direction from hole #14.

C. Nevada Seligman Phillips, NSP-series, 1 thru 6. Collected from quartz veins and Secret Canyon Shale. This area is 2 miles easterly from hole #14.

D. Nevada Little Antelope Summit, NLAS-series, 1 thru 4. Collected from Chainman Shale and Joana Limestone. This area is about 13½ miles in a N45°E direction from hole #14.

E. Nevada North Ridgey, NNR-series, 1 only. Collected from Joana Limestone. This area is around 3 miles in a S45°W direction from hole #14.

F. Nevada Jerritt Canyon, NJC-series, 1 only. Collected from Hanson Creek Shale in the Jerritt Canyon open pit gold mine. This area is in Elko County some 100 miles north of drill hole #14.

The sample descriptions and assay results are reported in Addenda A thru F, corresponding to the above sample-assay site areas.

Units from which samples were collected and 31-element spec plus fire gold-silver and silica determinations were analyzed are listed in Table 1.

Table 1 - Stratigraphic Units

Chainman Shale (Mississippian)

Joana Limestone (Mississippian)

Pilot Shale (Devonian-Mississippian)

Guilmette Limestone (Devonian)

# # #

Hanson Creek Formation (Ordovician) ≅ Fish Haven

# # #

Secret Canyon Formation (Cambrian)

The shale units of the Chainman and Pilot Formations (and probably the Hanson Creek at Jerritt Canyon) appear to have intrinsic high geochemical values in barium, nickel, and titanium, with notable boron, chromium, vanadium, and zirconium.

The basic Joana Limestone appears very flat geochemically and although I have no samples of the uneffected Guilmette, I suspect that it is also geochemically flat. Thus the increased values of some of the Joana and the Guilmette samples suggest that mineral fluids have passed through them.

Table 2 shows the jasperoid sample results from within a known ore zone to outside at some unknown distance from ore. Table 3 shows the non-jasperoid sample results from the same units and in the same proximity to the jasperoid samples.

Values of significance in Tables 2 and 3 are colored orange. These include iron, 5% and above; silver, 3 ppm and above; arsenic, 1000 ppm and above; barium, 1000 ppm and above; moly, 3 ppm and above; antimony, 150 ppm and above; and silica, 60% and above. Gold and silver at 0.01 oz/ton and above are also highlighted. These elements are believed to be part of the ore fluid system and not necessarily moved out of the shale sections.

The yellow highlighted elements include notable or high values of Ca, Mg, B, Ba, Co, Cr, Cu, La, Mn, Ni, Pb, Sn, Sr, Ti, W, Zn, and Zr. These, as noted above, are higher in the shale units and are probably an intrinsic suite for the shale. Note that barium, chromium, and titanium also tend to increase in the limestone units in proximity to high value shale units which are also in proximity to known ore. Thus these three elements (Ba, Cr, Ti) may have been enhanced and moved about by the mineralizing solutions and may be indicative of a metal bearing system.

Notes on Previous Work

Queenstake consultant Ron Richardson accompanied me on a tour of the Phillips area of the Seligman stock. The stock has an age of 140 m.y. Of the 65 drill holes only one is in the stock; all others are in the skarn zone of the Secret Canyon Formation. Most of the holes were rotaried, then cored through the ore zone. The west ore zone may have five million tons of tungsten-moly in a mineable configuration at a 0.3% WO_3-MO_2 combination. The east ore zone may have a half million tons as isolated poddy zones in low-grade skarn.

Steve Jones, Mackay School of Mines, Reno, is submitting a Master's thesis on the Phillips drilling. Steve, in late 1983, was working out of Elko for Getty Minerals and was hoping to have the final draft submitted by November.

Queenstake was evaluating the surface jasperoids for their gold content.

The Umont drill hole #14, located 2230' FNL (from north line), 2120' FWL, Sec. 18, T16N, R57E, White Pine County, Nevada, was rotaried by Boyles Brothers to a depth of 2145 feet where it was cased. Boyles then cored the hole NX size to 2353 feet, cased and continued BX size to 2624 feet, total depth in 1964. The rods broke at 2180 feet and the hole was terminated after fishing for the rods was unsuccessful.

Umont gold-silver assays from 2420-2624 feet were trace to 0.005 oz Au and none to 0.1 oz Ag per ton. Getty collected 21 samples from 2145 to 2620 feet and through RMGC showed copper at 10-60 ppm (30 ppm avg), lead at 5-30 (15 ppm avg), zinc at 25-315 (150 ppm avg), moly at less 1-5 (4 ppm avg), gold all less 0.003 opt, silver all less than 0.03 opt, and tungsten less 5 to 30 with most 5 or less and only 2 at 20 and 30 ppm tungsten.

Geologic units of hole #14:

Surface-2145'	-	gravel
2145-2184'	-	claystone
2184-2196½'	-	marl
2196½-2246'	-	shale (white Pine ~ Chainman)
2246-2275'	-	siltstone and sandstone, w/pebble cgl, silicified, jasperoid (2268-2271').
2275-2432'	-	shale w/pyrite and yellow-red stain
2432-2599'	-	interbedded sandstone and carbonaceous shale with some magnetite and pyrite.
2599-2624' (T.D.)	-	silicified limestone (Joana), med. grey, with grey-red-hematite mottling, fractured, quartz crystal lined vugs and hematite on fractures, brecciated; oxidized.

Umont hole PD1U (Pogonip Dome #1 Umont) is located S29°E from Umont #14 at about 2200 feet. It was rotaried 8 3/4" to 540 feet and cased, with rotary continued to 701 feet (T.D.) as open hole (end of 1983 season).

The Umont geophysical data were studied by the Asarco Salt Lake geophysical group and they verbally reported they could see no valuable data to support any domal structure under the gravels where hole #14 and PD1U are located.

The Monte Cristo stock is dated at 90 m.y. The skarn mineralization of Umont around the stock was written up in an M.S. thesis by R. A. Sonnevil, 1979, Evolution of Skarn at Monte Criso, Nevada: Stanford University, 83 p. Part of this data was incorporated in the paper by R. J. Newberry and M. T. Einaudi, 1981, Tectonic and Geochemical Setting of Tungsten Skarn Mineralization in the Cordillera: Ariz. Geol. Soc. Digest XIV, p. 99-111.

Mr. Dooley Wheeler, Jr. of Umont guided me around and also collected a few samples from the Little Antelope Summit area, North Ridgey and on Treasure Hill. G. J. Stathis (1980) had collected samples in the Little Antelope Summit area. These samples and their equivalents are tabulated in Table 4.

Table 4

Comparison of Different Collections

Sampler*	Lab*	Rx Type*	No.	All ppm							
				Au	Ag	Hg	As	Sb	Pb	Zn	Cu
JDS	Sky	jas	NNR-1	<0.2	<0.3	--	<500	<100	<10	<200	<10
DPW	RMGC	jas	#21	<0.1	<0.1	1.6	185	16.0	<10	155	40
JDS	Sky	jas	NLAS-1	<0.2	<0.3	--	<500	<100	<10	<200	2
DPW	RMGC	jas	#20	<0.1	<0.1	0.03	125	1.1	<10	35	165
GJS	WAI	jas	#6	<0.05	<0.5	0.20	80	--	--	--	--
JDS	Sky	jas	NTH-1	<0.02	<0.2	--	<500	<100	<10	<200	30
DPW	RMGC	jas	#22	<0.1	0.3	0.31	90	2.8	<10	55	20
JDS	Sky	jas	NTH-2	<0.02	0.2	--	<500	<100	<10	200	20
DPW	RMGC	jas	#23	<0.1	0.4	0.33	50	2.5	20	40	25

*Sampler:

JDS - James D. Sell
DPW - Dooley P. Wheeler
GJS - George J. Stathis

*Laboratory:

Sky - Skyline Labs, Au-Ag Fire + 31-element spec., Tucson, AZ
RMAG - Rocky Mountain Geochemical Corporation, Jordan, UT
WAI - Western Analytical Incorporated, Salt Lake City, UT

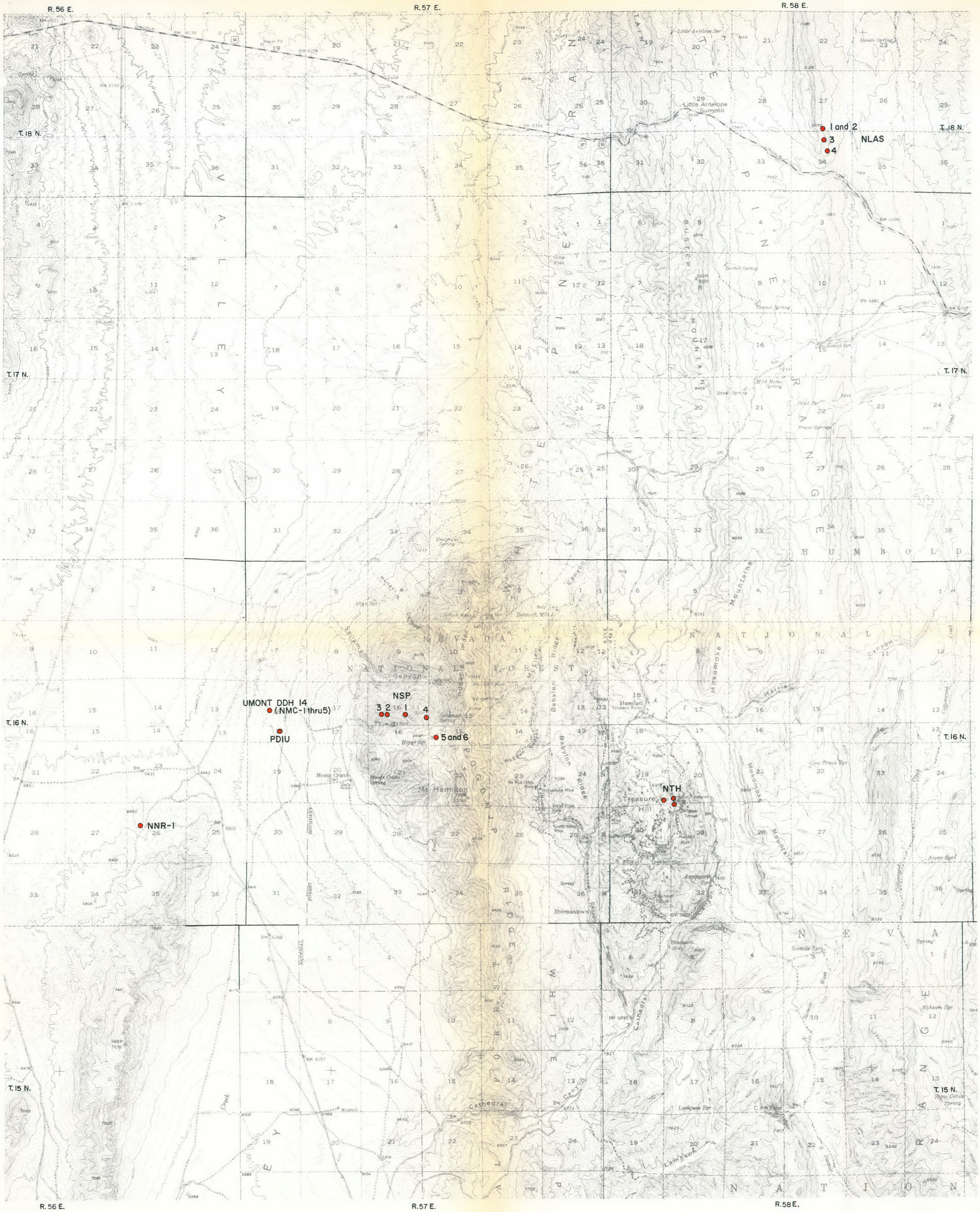
*Rock Type:

jas - jasperoid from limestone unit

James D. Sell

JDS/cg
xc: FTGraybeal

MAP A



TO ACCOMPANY MEMO
TO W.C. KURTZ
DATED 5-21-84
BY J.D. SELL

MAP A

JASPEROID SAMPLING
MONTE CRISTO AREA

WHITE PINE MINING DISTRICT
WHITE PINE COUNTY, NEV.

J.D.S. 1 inch = 1 mile 6-84

mn. 6049 dam

TABLE 2

ELEMENT		IN ORE ZONE				NEAR ORE ZONE	
		GUILMETTE LMS.			HANSON CREEK SHALE	JOANA LMS.	
		NTH-6	NTH-7	NTH-8	NJC-1	NTH-1	NTH-2
Fe		1.5%	0.7%	2.0%	0.5%	10.0%	7.0%
Ca		2.0%	2.0%	3.0%	0.15%	0.15%	0.7%
Mg		0.15%	0.15%	0.5%	0.05%	0.1%	0.1%
Ag		300	150	150	<1	<1	<1
As		<500	<500	<500	<500	<500	<500
Ba		500	300	1000	20	200	300
Co		<5	<5	<5	<5	<5	<5
Cr		150	150	150	300	150	200
Cu		100	30	100	15	30	20
Mn		70	200	300	70	100	100
Mo		15	<2	3	<2	<2	3
Ni		7	7	15	7	30	300
Pb		15	15	50	10	<10	<10
Sb		<100	<100	<100	<100	<100	<100
Sr		150	<100	<100	100	150	300
Ti		1500	700	1500	100	2000	700
Zn		<200	<200	<200	<200	<200	200
Au	oz/ton	<0.005	<0.005	<0.005	0.020	<0.005	<0.005
Ag	oz/ton	5.68	3.72	3.66	<0.01	<0.01	<0.01
SiO_2		87.1%	89.2%	77.3%	94.7%	89.1%	91.9%

ELEMENT		ABOVE AREA OF DRILLED RESERVES OF Mo-W-Ag					
		SECRET CANYON SHALE (limey to sandy)					
		NSP-1	NSP-2	NSP-3	NSP-4	NSP-5	NSP-6
Fe		3.0%	7.0%	3.0%	10.0%	>20.0%	0.7%
Ca		0.1%	0.15%	0.15%	0.03%	10.0%	0.15%
Mg		0.2%	0.1%	0.07%	0.15%	0.05%	0.07%
Ag		10	3	<1	<1	20	<1
As		1500	3000	1000	<500	<500	<500
Ba		300	300	>10,000	2000	<10	<10
Co		<5	<5	7	15	200	<5
Cr		200	100	200	100	50	150
Cu		150	70	15	300	>10,000	200
Mn		100	500	700	500	5000	150
Mo		70	200	30	30	50	<2
Ni		<5	7	10	15	7	5
Pb		20	150	<10	<10	<10	<10
Sb		200	300	150	300	200	150
Sr		150	<100	200	<100	<100	<100
Ti		2000	2000	2000	3000	300	1500
Zn		<200	300	200	<200	<200	<200
Au	oz/ton	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
Ag	oz/ton	0.16	0.08	<0.01	<0.01	0.30	<0.01
SiO_2		80.3%	79.9%	82.1%	74.2%	45.4	91.1%

ELEMENT		OUTSIDE KNOWN AREA OF MINERALIZATION						
		CHAINMAN SHALE	JOANA LMS.					
		NMC-3	NLAS-1	NMC-4	NMC-5	NLAS-2	NLAS-3	NNR-1
Fe		1.5%	1.5%	1.0%	2.0%	0.5%	1.0%	1.5%
Ca		3.0%	0.1%	>20.0%	15.0%	2.0%	3.0%	0.2%
Mg		1.0%	0.05%	10.0%	7.0%	0.05%	0.2%	0.07%
Ag		<1	<1	<1	<1	<1	<1	<1
As		<500	<500	<500	<500	<500	<500	<500
Ba		1000	5000	<10	<10	>10,000	1500	3000
Co		<5	<5	<5	<5	<5	<5	<5
Cr		100	300	10	100	200	70	300
Cu		70	2	30	70	2	3	10
Mn		70	70	200	100	30	15	50
Mo		<2	<2	<2	<2	<2	<2	<2
Ni		<5	7	<5	<5	15	7	15
Pb		50	<10	10	20	<10	<10	<10
Sb		<100	<100	<100	<100	<100	<100	<100
Sr		<100	150	<100	<100	300	<100	1000
Ti		1500	500	200	700	150	1500	1500
Zn		<200	<200	<200	200	<200	<200	<200
Au	oz/ton	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ag	oz/ton	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SiO_2		78.5%	94.8%	23.3	52.2	86.9%	79.8%	88.4%

TO ACCOMPANY MEMO
TO W.L. Kuerz
DATED 6-21-84
BY J.D. Seu

TABLE 2
JASPEROID VALUES

mn 6036 dam 4/84

TABLE-3

	CHAINMAN SHALE			JOANA LMS.	PILOT SHALE	GUILMETTE LMS.		
	NMC-1	NMC-2	NLAS-4	NTH-3	NTH-4	NTH-5		
Fe	3.0%	5.0%	3.0%	0.15%	3.0%	3.0%		Fe
Ca	2.0%	2.0%	0.07%	>20.0%	15.0%	15.0%		Ca
Mg	1.5%	1.5%	0.7%	0.7%	7.0%	7.0%		Mg
Ag	<1	<1	<1	<1	<1	<1		Ag
As	<500	<500	<500	<500	<500	<500		As
Ba	700	1000	1500	<10	500	1500		Ba
Co	<5	7	<5	<5	5	15		Co
Cr	200	200	200	<10	10	20		Cr
Cu	70	100	200	3	20	30		Cu
Mn	200	200	30	150	300	300		Mn
Mo	<2	3	15	<2	3	10		Mo
Ni	150	200	150	15	150	300		Ni
Pb	10	15	15	<10	<10	10		Pb
Sb	<100	<100	<100	<100	<100	<100		Sb
Sr	<100	150	300	200	100	100		Sr
Ti	3000	3000	5000	150	3000	3000		Ti
Zn	300	2000	<200	<200	<200	<200		Zn
Au oz/ton	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	oz/ton	Au
Ag oz/ton	<0.01	<0.01	0.4	<0.01	<0.01	<0.01	oz/ton	Ag
SiO_2	64.7%	67.3%	75.6%	6.2%	48.0%	47.8%		SiO_2

TO ACCOMPANY MEMO
TO W.L. Kuerz
DATED 5-21-84
BY J.D. Deu

TABLE-3
NON-JASPEROID VALUES

Addendum A

ASARCO EXPLORATION RECORD

J. H. C.

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [ ]

JUL 12 1984

Section I General Indexing

① Name(s) of Property or Area: MONTE CRISTO AREA Umont Mining Co., Pogonip Dome Target						② Country: White Pine Co.	③ State or Province: NV
						④ USGS Quad.: Pancake Summit & Green Springs 15'	⑤ File or Core No.: White Pine Range
⑥ Latitude: 39°15'N	⑦ Longitude: 115°36'W	⑧ AMS Sheet: Ely	Township: 16N	Range: 57E	Section: 18	⑨ Examined by: JDSell	⑩ Date: 10/26/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Asarco File, UMONT Mining Company data.				
NMC Series geochemistry (JDS) - Addendum A.				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No control

⑮

- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [ ]
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [x] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
None		

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes 2

Approx Total Footage 3325

⑲ Excavations: None

⑳ [x] Spectro. Analysis Attached

㉑ [x] Assays Attached

㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag-Pb replacement deposit concept.

㉔ Ore Minerals-Major: Same as Treasure Hill Mine Minor:

㉕ Host Rocks-Major: Guilmette Lms thru Chainman Shale Minor:

㉖ Age of Host Rocks: Devonian & Mississippian

㉗ Nature of Exposures: Buried under 2000' of gravels.

㉘ Alteration: Bleaching of shales and jasperoid in limestone.

㉙ Total Extent: Unknown

㉚ Structure: Interpreted data suggests large dome. Not supported by Asarco Geophys. interpretation.

㉛ Ore Occurrence: Potential replacement deposit.

㉜ Age of Mineralization: K-early Tertiary

㉝ Conclusions & Recommendations: The drill hole data, assays, and reinterpreted geophysical data cannot support concept of domal structure for favorable trap.

(For additional space use extra sheets)

Sample Descriptions

Nevada Monte Cristo, NMC-Series
Umont Drill Hole #14
Pogonip Dome Silver Target
Center Section 18, T16N, R57E
White Pine County, NV
Collected 10/28/83 by JDSell with DPWheeler, Jr.

NMC-1 Chainman Shale, black, sooty, fissile, with fine disseminated cubic pyrite. From 2583-2586' core interval.*

NMC-2 Chainman Shale, as above, with decarbonized spots up to ¼" diameter. These spots are not calcite. From 2595-2597' core interval.*

NMC-3 Silicified, replacement of Chainman Shale, few good jasperoid textures of white to light pink (about 10% core recovery). From 2600-2610' core interval.*

NMC-4 Jasperoid replacement of Joana Limestone, brecciated, clear white to grey with few vugs with fine quartz crystal growth, red to black FeOx seams, and 1/8" barite seam. From 2614-2619' core interval.*

NMC-5 Jasperoid, as above, but more apparent sanding and crushed textures (total run is pea to grape sized sand and particles). More red FeOx component. From 2620-2624' core interval, total depth of hole #14.*

*Sample fire assayed at <0.005 opt Au and <0.01 opt Ag.

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1775 W. Sahuaro Dr. • P.O. Box 50106
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COPY

REPORT OF ANALYSIS

JOB NO. TAJ 324
December 7, 1983
SHIPMENT NO. SIX
NMC-1 THRU 5

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

New Monte Cristo
[illegible]
White Pine Co. NV

Analysis of 5 Core Cutting Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NMC-1	<.005	<.01	64.7
2	NMC-2	<.005	<.01	67.3
3	NMC-3	<.005	<.01	78.5
4	NMC-4	<.005	<.01	23.3
5	NMC-5	<.005	<.01	52.2

RECEIVED
JAN 17 1984
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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JOB NO. TAJ 324
PAGE 2

ITEM NO. SAMPLE NO.
1 = NMC-1
2 = NMC-2
3 = NMC-3
4 = NMC-4
5 = NMC-5

ITEM	1	2	3	4	5
	Chimney Sh.	Chimney Sh	Jasperoid Chimney Sh	Jasperoid Jessica Area	Jasperoid Jessica Area
ELEMENT					
Fe	3%	5%	1.5%	1%	2%
Ca	2%	2%	3%	>20%	15%
Mg	1.5%	1.5%	1%	10%	7%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500
B	100	70	10	<10	<10
Ba	700	1000	1000	<10	<10
Be	<2	2	2	<2	2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	7	<5	<5	<5
Cr	200	200	100	10	100
Cu	70	100	70	30	70
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	<20	30	<20	<20	<20
Mn	200	200	70	200	100
Mo	<2	3	<2	<2	<2
Nb	<20	20	<20	<20	<20
Ni	150	200	<5	<5	<5
Pb	10	15	50	10	20
Sb	<100	<100	<100	<100	<100
Sc	<10	10	<10	<10	<10
Sn	<10	<10	<10	<10	<10
Sr	<100	150	<100	<100	<100
Ti	3000	3000	1500	200	700
V	150	200	50	<10	10
W	<50	<50	<50	<50	50
Y	15	15	<10	<10	<10
Zn	300	2000	<200	<200	200
Zr	100	100	30	<20	<20

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

Addendum B

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J. H. C.

JUL 12 1984

Section I General Indexing

① Name(s) of Property or Area: TREASURE HILL, Hamilton District					② Country: White Pine Co.	③ State or Province: NV	
					④ USGS Quad.: Treasure Hill 15'	⑤ File or Gore No.: White Pine Range	
⑥ Latitude: 39°13'N	⑦ Longitude: 115°29'W	⑧ AMS Sheet: Ely	Township: 16N	Range: 58E	Section: 19, 20,29	⑨ Examined by: JDSell	⑩ Date: 9/11 & 10/23/83
					⑪ Office: SWED Tucson	⑫ Field Days: 2	

Section II Sources of Information

Date Typed 5/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
NTH-series geochemistry (JDS) Addendum B				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [ ] Access Problem
- [x] Agreement?

⑮

- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]

- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown but large amount of close-spaced drilling; leach pads being constructed with plant.		

⑱ Num. Drill Holes: Numerous

Approx Total Footage: 50+ thousand

⑲ Excavations: Old mines

⑳ [x] Spectro. Analysis Attached

㉑ [x] Assays Attached

㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag-Pb-Zn

㉔ Ore Minerals-Major: Oxidation products of above sulfide Minor:

㉕ Host Rocks-Major: Guilmette Lms Minor:

㉖ Age of Host Rocks: Devonian

㉗ Nature of Exposures: Excellent, with host unit overlain by near barren units.

㉘ Alteration: Recrystallization and jasperoid.

㉙ Total Extent: ½ by 1¼ miles

㉚ Structure: Faulted N-S anticlinal.

㉛ Ore Occurrence: Replacement along faults and bedding.

㉜ Age of Mineralization: K-early Tertiary

㉝ Conclusions & Recommendations: Highly productive district now controlled by F. W. Lewis, Silver King Mines, and small part by Queenstake. Monitor District for possible work-joint venture agreement.

(For additional space use extra sheets)

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

Sample Descriptions

Nevada Treasure Hill, NTH-Series
SE¼ Section 19, and SW¼ Section 20, T16N, R58E
White Pine County, NV
Collected 9/11/83 and 10/23/83 by JDSell

NTH-1 Jasperoid replacement of Joana Limestone, brecciated, with yellow-brown-red-black FeOx, mainly as thin coatings on fragments and joints. East end of outcrop.*

NTH-2 Jasperoid replacement of Joana Limestone, brecciated, with mostly yellow-orange-brown-FeOx coatings. West end of outcrop. 100 feet west of sample NTH-1.*

NTH-3 Joana Limestone, light grey, weakly recrystallized, with replacement by light grey to white limestone masses and coarse secondary veins of white calcite which also partially fill breccia openings along N-S fault structure. 50 feet north of sample NTH-2.*

NTH-4 Pit dump sample of underlying Pilot Shale, very thin plates, calcite, varicolored with FeOx-MnOx soot. 100 feet west of sample NTH-2.*

NTH-5 Rotary cuttings from drill hole in road. Guilmette Limestone, light grey, with sooty manganese fines. Some debris from overlying Pilot Shale. 50 feet west of sample NTH-2. Guilmette is host for Treasure Hill ore runs.*

NTH-6 Jasperoid replacement of Guilmette Limestone (in weakly altered Guilmette within Hidden Treasure ore run), red-black, fine crystalline, some "sinter", clinker-type texture rims, with white calcite veinlets throughout. Flares along bedding. From pit 200 feet south of Hidden Treasure shaft.** 5.68 opt Ag.

NTH-7 Jasperoid feeder structure to sample NTH-6, grungy, crackle, crystalline, black, with fine calcite intertangled. Same pit as NTH-6.** 3.72 opt Ag.

NTH-8 Jasperoid wall rock left behind from mining. Red, fine, dense, with white crystalline calcite on fractures. In Guilmette workings 50 feet north of Hidden Treasure shaft.** 3.66 opt Ag.

* Geochem value of <0.02 ppm Au and 0.2 or less ppm Ag.

** Sample fire assayed at <0.005 opt Au. Silver fire assayed at reported value.

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Attachment B

REPORT OF ANALYSIS

JOB NO. TAJ 312
September 27, 1983

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 5 Rock Chip Samples

ITEM	SAMPLE NO.	Au (ppm)	Ag (ppm)	SiO2 (%)	
1	NTH-1	<.02	<.2	89.1	jasperoid E
2	NTH-2	<.02	.2	91.9	jasperoid W
3	NTH-3	<.02	<.2	6.2	Joana Ins
4	NTH-4	<.02	<.2	48.0	Pilot Shale
5	NTH-5	<.02	<.2	47.8	Guilmette Lms.

William L. Lehmbeck
Manager

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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REPORT OF ANALYSIS

JOB NO. TAJ 319
December 20, 1983
SHIPMENT NO. ONE
NTH-6 THRU 8

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 3 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NTH-6	<.005	5.68	87.1
2	NTH-7	<.005	3.72	89.2
3	NTH-8	<.005	3.66	77.3

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DEC 27 1983
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Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
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Tucson, Arizona 85703
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JOB NO. TAJ 312
PAGE 2

ITEM NO. SAMPLE NO.
1 = NTH-1
2 = NTH-2
3 = NTH-3
4 = NTH-4
5 = NTH-5

ITEM	1	2	3	4	5
	jasperoid & barnacles	jasperoid w barnacles	jarosite barns	Pb-Ag shale	rotten cutting Gilmette barns
ELEMENT					
Fe	10%	7%	.15%	3%	3%
Ca	.15%	.7%	>20%	15%	15%
Mg	.1%	.1%	.7%	7%	7%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500
B	15	15	<10	50	50
Ba	200	300	<10	500	1500
Be	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	<5	<5	5	15
Cr	150	200	<10	10	20
Cu	30	20	3	20	30
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	50	20	<20	<20	20
Mn	100	100	150	300	300
Mo	<2	3	<2	3	10
Nb	20	<20	<20	<20	<20
Ni	30	300	15	150	300
Pb	<10	<10	<10	<10	10
Sb	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10
Sr	150	300	200	100	100
Ti	2000	700	150	3000	3000
V	200	150	15	100	100
W	<50	<50	<50	<50	<50
Y	<10	<10	<10	10	10
Zn	<200	200	<200	<200	<200
Zr	20	20	<20	70	70

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JOB NO. TAJ 319
PAGE 2

ITEM NO.	SAMPLE NO.
1	= NTH-6
2	= NTH-7
3	= NTH-8

ITEM	1	2	3
ELEMENT			
Fe	1.5%	.7%	2%
Ca	2%	2%	3%
Mg	.15%	.15%	.5%
Ag	300	150	150
As	<500	<500	<500
B	20	15	20
Ba	500	300	1000
Be	<2	<2	<2
Bi	<10	<10	<10
Cd	<50	<50	<50
Co	<5	<5	<5
Cr	150	150	150
Cu	100	30	100
Ga	<10	<10	<10
Ge	<20	<20	<20
La	<20	<20	<20
Mn	70	200	300
Mo	15	<2	3
Nb	<20	<20	<20
Ni	7	7	15
Pb	15	15	50
Sb	<100	<100	<100
Sc	<10	<10	<10
Sn	<10	<10	<10
Sr	150	<100	<100
Ti	1500	700	1500
V	30	30	30
W	<50	<50	<50
Y	<10	<10	<10
Zn	<200	<200	<200
Zr	100	20	150

ASARCO EXPLORATION RECORD

Addendum C J.H.C.

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐

JUL 12 1984

Section I General Indexing

① Name(s) of Property or Area: SELIGMAN STOCK, White Pine (Hamilton) District					② Country: White Pine Co.	③ State or Province: NV	
					④ USGS Quad.: Pancake Summit 15'	⑤ File or Gore No.: White Pine Range	
⑥ Latitude: 39°15'N	⑦ Longitude: 115°33'W	⑧ AMS Sheet: Ely	Township: 16N	Range: 57E	Section: 15, 16	⑨ Examined by: JDSell	⑩ Date: 10/27/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
NSP-series geochemistry (JDS) Addendum C				

Section III Appraisal

⑭ Recommendations

- ☐ Action Now
- ☒ Too Low Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ Under lease

⑮

- ☐ Post Producer
- ☐ Producer
- ☒ Mineral Deposit
- ☐ Prospect
- ☐ Geologic Concept
- ☒ Geochem Anomaly
- ☐ Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
None		

⑰ Reserves ☒ Measured ☐ Estimated

Commodity	Tons	Grade
5½ million tons of 0.3% WO_3-MoS_2		

⑱ Num. Drill Holes 65
Approx Total Footage 100,000

⑲ Excavations: Few old pits

⑳ ☒ Spectro. Analysis Attached ㉑ ☒ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Jasperoids of Secret Canyon Fm. Minor:

㉖ Age of Host Rocks: Cambrian

㉗ Nature of Exposures: Generally subdued in weathered shale host.

㉘ Alteration: Jasperoid and skarn development around stock.

㉙ Total Extent: Square mile

㉚ Structure: Skarn-jasperoid development around stock.

㉛ Ore Occurrence: In skarn & jasperoid.

㉜ Age of Mineralization: Cret.-early Tertiary Stock 140 m.y.

㉝ Conclusions & Recommendations: Low-grade tungsten-moly with trace gold-silver in skarn around stock. Some gold in small spotty jasperoid zones along structures and apparent limey beds in shale. No interest. See Phillip data.

(For additional space use extra sheets)

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

Sample Descriptions

Nevada Seligman Phillips, NSP-Series
Phillips Mineral Division, Seligman Stock Zone
SW¼ Sec. 15, S½ Sec. 16, T16N, R57E
White Pine County, NV
Collected 10/26/83 by JDSell with RRichardson

NSP-1. Quartz stockwork vein system, ten feet thick dipping steeply to south within Seligman stock. Has brecciated jasperoid appearance. Reddish-black limonite cavities. Fire assay 0.01 opt Au & 0.16 opt Ag.

NSP-2. Jasperoid, replacing calcareous shaley metamorphosed Secret Canyon Formation, about 300' south and west of stock. Some red FeOx.*, 0.08 opt Ag.

NSP-3. Jasperoid on same trend as NSP-2, on ridge line. Jasperoid with trace barite replacing calcareous units of Secret Canyon Formation.*,**

NSP-4. Jasperoid, multiple quartz types, some crystalline with yellow-brown to red-black FeOx. Reported stibnite (antimony) from outcrop. Nearby outcrop reported 0.7 oz. gold. Secret Canyon Formation.*,**

NSP-5. Oxidized copper stain from reported chalcopyrite-garnet tactite with jasperoid seams, replacement of sandy unit in Secret Canyon Formation. From old pit.*, 0.30 opt Ag (fire).

NSP-6. Jasperoid, basically grey to white, some light red, at least three stages of silica, 2 stages of brecciation with seams and pods of yellow FeOx, minor yellow FeOx. Uphill to east in contact with copper-garnet tactite. Secret Canyon Formation.*,**

* Sample fire assayed at <0.005 opt Au.

**Sample fire assayed at <0.01 opt Ag.

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REPORT OF ANALYSIS

JOB NO. TAJ 321
December 20, 1983
SHIPMENT NO. THREE
NSP-1 THRU 6

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 6 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NSP-1	.010	.16	80.3
2	NSP-2	<.005	.08	79.9
3	NSP-3	<.005	<.01	82.1
4	NSP-4	<.005	<.01	74.2
5	NSP-5	<.005	.30	45.4
6	NSP-6	<.005	<.01	91.1

RECEIVED
DEC 27 1983
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 321

ITEM NO.	SAMPLE NO.
1	= NSP-1
2	= NSP-2
3	= NSP-3
4	= NSP-4
5	= NSP-5
6	= NSP-6

ITEM	1	2	3	4	5	6
ELEMENT						
Fe	3%	7%	3%	10%	>20%	.7%
Ca	.1%	.15%	.15%	.03%	10%	.15%
Mg	.2%	.1%	.07%	.15%	.05%	.07%
Ag	10	3	<1	<1	20	<1
As	1500	3000	1000	<500	<500	<500
B	30	10	<10	<10	<10	<10
Ba	300	300	>10000	2000	<10	<10
Be	<2	2	<2	<2	2	<2
Bi	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50
Co	<5	<5	7	15	200	<5
Cr	200	100	200	100	50	150
Cu	150	70	15	300	>10000	200
Ga	<10	<10	<10	10	20	<10
Ge	<20	<20	<20	<20	<20	<20
La	<20	<20	<20	<20	<20	<20
Mn	100	500	700	500	5000	150
Mo	70	200	30	30	50	<2
Nb	<20	20	<20	20	30	<20
Ni	<5	7	10	15	7	5
Pb	20	150	<10	<10	<10	<10
Sb	200	300	150	300	200	150
Sc	<10	<10	<10	10	<10	<10
Sn	<10	<10	<10	<10	70	<10
Sr	150	<100	200	<100	<100	<100
Ti	2000	2000	2000	3000	300	1500
V	30	50	20	70	15	10
W	<50	50	70	70	200	<50
Y	<10	<10	<10	<10	<10	<10
Zn	<200	300	200	<200	<200	<200
Zr	70	30	50	70	20	50

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

Addendum D

J. H. C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ]

JUL 12 1984

Section I General Indexing

① Name(s) of Property or Area: LITTLE ANTELOPE SUMMIT, Northern White Pine Range					② Country: White Pine County	③ State or Province: NV	
					④ USGS Quad.: Illipah 15'	⑤ File or Gore No.: White Pine Range	
⑥ Latitude: 39°23'N	⑦ Longitude: 115°25'W	⑧ AMS Sheet: Ely	Township: 18N	Range: 58E	Section: 27, 34	⑨ Examined by: JDSell	⑩ Date: 10/28/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Hose, R.K. et al., 1976. Geol. White Pine Co.: NV Bur. Bull. 85.				
Verbal: D.P.Wheeler, Jr. (1983) and NLAS-series (JDS) Addendum D.				
Asarco ERS by GJStathis, 9/25/80.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [ ] Post Producer
- [ ] Producer
- [x] Mineral Deposit
- [ ] Prospect
- [ ]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [x] Jasperoid

⑯ Production

Commodity	Tons	Grade
None		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes 3
Approx Total Footage 500' each?

⑲ Excavations Minor

⑳ [x] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold potential

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Shale, ss, jasperoid Minor:

㉖ Age of Host Rocks: Devonian or Mississippian

㉗ Nature of Exposures: Good, with shale slumps.

㉘ Alteration: Bleaching of shales, local jasperoid development in limestones.

㉙ Total Extent: Half mile sampled

㉚ Structure: N-S anticline, 7 miles long.

㉛ Ore Occurrence: FeOx in shales and jasperoids

㉜ Age of Mineralization: K-early Tertiary

㉝ Conclusions & Recommendations: Barium enhanced jasperoid of interest but no other suggestions for target zone. Drill holes in area did not encounter better values.

(For additional space use extra sheets)

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

Sample Descriptions

Nevada Little Antelope Summit, NLAS-Series
S Center Sec. 27, N½ Sec. 34, T18N, R58E
White Pine County, NV
Collected 10/28/83 by JDSell with DPWheeler, Jr.

NLAS-1. Jasperoid, probably replacing Chainman Shale but may include some Joana Limestone at base. Grey, massive to crinkly, some breccia texture, minor pink-red coloration, few reddish FeOx zones. Barite noted in jasperoid vein to west, but not in this outcrop sample.*

NLAS-2. Jasperoid replacement of limestone breccia and some near karst-like texture material, white, grey, black, pink, with reddish FeOx, abundant seams of barite, some late calcite.*

NLAS-3. Jasperoid, grey-brown to pink, silicified limestone, and barren Joana Limestone, northern rotary hole chip sample. Perhaps 100 feet into Joana Limestone sequence.*

NLAS-4. Chainman Shale, dark black, sooty, some sanded texture, eastern rotary hole chip sample.* 0.04 opt Ag (fire).

*Sample fire assayed at <0.005 opt Au and <0.01 opt Ag.

UMONT MINING, INC.

2028 KENSINGTON AVENUE
SALT LAKE CITY, UTAH 84108

November 26, 1983

Mr. James D. Sell, Manager
Exploration Department - SW United States Division
ASARCO Incorporated
P. O. Box 5747
Tucson, Arizona 85703

Re: White Pine Mining District, Nevada - Geochem Results

Dear Jim:

Enclosed is a zerox copy of the geochem results of Samples 20 - 23, inclusive.

Sample 20 * is a rock chip sample that I collected 500 yards NE of the Highway 50 maintenance station. We were both sampling jasperoid in the top of the Joana Limestone and the base of White Pine (Chainman) slate. You sampled the same zone and called it LAS Little Antelope Summit sample.

Sample 21 is a rock chip sample of Joana? Limestone jasperoid near the south end of the most northerly hill NW of the north end of Ridgey.

Sample 22 and 23 are both rock chip samples of the jasperoid at the base of the Joana Limestone about 300 yards west of the Hidden Treasure Mine on Treasure Hill. I went over the same jasperoid outcrop for each sample. (Samples 22 and 23 are not splits of one sample.) I do not consider silver anomalous in these two samples; so crossed them out.

I shall look forward to seeing your analytical results of Hole 14 jasperoid and of samples 20 and 21, above.

Our work was done by Rocky Mountain Geochemical and considering all the samples run recently (23), I have no reason to suspect their results. Rocky Mountain always knows that I have checks on them, or anyone else, and that I come back to them if there is a question.

Regarding the jasperoid of Hole 14, please remember that it is positioned at the top of the Joana Limestone or above the top in the White Pine Shale 0 - 500 feet. The enclosed samples 22 and 23, on the other hand, are taken from the bottom of the Joana Limestone and within 300 yards of the Hidden Treasure silver mine at the north end of Treasure Hill. Samples 22 and 23 could be salted by human activities related to the silver deposits of Treasure Hill.

* Equivalent to NLAS-1

Yours very truly,

Dooley P. Wheeler Jr.

Dooley P. Wheeler, Jr.
Vice President and General Manager

RECEIVED
NOV 2 3 1983
S. W. U. S. EXPL. DIV.

ROCKY MOUNTAIN GEOCHEMICAL CORP.
1323 W. 7900 SOUTH • WEST JORDAN, UTAH 84084 • PHONE: (801) 255-3558
WEST JORDAN OFFICE

Certificate of Analysis

RMGC Numbers:
Local Job No.: 83-53-30
Foreign Job No.:
Invoice No.: 107461

Date: November 23, 1983

Client: Umont Mining. Inc.
2028 Kensington Avenue
Salt Lake City, Utah 84108

Attn: Dooley P. Wheeler, Jr.

Client Order No.: None

Report On: 4 Rock Samples

Submitted by: Dooley P. Wheeler, Jr.

Date Received: 11/1/83

Analysis: Gold Fire Assay, Silver, Arsenic, Antimony, Copper, Lead and Zinc, Mercury, and Manganese.

Analytical Methods: Arsenic determined colormetrically. Gold determined by fire assay. Remaining elements determined by atomic absorption.

Remarks:

cc: enc
file
BGT/cl

Soil	-10	0.2	14	0.4	#8 Soil	40	35	120	29	770
Rock	-10	-0.1	13	1.5	#8 Rock	40	5	135	14	560
Soil	-10	0.3	17	2.3	#9 Soil	75	15	160	52	0.1
Rock	-10	-0.1	8.8	0.3	#9 Rock	40	15	135	9	695
0 Soil	-10	0.2	17	1.9	#10 Soil	75	70	150	87	0.1
0 Rock	-10	-0.1	8.2	0.8	#10 Rock	40	15	130	11	610
1 Soil	-10	0.3	10	1.1	#11 Soil	40	25	130	35	585
1 Rock	-10	0.1	12	0.7	#11 Rock	45	15	150	7	595
2 Gabbro	-10	-0.1	9.6	1.2	#12	70	25	205	17	0.1
3 Soil Or	-10	0.7	20	4.3	#13 Soil	35	35	200	29	830
3 Rock Or	-10	0.5	18	4.2	#13 Rock	50	20	550	30	875
4 Gabbro Vein in	-10	-0.1	17	1.5	#14	25	10	240	14	0.20%
5 Vein in Gabbro	-10	2.3	12	19	#15	150	0.38%	800	250	3.60%
6 Or Hornfels	-10	-0.1	24	1.5	#16	55	25	135	56	680
7 Tv bx pipe Mn+Fe stain	-10	0.3	45	7.1	#17	165	60	235	1.1ppm	0.56%
8 Ocm Mn+Fe Stain	-10	1.4	50	19	#18	175	170	385	405	0.28%
9 Vein-Rhomb	-10	87	225	0.082%	#19	0.32%	0.14%	280	230	0.33%

Sample No.	oz/ton ppb Gold	ppm Silver	ppm (Hydride) Arsenic	ppm (Hydride) Antimony	ppm Copper	ppm Lead	ppm Zinc	ppb Mercury	ppm Mangan
#20 Antimony Summit	-.10	-0.1	125	1.1	165	-10	35	30	90
#21 Ridge Jasper	-.10	0.1	185	16	40	-10	155	1.6 ppm	130
#22 Rose Mt, Tv. Hill	-.10	0.3	90	2.8	20	-10	55	315	110
#23 " " "	-.10	0.4	50	2.5	25	20	40	330	80

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 322
December 20, 1983
SHIPMENT NO. FOUR
NLAS-1 THRU 4

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 2 Rock Chips and 2 Rotary Cuttings

		FIRE ASSAY		
ITEM	SAMPLE NO.	Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NLAS-1	<.005	<.01	94.8
2	NLAS-2	<.005	<.01	86.9
3	NLAS-3	<.005	<.01	79.8
4	NLAS-4	<.005	.04	75.6

RECEIVED
DEC 27 1983
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 322
PAGE 2

ITEM NO.	SAMPLE NO.
1	NLAS-1
2	NLAS-2
3	NLAS-3
4	NLAS-4

ITEM	1	2	3	4
ELEMENT				
Fe	1.5%	.5%	1%	3%
Ca	.1%	2%	3%	.07%
Mg	.05%	.05%	.2%	.7%
Ag	<1	<1	<1	<1
As	<500	<500	<500	<500
B	<10	<10	15	150
Ba	5000	>10000	1500	1500
Be	<2	<2	<2	<2
Bi	<10	<10	<10	<10
Cd	<50	<50	<50	<50
Co	<5	<5	<5	<5
Cr	300	200	70	200
Cu	2	2	3	200
Ga	<10	<10	<10	<10
Ge	<20	<20	<20	<20
La	<20	<20	<20	70
Mn	70	30	15	30
Mo	<2	<2	<2	15
Nb	<20	<20	<20	<20
Ni	7	15	7	150
Pb	<10	<10	<10	15
Sb	<100	<100	<100	<100
Sc	<10	<10	<10	10
Sn	<10	<10	<10	<10
Sr	150	300	<100	300
Ti	500	150	1500	5000
V	20	<10	50	200
W	<50	<50	<50	<50
Y	<10	<10	<10	30
Zn	<200	<200	<200	<200
Zr	20	<20	20	200

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

Addendum E
J.H.C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] ~~JUL 12 1984~~

Section I General Indexing

① Name(s) of Property or Area: NORTH RIDGEY ZONE East Pancake Range						② Country: White Pine County	③ State or Province: NV
						④ USGS Quad.: Green Springs 15'	⑤ File or Gore No.: Pancake Range
⑥ Latitude: 39°14'N	⑦ Longitude: 115°38'W	⑧ AMS Sheet: Ely	Township: 16N	Range: 56E	Section: 26	⑨ Examined by: JDSell	⑩ Date: 10/28/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
NNR-Series, geochemistry (JDS). Addendum E				
Also see GJStathis ERS on Northern Pancake Range 10/4/80.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Recon.

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [x] Jasperoids

⑯ Production

Commodity	Tons	Grade
None		

⑰ Reserves
- [ ] Measured
- [ ] Estimated

Commodity	Tons	Grade
None		

⑱ Num. Drill Holes: Few
Approx Total Footage: Unknown

⑲ Excavations: Few

⑳ [x] Spectro. Analysis Attached

㉑ [x] Assays Attached

㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Joana Limestone Minor:

㉖ Age of Host Rocks: Mississippian

㉗ Nature of Exposures: Bold outcrops

㉘ Alteration: Jasperoid development along structures.

㉙ Total Extent: Regional?

㉚ Structure: North trending cutting ranges.

㉛ Ore Occurrence: Unknown

㉜ Age of Mineralization: K-early Tertiary

㉝ Conclusions & Recommendations: Jasperoid environment in favorable units. Continued reconnaissance for possible Carlin-Taylor type mineralization.

(For additional space use extra sheets)

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

Sample Descriptions

Nevada North Ridgey, NNR-Series
NW¼ Sec. 26, T16N, R56E
White Pine County, NV
Collected 10/28/83 by JDSell with DPWheeler, Jr.

NNR-1. Jasperoid replacement of Joana Limestone, red and black FeOx in massive to fine crystalline, white-grey-reddish, few quartz crystals in vugs and along fractures, brecciated, few seams of late calcite and some weakly silicified limestone clasts. <0.005 opt Au and <0.01 opt Ag (fire assay).

UMONT MINING, INC.

2028 KENSINGTON AVENUE
SALT LAKE CITY, UTAH 84108

November 26, 1983

Mr. James D. Sell, Manager
Exploration Department - SW United States Division
ASARCO Incorporated
P. O. Box 5747
Tucson, Arizona 85703

Re: White Pine Mining District, Nevada - Geochem Results

Dear Jim:

Enclosed is a zerox copy of the geochem results of Samples 20 - 23, inclusive.

Sample 20 is a rock chip sample that I collected 500 yards NE of the Highway 50 maintenance station. We were both sampling jasperoid in the top of the Joana Limestone and the base of White Pine (Chainman) slate. You sampled the same zone and called it LAS Little Antelope Summit sample.

Sample 21 * is a rock chip sample of Joana? Limestone jasperoid near the south end of the most northerly hill NW of the north end of Ridgey.

Sample 22 and 23 are both rock chip samples of the jasperoid at the base of the Joana Limestone about 300 yards west of the Hidden Treasure Mine on Treasure Hill. I went over the same jasperoid outcrop for each sample. (Samples 22 and 23 are not splits of one sample.) I do not consider silver anomalous in these two samples; so crossed them out.

I shall look forward to seeing your analytical results of Hole 14 jasperoid and of samples 20 and 21, above.

Our work was done by Rocky Mountain Geochemical and considering all the samples run recently (23), I have no reason to suspect their results. Rocky Mountain always knows that I have checks on them, or anyone else, and that I come back to them if there is a question.

Regarding the jasperoid of Hole 14, please remember that it is positioned at the top of the Joana Limestone or above the top in the White Pine Shale 0 - 500 feet. The enclosed samples 22 and 23, on the other hand, are taken from the bottom of the Joana Limestone and within 300 yards of the Hidden Treasure silver mine at the north end of Treasure Hill. Samples 22 and 23 could be salted by human activities related to the silver deposits of Treasure Hill.

* Equivalent to NNR-1

Yours very truly,

Dooley P. Wheeler Jr.

Dooley P. Wheeler, Jr.
Vice President and General Manager

RECEIVED
NOV 28 1983
S. W. U. S. EXPL. DIV.

ROCKY MOUNTAIN GEOCHEMICAL CORP.
1323 W. 7900 SOUTH • WEST JORDAN, UTAH 84084 • PHONE: (801) 255-3558
WEST JORDAN OFFICE

Certificate of Analysis

RMGC Numbers:
Local Job No.: 83-53-30
Foreign Job No.:
Invoice No.: 107461

Date: November 23, 1983

Client: Umont Mining. Inc.
2028 Kensington Avenue
Salt Lake City, Utah 84108

Attn: Dooley P. Wheeler, Jr.

Client Order No.: None

Report On: 4 Rock Samples

Submitted by: Dooley P. Wheeler, Jr.

Date Received: 11/1/83

Analysis: Gold Fire Assay, Silver, Arsenic, Antimony, Copper, Lead and Zinc, Mercury, and Manganese.

Analytical Methods: Arsenic determined colormetrically. Gold determined by fire assay. Remaining elements determined by atomic absorption.

Remarks:

cc: enc
file
BGT/cl

Soil	-10	0.2	14	0.4	#8 Soil	40	35	120	29	770
Rock	-10	-0.1	13	1.5	#8 Rock	40	5	135	14	560
Soil	-10	0.3	17	2.3	#9 Soil	75	15	160	52	0.1
Rock	-10	-0.1	8.8	0.3	#9 Rock	40	15	135	9	695
0 Soil	-10	0.2	17	1.9	#10 Soil	75	70	150	87	0.1
0 Rock	-10	-0.1	8.2	0.8	#10 Rock	40	15	130	11	610
1 Soil	-10	0.3	10	1.1	#11 Soil	40	25	130	35	585
1 Rock	-10	0.1	12	0.7	#11 Rock	45	15	150	7	595
2 Gabbro	-10	-0.1	9.6	1.2	#12	70	25	205	17	0.1
3 Soil Or	-10	0.7	20	4.3	#13 Soil	35	35	200	29	830
3 Rock Or	-10	0.5	18	4.2	#13 Rock	50	20	550	30	875
4 Gabbro Vein in	-10	-0.1	17	1.5	#14	25	10	240	14	0.20%
5 Vein in Gabbro	-10	2.3	12	19	#15	150	0.38%	800	250	3.60%
6 Or Hornfels	-10	-0.1	24	1.5	#16	55	25	135	56	680
7 Tv box pipe Mn+Fe stain	-10	0.3	45	7.1	#17	165	60	235	1.1ppm	0.56%
8 Ocm Mn+Fe Stain	-10	1.4	50	19	#18	175	170	385	405	0.28%
9 Vein-Rounded	-10	87	225	0.082%	#19	0.32%	0.14%	280	230	0.33%

Sample No.	oz/ton ppb Gold	ppm Silver	ppm (Hydride) Arsenic	ppm (Hydride) Antimony	ppm Copper	ppm Lead	ppm Zinc	ppb Mercury	ppm Mangan
#20 Ridge Summit Jasperoid	-.10	-0.1	125	1.1	165	-10	35	30	90
#21 Ridge Jasp.	-.10	0.1	185	16	40	-10	155	1.6 ppm	130
#22 Rose Mt, Tr. Hill	-.10	0.3	90	2.8	20	-10	55	315	110
#23 " " "	-.10	0.4	50	2.5	25	20	40	330	80

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 323
December 20, 1983
SHIPMENT NO. FIVE
NNR-1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 1 Rock Chip Sample

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NNR-1	<.005	<.01	88.4

RECEIVED
DEC 27 1983
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 323
PAGE 2

ITEM NO. SAMPLE NO.
1 = NNR-1

ITEM 1

ELEMENT	
Fe	1.5%
Ca	.2%
Mg	.07%
Ag	<1
As	<500
B	<10
Ba	3000
Be	<2
Bi	<10
Cd	<50
Co	<5
Cr	300
Cu	10
Ga	<10
Ge	<20
La	50
Mn	50
Mo	<2
Nb	<20
Ni	15
Pb	<10
Sb	<100
Sc	<10
Sn	<10
Sr	1000
Ti	1500
V	70
W	<50
Y	15
Zn	<200
Zr	20

Addendum F

J. H. C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] JUL 12 1984

Section I General Indexing

① Name(s) of Property or Area: JERRITT CANYON MINE, Freeport Gold Company					② Country: Elko Co.	③ State or Province: NV	
					④ USGS Quad.	⑤ File or Gore No.	
⑥ Latitude: 41°23'N	⑦ Longitude: 115°59'W	⑧ AMS Sheet: Wells	Township: 40N	Range: 53E	Section: 1,2, 11,12	⑨ Examined by: JDSell	⑩ Date: 10/21/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/21/84

⑬ References

Author	Date	Title	Publications	Vol. No.
NJC-Series geochemistry (JDS)	Addendum F.			

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Operating Property

⑮
- [ ] Post Producer
- [x] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes _____ Approx Total Footage _____

⑲ Excavations

⑳ [x] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Hg

㉔ Ore Minerals-Major: Micron gold Minor:

㉕ Host Rocks-Major: Hanson Creek Minor:

㉖ Age of Host Rocks: Ordovician

㉗ Nature of Exposures: In open-pit mine

㉘ Alteration: Jasperoid

㉙ Total Extent: Pods along structures

㉚ Structure: Mainly N-S and NE trend

㉛ Ore Occurrence: Micron gold in carbonaceous units

㉜ Age of Mineralization: ?

㉝ Conclusions & Recommendations: Sample was dead in all aspects except gold content and crackly texture (favorable) of jasperoid.

(For additional space use extra sheets)

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

Sample Descriptions

Nevada Jerritt Canyon, NJC-Series
Freeport's Jerritt Canyon Gold Mine
Section 34, T41N, R53E
Elko County, NV
Collected 10/21/83 by JDSell with GBED tour.

NJC-1. Jasperoid, white to various grades of grey, fine crinkly textured with abundant quartz crystals in vugs and on slips, some late Fe-clays on some fractures and on breccia textured vugs. Within zone with realgar and reported higher grade gold. Hanson Creek Formation.
Fire assay of 0.02 opt Au and <0.01 opt Ag.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 325
December 20, 1983
SHIPMENT NO. SEVEN
NJC-1
JAMES D. SELL

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 1 Rock Chip Sample

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NJC-1	.020	<.01	94.7

RECEIVED
DEC 27 1983
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 325
PAGE 2

ITEM NO. SAMPLE NO.
1 = NJC-1

ITEM 1

ELEMENT	
Fe	.5%
Ca	.15%
Mg	.05%
Ag	<1
As	<500
B	<10
Ba	20
Be	<2
Bi	<10
Cd	<50
Co	<5
Cr	300
Cu	15
Ga	<10
Ge	<20
La	<20
Mn	70
Mo	<2
Nb	<20
Ni	7
Pb	10
Sb	<100
Sc	<10
Sn	<10
Sr	100
Ti	100
V	<10
W	<50
Y	<10
Zn	<200
Zr	<20

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

~~File~~ ER File

J. H. C.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] JUN 15 1984

Section I General Indexing

① Name(s) of Property or Area: WOOD HILLS					② Country: Elko County	③ State or Province: NV	
					④ USGS Quad.: Moor Summit 7½'	⑤ File or Gore No.	
⑥ Latitude: 41°05'N	⑦ Longitude: 114°47'W	⑧ AMS Sheet: Wells	Township: 37N	Range: 63-64E	Section: 7,24	⑨ Examined by: JDSell	⑩ Date: 10/24-25/83
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/18/84

⑬ References

Author	Date	Title	Publications	Vol. No.
R.L.Erickson, et al., 1966, Geochem Recon., USGS Bull. 1198-E.				
C.H.Thorman, 1970, Metamorphosed & Nonmetamorphosed Paleozoic, GSA, v. 81, No. 8, p. 2417-2448.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Continued

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Unknown		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Unknown		

⑱ Num. Drill Holes 10-15
Approx Total Footage 1500?

⑲ Excavations: Number of shafts

⑳ [x] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Silver

㉔ Ore Minerals-Major: Silver-bearing galena & sulfosalts Minor:

㉕ Host Rocks-Major: Dolomites & Quartzites Minor:

㉖ Age of Host Rocks: Devonian

㉗ Nature of Exposures: Good, minor soil-brush cover.

㉘ Alteration: Bleaching, addition & moving of dolomite-calcite.

㉙ Total Extent: Unknown

㉚ Structure: Apparent minor vein structures (northerly).

㉛ Ore Occurrence: Along minor structures.

㉜ Age of Mineralization: Postmetamorphism

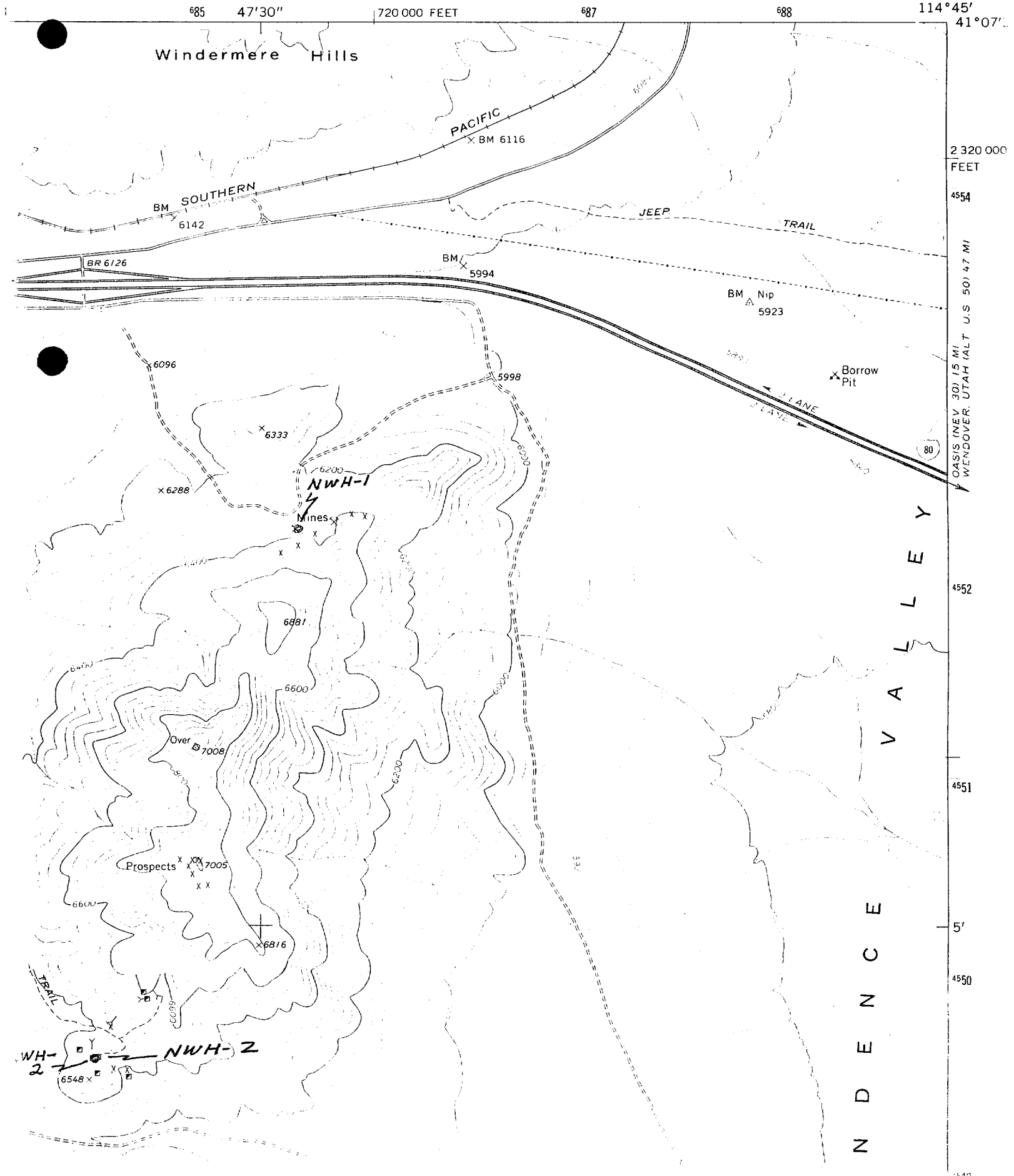
㉝ Conclusions & Recommendations: Continued recon in area controlled mainly by Southern Pacific land grants and several large ranch-real estate groups. Few patented and assessment work claims.

(For additional space use extra sheets)

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

ATTACHMENT A

MOOR SUMMIT QUADRANGLE
NEVADA—ELKO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



ATTACHMENT B

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 320
December 20, 1983
SHIPMENT NO. TWO
NWH-1 AND NWH-2

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 2 Rock Chip Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)	SiO2 (%)
1	NWH-1	<.005	<.01	1.0
2	NWH-2	<.005	16.44	75.1

RECEIVED
DEC 27 1983
S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 320
November 18, 1983
SHIPMENT NO. TWO
NWH-1 AND NWH-2

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 2 Rock Chip Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

William L. Lehmbeck
Manager 11/18/83

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 320
PAGE 2

ITEM NO. SAMPLE NO.
1 = NWH-1
2 = NWH-2

ITEM	1	2
ELEMENT		
Fe	.05%	.2%
Ca	>20%	3%
Mg	.7%	1%
Ag	<1	700
As	<500	<500
B	<10	<10
Ba	70	1500
Be	<2	<2
Bi	<10	10
Cd	<50	<50
Co	<5	<5
Cr	<10	150
Cu	<2	10000
Ga	<10	<10
Ge	<20	<20
La	<20	<20
Mn	<10	30
Mo	<2	<2
Nb	<20	<20
Ni	<5	<5
Pb	<10	3000
Sb	<100	7000
Sc	<10	<10
Sn	<10	15
Sr	<100	<100
Ti	30	20
V	<10	70
W	<50	<50
Y	<10	<10
Zn	<200	<200
Zr	<20	<20

Sample Descriptions

Nevada Wood Hills, NWH Series
Moor Summit 7½' Topo Quad
Elko County, NV
JDSell (10/24-25/1983)

NWH-1. In rock quarry at 41°06'N, 114°47'W. (Protracted Sec. 7, T37N, R64E (AMS sheet)). Light medium grey, medium crystalline dolomite with 10-30% of 1/16"-1/4" renticulated white calcite veinlets as stockwork and linear zones. Trace of fine, thin, cream-colored dolomite veins and crystals overprint on all (especially calcite). Devonian Guilmette Formation.

NWH-2. In area of mine workings at 41°04½'N, 114°48'W. (Protracted Sec. 24, T37N, R63E) (AMS sheet). In area of "Goldquest, Inc." claim block of MP and JB claims. Probably more than ten rotary wagon drill holes along roads to mine workings. Sample of ore pile, with azurite and malachite in fine crystalline quartzite units with some interstitial quartz crystals in vugs. Trace of black and yellow mineral products (silver, lead, antimony according to spec values). In basal sandstone subunit of metamorphosed equivalent of Devonian Simonson Dolomite.

~~JHC~~ - ER

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [x] Submittal

Section I General Indexing

① Name(s) of Property or Area: Hel-Roc Silver Prospect, Whitcomb Hill Area, Pima Mining District						② Country: Pima Co.	③ State or Province: AZ
						④ USGS Quad: Twin Buttes 7½'	⑤ File or Gore No.
⑥ Latitude: 31°58'	⑦ Longitude: 111°06'	⑧ AMS Sheet: Nogales	Township: 17S	Range: 12E	Section: 11	⑨ Examined by: GJStathis	⑩ Date: 5/1/84
						⑪ Office: SWED Tucson	⑫ Field Days: ½

Section II Sources of Information

Date Typed 5/10/84

⑬ References

Author	Date	Title	Publications	Vol. No.
a) July 1983 & Jan. 1984 Reports by Victor V. Livingston on the Hel-Roc Silver Property.				
b) Waller, Harold E., Jr., 1960, The Geology of the Paymaster & Olivette Mining Areas, Pima Co., AZ: U. of Ariz. MS Thesis. (Continued on p. 2)				

Section III Appraisal

J. H. C.

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No interest

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]

Possible silica flux
- [x]
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [x] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade

JUN 15 1984

⑰ Reserves
- [ ] Measured
- [x] Estimated

Commodity	Tons	Grade
	11,000 tons (Martin shaft area)	
	12 oz Ag & 0.035 oz Au	

⑱ Num. Drill Holes 42
Approx Total Footage 3400

⑲ Excavations many shallow; two inclined (Cont.p.2)

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Ag, Au, Pb, Zn, Cu

㉔ Ore Minerals-Major: Galena, freibergite, chalcopyrite, and sphalerite. (Cont. p. 2)

㉕ Host Rocks-Major: Arkose, arkosic-quartzite Minor: Andesite, grd. congl.

㉖ Age of Host Rocks: Sedimentary rks = Cretaceous, Andesite = Cret., Grd = L. Tertiary?

㉗ Nature of Exposures: Fair to good. Low relief, thin gravel cover throughout the region.

㉘ Alteration: Weak to strong silicification & sericitization accompanied by brecciation appears to be related to the (Cont.) ㉙ Total Extent

㉚ Structure: Bedding is N45°W & 75°SW dip, fissure vein structures N10°W-N10°E/vert. to 30°W dips & N55-85°W/50-70°N dips. Post-Laramide, San Xavier thrust, through-like (cont)

㉛ Ore Occurrence: Confined to narrow (2"-2' wide) at fissure qtz vein intersections.

㉜ Age of Mineralization: Laramide

㉝ Conclusions & Recommendations: 1. Fissure vein at property, narrow, strike length <40' as determined by surface drilling & down dip extension limited by San Xavier thrust.

2. Sampling by Hel-Roc should (verbal communication V. V. Livingston) 0.01 or less oz/ton gold & 0.75 or less oz/ton silver from the "quartzites" outcropping in the mine area. The "quartzites" were sampled and analyzed for possible silica flux by Mr. Livingston. In addition to low gold-silver values, the "quartzites" ran high in alumina (15% Al_2O_3) and high in CaO. (continued)

(For additional space use extra sheets)

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

13. References

c) Manuel N. Mayuga, 1942, The geology and Ore Deposits of the Helmet Peak Area, U. of Ariz., Ph.D. thesis.

d) John R. Cooper, 1960, Some Geologic Features of the Pima Mining District; Pima Co., AZ: USGS Bull. 1112-C.

19. Excavations

shafts, e.g. Whitcomb 400'? on 52° inclined (caved), Martin 200' on 42-60° incline (148' level open).

24. Ore Minerals-Minor

Bornite & chalcocite.

28. Alteration

margins of, and the sole of, the regional, postmineral, San Xavier thrust which underlies, at shallow depth, the Lower Tertiary-Cretaceous rocks in the area. Diseminated pyrite accompanies the alteration and causes strong, locallized, shallow, I.P. anomalies.

30. Structure

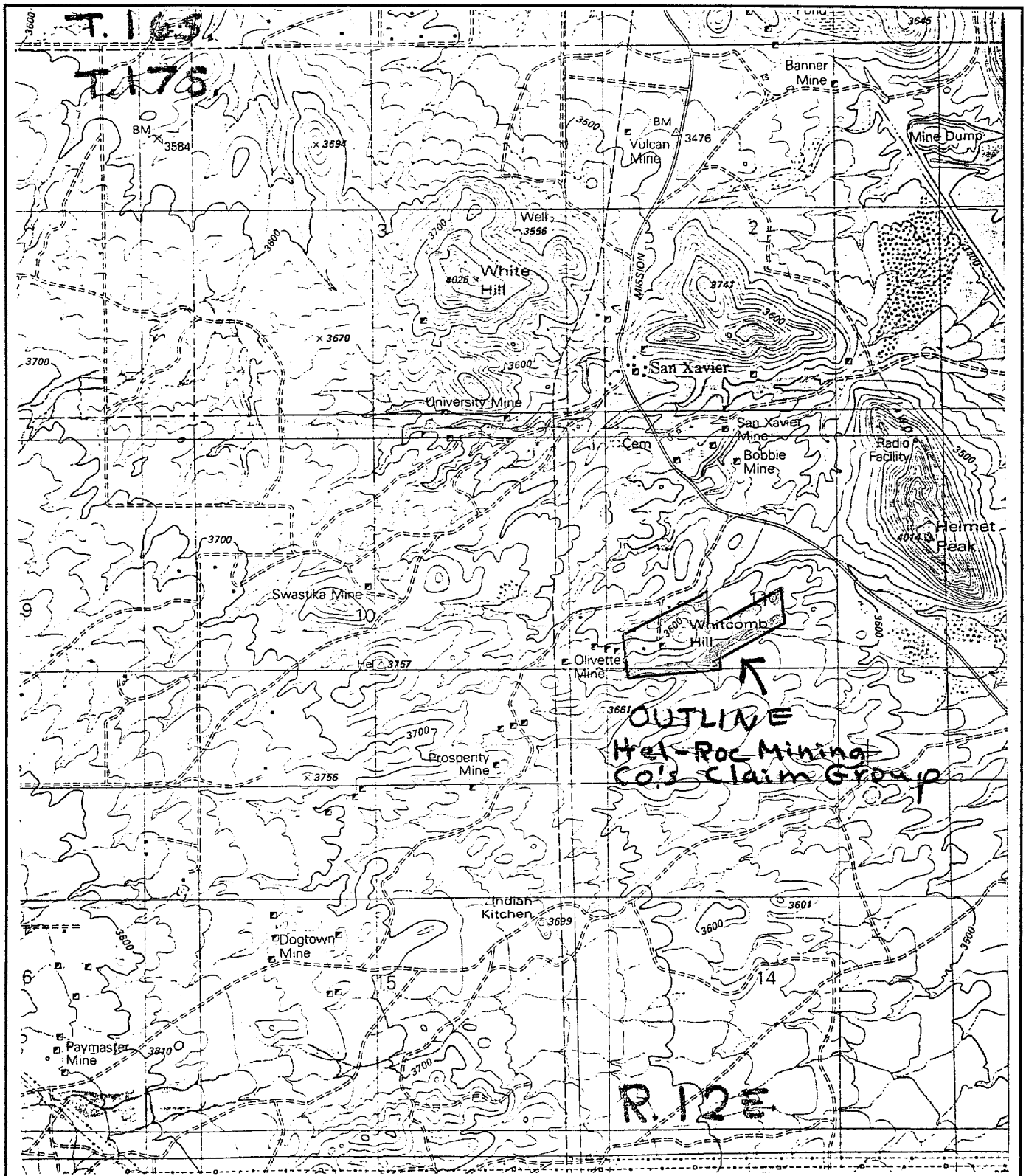
plunging north-northeast, underlies the area.

33. Conclusions & Recommendations

This is due to the fact that the iron stained quartzite is actually an arkose with a high altered feldspar content. We noted this makeup of the quartzites in outcrop examination of the prospect.

3. The deal to acquire additional mining claims (50 or so) held by ANAMAX to the north and west has yet to be consumated.

It is concluded that both the Ag-Au quartz vein mineralization potential and sedimentary rock, silica flux potential are of no interest to Asarco.



Base: USGS 7½' Twin Buttes topog. quad.

ASARCO INCORPORATED

area: Whitcomb Hill	data by	state: Arizona	township-range	revisions—date
		county: Pima	map number	PLATE 1
title: Location Map-HEL-ROC Prospect	drawn by: G.J.S.	2000' 0 2000' 4000'		
mining district: Pima	date: May 1984	contour interval: 20ft.		

Russell Dragoni ~~[illegible]~~ - ER
Box 804, Angels Camp, CA

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [x] Property Submittal

Section I General Indexing

① Name(s) of Property or Area: DRAGONE PROSPECT, Murphys-San Domingo Creek Area, Murphys Mining District						② Country: Calaveras Co	③ State or Province: Calif.
						④ USGS Quad.: Murphys & Calaveritas 7½'	⑤ File or Gore No.
⑥ Latitude: 38°09'	⑦ Longitude: 120°29'	⑧ AMS Sheet: Sacramento	Township: 3N	Range: 13E	Section: 1	⑨ Examined by: GJStathis	⑩ Date: 4/9/84
						⑪ Office: SWED Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 5/10/84

⑬ References

Author	Date	Title	Publications	Vol. No.

J. H. C.
JUN 15 1984

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [x] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No interest

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ]
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
<400? tons, <0.2 oz/T Au		

⑰ Reserves
[ ] Measured [ ] Estimated

Commodity	Tons	Grade
None		

⑱ Num. Drill Holes: None
Approx Total Footage:

⑲ Excavations: 3 adits, see Plate 2

⑳ [ ] Spectro. Analysis Attached
㉑ [x] Assays Attached
㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au, Pb, Ag

㉔ Ore Minerals-Major: Free gold, galena Minor:

㉕ Host Rocks-Major: Carbonaceous slate (Calaveras Fm.) Minor:

㉖ Age of Host Rocks: Carboniferous to Permian

㉗ Nature of Exposures: Fair to poor. Heavy vegetation

㉘ Alteration: Sericitization of the slates, some graphite, weak ankerite & mariposite locally near quartz veins & veinlets

㉙ Total Extent: Restricted to immediate vicinity of quartz vein-veinlet zone.

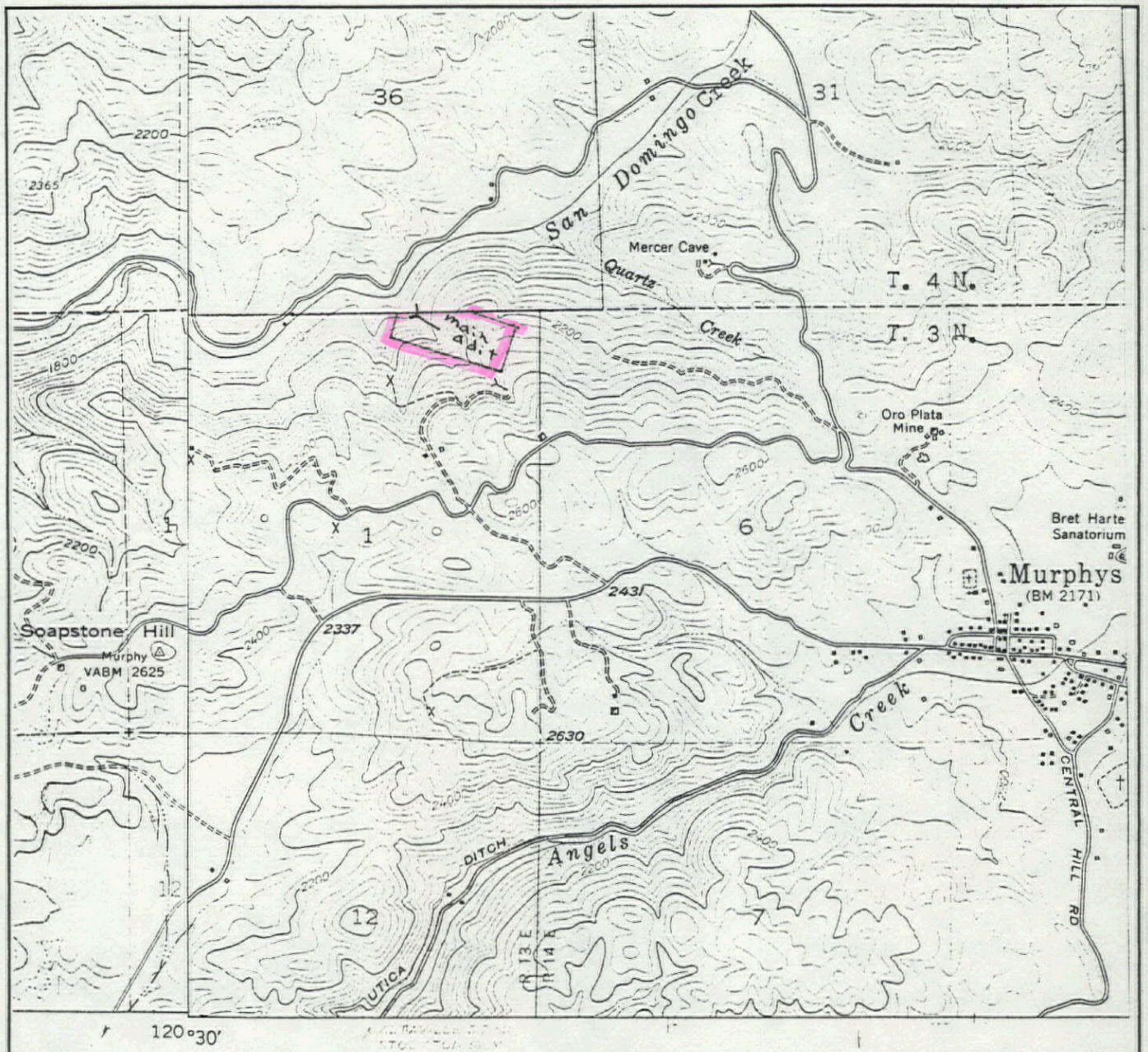
㉚ Structure: Sediments N80°W, 70°N dip. Qtz vein zone parallel to bedding.

㉛ Ore Occurrence: Confined to qtz vein-veinlet (stringer) zone. Gold mineralization follows galena in qtz veins. No galena mineralization in wall rocks.

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: 1. Qtz vein-veinlet zone averages 18-24" wide. 2. Gold mineralization occurs in qtz vein-veinlets & is associated with visible galena. 3. Best galena mineralization occurs in upper adit level & no galena noted in lower adit level. Only traces of galena on main adit level. 4. Max. qtz vein zone is 4-5' wide & is lens-like. Width does not reach a strike length of 20' or more underground. 5. Qtz. stringer zones (vein splits) do not persist for any significant length into the carbonaceous slate wall rocks of Calaveras Fm. 6. Au-Ag fire assay results collected 4/9/84 are low. Only significant Au-As values were from dump grab of upper adit. 7. It is concluded that the prospect is of no interest to Asarco because of the low gold-silver values & extremely restricted tonnage potential.

(For additional space use extra sheets)

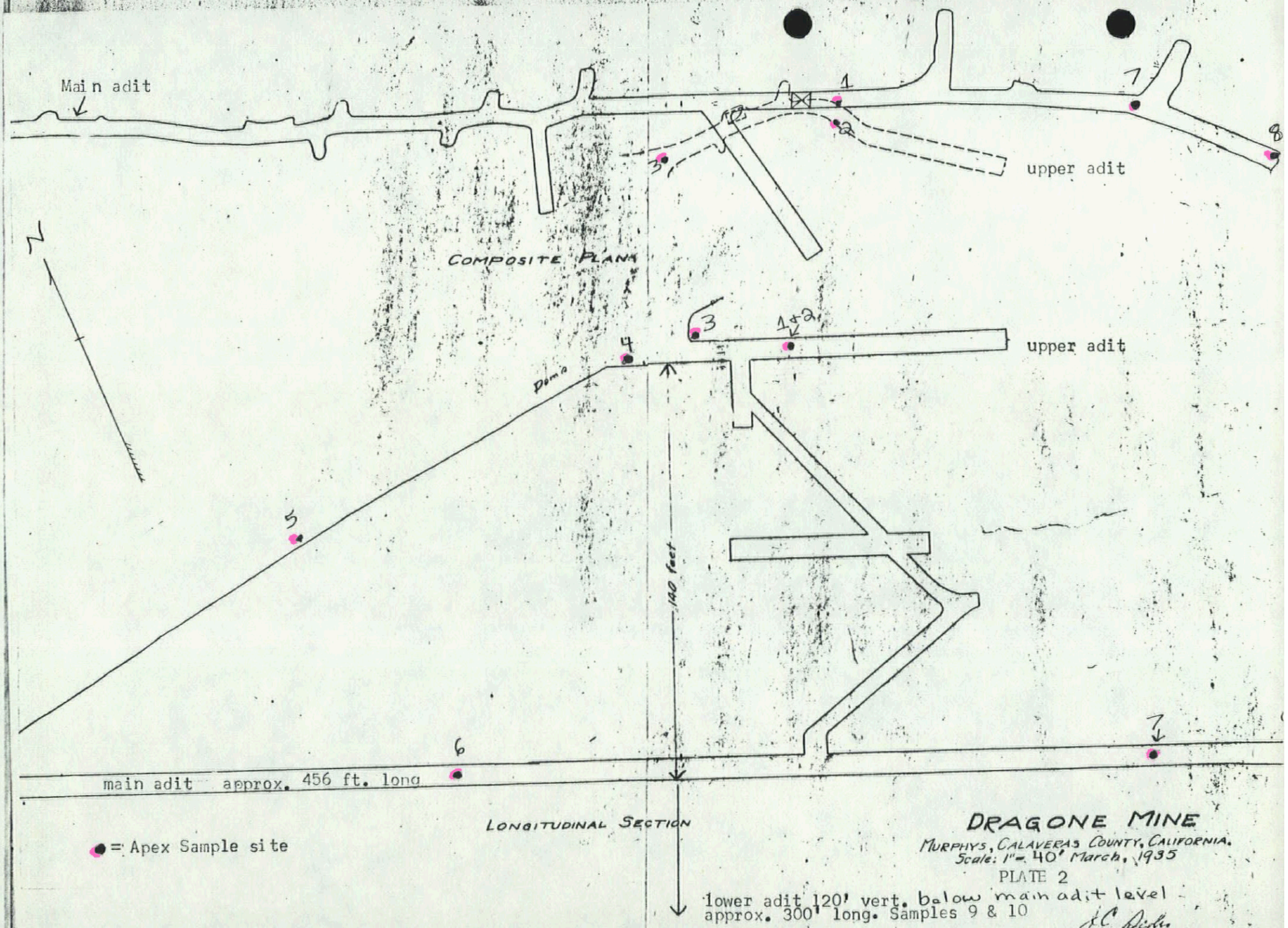


outline of Dragone patented lode mining claim

Base: 7½' USGS Murphys & Calaveritas Topographic Quads.

ASARCO INCORPORATED

area: Murphys - San Domingo Creek	data by	state: California	township-range	revisions-date
		county: Calaveras	map number	PLATE 1
title: Location Map-Dragone Prospect	drawn by: GJS	2000 0 2000 4000ft.		
mining district: Murphys	date: April 1984	contour interval: 40 ft.		


Main adit
1
2
3
7
8
upper adit
N
COMPOSITE PLANA
3
1+2
4
upper adit
Dump
5
140 feet
6
7
main adit approx. 456 ft. long
LONGITUDINAL SECTION
● = Apex Sample site
DRAGONE MINE
MURPHYS, CALAVERAS COUNTY, CALIFORNIA.
Scale: 1" = 40' March, 1935
PLATE 2
lower adit 120' vert. below main adit level
approx. 300' long. Samples 9 & 10

SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 354
April 24, 1984
JAMES D. SELL
APEX-1 THRU APEX-12

ASARCO INCORPORATED
Attn: Mr. George J. Stathis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Pb (ppm)
1	APEX-1	.005	<.01	5.
2	APEX-2	.015	<.01	85.
3	APEX-3	.020	.08	210.
4	APEX-4	.595	2.99	1900.
5	APEX-5	.080	.24	95.
6	APEX-6	.010	<.01	15.
7	APEX-7	<.005	<.01	10.
8	APEX-8	<.005	<.01	15.
9	APEX-9	.025	<.01	15.
10	APEX-10	.010	.01	5.
11	APEX-11	.015	<.01	10.
12	APEX-12	<.005	<.01	5.

SAMPLE NO.	DESCRIPTION
Apex-1	Upper adit, hw, 18" wide stringer zone (2",4",6-8" qtz. vnlts.)within carbonaceous slate of Calaveras fm.,2-3%py,tr. galena,min. ankerite.
Apex-2	Upper adit, main vein, 10"wide, 65°N dip, dense bull qtz., -1%py., tr. galena, ankerite? in cavities.
Apex-3	Upper adit, portal area, qtz. vein zone 5' wide, includes 1½'-2' Calaveras fm. w.r., locally sericitized, -½%py, bull qtz, locally rose,narrows to east.
Apex-4	Dump grab, higraded qtz. vn. material, abund. galena locally, tr. sphal.,
Apex-5	Shallow trench, halfway between upper and main adit level. 4-5'wide qtz. vein zone/1-1½' w.r. material,3% disem. leach. py.,ank. in vugs,w.r. =ser.
Apex-6	Main adit, 4'x8' long qtz lens, bull qtz, tr. py?, lens narrows to 6"eastward.
Apex-7	Main adit, 3½'wide vein zone, 2'of white, suggary qtz,locally botryoidal, 1½'qtz. stringers, talc alt. in w. r. plus massive graphite locally.
Apex-8	Main adit, vein zone 3½' wide, 3-5% dissem. py. locally, av. -2%.
Apex-9	Lower adit, dump grab, higraded qtz. vn. material, 2%+ oxid. py.
Apex-10	Lower adit, adit face, 2' wide qtz vn., 1-2% py., carbonaceous schist w.r. (Calaveras Fm.)/graphite locally.
Apex-11	Lower adit, 2'wide qtz vein 110' east of portal,sampled back, vuggy qtz/ thin ankerite coatings. Some carb. w. r. inclusions/1-2% fine py.
Apex-12	35' long adit, loc. approx. 400' N-NW of lower adit. 2'wide vein-stringer zone. Massive bull qtz, no. sulf.

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Tucson, Arizona 85703
(602) 622-4836

ITEM	SAMPLE NUMBER	Zn (ppm)	Cu (ppm)	As (ppm)
1	APEX-1	45.	35.	200.
2	APEX-2	25.	10.	120.
3	APEX-3	25.	10.	50.
4	APEX-4	235.	10.	50.
5	APEX-5	60.	10.	90.
6	APEX-6	10.	5.	20.
7	APEX-7	10.	5.	40.
8	APEX-8	10.	5.	30.
9	APEX-9	20.	20.	140.
10	APEX-10	20.	20.	40.
11	APEX-11	20.	10.	70.
12	APEX-12	10.	5.	190.

Samples collected April 9, 1984 by G. J. Stathis

cc: Asarco Incorporated
Attn.: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

cc: Asarco Incorporated
Attn.: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

REGISTERED ASSAYER
9425
WILLIAM L. LEHMBECK
Arizona U.S.A.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 334
February 24, 1984
84-CASH M-1

ASARCO INCORPORATED
Attn: Mr. George J. Stathis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 4 Rock Chip Samples, collected by Bob Schmauder for Mr. Dragone

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	84-CASH M-1	.015	<.01	20.	85.	40.
2	84-CASH M-2	.105	.48	70.	20.	<5.
3	84-CASH M-3	.900	5.12	<5.	14000.	<5.
4	84-CASH M-4	.020	<.01	95.	60.	5.

SAMPLE NUMBER	DESCRIPTION (Stathis)
CASH M-1	Qtz. vn./mariposite & sericite, 6% py., tr. ccp?
M-2	Qtz. vn., fract., 3%dissem. py., some carb. w.r. material.
M-3	Qtz. vn., dense, vuggy, 2% galena.
M-4	Qtz. vn./large py. masses & some gray sulfide material(marc.?).

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5047
Tucson, Arizona 85703
Attn.: Mr. H.G. Kreis

REGISTERED ASSAYER CERTIFICATE No. 9425 WILLIAM L. LEHMBECK DATE SIGNED 2-24-84 Arizona U.S.A.

William L. Lehmbeck
Manager

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☒ Review of Owner's Info.

Section I General Indexing

① Name(s) of Property or Area	② Country	③ State or Province
IRISH HILL MINE AREA	USA	CA
	④ USGS Quad. Irish Hill	⑤ File or Gore No. Amador County

⑥ Latitude	⑦ Longitude	⑧ AMS Sheet	Township	Range	Section	⑨ Examined by	⑩ Date
38°23'30"	120°57'00"	Sacramento	6N	9E	2,3, 11,12	HGKreis	Mar. 1984
						⑪ Office SWED - Tucson	⑫ Field Days

Section II Sources of Information

Date Typed April 17, 1984

⑬ References

Author	Date	Title	Publications	Vol. No.
Gold Fields Mining Co.,	1983,	Mapping & sampling information with Howard Estate, the property owner(s).		

J. H. C.

JUN 15 1984

Section III Appraisal

⑭ Recommendations

- ☐ Action Now
- ☐ Too Low Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ No further work

⑮

- ☐ Post Producer
- ☐ Producer
- ☒ Mineral Deposit
- ☐ Prospect
- ☐ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
Minor copper and some stibnite		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
None		

⑱ Num. Drill Holes 5

Approx Total Footage 4000'±

⑲ Excavations Not known

⑳ ☐ Spectro. Analysis Attached ㉑ ☒ Assays Attached (Summary) ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Cu-Zn-Ag-Sb in old Irish Hill Mine; area evaluated for Au

㉔ Ore Minerals-Major: Chalcopyrite Minor:

㉕ Host Rocks-Major: Black slate & metavolcanics Minor:

㉖ Age of Host Rocks: Jurassic

㉗ Nature of Exposures: Apparently very few outcrops (<5%) in soil covered area.

㉘ Alteration: Sericite & pyrite in elongate lenses; see attached description and map.

㉙ Total Extent: See attached summary and map.

㉚ Structure: Strongly developed, northwesterly stiking control of foliation and alteration-mineralization.

㉛ Ore Occurrence: Cu-Zn belt type elongate lenses of sericite, quartz-pyrite and chert-pyrite. See attached descriptions, maps, and geochem values of mineralization.

㉜ Age of Mineralization: Jurassic-Cretaceous

㉝ Conclusions & Recommendations: In late 1983 three Gold Fields' geologists mapped & sampled the Irish Hill Mine area to evaluate its gold potential. A summary of Gold Fields' mapping and sampling is presented herein (property owners have Gold Fields' data). This mapping & sampling failed to locate anomalous gold mineralization, & there is no indication of a significant gold potential. The Irish Hill Mine area is of no further interest at this time.

(For additional space use extra sheets)

ALTERATION AND ORE OCCURRENCE

Description of Mineralization-Alteration

A-B (map loc.) Zone: 1000' wide zone of sericitic quartz porphyry schist. At least 1500' long and open to the northwest.

Irish Hill Mine Zone: 50' to 200' wide and 5000' long zone of sericite quartz porphyry schist.

D-E Zone: 50' wide and 5000' long zone of pyritic chert and silicified pyritic volcanics.

F-G-H Zone: 150' wide and 3000' long zone of pyritic chert and silicified pyritic volcanics.

Irish Hill Mine: In 1976 Interpace, now called North American Refractories, drilled 5 angle holes at the Irish Hill Mine. The drill holes intercepted the "vein" mineralization at vertical depths of 235' to 544'. All the intercepts of mineralization were <35' thick, and the best intercept was 35' at 0.59% Cu, 1.21% Zn, 0.03 oz. Au, 0.65 oz. Ag, and 0.01% Pb.

Summary of Rock Geochem Values

Ag: 14.5 ppm in 6818 is highest value; there are a few samples with 1-3 ppm, and all the rest are <0.5 ppm.

Au: 0.13 ppm in 8146 is highest value, 8148 is 0.09 ppm, and all the rest are ≤0.05 ppm.

Cu: All Cu <300 ppm.

Mo: All Mo < 5 ppm.

Zn: All Zn <135 ppm.

Hg: 5 samples in 1000-3000 ppb range; half the remainder are 200 to 1000 ppb and the remainder are less than 200 ppb.

ROCK GEOCHEM VALUES

Map Identification	Sample No.	Au ppm	Ag ppm	Cu ppm	Mo ppm	Zn ppm	Hg ppb	Remarks
	3413	---	---	---	---	---	---	Couldn't find results.
	6808	.05	1.2	45	2	40	810	Jg(?)3A, isolated outcrop located at intersection of two roads.
	7504	<.02	4.1	120	<1	105	250	2 ppb Au.
	7505	<.02	<.3	125	<1	135	170	8 ppb Au.
	7506	<.02	<.3	150	<1	100	220	12 ppb Au.
	8149	.05	<.3	25	<1	60	410	
	8162	<.02	.3	30	<1	7	840	
Line A	6803-6807	Highest: 0.03 All Others: <0.02	.3	40	1	20	300	Across 1000' width of sericite schist.
Line B	6811-6818	Highest: 0.04	.4*	50-300	1	13-580	Highs: 2320 2290 1470 Others: 200-800	*Excludes 6818 with 14.5 ppm Ag.
Area C	8157-8160	≤.002	<.3	100	<1	20	70	
	3943-3946	<.02	.3	100	--	--	--	
Area D	8144-8146	<.02; .13	≤.3	20	<1	60	≤140	
Area E	3951-3952	≤.02	<.3	110	<1	70	600	
Area F	8150-8152	<.002	<.3	95	<1	20	200	
Area G	8153-8156	<.02	≤.3	100	<1	8	100	
Area H	6799-6800	<.02	≤.3	90	<1	12	500	

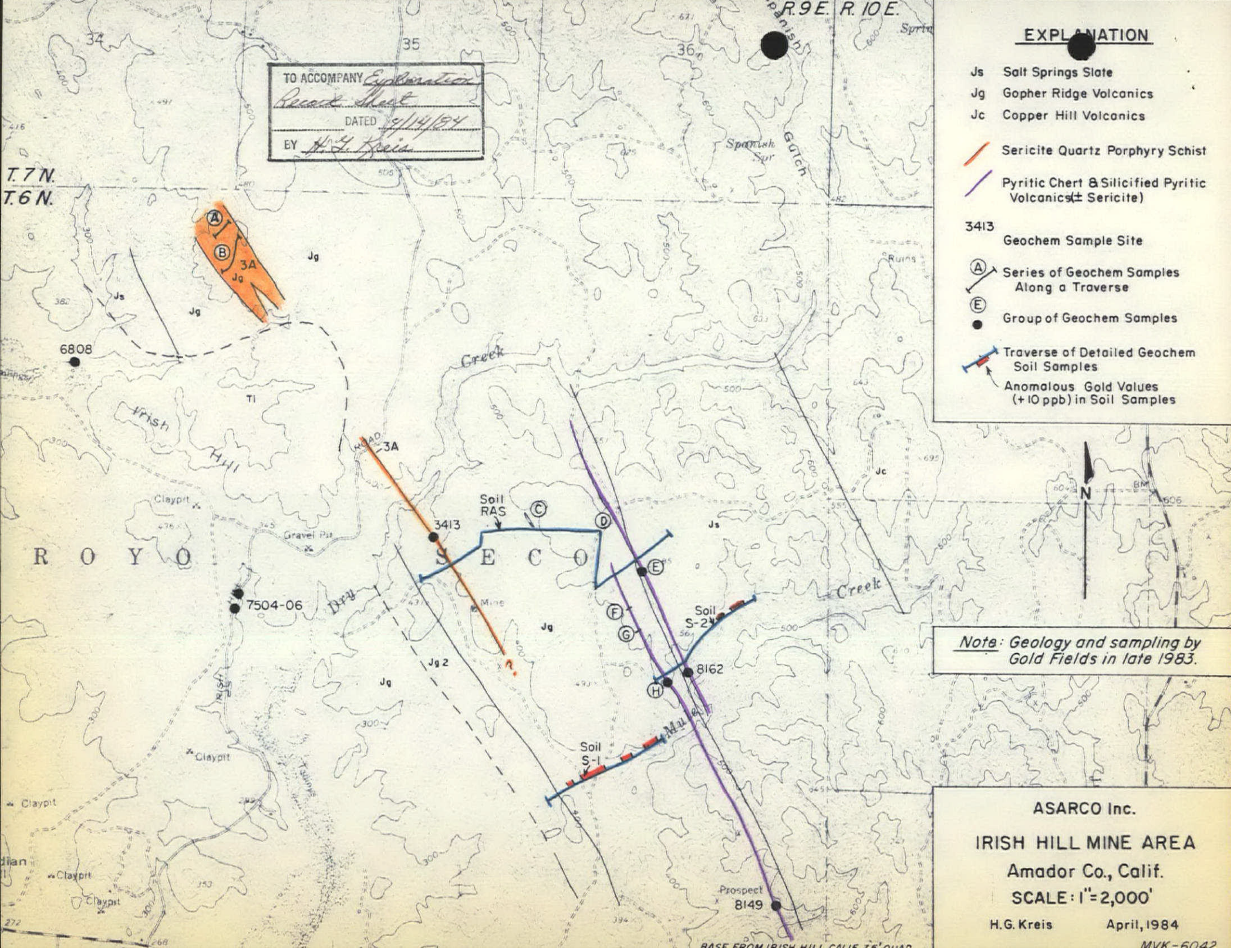
Soil Sample Lines

Line RAS: 5 samples in 10-49 ppb Au range, and several of these are just below mineralization shown as "C" on attached map. Apparently samples were taken in 25' and 50' intervals. The sample values do not indicate any soil covered mineralization.

Line S-1: 2 samples in ≥100 ppb Au range, 3 samples in 50-99 ppb range, 20 samples in 10-49 ppb range, and the rest are <10 ppb Au. Areas of anomalous Au in soil is shown on the attached map. Suspect that some of this anomalous Au may be terrace gravel accumulations. Apparently there are good outcrop exposures above the anomalous Au on the east, and spotty outcrops above the remaining anomalous Au values. Does not appear to warrant further investigation.

Line S-2: One sample ≥100 ppb Au and 9 in 10-49 ppb range. The remainder are <10 ppb. More work is not justified.

Remark: Of all the soil samples the three highest Au values were 120, 125, and 140 ppb.


TO ACCOMPANY Exploration Recap Sheet
DATED 4/14/84
BY H.G. Kreis
R.9E. R.10E.
T.7N.
T.6N.
34
35
36
Spanish Gulch
Spanish Spr
Ruins
Jg
Js
Jc
Ti
Jg2
3A
6808
7504-06
3413
Soil RAS
Soil S-2
Soil S-1
8162
Prospect 8149
Irish Hill
Dry Creek
Mu Creek
Claypit
Gravel Pit
Mine
ROYO SECO
N
EXPLANATION
Js Salt Springs Slate
Jg Gopher Ridge Volcanics
Jc Copper Hill Volcanics
Sericite Quartz Porphyry Schist
Pyritic Chert & Silicified Pyritic Volcanics (± Sericite)
3413 Geochem Sample Site
Series of Geochem Samples Along a Traverse
Group of Geochem Samples
Traverse of Detailed Geochem Soil Samples
Anomalous Gold Values (+10 ppb) in Soil Samples
Note: Geology and sampling by Gold Fields in late 1983.
ASARCO Inc.
IRISH HILL MINE AREA
Amador Co., Calif.
SCALE: 1"=2,000'
H.G. Kreis
April, 1984
MVK-6042

~~ATTC~~ - ER FILE

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH J.H.C. ☒ ASARCO FILE ☒ Submittal from Paul Eimon & Grover Heinrichs.

MAR 28 1984

Section I General Indexing

① Name(s) of Property or Area: WORLD'S FAIR MINE Argentor Claims/Platoro/(Cole,Lichty,Eimon)					② Country: Santa Cruz Co.	③ State or Province: AZ	
					④ USGS Quad.: Harshaw 7½'	⑤ File or Gore No.	
⑥ Latitude: 31°29'N	⑦ Longitude: 110°44.5'	⑧ AMS Sheet: Nogales	Township: 22S	Range: 16E	Section: NW/4 32	⑨ Examined by: FRKoutz	⑩ Date: 3/84
						⑪ Office: SWED Tucson	⑫ Field Days: --

Section II Sources of Information

Date Typed 3/26/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Argentor-W.F. Syndicate:	1984	Submittal data - World's Fair Mine + Maps		
	1915-1973	Asarco file data (including FTG 1973 samples for dissem Ag)		
Graybeal,F.T.	1973	Sunnyside Area Report + FRK Trench Drilling Files.		

Section III Appraisal

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ☒ Too Small
- ☒ Ownership Problem
- ☐ Access Problem
- ☒ Potential at depth.

⑮
- ☒ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☐ Prospect
- ☒ Promotion

☒ Ls. replac. min. @ depth (+4000')
- ☒ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly
- ☐

⑯ Production Az. Bur. Mines Bull. 191 (1975)

Commodity	Tons	Grade
Ag/Au	13,000 T	58/.0X opt
Pb		6.6%
Cu		0.7%

⑰ Reserves Several percent Zn not recovered

☐ Measured Commodity	☐ Estimated Tons	Guess-potential Grade
Ag	X,000	20 opt

P.I.E. est.: 30-50,000 Tons produced (??)

⑱ Num. Drill Holes 3(Rotary)
Approx Total Footage 1000-1500'

⑲ Excavations 15,000' old workings

⑳ ☐ Spectro. Analysis Attached ㉑ ☐ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Ag, Pb, Cu, Au, Zn High Sb-As Local Barite

㉔ Ore Minerals-Major: Freibergite Pearcite Galena,CC Minor: cpy, sl, pyrite. Silver Halides

㉕ Host Rocks-Major: Trachyandesite("Db");Chief lithic crystal tuff Minor: Latite flows & dome (NE)

㉖ Age of Host Rocks: 72 m.y. 62-58 m.y. Cretaceous

㉗ Nature of Exposures: Fair outcrop. Only a few of underground workings accessible. Lower levels flooded (note drainage water part of annual Asarco monitoring).

㉘ Alteration: Various clays along fissure veins, relicts of bedded silica tuff (jasperoid) plus local jasperoid in fissures. ± 5% pyrite halo.

㉙ Total Extent: 800' N-S x 600' deep x 1-6' wide (25% stope

㉚ Structure: NE-dipping Cretaceous Volcanics overlapped by northern lip of Chief-Sunnyside diatreme of Graybeal(1973). 1 or 2 N-striking, 50-60'W-dip.fissure veins, local NW veins with 40 NE and 60°SW dip.

㉛ Ore Occurrence: Fissure vein filling-sulfides & sulfosalts w/probably strong supergene enrichment of Ag-Cu. Suggestion ore rakes south toward Asarco property & Chief Diatreme. Mineralization similar to Trench-January-Norton

㉜ Age of Mineralization: Laramide

㉝ Conclusions & Recommendations: Minor potential for additional tonnages (X,000+ max) in old workings w/minor additional potential for new veins of ~5,000 T. FTG (1973) found only few ppm dissem. Ag in "diabase" wall rocks. Some potential for minor tonnages of dissem. Ag in Chief tuffs overlying vein to south and extending onto Asarco-Kerr-McGee ground. Very significant potential for deep (± 4000') limestone replacement-skarn mineralization as encountered in TCH-2/2A but presence of Paleozoic should be tested on NE end of Humboldt-Mendoza group, N. TM Group, or January claim following northerly drill-outs from TCH-2 before deep tests on World's Fair.

(For additional space use extra sheets)

ASARCO Southwestern Exploration Division

March 26, 1984

To: J. D. Sell

From: F. R. Koutz

World's Fair Mine
Argentor Claims
Santa Cruz County, AZ

The World's Fair Mine is a narrow N-S striking, 50-60° west dipping vein system which has produced in excess of 13,000 T of 58 opt Ag, .0X opt Au, 6.6% Pb, 0.7% Cu and minor Zn. The vein is hosted in the WNW-striking, moderately dipping thick basal lava flows of the Cretaceous Trachyandesite of Meadow Valley ("Diabase"). To the north are a series of earlier latitic lava domes and flows. To the south the area is overlapped by the northern lip of the outflow facies of the Chief crystal, lithic lapilli tuff-tuff breccia (xenolithic quartz feldspar porphyry of Graybeal, 1973). A number of ore shoots and spurs from the N-S vein system are controlled by NW to WNW both high and low angle fractures in the trachyandesite--including along flow layering similar to the Trench veins. Ore-grade mineralization was mined over a strike length of 800-1000' and over a vertical range of 600 feet and generally raked to the south.

Platoro Corp. (Thayer Lindsey, Ventures, Ltd.) restaked the area in 1963 and over the next ten or so years cleaned out some of the upper workings above the water table and in the early 1970's drilled 3 rotary holes. The property was optioned from Lindsey in the early 1970's by Lichty, Platoro's President, who teamed up with Cole ($) and Eimon (geologic "expertise"-promotion). These three purchased the claims in 1981 partially on the strength of Asarco's Trench drilling less than a mile to the southeast. Since then work has been mostly preparation of topographic maps, claim boundary surveys, geologic remapping and some geochemical sampling. Lichty and Eimon have stated over the last several years that they were going to clean out the upper workings and long-hole or diamond-drill for new veins or disseminations but this has not been done.

On the recent SEG field trip Paul Eimon offered to let me examine and copy their data packet and maps of World's Fair which have been "open-filed" at Grover Heinrich's office (a partner or consultant to the "World's Fair Syndicate"). This I did for several hours on March 15. A list of this data is attached with pertinent reports and geologic maps (rough colored by FRK) copied as indicated. There was no information on the drill holes and no copy of the Zahony report for the geologic map.

On contacting P. Eimon (Amarillo, 806-353-7486) he said that the drilling didn't hit anything except for one small stringer and did not go deep enough (water problems?) for a deep test of the vein. Lichty has also apparently "lost" the information on the holes (and lots of other negative information). No recent significant underground work has been done besides trying to clean out upper workings by Lichty which caused several cave-ins. The Zahony report was for Pioneer Nuclear last year and can't be released, but Eimon told me Zahony's findings. I suspect it has been the only decent report in the last 10 years as Eimon has a habit of farming out World's Fair and other properties to consultants, summer students, or employees of whatever company (Essex, United Technologies, Chevron, Pioneer) he happens to be working for at the time.

Zahony apparently recommended 4 target areas (shown on map) be tested by 4-5 holes to 500-800 feet and the property be dropped if no encouragement was encountered. Zahony's 4 targets are:

I. Strong alteration and stockwork structures along the SE corner of the Argentor claims;

II. The "Caldera Rim" or fault zone (Chief Tuff/Trachyandesite Contact);

III. A south to SW displaced projection of the World's Fair vein under jasperoid (bedded silica tuff) at the "Caldera Rim";

IV. A north projection of the vein into the latite in an area of heavy clay alteration and silicification that extends onto the Henry Ford claims of Kerr-McGee (Eimon believes that Asarco JV's these claims with Kerr McGee).

These are relatively good targets with the limited knowledge of the local geology that Zahony has but of small tonnage potential. The porous Chief Tuffs do not support major veins such as the Trench or World's Fair (the best vein in the tuff is probably the Humboldt Mine with 1200 T @ 1% Cu, 7% Pb, 2% Zn, and 19 opt Ag). The Chief does however contain major amounts of low grade disseminated-veinlet Cu mineralization on the SW side of the diatreme (TM-8, etc.) where intruded by the quartz feldspar porphyry. Much of the jasperoid around the north and east sides of the diatreme is bedded and does not extend to depth. The "Caldera" (diatreme) structural rim also may be several thousand feet to the south with the Chief Tuff, as at TCH-2, the outflow-tuff ring-"valve head" facies of the diatreme.

The maps and information in our files suggest that mineralization is weak on the southern end of the World's Fair workings. A 1931 Asarco report in our files states that the lowest (5th) level of the World's Fair contains only barren pyrite although a 1928 report lists 10 cuts over 330' averaging 3.2' of 15 opt Ag, 8.7% Pb, 0.86% Cu and .01 opt Au on the 500 (5th?) level. The potential at depth is probably low as World's Fair shows none of the strength of the Trench area veins and the deeper levels lack the strong supergene Ag enrichment (+ 100 opt) common on the upper levels. Fred Graybeal also sampled thè accessible World's Fair workings in 1973 and found only very weak indications of silver dissemination (including veinlets) in the wall rocks.

The latite as mapped by Zahony is not stratigraphically above the trachyandesite. It is thrust (high angle) over the trachyandesite at the main haulage level entrance to the mine and in the bottom of Alum Gulch. The latite is an extrusive lava dome within a package of Cretaceous siliceous volcanics (tuffs, welded tuffs, conglomerates and breccias) probably equivalent to the Hardshell Group. These units would probably make better disseminated mineralization than the Chief Tuffs would but they generally do not support strong veins--as shown in the lower levels of the Trench Mine.

The best potential for the World's Fair area lies at depth for limestone replacement/skarn type mineralization as intersected in TCH-2. High grade mineralization even though confined to narrow structures suggest mineralization at depth as elsewhere around the Chief-Sunnyside diatreme, especially when associated with strong structure. The intersection of NW structure along the January-Norton and Alum Gulch fault zones with the N-S World's Fair vein system and local NE fracturing suggest good potential for mineralization at depth if the Paleozoic is present at reasonable depths. However better targets nearer to known mineralization exist on our January and Norton claims, the NE end of the Humboldt-Mendoza group and on the Orb claims (Thunder Mountain) immediately south of the Argentor Group. If mineralized carbonates are found within the area to 3000' NNE of TCH-2/2A, the Argentor claims can be tested from our adjacent Orb claims 3000-4000' NNW of TCH-2/2A without picking up the Argentor ground.

Paul Eimon has offered several times to lease/option/sell to us the lower portion, say below 3000', of the Argentor Group "as we did with Anaconda at Summitville." I do not think any portion of his ground has any interest to us for a number of years considering our rate of drilling and depth of mineralization in the Trench-Thunder Mountain area. I have let him know we are really not interested. Nevertheless it would not surprise me to see Eimon option to or form a stock company the Argentor claims promoting his epithermal model and Asarco's TCH-2 intercepts. He has been actively encouraging many geologists he meets to stop by Grover Heinrich's and examine the World's Fair and data from other "Commonwealth International" properties.

For the record, besides our exploration files, there are scattered scraps of information in the Trench Unit Mining Dept. files in the basement on World's Fair and in a number of old map tubes around the building. Asarco apparently gave copies of a considerable amount of old file information to Platoro (D. M. Stranahan) on World's Fair and the Trench area mines in the early 1960's. Lichty apparently has much of this information. Asarco purchased the option on the Salvador, Hermosa and Bluff patented claims at Hardshell from Platoro in 1965.

F. R. Koutz

F. R. Koutz

FRK/cg

Consult MVK 5532
(Sunnyside-Trench Area Geology Map, TCH-1 & 2 reports)

F. R. Koutz
15 March 1984

World's Fair Data at Grover Heinrich's

*Items obtained by FRK for Asarco Files

2 Notebooks

Item

1. Testimonial letter on WF to Eimon.
2. 3 July 83 Testimonial letter to Eimon from R. Henley.
* 3. 5/26/82 Progress Report by Eimon, 9 p. (Includes Eimon's ideas of what Asarco drilled at Trench).
* 4. 11/12/81 Progress Report by Eimon, 3 p.
* 5. 11/18/74 Report by Eimon & Ken Jones, 10 p.
* 6. Smelter ore settlements 1905-1925 Selby and El Paso.
7. Reed Welch 16 March 64 Summary of WF shipments (in item 9).
* 8. H. S. Robinson Report March 21, 1964, 3 p.
* 9. W. O'Donnel 10/20/66 Report, 13 p.
* 10. E. Campbell Report 23 March 1968.
11. M. Chaffee 1981 USGS Geochemical Report on Patagonias, J. Geochem. Explor.
* 12. Xerox of Maps 3 to Thayer Lindsey March 1964, 7 p.
13. Simon's USGS Nogales-Lochiel Quad.
14. Berger and Eimon Feb. 1982 SEG Paper: Comparative Models of Epithermal Au-Ag Deposits.
15. Eimon: Explor. for Epithermal Au-Ag Deposits (Taxco, May 17, 1981).
16. Henley & Ellis paper, Geothermal Systems Ancient and Modern, Earth Sci. Rev., V. 19, p. 1-50 (1983).
17. Giles & Nelson: Principal Features of Epithermal Lode Au Deposits (1982).
18. Berger: Geological Attributes of Au-Ag-Base Metal Epithermal Deposits.
19. Buchanan, L., Precious Metal Deposits Associated with Volcanic Environments, Nev. S.S. talk, Jan. 16, 1981.

Note: Items 14-19 have nothing to do with World's Fair except for Eimon's attempt to show that the area is "epithermal".

Maps

Orthophoto 1" = 200'
Topo Map 1" = 200'
* Claim Map on topo 1" = 200'
** Multi-composite of World's Fair by John Rice & P. Eimon - 2 copies colored for structure/geology and for alteration, Feb. 1982/ Rev. 9/83, 1" = 200'.
* Geology Map 1" = 200' by Steve Zahony & P. Eimon, 5/30/82.
* Cross Sections A-D for Zahony Map, Dec. 15, 1983 for Pioneer Petroleum.
Several regional location maps plus R. Lenon "claim" map.
Old tracings of UG workings. We have better in our files.

ASARCO

Southwestern Exploration Division

~~JHC~~
File w/ERS

April 18, 1984

To: J. D. Sell/W. L. Kurtz/Files

From: F. R. Koutz

Discovery History
Gold Fields' Big Chief Deposit
Mesquite District
Imperial County, CA

Wm. Feyerabend, Gold Fields' Mining Corp. geologist at Yuma, AZ mentioned on the recent AGS field trip some early history of Gold Fields' exploration in the Mesquite District. Mr. Feyerabend is in charge of exploration around the Big Chief Deposit in the Chocolate Mountains. Mike Harris (now with Amselco, Denver) was the geologist that got Gold Fields into the district and among the geologists is given credit for the discovery. Harris apparently noted a crude "prospectus" of the district put together by Dick and Anna Singer, local prospectors who had a trailer just south of the deposit, in Gold Fields' Denver files in early 1980. The prospectus was from the mid-1970's and was sent to all major mining companies in the western U.S. (including Asarco). Gold Fields had filed the prospectus with only a few negative comments and made no examination or even answered the Singers. Mr. Harris (British or Canadian) had never been to the area before but was so impressed by the data and by talking to the Singers on the phone that he went to the district and after a few days looking got the property people to work on a lease/option agreement. Mr. Harris was impressed by the amount of data showing anomalous and leach-grade gold and a large poorly-tested covered zone on and east of the Singer's ground held by George and Clarabell Burslem. It seems George was notorious in the district for having "claimposts on wheels" which he floated around periodically with a golf bag-caddy.

Gold Fields very aggressively acquired property, mapped and sampled both surface and underground workings and began drilling with the first hole in ore. Mr. Harris is apparently a believer that most orebodies are in topographic or structural lows and are therefore covered on pediments. Besides the underground work in the Big Chief shaft, Gold Fields resampled Conoco's trenches in the area and came up with much higher grades. The story goes that during crushing and splitting of Conoco samples the locals hired to do the work were poorly supervised and removed much of the coarse gold from the samples.

Mr. Feyerabend said that the reserve was somewhat larger than announced but was definitely <u>not</u> a quarter-billion tons at 0.05 opt Au. A major part of the apparent delay in making development decisions on the property is due to the multilevels of Gold Fields' management that have their fingers in the project.

The Imperial Valley gold property several miles east of Big Chief which had a number of interesting grade drill holes listed in the June 4, 1975 George Cross Newsletter was drilled and test leached by Chester Miller of Rennicks Resources/later Glamis Gold. The leach results were marginal (part of the material was placer-eluvial gold) so Glamis acquired the Picacho gold property, dropping the property east of Big Chief. The George Cross Newsletter information was what brought most other companies (including Conoco) into the district before Gold Fields according to Mr. Feyerabend.

F. R. Koutz

F. R. Koutz

FRK/cg

~~JHC~~ - ER FILE

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [x] LITERATURE SEARCH [x] ASARCO FILE [x] SEG Field Trip

Section I General Indexing

① Name(s) of Property or Area: BIG CHIEF (MESQUITE) GOLD DEPOSIT (Gold Fields Mining Company)					② Country: Imperial Co.	③ State or Province: CA	
					④ USGS Quad.: Quartz Peak 15'	⑤ File or Gore No.	
⑥ Latitude: 33°05'N	⑦ Longitude: 115°00' W	⑧ AMS Sheet: Salton Sea	Township: 13S	Range: 19E	Section: 5	⑨ Examined by: FRKoutz	⑩ Date: 2/25/84
					⑪ Office: SWED Tucson	⑫ Field Days: 2 Hours	

J. H. C.

Section II Sources of Information + numerous rumors

Date Typed 3/20/84

MAR 29 1984

⑬ References

Author	Date	Title	Publications	Vol. No.
Morton,P.K., 1977, Geol. & Min. Resources of Imperial Co., Cal.Div.Min.Geol. Co.Rept.7				
Gold Fields Min. Co., SEG Field Trip Handout & talk by S.Watowich, Project Geologist.				
ASARCO files: Choc. Mtn. Placers, Mesquite & Paymaster (Poorman) Districts, Imperial Co.,CA.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [x] Ownership Problem
- [x] Access Problem
- [x] Too Late

⑮
- [ ] Post Producer
- [ ] Producer
- [x] Mineral Deposit
- [ ] Prospect
- [ ]

mid-Tertiary Detachment?
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [x] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Au - Prob.	several 1000 oz.	placer and
lode + specimens from area.		

⑰ Reserves
[x] Measured [ ] Estimated

Commodity	Tons	Grade
Au	25 m.t.	0.075 opt
(>.02 opt	41.5 m.t.	0.057 opt
cutoff)	200(?) m.t.	>.02-.01

⑱ Num. Drill Holes 600
Approx Total Footage + 130,000'

⑲ Excavations 100' shaft; many pits and trenches; 2390' new decline.

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au (Ag) Regional Cu-U-W? also

㉔ Ore Minerals-Major: Electrum-(High Au) in goethite-pyrite Minor: cpy, sl, gn NiAsS

㉕ Host Rocks-Major: Granite gneisses-schists/Mesozoic gr? Minor: Mafic gneiss & Muscov.schist

㉖ Age of Host Rocks: p€ Chuckwalla Complex Possible Tertiary rhyol. intrusives

㉗ Nature of Exposures: None except in old workings and in surrounding area. Covered by Tertiary & Quaternary conglomerates and alluvium. "Discovery" in Big Chief Shaft (1980)

㉘ Alteration: Minimal. Minor chlorite after mafics, local sericite clay, white to brown calcite > quartz veins.

㉙ Total Extent: Best zone: 3500'NW x 600-1800'NE x 200' thick.

㉚ Structure: Deposit in synformal foliation of brecciated-sheared granite-gneisses, high angle WNW,N-S & other faults-feeders. Possibly assoc. w/thrusts or detachment faults.

㉛ Ore Occurrence: Au in pyrite or goethite after py, in Fx zones, Bx matrix or qtz-calcite veinlets. Higher grade x.g. Au in vertical fissure zones. 67% of Au 1-10μm. 90% of ore oxidized. 90% of sulfide is pyrite, 0.5-2% total sulfide.

㉜ Age of Mineralization: mid-Tertiary, Laramide or p€?

㉝ Conclusions & Recommendations: Information incomplete. Origin enigmatic. Associated with p€ gneiss, thrusts & possible detachment faults (mid-Tertiary) ± Mesozoic (Laramide?) granite and/or mid-Tertiary intrusives. Possible partially melting of p€ gneisses. Brecciation-shearing associated with low angle structues important ore control. Range front fault possibly major localizer of mineralization. Local weak(?) Cu,Zn,Pb,As,Hg, U,Bi?,W? and geophysical anomalies associated with mineralization. Possible grade continuity problems.

(For additional space use extra sheets)

ASARCO

Southwestern Exploration Division

March 20, 1984

To: J. D. Sell

From: F. R. Koutz

Gold Fields' Big Chief Project
Mesquite Mining District
Imperial County, CA

On Feb. 25 as part of the SEG-AIME field trip I visited the Big Chief Deposit of Gold Fields Mining Corp. in the Southern Chocolate Mountains about 30 miles ENE of Brawley, CA. The visit was limited to two hours at dusk and we were restricted by time and the size of the crowd (+100) to 45 minutes of talks and questions then lining up to examine, for a few minutes each, illustrations and a few core samples in a conference trailer. Gold Fields would not give permission to examine or sample their "ore" piles although agreed to let some people examine a "barren" outcrop in poor light along the road. The talks were given by Stan Watowich (ex-AMAX), Project Geologist, Andy Cumaric, metallurgist (thick limey accent) and Shawn Hagerty, a BLM-Geologist (Calif. Desert Conservation Area) mostly assigned to keep track of Gold Fields. A 6-page handout--mostly on drilling-engineering--was included in the guidebook and is attached. I also took 35mm slides of a number of illustrations and core specimens in the trailer of which 15 are appended. Much of the information on the project and area has been pieced together from the rumor mill (which I will try to identify by question marks and parentheses) and from the large number of geologists on the trip who have worked the district or have been (unasked) on the property before. Gold Fields has a number of Pinkertons ± guard dogs on the property to "keep dune buggy types and geologists out of their cyanide metallurgical test pads."

Gold Fields refused to comment on any details of discovery methods, ore controls, structure, alteration, geochemistry or geophysics since other properties in the area are still in the exploration stage. Gold Fields apparently had 40,000 acres staked or optioned in 1982 and has now in excess of 100,000 acres in the region (California only) according to the BLM. Most of Gold Fields Big Chief Deposit is in Sec. 5, T13S, R19E (Map 1) (sections are non-standard) and consists of unpatented lode and placer claims mostly optioned from local prospectors or consortiums in the district, including the Burslems, Singers, Kelley and Miller. (The Singers are apparently receiving $4000/month option payments with $750,000 buy-out + residual NSR.) Gold Fields apparently has 25 other lease agreements but has drilled and dropped a number of low-grade-barren claims with onerous terms. Gold Fields has been actively drilling in 8 or more townships, off and on with 3-6 reverse circulation, several core rigs and a track drill or two. There are over 600 holes around Big Chief.

There is no outcropping ore-grade and width material at Big Chief as much of the deposit is covered with 50-100' of Qal and Tertiary gravels (photo A, C and Map 2). The discovery is apparently due to sampling the Big Chief Shaft (photo B), 100 feet deep with 195 feet of work on the 50 level and 170 feet of work on the 100 level (see Morton, 1977, p. 54) with much of the workings in "ore" (>.02 opt Au). The workings are in a NNW, 80°NE dipping shear zone averaging 6 feet wide in Precambrian Chuckwalla schists and gneiss complexly intruded by f.g. granitic rock (migmatite?, Tertiary or Laramide intrusive?). The zone consists of ramifying quartz, calcite, goethite (partially after pyrite) with native gold--some very coarse and in various California museums. The first few angle holes (see SM-1, 2D, and 3D on photo E) in the vicinity of the Big Chief Shaft cut ore-grade material below a few tens of feet of gravel.

Gold Fields was not the first to extensively examine or drill the district. Conoco (Dick Moores, in exile from the Tucson Mountains) extensively sampled and trenched the area in 1976. Cominco, Amax, Amselco, Duval, and Homestake and several uranium companies did extensive work in the district. Newmont (Jim Guthrie?) geologists could not convince the company to pick up or keep the ground. There are also a dozen or so holes by Placer drilled in 1976 and a number of holes cut the area of Gold Fields' low-grade (.01-.04 opt Au) mineralization which apparently were not deep enough or interesting enough at the time for further work. Asarco is advertized as having extensively sampled the Placer workings SE of Big Chief in the 1960's (apparently B. N. Watson's 1968 work 5 miles SE on the Chocolate Mountain Placers). Apparently although Gold Fields has been rumored to have used airborne geophysical methods (magnetics, radiometric - some rocks have +30ppm U anomaly) or geochemical (As-Hg?) methods to narrow in on Big Chief, parts of the deposit were apparently submitted to them. Being new to the states they were not as tired as others of hearing the Burslems, Singers and other prospectors pound on their door with new assays from partially reputable Los Angeles labs through the porphyry copper, uranium and precious metals rushes of the last 20 years. Several new Gold Fields geologists had also worked the district previously for other companies.

Lithology in the deposit,as explained by Gold Fields, consists of the Precambrian Chuckwalla Formation gneiss-schist complex. The "footwall" rock of the deposit consists of "Mafic Gneiss" - a metamorphosed volcanic unit with a fine-grained dark greenish grey hornblende-rich matrix and 1-3mm feldspars. The specimen we were shown is only weakly foliated and shows weak bleaching and conversion of hornblende to chlorite-biotite away from fractures filled with minor carbonate. Locally this unit contains some magnetite but the specimen shown (photo I) doesn't. Above is Hornblende Biotite Gneiss - the lowest unit in which significant mineralization occurs. The nature of the contact with the underlying mafic gneiss is uncertain and is remored to be either a detachment fault or premetamorphic intrusive contact. Above and apparently transitional is a quartz feldspar Biotite granitic Gneiss. These two units are the major ore hosts and have leucocratic phases, local augen and pegmatoid zones. A Muscovite quartz-feldspar Schist overlies parts of the gneiss and is sometimes mineralized but is not

the consequence of alteration. The "barren" outcrop along the road is a leucocratic Biotite Gneiss with a few augen. The road outcrop is said to contain <<.01 opt Au over any significant width but a few thin seams not recently removed by visiting explorationists do contain .03 or more Au. Apparently there are not large amounts of chlorite or chlorite breccias associated with Big Chief.

Intruding the Mafic Gneiss apparently in the central portion of the deposit is a leucogranite which Watowich feels is anatectic. He did not give a clear indication if the leucogranite is the source of the leucocratic gneisses and numerous pegmatites in the upper part of the deposit or what relationship besides spatial this intrusive has to Au mineralization. Skeptics in the crowd suggested a Laramide or mid-Tertiary intrusive or series of dikes which Watowich wouldn't comment on except to claim that drill chips do not give clear indication of intrusive relations in the upper portion of the deposit. Some, including Paul Morton and others described as "porphyry copper retreads who missed the gold in the district", believe the Au-Cu (U & W) mineralization at Mesquite and in the surrounding districts is strongly related to these Mesozoic or Laramide granites near Precambrian contacts.

To the north of the deposit (Map 2) are Mesozoic or Paleozoic metavolcanics--part of or related to Orocopia Schists (previously considered Precambrian). The Chuckwalla is thrust (Chocolate Mountains Thrust) over the Mesozoic Schists. The contact is silicified and apparently locally contains detectable gold with some malachite. The Mesozoic is much more tectonized and contorted than the Chuckwalla Complex.

Also to the north of the deposit (Map 2) are a series of relatively flat-lying Tertiary Volcanics, mostly andesites, dipping to the south and a number of quartz-eye rhyolite porphyry knobs to the west and north of the deposit. Watowich says there are a number of tight ptygmatic-like folds in the volcanics and they are said to have been locally tectonized. There are some pyroclastics in this sequence. Some in the crowd wondered whether Watowich knew what an ash flow tuff was as apparently ignimbrites are noted to the north and east of the Mesquite District. There are also those that feel that the area is in the root zone of a caldera complex, almost totally eroded. The Imperial County Report (No. 7) by P. Morton (1977) and U. C. Santa Barbara Ph.D. dissertations (1976) by John T. Dillion (Geology of the Chocolate and Cargo Muchacho Mountains) and Crowe, B. M. (1973 or 79) (Cenozoic Volcanic Geology of the S. E. Chocolate Mountains) are apparently required reading for those working the district.

The foliation of the Chuckwalla Formation under Gold Fields deposit was described as saucer-shaped or synformal which shows fairly well on photo E. Foliation on the road outcrop SE of the deposit in "FW" rocks dipped to the north. The rocks within this zone have been fairly well tectonized as shown by the dark breccia symbols in the drill hole geology on this photo. Watowich says these are not really detachment structures but he admits lots of low angle shearing and mylonization (see photo K). Rock

flour was encountered in the metallurgical decline and caused ground support problems. Others say that these broken zones are in the folded and crushed hangingwall block of a Chocolate Mountains detachment.

Watowich suggests some lateral control or feeders to mineralization but suggested we examine the cross sections and grade and thickness contours when questioned for details. Map 2 shows a major range-parallel WNW fault (SW side up?) but whether this fault is part of the same fault as shown between SM-2 and 3 on cross-section photo E is uncertain. Some in the crowd felt that grabens may be an important localizing control for the deposit. Watowich also mentioned a N-S fault zone controlling mineralization but didn't point the fault out. What relationship to the NNW fault in the Big Chief Shaft these other faults have is uncertain. Apparently there are local stockwork fracture zones in the deposit but calcite rather than quartz veinlets are more common. Watowich mentioned that the veinlets are not necessarily preferentially enriched in Au compared to wall rock. Earlier he had said there was no veining in the deposit. He says most core shows significant high angle vertical fracturing.

Watowich would not give the percentage of sulfides in the deposit but estimates from snoopers are 0.5-2%. About 10% of the ore is sulfide (unoxidized). Au is associated with the pyrite or resultant limonite. (Watovitch mentioned there was no specularite and only minor hematite.) 10% of the sulfides are non-pyrite and include in order of abundance chalcopyrite, sphalerite, galena and gersdorffite (NiAsS). Watowich says there is no arsenopyrite, fluorite, kyanite, tourmaline, carbon or organics, no visable significant silicification or alteration clay formation--although there is much muscovite-sericite which they feel is mostly metamorphic. Watowich says chlorite is minor and there is no evidence of chlorite breccia usually associated with detachments-but this might not be expected in a leucocratic rock.

The Au apparently has a high fineness but he wouldn't talk about Ag content. The metallurgist said some Ag might be recovered from unoxidized ores as it was higher there. The sulfide/oxide contact is irregular and sometimes extends to 450-+500' deep and is generally below the present water table (200 feet depth). Apparently much of the subgrade (<.02) material is sulfide below the water table.

Watowich would not comment on geochemistry but his competition mentions Hg and As anomalies in the district. The metallurgist noted that there was some cobalt in the gersdorffite in microprobe analyses. As (100's of ppm) apparently gives a higher and better halo than Hg (tenths of ppm) for the district according to Gold Fields' competition. P. Morton says there has been cinnabar and native(?) amalgam noted in placer operations to the SE of Big Chief. Uranium and tungsten are also found in the district. Others mention that the several stages of brown calcite associated with these deposits are very strontium rich and barite may be present.

Discussion of the drilling, sampling and some metallurgical testing is given on the attached 7 page Gold Fields' guidebook article. The large amount of HQ coring (90%+ average recovery) is because Au grade is definitely lost in certain areas with wet hammer-reverse-circulation drilling. Several +1000 foot holes including one to 1500 feet (pencil lines on photo E) were drilled beneath the deposit with nil gold.

Apparently the reserve of 41.5 m.t. @ .057 opt Au announced in November 1982 included a high grade core or cores of 25 m.t. of .075 opt Au. Some in the crowd had heard from Mountain States that there were 6-8 m.t. of +0.1 opt Au. The metallurgical decline assay map (220' level) showed a central zone with +200 feet of>0.1 opt Au. Watowich would not comment on reserves except to say that, as usual, the tons have gone up and the grade has dropped with more drilling. There is an old 46 or 57 m.t. figure floating around from ex-Gold Fields people now with Amselco as well as a 200 m.t. at a >.02 or >.01 opt Au cutoff for the district.

The Big Chief Deposit appears to be grossly overdrilled. After the first dozen or so holes Gold Fields started on a 280' and then 140' diagonal grid and now are down to 70' spacing for "geostatistical work" around a higher grade portion to be mined early. There are over 550 holes shown on photo D (not up-to-date) and over 600 holes now plus "dozens to hundreds" of others elsewhere in the district. Watowich admits that the deposit was at least 25% overdrilled on 140 foot centers but drill spacing is in the hands of the geostatistical crew. The metallurgical decline (2500' of work) in the heart of the orebody showed excellent correlation with drilling and was not really necessary for sampling but provided valuable geological-rock mechanics information as well as samples for the pilot leach pad.

Andy Cumaric said that initial 4-36" column tests to optimize crushing size and percolation rate showed 96-99% recovery (no time given). Results from their 1983 pilot leach plant were not as high but recovery, cyanide and lime consumption were "industry average." They crushed to <5/8" for their pilot pad and less than 5% was less than 200 mesh so fines were not a problem. 15-20 foot test piles were used. They plan a 15 foot lift design of pads but have considered single use pads. The third major leach test was apparently just completed. They say there is no need for agglomeration but apparently they have farmed out agglomeration test work as of the first of 1984. 67% of the gold is 1-10 micron and is contained within goethite and other iron oxides with "insignificant" silica encapsulation. There is also a good correlation of gold grain size and overall grade. Some screening-upgrading tests on the fines were done but they won't reveal results. There is no problem with carbon and no significant losses of cyanide (beyond "industry average") due to other elements. A few percent of the gold is water soluble but Watowich notes no significant supergene Au enrichment. There may be some problems with grade distribution within the deposit because they intend to do some blending as the leach pads are built. Gold Fields is quite worried about cyanide spray losses and did mention that certain sides of the leach pad were better than others with Au recovery. Gold Fields is apparently ready to go with mining. Permits

are presently being sought but the final decisions on the exact metallurgical scheme have not been finalized.

Shawn Hagerty, BLM-Geologist, presented a short history of the California Desert Conservation Area. Apparently Gold Fields has filed 20 separate plans of operations in the last 3 years but all the permitting has gone smoothly. There have been some conflicts with potential drill sites and required archaeological work but Gold Fields was most happy to cooperate--even buying the impoverished BLM geologist dinner when he had to work overtime without pay on weekends. Water sources are apparently abundant and there will be no problem with supply or pollution.

John Latta, a Newmont geologist working on their Cargo Muchacho drilling, mentioned that O'Keiffe Drilling of Butte has been doing their reverse circulation hammer drilling and average 500-600 feet/day. This cost Newmont $7.14/foot (hourly rate) including bits for 300 foot average depth holes. Gold Fields now likes O'Keiffe so much after a number of previous poorer drillers that Newmont sometimes has trouble getting rigs back. These types of deposits are apparently best drilled absolutely dry (without even foam) and many drillers today do not like the dust (or the heat) so it is sometimes hard to get good crews in the area.

After the field trip discussion of the Mesquite District continued at the AIME meeting. There appears to be two camps concerning the genesis of these types of deposits. One is that they are directly associated with detachment faults as a structurally prepared zone with high angle faults in the footwall feeding and laterally limiting mineralization with some leakage in the hanging--especially in high angle faults and fractures. Associated mid-Tertiary intrusives provide the source of the Au or at least the heat engines for hydrothermal transport.

The other camp insists that detachment or thrust faults are more or less incidental to mineralization and that mineralization is Laramide, possibly with remobilized Precambrian gold. This involves partial melting of host rocks and concentration of gold in quartz-carbonate shear zones. Many of these Au deposits have two mica (peraluminus) granites associated with the district. Mid-Tertiary hot spring remobilization has also been suggested.

I have not worked with these deposits enough to make any decision of the exact genesis--there may even be two types. As you probably realize the detachment fault ideas developed from the metamorphic core-complex and overthrust belt structural geologic mapping that has been going on heavily in the Mohave for the last 6-8 years. In general those doing the mapping and arm-waving are much more interested in plate tectonics than finding hydrocarbons or metals--so these low-angle thrust and/or detachment structures are probably receiving much more economic attention than they deserve. Some may even be angular unconformities with only minor movement along the contact. Nevertheless these low angle faults provide good areas of ground preparation and impermeability which may localize mineralization horizontally, now near present erosion surfaces amenable to open-pit mining. The following facts or features, even if only suspected, appear to be important to the explorationist hunting for low grade Au deposit targets of this type worthy of drill testing:

1. Most of these deposits are hosted in Precambrian (±2-mica) granitic gneiss or schists--with low angle foliation or shearing--often with quartz stringers and/or pegmatites. The area may show migmatites or evidence of partial melting. The gold may or may not be Precambrian. The deposits are probably not related to massive sulfides or greenstone belts.

2. The deposits often have intrusive rocks associated either with stocks or dikes (mafic to rhyolitic) which may be Laramide or mid-Tertiary in age. Some of the better gold properties have mid-Tertiary intrusives. Some of the Laramide or mid-Tertiary igneous rocks may be related to the root zones of caldron complexes.

3. Low angle structures--thrust or detachment with possible associated listric normal faults--are present in the area. The best ones have an undulating fault surface conducive to major breakage. On a local scale high angle shear-fault zones in the footwall and hangingwall are important as feeders or laterally limiting the mineralization. These high angle structures may expose high-grade mineralization that has been previously mined or tested and may provide the source of placers. However much of the gold may be fine-grained so the lack of placers is not a negative factor.

4. The best areas are associated with range-margin, high-angle faults, especially those which existed in pre-Basin and Range time, and are usually on pediments partially covered with Tertiary conglomerates and later alluvium.

5. The deposits generally have relatively low original sulfide and base-metal contents and high Au/Ag ratios. However Cu, Pb, Zn, As, Sb, Bi, W or Hg or other elements may be anomalous in the detectable Au zone but do not necessarily provide a dispersion halo to Au mineralization.

6. Although quartz veinlets may be present, alteration is generally minimal with minor silicification, seritization and chloritization. However some detachments have significant amounts of chlorite breccia--usually in the footwall but also in the hangingwall. Specularite either primary or as an alteration-hydrothermal oxidation product of pyrite or magnetite is often present. Carbonates particularly brown sideritic or manganoan calcites, though late, are relatively common. Barite or other sulfates may be present.

7. All of the easily locatable (outcropping) deposits have probably been well gone over but one should not be discouraged by the lack of significant widths of +0.03 opt Au on the surface. Shallow (±100') air-track drilling in covered areas or subgrade outcrop is being increasingly used in prospecting and is much easier to get permitted by the BLM than backhoe use. All of this is preceded by major property acquisition of favorable environments before significant mapping or sampling has been done. Besides loads of claim stakes and notices in their trucks many exploration geologists now carry standard initial lease-option forms and are quick to sign up claim owners before the nearest notary with front-end payments into the

thousands of dollars right out of their company checkbooks. One geologist (Amselco) even showed me a list of California notaries provided by the company.

8. A large percentage of the region is withdrawn, particularly for military use. In many of these withdrawn areas it is not difficult to get permission to map and sample promising environments. Old trenches and roads on Photo C are north of the Gunnery Range boundary. Many of these areas have been suggested for being opened to mineral entry or lease but apparently without significant new data this will probably not be done. There are numerous petitions in to open up the Chocolate Mountains without much success. The area north of Big Chief and elsewhere on the Gunnery Range has been sampled with locally very encouraging results. A great rush is predicted if and when the area is opened. The BLM geologist at Big Chief suggested that everyone write their Congressmen.

F. R. Koutz

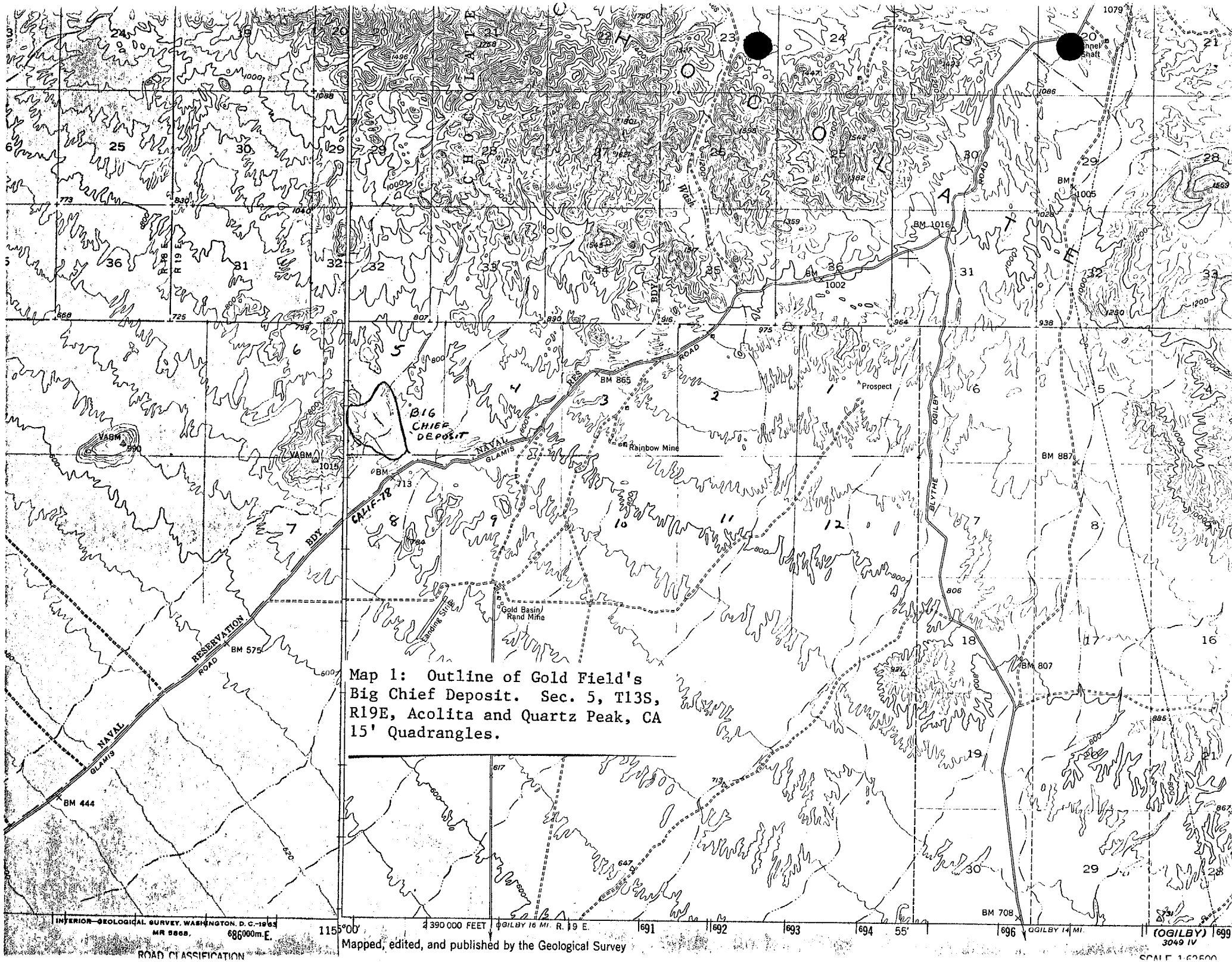
FRK/cg

Attachments: 15 photos (2 color originals made, slides w/FRK)
2 maps
Gold Fields' Handout
ERS

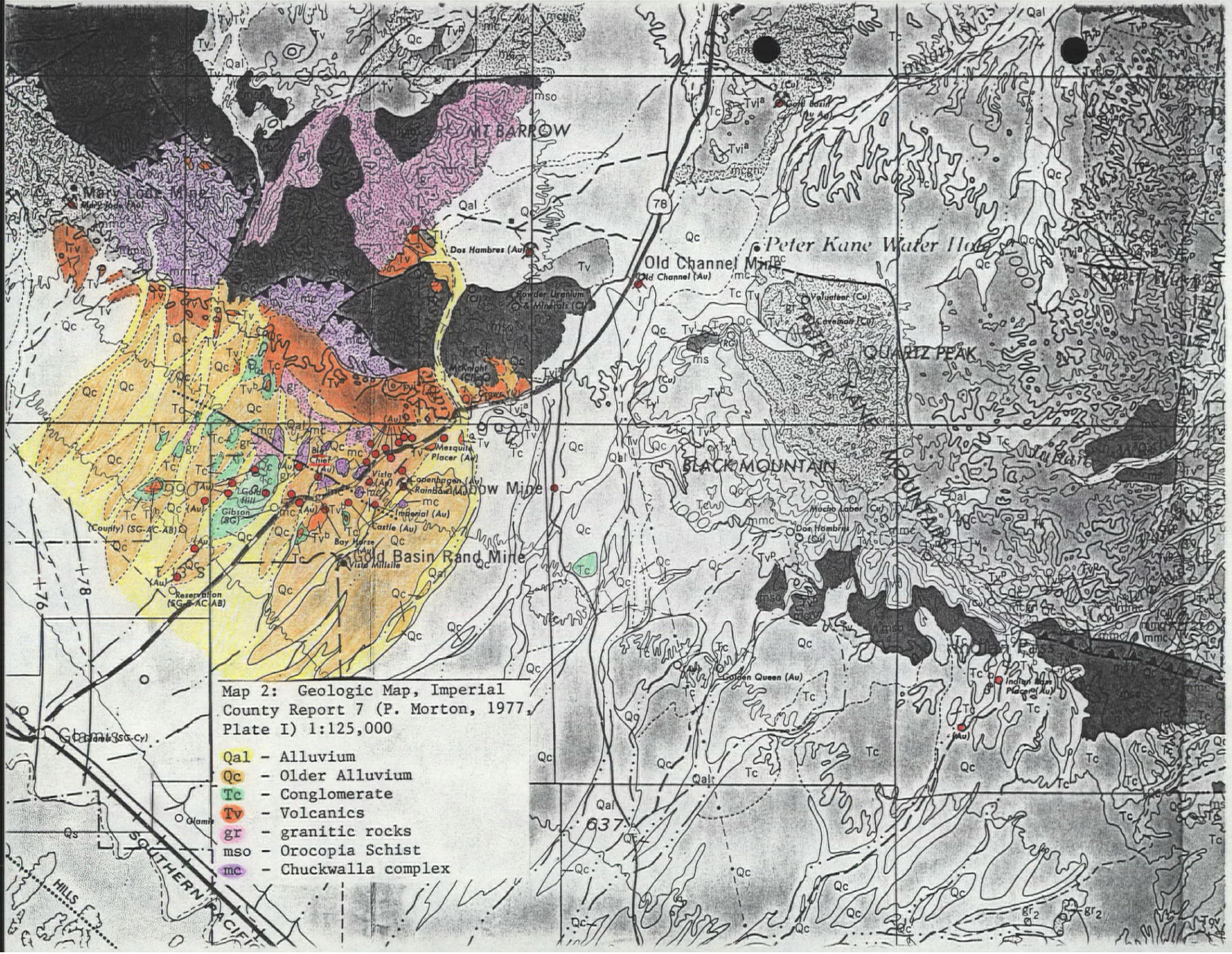
Addendum

Apparently Gold Fields gave serious consideration to mining a few million tons of higher grade (+ .10 opt Au) material underground-trackless and treating this material in a conventional cyanide mill circuit. Apparently the bad ground conditions and continuity problems with the highest grade material would have meant too high costs so they have returned to open pit-heap leach ± agglomeration considerations.

According to Barry Watson, Inspiration did some drilling on or near Big Chief to follow up a number of shallow holes drilled by an unknown Canadian group in the late 1970's. Hanna, while they held Picacho, also evaluated a considerable amount of previous drilling (+ 100 holes) in the Mesquite District but could not find any continuity of shallow high-grade material. This may be the Rennicks Resources data listed in the George Cross Newsletter (June 4, 1975) (all our Chocolate Mountains Placer file). This Imperial Valley gold property (35 miles E of Brawley) may be the Imperial Property (on WNW fault) shown on Map 2.

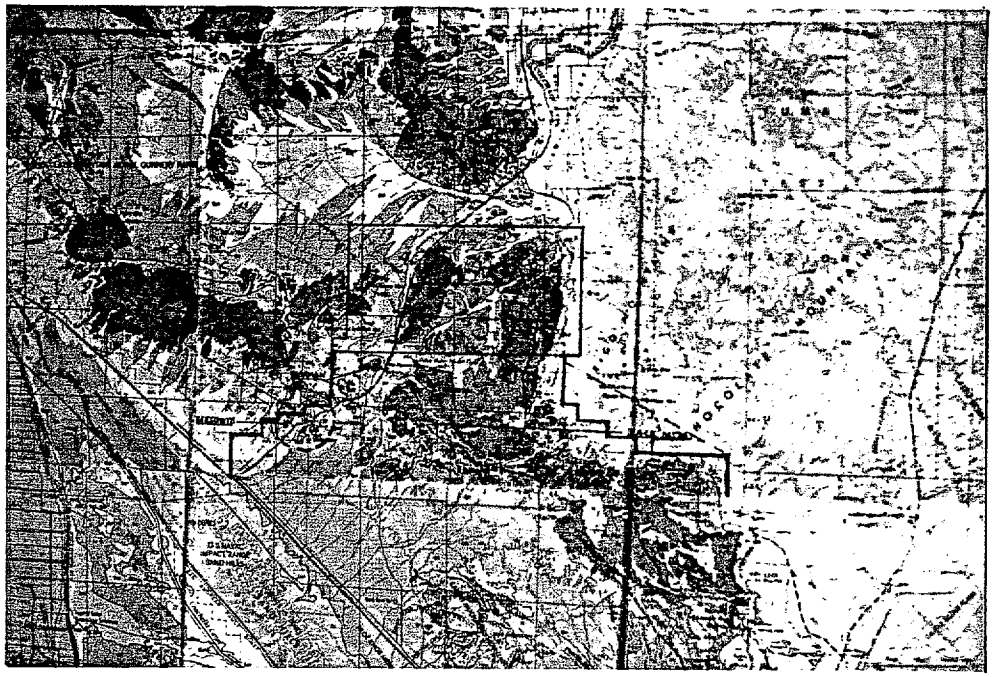


Map 1: Outline of Gold Field's Big Chief Deposit. Sec. 5, T13S, R19E, Acolita and Quartz Peak, CA 15' Quadrangles.

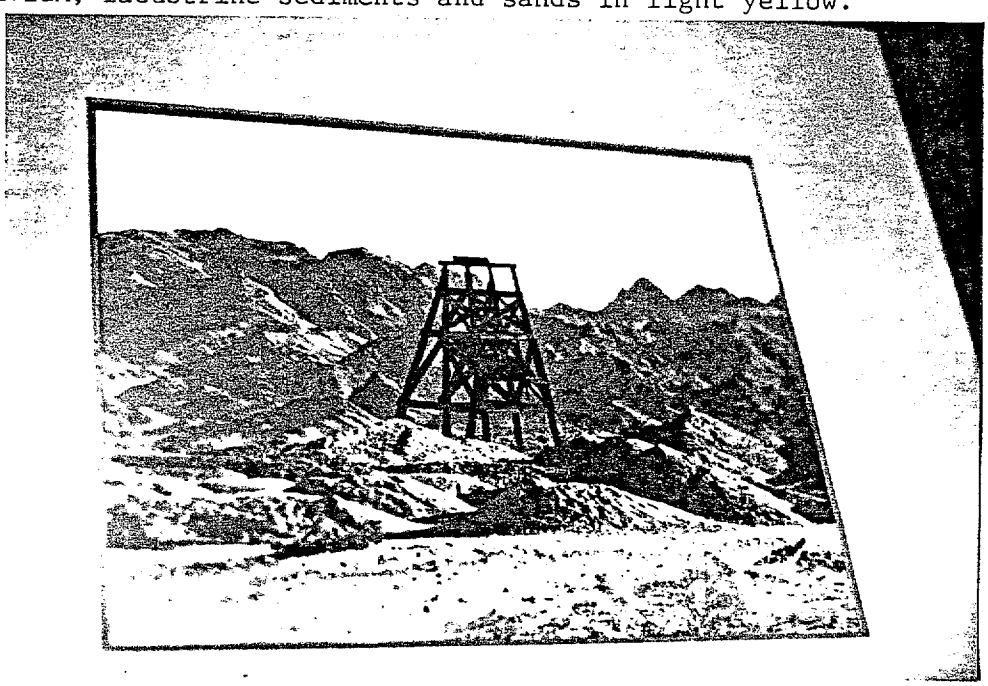


Map 2: Geologic Map, Imperial County Report 7 (P. Morton, 1977, Plate I) 1:125,000

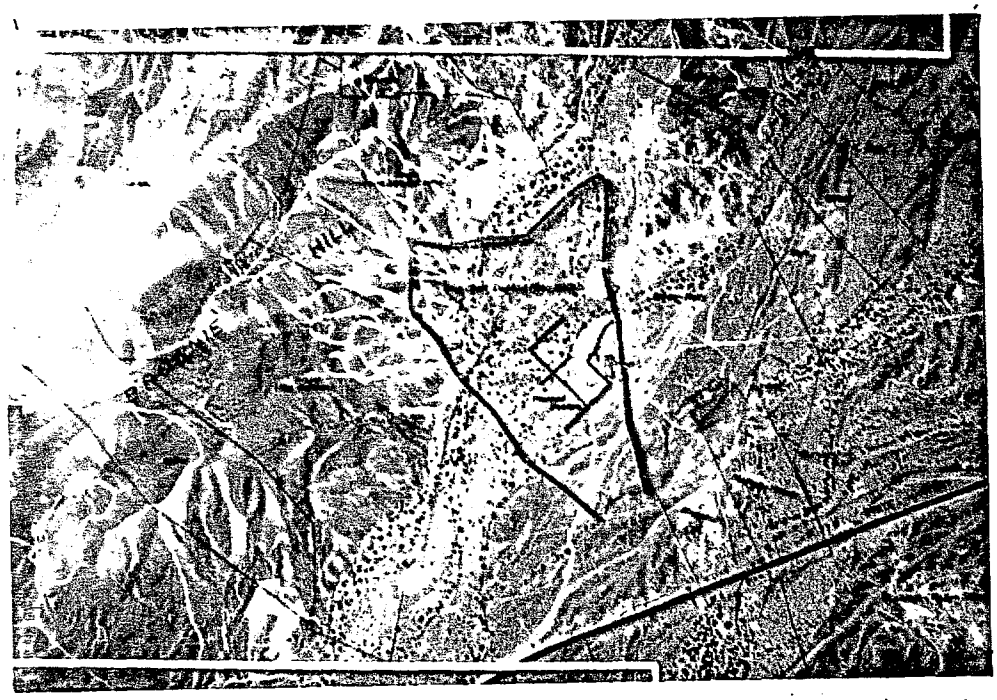
- Qal - Alluvium
- Qc - Older Alluvium
- Tc - Conglomerate
- Tv - Volcanics
- gr - granitic rocks
- mso - Orocopia Schist
- mc - Chuckwalla complex



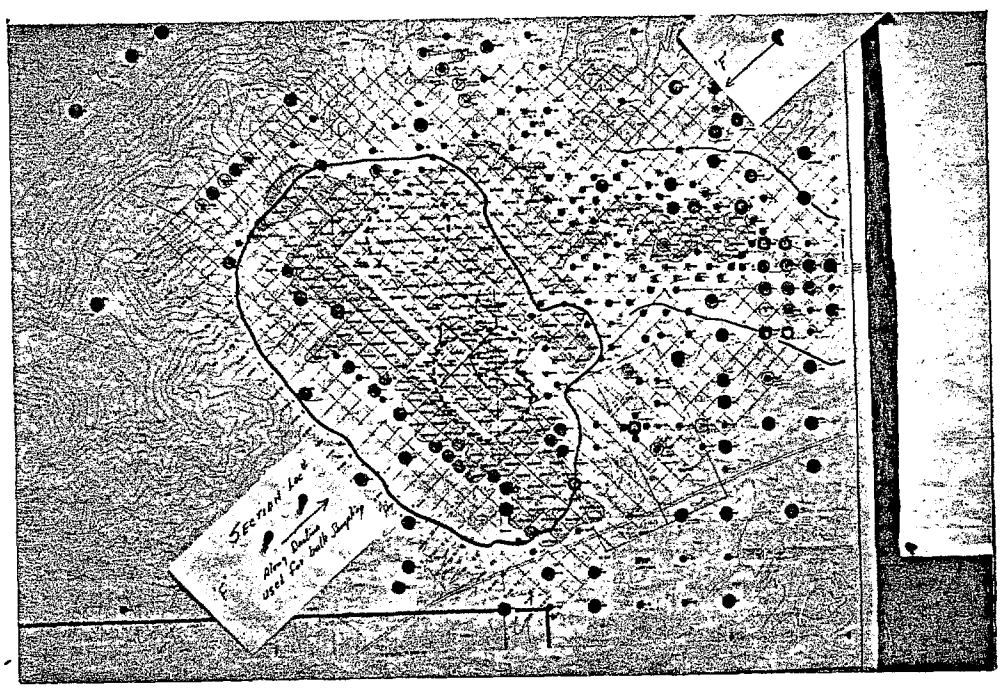
A. AMS Geologic Maps of California: Salton Sea and El Centro sheets Showing Locations of Mesquite, Poorman and Black Mountain Districts, Imperial County. (Arizona uncolored). Red lines NW of Mesquite are southern and eastern boundaries of Chocolate Mountains Aerial Gunnery Range and in Arizona N and E boundaries of Imperial National Wildlife Refuge. Precambrian Chuckwalla metaigneous complex in dark grey. Mesozoic or Paleozoic(?) metasedimentary rocks correlative(?) with the Orocopia Schist or McCoy Mountains Fm. in light grey. Tertiary volcanics in dark orange. Miocene Fanglomerates in lighter orange. Quaternary Fanglomerates and pediment gravels in dark yellow. Recent alluvium, lacustrine sediments and sands in light yellow.



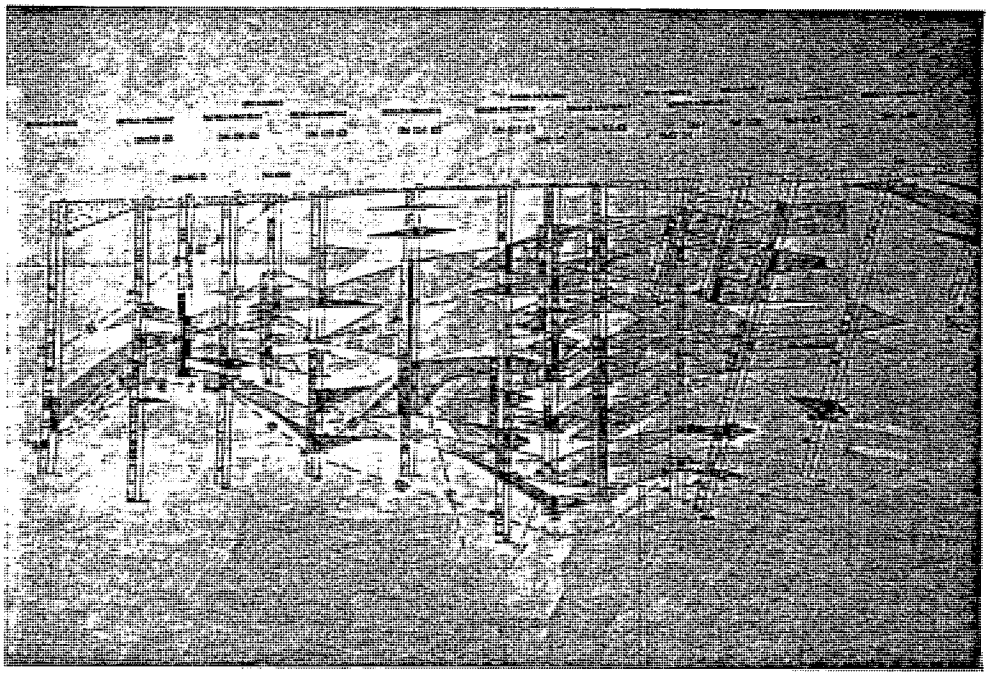
B. Big Chief headframe, "discovery" shaft of Goldfields, last high-graded in 1930's, and new namesake of Goldfields Mesquite Project. 100' shaft with 50 and 100 foot levels on weak(?) shear zone on ENE edge of deposit. All of workings reportedly of ore (>.02 opt Au) grade below a few feet of the collar. Tertiary conglomerates(?) below shaft contain minor (placer?) gold and apparently were trenched-drywashed. Looking NE with Chocolate Mountains in background; Qal covering Big Chief deposit in foreground. Headframe removed for safekeeping.



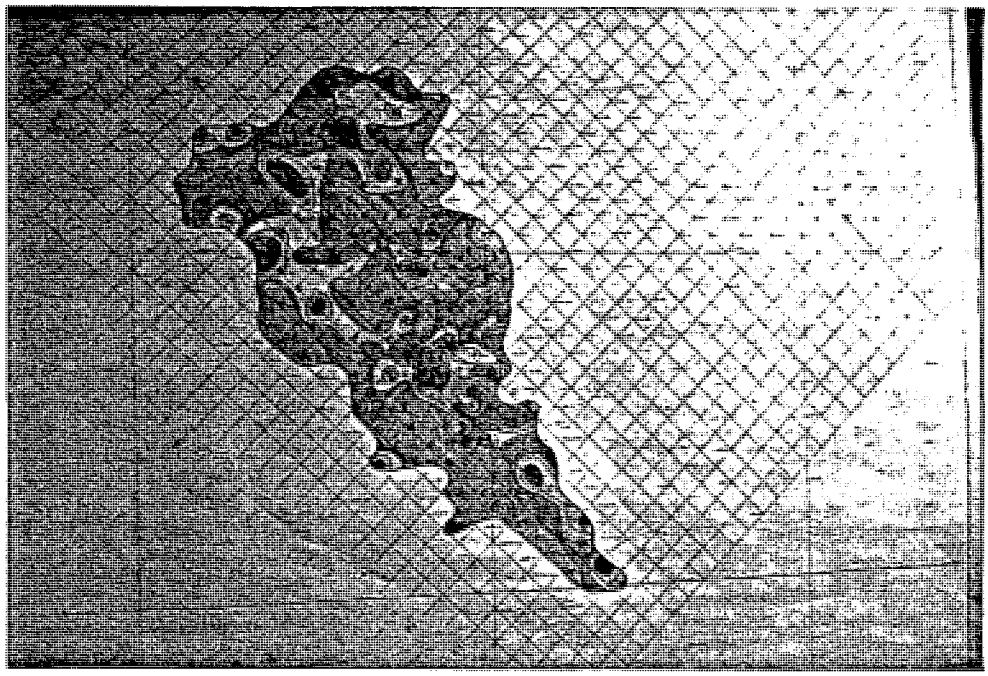
C. Aerial photo (N = up) of Big Chief deposit (outlined in red) with plexiglass overlay showing claim groups southern boundary of Chocolate Mountain Gunnery Range in yellow along N. edge and north boundary of "withdrawn area" in yellow along S. edge; about 1 mile N-S between yellow lines, ENE State Highway 78 (Glamis to Blythe) in black. Proposed (not as built) metallurgical decline in green. Note Qal (with vegetation) and Tertiary Fanglomerates cover much of deposit. Most of drill roads are trenches on Brownie (W) and Bayhearse Hills (NE) of deposit are Goldfields.



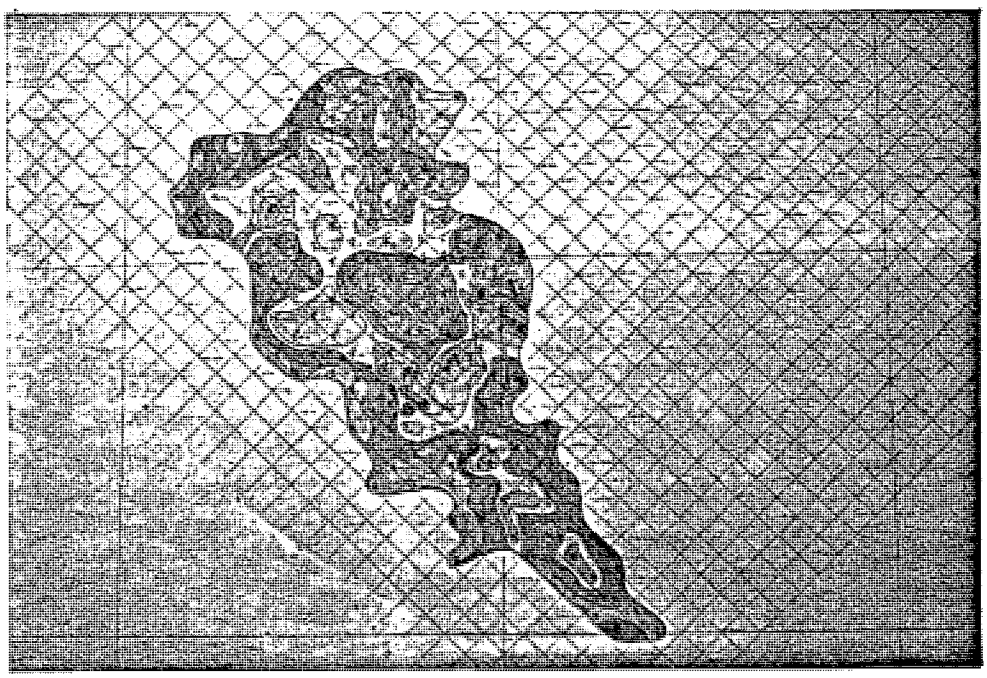
D. Drilling/Orebody Progress Map (without key!) Diagonal grid = 140 feet drill spacing showing "ore" (>.02 opt Au) holes in red-maroon and waste holes in green. Line of Section F-F' (photo E) indicated along metallurgical decline (in yellow). Major black outline is stripping limit of future pit (41 m.t. @ 0.057 opt Au). Two higher grade areas dashed or non-red clear, NW-NE rectangular area in pit outline are 25 m.t. @ .078 opt Au high-grade area selected for additional test drilling-geostatistics/early production. Note position of 2 NNW lode claims across state highway and northern limit of withdrawn area to compare to photo C. Note NE-E trending extension which is probably part of rumored 200 m.t. @ >.02-.01 opt Au.



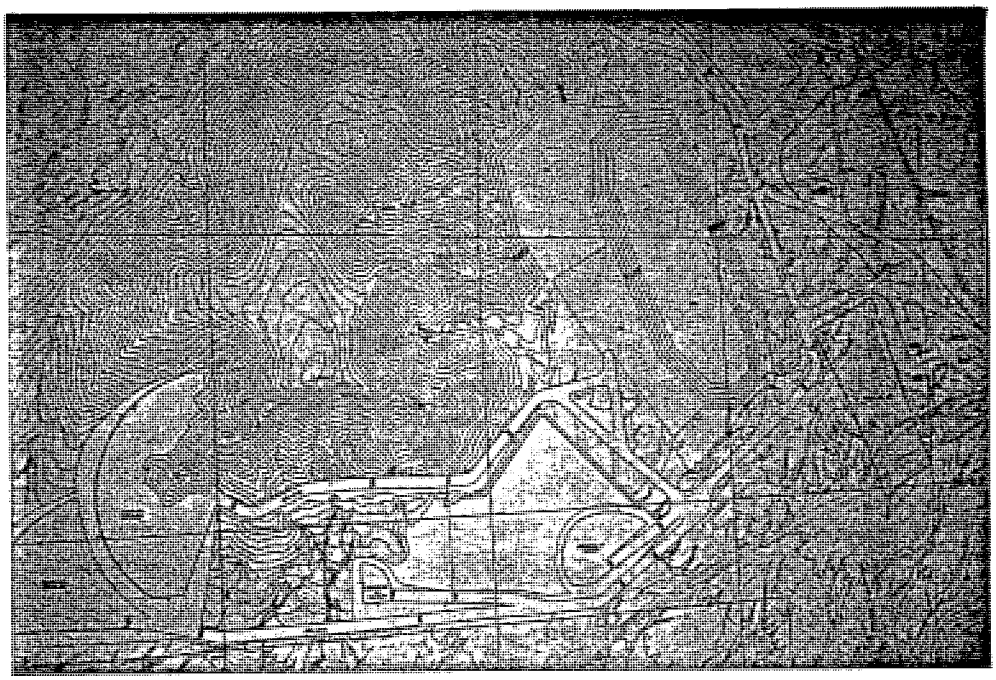
E. Cross section F-F', looking NW showing grade distribution and ± geology (red = +.10, orange = .08-.10, yellow = .06-.08, green = .04-.06 (or >.02??) opt Au:from keys to other maps). Major drill hole spacing 140 feet with a few 70' spacing; deepest holes slightly over 500 feet. Note thinness of alluvium but local +100' waste cap. Geology is not very clear on this photo but dark sympols in drill holes are breccia and mylonite-shearing(?). Note synform of "MG" (Mafic Gneiss), "HBgn" (Hornblende Biotite gneiss) contact beneath mineralized zone (detachment??); SW dip of mineralization; SW-dipping "MS" (Muscovite Schist), "BG" (Biotite Gneiss) contact; BG/HBgn contact not well shown across central part of deposit. I did not catch what the downward-narrowing wedge zone was around SM123(D) (D = deepened by HQ core). There are apparently some high angle faults in this zone but this may be one of the leuco-granitic ± "anatectic"-migmatitic granite-gneiss intrusive zones through the MG/HBgn contact. Rumor (denied or smiled-at by Goldfields) has it that there may be Tertiary intrusives in this area which has some of the highest grade mineralization. Note the NE bounding,NW striking fault on the NE end of the section and the change in attitude across this fault. Some of the apparent rolling of the foliation of the Chuckwalla granite-gneissic complex may be locally due to such block faulting. Deposit may also be in a NW-trending graben. W/O ratio uncertain but estimated at ½/1.



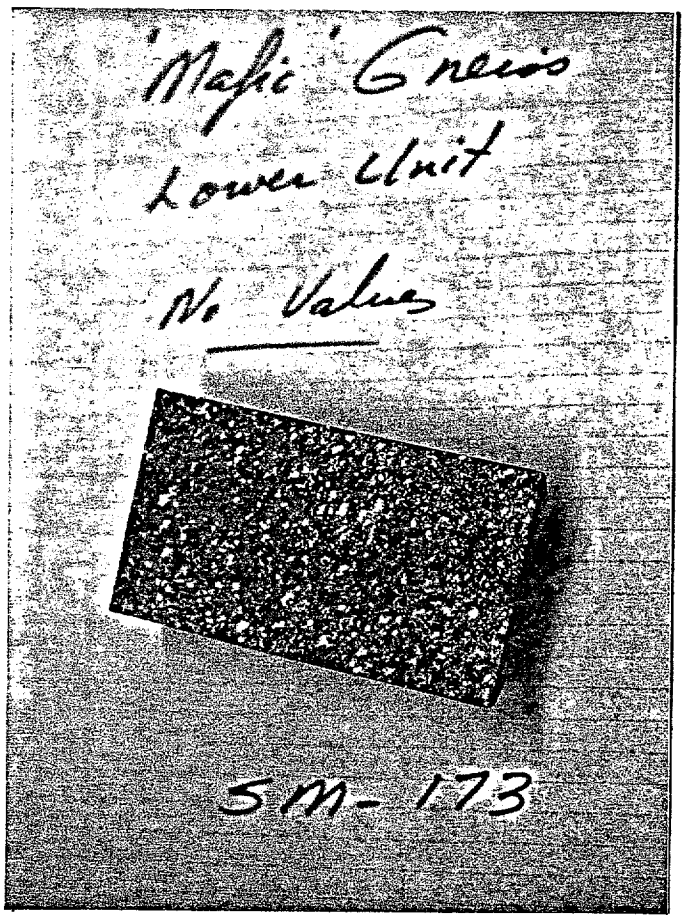
F. Isograde map, weighted average through "orebody" (thickness not given) with boundary = general outline of "ore". 0.02 cutoff and interval: >.10 red, .08-.10 orange, .06-.08 yellow, .04-.06 green, .02-.04 blue. I presume that this is the 46 m.t. @ .057 opt Au reserve and holes on NE-E extension are not included but were numbered on printout. N-S/E-W grid is 2000' and diagonal grid is 140' (about 100 $\cdot \sqrt{2}$) as in photo D. Map is supposed to show some lateral control of mineralization hinted at by N50-60W, N-S and NNE high-angle fault zones.



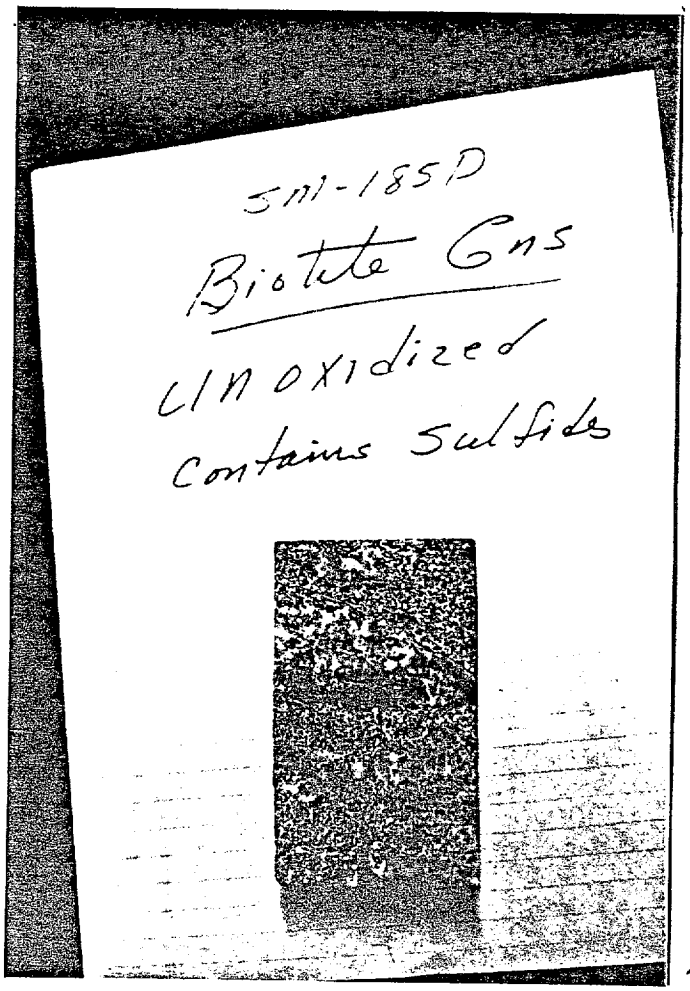
G. Isopach map of >0.02 opt Au orebody on same grid as F. 50-foot contour interval: red = >300', purple = 250-300', orange = 200-250', yellow = 150-200', green = 100-150', blue = 50-100', brown = <50'. Note similar fabric to isograde map and that thickest ore is generally <u>marginal</u> to highest grades which may suggest some type of host rock, feeder fault or intrusive system.

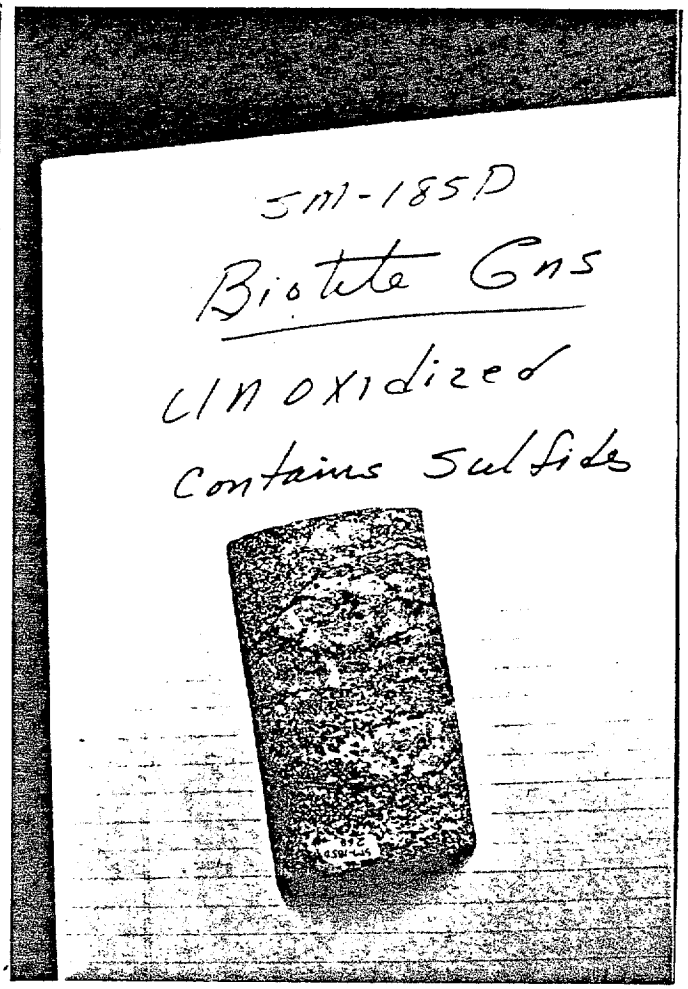


H. Pit/dump/plant plan for Big Chief operation with 2000' N-S/E-W grid. Open pit in east-central portion, Brownie Hill in west-central with dumps and road to adjoining withdrawn area on south boundary. Major contour interval = 10' but not constant. Pit limit of NE-E extension shown on extreme NE corner - compare to photos C and D.

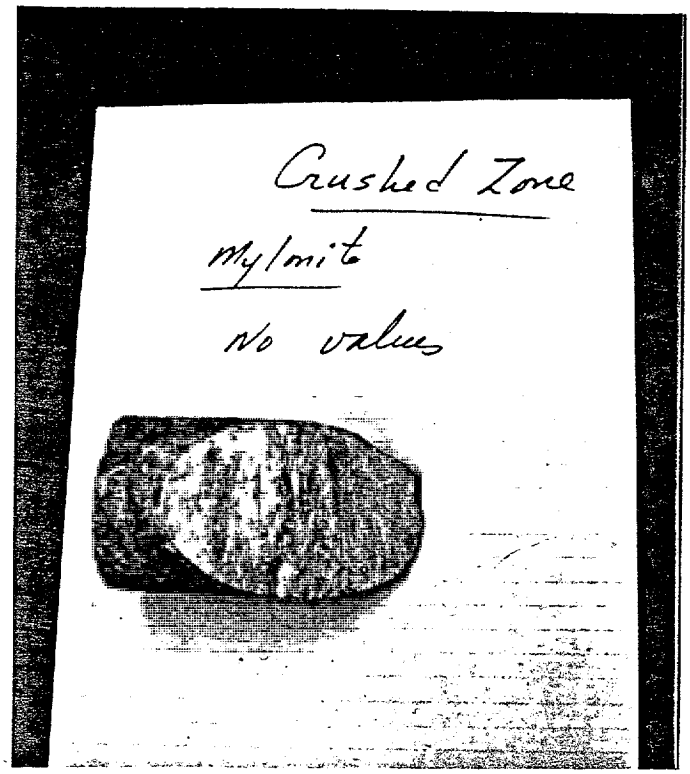


I. "Mafic" gneiss. Lower - footwall (not necessarily structural footwall). No values. A metavolcanic - mostly Hornblende with trace biotite-chlorite on and away from fractures (trace carbonate in fractures). No magnetite but said to contain elsewhere in district.

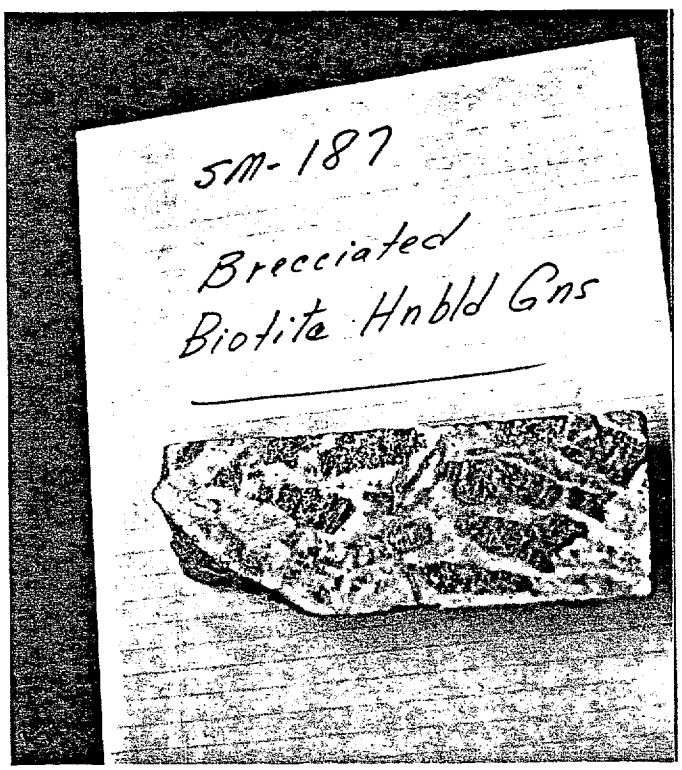




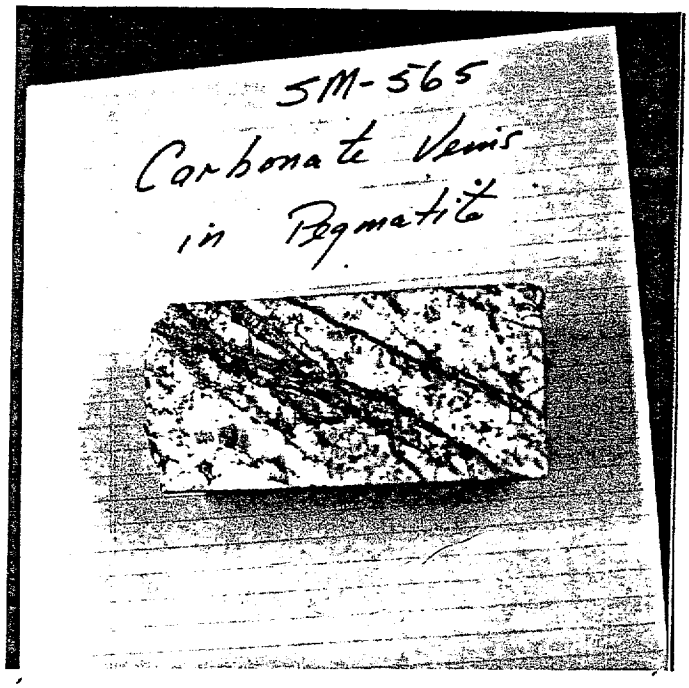
J1 & J2. Biotite gneiss, locally schistose with augen, porphroblasts show stain and healed microfractures. About ½% f.g. pyrite near schistose-porphroblast contacts, faint trace chalcopyrite (or tarnished pyrite). "Sulfide-ore."



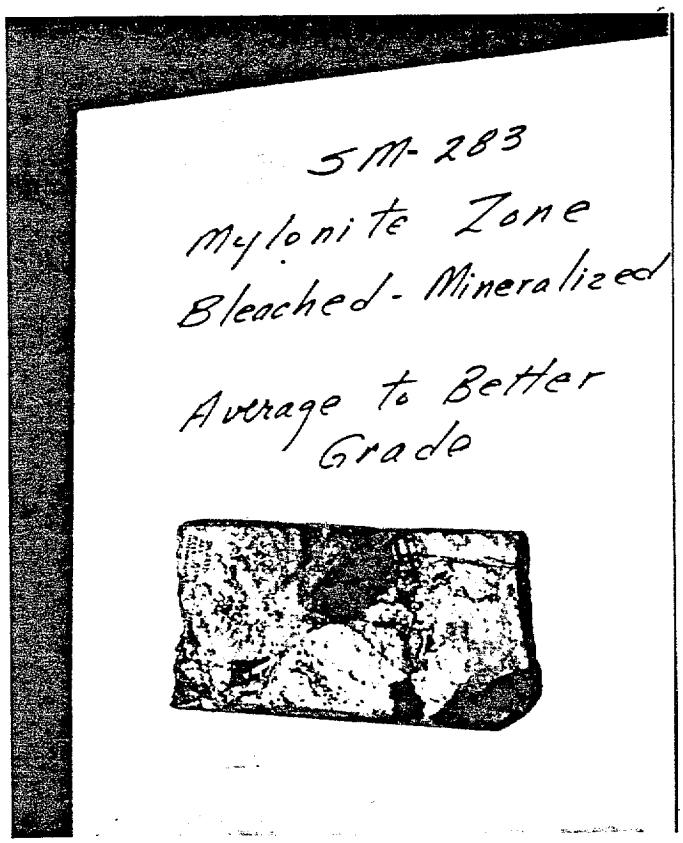
K. Mylonite: Quartz-feldspar & sericite-muscovite, weakly bleached. Horizontal slickensides. No(?) values.



L. Brecciated biotite hornblende gneiss. Only trace pyrite. Most of breccia-matrix-veins are carbonate; quartz is earlier. Late darker carbonate veinlets. Grade not given but the snoopers say this is ore.



M. Brown carbonate breccia veinlet stringers in quartz-feldspar-muscovite pegmatite. Earlier carbonate is cream colored. Late brown carbonate is spatially associated with earlier(?) Au-mineralization.



N. SM-283D, 223' mylonitic, brecciated, bleached leucogranite gneiss. Bleached with weak sericite > clay around breccia clasts with several percent goethite > hematite. "Typical average to better grade" but contains several 1-2mm blebs of dark yellow gold in goethite with interval from which this came averaging 0.54 opt Au. "A specimen to impress South Africans."

THE BIG CHIEF GOLD DEPOSIT

A New Discovery In Southeast California

By Gold Fields Mining Corporation

Introduction

Gold Fields Mining Corporation publicly announced in November of 1982, that they had discovered gold mineralization of possible significance on mineral claims under its control in Imperial County, California. The announcement stated that based on the selected cut-off grade and assuming continuous mineralization between holes, the zone may contain in situ 41.5 million tons at a grade of .056 ounces per ton.

Location

The deposit is located in the Mesquite Mining District of Imperial County in southeast California and is situated just to the north of highway 78, about 30 miles northeast of Brawley and 38 miles southwest of Blythe. Host rocks are exposed in the low, scattered knolls which interrupt the pediment of the southwest flank of the Chocolate Mountains. The depression to the southwest constitutes a part of the

Colorado River deltaic basin which forms the Imperial Valley. Elevations range from 700 feet above sea level in the pediment area to 2000 feet in the rugged Chocolate Mountains. Seasonal rains average about 3 inches annually.

History

Gold exploration was initiated early in 1980 on a project level and directed toward evaluationg the old gold mining district of Mesquite which shows much evidence of prospecting and various development attempts that date back to turn of the century. GFMC began land acquisition in 1980 and began drilling in September, 1981.

Drilling started with one reverse circulation rotary machine using a 5¼ inch tri-cone bit. Chips were recovered down to the water table which sits at about 200 feet below surface. When it became necessary to drill below the water table a diamond drill was added and HQ size core was recovered. A controlled mud additive program was required to assure over a 90 percent core recovery. The drilling was performed by Longyear and the Baroid mud program consisted of EZ mud, Dextrid, Quick Gel and Condet.

By the end of 1981, rotary drilling totaled 16,446 feet and core drilling totaled 436 feet. Drilling accelerated in

1982 with up to 3 rotary rigs and 4 diamond rigs operating and by the end of 1982 drilling totaled 79,802.0 rotary feet and 50,413.0 core feet. The deposit has been delineated using a 140-foot square drilling grid and the early production areas are being detailed on a 100-foot square grid.

Sample Preparation And Analyses

A sample preparation facility was established in Yuma to handle the large sample volume and to obtain a satisfactory level of confidence in the evaluation of this low grade gold deposit. Samples are taken at 5-foot intervals and processed to the pulp stage and then shipped to a GFMC fire assay laboratory in Denver. The entire core interval constitutes the sample for assaying following logging and photographic documentation. Analyses are based on a one assay ton aliquot and are randomly checked with duplicate split pulps by various commercial laboratories so as to constantly monitor precision and accuracy.

Metallurgical Studies

Early in 1982 a preliminary metallurgical program began with bottle leach tests on both rotary chips and core. This progressed into a column leach program using various sizes

and grades of feed and progressively larger columns up to a maximum of 36inches diameter and 36 feet high. All this testwork was conducted in Mountain States' facilities in Tucson and was in preparation for on-site pilot heap leach tests. In Novemeber 1982 a Conditional Use Permit was received from Imperial County to allow a number of heap leach tests each on about 1600 tons of material.

A decline was started by J. S. Redpath at the end of 1982 to test the grade continuity between drill holes and to provide bulk samples for metallurgical work. The decline was completed on May 14, 1983 for a total length of 2,390 feet. The 10-foot by 10-foot drift allowed the use of rubber tired LHD equipment however poor ground necessitated 4-foot timber sets and lagging, and required the use of standard jack legs in place of hydraulic jumbo drilling equipment.

The decline reached a depth of about 220 feet below surface and exposed mineralization above and below the water table for heap leach testing. Each drift round was sampled by passing 50 percent of the entire round through a portable multi-stage crushing and splitting plant.

The first heap leach test was completed in July, 1983 and consisted of material selected from above the water table with an average grade similar to the reserve stated. A

second heap leach test was completed in October 1982, and was composed of material from below the water table with an average grade similar to that of the first heap leach test. The Conditional Use Permit has been extended to allow further testing and at the time of writing a third test heap was being prepared.

The construction of the test heaps involves placing all material and equipment on a 36 mil nylon reinforced PVC liner. This liner protects against any spillage coming from the leach pile, the pregnant and barren solution tanks, the carbon columns and reagent mixing tanks. Some 1600 tons of minus 5/8 inch crushed rock are loaded on the pad using a clam shell and/or conveyor belt. The heaps reach a height of 15 feet and have a level top about 20 feet by 20 feet.

In order to avoid spray losses the diluted lime-cyanide solution is applied to the heaps using a system of 3/4 inch polyethylene truck lines feeding a large number of 1/8 inch "dribbler" tubes. After percolating through the heap the effluent collects in a ditch and is pumped into a pregnant solution tank. From there it passes through a series of five activated carbon columns, and then into a barren solution tank.

Geology and Gold Mineralization

There are few bedrock exposures in the Mesquite Mining District, particularly in the vicinity of the deposit which occurs beneath a major wash. The district is generally underlain by a metamorphic-igneous complex belonging to the Precambrian Chuckwalla Group. To the northeast the basement rocks are overlain in turn first by Mesozoic metavolcanics and then by Tertiary volcanics. The most recent igneous event was the outpouring of thin olivine basalt flows over thick Tertiary fanglomerates.

The area lies in an active tectonic belt near the San Andreas fault system and numerous low angle faults may be present in the region. The gold mineralization occurs in structurally deformed metamorphic rocks and forms an irregular deposit that has the general cross-sectional shape of an upturned saucer.

The deposit is largely oxidized. However, auriferous sulfide mineralization has been found within 200 feet of the surface. The gold is native and particles range from submicron to a millimeter or more in diameter. No economically significant amounts of other metals are associated with the deposit.

It is premature to speculate on the origin of the deposit and it is hoped that future studies will contribute to a better understanding.

NOT

8:

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~~FILE~~ – ERS FILE

ASARCO EXPLORATION RECORD

Requested submittal from Felmont Oil Corp Arvada, CO

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [x] ASARCO FILE [x] Previous

Section I General Indexing

① Name(s) of Property or Area: FELMONT – HARDSHELL (EAST) (S.W. Expl. Assoc.)					② Country: Santa Cruz Co.	③ State or Province: AZ	
					④ USGS Quad.: Harshaw 7½'	⑤ File or Gore No.	
⑥ Latitude: 31°27.5'N	⑦ Longitude: 110°41'W	⑧ AMS Sheet: Nogales	Township: 23S	Range: 16E	Section: 1-3, 10-12	⑨ Examined by: FRKoutz	⑩ Date: Dec. 1983
						⑪ Office: SWED Tucson	⑫ Field Days: logging 2

J.H.C.

Section II Sources of Information

Date Typed 3/6/84

MAR 29 1984

⑬ References

Author	Date	Title	Publications	Vol. No.
Texas Gulf, 1974, Submittal data - Asarco Files (Goldbaum Canyon) Sept. 1974				
Felmont, 1982, Submittal data - Hardshell (East) Project including				
S.W. Explor. Assoc., 1972, (Briscoe & Mills) Exploration Proposal - Hardshell (East)				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [x] Too Low Grade
- [x] Too Small/spotty
- [ ] Ownership Problem
- [x] Access Problem Hale's
- [x] Stake if open

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [x] Dump/mill/water

- [x] E.of Hardshell
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [x] Coat-tail pros.

⑯ Production

Commodity	Tons	Grade
Minor clay/sand & gravel/water		
Hale/Wheeler wells annually monitored.		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Nil		

⑱ Num. Drill Holes 7+11 locat. Approx Total Footage 6671'

⑲ Excavations Stock tanks Pat. homestead in middle

⑳ [x] Spectro. Analysis Attached ㉑ [x] Assays Attached ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals Mn,Pb,Zn,Ba,"Ag" (local anomalous Pb,Zn,Ba,As,Mn,B)

㉔ Ore Minerals-Major Metals in Mn oxides, jarosites, hematites Minor pyrite, goethite

㉕ Host Rocks-Major Hardshell rhyol. tuff-bx, tuff agglomer. Minor Latite porph.; diabase-andesite

㉖ Age of Host Rocks (±83 m.y.) mostly ignimbrites 71 m.y.

㉗ Nature of Exposures Mid-late Tertiary basin-fill gravel ("Gila") cover 200-600'. Locally up to several hundred feet Harshaw Creek tuff (air-fall, lake beds, plus ls.-all clayey) at base.

㉘ Alteration Minor silicif. & sericite-clay fm. along faults/fractures locally spreading into stratigraphy. Strong weathering below conglomerate

㉙ Total Extent Best zone 8000'E-W/4000'N-S (Hds-Bx)

㉚ Structure Number of N-S to NNW faults drop volcanic section down to east; shallow northerly dip to volcanics; local grabens; minor angular unconformities between volcanic units.

㉛ Ore Occurrence Minor MnOx (mostly exotic) in fault zones & along contacts - local anomalies. Geochem. anomalies very weak (no Ag) & not pervasive compared to HDS/Hermosa.

㉜ Age of Mineralization Mid-Tertiary oxidation and remobiliz. of Laramide

㉝ Conclusions & Recommendations Outlying fringes of HDS-Hermosa type mineralization: small, usually exotic, & confined to faults/fractures. Favorable Paleozoic/Hardshell fine-grained epiclastic tuff contact not present & Paleozoic too deep (+4000'?). Latite porph. N of Hermosa misinterpreted a resurgent dome/stock--actually series of sills or flows. Potential mineralization as known not economic considering water-saturated conglomerate above. A promotion & nuisance. This ground is potential dump/tails site and water source for Hardshell operations and should be staked at once if ever comes open.

(For additional space use extra sheets)

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

ASARCO Southwestern Exploration Division

March 6, 1984

To: J. D. Sell

From: F. R. Koutz

Felmont Oil Submittal
Hardshell East
Santa Cruz County, AZ

Summary

Data and available core on Felmont's 102 claims east of Hardshell were examined. Although weak alteration and minor amounts of fringe Mn-Zn-Pb-Ba-As mineralization are present, bedrock is beneath 300-600 feet of water-saturated conglomerates and volcanic ash-clay-lake beds. The favorable Paleozoic/Hardshell epiclastic sediment contact is not present and the Paleozoic is up to 4000 feet deep, therefore Ag-bearing Mn oxide mantos will not be present. Potential low-manganese, silver-halide mineralization such as at the Hermosa Mine would be expected to be poorly enriched and difficult to locate and mine. The only immediate value of the ground is as dump/tailings sites and a potential water source for Hardshell operations. If the ground comes open it should be staked for these potential purposes and for insulating value to Hardshell.

Introduction

In June 1983 you requested a submittal from Felmont Oil Corporation of their Hardshell property (102 claims) east of our Hardshell claims. You completed their Confidentiality Agreement on July 27 and thereafter received a data notebook. Upon my return from Montana in late October I briefly reviewed this data. I additionally requested from Felmont their gravity and magnetic survey data used for 1983-84 assessment work which arrived in late November. In Denver, in mid-December, I spent two days reviewing the remaining Texas Gulf core and Felmont's 1981 core from hole HCH-1-81. I photographed all core and took 40 character samples (see attached list) for our future reference. I also selected 3 manganese-rich intervals for additional check assays in HCH-1-81 from which Felmont had assays of several hundred ppm Zn but only 0.2 ppm Ag and a few tens ppm Cu and Pb--extremely unusual in most Hardshell mineralization. Texas Gulf hole PK-5, the only core from which more remains than a skeleton, also had 11 altered, iron-oxide intervals (potential Hermosa-type mineralization) selected for assay. Assaying from both Texas Gulf and Felmont appeared to be minimal with only selected intervals run. Assay results are attached. All Ag was <.2 ppm and the only Au detected was 0.19 ppm (HCH-1-81:737-744) with the rest <.02 ppm Au. The

assays confirmed previous results showing 300-700 ppm Zn for the high MnOx Felmont intervals, very low Pb and Cu but also 70-1500 ppm Ba and often 500-1500 ppm As. By and large I think these assays confirm that there are no major Ag, Au Cu, Pb, Zn orebodies nearby.

The following briefly reviews the claims, geology, alteration and mineralization under Felmont ground. Additional work, particularly petrography on the core samples obtained for better correlation of the volcanics and evaluation/interpretation of their geophysical data, is being deferred for lack of time. I believe it was agreed among us that the main value of examining this submittal data was for background geologic data rather than to obtain another prospect when obviously better targets exist beneath and immediately around the Hardshell manto. A secondary reason is to make sure that we do not overlook any facts that were not considered significant by Felmont/Texas Gulf. A property/drill hole map, summary of drill hole depths/horizons, sample listings and assays are attached. The drill data should be added to our Hardshell computer data file.

Property

The Felmont Hardshell property consists of 102 "HAR" lode claims (not sequential: numbered to HAR 110) in Sections (protracted) 1, 2, 3, 10, 11, and 12, T23S, R16E. These claims surround the Hale patented homestead (HES 305-306) of about 240 acres in lower Goldbaum Canyon. The claims were staked in early 1977 by S. W. Exploration Associates (J. A. Briscoe) for Texas Oil & Gas and Felmont Oil. Location holes (11) were drilled by Drilling Services, Inc. in late July immediately after they completed our HDS-70 (and told SEA what we hit and gave them a few samples).

Briscoe brought the property to us in early 1978 pointing out several sets of arcuate features which he thought were caldera margins. Apparently S. R. Davis did look at Texas Gulf's core at this time. From my discussions with Steve Davis in 1978 apparently Briscoe thought that the latite porphyry sill(s) in the North Hermosa area were a major stock (± resurgent dome of a caldron) and a mirror image of Hardshell mineralization would also be found on the east side of the stock. This shows on SEA's May 15, 1979 cross sections. This stock or dome idea is wrong as drilling shows latite sills or flows rather than a stock.

Asarco (SRD, FTG, WLK) turned down Briscoe's JV-proposal according to a file memo of February 14, 1978. We did have in our files the 1972 and 1973 reports of Texas Gulf (WLK stamp Sept. 6, 1974) so the property was apparently previously presented to us (there is slightly different additional data in our file reports than sent by Felmont). The copy (3 of 4) of the Texas Gulf report is the same as sent by Felmont so it may have come from Briscoe. One of the Texas Gulf geologists, David Brown (now with Billiton), told me last fall that Briscoe got Texas Gulf's Hardshell data and core in an information exchange. Brown told me many of the ideas that Texas Gulf had had when they were active on the project (1972-1973).

It should be noted that we staked 62 water claims in late 1974 in the Corral-Willow Spring Canyon areas NE of Mowry which had been previously dropped by Texas Gulf as part of their Goldbaum Canyon project--south of hole PK-1. I point this out because J. A. Briscoe had told several groups of people that Asarco had dropped or neglected to file assessment work on claims in the Goldbaum Canyon area which we once supposedly held.

Geology

From reading Briscoe's 1979 report it is clear that he has an incomplete and imperfect understanding of Hardshell geology and ore occurrence--partially developed from R. C. Moore's (1972) thesis on the area. SEA apparently did no original field work but lots of photogeology. The semi-circular features they point at in many cases have no direct relationship to geology. The Corral Canyon to Harshaw Creek arcuate feature is due to stream piracy from the lower base level of Harshaw Creek into the headwaters of the San Rafael (Santa Cruz River) Valley into which Corral, Willow Spring and Goldbaum Canyons originally drained. The reasoning for the right-lateral offset on NNW faults is due to a misinterpretation of Moore's incomplete and partially plagiarized mapping of "Tertiary Extrusives" (lower ignimbrites and flows of basal Hardshell (Corral Canyon) Volcanics).

Interpretation II cross sections of Briscoe are definitely wrong because they do not include the Corral Canyon Volcanics above the Paleozoic east of the main manto. Interpretation I does not include great enough thickness of the Corral Canyon type of volcanics above the Paleozoic--possibly 3000 to 9000 feet thick in measured section and ±2000' (not including an additional 1000' of Upper Hardshell Volcanics) under Trench. SEA is correct in that there is more of what is now called Hardshell Rhyolite Breccia to the east of the manto ore zone than over it--but this is due to active faulting during volcanism with more breccia accumulating to the east where fault blocks are downthrown. Since all except the latest minor movements on these faults are premineral, offset mineralized horizons should not be expected.

Texas Gulf was apparently initially hunting for a porphyry copper-type system and drilled two rotary holes with spot cores: PK-1 and -2 to depths of 1040 and 1270 feet, respectively. They realized that in the upper bedrock portion of PK-2, beneath 250 feet of basin-fill ("Gila") conglomerates and 70 feet of tuffaceous clays (weathered Harshaw Creek tuff (water-lain + limestone beds)) that they had encountered altered rhyolite breccias (from 320-510' depth) that were similar to those above and east of the Hardshell mineralization. Below 510' to 1270 feet (TD) they encountered "Juro-Triassic" latite(?) and andesite(?) flows which were flow brecciated in their upper parts. These were similar to those cropping out in Corral Canyon to the west.

In 1973 Texas Gulf drilled 3 additional but shallower holes east of PK-2 and one to the north (PK-6) to test the idea of "synvolcanic" Hardshell-type silver mineralization. Holes PK-3 and -4 hit the Hardshell rhyolite

and latite breccia units similar to beneath the Hermosa Mine. Although the rocks were clay-sericite altered and stained with varying percentages of goethite, hematite, jarosite, and minor iron oxides only weak mineralization was encountered. PK-3 (638-660') averaged 5300 ppm Pb, 11 ppm Cu and <1 ppm Ag while PK-4 (350-530') averaged 290 ppm Pb, 40 ppm Cu and <1 Ag. From 0.2-2.2% Pb was detected in jarosite and hematite mineral separates in the core. PK-2 averaged 70 ppm Cu from 330-530 feet with no detectable silver. Only up to 0.1 ppm Ag was detected in up to 1% MnOx staining in other portions of PK-2. Since any significant mineralization in the Hardshell-Hermosa area has exotic Ag (and anomalous Cu, Pb, Zn, Sb, As) >1 ppm some distance from +1 oz. Ag/T mineralization, no evidence of silver ore has been encountered in drilling on the Felmont ground.

I have few major quibbles with the lithologic and alteration-mineralization logging done by D. M. Brown (Texas Gulf) or N. F. Lewis (Felmont) (except the lack of assays). It is clear that SEA (Briscoe) misinterpreted or disregarded much of Texas Gulf's data. It is clear to Lewis (after talking to me and reading the Hardshell Field Trip Guide) that with present drilling depths the only hope Felmont has of intersecting mineralization would be Hermosa-type low angle stratiform vein/replacement mineralization away from major faults. At Hermosa this mineralization was mined because it outcropped and showed extreme supergene Ag enrichment from being near the surface both in Mid-Tertiary time (deposition of the Harshaw Creek Tuff ~ 25 m.y. ago) and in the Recent as part of the dissected pediment surface extending into the San Rafael Valley. Any such mineralization on Felmont ground is beneath 300-600 feet of water-saturated conglomerates and has missed the Recent period of supergene enrichment.

Although there are fine-grained epiclastic sediments interbedded with the Hardshell Rhyolite Breccia beneath the Hermosa Mine, these units are only weakly mineralized at their contacts or along crosscutting faults. Thick MnOx-Ag mineralization should not be expected in these horizons because no impermeable (silica) caprock has been developed, the feeder system from permeable underlying fractured and faulted Paleozoic sediments is missing, and there is little evidence of significant alteration/mineralization in the thick lower Hardshell ash flow tuffs and lava flows (latite porphyry-andesite). I therefore see no hope of manto mineralization at reasonable depths under the Felmont ground, especially without the geochemical halo evident over our Hardshell manto and Hermosa Mine.

I was somewhat surprised by the amount of clay-sericite alteration observed in the remaining core although a fair percentage of this is probably due to weathering in at least a moderately pyrite-rich environment. However, most of the manganese oxide mineralization I noted was exotic with only local accompanying jasperoid or drusy quartz. The exotic nature is confirmed by the presence of relatively high amounts of Zn detected in Felmont's and our (TAJ-330) analyses compared to Ag or Pb which tend to be less mobile than zinc in an Mn-rich oxidizing environment. The only evidence of significant alteration was moderate amounts of jasperoid in Hardshell Rhyolite Breccia in two skeleton pieces (532 and 554') in PK-4. No assay data is given for

the PK-4 core although the hammer-drill-chips from 350-530' depth averaged 290 ppm Pb with 500 ppm from 490-530'--all with less than 1 ppm Ag. The drill hole summaries (May 9, 1973) list a Pb/Mo geochemical "response" from 552-578' in PK-4 but do not give values. If there were much of any potential on Felmont ground it should probably be around PK-3 and -4 where indigenous mineralization was found. Lewis wants to deepen hole HCH-81-1 and drill 2 holes W and WSW of 81-1; however they only have 1000 feet of ground to the west before they hit our Shell claims.

Geophysics

For 1982-83 and 83-84 assessment work Felmont had Geoterrex run detailed gravity and magnetic surveys on the western half of their claim block. Texas Gulf had previously run regional gravity surveys over the NW portion of the San Rafael Valley in 1973 as had Montgomery and Benavidez (Asarco) in late 1974. I also saw the flags, surveyors and crews running gravity work over Hermosa and the Felmont ground in 1977 during drilling of HDS-70 and, although I thought that this was work by SEA, this data is not included in Felmont's data.

The early Texas Gulf work defined a series of N to NW grabens or young faults down to the east which turned out, on drilling PK-1 and -2, not to have the "favorable" pile of Laramide volcanics which for some reason Texas Gulf expected. The NW "hinge line" in the Bouguer gravity contours is actually just a reentrant of Late Tertiary basin-fill gravels into the trachyandesite of Meadow Valley to the N and NW and the Hardshell volcanics to the west. Asarco's interest in the gravity and magnetic work was to find downdropped Tertiary gravels which might be water-bearing. This led to the staking of our 62 water claims in late 1974. It is of interest to note that the 53 water claims staked in 1983 in Sec. 7, 8, 17, and 18 E and NE of our 1974 claims now cover the best graben structure (points 20-22 on Fig. 1 of J. R. Montgomery's Nov. 15, 1974 report as well as being just NW of Kerr-McGee's productive Mowry Wash water test well in SW/4, SE/4, SW/4 Sec. 17.

I see little of outstanding interest on Felmont-Geoterrex's gravity except an indication of thicker basin-fill to the east. There is a perturbation in the NE/4 of their surveyed area (between PK-2 and -6) which may indicate faulting. I would like an experienced gravity interpreter to confirm this. The magnetic map shows several highs on the NW and SW edges of the survey area probably reflecting non-replacement of magnetite in the basal trachyandesite (diabase) and lower Hardshell (Corral Canyon) ash-flow tuff units by sulfides. I suggest that for the record we ask for an interpretation of this work by our Geophysical Department.

In summary, although the Felmont ground shows local significant alteration and minor mineralization there is little that indicates potential ore considering the depth, conglomerate cover and the lack of encouraging results from drilling. It is significant that alteration/mineralization continues

to the east of Hardshell/Hermosa possibly with other minor centers. We have what data is available on the ground and samples of rock types that may be useful in future studies. The Felmont ground has little potential for significant mineralization, especially since there are better targets immediately around and beneath Hardshell and toward Trench. Nevertheless the Felmont ground may be valuable for dumps or tails and being within the Harshaw Creek basin does not have the water-law problems associated with removing water from the San Rafael (Santa Cruz) Basin even though the groundwater divide extends for at least several miles east of the topographic basin divide. If we wanted to have the Felmont ground declared "non-mineral" in the future for use as dumps, water or millsites, drilling a number of deep "rejection" holes would probably be necessary. Necessary parts of the ground could probably be covered with millsites. It will also probably be necessary to buy the Hale patented homesteads. The Mining/Minerals Beneficiation Department personnel presently working on the Hardshell feasibility study should determine what value, if any, the Felmont ground has for dumps and water sources and, if necessary, how might we obtain these rights with or without dealing with Felmont.

Felmont, as admitted by Denver Manager D. Rhoades, has very little money in their Hardshell ground--probably only assessment work from 1977-1985 or about $80,000. They would probably be willing to enter into a joint venture for not much more than annual assessment work but according to Rhodes the money would have to be spent on the 102 claims and not contiguous Asarco ground and Felmont would have to have some say in where and what work was done. Apparently Felmont is not interested in operating any of their properties directly and would not accept less than a 49-50% share. They are also apparently willing to sit on a number of properties they have next to known discoveries for a number of years. Nevertheless if Felmont gives any indication that they will drop the ground or neglect assessment work or filing, we should pick it up at once for insulating value. In this regard we are presently staking the ground formerly held by Sharon Steel and Continental Materials that was not picked up by Exxon in March 1983 south and east of American Peak and north of Mowry patented ground. These claims (Shell 188-237) have moderate potential for extensions of Mowry-type limestone replacement mineralization in addition to value for dumps and water sources for Hardshell operations.

F. R. Koutz

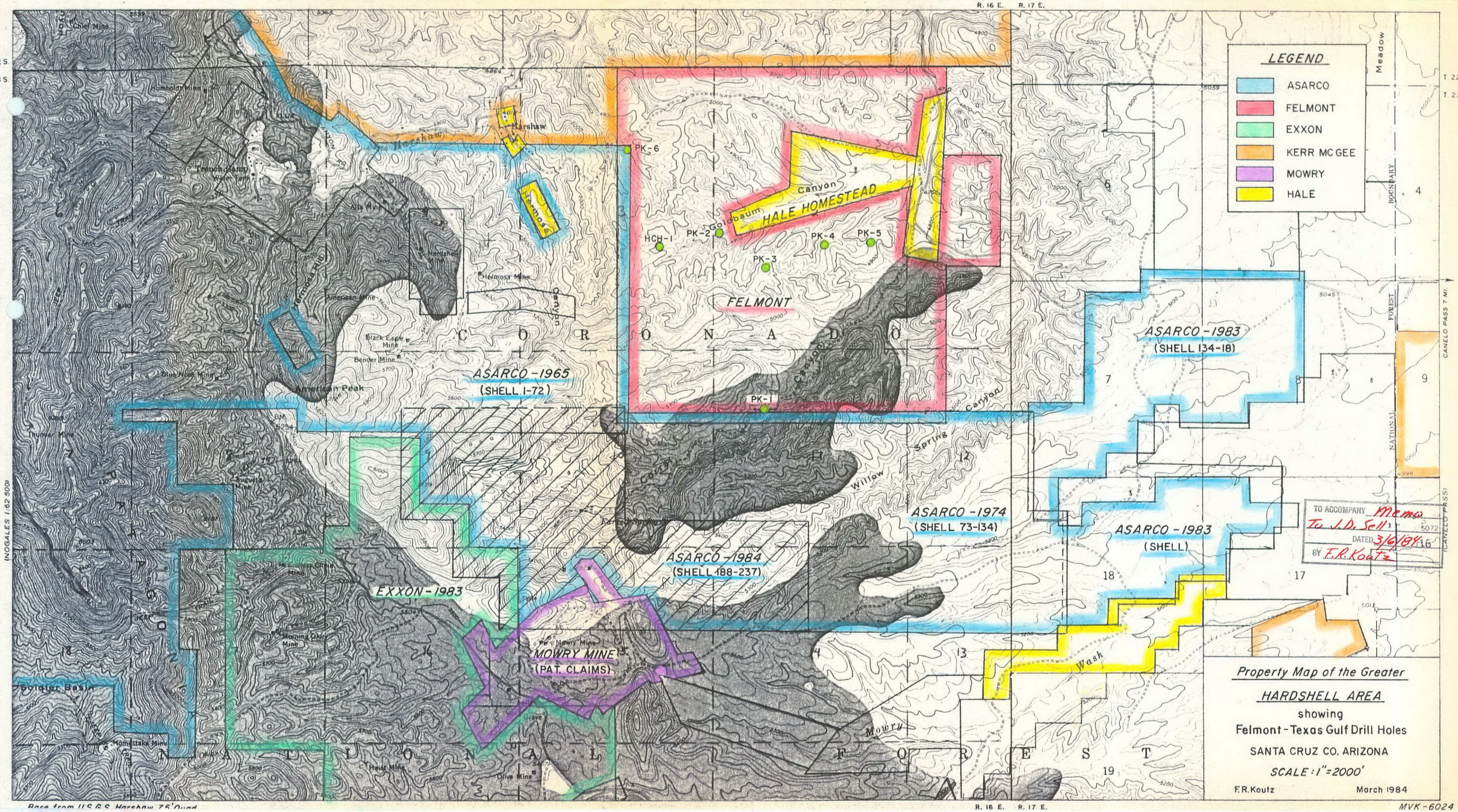
F. R. Koutz

FRK/cg

cc: SAA

Attachments: ERS
Property/Drill Hole Map
Summary - Drill Holes
Sample-Core Descriptions
Assays (Asarco)

Note: Slide of core given to D. A. Melhado for storage in Drafting room.



Base from U.S.G.S. Marshaw 7.5' Quad

FRKoutz
2/7/84

HARDSHELL EAST (Goldbaum-Corral Canyon) DRILLING

TEXAS GULF - FELMONT

Sample No.	N	E	Collar Elevation	TD (Ft.)	Base of Cgl.	Base of Harshaw Tuff	Core Starts
PK-1	164,110	884,185	5450	1040	590	Little Clay	Spot Only 865-870; 999-994
-2	168,910	883,215	5400	1270	250	320	Spot Only 385-388.5; 557-561; 800-803; 1210-1213
-3	167,960	884,335	5025	764	480	500	530
-4	168,510	886,055	4950	657	258	346	532
-5	168,690	887,315	4915	685	232	420	483
-6	171,210	880,565	4850	650	0	250	No Core - In Db to TD
HCH-1	168,460	881,485	4980	775	562	No Clay	503
	(State Grid)			5841		2853' of Bedrock (Pre-Tertiary) Sampled	
	11 Location Holes (1977)			830' Total			
				6671' Total Drilling			

F. R. Koutz
6 Feb. 1984

HARDSHELL EAST

Felmont-Texas Gulf Core Chips

Obtained from Felmont December 12, 1983 - Arvada, Colorado

Felmont HEH-1-81 (cored 1981 503-775')

	-562'	Breccia, volcanic (HDS rhyolite breccia)
	-576'	Tuff breccia, weak goethite + hematite
	-588'	White bleached tuff
	-600'	Purple tuff breccia
NX ↑	-616'	Purple matrix Fs-biot porphyry (xtal tuff?)-latite porphyry?
BX ↓	-637'	Purple tuff breccia, weak fiamme
	-662'	Purple lithic tuff breccia
	-670'	Purple lithic tuff
	-691'	Maroon red tuff
	-710'	MnOx soaked, earthy tuff (white, bleached)
	-720'	MnOx soaked, breccia?, weak silicif. MnOx soaks matrix & rims & rounds fragments
	-720'	As above but more MnOx sooty MnOx > goeth replaces Fs, bx sites
	-730'	White bleached tuff, spotty-blotchy MnOx stain
	-744'	Heavy MnOx staining grit, lithic tuff
	-750'	Weakly sheared, tuff-latite porphyry, maroon+MnOx stains
	-760'	Maroon-porphyry-latite porphyry(?) or tuff-flow/bedding clean
	-770'	Latite porphyry, weak hematite matrix + white Fs, weak qtz vnlts
	-780'	Latite porphyry-breccia (50+% Fs (broken)-Lt. green & clayey) wk hematite matrix-qtz microveinlets

Texas Gulf: PK-1 (spot core only)

-886'	Rhyol. breccia bleached with hematite on fractures, Fs + lithics to clay
-994'	Maroon rhyol. breccia

Texas Gulf: PK-2 (spot core only)

-386' Bleached white to tan rhyol. tuff breccia

-557' Light maroon latite porphyry-ash flow tuff

Texas Gulf: PK-5 (boxes unopened by Felmont from SW Ex. Assoc.)

-488' Earthy hematite-stained rhyol. tuff (lithic) breccia

-500' Cream to light pink bleached lithic tuff breccia

-504' Cream to light tan lithic tuff breccia, bleached, weakly clayey (fragments are eutax. banded)

-509' Hematite > goethite soaked needle/platey Fs tuff or flow

-520' Low density (clayey)-well altered white to light pink xtal-lithic tuff

-530' Light goethite-stained, vuggy Fs xtal tuff or flow (530-45: 500 ppm Ba, 2000 ppm As)

-540' White bleached, light tan stained Fs-xtal tuff or flow

-552' Velvet-hematite stained pink to white tuff breccia or flow (550-60: 500 ppm Ba, 2000 ppm As)

-557' Bleached white with light hem-goeth stained tuff or flow, weak silica or alunite(?)

-558' Weakly brecciated tuff or flow with black hematite in vugs, weak clay

-568' Bleached xtal tuff breccia or flow, goeth on fractures (560-70: 700 ppm Ba, 500 ppm As)

-570' Needle/platey Fs tuff or flow, maroon hematite matrix, strong 60-70° foliation

-580' White to light cream f.g. tuff (ghosts of crystals & lithics) (570-590: 700 ppm Ba, 500 ppm As)

-590' Goethite/hematite stained xtal tuff or flow (590-600: 1500 ppm Ba, 1500 ppm As)

-595' Light maroon hematite-stained xtal tuff or flow, (eutax. band? - vertical)

-600' As 590 but strong goethite wash & velvet-black goethite>> hematite on Fx

-609' Bleached white, flinty matrix (lt. pink) needle/platey Fs xtal flow

-630' Dark-medium maroon Fs xtal tuff or flow

Most of PK-5 probably one of Corral Canyon (Lower Hardshell group) lava flow units but local ash flow tuff characteristics. PK-5 is eastern-most hole.

PK-5: 600-608: 7000 ppm Ba, 1500 ppm As, 50 ppm Cu, 15 ppm Mo

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 330
January 5, 1984
SHIPMENT NO. HOS-E
FLEETWOOD R. KOUTZ
HCH-1-81: 713-714

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 14 Core Chip Samples

ITEM	SAMPLE NUMBER	Ag (ppm)	Au (ppm)
1	HCH-1-81: 713-714	<.2	<.02
2	HCH-1-81: 720-721	<.2	<.02
3	HCH-1-81: 737-744	<.2	.19 .006 oz/T
4	PK-5: 483-491	<.2	<.02
5	PK-5: 505-511	<.2	<.02
6	PK-5: 518-525	<.2	<.02
7	PK-5: 530-545	<.2	<.02
8	PK-5: 550-560	<.2	<.02
9	PK-5: 560-570	<.2	<.02
10	PK-5: 570-590	<.2	<.02
11	PK-5: 590-600	<.2	<.02
12	PK-5: 600-608	<.2	<.02
13	PK-5: 622-626	<.2	<.02
14	PK-5: 635-641	<.2	<.02

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona 1-80-84

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 330
January 5, 1984
SHIPMENT NO. HOS-E
FLEETWOOD R. KOUTZ
HCH-1-81: 713-714

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 14 Core Chip Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

William L. Lehmbeck
Manager

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JOB NO. TAJ 330
PAGE 2

ITEM NO.	SAMPLE NO.
1	HCH-1-81: 713-714
2	HCH-1-81: 720-721
3	HCH-1-81: 737-744
4	PK-5: 483-491
5	PK-5: 505-511
6	PK-5: 518-525
7	PK-5: 530-545
8	PK-5: 550-560

ITEM	1	2	3	4	5	6	7	8
ELEMENT								
Fe	3%	2%	5%	5%	5%	5%	1.5%	2%
Ca	.1%	.05%	.02%	.3%	.07%	.02%	.02%	.02%
Mg	.5%	.5%	.15%	.3%	.15%	.15%	.03%	.03%
Ag	<1	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	500	700	2000	2000
B	300	200	150	100	30	70	15	15
Ba	1500	70	200	100	500	500	500	500
Be	7	3	<2	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50	<50	<50
Co	150	20	15	<5	<5	<5	<5	<5
Cr	<10	<10	<10	<10	<10	<10	<10	<10
Cu	70	15	50	5	15	15	30	7
Ga	10	10	<10	<10	20	15	10	10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	50	30	20	30	50	100	30	<20
Mn	>10000	>10000	>10000	150	150	30	50	20
Mo	<2	<2	<2	<2	7	3	2	2
Nb	20	<20	<20	<20	20	20	<20	<20
Ni	15	5	<5	<5	<5	<5	<5	<5
Pb	20	10	<10	<10	10	15	<10	10
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	10	10	<10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	<100	<100	<100	700	1000	1500	2000	1500
Ti	5000	5000	5000	5000	7000	10000	5000	5000
V	50	30	30	70	100	100	50	50
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	30	15	10	10	20	20	10	<10
Zn	700	300	500	<200	<200	<200	<200	<200
Zr	200	150	150	150	300	300	150	200

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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JOB NO. TAJ 330
PAGE 3

ITEM NO.	SAMPLE NO.
9	= PK-5: 560-570
10	= PK-5: 570-590
11	= PK-5: 590-600
12	= PK-5: 600-608
13	= PK-5: 622-626
14	= PK-5: 635-641

ITEM	9	10	11	12	13	14
ELEMENT						
Fe	2%	2%	5%	5%	3%	5%
Ca	.05%	.05%	.07%	.1%	.2%	.7%
Mg	.03%	.05%	.03%	.05%	.1%	.2%
Ag	<1	<1	<1	<1	<1	<1
As	500	500	1500	1500	<500	<500
B	20	20	30	15	20	15
Ba	700	700	1500	7000	1000	700
Be	<2	<2	2	2	<2	2
Bi	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50
Co	<5	<5	10	15	<5	30
Cr	<10	<10	<10	<10	<10	<10
Cu	5	7	30	50	20	15
Ga	10	15	10	15	15	15
Ge	<20	<20	<20	<20	<20	<20
La	<20	20	<20	<20	30	30
Mn	50	30	150	100	70	1000
Mo	<2	<2	15	15	<2	2
Nb	<20	<20	20	20	<20	<20
Ni	<5	<5	7	5	<5	7
Pb	<10	<10	<10	10	15	15
Sb	<100	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10	<10
Sr	1000	1500	2000	1500	500	200
Ti	7000	7000	5000	5000	5000	5000
V	50	70	100	100	50	70
W	<50	<50	<50	<50	<50	<50
Y	<10	<10	<10	10	20	20
Zn	<200	<200	<200	<200	<200	<200
Zr	200	150	200	200	200	150

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Arizona Registered Assayer No. 11122

~~JHC~~ - ER File

ASARCO EXPLORATION RECORD

Submittal from
W.C.Canady, Bagdad
(633-9902)
93-112 lode claims

[X] FIELD EXAMINATION [ ] LITERATURE SEARCH [X] ASARCO FILE [X]

J. H. C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: CROSBY MINE AREA; Canady Claims, Hayes Mining & Machinery Co.						② Country: Yavapai County	③ State or Province: AZ
						④ USGS Quad.: Malpais Mesa:NE7½	⑤ File or Gore No.
⑥ Latitude: 34°29'N	⑦ Longitude: 113°07'W	⑧ AMS Sheet: Prescott	Township: 13N	Range: 8W	Section: 4,9 plus	⑨ Examined by: FRKoutz/JDSell/WLKurtz	⑩ Date: 11&12/83
						⑪ Office: SWED - Tucson	⑫ Field Days: ½ & ½

Section II Sources of Information

Date Typed 2/8/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Anderson, C.A. & others, 1955, Geology & Ore Deposits, Bagdad Area, USGS P.P. 278.				
Wilson, E.D. & others, 1934, Crosby Mine, in: AZ Lode Au Mines, AZ Bur. Mines Bull.137, p.26-2				
Canady, W.C., 1983, Submittal data (partially fabricated): Assays, reports, map & claims.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [X] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [X] Recon. Area

⑮
- [X] Past Producer
- [ ] Producer
- [ ] Mineral Deposit
- [X] Prospect
- [X] Promotion

Shallow-dip, high-grade stringers.
- [X] Geologic Concept
- [X] Geochem Anomaly
- [ ] Geophy Anomaly
- [X] Potential o.p.-leach

⑯ Production

Commodity	Tons	Grade
Au	2000?	0.2-1.7 opt
(old 10 stamp mill) 1906-38		
2000 tons of dumps grade		0.10 opt

⑰ Reserves
- [ ] Measured
- [X] Estimated

Commodity	Tons	Grade
Tails	500	0.20 opt Au
O.P.Mineral	100,000 Max.	0.10 opt Au
(+ Hi stripping) Potential		

⑱ Num. Drill Holes ?"36"
Approx Total Footage "9600'"

⑲ Excavations Numerous pits
Shafts to 325'(inclined?)

⑳ [X] Spectro. Analysis Attached ㉑ [X] Assays Attached 22 ㉒ [ ] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au >> Ag (Pb, Zn, Cu)

㉔ Ore Minerals-Major: Electrum, pyrite, gn-sl (oxid) Minor: cpy (max. 2% sulfides)

㉕ Host Rocks-Major: Schist - gneiss, granite Minor: Mafic dikes - aplites-pegmatites

㉖ Age of Host Rocks: Precambrian; Laramide or p€

㉗ Nature of Exposures: Fair to good; rolling hills in grus-granite, locally well weathered. Water reported (1934) at 235' underground (inclined distance); also shallow water. Qal covers Crosby HW.

㉘ Alteration: Stringers of qtz in schistose zones, biotite bleached to sericite for several feet; local pegmatites/qtz.-muscov. segregations.

㉙ Total Extent: 600-800'N-S x 500-600'E-W x 3'(?) max.

㉚ Structure: N-S to N10E shears-schistose zones in granite to gneiss, dip to E @ 10-35° zones are gradational into granite. May be roof pendents, xenolith or contact zones.

㉛ Ore Occurrence: Au in py-gn-sl±cpy in quartz stringers, discontinuous in schistose zones. Stringers mineralized zones reportedly 4"-36" wide. Now all oxidized.

㉜ Age of Mineralization: Precambrian(?)

㉝ Conclusions & Recommendations: Most drilling data & reports submitted by Canady fabricated. Frequency, width, and continuity of schistose-quartz stringer zones apparently too restricted to make a significant operation with suspected high stripping ratio but district/region needs to be examined for similar, larger zones.

Note: Most of Sec. 1-6 (except S/4 of Sec. 4) & Sec. 15, T13N, R8W, is state land on BLM map.

Crosby Mine covered by 2 claims of Hibbert (Tempe)

(For additional space use extra sheets)

ASARCO Southwestern Exploration Division

February 8, 1984

To: J. D. Sell

From: F. R. Koutz

Crosby Mine Area
Sections 4 & 9, T13N, R8W
Eureka (Bagdad) Mining District
Yavapai County, AZ

Examination of the immediate Crosby Mine area showed a number of 30°E-dipping schistose-shear zones and pegmatoid lenses which are thin and discontinuous, relatively widespaced, but may contain up to 0.2 opt Au over several feet. Maximum potential at the Crosby Mine would be about 100,000 tons @ 0.10 opt Au with a potentially high stripping ratio, but the district deserves continuing examination for better mineralization.

In late October 1983 I received a promotional letter originally sent to SWMD (Sept. 12) listing drilled reserves of 3.5 million tons @ 0.119 Au, 0.70 Ag, .173 Be, .161 Mo and .134 W (units not given) on the above property. I contacted the owner, W. C. Canady (Bagdad: 633-9902), who said that 28-200' and 8-500' Winkie holes had been drilled on the property by California Core Drilling, a Canadian-financed group formerly of Costa Mesa, CA and now at Goldfield, NV. He said the Be, Mo and W analyses were from a nearby pegmatite zone. Mr. Canady said he had thousands of assays and a number of favorable reports on the property - 150 lode + 9 placer claims - and said he would show them to me when I visited the property. Mr. Canady also said that he had some of the core plus rejects and pulps available so I made arrangements to visit the property and examine the core and data on my way home from the AGS field trip on Nov. 7.

I was met by Steve Fergeson who sometimes works for Mr. Canady as Mr. Canady had a "doctor's appointment." Mr. Fergeson had no data on the property except for a topographic map and a few assay sheets, various rock specimens, and a few old core pieces from some other area. In the field Fergeson showed me a number of stakes where he thought Canady had told him core holes had been drilled but I saw no evidence of drilling or other recent work on the property besides the stakes and sampling holes in old dumps and trenches. Apparently Mr. Canady had jumped these claims several years ago when the original owners (Hibbert-Elliot) neglected to file with the BLM. Mr. Fergeson said the Crosby Mine proper was covered by 2 patented claims owned by Hibbert.

The Crosby Mine area is in a relatively equigranular coarse-grained biotite quartz feldspar granite with a number of pegmatoid segregations with local granite-gneiss to schistose zones. The multiple schistose zones strike roughly N-S and dip to the east at 10-35° and are gradational into the

granite. A few pieces of mafic dike material were noted in the schistose zones. The schistose zones have a higher percentage of biotite which has locally been bleached and altered to sericite-muscovite. The schistose zones contain glassy white quartz veinlets, stringers and segregations, locally crushed, with up to several percent pyrite and possibly other sulfides - now mostly goethite, hematite, and rare trace malachite. A significant amount of the FeOx in the area is, however, from weathering of mafic minerals. Around the old Crosby Mine workings the schistose-sheared zones with quartz seldom appear to be wider than several feet. The old workings consist of several vertical shafts with about 100 feet to water and a number of inclined shafts over a 600-800' N-S by 500-600' E-W area with several thousand tons of dumps, recently backhoed. Some old machinery, the remains of a stamp mill, and about 500 tons of tails remain at the mine. A short description of the property is given in Ariz. Bur. Mines Bull. 137 (1934, p. 26-27) but no other information on the property is available. USGS Prof. Paper 228 on Bagdad did, however, map and examine the area to within 5 miles NW of the Crosby Mine.

Although I was disappointed in the Crosby #1 & #6 areas of Canady north of the mine because there appeared to be too much barren granite between potentially mineralized schistose and pegmatoid zones, I took 14 samples along old trenches and dumps, some high-graded for quartz or iron oxides, some representative. Sample description, location map, assays, and general field notes are attached.

The results were very surprising with only 3 <.02 ppm Au and 4 >2 ppm Au assays from the 11 samples on Canady's ground. Careful reading of the field notes and our examination of 27 Dec. 1983 shows that the better Au values are often from areas with more iron oxide staining and quartz stringers while plain granite gneiss or schist are low grade or barren unless pegmatic quartz segregations are present. The high grade Crosby Mine-tails samples (12,13,14) contain up to 7 ppm Ag, 500 ppm Ba, 7000 ppm Pb, 1500 ppm Cu and 1000 ppm Zn with < As, Sb and only 30 ppm Bi in E-spec analyses suggesting minor but auriferous amounts of galena, sphalerite, chalcopyrite and barite in original unoxidized quartz stringers. There is a possibility that there are enough stringers-schist zones present, considering the shallow dip, that potential for a small (<100,000 ton) open pit Au-leach mine exists.

After visiting the property I asked Fergeson and Canady to send me a copy of their data, claim map and reports. After questioning Mr. Canady over the phone in late November he said that the remaining (mythical) core and pulps were in California but he really didn't know what the core drilling company did with the material when they moved to Nevada. I suspect the stakes were from someone's geophysical work.

A packet of data was waiting for me on return from Denver in late December. It was obvious that Mr. Canady had fabricated most of this assay data and the reports although he may have sent some high-graded gold samples from the Crosby or other dumps to reasonably reputable assayers. R. W. Barnes

and W. H. Sayers, the "authors" of the "reports", are also not registered with the states of Arizona or California as indicated on the reports. The BLM microfiche only lists 93 claims for Mr. Canady although his annual work affidavit lists 112 claims with $13,500 "work" done by Oct. 14, 1983. There are also 2 unpatented "Bonanza" claims of Alden Hibbert of Tempe covering the Crosby Mine proper, but with considerable overlap of Canady's claims.

We (WLK, JDS, FRK) visited the property on Dec. 27 and collected 8 additional dump samples from the Crosby Mine dumps which contained from 0.7 to 8.2 ppm Au and averaged 3.4 ppm (0.10 opt). Other significant elements from the E-spec average analyses were 2.6 ppm Ag, 530 ppm Ba, 270 ppm Cu, 1100 ppm Pb and 340 ppm Zn. Maximum potential tonnage for the Crosby Mine is 800'(N-S) by 600'(E-W) x 3' (max. thickness) ÷ 13 cu. ft/ton = 110,000 tons with a significant stripping ratio and no evidence of continuity between stringers.

I believe our conclusions in the field were in agreement that the frequency and width of gold-bearing stringers over the area sampled were not enough to make a large enough deposit in the immediate Crosby Mine area. In addition the schistose zones did not appear to extend out of the area although there are other mines to the south.

However, I believe the area is worth several days of reconnaissance and sampling to the south and north to determine if other or large zones of similar character exist. I also believe that the Bagdad region may have potential for gold deposits since it is part of a Precambrian greenstone belt-granitic terrain and there are a number of high-grade but small gold occurrences in the district.

In checking with the S. W. Ore Purchasing Dept. I find that for 1971, for example, Bruce Mine (massive sulfide) Cu and Zn concentrates contained only .002/2.2 opt Au/Ag and the Bagdad porphyry copper pit only .002/1.7 opt Ag which may indicate that Precambrian in the Bagdad area is not necessarily rich in precious metals. Prof. Paper 278 (p. 58) also notes that Bagdad has an extremely low Au/Cu ratio compared to Bingham, Ely, Ray, Miami, Ajo and Castle Dome, although Ag/Cu is within the ranges of these other deposits. There are some major Au/Ag mines in the district, the best being the Hillside Mine--a narrow fissure vein with $3.5 million production from 1887-1951 with 90% of the value in Au-Ag and average grade in 1941 of Au: 0.18 opt, Ag: 4.1 opt, Pb: 2.0%, Zn: 3.7%, Cu: 0.3%. This suggests considerable district Au-Ag zoning, complicated by 2 district ages of mineralization in the district: Precambrian and Laramide.

It is of interest to note a recent Vancouver Stock Prospectus of Express Resources who holds 48 claims 4 miles SW of the Crosby Mine in the Sultan Mine (patented) area on which the PEng. recommends $35,000 (Canadian) exploration work without even having visited the property. Part of the potential of the Sultan is listed as being near the Crosby Mine. Perhaps even the Canadians are turned off by Canady's $1,000,000 asking price for his group of claims.

I intend to go back to the Crosby Mine and the Bagdad area this winter and examine/map and sample the surrounding areas to Crosby and check on the Au-Ag potential of the rest of the Precambrian. It may be helpful to sample the inclined workings in the Crosby Mine but this can wait until an additional person for safety is available and a better feeling for the district potential is obtained.

F. R. Koutz

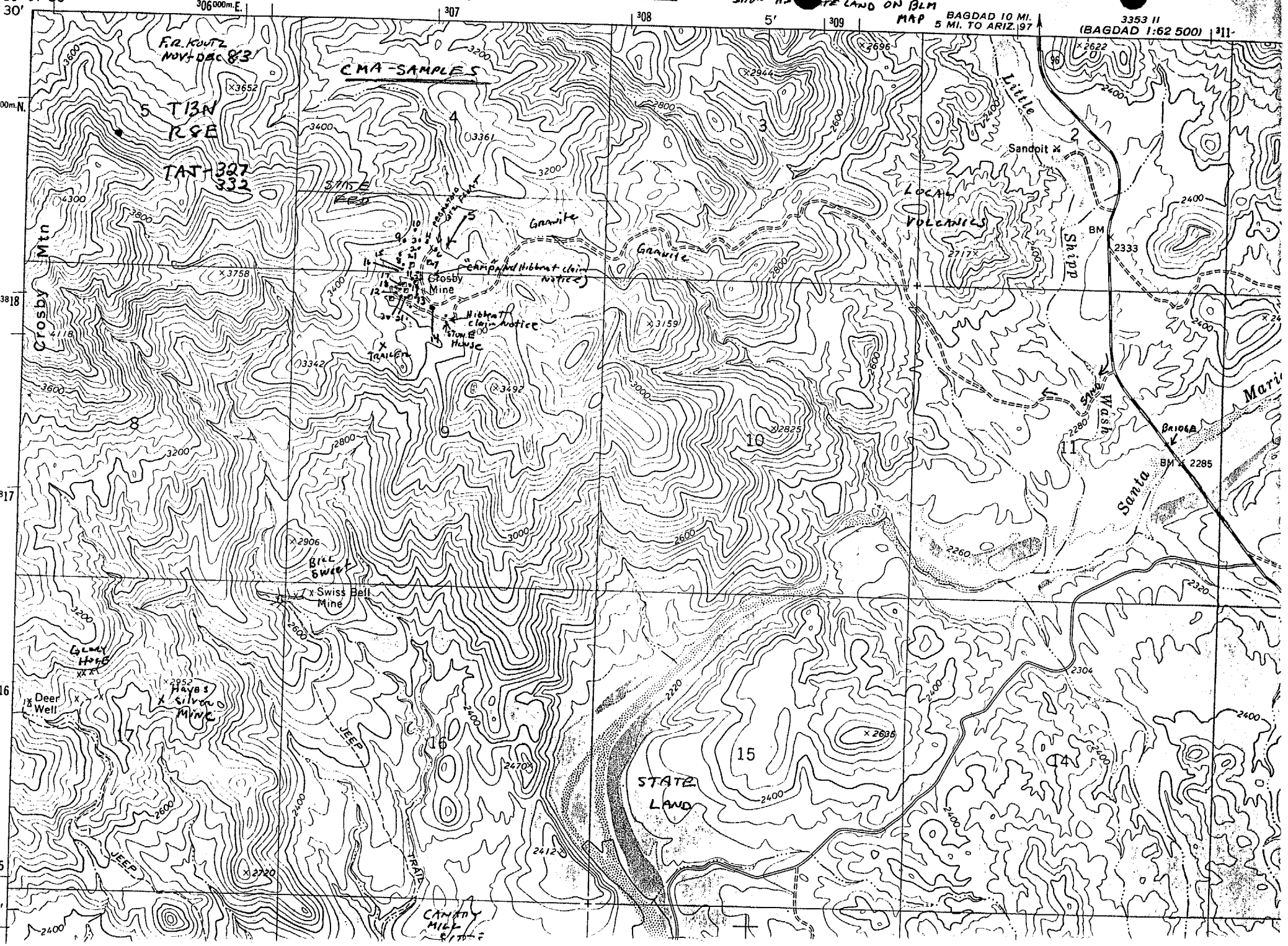
FRK/cg

Attachments: ERS
Location Map
Sample Descriptions
Assays
Crosby Mine Description

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MALPAIS MESA NE QUAD.

SEC 1-6 [redacted] 3N, R8E
SHOW AS [redacted] TE LAND ON BLM MAP



F.R. Kotz
Mon. 7 Nov 83

Field Notes
Crosby Mine Area - (CMA samples)
SE/4 Sec 4 NE/4 Sec 9 T13N R8W / 34°29'N, 113°06' W
Yavapai County, Eureka Mining District, Arizona

Malpais Mesa
7½ min sheet

Area reached by dirt - fairly graded road about 3 miles W of State Rt #89 - V. sandy crossing Little Sheep - Santa Maria Wash.
14 - 2 pound samples
Skyline (8 Nov) - TAT-327

CMA-1: 40' N of inclined shaft + old building at end of road 80' E-W trench to 10' deep (Backhoe)
.09 Goethite (2%) stained schistose granite-gneiss with local QTZ units and pegmatitic clots. Sample: representative grab; trench is 300' deep 3' wide. Local Rotten mafic 2' dikes.
→ Rock in area is probably Bowler Pink Granite of C.A. Anderson (U.S.G.S. P.P. 278 - Bagdad), m→x.g. with orthoclase to 1", biotite + muscovite rich locally cut by a number of N to NNW shear - gneissic zones with may be gradational into Hillside Mica Schist (??). Most of exposures are subcrop - fairly well weathered and "grussy."

CMA-2 80' "T" trench to 6' deep (Backhoe) 25 yrs or more old., Schistose x.g. Granite rock
.33 @ contact with schist - (biot-musc.) rich shear zone. local Chl + epidote, some x.g. milky to smoky QTZ. ¼-½% Goeth, T+hem.: indport from Wx mafics.

CMA-3 100' trench = excavated caved adits ~200 ton dump. x.g. gneiss (Foliated granite)
<.02 with ½% Goeth. - partially after pyrite (Goeth pseudom.); muscovite and chlorite

CMA-4: 20' trench - very old - more schistose x.g. gneiss - pegmatite fragments, x.g. QTZ.
<.02 3% Goeth concentrated on cleavage of schist.

CMA-5: 15-20' Deep 20' Diameter pit in rotten Equigranular Biot > QTZ - Fs Granite
2.9 at depth. Contact with pegmatitic material. Dump is mostly sheared schistose material. Sample is rep. of dump. Sample includes x.g. QTZ veinlet material with 2-3% Goeth, T green Cu ox. Much of Goeth is from Wx of Biot.

CMA-6: Dump from 5' trench. x.g. gneiss with vuggy QTZ veinlets, 1% goeth,
Fire >10 >20 ½ vugs after sulfides (pyrite?), T+hem. Rep. sample incl. QTZ. Local wh. Bull QTZ between 5+6.
0.5850 oz/t
CMA-7: 10x7x50' shaft in granite with shear zones (probably granodiorite - Butrick)
0.59 Locally gneissic granite. Sample from dump @ rim inside fence.

CMA-8: "Core drill site" (??) stake (marked CMA-8 by Pirt) No evidence of hole in
.04 old cactus growth. x.g. granite - pegmatitic gneiss ½% goeth, x.g. QTZ segregations + veinlets 5-10% - looks unaltered 10' radius grab of subcrop.

CMA-9 Stake @ 20x6x3' deep old trench (Recently sampled) "old drill site" - No
9.3 9.4 evidence of hole. x.g. pegmatitic gneiss with 5-10% QTZ segregation and veinlets, ¼-½% Goeth. T hem.

CMA-10 20x6x3-5' trench with stake ("drill site") High graded for QTZ (white +
6.1 goethite - hem stained material) Gneissic granite - pegmatitic zone.
No evidence of hole

BK
7 Nov 83

Crosby Mine Area

CMA-11: N35°W - 30-45°E shear zone in schist with qtz veinlets & pods. 2' cut 2.02 sample ⊥ to vein includes QTZ. Rock is bleached (sensitized) with wht & lt green streaks. Shaft down on vein dip 4-5' high, 18' wide can see down about 50' then dip decreases (level?). Probably N end of Crosby Mine workings. Several 1000 ton dumps just to South but looks like 200-400 tons out of this incline. Warm mine air flowing out. Rotten looking Brk.

CMA-12: "High grade?" one pile (#10 #) on remains of galvanized trash bottom. T blue QUX >10 >20 0.770 opt sample. Many dumps and shafts to N+E. ~2% hem. 5% vuggy goeth 50% xg drusy vuggy QTZ. (glassy) character

CMA-13: Spillage beneath Stamp Mill Bin. (Stamps gone - wheel and fittings still around) 6.1 7.6 4.4 Gneiss with vuggy QTZ, 2-3% goeth. 0.18 opt

CMA-14: Tails (silty-sandy) Lt. reddish (hem) about 500 tons. Badly eroded 7.0 7.4 0.16 local float of v. dark green to black mafic fg. rock in area. ≈21 opt

CHARACTER SAMPLES

Heard around by Steve Ferguson (Box 1436 Bagdad 86321) 35-40, ex USN + .45 ACP "works" for Canady off + on. Works @ "Kitty Litter" mine (furnace) @ Bagdad when needs $. There are two PAT claims @ Crosby Mine still held by Ron Hibbert (used to belong to Elliots). Canady jumped their unpat claims when they didn't do assessment work a number of years ago. Canady was at Doctor on 7 Nov 83 in Prescott (having had examined I hope) and Ferguson had no data except USGS Topo sheets. Said Crosby has 150 claims and several people had been by to look @ claims, a number of Canadians including Lornex or Lornex and several Dallas outfits. Canady had all data - assays with him but Ferguson had a sheet with some average surface assays on it - from drilled area Au (12 assays: .090 oz/T) 0.254 opt Ag, 0.166% Mo, 0.885% U (2 assays) 4.14% Mg etc. + rest of periodic table from E-spec analyses from obscure labs. The drilling over a 1000 x 500' area north of Crosby Mine included 28: 200' holes + 8: 500' holes and was done by "California Core Drilling" - who were evaluating property for themselves or other. The drilling was with a Winkie apparently. Canady says he has 2000 surface assays from the area

- Canady called Nov 14 + said he will send assays from drill holes + some reports & also said there was a good area S. of the Crosby mine worked by Keith Sayers - A geologist from Wickenburg. Crosby has been having trouble with his assayers - they keep reporting no Au but he has found 12 that will give him the "true values" of his property. Canady said he has shown his property to 50 people but they do not use good assayers

Ferguson says Canady wants a ½ million for his property. According to Ferguson the Hayes Mining + Machinery Co is a letterhead only. Would guess that Canady has quite an imagination and a good chance no holes drilled at all.

→ Canady's Ans. serv.: Prescott 445-8202. (also 445-2054 a Mr. De Delaney)

→ Lives @ JR's A Roadhouse - trailer park @ Bagdad 633-9902. Ferguson has sworn he'd trade hell.

- Rocky Section 1-6 is state land! According to BLM mine management maps.

Bem is fil. claims 93 claim. in Cana (here Arizona Parks) - some with assessment work

F.R. Kautz
27 DEC 83

Field notes II - Crosby Mine Area

CMA samples: Trip w/ WLK/JDS TAS-332 - Skyline

It is very clear that CMA 1-14 samples have higher Au in areas with more QTZ veining / pegmatitic QTZ + Goethite especially in schistose zones. Granite areas between shear zones looks barren but should be sampled. Additional samples were taken of dump material from old Crosby Mine workings. These have been "bulkhead" though in the last several years. The Crosby Mine area with old workings is covered by at least two "Bonanza" claims of Alden R. Hibbert (AMC 119687) 185683 & are unpatented. Need to work out the true property status in the area - appears to be some duplication

CMA-15 (5x10" Bag) Schistose dump material including QTZ + Goeth. From CMA #11 (?) incline
~7 East end of pile - reworked by dozer.

CMA-16 - Same dump as 15. less QTZ, schist & Goeth. More pegmatitic material. West end
1.3 of dump - in front of house shell.

CMA-17: From E+S rim of 30'E inclined shaft dump. 2-3% Goeth stained schist, minor
1.1 QTZ. Rock bleached white in part. Pieces < 1"

CMA-18: Schistose gravel sized (< 1/2") dump material (sorted-screened?). N side 100'
4.1 from end of tracks. ~10% QTZ, white to mod. bleached schistose material. 2-3% Goeth,
Tr Lem, Tr Cu ox (malachite). Blk Mn ox - Cu ox (?): Trace.

CMA-19: Dump. weakly bleached schist ~5% QTZ, 2% Goeth. local pegmatitic QTZ-FS
1.4 < 1" pieces plus fines from several points on dump.

CMA-20: Schistose dump material including QTZ, Goeth + pegmatitic < 1/2" West dump
4.3 Just west of Stamp Mill. JDS sample.

CMA-21 As #20 (JDS) But E end of reworked dumps.
1.1

CMA-22: +100' deep shaft (fenced) Schistose granite + chl, 1-2% Goeth., 2-3% QTZ
8.3 local pink fs "stained" in schistose gr. S30E from #11 incline.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 327
November 18, 1983
PROJECT NO.: CMA
SHIPMENT NO. 1
CMA 1 TO 14

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 14 Rock Chip Samples

	ITEM	SAMPLE NO.		Au (ppm)	
	1	CMA 1	HE spec	.07	Trench -80' Schistose - Granite gneiss
	2	CMA 2		.33	80' Trench Schistose Granite
	3	CMA 3		<.02	100' Trench - Gneiss
	4	CMA 4		<.02	80' Trench
	5	CMA 5	HE spec	2.90	Schistose Dump material + Qtz. Segregations
	6	CMA 6	0.585 opt	>10.00*	X-D-gneiss with veggy Qtz veinlets
	7	CMA 7	HE spec	.59	Sheared gneiss
	8	CMA 8		.04	XG Granite gneiss Prog.
	9	CMA 9		9.30	Gneiss + Precambrian Qtz
	10	CMA 10		6.10	Hi Grades for Qtz - Trench in Gneiss. - Pegmatite
	11	CMA 11	E spec.	<.02	Cut across vein at incline
Closby mine	12	CMA 12	0.770 opt	>10.00*	Hi-Grade Pile on Tin
	13	CMA 13		6.10	Stamp mill Bins.
	14	CMA 14		7.00	Tails

*NOTE: Fire assay results to follow as TAJ 327-A.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 327
November 18, 1983
PROJECT NO.: CMA
SHIPMENT NO. 1
CMA 1 TO 14

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 8 Rock Chip Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
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Tucson, Arizona 85703
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JOB NO. TAJ 327
PAGE 2

ITEM NO.	SAMPLE NO.
1	CMA 1
5	CMA 5
7	CMA 7
9	CMA 9
11	CMA 11
12	CMA 12
13	CMA 13
14	CMA 14

ITEM	1	5	7	9	11	12	13	14
ELEMENT								
Fe	3%	2%	2%	3%	3%	5%	3%	7%
Ca	.2%	.07%	.1%	.03%	.15%	.03%	.1%	.1%
Mg	.7%	.3%	.3%	.15%	.3%	.15%	.3%	.3%
Au	.07	2.9	.59	9.3	2.02	>10.	6.1	7.10
Ag	<1	<1	<1	1	<1	7	2	7
As	<500	<500	<500	<500	<500	<500	<500	<500
B	10	<10	<10	<10	30	<10	<10	<10
Ba	700	300	500	100	500	500	300	500
Be	3	2	2	<2	3	7	<2	<2
Bi	<10	<10	<10	<10	<10	20	<10	30
Cd	<50	<50	<50	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	5	<5	<5	<5
Cr	100	150	200	300	300	200	200	50
Cu	50	300	20	200	7	1000	300	1500
Ga	15	<10	10	<10	10	10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	50	30	50	<20	30	<20	<20	<20
Mn	300	150	200	100	300	150	100	300
Mo	7	15	<2	7	<2	70	<2	70
Nb	<20	<20	<20	<20	<20	<20	<20	<20
Ni	10	5	5	15	7	7	<5	<5
Pb	15	700	30	150	<10	3000	200	7000
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	15	10	10	<10	10	<10	<10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	10
Sr	<100	<100	100	<100	100	<100	<100	<100
Ti	3000	2000	2000	700	3000	2000	3000	1500
V	50	70	20	50	50	70	30	300
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	30	20	30	<10	30	15	20	15
Zn	<200	<200	<200	<200	<200	700	<200	1000
Zr	150	150	100	30	100	70	100	70

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 327A
December 27, 1983
PROJECT NO.: CMA
SHIPMENT NO. 1
CMA 1 TO 14

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 2 Pulp Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au (oz/t)	Ag (oz/t)
6	CMA 6	.585	<.01
12	CMA 12	.770	<.01

weak
argent
problem

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell

REGISTERED ASSAYER
CERTIFICATE NO. 9425
WILLIAM L. LEHMBECK
DATE SIGNED 12/27/83
Arizona U.S.A.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 332
January 20, 1984
SHIPMENT NO. 2-CMA

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 8 Rock Chip Samples

ITEM	SAMPLE NO. *	Au (ppm)	
1	CMA-15	8.20	Dump E End } -From N Decline
2	CMA-16	1.30	Dump W End }
3	CMA-17	.70	Rim-outcrop 300E shaft
4	CMA-18	4.20	Dump (Sorted 1/2")
5	CMA-19	1.40	Dump (1/4" pieces + fines)
6	CMA-20 (JDS)	3.60	West of Stamp Mill - Dump (West)
7	CMA-21 (JDS)	1.10	" " " Dump (East)
8	CMA-22	7.00	+100' shaft - rim
		3.4 ppm MEAN = 0.10 opt Au	

*NOTE: Sample numbers start with CMA-15 and not CMA-16 as on the advice.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 332
PAGE 2

ITEM NO.		SAMPLE NO.
1	=	CMA-15
2	=	CMA-16
3	=	CMA-17
4	=	CMA-18
5	=	CMA-19
6	=	CMA-20
7	=	CMA-21
8	=	CMA-22

ITEM	1	2	3	4	5	6	7	8
ELEMENT								
Fe	3%	2%	3%	3%	2%	2%	3%	2%
Ca	.1%	.07%	.15%	.02%	.15%	.07%	.1%	.07%
Mg	.3%	.3%	.3%	.2%	.3%	.3%	.3%	.3%
Au	8.2	1.3	0.7	4.2	1.4	3.6	1.1	7.0
Ag	3	<1	2	5	<1	2	3	5
As	<500	<500	<500	<500	<500	<500	<500	<500
B	10	<10	<10	<10	10	20	50	<10
Ba	500	300	700	500	500	500	700	500
Be	3	2	2	3	3	<2	3	<2
Bi	<10	<10	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	<5	<5	<5	<5
Cr	100	70	100	500	100	20	70	50
Cu	300	30	200	700	200	150	300	300
Ga	10	<10	10	10	10	10	15	10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	50	30	30	20	30	<20	20	50
Mn	200	200	300	200	300	300	500	200
Mo	10	<2	<2	20	2	<2	2	<2
Nb	20	<20	<20	20	<20	<20	<20	<20
Ni	7	5	<5	7	5	<5	7	<5
Pb	700	30	300	5000	300	200	1000	1500
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	10	<10	10	10	10	<10	10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	<100	<100	<100	<100	<100	<100	<100	<100
Ti	3000	2000	2000	2000	2000	2000	3000	3000
V	70	20	50	150	20	30	70	20
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	30	15	20	15	20	15	30	20
Zn	500	<200	200	700	200	200	500	300
Zr	150	100	150	100	100	70	150	150

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

 Bull 137 (1934)

Lawler[10], generally averaged less than $16 per ton in gold.

As seen in the lower adit drifts, which are about 300 feet in length and 170 feet below the collar of the new shaft, the vein ranges from a few inches to about 1½ feet in width. It consists of stringers and irregular bunches of coarse-grained, massive white quartz with irregular bunches and disseminations of pyrite, galena, and sphalerite.

COWBOY MINE

The Cowboy property of four claims is accessible by one mile of road that branches westward from the Bagdad highway at a point 23 miles from Hillside. This deposit, which is reported to have been discovered in the eighties, was relocated in 1923 by G. G. Gray. The U. S. Mineral Resources credit it with a small production of gold-lead ore in 1911, 1925, and 1931. Some of this ore carried about an ounce of gold per ton.

The prevailing rock is micaceous schist, intruded on the east by granite and cut by granite-porphyry dikes. The principal vein strikes northwestward and dips about 60° SW. It has been opened by an inclined shaft, reported to be 200 feet deep, with about 700 feet of drifts. When visited in January, 1934, these workings were under water to the 65-foot level. So far as seen, the vein-filling consists of narrow, lenticular masses of brecciated jasper together with more or less coarsely crystalline shiny gray quartz. It contains small scattered masses and disseminations of limonite, cerussite, anglesite, and galena. The gold occurs mainly with the lead minerals, particularly in the jaspery portions of the vein.

CROSBY MINE

The Crosby property, in Secs. 4 and 9, T. 13 N., R. 8 W., is accessible from the Bagdad highway by 3.5 miles of road that branches westward at a point 13 miles from Hillside.

The U. S. Mineral Resources state that the Nieman and Crosby property produced in 1906-1907, 1911-1916, but do not give the amounts. In 1927, according to Carl G. Barth, Jr.[11], the Red Crown Mines, Inc., produced $1,000 in bullion, and lessees obtained $1,870 from 22 tons of ore. Some production was made during 1928 and 1930. In 1931, according to the U. S. Mineral Resources, 100 tons of ore that averaged more than 1.7 ounces of gold per ton were shipped, and 25 tons were treated by amalgamation and concentration. Lessees were continuing small scale operations in 1934. When visited in January, a little ore was being mined from the adit level and treated in an old 10-stamp amalgamation-concentration mill.

[10] Oral communication
[11] Oral communication

Aplite in granite

The mine is at an altitude of 3,300 feet, in a small area of banded gray schist that is surrounded by light-colored granite and intruded by pegmatite, rhyolite-porphyry, and basic dikes. The vein, which strikes N. 10° E. and dips 25°-30° E., ranges from less than an inch to about 18 inches in width. Its filling, where unoxidized, consists of coarse-textured, glassy, grayish-white quartz with bunches and disseminations of pyrite. Rich ore from the oxidized zone shows brecciated quartz with abundant cellular limonite. The gold appears to occur in the iron minerals and to a less extent as visible particles in the quartz. Considerable sericite has been formed in the wall rocks.

The vein has been opened by an incline, reported to be 350 feet deep, with water at the 235-foot level. According to Carl G. Barth, Jr., the vein has been largely stoped out for a length of 325 feet from the surface to the 165-foot level. He states that it is cut off on the south by a fault occupied by a basic dike.

SOUTHERN CROSS MINE

The Southern Cross Mine, in the southwestern part of the Eureka district, south of Grayback Mountain, is accessible by 4½ miles of road that branches southward from the Kingman road at a point 28 miles from Hillside. This deposit was opened by shallow workings more than thirty years ago. During the first few months of 1934, the present owner, R. L. Gray, shipped from the property about 55 tons of ore that is reported to have contained from 0.75 to 1.0 ounce of gold per ton.

The vein strikes northward, dips from 15° E. to almost flat, and occurs in vertical mica schist. Its gangue is coarse-textured, massive, grayish-white quartz with fractures and small cavities filled with limonite and sparse copper carbonate. The walls show marked sericitization and limonite staining.

Underground workings include a 70-foot inclined shaft that passes through the vein, and two short, near-surface drifts with small stopes on the vein. As shown by these workings, the vein is lenticular and ranges from a thin seam up to 4 feet in thickness.

MAMMOTH OR HUBBARD MINE

The Mammoth property of eight claims, held by Hugh Hubbard and associates, is 8½ miles by road north of Hillside and within ¾ mile of the Santa Maria River.

This deposit, which is reported to be on school land, was discovered many years ago. Since 1931, it has produced several cars of ore.

Here, a moderately hilly pediment is floored by extensively jointed granite. The present shaft, which is 175 feet deep, was sunk on a narrow southward-dipping fault zone that showed a little iron oxide and copper stain. Between the 80- and 100-foot levels, a short drift to the east encountered an ore shoot that

~~SHC~~ - ER

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J. H. C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area	② Country	③ State or Province
JUPITER MINE AREA	USA	Calif.
	④ USGS Quad. Angels Camp	⑤ File or Gore No. Calaveras Co.

⑥ Latitude	⑦ Longitude	⑧ AMS Sheet	Township	Range	Section	⑨ Examined by	⑩ Date
38°6'30"	120°31'30"	Sacramento	3N	13E	15, 22	HGKreis/GJStathis	11/11-12/83
						⑪ Office SWED - Tucson	⑫ Field Days 1½

Section II Sources of Information

Date Typed 2/7/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Clark, W.B. & Lydon, P.A., 1962, Mines & Min. Res. of Calaveras Co., Calif; Calif. Div. of Mines & Geology County Report No. 2				

Section III Appraisal

⑭ Recommendations

- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Possible future interest

⑮

- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ]
- [x] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Gold: Probably very minor at Jupiter Mine; none in sampled area		

⑰ Reserves

[ ] Measured [ ] Estimated

Commodity	Tons	Grade
None known		

⑱ Num. Drill Holes None

Approx Total Footage

⑲ Excavations Old UG Mine north of sampled area

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Recon. for gold; 0.3-0.5% Cr and 0.3-0.5% Ni

㉔ Ore Minerals-Major: None Minor:

㉕ Host Rocks-Major: Altered ultramafic volcanics Minor:

㉖ Age of Host Rocks: Probably Jurassic

㉗ Nature of Exposures: Shallow soil cover with good outcrop exposures in most of the examined area.

㉘ Alteration: Very strong ankerite-talc replacement as shown on attached map.

㉙ Total Extent: 4000' x 1500'

㉚ Structure: Northwesterly striking quartz veins, some of which dip to the east at 40-60°. Northwesterly striking fault on west side of sampled area.

㉛ Ore Occurrence: There are several white bull quartz veins up to a couple feet thick that cut through (NW'ly) the ankerite-talc schist (as at sample sites 22, 28, 29, 100B, 102B, 110B, 117). (Continued)

㉜ Age of Mineralization: Jurassic-Cretaceous

㉝ Conclusions & Recommendations: The quartz veins and the hosting ankerite-talc schist in the sampled area do not contain significantly anomalous gold mineralization. Conceivably the widely spaced quartz veins, the pervasive strong ankerite-talc alteration, and the anomalous arsenic values could reflect gold mineralization at depth; but, this potential is not of current interest. Therefore, no further work is recommended at this time.

(For additional space use extra sheets)

31. Ore Occurrence (continued)

None of the quartz vein samples or the ankerite-talc schist samples carry substantially anomalous gold values. The highest gold value in all the samples is 0.050 ppm in sample 111. Anomalous arsenic values, 130 to 280 ppm As, occur in ankerite-talc schist in the triangularly shaped area bounded by samples 108, 24, and 27. Up to 10,000 ppm combined Ni and Cr occur in the ankerite-talc schist and reflect the ultramafic character of the rock. Platinum and palladium geochemical determinations are being run on two of the Ni-Cr rich, composite samples of ankerite-talc schist.

Geochem Sample Descriptions

Jupiter Mine Area

Calaveras County, California

GJS Samples

83-MLCA-22	Float, qtz. vn. material, vuggy, -2' wide max.
-23	Talc-sericite?-chl-ankerite alt. rock.
-24	Talc-ankerite-sericite rock, sparse gypsum? vnlts. (1/8" wide).
-25	Talc-ankerite-sericite schist.
-26	Sericite-talc schist/ tr. ankerite.
-27	As No. 26/ increase in ankerite.
-28	Qtz. vn. float up to 3' wide, tr. chl. or mariposite?
-29 & -30	No. 29 is mixed qtz. vn. material (float & outcrop) up to 75'+ wide. No. 30 talc-sericite schist/ strong limn. stn. after ankerite.

HGK Samples

ML-C-100A	Ankerite-talc schist (ats). White to light green, soft, abundant former ankerite (some of which forms FeOx cap rock). Hosts qtz. vn. of -100B.
-100B	1' qtz. vein (wht. bull), N20°W, 40°E (host rock is sample -100A).
-101	Ats. Same as -100A. No qtz. veins.
-102A	Ats. Same as -100A but with 0.2% qtz. vnlets (<¼" thick) and few 3"-12" thick qtz. vns (bull wht. qtz). Qtz vn & vnlets strike NW'ly. Sample of host rock including vnlets but not the vein (-102B). Large py cubes in large boulders.
-102B	Float of qtz vn(s). Sample -102A is host rock.
-103	Ats. Same as -100A. Few py cubes. Float indicates a couple 4-6" thick qtz veins.
-104	Ats. Same as -100A.
-105	Ats. Same as -100A. 3%, 1/8" thick asbestos vnlets.
-106	Ats. Same as -100A. Apparent bedrock in road cut.

HGK Samples (continued)

ML-C-107	Black, highly graphitic schist. 1-5% pits w/limonite (after ankerite??). Local pyrite cubes. N-S, 45°E foliation.
-108	Ats. Same as -100A.
-109	Schist, dark to light gray; local minor py cubes & local minor dissem. ankerite (FeOx replaced). Fol. N50W 45°E.
-110A	Ats. Same as -100A.
-110B	Qtz. vein, 1' thick (hosted in ats of -110A).
-111	Ats. Same as -100A. (1' qtz. vn not sampled).
-112	Ats. Same as -100A.
-113	Serpentinite. ≈3% cavities and fractures of FeOx after ankerite.
-114	Sample of ½ ats (as in -100A) and ½ green schist w/rare qtz. vnlets.
-115	Dark gray greenschist(?). 3% former ankerite.
-116	Ats. (same as -100A).
-117	2' thick qtz. vein, white qtz w/fist-sized poorly developed crystals. Few percent of ankerite (as in -116) developed along vein.
-118	Lt. grey schist (probably Calaveras Fm.). Appears to have a couple % of finely diss. ankerite. Soft, friable rock.
-119	Greenschist. Local minor diss. former ankerite near where sample taken. Sample site is on east side and 5'-10' from v. stg ankerite selvage along qtz vein.
-120	Black, graphitic schist with 2-4% pyrite cubes that look syngenetic.

Original

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 329
December 21, 1983
ML-C-100A TO 83-MLCA-30

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 48 Rock Chip Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	As (ppm)	Hg (ppm)
1	ML-C-100A	.014	<.2	<10.	.03
2	ML-C-100B	.038	<.2	<10.	.09
3	ML-C-101	.008	.8	<10.	.01
4	ML-C-102A	.004	<.2	<10.	.04
5	ML-C-102B	.010	<.2	<10.	.07
6	ML-C-103	.002	<.2	60.	.02
7	ML-C-104	.003	<.2	150.	.03
8	ML-C-105	.004	.4	240.	.03
9	ML-C-106	.002	<.2	280.	.02
10	ML-C-107	<.002	<.2	<10.	.05
11	ML-C-108	<.002	<.2	130.	.02
12	ML-C-109	.002	2.6	<10.	.03
13	ML-C-110A	<.002	<.2	50.	.01
14	ML-C-110B	.009	<.2	<10.	.06
15	ML-C-111	.050	<.2	70.	.02
16	ML-C-112	<.002	<.2	<10.	.03
17	ML-C-113	<.002	<.2	60.	.03
18	ML-C-114	.003	<.2	70.	.03
19	ML-C-115	.050	<.2	<10.	.05
20	ML-C-116	<.002	<.2	130.	.01
21	ML-C-117	<.002	<.2	40.	.02
22	ML-C-118	<.002	<.2	30.	.01
23	ML-C-119	<.002	<.2	<10.	.02
24	ML-C-120	<.002	<.2	<10.	.03

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 329
December 21, 1983

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	As (ppm)	Hg (ppm)
40	83-ML-CA-22	<.002	<.2	<10.	.06
41	83-ML-CA-23	<.002	<.2	<10.	.06
42	83-ML-CA-24	.016	<.2	280.	.01
43	83-ML-CA-25	.002	<.2	190.	.03
44	83-ML-CA-26	.015	<.2	40.	.03
45	83-ML-CA-27	.002	<.2	280.	.02
46	83-ML-CA-28	<.002	<.2	20.	.03
47	83-ML-CA-29	<.002	<.2	30.	.06
48	83-ML-CA-30	<.002	<.2	110.	.03

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell
Mr. George Stathis

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 329A
January 27, 1984
ML-C-100A TO 83-MLCA-30

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 5 Composite Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED 1/27/84 Arizona

William Lehmbeck
Manager

*NOTE: Sample numbers are as follows:

Item 49 COMP. ML-C-100A, 101, 102A, 103.
Item 50 COMP. ML-C-100B, 102B.
Item 51 COMP. ML-C-104, 105, 106.
Item 52 COMP. 83-MLCA-22, 28, 29.
Item 53 COMP. 83-MLCA-23, 24, 25, 26, 27, 30.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 329A
PAGE 2

ITEM NO.	SAMPLE NO.
49	= COMP(100A,101,102A,103)
50	= COMP(100B,102B)
51	= COMP(104,105,106)
52	= COMP(MLCA22,28,29)
53	= COMP(MLCA23-27,30)

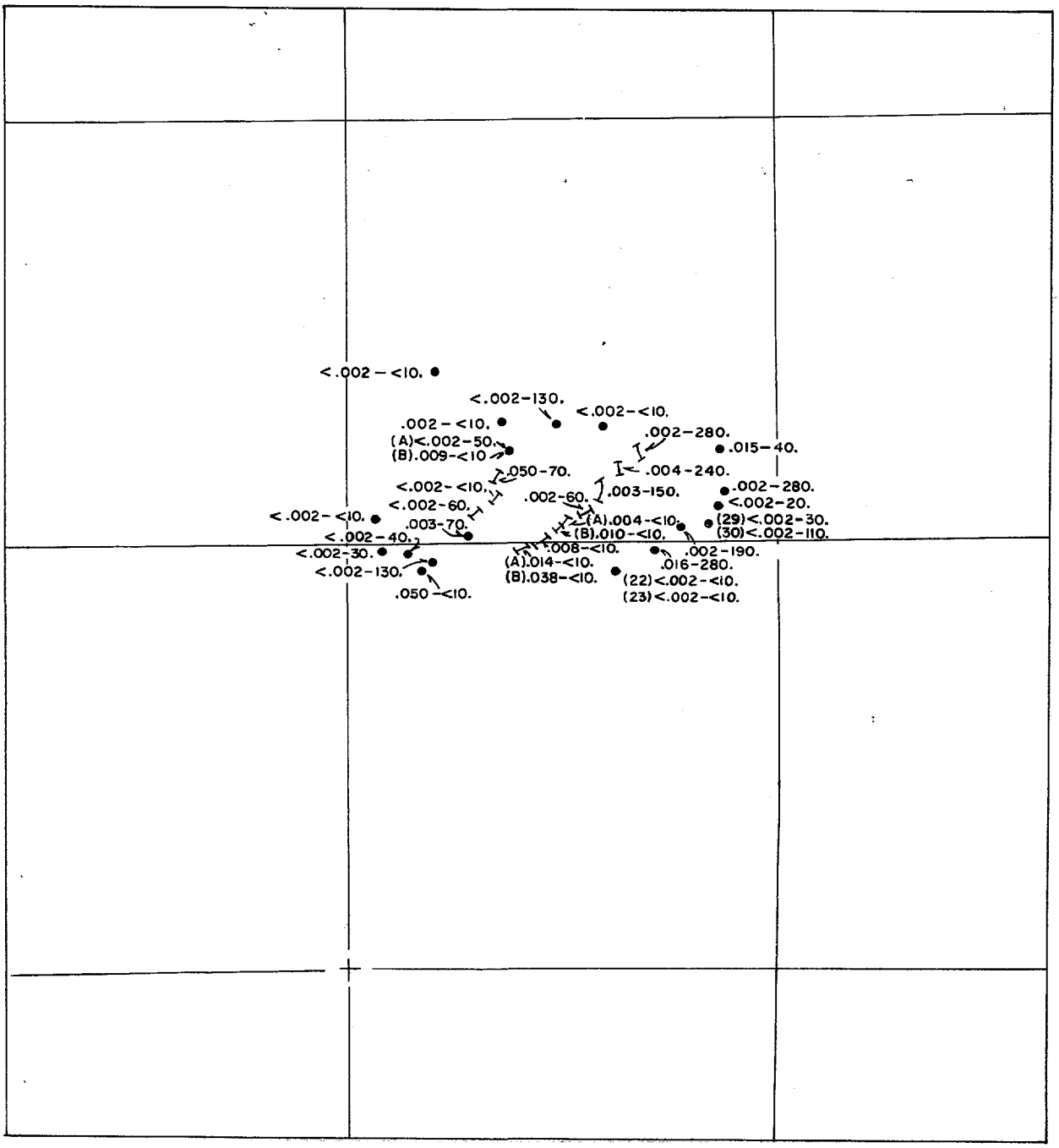
ITEM	49	50	51	52	53
ELEMENT					
Fe	7%	.7%	7%	.7%	7%
Ca	.3%	<.02%	.02%	<.02%	.03%
Mg	20%	1.5%	15%	.3%	15%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500
B	<10	<10	<10	<10	<10
Ba	20	<10	<10	<10	<10
Be	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	150	<5	150	<5	150
Cr	5000	300	5000	200	3000
Cu	7	<2	30	<2	70
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	<20	<20	<20	<20	<20
Mn	700	50	300	70	1000
Mo	2	<2	<2	<2	<2
Nb	<20	<20	<20	<20	<20
Ni	5000	300	3000	30	3000
Pb	<10	<10	<10	<10	<10
Sb	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	30
Sn	<10	<10	<10	<10	10
Sr	<100	<100	<100	<100	<100
Ti	70	<20	700	70	3000
V	30	<10	50	<10	200
W	<50	<50	<50	<50	<50
Y	<10	<10	<10	<10	<10
Zn	<200	<200	<200	<200	<200
Zr	<20	<20	<20	<20	<20

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

R. 13 E.



T. 3 N.

ASSAYS

Au — As
(ppm)

.002 – 280.

OVERLAY

Gold & Arsenic Values

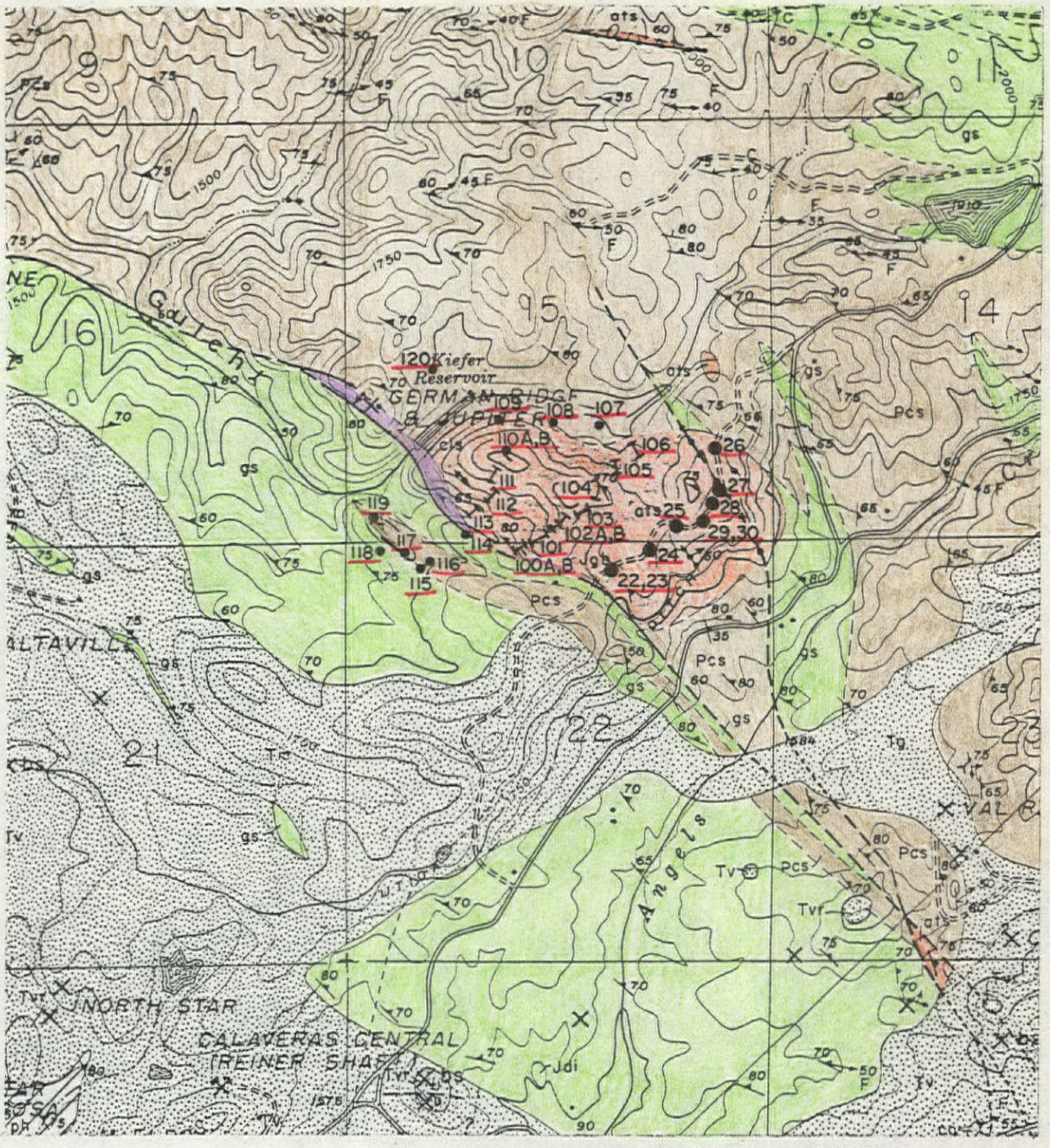
JUPITER MINE AREA

Calaveras County, California

SCALE: 1" = 2000'

H.G.Kreis & G.J.Stathis Jan.13,1984

R. 13 E.



T. 3 N.

Geology from J.H. Eric and A. A. Stromquist, 1947 "Mines & Prospects of the Angles Camp Quad." Calif. Dept. of Mines, Special Report No. 41

GEOCHEM SAMPLE SITE

- ● 83-MCLA Series (G.J. Stathis) } Prefix Omitted
- ● ML-C Series (H.G. Kreis) } Prefix Omitted

- Attitude of bedding
- Attitude of foliation

- Tertiary gravels & tuffs
- gs — Green schist (basaltic-andesitic volcanics of Jurrassic ? or Carboniferous ? age)
- Pcs — Paleozoic quartz-muscovite schist
- ats — Ankerite-talc schist

TO ACCOMPANY Exploration Record Sheet
DATED Feb. 7, 1983
BY H.G. Kreis

Rock Chip Sample Locations

JUPITER MINE AREA

Calaveras County, California

SCALE: 1" = 2000'

H.G. Kreis & G.J. Stathis Jan. 13, 1984

MVK-6015 Xerox

~~JHC~~ - ER

ASARCO EXPLORATION RECORD

[X] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J. H. C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: Recon. Traverse Across NW Projection of McCARTY MINE					② Country: USA	③ State or Province: Calif.	
					④ USGS Quad.: Jenny Lind	⑤ File or Gore No.: Calaveras County	
⑥ Latitude: 38°5'	⑦ Longitude: 120°47'	⑧ AMS Sheet: Sacramento	Township: 3N	Range: 11E	Section: 20, 29	⑨ Examined by: HGKreis	⑩ Date: 11/14/83
						⑪ Office: SWED - Tucson	⑫ Field Days: 1

Section II Sources of Information

Date Typed 2/6/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Watson, B., 1968, Sierra Nevada Report; ASARCO Files				
Clark, W.B., and Lydon, P.A., 1962, Mines & Mineral Resources of Calaveras Co.;				
C.D.M. & G. County Report 2, p. 67.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [X] Option Prop.

⑮
- [ ] Post Producer
- [ ] Producer
- [X] Mineral Deposit
- [ ] Prospect
- [ ]
- [ ]
- [ ] Geologic Concept
- [X] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Not researched but thought to be minor.		

⑰ Reserves
- [ ] Measured
- [ ] Estimated

Commodity	Tons	Grade
None known		

⑱ Num. Drill Holes: None known

Approx Total Footage:

⑲ Excavations: Nill

⑳ [ ] Spectro. Analysis Attached

㉑ [ ] Assays Attached

㉒ [X] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold reconn.

㉔ Ore Minerals-Major: Native gold and/or gold in sulfides Minor:

㉕ Host Rocks-Major: Meta volcanic Minor:

㉖ Age of Host Rocks: Probably Jurassic

㉗ Nature of Exposures: Rare outcrops in area of interest. Less than 5% of the area on the NW projection of the McCarty is in the form of outcrop.

㉘ Alteration: Bleaching, sericitization, silicification & pyritization in a couple, apparently narrow (<20'?) vein-like structures.

㉙ Total Extent: Apparently <20'(?) wide with undeterminable strike length.

㉚ Structure: Strong northwesterly control of foliation (75°-90°E dip) and mineralized structures.

㉛ Ore Occurrence: The northwest projection of Watson's anomalous gold mineralization (SW corner Sec. 28) was nearly entirely covered by shallow soil and only a few outcrops were found (continued)

㉜ Age of Mineralization: Jurassic-Cretaceous

㉝ Conclusions & Recommendations: Two NE-SW traverses were made across the northwest projection of Watson's anomalous gold mineralization, and the outcrops along these traverses were too few to evaluate the presence or absence of Watson's mineralization to the northwest. Because of the scarcity of outcrops, detailed mapping will be necessary to evaluate this area; and there is a possibility that detailed mapping alone will be insufficient to complete the evaluation (i.e., shallow drill holes through the (continued)

(For additional space use extra sheets)

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

?

31. Ore Occurrence (continued)

in the projected area of interest. The few outcrops on the northwesterly projection of Watson's mineralization suggest two types of mineralization, white bull quartz veins with pyrite and pyrite-sericite-quartz replacement mineralization. The white bull quartz veins are present at sample sites 126, just west of 127, 130, and 131. Up to 5% pyrite (vol.) is present in these veins, and their thickness is two feet or less except for site 126 with an approx. horizontal thickness of 40'. The pyrite-sericite-quartz replacement mineralization is present at sites 124 and 132. The pyrite content in this replacement mineralization is 3 to 8% by volume. The width of the replacement mineralization at sites 124 and 132 is not readily determinable without detailed mapping and/or more outcrops. I suspect they are less than 20' in width; however, wider zones could exist under the extensive soil cover. The gold values in the quartz veins range up to 0.29 ppm and up to 0.13 ppm in the replacement mineralization. An arsenic content of 50 to 80 ppm is typical of both types of mineralization.

33. Conclusions & Recommendations (continued)

cover may be necessary after the detailed mapping).

An evaluation of Watson's anomalous gold mineralization and its projection to the northwest and southeast is dependent upon making satisfactory arrangements with Lewallen Land and Cattle Co., the surface-mineral owner of the area with the most favorable potential. The Lewallen family has decided it does not want any mining or trespassing on the Lewallen property. I think the only way to gain access to the property for a complete evaluation is to offer them an option in writing, an option with a lucrative purchase price well in excess of one million dollars.

In summary, the McCarty zone with Watson's anomalous gold mineralization is worth a detailed evaluation. Detailed mapping and sampling is the next logical step, and in all probability shallow drill holes through the soil cover will be necessary to complete the near surface evaluation of the McCarty prospect. This work should not be done unless the Lewallen family is willing to option, or has optioned, the property to ASARCO.

H. G. Kreis
11/14/83

Field Notes

Recon. Traverse Across NW Projection of McCarty Mine

Sections 20, 29 (T3N, R11E)

- Access from SW/4 SW/4 Section 22 (1¼ hour hiking time to site ML-C-135).

- Traverse along E-W drainage in center of SW/4 Sec. 21 is in dark gray fissile slate (more like meta shale) (foliation ≈N20°W steeply dipping) with rare diss. py. grains and occasional (rare-minor) qtz. veining. Large (1'x1'x2') boulders of massive white qtz. observed in drainage but abundance is so low as to suggest only a vein or two of 1-2' thick wht. qtz.

ML-C-121 Meta volcanic (lithic tuff), slightly greenish to white-grey color. Local hairline qtz. vnlets, & local finely dissem. py. Hard rock for the most part. Float sample.

ML-C-122 Meta volc. [spherulites & crystals of qtz(?) and a mineral altered to a green mineral]. Rare tr. pyrite. Quartz claim notice "Whiskey 2", dated May 18, 1983 by Gold Fields Mining Corp. NE of Whiskey 2 is north 242.42' and west 300' from SE cor. Sec. 20, T3N, R11E. E-W claim 500' long, 300' wide.

ML-C-123 Meta volc. w/traces of qtz. vnlets.

ML-C-124 White, sericitized(?) meta volc. w/4-8% diss. pyrite (partly oxid.) and 2% qtz. veining (½" bull white qtz.). Width needs to be determined (few outcrops to work with). Noted mineralized float on hillside to south (hillside that faces sites -123 and -124). Competitors metal tag w/sample number.

ML-C-125 Meta volc.

ML-C-126 White bull qtz. vein w/a few strongly pyritized frag. of host rock. Sampled 30 ft. in old partially filled trench. Very heavy brush cover. Vein width not easily determined because of scarcity of outcrops & brush cover. Horizontally vein appears about 40' wide.

ML-C-127 Schistose meta volc.; N35°W 75°E foliation. Schistosity produced by mechanical process (fault or fold).

ML-C-128 Few 1' x 1' type outcrops of schistose meta volcanic, schist (meta shale), and porphyry(?).

ML-C-129 Grey schist (meta volc. originally?). Fissile. N30°W vert.

ML-C-130 Suboutcropping system of qtz. veins in otherwise totally covered area. Sample of iron stained latite (f-g, equig.) and qtz. veining ($\approx$5% of sample). Lat.(?) is light colored. Degree of alt. difficult to determine.

ML-C-131 White qtz. vein w/5% pyrite (mostly oxidized). Suboutcrop in extensively covered area. Vein appears to be $\approx$2' wide. Competitive sample site No. H-7043.

ML-C-132 Silicified, pyritized, altered (sericite?) meta volc.(?). 2' x 6' outcrop (poorly exposed. $\approx$ 3-5% F.T.S. Competitive sample H-7022.

ML-C-133 Dark tannish grey meta volc., loc. pyrite (& FeOx) < ½%.

ML-C-134 Meta volc.

ML-C-135 Meta volc.

- -

Mines NW of McCarty Mine*

Gold Standard	NW/4	Sec. 17	(T3N, R11E)	Vein in greenstone.
Lucky Boy	SW/4	"	"	Vein in slate & greenstone.
Midnight	S/2	"	"	Vein in greenstone
Ryland Cons.		Sec. 20	"	Vein zone with abundant pyrite hosted in slate & amphibolite.
Lost Log	SW/4	"	"	Vein in slate
Morning Star	SW/4	"	"	Faulted vein in greenstone with dikes.
Buckeye	SE/4	"	"	7' vein with abundant pyrite in slate & greenstone.

*Clark, 1962.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 329
December 21, 1983
ML-C-100A TO 83-MLCA-30

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 48 Rock Chip Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	As (ppm)	Hg (ppm)
25	ML-C-121	<.002	<.2	<10.	.08

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

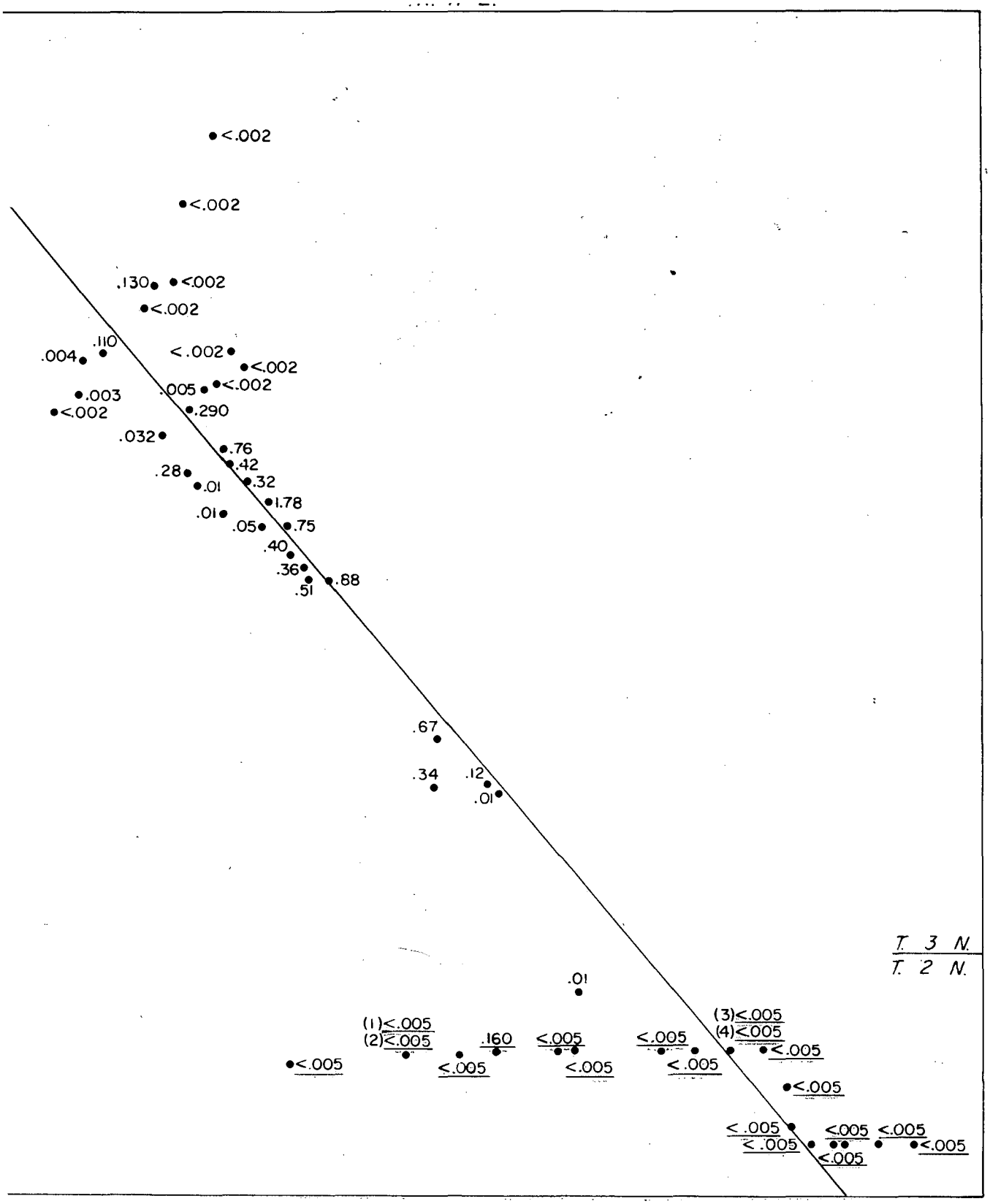
SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 329
December 21, 1983

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	As (ppm)	Hg (ppm)
26	ML-C-122	<.002	<.2	<10.	.11
27	ML-C-123	<.002	<.2	<10.	.03
28	ML-C-124	.130	.6	80.	.18
29	ML-C-125	<.002	<.2	<10.	.05
30	ML-C-126	.110	3.4	50.	.14
31	ML-C-127	.004	<.2	20.	.03
32	ML-C-128	.003	<.2	<10.	.03
33	ML-C-129	<.002	<.2	<10.	.05
34	ML-C-130	.032	.6	80.	.07
35	ML-C-131	.290	2.2	80.	.28
36	ML-C-132	.005	<.2	<10.	.02
37	ML-C-133	<.002	<.2	<10.	.11
38	ML-C-134	<.002	<.2	<10.	.10
39	ML-C-135	<.002	<.2	<10.	.15

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell
Mr. George Stathis

REGISTERED ASSAYER
9425
WILLIAM L. LEHMBECK
Arizona



OVERLAY
Gold Values

Au Assays

.004 ● ppm

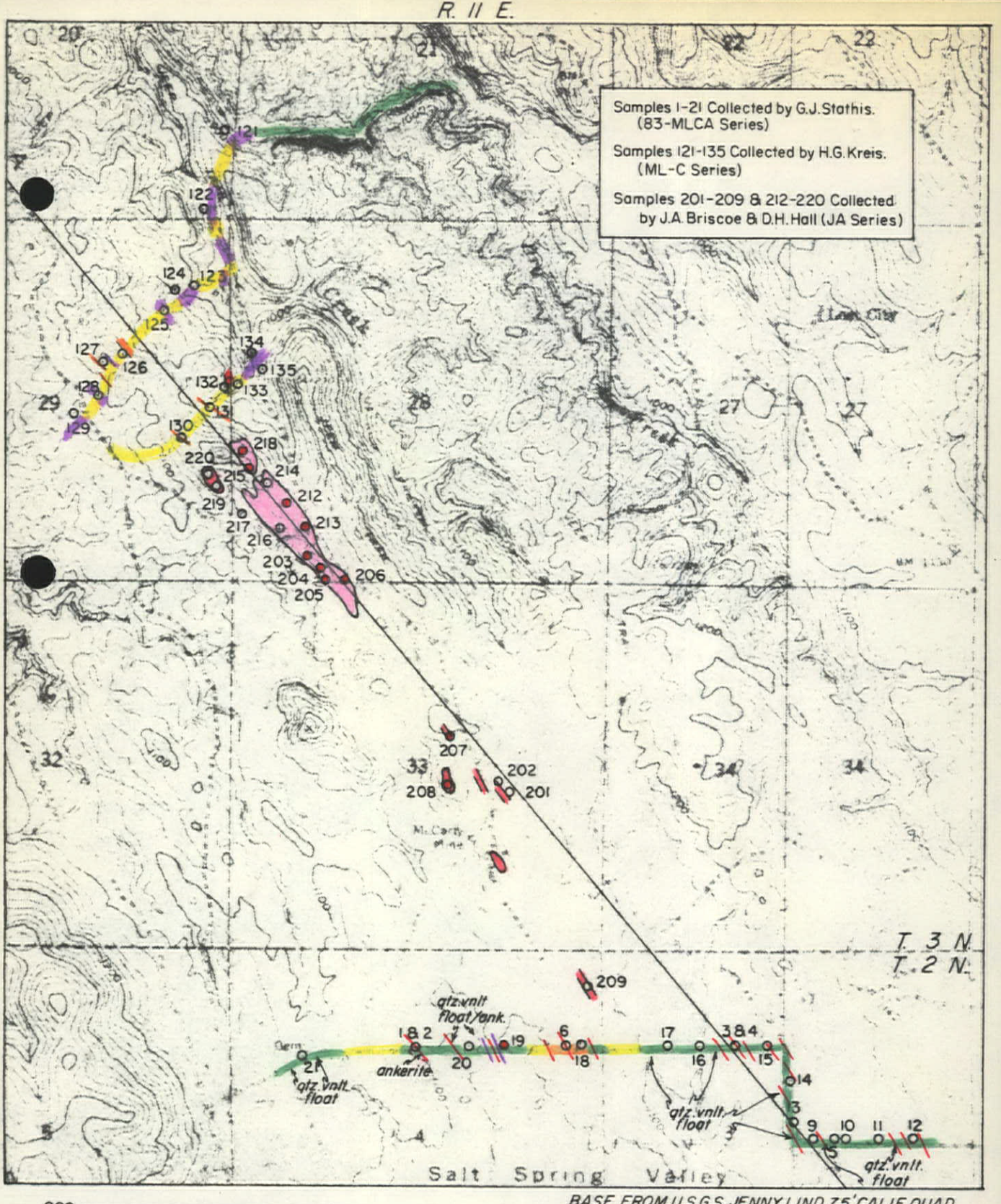
<.005 ● oz/ton (underlined)

McCARTY MINE

CALAVERAS CO. CALIFORNIA

SCALE: 1"=2000'

G.J. Stathis & H.G. Kreis 11-14-83



BASE FROM U.S.G.S. JENNY LIND 7.5' CALIF. QUAD.

209 Rock Sample Site & Number

Anomalous Gold Samples (0.34 ppm Au or 0.01 oz/ton Au

Quartz-Pyrite Vein

Pyrite-Quartz-Sericite Replacement Min.

Ankerite-Quartz-Gold Anomaly

Soil Cover

Meta Volcanic

Meta Shale (Slate)

Granite

TO ACCOMPANY Exploration Record Sheet

DATED 2/6/84

BY H. G. Kreis

Recon. Traverse Across N.W. Projection of

Mc CARTY MINE

CALAVERAS CO. CALIFORNIA

SCALE: 1" = 2000'

G.J. Stathis & H.G. Kreis 11-14-83

MVK-6018

~~JHC~~ ER

J. H. C.

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐ _____

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: McCARTY MINE - SALT SPRING VALLEY						② Country: USA	③ State or Province: Calif.
						④ USGS Quad.: Salt Spg. Valley & Jenny Lind 7½'	⑤ File or Gore No.: Calaveras Co.
⑥ Latitude: 38°04'	⑦ Longitude: 120°46'	⑧ AMS Sheet: Sacramento	Township: 3N, 2N	Range: 11E, 11E	Section: 33, 3,4	⑨ Examined by: GJStathis	⑩ Date: Oct. 13 & 17, '83
						⑪ Office: SWED Tucson	⑫ Field Days: 1½

Section II Sources of Information

Date Typed 1/20/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Briscoe, J.A., & Hall, D.K., 1968 - McCarty Mine Area, pp. 168-171 in B.N.Watson's 12/2/68 ASARCO Rept. "Reconnaissance for Large-Tonnage Precious Metal Deposits in the Sierra Nevada of Calif."				

Section III Appraisal

⑭ Recommendations
- [x] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [x] Access Problem
- [ ]

⑮ McCarty
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [x] Prospect
- [ ]
- [ ]
- [x] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production (McCarty Mine)

Commodity	Tons	Grade
Presumably small - worked 1903-1906, 1928-35 and 1940-42.		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes None

Approx Total Footage --

⑲ Excavations None in immediate vicinity of MLCA (cont.)

⑳ ☐ Spectro. Analysis Attached ㉑ ☐ Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: _____ Minor: _____

㉕ Host Rocks-Major: Shale (Mariposa Schist) Minor: Granite

㉖ Age of Host Rocks: Shale = Upper Jurassic; Granite = Cretaceous

㉗ Nature of Exposures: Fair to poor & confined to immediate vicinity of county road. Shallow postmineral Quaternary gravel cover in all directions away from county road.

㉘ Alteration: Oxid. of the carbonaceous shale. Weak to mod. argilliz. of the granite.

㉙ Total Extent: _____

㉚ Structure: Dominant structure is NW trending, steeply (75°+) NE dipping Hodson Fault zone segment of the Bear Mtns. Fault zone.

㉛ Ore Occurrence: Quartz stringers & veins (<1' wide) generally parallel to bedding. Eratic distribution, but overall qtz. stringer-vein occurs within an 8000' width of the Hodson Fault zone.

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: 1. A broad (approx. 8000' wide) zone of intermittent qtz. vein & veinlet mineralization occurs coincident with the NW trending Hodson Fault zone of the West Gold Belt.

2. MLCA-19 sample, a 500' roadside grab ran 0.160 oz/ton Au (Plate 1).

(continued)

(For additional space use extra sheets)

19. Excavations (continued)

sample site; however, the McCarty Mine was developed by two inclined shafts, about 200' deep and worked to the 300' level.

33. Conclusions & Recommendations (continued)

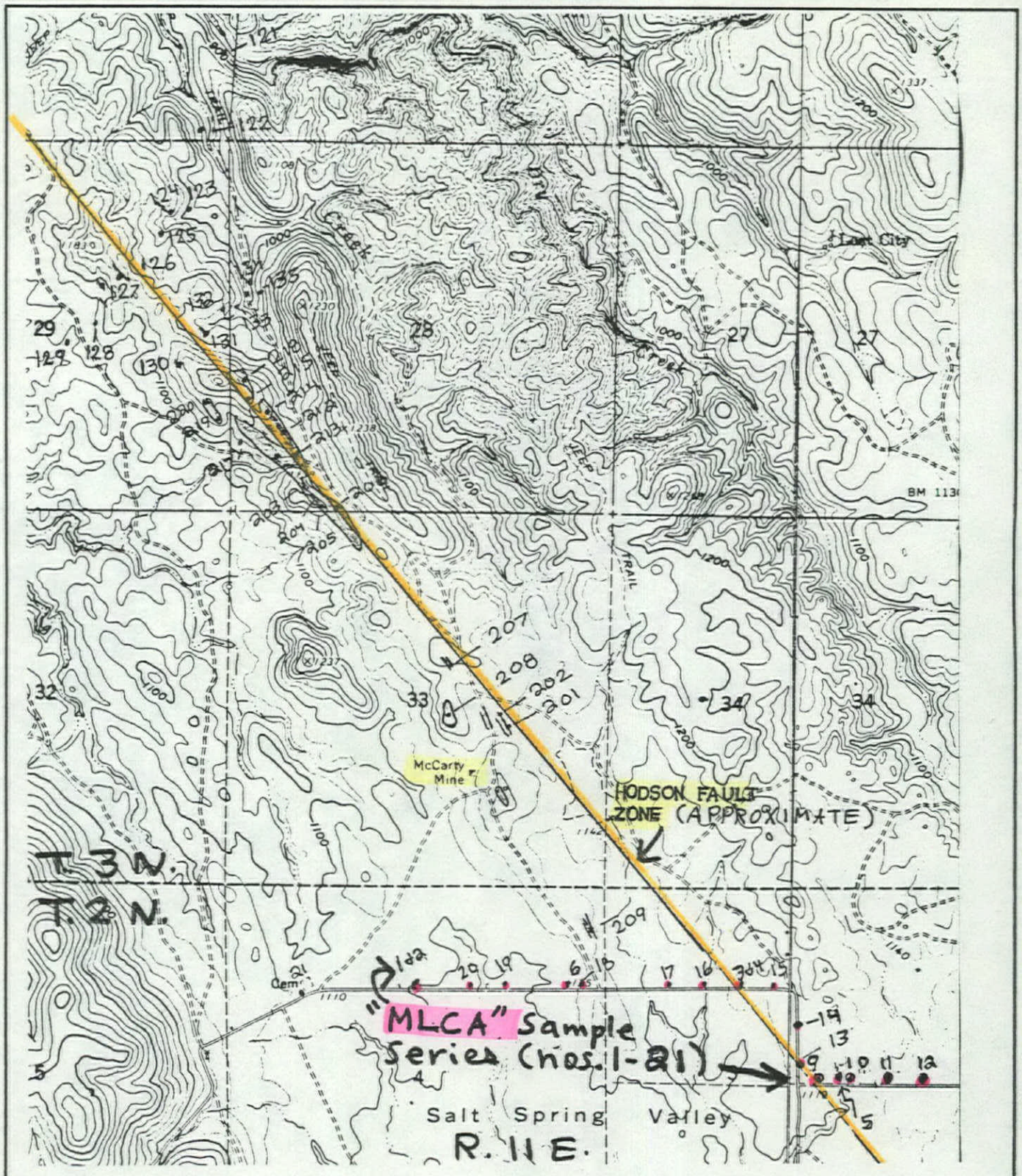
3. 11 of the 18 samples (Plate 2) collected by Briscoe & Hall in 1968 ran (A.A.) 0.01 oz/ton Au or better. All 18 samples were then fire assay checked. The initial A.A. results were found to be valid.

4. A potential strike length of at least 9400' of gold mineralization (not necessarily continuous) is inferred here (Plate 2).

5. Shallow gravel cover occurs south of the McCarty Mine and through Salt Spring Valley. Gravel cover and heavy vegetation cover occurs in Sec. 28 (Plate 1) where the 1968 ASARCO sampling was done.

6. The area of interest is controlled by the Lewallen Land & Cattle Co. and it is recommended that an agreement be reached with them before trespassing onto their holdings.

Upon execution of an agreement with Lewallen Land & Cattle, additional rock-chip sampling should be done where exposures are available in Section 28 & McCarty Mine area. Finally, a program of grid, "peep hole" shallow drilling should be done systematically as a fence of holes at right angles to the NW trend of the Hodson Fault zone. This program should be eventually extended south of the county road and the MLCA sample sites into Salt Spring Valley.

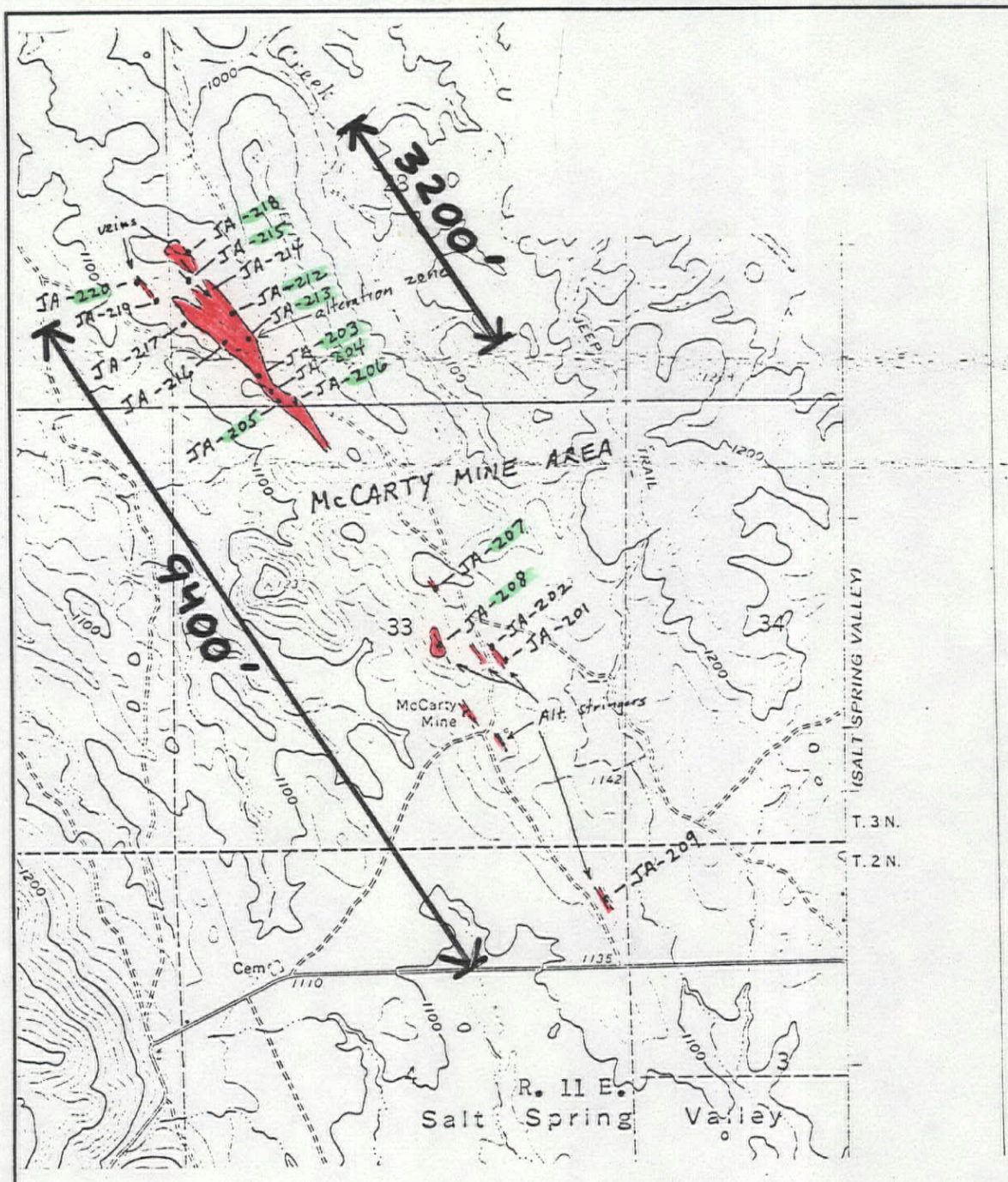


Base: 7½' USGS Jenny Lind & Salt Spring Valley Quads.

ASARCO INCORPORATED

area: Salt Spring Valley-McCarty Mine	data by	state: California	township-range	revisions-date
title: Location Map	drawn by: GJS	county: Calaveras	map number	PLATE 1
mining district	date: Jan. 1984	2000' 0 2000' 4000'		
		contour interval: 20'		

sm 2910 dsm



Qtz. veins, and or, altered & pyritized rock (after J.A. Briscoe & D.K. Hall in 12/2/68 ASARCO report by B. N. Watson)

Anomalous gold sample site (0.34ppm Au or 0.01 oz./ton Au), rock

Base: 7½' USGS Jenny Lind Quad.

ASARCO INCORPORATED

area: McCarty Mine	data by: JAB & DKH 1968	state: California	township-range: T.3N.,R.11E.	revisions-date
		county: Calaveras	map number	PLATE 2
title: Sample Location Map	drawn by: GJS	2000' 0 2000' 4000'		
mining district	date: Jan. 1984	contour interval: 20'		

mn 2910 dam

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	FIRE ASSAY Ag (oz/t)	A. A. As (ppm)	Hg (ppm)
83-MLCA-1	<.005	<.01	<10.	
83-MLCA-2	<.005	<.01	20.	
83-MLCA-3	<.005	<.01	<10.	
83-MLCA-4	<.005	<.01	20.	
83-MLCA-5	<.005	<.01	<10.	
83-MLCA-6	<.005	<.01	20.	
83-MLCA-7	<.005	<.01	<10.	
83-MLCA-8	<.005	<.01	<10.	.07
83-MLCA-9	<.005	<.01	<10.	.03
83-MLCA-10	<.005	.04	<10.	.04
83-MLCA-11	<.005	<.01	<10.	.03
83-MLCA-12	<.005	<.01	10.	.12
83-MLCA-13	<.005	<.01	<10.	.03
83-MLCA-14	<.005	<.01	<10.	.04
83-MLCA-15	<.005	<.01	<10.	.03
83-MLCA-16	<.005	<.01	<10.	.03
83-MLCA-17	<.005	<.01	10.	.09
83-MLCA-18	<.005	<.01	30.	.05
83-MLCA-19	.160	<.01	10.	.42
83-MLCA-20	<.005	<.01	<10.	.40
83-MLCA-21	<.005	<.01	<10.	.04

SAMPLE NO.	SAMPLE DESCRIPTION (Rock)
83-MLCA-1	50-60' wide qtz. vn (float) zone. Bl., fissile sh. w. r., org. lim. after ank?
-2	Same locale as #1, bl. carbn. sh., N.40oW, 55°NE dip, N. side of rd.15' width.
-3	Qtz. vn. as #1, 65' wide zn, ¼"-4" vns in bedding of sh (80% of zn.=sh).
-4	Same locale as #3, shale wallrock. Both samples N. side of rd.
-5	Float, 100'+ wide zone of qtz. vn. material. N. side of rd.
-6	Granite, med. gr., 300'+wide exp. sampled 50',local 0.1"qtz. vn.1-2%py or mgt?
-7	Float, sparse, qtz. vn. material -1'.Carbn. sh.w.r., N20oW, vert. to 75°NE dip
-8	Float, qtz. vnlts, chloritiz. and. (Logtown Ridge fm?).
-9	Mariposa schist, minor qtz. vns., 500' grab sample, N. side of rd.
-10	500' grab sample, 20% outcrop, rest float, mixed qtz. vn. & sh. (Mariposa).
-11	500' grab of qtz. vn. float material. N. side of rd.
-12	500' grab, 20% outcrop (sh. & qtz. vn.), rest qtz. vn. float., N. side of rd.
-13	500' grab, qtz. vn. float, E. side of rd.
-14	800' grab, 90% float, 2/3 rds. sh. 1/3rd qtz. vn. Collected E & W. sides of rd
-15	500' grab, float & suboutcrop, mixed qtz. vn. & sh. w.r., N. side of rd.
-16	500' grab, sparse float, qtz. vn. & sh., N. side of rd.
-17	500' grab, as # 16.
-18	600' grab, suboutcrop, qtz. vn., sh. & granite, N. side of rd.
-19	500' grab, bl. sh. & qtz. vn.
-20	500' intv. sampled last 250-300'W, float & outcrop of qtz. vn. & sh. N. rd.
-21	600' grab, float, qtz. vn. Unmineralized andesite outcrops to the west.

Notes:

1. Samples 83-MLCA-1 thru -7 reported 11/11/83 Skyline Labs. Job No. TAJ-318.
2. Samples 83-MLCA-8 thru -21 reported 11/11/83 Skyline Labs. Job No. TAJ-317.

_____ = Anomalous sample value (0.01 oz/ton Au; 0.30 ppm Hg)

~~JHC~~ ER

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J.H.C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: RAWHIDE MINE AREA, Jamestown Mining District					② Country: USA	③ State or Province: Calif.	
					④ USGS Quad.: Sonora 7½' & 15'	⑤ File or Gore No.: Tuolumne County	
⑥ Latitude: 37°58'	⑦ Longitude: 120°27'	⑧ AMS Sheet: San Jose	Township: 1N	Range: 14E	Section: 4,5, 8,9	⑨ Examined by: GJStathis	⑩ Date: 10/14/83
						⑪ Office: SWED Tucson	⑫ Field Days: ½

Section II Sources of Information

Date Typed Jan. 19, 1984

⑬ References

Author	Date	Title	Publications	Vol. No.
Watson, B.N. et al., Dec. 2, 1968, ASARCO Report on Reconnaissance for Large-Tonnage Precious Metal Deposits in the Sierra Nevada of Calif.				
Eric, J.H. et al., 1955; Calif. Div. of Mines Special Report 41.				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Not available

⑮
- [x] Post Producer
- [ ] Producer
- [x] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
$6,000,000	1867-1905	

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Rawhide to Qtz. Mtn. (3 mile long) zone aggregating 24.8 m.t. of 0.065 oz/ton Au open pit ore (continued)		

⑱ Num. Drill Holes: Many
Approx Total Footage: ?

⑲ Excavations: Shaft inclined to 1800'. 45' winze to 1845' depth.

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Serpentine Minor: Meta andesite (Logtown Ridge Fm)

㉖ Age of Host Rocks: Serpentine - Late Jurassic, Meta andesite = Jurassic

㉗ Nature of Exposures: Good

㉘ Alteration: Ankerite, quartz, mariposite ("gray ore" assemblage)

㉙ Total Extent: 7000' long (SE to Crystalline Mine), <20' wide

㉚ Structure: N34°W, 62°NE main Mother Lode vein with serpentine footwall & Logtown Ridge Fm? rocks on hangwall which dip 75°NE.

㉛ Ore Occurrence: In the Mother Lode qtz vein (max. 70' wide), dissem. in the "gray ore" part of the vein & in late qtz. stringers which cut the "gray ore".

㉜ Age of Mineralization: Cretaceous

㉝ Conclusions & Recommendations: 1. Property was dealt away by NJZ to ABM Mining at time of my visit. 2. This was the only property that the ex-NJZ people gave me permission to visit. B. N. Watson et al. ranked the Rawhide Mine as a 2nd order target yet on p. 109 state "The outcrop values at the Rawhide are the best picked up in the summer's work in the Sierras." My assay results from 3 samples collected from the "gray ore" replacement portion of the Mother Lode vein indicated fairly anomalous gold values & fairly low arsenic and mercury results. (Continued)

(For additional space use extra sheets)

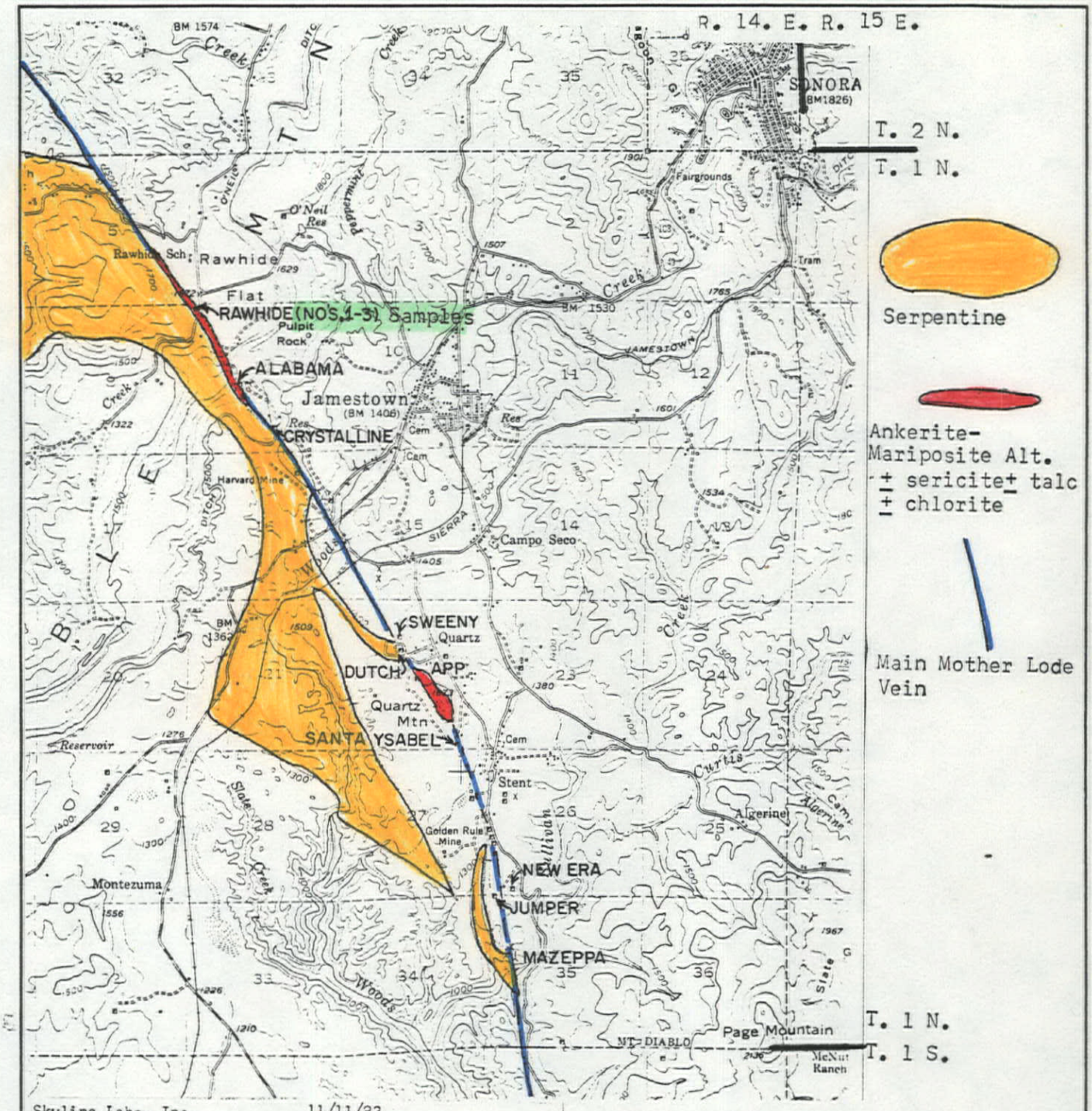
17. Reserves (continued)

at 3.5:1 stripping ratio and 12.9 m.t. of 0.136 oz/ton Au underground ore according to NJZ or Gulf & Western. Rumored to have 5-7 ore zones scattered along 3 miles of the 5 mile length (Jumper to Rawhide Mine) of the Mother Lode in the Jamestown District formerly controlled by NJZ now optioned by Sonora Gold Corp (ABM Mining of Canada). The Rawhide Mine is just one of the ore zones.

33. Conclusions & Recommendations (continued)

3. The main conclusion drawn from the visit to the Rawhide Mine and inspection of the general geology (Plate 1) of the Jamestown District is the close spatial occurrence of serpentine bodies strung out (generally on the FW side) along the Main Mother Lode structure and the more productive gold mines in the district, e.g. Rawhide, Harvard, Sweeny, Dutch, App and Santa Ysabel Mines.

This same association of serpentine at or near areas of gold mineralization has been noted elsewhere in the Main Mother Lode region as well as in the Northern Mines Area, e.g. Alleghany District of Sierra County and Grass Valley District of Nevada County.



Skyline Labs, Inc.
Tucson, AZ
Job # TAJ 317

11/11/83

SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	A. A. As (ppm)	Hg (ppm)
83-MLTU-1	.040	<.01	<10.	.22
83-MLTU-2	.015	<.01	110.	.13
83-MLTU-3	.025	<.01	<10.	.09

Base: 15' USGS Sonora Quad.

Sample No.	Rawhide Mine Sample Description
1	Qtz.-ankerite+min. mariposite.35% rk=stringer qtz, av. ½"wide.
2	15'west of no. 1 sample. more ank. alt., -10%strg. qtz. rk oxid.
3	20'wide zone west of #2. FW metaand.dissem. ox. py 1st 5',Wk qtz. strg.

ASARCO INCORPORATED

area: Jamestown	data by	state: California	township-range	revisions-date
		county: Tuolumne	map number	PLATE 1
title: Location Map	drawn by: GJS	1 ½ 0 1 2miles		
mining district: Jamestown	date: Jan. 1984	contour interval: 100 ft.		

JHC - ER

ASARCO EXPLORATION RECORD

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☒ J.H.C. Tour

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: CASSILL MINE (Placer Gold)					② Country: USA	③ State or Province: Calif.	
					④ USGS Quad.: Georgetown	⑤ File or Gore No.: El Dorado Co.	
⑥ Latitude: 38°59'	⑦ Longitude: 120°45'20"	⑧ AMS Sheet: Sacramento	Township: 13N	Range: 11E	Section: 9, 16	⑨ Examined by: HGKreis	⑩ Date: 10/8/83
						⑪ Office: SWED Tucson	⑫ Field Days: Tour

Section II Sources of Information

Date Typed 1/17/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Kreis, H.G.,	11/28/83,	Cassill Mine, El Dorado Co.; ASARCO memo		

12th Report (1894) & 13th Report (1896) of Calif. State Mineralogist have very brief descriptions of old placer mines in the area.

Section III Appraisal

⑭ Recommendations

- ☐ Action Now
- ☐ Too Low Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ Future check

⑮

- ☐ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☐ Prospect
- ☐ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
Not researched		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
Operation claims to have proven reserves of 500,000 cu. yds. at $80-100 Au/cu. yd. (10-1983).		

⑱ Num. Drill Holes 8 (more?) Approx Total Footage

⑲ Excavations Site cleared for portal of adit.

⑳ ☐ Spectro. Analysis Attached ㉑ ☐ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold

㉔ Ore Minerals-Major: Native gold (placer) Minor:

㉕ Host Rocks-Major: River Gravel Minor:

㉖ Age of Host Rocks: Tertiary(?)

㉗ Nature of Exposures: No exposures of gold bearing gravel.

㉘ Alteration: None

㉙ Total Extent:

㉚ Structure: Old buried river channel.

㉛ Ore Occurrence: Placer gold.

㉜ Age of Mineralization:

㉝ Conclusions & Recommendations: Cassill Mine is being developed by Youngquist Mine Development for International Recovery. The reserves & proposed mining operation at the Cassill Mine have very little credibility. No further work is recommended at this time but the Tertiary channels of the area might be worth a review at some time in the future.

(For additional space use extra sheets)

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

J. H. C. ~~JHC~~ ER

ASARCO EXPLORATION RECORD

FEB 27 1984

☐ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☒ Report offered to ASARCO (verbal)

Section I General Indexing

① Name(s) of Property or Area: BLUE LEDGE MINE AREA					② Country: USA	③ State or Province: Calif.	
					④ USGS Quad: Seiad Valley	⑤ File or Gare No.: Siskiyou County	
⑥ Latitude	⑦ Longitude	⑧ AMS Sheet: Weed	Township: 48N, 47N	Range: 11W, 11W	Section: 35, 3	⑨ Examined by: HGKreis	⑩ Date: 1/12/84
						⑪ Office: SWED Tucson	⑫ Field Days: 0

Section II Sources of Information

Date Typed 1/17/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Not researched				

Section III Appraisal

⑭ Recommendations
- ☐ Action Now
- ☐ Too Low Grade
- ☐ Too Small
- ☐ Ownership Problem
- ☐ Access Problem
- ☒ Future interest

⑮
- ☐ Post Producer
- ☐ Producer
- ☐ Mineral Deposit
- ☐ Prospect
- ☐ Geologic Concept
- ☐ Geochem Anomaly
- ☐ Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
Not researched		

⑰ Reserves ☐ Measured ☐ Estimated

Commodity	Tons	Grade
Possibly one million tons @ 3% Cu, 4% Zn, 4-5 oz. Ag, 0.04-0.1 oz. Au (Based on 10 rotary drill hole intercepts)		

⑱ Num. Drill Holes 14 rotary

Approx Total Footage

⑲ Excavations: Old underground mine

⑳ ☐ Spectro. Analysis Attached ㉑ ☐ Assays Attached ㉒ ☐ Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Silver, copper, zinc, gold

㉔ Ore Minerals-Major: Not described Minor:

㉕ Host Rocks-Major: Schist (meta rhyolite) Minor:

㉖ Age of Host Rocks: Not described

㉗ Nature of Exposures: Not described

㉘ Alteration: Sericite & silicification associated with massive sulfide mineralization.

㉙ Total Extent: At least 5' to 35' thick & 3500' long.

㉚ Structure: Ore zone is 4' thick, strikes north-south and dips 70-90°.

㉛ Ore Occurrence: Ore is massive sulfide deposit (50% total sulfides, mainly pyrite) with sharp contacts & very competent walls. It has been drilled from the surface to a depth of 900' (continued)

㉜ Age of Mineralization:

㉝ Conclusions & Recommendations: The ore is very narrow and the property payments and work commitments are too costly to be of interest to ASARCO.

(For additional space use extra sheets)

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

31. Ore Occurrence - continued

over a 3200' strike length. The ore is the southerly continuation of the Blue Ledge Mine. Freeport drilled the northerly continuation of the Blue Ledge Mine and intercepted only pyrite. In the hanging wall, adjoining the ore, is a 10' to 30' thickness of 0.04 to 0.06 oz. Au.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] I. H. C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area	② Country	③ State or Province
GEORGIA SLIDE MINE	USA	Calif.
	④ USGS Quad. Georgetown	⑤ File or Gore No. El Dorado Co.

⑥ Latitude	⑦ Longitude	⑧ AMS Sheet	Township	Range	Section	⑨ Examined by	⑩ Date
38°55'30"	120°50'45"	Sacramento	13N	10E	34	HGKreis/GJStathis	9/21/83
			12N	10E	3	⑪ Office SWED - Tucson	⑫ Field Days ½

Section II Sources of Information

Date Typed 1/9/84

⑬ References

Author	Date	Title	Publications	Vol. No.
ASARCO Files				
Logan, C.A., 1934, Mother Lode Gold Belt; Div. of Mines Bull. No. 108				
Clark, W.B. & Carlson, D.W., 1956, Mines & Min. Res. El Dorado Co.; Ca. Jour. of M. & G, Vol. 52, No. 4				

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] Follow-up

⑮
- [x] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
Gold: $3 million ($20 Au), may be greatly overestimated		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Potential: 2 to 15 million tons at 0.03-0.05 oz. Au		

⑱ Num. Drill Holes First drilling 11/1983

⑲ Excavations Partially overgrown pit of hydraulic mine

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold

㉔ Ore Minerals-Major: Native gold Minor:

㉕ Host Rocks-Major: Schist (Mariposa Fm.) Minor:

㉖ Age of Host Rocks: Jurassic

㉗ Nature of Exposures: Large irregularly-shaped pit area with extensive soil cover outside of pit and in bottom of pit. Good exposures in pit walls.

㉘ Alteration: Local, apparent sericite alteration

㉙ Total Extent: Not determined

㉚ Structure: N5°W 85°E foliation with parallel and cross cutting, 20-70' thick seams of gold-quz. veinlets.

㉛ Ore Occurrence: Gold is present in quartz veinlets that occur in narrow zones known as seam deposits. Detailed sampling of the wall rocks was done in underground workings in 1914. (Continued)

㉜ Age of Mineralization: Jurassic-Cretaceous

㉝ Conclusions & Recommendations: The purpose of our visit was to see if the old Georgia Slide workings could be found in the field along with sufficient outcrops for a detailed sampling program. The approximate old mine site was located along with sufficient outcrops for detailed sampling. A check of the courthouse records showed the property was optioned to Nevada Resources, and a call to Nevada Resources revealed they farmed it out to another company. Consequently, no detailed sampling or research was done (continued)

(For additional space use extra sheets)

31. Ore Occurrence (continued)

An area of 150' x 300', the extent of the underground workings, averaged 0.03 oz. Au (Smith, Emery, and Co. assays). Since that time there have been numerous surface sampling programs to evaluate the low grade gold potential, but the results of these programs are not known to ASARCO.

The size of the mineralized area is not well defined, but it is said to be 3500' long and up to 400' wide. In 1914 the open cut from hydraulic mining was described as being 700' long, 100-200' wide, and 50-200' deep. The northern extent of the open cut may be overgrown and not readily recognizable. In fact, in 1968, two ASARCO geologists spent two days looking for the Georgia Slide Mine in the dense brush but never found it, and Nevada Resources' geologists spent a couple of days trying to locate the old mine.

The potential of the Georgia Slide Mine appears to be 2 to 15 million tons at 0.03-0.05 oz. Au. This is based on published information and ASARCO's old file information which is outdated and of unknown reliability. Undoubtedly, there are more recent detailed evaluations with the owners and/or other parties. Nevada Resources, as part of a joint venture, did their first phase of drilling in November 1983.

A few character samples were taken at the time of our visit and the results are attached. These samples were taken in and about an old cut (pit) but it is not known if this sampled, old cut was the main Georgia Slide Mine area. The gold values of these samples are low, <0.015 oz. Au, and suggest a lack of significant gold values in the wall rocks of the cut that was sampled. However, more sampling definitely would be needed to evaluate the dispersion of gold in the sampled pit area, and more research would have to be done to determine the exact location of the most productive portion of the Georgia Slide mineralization.

33. Conclusions & Recommendations (continued)

on the Georgia Slide. From a follow-up call in January, it was learned that Nevada Resources is still in a joint venture with another company and more drilling is planned.

The Georgia Slide Mine activity is worth following in 1984, and we will check on the activity in a few months.

GEOCHEM SAMPLES

GEORGIA SLIDE MINE AREA

September 21, 1983

Samples by HGK

83-ML-EL-A Sericite schist, N-S 85°E foliation, 1% limonite pseudomorphs after pyrite cubes (disseminated). Sample chipped across 25' stratigraphic thickness. Light gray color as if altered.

-B Sericite schist, 1% F.T.S. (diss py.cubes), 2-6% qtz. veins that are lenticular pods and lenses in foliation of schist (pods-lenses <1" thick). Schist is a mottled light and dark grey color, 25' traverse, 15' strat. thickness.

-C White sericite schist with ½% F.T.S. (diss. py. cubes). Minor amount of v. stgly clay-ser. alt. tuffaceous volcanic(?) w/1-8% diss. F.T.S. Sample representative of 50% of a 30' strat. thickness.

-D Saddle ≈500' WNW of pit. Stgly. clay (ser.?) alt. schist w/4% goeth. stain, loc. ½% F.T.S. fract. control., tr qtz. (Blue competitive flag.)

-E Sericite schist & quartzose sericite schist. Thin bedded. ¼% F.T.S.; thin minor MnOx stain; goethite & minor hem. stain. Small outcrop, 2' x 30';≈35° E'ly dip to foliation (slump).

Samples by GJS

83-MLEL-1 4' deep pit; thin bedded, soft, clay-sericite schist/light goeth stn. -1% oxid., dissem. py.

-2 As above, tr. py., collected along 50', approx. east-west channel.

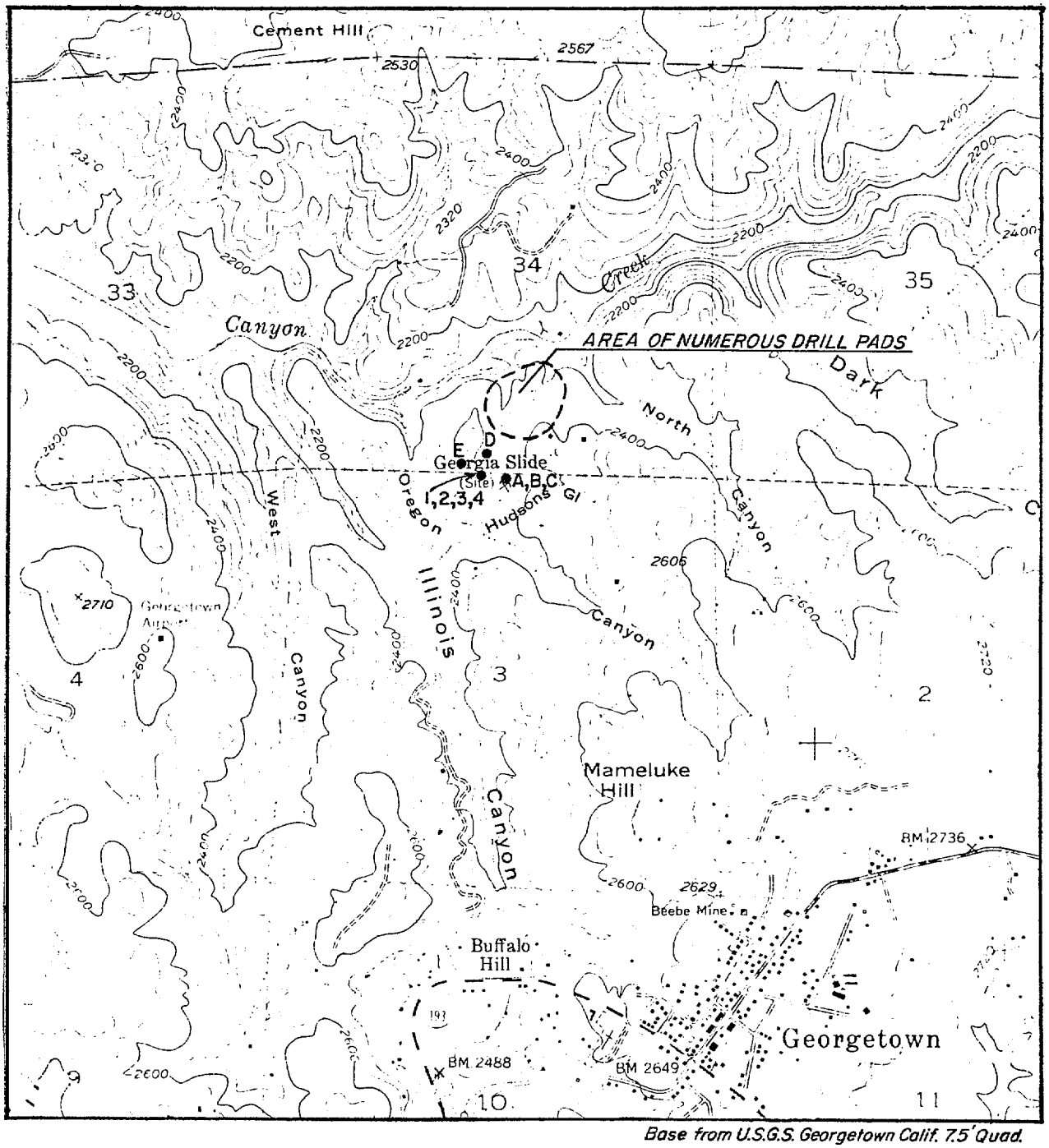
-3 Rock as nos. 1 & 2, top of ridge spur, 150' E. of no. 2. Twenty foot long channel sampled. Competitor sample site (flagging).

-4 20' long sample channel. 50:50 outcrop & residual soil. Latter goeth. stn. Rock is argilliz./tr? dissem. oxid. py.

R. 10 E.

T. 13 N.

T. 12 N.



Base from U.S.G.S. Georgetown Calif. 7.5' Quad.

TO ACCOMPANY Exploration Record Sheet
DATED 1/9/84
BY H.G. Kreis

ASARCO Inc.

Rock Chip Sample Sites.

GEORGIA SLIDE MINE AREA

EL DORADO COUNTY, CALIFORNIA

SCALE: 1" = 2000'

H.G. Kreis & G.J. Stathis 1-5-84

MVK-6005 (Xerox)

Georgia Slide Mine
El Dorado Co., Ca.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 314
October 7, 1983
GEORGE J. STATHIS
83-ML-EL-A TO 83-MLEL-4

ASARCO INCORPORATED
Attn: Mr. George J. Stathis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 9 Rock Chip Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Hg (ppm)	As (ppm)
1	83-ML-EL-A	<.005	<.01	.15	10.
2	83-ML-EL-B	<.005	<.01	.11	10.
3	83-ML-EL-C	<.005	<.01	.25	<10.
4	83-ML-EL-D	<.005	<.01	.22	<10.
5	83-ML-EL-E	<.005	<.01	.06	<10.
6	83-MLEL-1	<.005	<.01	.11	<10.
7	83-MLEL-2	<.005	<.01	.03	10.
8	83-MLEL-3	.015	<.01	.26	<10.
9	83-MLEL-4	<.005	<.01	.10	10.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell
Mr. H.G. Kreis

REGISTERED ASSAYER
CERTIFICATE NO.
9425
WILLIAM L.
LEHMBECK
DATE SIGNED
Arizona U.S.A.
83

~~JHC~~ J.H.C.R

ASARCO EXPLORATION RECORD

[X] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: MONARCH-SUGAR LOAF MINE					② Country: USA	③ State or Province: CA	
					④ USGS Quad.: Fiddletown	⑤ File or Gore No.: El Dorado Co.	
⑥ Latitude: 38°36'00"	⑦ Longitude: 120°52'10"	⑧ AMS Sheet: Sacramento	Township: T9N	Range: R10E	Section: SW/4 27	⑨ Examined by: HGKreis	⑩ Date: 10/18/83
						⑪ Office: SWED Tucson	⑫ Field Days: ½

Section II Sources of Information

Date Typed 1/6/84

⑬ References

Author	Date	Title	Publications	Vol. No.
B. Watson	12/2/1968	Sierra Nevada Report; ASARCO File, p.276-277		

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No further work

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [x] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
Gold from nearby mine		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
Not researched		

⑱ Num. Drill Holes: None
Approx Total Footage:

⑲ Excavations: Old workings nearby

⑳ [ ] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Gold

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Meta conglom., Andesite porphyry Minor:

㉖ Age of Host Rocks: Mesozoic

㉗ Nature of Exposures: Scattered outcrops separated by shallow cover (soil).

㉘ Alteration: No obvious hydrothermal alteration

㉙ Total Extent:

㉚ Structure: N10-20°W striking, vertical to steeply west dipping, cataclastic foliation is common.

㉛ Ore Occurrence: Attached sampling was done to confirm Watson's 50' chip sample of conglomerate that ran 0.95 ppm Au. No gold was detected in any of the samples of conglomerate or (continued on p. 2)

㉜ Age of Mineralization: Late Jurassic-Early Cretaceous

㉝ Conclusions & Recommendations: The anomalous gold value in Watson's one sample of the conglomerate was not substantiated by the additional sampling of this examination. No further work is recommended.

(For additional space use extra sheets)

31. Ore Occurrence (continued)

andesitic volcanics. The only mineralization noted in the sampled area was trace to 1% pyrite (partially to totally oxidized) in samples ML-ED-12 and -13. The pyrite is very fine grained in size, and it is disseminated. Sample ML-ED-12 had an anomalously strong FeOx-MnOx stain. Judging from a few small outcrops in the sample ML-ED-12 area, there are one or two FeOx-MnOx "mineral zones," about two feet in thickness, that parallel the NNW fabric of the area.

In several of the conglomerate outcrops, the texture of the rock was that of a breccia. So the conglomerate rock type name could change with a more detailed examination of the area.

Monarch-Sugar Loaf Mine

Geochem Sample Descriptions

ML-ED-10 Dark gray colored metaconglomerate.

-11 Dark gray colored metaconglomerate.

-12 Dark gray colored metaconglomerate with a trace of finely disseminated pyrite. Two foot width of anomalously strong FeOx-MnOx on east side of outcrop.

-13 Metaconglomerate. Sample taken from a half dozen ribs protruding through the soil cover. Approx. 10% of chips carry FeOx after 1% diss. pyrite.

-14 Andesite (almost fine-grained diorite). Locally fresh biotite. Five percent of sample is breccia-conglom.-agglom. like.

-15 Andesite with a few rock fragments.

-16 Andesitic volcanic-sedimentary(?) rock.

-17 Andesitic volcanic-sedimentary(?) rock.

-18 Andesitic volcanic-sedimentary(?) rock.

-19 Andesitic volcanic-sedimentary(?) rock.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

Monarch - Sugar Loaf
El Dorado Co. CA

REPORT OF ANALYSIS

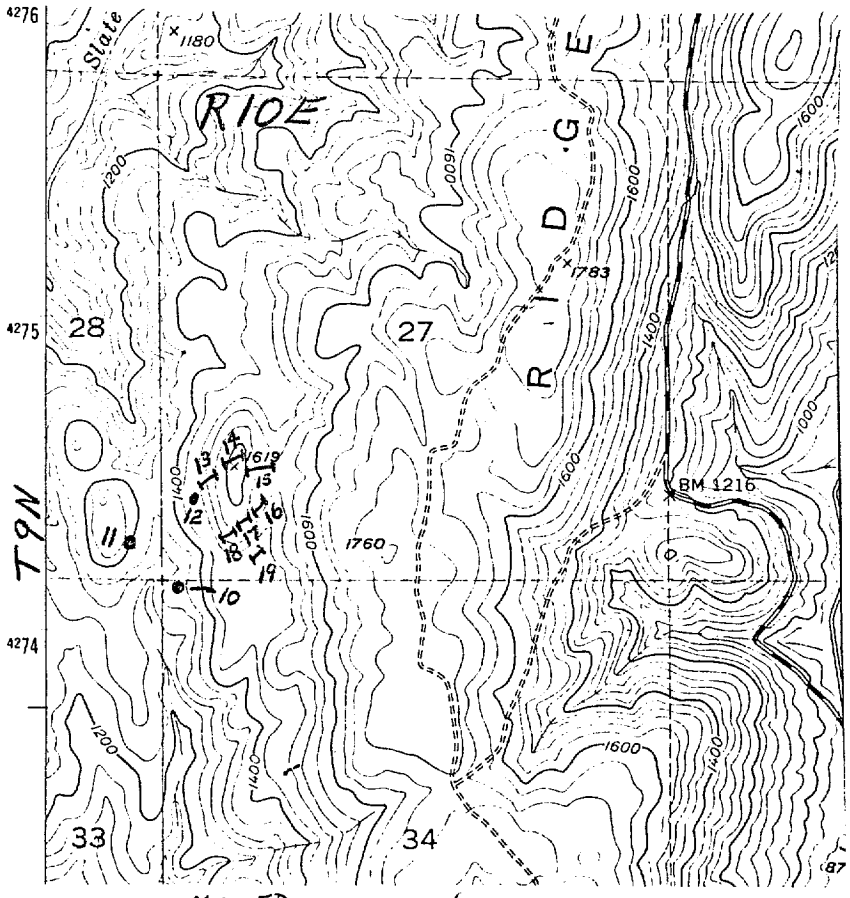
JOB NO. TAJ 326
November 21, 1983
ML-ED-10 TO ML-ED-19

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 10 Rock Chip Samples

ITEM	SAMPLE NO.	Au (ppm)
1	ML-ED-10	<.002
2	ML-ED-11	<.002
3	ML-ED-12	<.002
4	ML-ED-13	<.002
5	ML-ED-14	<.002
6	ML-ED-15	<.002
7	ML-ED-16	<.002
8	ML-ED-17	<.002
9	ML-ED-18	<.002
10	ML-ED-19	<.002

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell



ML-ED series of samples

MONARCH - SUGARLOAF
Eldorado Co. CA

H.G. Kreis 1-5-1984
ASARCO INC
1" = 2000'

DTC - ER
REV.

ASARCO EXPLORATION RECORD

[x] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] J.H.C.

FEB 27 1984

Section I General Indexing

① Name(s) of Property or Area: BRIAN HEAD RECONNAISSANCE					② Country: USA	③ State or Province: Utah	
					④ USGS Quad. Cedar Breaks & Panguitch Lake	⑤ File or Gore No. Iron County	
⑥ Latitude: 35°40'	⑦ Longitude: 112°45'	⑧ AMS Sheet: Cedar City	Township: 36S	Range: 8,9 W	Section	⑨ Examined by: HGKreis	⑩ Date: 11/4/82
						⑪ Office: SWED Tucson	⑫ Field Days: 1 (Snowed out)

Section II Sources of Information

Date Typed 1/6/84

⑬ References

Author	Date	Title	Publications	Vol. No.
Gregory, H.E.,	1950	Geol. of Eastern Iron Co., UT; Ut. Geol. & Min. J., Bull. #37		

Section III Appraisal

⑭ Recommendations
- [ ] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [x] No more work

⑮
- [ ] Post Producer
- [ ] Producer
- [ ] Mineral Deposit
- [ ] Prospect
- [ ] Geologic Concept
- [ ] Geochem Anomaly
- [ ] Geophy Anomaly

⑯ Production

Commodity	Tons	Grade
None		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade
None		

⑱ Num. Drill Holes None
Approx Total Footage

⑲ Excavations None

⑳ [x] Spectro. Analysis Attached ㉑ [ ] Assays Attached ㉒ [x] Geochem Results Attached

Section IV Geologic Data

㉓ Commodity or Contained Metals: Precious metal reconnaissance

㉔ Ore Minerals-Major: Minor:

㉕ Host Rocks-Major: Carbonates Brian Head Fm. (see attached discussion)

㉖ Age of Host Rocks: Cretaceous Tertiary

㉗ Nature of Exposures: The premineral rocks of interest are extensively covered by post-mineral volcanics, Qal, and soil. Good outcrop exposures of the Brian Head (cont.)

㉘ Alteration: See attached discussion.

㉙ Total Extent:

㉚ Structure: Nearly flat dipping sediments are cut by steep N to NE'ly striking faults.

㉛ Ore Occurrence: See attached discussion

㉜ Age of Mineralization: Tertiary

㉝ Conclusions & Recommendations: The field examination and initial sampling of this evaluation was hampered by snow & ice. Consequently, this work is only a cursory evaluation of a hot springs concept. The geochem values are not encouraging. No significant gold mineralization or substantially anomalous indicator metals were detected in either the rock chip samples or the stream sediment samples. Because of this lack of encouragement, no further work is recommended at this time.

(For additional space use extra sheets)

27. Nature of Exposures (continued)

Formation and underlying Wasatch Formation are present on Blue Spring Mountain (Sec. 23, T36S, R8W) and Brian Head (Sec. 12, T36S, R9W).

Host Rocks, Alteration, and Mineralization

The Brian Head Formation is a complex group of rocks that formed in the transition from the clastic and carbonate sedimentation of the Wasatch Formation to the volcanic eruptive rocks that cap the underlying sedimentary rocks. The Brian Head Formation in the area of sampling is of interest because it contains abundant silica sinter (geyserite), carbonate rocks that resemble travertine, and local strong silicification.

Most of the observed outcrops of Brian Head Formation consisted of a very limey (10-30%), tuffaceous appearing sandstone. Conformable lenses of white to locally red chalcedonic sinter, up to a couple feet thick, occur within the Brian Head Formation; and, near these lenses of sinter, are irregularly shaped masses of strong silicification. These silica and carbonate deposits are indicative of hot springs activity that occurred during and possibly after the formation of the Brian Head rocks; i.e., at the beginning of Tertiary volcanism.

The Brian Head Formation rests on the underlying Cretaceous Wasatch Formation. The Wasatch Formation is about 1000'-1500' thick, and it consists of limestone, dolomite, marl, shale, and basal sandstone-conglomerate. The few outcrops of Wasatch Formation that were observed and sampled carried up to 7% calcite veins and 2% quartz veins. The calcite and quartz veining suggest that some of the hot waters that produced the silica-calcite sinter also permeated through the smaller fractures of the Wasatch Formation.

Geochem reconnaissance sampling is based on the premise that a suitable host for gold mineralization could occur in the Wasatch Formation or some other sedimentary formation beneath the silica-calcite sinter deposits of the Brian Head Formation. Thus, reconnaissance geochem samples were taken in the Brian Head Formation and the Wasatch Formation (NE/4 Sec. 14, T36S, R9W; Sec. 25,26, T36S, R8W; and NE/4 Sec. 30, T36S, R7W). As shown in Table 1 all of the samples have no detectable gold except for 16 ppb in sample BHF-11 (center SE/4 Sec. 26, T36S, R8W). Arsenic values are ≤30 ppm except sample BHF-18 with 80 ppm, and mercury values are all ≤0.08 ppm.

Initially, six stream sediment samples were taken along Mammoth Creek from the east edge of Section 30 (T36S, R8W) to the east edge of Section 31 (T36S, R7W), and the results are shown in the attached Table 2. Gold determinations on -80 mesh samples were done by both Western Analytical and Skyline Labs. Gold determinations on the -¼" and +10 mesh samples were done by Skyline Labs. As seen in the attached table there are three values in the range of 34 to 55 ppb, six values in the 17 to 22 ppb range, and eight values in the 7 to 13 ppb range. Because of these high gold values, a follow-up stream sediment survey was initiated, and the results are shown in Table 3. The follow-up survey was terminated before its completion due to flooding and heavy rains.

Host Rocks, Alteration, and Mineralization (continued)

The quality of the samples in the follow-up stream sediment survey was not as good as that in the initial samples because the drainages were flooded and the samples had to be taken from high on the banks. Therefore, the follow-up sampling may or may not have evaluated the initial stream sediment samples. After considering the low gold values of Tables 1 and 3, I'm inclined to think the anomalous values of Table 2 are due to contamination; but, we have been unable to determine how this might have occurred.

The stream sediment sampling program was not completed as planned. The first attempt was cut short by snow and ice, and the second attempt was limited by heavy rains and record flooding. Considering the results to date and work requirements elsewhere, I am not sufficiently encouraged to recommend additional work at this time. The concept of Tertiary hot spring deposits at the base of the Tertiary volcanic pile and at the top of underlying sediments is worth noting.

Table 1

BRIAN HEAD FORMATION & WASATCH FORMATION GEOCHEM

Brian Head Mountain & Blue Spring Mountain

Iron County, Utah

	BRIAN HEAD FORMATION			WASATCH FORMATION					
Sample Number	Limey Sandstone	Limey Ss. & Altn.-Silica & Sinter	Silica-Calcite Sinter	Marl & Calcite-Qtz. Vns.	Red Limestone	Au (ppb)	Ag (ppm)	As (ppm)	Hg (ppm)
BHF- 1	X					<2	<.2	<10	.02
- 2	X					<2	.2	<10	.01
- 3	X**					<2	<.2	<10	.01
- 4			X*			<2	<.2	<10	.02
- 5		X				<2	<.2	20	.05
- 6	X					<2	<.2	<10	.04
- 7		X				<2	<.2	<10	.01
- 8		X				<2	<.2	20	.02
- 9				X		<2	<.2	10	.01
-10				X		<2	<.2	<10	.02
-11	X**					16	<.2	<10	.08
-12				X		<2	<.2	<10	.02
-13				X		<2	<.2	10	.01
-14				X**		<2	<.2	10	.05
-15				X**		<2	<.2	20	.01
-16	X***					<2	<.2	<10	.02
-17			X**			<2	<.2	30	.02
-18			X**			<2	<.2	80	.01
-19		X**				<2	<.2	<10	<.01
-20	X**					<2	<.2	20	.02
-21	X**					<2	<.2	<10	.02
-22					X	<2	<.2	10	.07

*Outcrop & float sample/**Float sample/***Fine sand & silt (stream).

Table 2

INITIAL STREAM SEDIMENT SAMPLES*

Brian Head Area

Iron County, Utah

Sample Number	Au -80 Mesh (Western) (ppb)	Au -80 Mesh (Skyline) (ppb)	Au ¼", +10 Mesh (Skyline) (ppb)	As ¼", +10 Mesh (Skyline) (ppm)	Hg ¼", +10 Mesh (Skyline) (ppm)
PLB-1	8	13	34	10	.02
-2	35	(N.A.)	17	10	.02
-3	10	55	22	20	.02
-4	19	22	17	20	.05
-5	13	19	13	<10	.02
-6	7	9	8	10	.03

The above gold values are listed in decreasing magnitude:

55, 35, 34, 22, 22, 19, 19, 17, 17, 13, 13, 13, 10, 9, 8, 8, 7

*From the follow-up stream sediment sampling and the rock chip sampling, it is concluded that the gold values of Table 2 are due to contamination.

Remark: Although not stated, the +10 mesh is actually +10 mesh and -¼" mesh.

Table 3

FOLLOW-UP STREAM SEDIMENT SAMPLES

Brian Head Area

Iron County, Utah

Sample Number	Au -80 Mesh (ppb)	As +10 Mesh (ppm)	Hg +10 Mesh (ppm)
83-PLB-1	7	<10	0.14
-2	10	<10	0.07
-3	4	<10	0.07
-4	<2	<10	0.08
-6	<2	<10	0.09
-7	<2	<10	0.03
-8	<2	20	0.01
-9	3	10	0.01
83-CBB-2	2	<10	0.05
-3	2	<10	0.15
-4	2	10	0.07
-5	2	20	0.11
-6	4	20	0.09
-7	<2	<10	0.02
83-PAR-1	<2	<10	0.02
-2	<2	<10	0.25
-3	<2	<10	0.11
-4	<2	20	0.06

Table 4

STREAM SEDIMENT SAMPLE LOCATIONS
FOR THOSE NOT PLOTTED ON MAP

83-PAR-1	1800'S, 700'W of NE Cor. Sec. 8, T35S, R8W
-2	1800'S, 1700'W of NE Cor. Sec. 8, T35S, R8W
-3	1200'E, 200'N of SE Cor. Sec. 6, T35S, R8W
-4	Extreme NW Corner Sec. 6, T35S, R8W

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1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 237
November 24, 1982

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 22 Samples

ITEM	SAMPLE NO.	Au ppm	Ag ppm	As ppm	Hg ppm
1	BHF-1	<.002	<.2	<10.	.02
2	BHF-2	<.002	.2	<10.	.01
3	BHF-3	<.002	<.2	<10.	.01
4	BHF-4	<.002	<.2	<10.	.02
5	BHF-5	<.002	<.2	20.	.05
6	BHF-6	<.002	<.2	<10.	.04
7	BHF-7	<.002	<.2	<10.	.01
8	BHF-8	<.002	<.2	20.	.02
9	BHF-9	<.002	<.2	10.	.01
10	BHF-10	<.002	<.2	<10.	.02
11	BHF-11	.016	<.2	<10.	.08
12	BHF-12	<.002	<.2	<10.	.02
13	BHF-13	<.002	<.2	10.	.01
14	BHF-14	<.002	<.2	10.	.05
15	BHF-15	<.002	<.2	20.	.01

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JOB NO. TAJ 237
November 24, 1982
PAGE 2

ITEM	SAMPLE NO.	Au ppm	Ag ppm	As ppm	Hg ppm
16	BHF-16	<.002	<.2	<10.	.02
17	BHF-17	<.002	<.2	30.	.02
18	BHF-18	<.002	<.2	80.	.01
19	BHF-19	<.002	<.2	<10.	<.01
20	BHF-20	<.002	<.2	20.	.02
21	BHF-21	<.002	<.2	<10.	.02
22	BHF-22	<.002	<.2	10.	.07

REGISTERED ASSAYER
CERTIFICATE NO. 9425
WILLIAM L. LEHMBECK
DATE SIGNED
Arizona, U.S.A.

William L. Lehmbeck
Manager

Dec. 3, 1982
P82-369

Sample Number	Au (PPB)
PLB 1	8
PLB 2	35
PLB 3	10
PLB 4	19
PLB 5	13
PLB 6	7

Mark R. Craven

Mark R. Craven
for E.H. Phillips
Laboratory Director
Western Analytical
Salt Lake City
Charges: $471.60

MRC/kc

SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 239
November 24, 1982

ASARCO INCORPORATED
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 6 Soil Samples

ITEM	SAMPLE NO.	As ppm	Hg ppm
1	PLB-1	10.	.02
2	PLB-2	10.	.02
3	PLB-3	20.	.02
4	PLB-4	20.	.05
5	PLB-5	<10.	.02
6	PLB-6	10.	.03

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. H.G. Kreis

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona U.S.A.

William L. Lehmbeck
Manager

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SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 237
November 24, 1982

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 13 Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

REGISTERED ASSAYER
CERTIFICATE NO.
9425
WILLIAM L.
LEHMBECK
DATE SIGNED
Arizona

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 237.
PAGE 2

ITEM NO.	SAMPLE NO.
4	= BHF-4
6	= BHF-6
9	= BHF-9
15	= BHF-15
16	= BHF-16
19	= BHF-19
20	= BHF-20
21	= BHF-21

ITEM	4	6	9	15	16	19	20	21
ELEMENT								
Fe	.3%	1%	.15%	.2%	.7%	.2%	.7%	1%
Ca	5%	15%	20%	20%	5%	5%	15%	15%
Mg	.1%	.5%	7%	10%	.7%	1.5%	1.5%	.7%
Ag	<1	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500	<500	<500	<500
B	10	<10	<10	<10	10	<10	15	<10
Ba	<10	30	<10	<10	30	<10	<10	30
Be	<2	<2	<2	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	<5	<5	<5	<5
Cr	70	15	<10	<10	10	50	15	10
Cu	7	<2	3	3	7	3	10	<2
Ga	<10	<10	<10	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	<20	<20	<20	<20	<20	<20	<20	<20
Mn	150	150	15	10	150	300	100	100
Mo	<2	<2	<2	<2	<2	<2	<2	<2
Nb	<20	<20	<20	<20	<20	<20	<20	<20
Ni	10	<5	<5	<5	5	7	20	<5
Pb	<10	<10	<10	<10	<10	<10	<10	<10
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	<100	<100	150	300	<100	<100	<100	<100
Ti	100	700	70	150	1000	<20	500	700
V	<10	10	<10	<10	10	<10	10	<10
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	<10	<10	<10	<10	<10	<10	<10	<10
Zn	<200	<200	<200	<200	<200	<200	<200	<200
Zr	<20	<20	<20	<20	20	<20	<20	<20

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

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(602) 622-4836

JOB NO. TAJ 237
PAGE 3

ITEM NO.	SAMPLE NO.
22	= BHF-22
23	= BHF-1,2,3
24	= BHF-5,7,8
25	= BHF-12,13,14
26	= BHF-17,18

ITEM	22	23	24	25	26
ELEMENT					
Fe	.3%	1%	.5%	.2%	.5%
Ca	>20%	15%	15%	20%	3%
Mg	1.5%	.5%	.2%	10%	.3%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500
B	<10	<10	<10	<10	<10
Ba	<10	20	<10	<10	20
Be	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	5
Cr	<10	<10	100	<10	100
Cu	<2	15	7	<2	10
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	<20	<20	<20	<20	<20
Mn	100	300	100	30	500
Mo	<2	<2	<2	<2	<2
Nb	<20	<20	<20	<20	<20
Ni	<5	<5	7	<5	15
Pb	<10	<10	<10	<10	<10
Sb	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10
Sr	<100	100	<100	300	<100
Ti	300	1000	<20	100	<20
V	<10	10	<10	<10	15
W	<50	<50	<50	<50	<50
Y	<10	<10	<10	<10	<10
Zn	<200	<200	<200	<200	<200
Zr	<20	20	<20	<20	<20

SKYLINE LABS, INC.
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(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 306
September 15, 1983
H.G. KREIS
PLB-1 (-80)

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 11 Pulp Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
1	PLB-1 (-80)	.013	N/R
2	PLB-2 (-80) *	.000 *	.0 *
3	PLB-3 (-80)	.055	N/R
4	PLB-4 (-80)	.022	N/R
5	PLB-5 (-80)	.019	N/R
6	PLB-6 (-80)	.009	N/R
7	PLB-1 (+10)	.034	.2
8	PLB-2 (+10)	.017	<.2
9	PLB-3 (+10)	.022	<.2
10	PLB-4 (+10)	.017	<.2
11	PLB-5 (+10)	.013	<.2
12	PLB-6 (+10)	.008	<.2

NOTE: N/R denotes analysis not requested.

*NOTE: Item 2 PLB-2 (-80) has insufficient sample for analysis.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 306
September 15, 1983
H.G. KREIS
PLB-1 (-80)

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 2 Composite Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

REGISTERED ASSAYER
CERTIFICATE NO.
9425
WILLIAM L.
LEHMBECK
DATE SIGNED
Arizona

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 306
PAGE 2

ITEM NO. SAMPLE NO.
13 = COMP(PLB-2,3(+10))
14 = COMP(PLB-4,5(+10))

ITEM	13	14
ELEMENT		
Fe	3%	3%
Ca	3%	.7%
Mg	.7%	.3%
Ag	<1	<1
As	<500	<500
B	10	15
Ba	700	700
Be	<2	2
Bi	<10	<10
Cd	<50	<50
Co	10	10
Cr	50	70
Cu	20	20
Ga	10	15
Ge	<20	<20
La	50	70
Mn	1500	700
Mo	7	<2
Nb	20	20
Ni	50	30
Pb	20	20
Sb	<100	<100
Sc	<10	<10
Sn	<10	<10
Sr	300	200
Ti	3000	3000
V	70	50
W	<50	<50
Y	10	10
Zn	<200	<200
Zr	200	300

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REPORT OF ANALYSIS

JOB NO. TAJ 313
October 11, 1983
H.G. KREIS
83-PLB-1 TO 83-PAR-4

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 36 Soil Samples

ITEM	SAMPLE NO.	Au* ppm	As ppm	Hg ppm
1	83-PLB-1 (-80)	.007	N/R	N/R
2	83-PLB-2 (-80)	.010	N/R	N/R
3	83-PLB-3 (-80)	.004	N/R	N/R
4	83-PLB-4 (-80)	<.002	N/R	N/R
5	83-PLB-6 (-80)	<.002	N/R	N/R
6	83-PLB-7 (-80)	<.002	N/R	N/R
7	83-PLB-8 (-80)	<.002	N/R	N/R
8	83-PLB-9 (-80)	.003	N/R	N/R
9	83-CBB-2 (-80)	.002	N/R	N/R
10	83-CBB-3 (-80)	.002	N/R	N/R
11	83-CBB-4 (-80)	.002	N/R	N/R
12	83-CBB-5 (-80)	.002	N/R	N/R
13	83-CBB-6 (-80)	.004	N/R	N/R
14	83-CBB-7 (-80)	<.002	N/R	N/R
15	83-PAR-1 (-80)	<.002	N/R	N/R
16	83-PAR-2 (-80)	<.002	N/R	N/R
17	83-PAR-3 (-80)	<.002	N/R	N/R
18	83-PAR-4 (-80)	<.002	N/R	N/R
19	83-PLB-1 (+10)	N/R	<10.	.14
20	83-PLB-2 (+10)	N/R	<10.	.07
21	83-PLB-3 (+10)	N/R	<10.	.07
22	83-PLB-4 (+10)	N/R	<10.	.08
23	83-PLB-6 (+10)	N/R	<10.	.09
24	83-PLB-7 (+10)	N/R	<10.	.03
25	83-PLB-8 (+10)	N/R	20.	.01

SKYLINE LABS, INC.
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Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 313
October 11, 1983

ITEM	SAMPLE NO.	Au* ppm	As ppm	Hg ppm
26	83-PLB-9 (+10)	N/R	10.	.01
27	83-CBB-2 (+10)	N/R	<10.	.05
28	83-CBB-3 (+10)	N/R	<10.	.15
29	83-CBB-4 (+10)	N/R	10.	.07
30	83-CBB-5 (+10)	N/R	20.	.11
31	83-CBB-6 (+10)	N/R	20.	.09
32	83-CBB-7 (+10)	N/R	<10.	.02
33	83-PAR-1 (+10)	N/R	<10.	.02
34	83-PAR-2 (+10)	N/R	<10.	.25
35	83-PAR-3 (+10)	N/R	<10.	.11
36	83-PAR-4 (+10)	N/R	20.	.06

NOTE: N/R denotes analysis not requested.

*NOTE: Method of analysis by combination fire assay and atomic absorption.

cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. James D. Sell

REGISTERED ASSAYER CERTIFICATE NO. 9427 CHARLES E. THOMPSON ASSIGNED Arizona U. S. A.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF SPECTROGRAPHIC ANALYSIS

JOB NO. TAJ 313A
January 11, 1984
H.G. KREIS
83-PLB-1 TO 83-PAR-4

ASARCO INCORPORATED
Attn: Mr. H.G. Kreis
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 5 Composite Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED 1/13/84 Arizona

William Lehmbeck
Manager

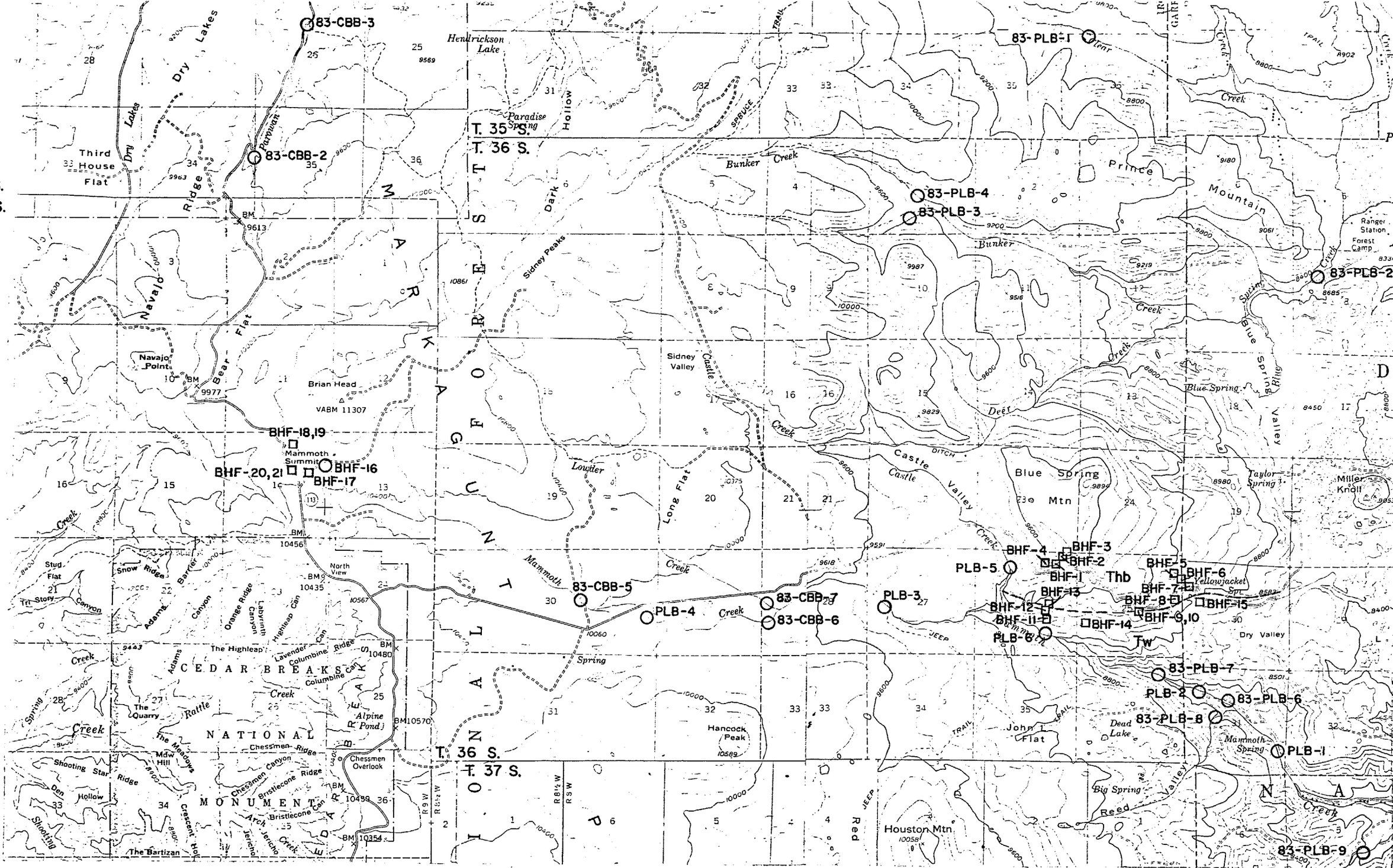
cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 313A
PAGE 2

ITEM NO.	SAMPLE NO.
37	= COMP(83PAR-1,2,3,4) +10
38	= COMP(83PLB-6,7,8,9) +10
39	= COMP(83PLB-1,2,3,4) +10
40	= COMP(83CBB-2,3,4) +10
41	= COMP(83CBB-5,6,7) +10

ITEM	37	38	39	40	41
ELEMENT					
Fe	1.5%	3%	3%	2%	2%
Ca	15%	10%	2%	10%	.5%
Mg	1%	1.5%	.5%	.7%	.3%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500
B	<10	10	10	<10	10
Ba	200	500	500	300	700
Be	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	7	<5	<5	5
Cr	<10	70	<10	<10	100
Cu	<2	7	3	2	2
Ga	<10	<10	<10	<10	10
Ge	<20	<20	<20	<20	<20
La	20	50	30	30	50
Mn	200	700	300	300	700
Mo	<2	<2	<2	<2	<2
Nb	<20	<20	<20	<20	<20
Ni	<5	10	<5	<5	<5
Pb	10	10	10	<10	10
Sb	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10
Sr	<100	150	100	<100	<100
Ti	1500	3000	3000	2000	2000
V	15	70	50	30	50
W	<50	<50	<50	<50	<50
Y	10	15	10	10	10
Zn	<200	<200	<200	<200	<200
Zr	100	100	150	100	150



Base from U.S.G.S. Cedar Breaks & Panguitch Lake 15' Quads.

EXPLANATION