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James Doyle Sell Mining Collection

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Van Deeman

See: Day 1. Field Trip Log
Dolan Springs Rd - White Hills - Pago Mio Area
and
Map: Geology of a Portion of the Northern Black Mtns.
Mt Perkins, AZ-NV 15' Quad

ARIZONA GEOLOGICAL SOCIETY

1984 FALL FIELD TRIP

STRUCTURE & MINERALIZATION

KINGMAN AREA ARIZONA

Also See Handout, attached to
Liberty Mine memo of FRK, June 3, 1987.

AGS FALL FIELD TRIP ROAD LOG

Dolan Springs Rd. - White Hills - Pope Mine Area

By: Joe Wilkins Jr. (St. Joe)

Mileage	Mileage Interval	
0.0	0.0	Junction of Dolan Springs Road with U.S. Highway 93. Turn right, going NNW, onto Highway 93. Black Mtns. at 1:00-3:00, consist of Precambrian schist and gneiss intruded by a Laramide(?) pluton (Wilson and Moore, 1959). Mt. Perkins is the highest peak and the pluton covers about 2.5 sq. mi. in the foreground area below the peak. The entire range is probably allochthnous, since the overlying Patsy Mine Volcanics are an allochthnous sequence of steeply tilted, Tertiary-age volcanic flows and tuffs. The gap in the Black Mountains at 11:30 marks the boundary between steeply-tilted volcanics (to the north) and moderately-tilted or flat-lying volcanic rocks (to the south). The gap appears to be a continuation of the trace of an ENE-trending structural zone separating tilted volcanics in the White Hills from the unrotated, upright sequence of rocks in the Cerbat Mountains.
0.3	0.3	White Hills at 2:00. The light-colored units in the foreground are moderately-dipping (+ 40°) older volcanic flows and tuffs - probably Patsy Mine Volcanics - deposited on Precambrian gneiss. The entire sequence is overlain by younger basalt flows (on the skyline) of probable Muddy Creek Formation ages.

Mileage	Mileage Interval	
1.9	1.6	Smith City. The steeply-dipping, rotated volcanic flows and tuffs at 11:00 are in low-angle fault contact with the underlying Precambrian schist-gneiss complex. Units within this Patsy Mine(?) sequence strike almost N-S and dip 60°-70° East. The NW-dipping fault-contact is the line separating light-colored Precambrian in the footwall from the dark-colored Patsy Mine(?) Volcanics in the hangingwall. Good view of 40°-dipping Patsy Mine(?) Volcanics at 2:00 in the White Hills.
5.4	3.5	Cross Detrital Wash, begin 4-lane divided highway.
6.2	0.8	Milepost 35. White Hills at 2:00-3:00 are mantled by younger, Fortification Hill-type basalts giving the overall impression that the White Hills are a flat-lying volcanic pile. Older volcanic units in the foreground are rotated and tilted at about 40°-50°.
7.2	1.0	Milepost 34. The Pope Mine area is at 11:30 to 12:00. Mt. Wilson, composed of Precambrian schist and gneiss (Wilson and More, 1959) is the high peak at 12:30. Fortification Hill-type basalt flows are visible as black patches at the base of the hills (looking towards Mt. Wilson).
9.2	2.0	Milepost 32. The Mockingbird Mine, part of Keith and others, (1983) Virginia District, is located in the low hills at 9:00. The light-colored hills are an allochthonous schist-gneiss (PC) complex cut by low-and-high-angle lamprophyre dikes. The Mockingbird Mine produced about 1,000 ounces of Au from a very flat (0° to 20°) dipping quartz vein which cuts the schist. Fanglomerate units in the area with clasts of Precambrian schists and gneisses plus Patsy Mine Volcanics are consistently rotated and dip 40°-50° NW.
11.2	2.0	Milepost 30. The White Hills Mining Camp is visible at 2:30 near the white buildings at the base of the hills. Bug Hills are at 2:00. The dark-colored rocks are Patsy Mine Volcanic flows, tuffs and lahars (andesite to rhyodacite composition) striking N-S to N10°W and dipping 40° to 50° East.

Mileage	Mileage Interval	
12.0	0.8	White Hills Road. Turn right (East) and continue 8.1 miles to the White Hills Silver Mine (a trip stop).
		White Hills Road - Highway 93 intersect. Turn right and reset mileage count.
3.2	3.2	Milepost 26. The dark-colored hill at 10:30 is a phyllically-altered, leached cap over a small chalcocite blanket (see figure 4 in pocket). The chalcocite is associated with a tectonic slice of a Laramide(?) porphyry copper system. Detailed mapping has outlined at least 6 major slices of a composite pluton (figure 5). Each tectonic wedge of intrusion contains differing alteration assemblages and aureoles; potassic zones are commonly juxtaposed against intense phyllic zones or fresh, unaltered rock. Several intrusion slices contain alteration assemblages indicative of the deep root zone characteristics described by Durning (1978). The intrusions and the intruded, altered, Precambrian gneiss are cut by several low-angle fault zones which are occasionally occupied by lamprophyre dikes (figure 5).
4.6	1.4	Pope Mine Road. Caution. Cross median and turn left onto gravel road.
4.7	0.1	STOP (1.) Orientation stop. Bug Hills are the dark-colored hills at N70°E. The White Hills Mining District is visible at S85°E. The Gold Basin District is located about 16 miles N80°E through the gap between Bug and White Hills. Coincidently, the direction of transport of the allochthonous rocks, as estimated from rotation of Tertiary rocks, is about S80°W - from Gold Basin towards this stop.
		A schematic cross-section of Detrital Valley from Bug Hills to Stop 1 shown on figure 5, is derived from gravity data and 2 drill holes plus geologic mapping. Basin fill, at GDV-2, consists of 2,100 feet of unconsolidated playa-type sediments overlying a flat-lying sequence of red beds thought to be Muddy Creek formation. The unconsolidated sediments are, from the top: 610 feet of arkosic sands with thin clay layers, conglomerate, and evaporite; about 100 feet of green bentonitic clay, 350 feet of anhydrite, 520 feet of halite with anhydrite clay and sand lenses, and 400 feet of green and brown clay with lenses of anhydrite and/or halite. At 2;000 feet, an indurated red-bed sequence consisting

Mileage	Mileage Interval	

of mudstone-siltstone with conglomerates containing volcanic clasts was encountered. Drill hole GDV-3 encountered a more clastic sequence of sediments indicative of basin margin and fault-scarp deposits. In addition, minor evaporite horizons and a thick bentonitic clay layer were present.

The Detrital Valley basin appears to be a graben (or half-graben?) which formed synchronously with Muddy Creek formation deposition. The basin faults clearly cut the listric normal fault sequence.

In GDV-3, the basement was cored from 1,690 to 2,463 feet. Logging the core revealed Precambrian gneisses cut by (and probably repeated along) an almost continuous sequence of stacked listric normal faults. The faults dip between 20° and 50° and have an average periodicity of about 1 major fault per 100 feet of depth. Typically the faults are marked by 1 to 15 feet of hematitic gouge with rounded to sub angular breccia clasts grading up and down into shattered, often chloritic, gneiss. On several occasions the fault zones were occupied by synkinematic lamprophyre dikes. Anderson's (1971) model for thin-skinned distension appears to be substantiated by the drill hole data. The listric fault system is shown schematically on figure 5.

The Stop 1 area is at the intersection of at least 4 major fault zones; listric normal faults, a low-angle normal fault, a high-angle tear fault, and a Basin and Range fault. The listric normal faults exposed to the south (figure 4) cut and rotate a Laramide(?) porphyry copper system to the west. The four (4) major faults in this area trend NNW, dip from 20° to 50° west and juxtapose contrasting alteration assemblages and intrusions associated with the porphyry copper system.

The volcanic terrane north and west of Stop 1 consists of steeply tilted Patsy Mine Volcanics which dip into the low-angle fault-contact (figure 4). The volcanic flows, tuffs and agglomerates dip 50° to 88° E and are cut by a NNW-to NW-trending set of listric normal faults (figure 4 and Anderson, 1978). The low-angle fault is a low-dipping undulatory surface with brecciated gneiss in the footwall and brecciated volcanics in the hanging wall. Transport direction indicators, such as slickensides, striae, and bedding attitudes suggest S80°E directed movement in post-Patsy Mine, pre-Muddy Creek time.

Mileage	Mileage Interval	
		The volcanic and porphyry copper terranes are separated by a high angle tear fault which trends E-W to ENE and dips steeply to the north. Where exposed in adits and mine workings the fault surface has well-developed, sub-horizontal slickensides suggesting translational movement sub-parallel to the fault trend. This fault zone is of limited lateral extent and does not appear to be a penetrative through-going structure. Instead the fault is apparently an intraplate phenomenon which terminates at one or more of the deeper, listric normal or low-angle faults. Suggested motion on the fault is WSW with differing rates of movement on each side of the fault. Many of these relationships will hopefully be clarified at the succeeding stops.
5.1	0.4	We are now driving approximately along the trace of the low-angle normal fault zone. The volcanics to the north are in the hangingwall, the footwall to the south is Precambrian gneiss. Note the rubbly appearance of the volcanics. The brecciated texture is a due to brittle deformation above the fault; rather than a basal agglomerate.
5.7	0.6	Cross low-angle fault zone into hangingwall volcanics. Note intense brecciation in the Patsy Mine volcanics.
6.0	0.3	Drill road to left. Consolidate vehicles here -- drill road is narrow and rough.
7.0	1.0	STOP 2. Stop 2 is situated in the footwall of the low-angle fault zone near the trace of the high-angle tear fault. Traverse about due west towards the dark-colored, jagged hill, crossing a ridge of phyllically altered Precambrian gneiss. This appears to be a small isolated zone of porphyry copper-related mineralization. STOP 2A. Stop 2A is the contact between the Patsy Mine Volcanics and the Precambrian. The contact dips about 25° west and has been mapped as a fault-contact. The footwall Precambrian consists of rounded to subangular fragments in a gougy matrix with a weak hematite stain and abundant caliche. The hangingwall volcanics are rounded to subangular clasts (0.1 in. to 1.0 feet diameter) with a moderate transposed foliation which is subparallel to the contact. Some clasts appear to be composed of a breccia. Weak calcite veining is present.

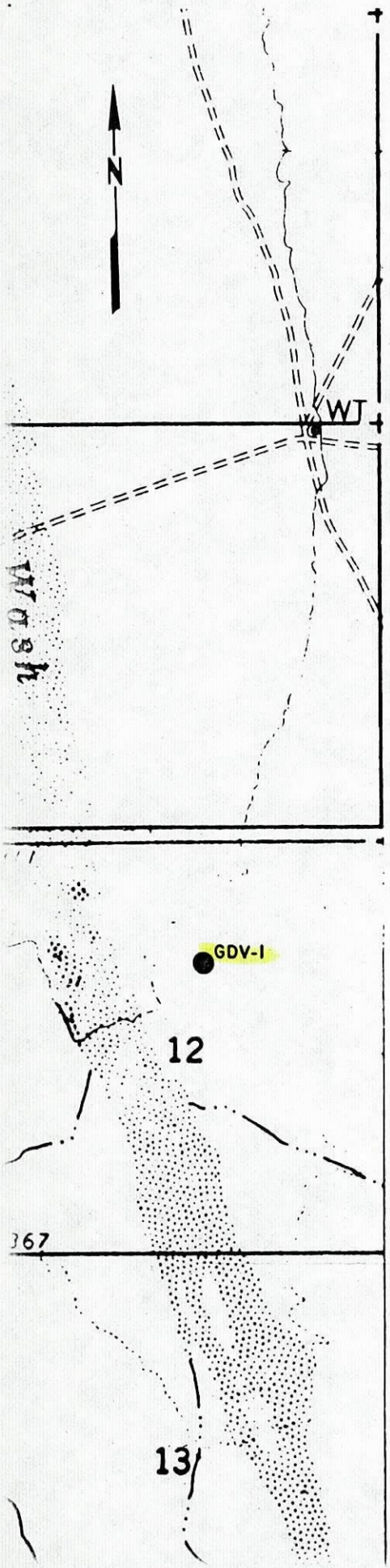
Mileage	Mileage Interval	
		Continue traverse to the top of the hill. The volcanics are highly brecciated and could be mistaken for lahars. Try to find coherent bedding attitudes. Also note the increase in clast size as you go up the hill.
		STOP 2B. Top of hill. A compositional change in the volcanic rocks allows an unequivocal bedding attitude measurement: N85° 82°E. The volcanic flows, tuffs and tuff breccias dip steeply into the low-angle contact of Stop 2A indicating that the contact is a low-angle fault.
		Looking north from Stop 2B, tilted sequences of the volcanics are visible and the trace of the low-angle fault contact is apparent.
		RETURN TO VEHICLES
8.0	1.0	Pope Mine road, turn left.
8.6	0.6	Reddish-brown unit at 9:00 has the same composition as the unit at Stop 2B.
8.7	0.1	Klippe of Patsy Mine Volcanics in low-angle fault contact with Precambrian visible at 9:00. The fault is part of the low-angle fault zone examined at Stop 2A.
		Road traverses along the trace of the low-angle fault with Precambrian to the south and Patsy Mine Volcanics to the north.
9.0	0.3	Mine workings at 9:00 are on a WNW high-angle quartz vein.
9.6	0.6	STOP 3. Pope Mine. The Pope Mine is in the El Dorado Pass Mining District (Keith and others, 1983), which has a district wide production of 7,500 oz Au; 6,000 oz Ag, with minor Cu and Pb from 18,000 tons of ore. The piles of muck and bulldozer scrapings represent an abortive, 1977 attempt of heap leaching.
		The Pope Mine is situated in the footwall of the low-angle fault zone that we have been following. It is also adjacent to the tear fault discussed at Stop 1. To further complicate the geologic setting, a small slice of the granitic phase of the porphyry copper intrusives is present south of the tear fault and the entire sequence is truncated by a NW-trending low-angle fault zone (figure 4).

Mileage	Mileage Interval	
		Mineralization occurs in a discontinuous series of high-angle, brecciated quartz veins. The veins trend WNW and cut Precambrian schist and gneiss with a weak phyllic alteration overprint. The veins may be related to the porphyry copper system or they may occupy the low-angle faulting; the relationships are not clear cut. From here to Stop 4, the road follows the trace of a SW-dipping low-angle fault which appears to truncate the E-W tear fault and appears to rotate the older gravels.
10.1	0.5	Mine workings at 9:00 are part of the Pope Mine complex. Mineralization occurs along strands of the E-W tear fault which cuts phyllic altered Precambrian gneiss. The light-colored hills at 10:00-11:00 are composed of the relatively unaltered granite porphyry phase of the Laramide(?) intrusion. Red-brown rocks along the road are brecciated volcanics in the hangwall of a SW-dipping low-angle normal fault.
10.4	0.3	Microwave tower at 11:30. The ridge is a Precambrian schist-gneiss complex.
10.5	0.1	The saddle at 9:00 marks the trace of the granite porphyry-gneiss contact.
10.7	0.2	Quartz-sericite-pyrite altered gneiss at 9:00 is in the hangingwall of the SW-dipping low-angle normal fault. The footwall is fresh, virtually unaltered gneiss and schist. The fault dips about 25° SW.
10.8	0.1	The light-colored rocks in the basin at 9:00-11:00 are fresh unaltered quartz monzonite porphyry in the footwall of the fault zone. The trace of this low-angle fault is just east of the low hills adjacent to the road on the right. The high ridge at 2:00-3:00 is composed of steeply-dipping Patsy Mine Volcanics. The hills at 12:00 are Precambrian schist and gneiss.
11.2	0.4	Small shaft alongside road is in brecciated and gougy, quartz-sericite-pyrite altered gneiss. The red-brown hill at 9:00 is in the hangingwall and consists of phyllic-altered gneiss cut by a stock-work of barite veinlets. Turn left, just past small shaft, onto a drill road.

Mileage	Mileage Interval	
11.5	0.3	STOP 4. Stop 4 will examine an exposure of the low-angle normal fault which extends from the Pope Mine area to here. The fault strikes about N45°W and dips from 17° to 50° SW. The footwall of this structure is fresh, virtually unaltered gneiss and schist intruded by fresh, unaltered Laramide(?) granitic rock. The hangingwall is schist-gneiss with an intense to moderate phyllic alteration overprint capped by (in places) brecciated Patsy Mine Volcanics and tilted older alluvium (Tog). In several places along the fault, lamprophyre (or microdiorite) dikes are intruded along the fault plane but also are truncated and offset by the fault, suggesting a syntectonic relationship. From the parking area, (by a pre-1978 validation drill hole) walk about 700 feet towards S77°E. A claim post and an iron pipe mark the location of the fault surface. The hangingwall rocks along this traverse are overprinted by a weak propylytic alteration suite cut by spotty phyllic alteration; both are Laramide(?) porphyry copper relatd. The fault zone is about a 25 foot thickness of cataclastically deformed, fine-grained granite(?) of probable Precambrian age. The rock is sheared, iron-stained and slightly silicified. Slickensides along the structure consistently indicate SW-to-SSW-directed movement. Note that the footwall rocks are fresh and unaltered compared to the hangingwall rocks. This fault zone, like several others to the east, juxtaposes discordant porphyry copper alteration assemblages and is only one of several subparallel structures. In consideration of Anderson's (1971) model and from the results in drill holes GDV-3 and GDV-4, this fault zone represents the deeper and flatter portion of a listric normal fault, in a series of stacked listric normal faults. The altered gneiss in the hangingwall is a slice of upper level or peripheral alteration related to the porphyry copper system (to the east) which has been rotated and transported at least 1 mile to the west. RETURN TO VEHICLES.

Mileage	Mileage Interval	
11.8	0.3	Road intersection, turn left.
11.85	0.05	Pile of miscellaneous drill core on west side of road. Origin unknown.
12.35	0.5	Cerbat Mountains on Skyline; White Hills in foreground across Detrital Valley. Altered gneiss-schist both sides of road.
13.1	0.7	Van Deeman Mine Road to right. Road follows a sandy wash, four-wheel drive is recommended but not essential.
14.2	1.1	Upper contact betwen Patsy Mine Volcanics and Precambrian gneiss-schist.
14.4	0.2	Lower contact Tpm-PCs-g. is a low-angle normal fault contact.
14.9	0.5	Mine workings and fresh cuts at 3:00 are in brecciated, non-stained Precambrian gneiss in the footwall of the low-angle normal faults. The hangingwall is Patsy Mine Volcanics.
15.0	0.1	STOP 5. Road forks, turn right into Van Deeman Mine area. The Van Deeman is currently optioned to Amselco and a brief discussion of the geology will be made by a representative of that company.
16.9	1.9	Intersection of Van Deeman Mine road and original road. Turn right.
17.3	0.4	High hills at 9:00 are Precambrian schist and gneiss.
17.6	0.3	Road forks, take left fork. Road follows a section line to Highway 93 at Boulder Inn. Bug Hills are at 10:30. White Hills Mining Camp at 11:30.
19.6	2.0	Highway 93 to Kingman. Please close the gate.

END



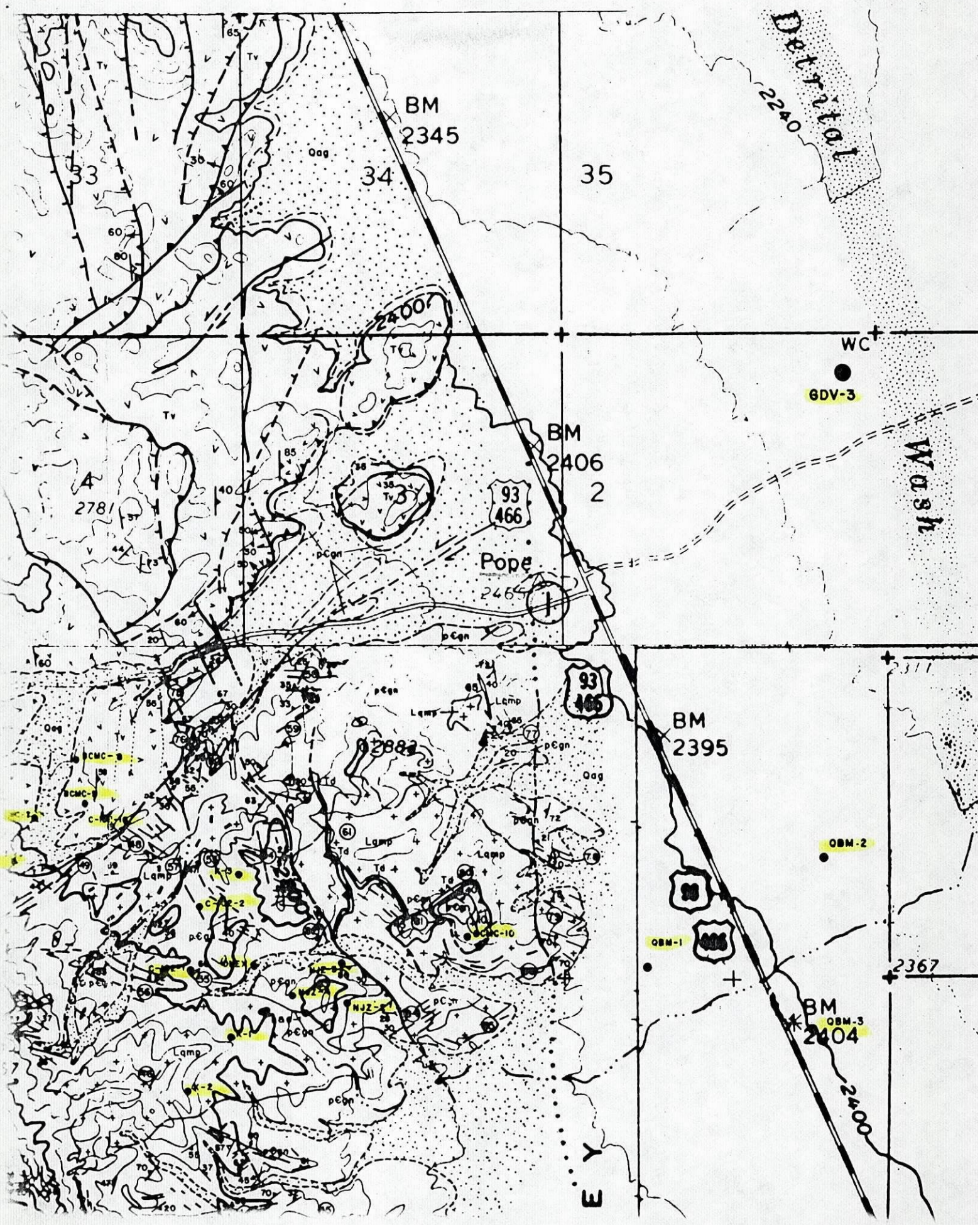
EXPLANATION

Lithology

- Qal — Alluvium
- Tmc — Muddy Creek formation
- Tmf — Fortification Hill Basalt member of Tmc
- Td, Tl — Lampophyre or microdiorite dikes
- Tog — Older gravels (Mt. Davis Volcanics?)
- Tv — Patsey Mine Volcanics
- Lqmp — Quartz Monzonite porphyry
- Lqp — Granite porphyry phase
- Porphyritic phase
- P€gn — Gneiss
- P€d — Diorite
- P€s — Schist
- ★ — K-Ar Age date
- ◉ — Whole Rock analysis

Structure

- 70 — Basin and Range Fault
- 30, 15 — Low-angle normal fault; showing dip and trend of lineation on fault surface. Teeth on upper plate.
- 75 — Listric normal fault.
- 75, 0 — Tear fault in upper plate showing dip and trend of lineation on fault surface.
- Fault-vein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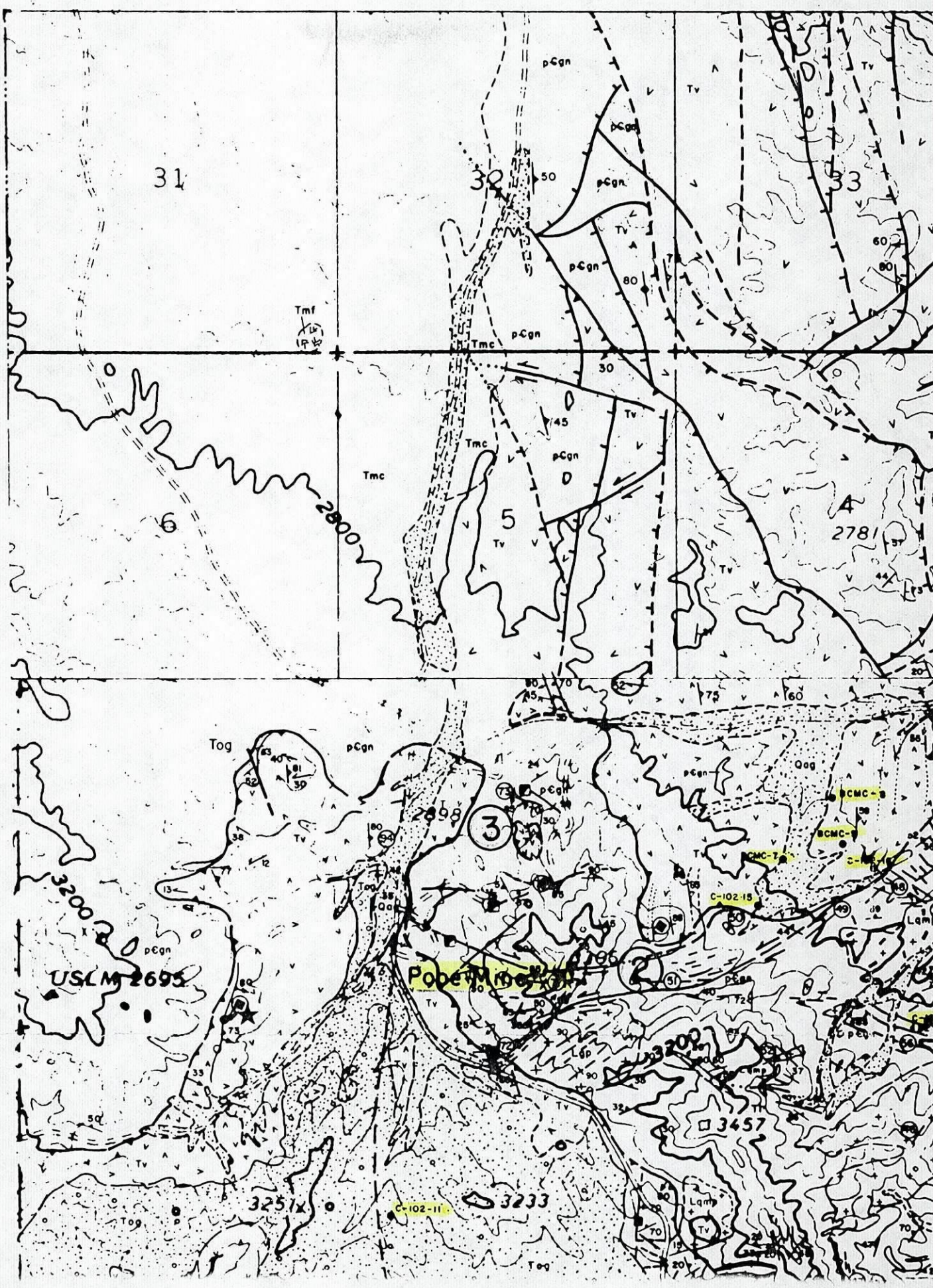
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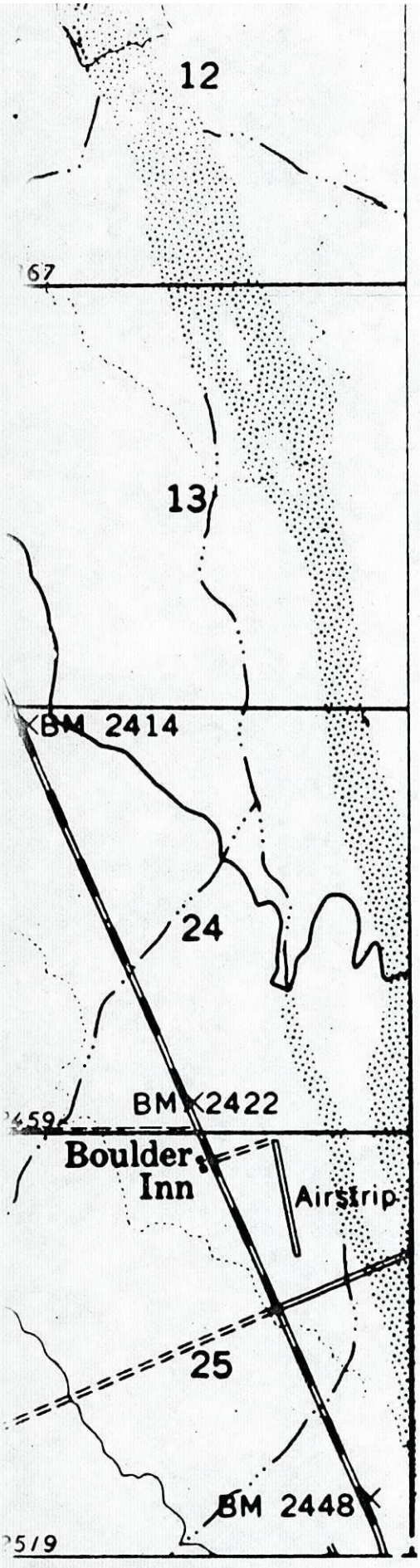


Whole rock analysis

Structure

70 Basin and Range Fault

30 / 15 Low-angle normal fault; showing dip and trend of lineation on fault surface. Teeth on upper plate.

75 Listric normal fault.

75 / 0 Tear fault in upper plate showing dip and trend of lineation on fault surface.

Fault-vein

Contact

Trend of contact between volcanic units

80 Bedding attitude, showing dip.

55 Foliation trend; in Tv-flattened amygdules.

45 Foliation trend; in P€-Felsic unit.

45 Foliation trend; in P€-Mafic unit.

13 Lineation trend, showing plunge.

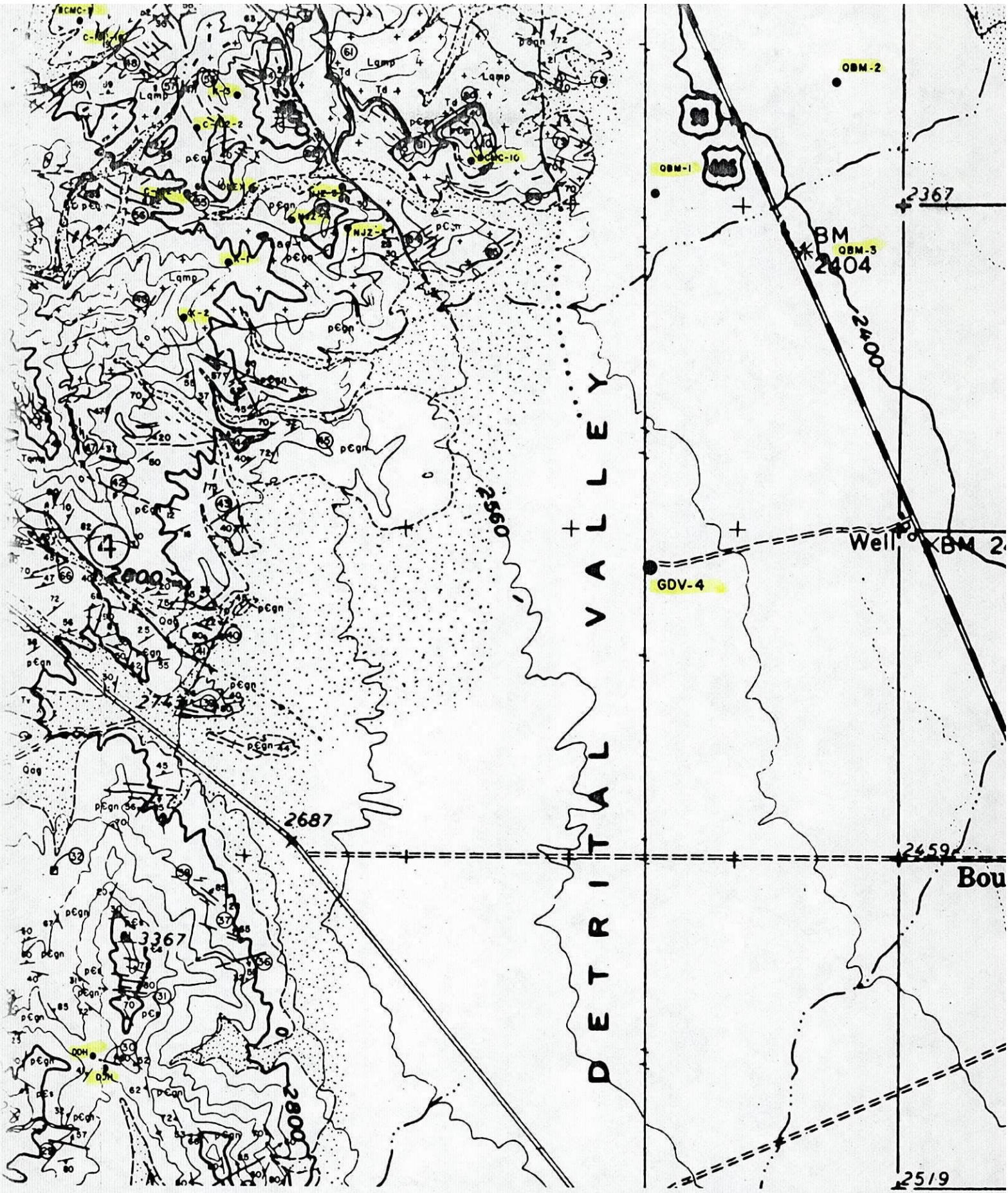
Miscellaneous

Drill-hole location.

(17) Geochem. sample site

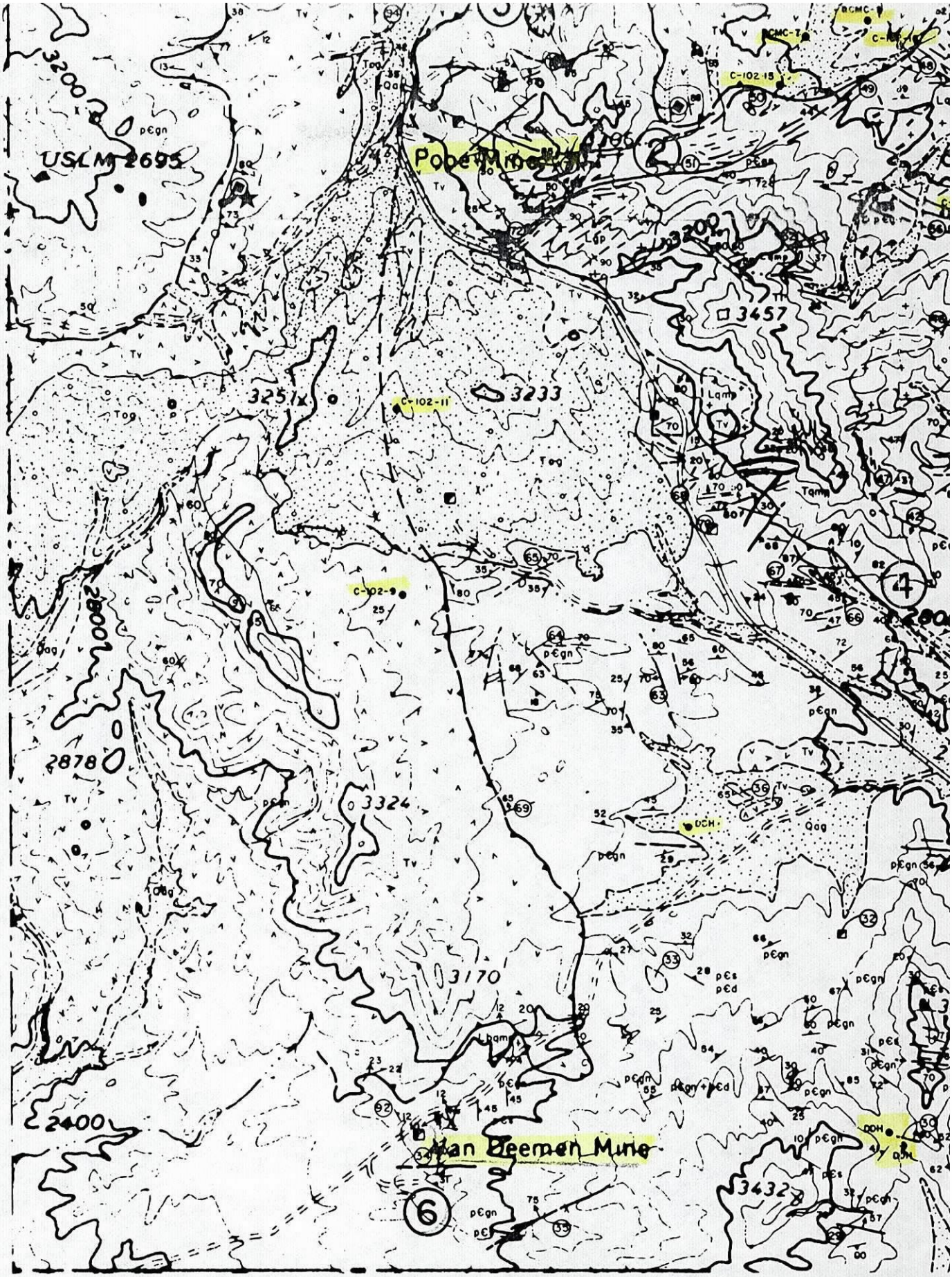
Field Trip Stops

0 1000 2000 Feet



NORTHERN BLACK MOUNTAINS, MOHAVE COUNTY, ARIZ

BY: TOM L. HEIDRICK and JOE WILKINS JR. 1979



GEOLOGY OF A PORTION OF THE NORTHE

GEOLOGY BY: TOM L. I

[redacted]

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NO.243(1986)
DECEMBER 18, 1986

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DECEMBER 18, 1986

WESTERN CANADIAN INVESTMENTS

ARIZONA STAR resource corp.

VAN DEEMEN PROPERTY, MOHAVE COUNTY, ARIZONA

The drill intercepts were the following:

Hole Number	Interval (Feet)	Length (Feet)	Oz. Gold Per Ton
1	65-115	50	0.023
incl.	85-115	30	.031
2	55-105	50	.023
3	0-45	45	.017
incl.	25-35	10	.037
4	0-35	35	.025
incl.	0-15	15	.034
5	0-65	65	.034
incl.	0-40	40	.055
6	0-40	40	.031
incl.	0-10	10	.045
incl.	30-40	10	.063
7	25-40	15	.037
9	10-35	25	.025
incl.	20-30	10	.035
12	0-80	80	.018
incl.	35-45	10	.035
incl.	105-110	5	.102
13	95-130	35	.030
14	20-125	105	.034
incl.	composite	80	.044
incl.	105-125	20	.067
26	65-75	10	.044
35	50-70	20	.032
37	25-35	10	.048

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NO.15(1987)
JANUARY 22, 1987

NO.15(1987)
JANUARY 22, 1987

ARIZONA STAR resource corp.

HOLE NUMBER	INTERVAL (Feet)	LENGTH (Feet)	OZ. GOLD Per Ton.
15	composite	45	0.037
incl.	0-15	15	0.045
incl.	5-10	5	0.067
and	70-90	20	0.034
18	0-25	25	0.022
incl.	20-25	5	0.052
19	105-116	11	0.101
incl.	110-116	6	0.112
20	10-50	40	0.012
incl.	35-40	5	0.039
21	5-45	40	0.113
incl.	15-45	30	0.145
incl.	15-20	5	0.433
22	60-80	20	0.026
incl.	60-65	5	0.039
23	30-55	25	0.038
incl.	45-50	5	0.057
24	50-90	40	0.055
incl.	85-90	5	0.165
34	45-65	20	0.015
incl.	55-60	5	0.031
42	45-100	55	0.037
incl.	60-100	40	0.048
incl.	85- 90	5	0.131
47	65-100	35	0.062
and	150-165	15	0.046
incl.	80-85	5	0.113
50	120-145	25	0.023
incl.	125-130	5	0.060

JDS

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NO.43(1987)
MARCH 3, 1987

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NO.43(1987)
MARCH 3, 1987

[redacted]

To: J.D. Sell/W.L. Kurtz Revised: March 16, 1987

MOHAVE COUNTY GOLD "RESERVES" - RESOURCES

* = Elephant County (Potential for Asarco: Keep track of + future work)

* Cyclopic - Gold Basin - ±5 m.t. @ ± .04 opt Rough Estim. Resource - Corn/Ahren
  Including: 300,000T @ 0.15 opt indicated (Wyman + King)
  Including: 67,000T @ 0.28 opt indicated (McIntire)
  AZ Dept.Min. Res. - Phoenix (need to review data)
  Saratoga Mines has lease from Wyman + King.
  Production ±60,000T @ 0.35 (Tails ±5000T run 0.08 opt) - Corn
  U.S. Borax Drill: 200,000T @ 0.04 (1983) W&N of Cyclopic, spotty, now Loghry/Corn/Ahren
  (F.R.K. will sample a few of neglected better areas)
  Back from Icarus-Teton Expl. 3/15/87.

* N. Black Mtns: Van Deeman: Fischer-Watt Gold (US-OTC)/Arizona Star Resources (VSE) (±WSA)
  (235 unpat. claims from Kunkes): fill-in - step out drilling Spring 1987 (May 1 start + detailed mapping + sample on north end).
  2-10 m.t. @ .04-.05 "potential" (including area W. of Pope Mine)
  2.6 m.t. @ 0.042 .5-1.5/1 w/o indicated + infer. GCNL 2/9/87
  .72 m.t. @ 0.042 1.2/1 w/o @.01 c/o indic.+prob. 65 holes±40' thick
  .75 m.t. @ 0.042 - possible P. Durning 12/86

  Gold Bug (Ivy Minerals): 300T @ ± 4.opt Au Drilled to 200' (vein)
  Bill Vanderwall. Mgr. (Geol) (7 pat. claims)

  ±5000T @ 1. opt Au in vn to 400'; shaft retimbering, to 250'
  2/87 - May ship to Hayden - mini-mill later (vn-lower plate pE)
  Check out Liberty Mine color anom., lower plate, drilled Freeport 1982, Sec. 33, T27N, R21W.

±*Mockingbird (Chevron, Ex-Anaconda) New Chevron claims S. of Mockingbird 4/86
  Production: ±20-30,000T @ .4 opt Au-(±5,000T Tails) - Guess FRK + Shrader
  ±8 RDH Drilled Oct 1985 at Mockingbird Mine (Kyllo-Noon, Las V.?)
  Plans of operations for Spring 1987 drilling by Chevron and another Group S. of Mine filed with BLM

Van Deeman

JDS

1710-609 GRANVILLE ST.
P.O. Box 10363 Stock Exchange Tower
Vancouver, B.C.
V7Y 1G5
683-7265
(Area Code 604)

NO.72(1987)
APRIL 13, 1987

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MAY 22, 1987

George Cross News Letter

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NO.98(1987)
MAY 22, 1987

JDS

ASARCO

Exploration Department
Southwestern United States Division
James D. Sell
Manager

June 22, 1987

Mr. Perry Durning
Fischer-Watt Mining Co., Inc.
114 Trecker Ave., Suite 7
Kingman, AZ 86401

Van Deeman Area
Mohave County, AZ

Dear Perry:

Asarco thanks you for the aid you have given Fleetwood Koutz of this office in his review of the Mohave County areas.

Of the ones you have an interest in, the Van Deeman area is approaching the size and grade we would be interested in.

Thus should F-WMC have need for influx of someone like Asarco, we would be please to review the data and terms for possible participation at any level.

Sincerely,

James D. Sell

JDS:mek

cc: W.L. Kurtz
F.R. Koutz

6/22. Dalected R L Brown of this.

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

ASARCO

Southwestern Exploration Division

JDS

July 30, 1987

R. L. Brown
New York

FRKounty

July 1987
Monthly Report
Mohave County, AZ

	Field Days	Office Days	Samples Collected	Assay Cost	Expense Account	Truck Expense
To Date	39	32	124	$1,314.80	$3,412.71	$1,499.89
July 1987	0	0	0	0	0	0

Only a few hours were spent this month on Mohave County. ERS sheets were published on Van Deeman, Pilgrim, Secret Pass and Mossback. A complete Freeport data package on the Liberty Mine was obtained from C. Kunkes, owner of hundreds of claims in the N. Black Range, including Van Deeman south of Mockingbird. This data should contribute to our geological/geochemical understanding of this district. Mr. Kunkes is busy drill and sample plant testing several of his placer deposits which he promises to show me in the fall--a good lead to potential open-pit lode Au.

At Van Deeman Arizona Star had completed 7000' of RDH by early July and the total of 10,000' (or possibly 12,000') should be completed by now. Results are apparently quite encouraging, but exact results "have been embargoed to prevent stock manipulation." AMIR Mines Ltd. is buying out 54% of AZ Star (GCNL-5/22/87) and wants to buy more including Fischer-Watt's half. AMIR is in cahoots with Glamis Gold on a number of projects in the W. U.S. Glamis has previously drilled at Van Deeman.

At Frisco (Union Pass) drilling, re-sampling and promotional work continues (GCNL 6/12, 6/29) as reported last month. I neglected to report that the owners (Bonelli Family) told me that they had 0.6 MT @ 0.06 opt Au, but 0.08 MT was based on 1 RDH. Their 10% NSR was too steep for Red Dog (Glamis) that previously did a considerable part of the drilling.

The last leaching in 1985 on the Bonelli Frisco pods was several 1000 T test of "ore" from Sharon Steel's 6 patented claims (Bi-Metal Mine) at McConnico siding (ATSFRR) 3½ miles SW of Kingman also under US 66, I-40 and several junkyards. The Bonelli's report reserves of 120,000 T @ 0.065 opt Au from ± a dozen RDH. Asarco's M. Stockder moiled 114-5' samples UG in 1915 and estimated perhaps ½ MT @ 0.036 opt Au. Others have estimated 1 MT @ 0.13 opt Au and in the 1930's some 20,000 T were quarried which might have averaged ± 0.08 opt. The deposit is pyritic quartz veins and breccia-matrix in pЄ granite with aplites, mafic dikes and considerable low angle shearing. There undoubtedly has been mechanical enrichment of the gold at this break in the pediment. Although I was not impressed with the extent of mineralization in the several hours I was at

the quarry and in spite of the thick post-mineral volcanic cover, super-saturation with transportation facilities and 100's of NICOR claims (pediment + post mineral volcanics), I believe this area needs to be looked into further.

Dave Cockrum of Galli Exploration (home base: Chloride: 565-4486) reports that they have completed their mapping at Pilgrim and built a dozen or so drill pods and numerous roads for 86-87 assessment work. They have post-poned drilling until fall when rigs will be more available at more reasonable rates. I had previously expressed interest in the property. He suggests I contact his manager (Dave Fanning, Reno 702-786-7667) which I will do in the near future.

Paydirt (June 1987) reports that Alanco (Anthony Lane) will reopen the C.O.D. mine in the White Hills district (Ag>Au in quartz veins in granite) halfway between Gold Basin and Van Deeman. Although they claim 100,000 T reserves, Arizona Silver, the previous "operator," was not able to make a go at the reported 20 opt Ag and $\frac{1}{4}$ opt Au. Alanco has been previously tied up with such shady dealings at the Blackhawk Slide (Lucerne Valley, CA), Haber Gold and a custom mill in Tombstone.

A field trip for Graybeal, Kurtz and Sell to NW Mohave County has been tentatively planned for the late fall.

FRK:mek

F. R. Koutz

cc: J.D. Sell
W.L. Kurtz

ASARCO EXPLORATION RECORD

235 Unpat Lode Claims
4.5% NSR with $2 million buy out.

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

JV: 50% Fischer-Watt/50% Ariz. Star Res.

Section I General Indexing

① Name(s) of Property or Area	② County	③ State or Province
Van Deemen Mine (also Van Deeman) Weaver or Minnesota Mining Dists.	Mohave County	Arizona
	④ USGS Quad. Mt. Perkins 15'	⑤ File or Core No.

⑥ Latitude	⑦ Longitude	⑧ AMS Sheet	Township	Range	Section	⑨ Examined by	⑩ Date
35°42'N	114°33'W	Kingman	27N	21W	29,30 32,21	F.R.Koutz	2/8-9/87
						⑪ Office SWED Tucson	⑫ Field Days (area) 2

Section II Sources of Information

plus Date Typed 7/9/87 July

⑬ References

Author	Date	Title	Publications	Vol. No.
Ariz.Star Res.	8/13/86	Prospectus (USE)+Fischer-Watt Gold Co.(OTC)	12/4/86 Prelm.Prosp	
Wilkens, J.(+Heidrick,T.)	1984	AGS Fall Field Trip Guidebook + 1"=1000' map of N.Black Mtns.		
Brownlee, D.J.+Poloni,J.R.	1981	Rpts on VanDeemen Proj.,Pacific Cypress Min.,Ltd (w/o maps)		

Section III Appraisal

Asarco Files "Pope Mine Area-Gold Bug"

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

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

- [ ] Stacked detach Fault
- [X] Geologic Concept
- [X] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Gold ore	few 1000 max.	±.2 opt Au

⑰ Reserves [X] Measured [ ] Estimated

Commodity	Tons	Grade
1.2/1 o/w,.01 c/o	or 716,000T	.042 opt Au
.5-1.5/1 w/o	2.6 mt	.042 opt Au
"potential"	2-10 mt	.04-.05

⑱ Num. Drill Holes 178+ thru 1986 Approx Total Footage 15,000

⑲ Excavations Many Trenches. ±500' UG workings.

⑳ [ ] Spectro. Analysis Attached

㉑ [ ] Assays Attached

㉒ [X] Geochem Results ~~Attached~~ +500

Section IV Geologic Data

㉓ Commodity or Contained Metals Au-Ag As, Mo ± Hg anomal. (±Cu?)

㉔ Ore Minerals-Major Au FeOx>MnOx (py>>cpy) Minor malachite Dikes

㉕ Host Rocks-Major gr-dior.gneiss-schist Patsy Mine And Minor biot.Qtz Monz diorite-rhyol.

㉖ Age of Host Rocks pC (±peg-aplites) 18.6(22-40?)m.y. Laramide Miocene/Laramide

㉗ Nature of Exposures fair. Mostly on WSW facing pediment surface. 800' Local relief, 2900' av.elev. Much of detach. buried by grav. broken by high ⟩ faults. Deeper holes chloritic, grey chips + py

㉘ Alteration Hem ⟩ Goeth after py>>cpy, loc.jaros., Tr.malach in old works. White bleached (clay-ser.) zones in schist. Chl schist (cont. pg. 2) ㉙ Total Extent 40' av. thick.,600-800'x300-400' ea.3 zones.

㉚ Structure 5-15°W-dipping detachment fault (other subparallel low angle listric faults above & below). ENE to E&N-S orthogonal Basin & Range faults. Brecciation (cont. pg.2)

㉛ Ore Occurrence Au° with FeOx ± silica in low angle fault breccia and associated higher angle feeders ± rhyolite dikes. Irregular oxidation: deeper along Fx. Not all Bx mineralized. (cont. pg. 2) ㉜ Age of Mineralization Miocene (Laramide??)

㉝ Conclusions & Recommendations Ex-Utah Int. (Cu-Mo), Freeport (1980), Cypress Pac. (1981-82), Amselco (83-84) Zone 1-2 miles W of Pope Mine similar and will be drilled summer 1987. (10,000' of fill-in/step-out drilling now in progress.) Higher grade >0.1 opt Au zones narrow--seldom above an acre. Will make difficult to mine-plan. Reserves could be easily doubled or tripled. Much of early drilling was in barren parts of lower plate. Prelim. metallurgy indicates crushing/agglomer. prob. necessary. If reserves confirmed could go into (cont. page 2)

(For additional space use extra sheets)

Van Deemen Mine

28. Alteration: prob. metamorphic (mafic schist)

30. Structure: along silicif. faults. Upper plate volc. rotated: dip 30-60° W.

31. Ore Occurrence: Orthogonal Faults offset flat Bx zone locally.

33. Conclusions & Recommendations: production in 1988. Unoxid. mineraliz. maybe not recoverable.

Note: Amir Mines Ltd (VSE) is buying out 54% of AZ Star CGNL 5/22/87 and apparently is making an offer for controlling interest of Fischer-Watt's half. Amir Mines is in cahoots with Glamis Gold on a number of projects in W. US.

ASARCO Southwestern Exploration Division

JDS

September 1, 1988

F.T. Graybeal
NYC

Van Deeman, et al
Mohave County, AZ

Mr. Chuck Kunkes and wife Marge (phone 602/767-3831), owners of a large land package around the Van Deeman area, called on 9/1/88 to say that Fisher-Watt, Amir, et al are saying that they need "relief" from him on the Van Deeman, et al properties. He says he will not give in, and thus was looking for another group to continue exploration when he gets the properties back.

As the group is presently in arrears it appears that he may get the properties back.

I affirmed that Asarco was interested and had some Fisher-Watt data but not all the data. Kunkes said he would sent a data package on his area along with suggestive terms.

Suggestive terms:

$20,000 advance
$10-$15,000 quarterly (presently $4,000 monthly)
Keeping the large land package (assessment costs)
Buy out.

I agreed that the terms were acceptable upon review of data and confirmation of drilling program and targets.

I'll attempt to stop in and see them on my way north next week. They live in a house just south of the Boulder Inn between Kingman and Las Vegas.

James D. Sell

JDS:mek

James D. Sell

cc: W.L. Kurtz

PS The Vancouver Amir, AZ stds, etal groups have yet to return my calls and requests these past six months.

JDS

ASARCO

Southwestern Exploration Division

September 26, 1987

R.L. Brown
New York Office

Monthly Report
September 1987
Mohave County, AZ

	Field Days	Office Days	Samples Collected	Assay Cost	Expense Account	Truck Expenses
To Date	39	32	124	$1,314.80	$3,412.71	$1,499.89

In September there was no Asarco activity or expense in Mohave County, AZ.

Arizona Star Resources (VSE) has made some preliminary announcements (GCNL 8/31) on the results of 11,330' of RDH in July at the Van Deeman Property in the northern Black Range. Tonnage (716,750) has stayed the same, but the announced grade of .038 opt Au has dropped from .042 opt announced in Dec.'86 for zones 2 and 3. Zone 4 results with ±50,000 potential are not back yet. Zone 1 (23,350T @ .055 opt Au?) were not mentioned. Amir Resources (VSE) has bought 27% of AZ Star and has warrants for another 27%. AZ Star has essentially earned a 50% interest in Van Deeman from Fischer-Watt Gold (OTC). What has happened to the "2-10 mt potential" in the area is not known, but expect the usual touting to continue.

David Fanning, Reno Mgr. of Galli Exploration finally got back to me concerning their Pilgrim property in the Black Range that I was interested in. They are not interested in a JV partner or in showing the data at this time, but will drill late this fall. Galli is being spun back-off of Royal Apex-Cd'A Mines and is currently "gagged" by the SEC from making comments on specific properties. Galli will not become operators of anything they find and will let us know if they find anything of size.

Arizona Silver (VSE) has been making noises about the Burro Creek (Burro-Telegraph Pat. Claims) property 60 miles SE of Kingman which they are JVing from Dominion Resources. "Exact" reserves were announced several weeks ago in GCNL and they have applied for various state mining permits which are being contested. From past efforts of Arizona Silver in the White Hills and the Oro Blanco District (Santa Cruz Co.), I expect they will produce a few bars of gold and silver to show to several helicopter loads of Canadian Investors -- and not much more.

FRK:mek

F. R. Koutz

cc: J.D. Sell
W.L. Kurtz

ASARCO

Southwestern Exploration Division

JDS

October 26, 1987

R.L. Brown
New York Office

Monthly Report
October 1987
Mohave County, AZ

	Field Days	Office Days	Samples Collected	Assay Cost	Expense Account	Truck Expenses
To Date	39	32	124	$1314.80	$3412.71	$1499.89

In October there were no Asarco expenses and only a few hours were spent reading and talking with C. Kunkes concerning his properties in the Van Deeman area.

C.R. Kunkes owns some 450 unpatented lode claims (some with Amselco) from the Pope Mine south to Mockingbird in the Black Range. Fifty-eight plus of these claims (Van Deeman area) are under option to Fischer-Watt Gold, Arizona Star Resources, et al, for ±$4000/month ($750,000 + 300,000 buy out which also reduces NSR on 23 claims from 5½% to 4% and eliminates NSR on 35 claims plus other terms including partially restricted and other VSE penny stock to Kunkes). Monthly payments are due to escalate soon and Fischer-Watt would like to renegotiate terms and obtain another block of ground north of Van Deeman for "next to nothing" according to Kunkes. Although official results of this summer's drilling have not been announced, total mineable heap-leach ore will probably only be in the 900,000T @ ± .04 opt Au range according to P. Droebeck, consultant to Arizona Star. Fischer-Watt, et al, are apparently trying to tout the "potential and inferred" reserves rather than the "drilled out" (short-tonnage) area now known.

Mr. Kunkes will send us his property maps and what data he has on this area that Fischer-Watt is interested in south of the Pope Mine (mostly Sec. 17, T27N, R21W) previously drilled for Cu-Mo by Utah International and others. I briefly visited this area in Feb. 1987 before I knew of ownership. Most of the area is covered with post (?)-tectonic Tertiary gravels, but some interesting low-angle and high-angle, strike-slip subgrade mineralized structures similar to Van Deeman project beneath the gravels. There is fair to good potential for .0X opt Au intercepts beneath these gravels. Mr. Kunkes would like to lease all his remaining property in T26 & 27N, R21W in one block, and, of course, would like to use interest of others to raise the price to Fischer-Watt, et al. Overall, the ground that is exposed does not look anywhere near as good as the Van Deeman, but I have only looked at a few miles^2 of the area.

Mr. Kunkes reports that the Gold Bug vein is now in production (<50 TPD) and the people at Kemple Camp (SE of Mockingbird) have applied for a permit to heap leach X0,000T @ .0X opt Au.

Bud Hillemeyer showed me some of the results from recent Fischer-Watt drilling at Secret Pass (Tincup Mine), one hole with 20' at 2.2 opt Au near Santa Fe's 60' of 0.6 opt Au (drilled down structure). They are hoping for 300,000T @ 0.15-0.18 opt Au which might (with +10/1 w/o ratio) be open-pitted. Apparently, Fischer-Watt confirmed that Santa Fe's unsurveyed angle holes had considerable deviation which increases potential reserves by 50%. They will drill an area about 1 mile NW of Tincup on structure next to the WSA which shows weak argillic-sericitic alteration and Au-Ag anomalies. Fischer-Watt got this ground from Santa Fe for $5K down (May 22, 1987) and $10K/6 month for first year and 20K/6 month second year with a Canadian Group-"International Prospectors" paying the first $100K expenses for a 50% interest (final terms not known) (see May Monthly Report).

Arizona Silver, as reported last month, optioned last winter the Burro Creek (65 miles SE of Kingman) property from Dominion Resources (GCNL) 8/26/87 claiming potentials of 1.3-1.9 m.t. @ 0.068 opt Au and 2.1 opt Ag - 1000' strike, 70' av. width and 300' downdip calculated from 8 Dominion DH, UG sampling and surface cuts at 50' intervals. They filed BLM plan of operations for drilling late 1986-early 1987.

In March 1988 the Cordilleran Section of GSA will have a meeting in Las Vegas with major field trips to mines and prospects in Mohave County, Arizona, as well as Clarke and Nye Counties, Nevada and San Bernardino County, California. We should plan to attend these field trips and possibly the meetings.

With additional Camp Douglas and other Mineral Co. duties added to Esmeralda County, NV, work, there is little chance I will get back to full time Mohave County work until 1988. However, the Van Deeman area/Kunkes situation should be kept track of and acted on if a reasonable option can be obtained from Kunkes.

FRK:mek

F. R. Koutz

cc: W.L. Kurtz
J.D. Sell
P.G. Vikre

ASARCO

Southwestern Exploration Division

March 1, 1988

FILE NOTE

Van Deeman Area
Mohave County, AZ

Pete Drobeck, Kingman 602/753-1100, stated that the property is now tied up by a major company and the VP's etc. have been out on the property this past week. Sign up by both parties is expected at any time.

Pete stated that the land position toward the river was included (±300 claim package) and felt that the package had all the land needed for the exploration.

I told Pete to keep Asarco in mind in any event.

Allan Moran of Freeport Gold did have the property under investigation (see F.R. Koutz's letter to C&M Kunkes on the Liberty Mine Data, June 15, 1987), so it is possible that Freeport is the party involved.

At the CUSMAP meeting it was learned that Allan was setting up an office in Tucson for gold exploration, though the statement was made that they were interested in Mexico.

JDS:mek

James D. Sell

cc: ~~W.L.~~ Kurtz

J.D Sell — you should keep track do not rely on Drobeck to get back to you.
Yes. I'll keep after it.

ASARCO

Southwestern Exploration Division

JDS

March 1, 1988

FILE NOTE

Van Deeman Area
Mohave County, AZ

Pete Drobeck, Kingman 602/753-1100, stated that the property is now tied up by a major company and the VP's etc. have been out on the property this past week. Sign up by both parties is expected at any time.

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James D. Sell

JDS:mek

cc: W.L. Kurtz

Van Deeman Property

Arizona Star Resources Corp 50%
Fisher-Watt 50%

ASRC probably controlled by AMIR Mines Ltd (Vancouver)

Van Deman Maps in Drafting:

1. Set of Cross-Sections, Area III (11"x17") 1"=50'
A-A' B-B' C-C' D-D' E-E' F-F' G-G'
H-H' I-I' J-J' K-K' L-L' M-M' N-N'
O-O' P-P' Q-Q' with ore blocks. Revised Aug. 5, 1987. (N40°W – S40°E)

2. Set of Cross-Sections, Area III (11"x17") 1"=50'
QQ-QQ' RR-RR' SS-SS' TT-TT' UU-UU'
VV-VV' WW-WW' XX-XX' YY-YY' ZZ-ZZ'
aa-aa' Aug-Sept 1987 (North-South).

3. District Geologic Map 1"=400' (24"x36")
Sheet 1 (South)
Sheet 2 (middle) w/ cross-sections bisc A-A', B-B', & C-C'.
Sheet 3 (North) (June-Sept. 1987).
District Cross-Sections A-A', B-B', & C-C' (July 1987).

4. District Claim Map on District Geologic Map base.
1"=400' (24"x36").
Sheets 1, 2, & 3 as above in item 3.

5. Drill Hole Location Map. Area III - Area IV Lost Run Gulch. 1"=50' July 8, 1987. ~~Plan~~ with cross-section lines as in items 1 & 2 above. (48" x 42").

Van Deeman Maps Continued.

6. 1"=100' Geologic Map. July 20, 1987 (36" x 54")
   Sheet 1 (south)
   Sheet 2 (north)

7. Drill Hole Location Map Area I - Area II
   1"= 100' July 7, 1987 (36" x 54").

8. Van Deeman - Pope West Land States 1"= 1000'
   11/22/83 (Anaeleo Engr-Inc.). (54" x 36").

F

JDB 4/27/88

Anir.

AZ Star 4/5/88

Gary Nordin Vancouver

604/ 681-8371

Dan Johnson

Van Dee

Work in —

Will send down thoughts
+ have P Drobeck send date + visit.

4/12 he's out see will check up on
when agreement out

4/27 out — see say he'll call tomorrow!

PETER A. DROBECK

Exploration and Mining Geologist
Arizona Registered Geologist No. 21610
Certified Professional Geological Scientist No. 7245

114 Tucker, Suite #5
Kingman, Arizona 86401
602 - 753-1100

April 6, 1988

Mr. Jim Sell
Asarco Inc.
1150 N. 7th Avenue
Tucson, AZ 85703

Dear Jim:

Enclosed please find a basic data package concerning the Van Deemen property, Mohave Co., Ariz. The property presently has a small reserve of 988,000 tons grading .034 O/T Au with a 3:1 strip ratio. The deposit occurs at the confluence of ENE trending shear zones and the Black Mountains Detachment Fault. Work to date suggests excellent potential to at least double the existing reserve by simply stepping out with another drill program. In addition, there are three exploration targets on the property with similar geology and potential.

Thank you for your interest in the project. Please contact me if you have questions or would like a field tour.

Sincerely,

Peter Drobeck

Peter Drobeck

PD/nl

Enclosures

PETER A. DROBECK

Exploration and Mining Geologist

114 Tucker, Suite #5
Kingman, Arizona 86401
602 - 753-1100

SUMMARY REPORT

PHASE TWO WORK PROGRAM

VAN DEEMEN PROJECT

MOHAVE COUNTY, ARIZONA

FOR

ARIZONA STAR RESOURCE CORP.

OCTOBER 5, 1987

I. PHASE TWO WORK COMPLETED

The Van Deemen Phase Two Work Program was initiated in May of 1987 and is nearly complete. I have personally overseen the entire program. Tom Dodge, Bud Hillemeyer, and Jim Faulds, all degreed geologists, have worked on the project in varying capacities under my direction. The program has been done in a very professional and cost-efficient manner. The following items were completed:

A) The property was partially surveyed and a coordinate grid system was established. Drill holes from Phase One were also surveyed. Using this data Cooper Aerial Surveys prepared a 1" = 400' topographic base map with 10' contours. This map was enlarged in areas where detailed work was required.

B) The geology of Areas I, II, III, and IV was mapped on low altitude air photos and compiled onto 1" = 100' base maps. This mapping was done by Bud Hillemeyer and it covers approximately 0.7 mi^2.

C) The geology of most of our property position and some surrounding ground was mapped on air photos and compiled onto the 1" = 400' base maps. This mapping was done by Jim Faulds, myself, and Bud Hillemeyer and it covers approximately 8.5 mi^2. This work has allowed delineation of new exploration targets and encouragement to continue the mapping to the north and east.

D) A pilot biogeochemistry grid sampling survey was run over the existing reserves in Area II. A similar grid sampling program was run over the "East Klippe" target.

E) Seventy-five reverse circulation rotary drill holes, totalling 11,300 lineal feet, were completed to test the potential in Areas II, III, and IV of the property. The samples were assayed by three laboratories: G.D. Resources, Chemex Labs, and Hunter Labs. Approximately 7% of the samples were assayed by two labs to check for analytical errors. No significant problems were encountered.

F) All new drill hole collars were surveyed and plotted on 1" = 50' topographic base maps.

G) Fifty-two detailed cross-sections were constructed in the areas drilled during the program. The sections were constructed to show both the geology and the gold grade distribution.

H) The geology and grade distribution sections were used to prepare detailed cross-sectional reserve estimates for Areas II, III, and IV. A crude open pit was designed for each area to enable calculation of stripping ratios.

I) The geology, grade distribution, and ore block cross-sections were used to construct three dimensional models of the orebodies in Areas III and IV.

J) Encouraging results were received from cyanide bottle roll metallurgical tests that were initiated during Phase I. Two bulk metallurgical samples were collected in the field and submitted to Dawson Metallurgical Labs for column leach testing. Results from these tests have been received and are encouraging. Metallurgical samples of sulfide and mixed oxide sulfide ore from drill cuttings were submitted for bottle roll tests.

K) An additional eleven claims were staked on the northeast side of the property to cover an exploration target.

II. PHASE TWO CONCLUSIONS

A) The work to date has established a total reserve of 988,700 tons grading .034 O/T Au which contains 34,111 troy oz. Au. To mine the reserves would require an approximate strip ratio of 3:1. Of this total reserve 28% is in the drill-proven category, 75% is in the drill-proven plus probable categories, and 25% is in the possible category. The reserve is mostly oxidized, with only 83,170 tons in the sulfide zone. These reserves are summarized on Table 1.

Note these reserves are comparable to Stevenson's reserve estimate of January, 1987. That report showed an indicated reserve of 674,000 tons grading .043 O/T with 29,140 oz. Au. The Phase Two drill program established a greater tonnage and more contained ounces of gold, although the grade is lower. The cut-off grade used for the Phase Two estimate was 15' grading .015 O/T Au. It is possible that a higher cut-off grade would substantially increase the reserve estimate's average grade.

B) Using the geologic logs and the cross-sections, it became quite obvious that it is not possible to visually recognize ore. There was considerably more altered and mineralized rock than ore in most drill holes in Areas III and IV. The cross-sections also show that although the gold grades are quite erratic within the deposit, the strongly altered zones are fairly continuous. The altered zones (and to some degree the actual orebody) crudely follow the trend of the detachment fault.

It also became apparent that low grade or barren drill holes with good alteration do not necessarily indicate the end of the orebody. For example, drill holes VDRC87-91 and VDRC-13AMS had very poor results but are essentially in the heart of the Area III orebody. Also VDRC87-121 showed

TABLE 1

VAN DEEMEN PROJECT

DRILL-INDICATED GOLD RESERVES

AREA	PROVEN			PROBABLE			POSSIBLE			WASTE
	TONS	GRADE	OZ.	TONS	GRADE	OZ.	TONS	GRADE	OZ.	
II-A	65,218	.045	2946							171,370
II-B				*23,300	.055	1281				2,000
III	131,429	.033	4378	241,666	.036	8783	126,332	.035	4441	1,697,763
IV	73,507	.031	2242	200,721	.030	6041	129,569	.031	3999	1,007,502
TOTAL	270,154	.035	9566	465,687	.035	16,105	252,901	.033	8440	2,878,635
			28%			47%			25%	

Total tons all categories: 988,742

Average Grade: .034 O/T Au
Total oz Au: 34,111
Total Waste: 2,878,635
Strip Ratio: 2.9:1

* (Estimate by Hillemeyer and Stevenson, 1986)

Of the total reserve 83,173 tons are sulfide ore.

poor results even though it is within the Area IV orebody. This observation suggests that the Area III orebody is still open on its SW and NW sides because the drill holes on these sides of the orebody still showed good alteration. The Area IV orebody is also open on its north side: drill holes VDRC86-50, VDRC87-109 and VDRC87-113 all show strong alteration and anomalous to ore grade gold. There appears to be ample room to add 20 - 40% more reserves on the north side of Area IV and 20 - 30% more reserves on the NW flank of Area III.

The Area III orebody has a strikelength of 1100 feet and is bound on the southwest by VDRC-2AMS which showed good alteration and anomalous gold. The geologic mapping indicates there is an 1100 foot additional strikelength of similar alteration southwest of this drill hole. Surface sampling in this area has shown anomalous gold values locally over .030 O/T Au. Hence there appears to be potential to increase the Area III reserves by 50 - 100% in this area.

C) No physical work was done in the Area I altered zone during this phase. This area is the second largest altered zone in the Van Deemen vicinity and has a significant surface gold anomaly. Five holes were previously drilled in this area but only one was in the main gold anomaly. It is clear that this zone merits more drilling.

D) The mapping done during this phase of the project, as well as previous work has identified six possible exploration targets outside the Van Deemen-Lost Pan Gulch vicinity. In descending order of priority these targets are:

1) East Klippe Target

The East Klippe Zone exhibits strong detachment assemblage type alteration associated with a klippe of upper volcanic rocks. The zone occurs along the eastward extension of the Lost Pan Gulch Zone as well as the eastward extension of the Loop Fault Zone. There are only three small outcrops of altered gneiss - the surrounding area is covered with a thin veneer of alluvium. The target shows alteration over a 1200' X 400' area.

A 210 sample biogeochem grid sampling program was run over the target on a 75' X 200' pattern. This program discovered anomalous gold values in some creosote samples comparable to values found over the known orebody in Area II.

Based on the favorable structural setting, the strong alteration, and the gold biogeochem anomaly, this area appears to be an excellent drill target.

2) Loop Fault Target Zone

This target was initially identified by Hillemeyer and also by the photogeologic map. Our surface mapping has shown that two ENE trending faults transect the upper plate volcanic rocks as well as the detachment fault itself. East

of the detachment fault, a zone of anomalous fracturing and mylonitic lineation was found. Where this zone intersects the detachment fault, a 15' to +30' thick zone of intense alteration and brecciation is developed along a N-S width of approximately 400'. The zone appears very similar to the Lost Pan Gulch zone in its structural setting and alteration style. Our mapping has shown that the detachment is nearly flat in this area, so there should be an extensive prospectable strikelength to the west. There is a complex zone of intersecting E-W striking and NE-SW trending faults 1000' west of the outcropping detachment alteration. This area appears to be an excellent drill target.

One drill hole (VDRC86-53) was drilled to 148' on the south margin of the Loop Fault Target. All assays from 90 to 148' were -.001 O/T Au (the top 90' presumably was Tertiary volcanics and was not assayed). Eleven surface samples collected from the zone in 1986 were devoid of Au. Despite these initial discouragements, I believe the zone should be more carefully assessed.

3) Pope South Target

This area has not been mapped yet. There is a well developed system of ENE trending faults and quartz-pyrite-hematite veins associated with a major NE trending shear zone. Weekly anomalous gold occurs in some of the vein structures. The setting appears to be quite similar to that of the Lost Pan Gulch area. Mapping and sampling of this zone will be completed by the end of the month.

4) Horseshoe Canyon Target Zone

The Horseshoe Canyon prospect was initially recognized by Amselco when they controlled the property. A 20' thick zone of intense argillic alteration and minor silicification is developed along a section of the detachment fault along the south wall of the canyon. Initial sampling showed several anomalous values with the highest values being .320, .223, and .189 O/T Au. They subsequently trenched the area and sampled the trenches. The highest grade values in these trenches were .006 O/T.

A NE trending linear zone occurs near the N wall of the canyon which is approximately 100' X 400' in outcrop dimension. Their highest samples were .196, .036, and .012 O/T Au from this zone. Subsequent trenching encountered only one anomalous sample grading .012 O/T Au.

The negative trenching results suggest that the gold has been supergene enriched. On speculation that the trenches were simply poorly placed, we may wish to drill a few shallow holes. Five holes, totalling 850' of drilling, would adequately test this zone. The permits to do so have been filed with the BLM and approved.

5) A.J. Zone Target

A NW trending zone of moderate to intense argillic-hematitic-quartz alteration was discovered in the north portion of our claimblock near claim "A.J. #9." The altered zone occurs in lower plate quartz monzonite and is not a "detachment" target. However, the zone locally attains dimensions of +50' width along a 1,000' strikelength. The zone was trenched by Amselco 800' SE of this wide swell in the zone. Where they trenched, the zone has pinched to a 2' thickness. Their trenching did not find significant gold anomalies, but it is clear they missed the main target.

6) BC-45 Zone

A small zone of brecciation, silicification, hematite staining, and sericitic alteration is developed along the detachment fault on the N side of claim "Box Canyon #45." A small sampling program should determine if it is a viable drill target.

E) The metallurgical work completed to date indicates the Van Deemen Lost Pan Gulch ores will probably be amenable to heap leaching. Based on favorable results obtained from Phase I bottle roll cuttings two column leach tests were performed on Van Deemen ores. One sample was collected from intensely silicified outcrops on the Area IV hill. The other sample was taken from several outcrops of only weakly silicified ore from both Area III and Area IV of Lost Pan Gulch.

Both samples were crushed to -1/2", agglomerated with cement, quicklime, and 1 lb/ton sodium cyanide. The samples were then leached with a solution of 1 lb/ton sodium cyanide for 27 days. The tests showed the following results

	Head Grade O/T Au	Residue Grade O/T Au	% Extraction
Silicified Ore	.079	.034	56.8
Non-Silicified Ore	.053	.014	73.4

The silicified ore showed .56 lb/ton NaCN consumption and 3 lb/ton lime consumption. The non-silicified ore showed .99 lb/ton NaCN consumption and 6.7 lb/ton lime consumption.

The test results indicate commercial leach results (73%) from the non-silicified ore but marginal results from the silicified ore. Most of the ore encountered in the drilling is intermediate in degree of silicification between the two metallurgical samples. Hence it appears reasonable to assume that actual recoveries would be in the 65 - 70% range.

Upon encountering sulfide ore and mixed oxide-sulfide ore in Area IV, it was decided to perform bottle roll tests on drill cuttings from these ore types. The mixed oxide-sulfide ore showed 72.4% recovery and the sulfide ore showed 63.6% recovery. These results suggest the mixed ore will probably allow operating recoveries of 65 - 70% and the sulfide ore of 55 - 60%.

II. RECOMMENDATIONS

A) I recommend that a third phase of exploration be immediately initiated on the Van Deemen Project, as outlined below. This program should be designed to discover new reserves in the vicinity.

B) The drilling and reserve data from Areas III and IV should be digitized, and a polygonal reserve estimate made using a .020 O/T Au cut-off. If this estimate defines a better grade orebody with a similar or lower strip ratio, a feasibility study should be commissioned.

C) If the polygonal reserve estimate is encouraging, the reserve should be classed into silicified vs non-silicified to better estimate operating recoveries. In logging the cuttings we found a complete gradation from silicified to non-silicified ore types. Hence it would be advisable to run a series of bottle roll tests and agitation leach tests on the existing metallurgical samples and on ore-grade drill cuttings.

D) The existing geologic mapping should be extended to cover the Pope South Target and the north end of the "DD" claimblock.

E) A small program of rock chip geochem should be initiated in the following areas:

1) Loop Fault Zone
2) Pope South Target
3) A.J. Zone
4) B.C. #45 Zone
5) The large area of porphyry - copper type phyllic alterations

F) Initiate a reverse-circulation rotary drill program to test the reserve potential of the following areas:

1)	Area III northwest flank : 20 holes	4500'
2)	Area IV north and northwest flank : 15 holes	3000'
3)	Area IV south flank : 2 holes	300'
4)	Area III southwest extension : 8 holes	1600'
5)	Area III far NW extension : 3 holes	750'
6)	Area I : 8 holes	1900'
7)	Area II northwest extension : 5 holes	1050'
8)	Area II far west extension : 1 hole	350'
9)	East Klippe Zone : 6 holes	1000'
10)	Loop Fault Zone : 6 holes	1400'
11)	Horseshoe Canyon : 5 holes	900'
12)	Pope South Zone (depending on upcoming geology and geochemistry) : 8 holes	1600'
13)	A.J. Zone, B.C. Zone, or follow-up on successful intercepts	2000'
	Total recommended footage	20,350'

IV. PROJECTED PHASE III BUDGET

A)	Polygonal reserve estimate	$ 5,000
B)	Follow-up metallurgy	10,000
C)	Geologic mapping	2,500
D)	Rock chip geochemistry	2,500
E)	Reverse circulation drilling: 20,350 ft. @ $12/ft including logging and assaying	244,200
F)	Supervision, engineering, drafting reporting	20,000
G)	Contingencies @ 10%	28,400
	TOTAL U.S.	$312,600

APPENDIX

CERTIFICATE

I, Peter A. Drobeck, do hereby certify:

1. That I am a Consulting Geologist with my office at 114 Tucker Street, Suite #5, Kingman, Arizona.

2. That I graduated from the Colorado School of Mines in 1979 with a Masters Degree in Geology.

3. That I am Certified Professional Geological Scientist No. 7245 and am a member in good standing of the American Institute of Professional Geologists, the American Institute of Mining Engineers, The Society of Economic Geologists, and the Geological Society of America.

4. That I have practiced my profession since graduating from the Colorado School of Mines.

5. That I have no direct of indirect interest in the mining claims at the Van Deemen Property, Mohave County, Arizona, nor in the securities of Arizona Star Resource Corp.

6. That this report dated October 5, 1987, is based on my personal supervision of the Van Deemen Phase Two Project from May through October of 1987.

7. That I consent to the use of this report dated October 5, 1987, in a Prospectus, Statement of Material Facts, or any company public disclosures.

DATED at Kingman, Arizona, this 5th day of October, 1987.

Peter Drobeck, CPGS

AREA IV ORE RESERVES

(CALCULATED FROM N-S CROSS SECTIONS)

SECTION	PROVEN T.	PROBABLE T.	POSSIBLE T.	OXIDE T.	SULFIDE T.	MIXED T.	TOTAL ORE T.	ORE WITHIN PIT T.	TOTAL OZ. AU	OZ. AU WITHIN PIT	TOTAL WASTE
QQ-QQ'	4,487	3,606	11,154	0	4,519	14,728	19,247	17,228	540	492	33,077
RR-RR'	18,270	47,212	10,864	14,712	55,865	5,769	76,346	73,173	2,724	2,522	102,404
SS-SS'	4,615	10,096	46,248	18,364	36,538	6,057	60,959	48,748	2,141	1,530	144,616
TT-TT'	0	5,770	19,040	24,810	0	0	24,810	24,041	684	656	128,270
UU-UU'	3,675	36,441	10,577	37,232	4,134	9,327	59,018	52,288	1,666	506	116,921
VV-VV'	13,654	20,576	22,405	47,404	3,270	5,961	56,635	52,981	1,640	1,550	90,385
WW-WW'	19,423	17,115	17,693	45,385	0	8,846	54,231	37,308	1,422	1,045	71,154
XX-XX'	0	39,808	11,635	33,655	288	17,500	51,443	35,578	1,590	1,134	101,828
YY-YY'	12,308	19,230	15,000	2,500	192	43,846	46,538	28,077	1,536	848	95,385
ZZ-ZZ'	0	24,423	20,289	34,423	0	10,289	44,712	32,596	1,376	948	92,308
aa-aa'	0	7,067	4,135	11,202	0	0	11,202	1,779	249	50	31,154
TOTALS	76,432	231,344	189,040	263,917	104,806	122,323	496,816	403,797	15,645	12,282	1,007,502

TOTAL RESERVES: 496,816 TONS AT .031 OZ. AU/TON

TOTAL IN PIT RESERVES: 403,797 at 0.030 oz Au/ton

STRIP RATIO 2.5=1

9/30/67
P.A.D.

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section QQ-QQ'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.²/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.²/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	5500	25	10,577	A			X		X		2350	25	4519	.021	95	X
2	7550	25	14,519	B			X			X	2150	25	4135	.037	153	X
3	3825	25	7356	C		X				X	1250	25	2404	.037	89	X
4	325	25	625	D	X					X	1250	25	2404	.029	70	X
				E	X					X	1083	25	2083	.021	44	X
				F		X				X	625	25	1202	.024	29	X
				G			X			X	250	25	481	.024	12	X
				H			X			X	1050	25	2019	.024	48	No

TOTAL TONS 33,077

				IN PIT
TOTAL PROVEN:	4487	.025	114	4487 .025 114
TOTAL PROBABLE:	3606	.033	118	3606 .033 118
TOTAL POSSIBLE:	11,154	.028	308	9,135 .028 260
TOTAL ALL CATEGORIES:	19,247	.028	540	17,228 .029 492

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section JRR-RR'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	20,250	50	77,885													
2	3375	50	12,981	A		X			X		225	50	865	.022	19	X
3	1050	50	4038	B	X				X		500	50	1923	.024	46	X
4	1375	50	5288	C		X			X		1975	50	7596	.034	258	X
5	575	50	2212	D	X					X	1500	50	5769	.024	138	X
				E		X			X		3150	50	12,115	.036	436	X
				F		X		X			2750	50	10,577	.036	381	X
				G	X			X			750	50	2885	.034	98	X
				H		X		X			250	50	962	.015	14	X
				I			X	X			75	50	288	.015	4	X
				J			X		X		1650	50	6346	.022	140	X
				K		X			X		750	50	2885	.021	61	X
				L		X			X		2425	50	9327	.037	345	X
				M	X				X		1250	50	4808	.048	231	X
				N	X				X		750	50	2885	.034	98	X
				O		X			X		475	50	1827	.052	95	X
				P			X		X		75	50	288	.052	15	X
				Q			X		X		450	50	1731	.052	90	No

TOTAL TONS NEXT PAGE

TOTAL PROVEN: CONTINUED ON NEXT PAGE
TOTAL PROBABLE: _____ _____ _____
TOTAL POSSIBLE: _____ _____ _____

TOTAL ALL CATEGORIES:

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section RR-RR'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
				R		X			X		275	50	1058	.078	83	X
				S			X		X		200	50	769	.078	60	X
				T			X		X		375	50	1442	.078	112	No

TOTAL TONS 102,404

TOTAL PROVEN:	18 270	.033	611
TOTAL PROBABLE:	47,212	.036	1692
TOTAL POSSIBLE:	10,864	.039	421
TOTAL ALL CATEGORIES:	76,346	.036	2724

IN PIT

Same Same 7691 .028 219

73,173 .034 2522

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section 55-55'

WASTE			
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T
1	15,225	50	58,558
2	7900	50	30,385
3	475	50	1827
4	8750	50	33,654
5	5250	50	20,192

ORE														
BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
	Proven	Probable	Possible	Oxide	Sulfide	Mixed						
A			X		X		1000	50	3846	.029	112	No
B			X		X		725	50	865	.029	25	X
C		X			X		1250	50	4808	.029	139	X
D			X		X		1225	50	4711	.029	137	X
E			X		X		1000	50	3846	.034	131	X
F			X	X			400	50	1538	.024	37	X
G		X		X			675	50	2596	.024	62	X
H	X			X			1200	50	4615	.018	83	X
I		X				X	700	50	2692	.015	40	X
J			X			X	875	50	3365	.036	121	X
K			X	X			2500	50	9615	.036	346	X
L			X		X		625	50	2404	.036	87	X
M			X		X		400	50	1538	.078	120	No
N			X		X		500	50	1923	.078	150	No
O			X		X		1750	50	6731	.043	289	X
P			X		X		250	50	962	.034	33	X
Q			X		X		750	50	2885	.043	124	No
R			X		X		525	50	2019	.052	105	No

TOTAL TONS 144,616

TOTAL PROVEN:	4615	.018	83
TOTAL PROBABLE:	10,096	.024	241
TOTAL POSSIBLE:	46,248	.039	1817
TOTAL ALL CATEGORIES:	60,959	.035	2141

IN PIT
Sand Sand
34,037 .035 1206
48,748 .031 1530

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section TT-TT'

WASTE			
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T
1	26,750	50	102,885
2	6600	50	25,385

ORE												
BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
	Proven	Probable	Possible	Oxide	Sulfide	Mixed						
A			X	X			1500	50	5770	.024	138	X
B		X		X			1500	50	5770	.024	138	X
C			X	X			1500	50	5770	.024	138	X
D			X	X			1750	50	6731	.036	242	X
E			X	X			200	50	769	.036	28	No

TOTAL TONS 128,270

TOTAL PROVEN:	0	0	0
TOTAL PROBABLE:	5770	.024	138
TOTAL POSSIBLE:	19,040	.029	546
TOTAL ALL CATEGORIES:	24,810	.028	684

IN PIT
same same
18,271 .029 518
24,041 .027 656

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section UU-UU'

WASTE			
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T
1	9475	50	36,442
2	2500	50	9615
3	1025	50	3942
4	225	50	865
5	17,125	50	65,865
6	50	50	192

ORE													
BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU.	WITHIN PIT
	Proven	Probable	Possible	Oxide	Sulfide	Mixed						
A			X			X	700	50	2692	.018	48	No
B			X	X			150	50	577	.018	10	X
C		X		X			750	50	2884	.018	52	X
D			X		X		975	50	3750	.028	105	No
E			X		X		25	50	96	.028	3	X
F		X				X	1300	50	5000	.028	140	X
G		X			X		75	50	288	.021	6	No
H		X				X	250	50	962	.021	20	X
I			X	X			250	50	962	.021	20	X
J		X		X			525	50	2019	.021	42	X
K		X		X			3775	50	14,519	.029	421	X
L		X		X			1625	50	6250	.031	194	X
M	X			X			3120	50	12,000	.036	432	X
N		X		X			1000	50	3846	.025	96	X
O			X	X			650	50	2500	.025	63	X
P		X				X	175	50	673	.021	14	X

TOTAL TONS 116,921

TOTAL PROVEN:	12,000	.036	432
TOTAL PROBABLE:	36,441	.027	985
TOTAL POSSIBLE:	10,577	.024	249
TOTAL ALL CATEGORIES:	59,018	.028	1666

IN P.T
pound
36,153 .027 979
4135 .023 96
52,288 .029 1507

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section VV-VV'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	11,175	50	42,981													
2	125	50	481	A		X		X			350	50	1346	.038	51	No
3	5500	50	21,154	B		X		X			1050	50	4038	.038	153	X
4	5375	50	20,673	C		X		X			1400	50	5385	.038	205	X
5	1325	50	5096	D			X	X			1250	50	4808	.038	183	X
				E			X	X			2000	50	7692	.029	223	X
				F			X	X			1725	50	6635	.033	219	X
				G		X		X			1000	50	3846	.033	127	X
				H	X			X			2725	50	10,481	.021	220	X
				I	X			X			825	50	3173	.032	102	X
				J			X		X		600	50	2308	.017	39	No
				K			X		X		250	50	962	.017	16	X
				L		X				X	850	50	3269	.017	56	X
				M		X				X	700	50	2692	.017	46	X

TOTAL TONS 90,385

TOTAL PROVEN:	13,654	.024	322
TOTAL PROBABLE:	20,576	.031	638
TOTAL POSSIBLE:	22,405	.030	680
TOTAL ALL CATEGORIES:	56,635	.029	1640

IN PIT

19,230 .031 587
20,097 .032 641
52,981 .029 1550

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section WW-WW'

WASTE			
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T
1	7950	50	30,577
2	4750	50	18,269
3	125	50	481
4	2250	50	8654
5	3425	50	13,173

ORE												
BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
	Proven	Probable	Possible	Oxide	Sulfide	Mixed						
A			X			X	1150	50	4423	.024	106	No
B		X				X	1150	50	4423	.024	106	No
C			X	X			1900	50	7308	.020	146	No
D			X	X			425	50	1635	.017	28	X
E		X		X			450	50	1731	.017	29	X
F	X			X			1500	50	5769	.031	179	X
G	X			X			2200	50	8462	.035	296	X
H	X			X			850	50	3269	.030	98	X
I		X		X			2150	50	8269	.023	190	X
J		X		X			700	50	2692	.025	67	X
K			X	X			925	50	3558	.025	89	X
L			X	X			200	50	769	.025	19	No
M	X			X			500	50	1923	.036	69	X

TOTAL TONS 71,154

TOTAL PROVEN:	19,423	.033	642
TOTAL PROBABLE:	17,115	.023	392
TOTAL POSSIBLE:	17,693	.022	388
TOTAL ALL CATEGORIES:	54,231	.026	1422

N P.I.T

same
12,692 .023 28
5193 .022 117
37,308 1045

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area IV Cross-section XX-XX'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU.	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	12,825	50	49,327													
2	5325	50	20,481	A			X			X	925	50	3558	.028	100	No
3	325	50	1250	B		X				X	550	50	2115	.028	59	No
4	7400	50	28,462	C		X		X			1650	50	6346	.025	159	No
5	600	50	2308	D		X		X			1750	50	6731	.025	168	X
				E		X		X			2400	50	9231	.024	222	X
				F		X		X			1800	50	6923	.034	235	X
				G		X		X			300	50	1154	.054	62	X
				H		X		X			850	50	3270	.046	150	X
				I			X			X	925	50	3558	.036	128	No
				J			X			X	125	50	481	.036	17	X
				K		X				X	975	50	3750	.036	135	X
				L		X			X		75	50	288	.036	10	No
				M			X			X	1050	50	4038	.036	145	X

TOTAL TONS 101,828

TOTAL PROVEN:	0	0	0
TOTAL PROBABLE:	39,808	.030	1200
TOTAL POSSIBLE:	11,635	.034	390

In Pit
31,059 .031 972
4519 .036 162

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area IV Cross-section YY-YY'

WASTE			
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T
1	19,675	50	75,673
2	5125	50	19,712

ORE													
BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
	Proven	Probable	Possible	Oxide	Sulfide	Mixed						
A			X			X	550	50	2115	.044	93	No
B		X				X	700	50	2692	.044	118	No
C	X					X	2925	50	11,250	.036	405	No
D	X			X			275	50	1058	.036	38	X
E		X				X	1250	50	4808	.032	154	X
F			X			X	3350	50	12,885	.032	412	X
G		X				X	425	50	1635	.032	52	No
H		X				X	150	50	577	.026	15	No
I		X				X	350	50	1346	.026	35	X
J		X			X		50	50	192	.026	5	No
K		X				X	1700	50	6538	.026	170	X
L		X		X			375	50	1442	.027	39	X

TOTAL TONS 95385

TOTAL PROVEN:	12,308	.036	443
TOTAL PROBABLE:	19,230	.031	588
TOTAL POSSIBLE:	15,000	.034	505
TOTAL ALL CATEGORIES:	46,538	.033	1536

	IN PIT		
	1058	.036	38
	14,134	.028	398
	12,885	.032	412
	28,077	.030	848

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area TJ Cross-section ZZ ZZ'

WASTE				ORE										
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	18,200	50	72,308													
2	4000	50	15,385	A			X			X	2050	50	7885	.036	284	n/o
3	1200	50	4615	B			X	X			925	50	3553	.036	128	X
				C		X		X			625	50	2404	.036	87	X
				D		X				X	625	50	2404	.036	87	n/o
				E		X		X			475	50	1827	.031	57	n/o
				F		X		X			4075	50	15,673	.031	486	X
				G		X		X			550	50	2115	.019	42	X
				H			X	X			1100	50	4231	.019	80	X
				I			X	X			1200	50	4615	.027	125	X

TOTAL TONS 92,308

TOTAL PROVEN:	0	0	0
TOTAL PROBABLE:	24,423	.031	759
TOTAL POSSIBLE:	20,289	.030	617
TOTAL ALL CATEGORIES:	44,712	.031	1376

In Pit		
20,192	.030	615
12,404	.027	333
32,596	.029	948

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area _____ Cross-section _____

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	13,500	50	21,154	2			X	X			1225	50	1,345	.019	46	No
				3		X		X			575	50	631	.112	71	No
				5		X		X			2402	100	2,638	.092	243	No
				6		X		X			350	100	192	.021	4	Y
				7		X		X			200	100	220	.050	11	X
				8		X		X			175	100	192	.088	17	No
				4			X	X			625	100	1,502	.004	6	Y
				2			X	X			900	100	1,154	.004	4	No

TOTAL TONS 21,154

TOTAL PROVEN:	2	2	2
TOTAL PROBABLE:	1,402	2	2
TOTAL POSSIBLE:	3,231	2	3
TOTAL ALL CATEGORIES:	11,000		1,117

IN PIT

577 .15
2202 .38
2779 .028 24

PETER A. DROBECK

Exploration and Mining Geologist

114 Tucker, Suite #5
Kingman, Arizona 86401
602 - 753-1100

MEMO TO: Gary Nordin
FROM: Peter Drobeck
SUBJECT: Results of Van Deemen Rock Chip Geochem
DATE: December 29, 1987

I. CONCLUSIONS

A. Multielement geochem analyses were able to fingerprint the two mineralizing episodes at Van Deemen. The Laramide porphyry Cu-Mo mineralization can be distinguished from the mid-Tertiary detachment - Au mineralization by (in decreasing order of usefulness):

1) Cu/As ratio
2) As values
3) % of anomalous Au samples
4) Sb values
5) Mo values

B. Results from this fall's rock chip geochem program have been reviewed and have resulted in a reprioritization of the outlying exploration targets at the Van Deemen Project. In decreasing order of priority these are:

1) Area I
2) Area IV NE Extension
3) A. J. Zone
4) Pope Zone
5) Loop Fault Target
6) Horseshoe Canyon
7) Klippe Zone

II. RECOMMENDATIONS

A. The A. J. Zone and Pope Zone should now be mapped at a more detailed scale of 1" = 100' and sampled in greater detail. This work can be initiated at your convenience.

B. The detailed land status of the A. J. Zone should be determined to find out if the A. J. claims need to be optional.

C. Kunkes' block of claims covering the Pope Zone target should be acquired. I have included a letter to Kunkes which I will send upon your approval.

D. Area I, the Area IV NE Extension, the A. J. Zone, the Pope Zone, and the Loop Fault Target should be drilled. At present the Klippe and Horseshoe Canyon targets do not merit drilling.

III. TRACE ELEMENT CHARACTER OF VAN DEEMEN AREA

Forty-two rock chip samples from the Area III reserve (collected in 1986) were compared to 45 samples collected this fall from the large zone of typical porphyry - Cu phyllic alteration leached capping. Results from inspection of the data are shown on Figures 1 - 8. In compiling these data, samples which grossly skewed the average were deleted from the average values. Several impressive geochemical differences are evident on these figures.

The average Cu/As ratio for Area III is 6.3 whereas this ratio is 125 for the porphyry Cu alteration (fig. 1). This ratio was calculated for each sample, then averaged. This ratio appears to be a very useful tool to differentiate the two systems. Most of this striking difference is due to the much higher As concentrations in Area III (average 190 ppm) than in the porphyry Cu zone (average 7.5 ppm) - see fig. 2. As shown on fig. 5, Cu concentrations themselves do not appear to be useful discriminators between the two systems. Note that the average Cu values are actually less in the porphyry Cu zone than at Area III. This character is due to the porphyry zone being a leached capping and provides encouragement for finding a buried chalcocite blanket.

Another diagnostic feature is the percentage of samples with anomalous (+.050 ppm) Au. At the Area III zone where we have an established reserve, 43% of these initial samples had anomalous Au (fig. 3). The anomalous samples (18 of 42) themselves average 1.07 ppm Au (.031 o/T) which is surprisingly close to the grade of the contained reserve. At the porphyry Cu zone only 2 of the 45 samples (4.4%) had detectable Au. In fact, these two samples were from Tertiary gravel deposits with eroded clasts of porphyry - Cu alteration. These two samples averaged .320 ppm (.009 o/T). None of the samples from the actual in-place leached capping had anomalous Au.

The Sb concentrations also appear to be distinctly different in the two zones. Most of the samples from the porphyry Au zone had no detectable Sb (-.2 ppm) and the average concentration is .98 ppm. Most of the samples from Area III had detectable Sb and the average concentration is 3.8 ppm (fig. 4).

Molybdenum concentrations are also distinctly different in the two zones. The average Mo concentration in Area III is 5.6 ppm and in the porphyry Cu zone is 36.7 ppm. Apparently the Mo was not leached as much as the Cu was from the leached capping.

An interesting feature of Area III's geochem is shown on figures 7 and 8, which plot the Cu/As and Cu/Sb ratios of individual samples as a function of gold concentration. Note the sample population is quite bi-modal. With only 2 exceptions, samples with Cu/As greater than 4 are devoid of Au. Likewise, with only 2 exceptions, samples with Cu/Sb greater than 75 are devoid of Au! This observation suggests that the Cu which occurs in Area III is in different samples than the Au, As, and Sb. Hence it appears that two stages of mineralization have affected differing volumes of rock within the zone. I suggest that the most likely candidate for the Cu mineralization is the Laramide porphyry Cu system and that this event was overprinted by mid-Tertiary Au, As, Sb mineralization. Although the Mo values in Area III are distinctly lower than in the porphyry Cu zone, it should be noted the better Mo values in Area III are mostly associated with the higher Cu values.

IV. EXPLORATION TARGET GEOCHEM

A. Using the criteria developed above, it is possible to geochemically classify targets developed during mapping into potential gold vs. copper zones. Thus the known prospects were classified and re-prioritized using these diagnostic features.

B. Area I appears to be a favorable zone to prospect with further drilling. The Cu/As ratio is comparable to that of Area III. This zone does have high Cu and its As values are intermediate between those of Area III and the porphyry Cu zone. However, the zone has the highest percentage of anomalous gold samples (49% - see fig. 3) of any target on the property. The anomalous samples average .470 ppm (.014 o/T).

C. The NE extension of Area IV also appears favorable as a drill target. At present the Area IV orebody is open on its NE flank. As shown on the district geologic map, the NE flank of the deposit is covered by upper plate volcanics. 900 feet NE of the orebody outcrops of lower plate gneiss appear and are well altered over a 100 foot width. Samples of this alteration (VD86-106, 107, 108 and A4EX-7 - see geochem maps) indicate the zone has anomalous Au, As, and Sb. Note that the Area IV extension shows up as being more like the Cu system on figures 1 - 6. However, this is because most of the samples included in this population are from a porphyry Cu related phyllic alteration zone 700 feet southeast of the detachment alteration.

Because the zone is basically an extension of a known orebody and has anomalous Au, it should be drilled as part of the next program.

D. The A. J. Zone, on the NW flank of the property, has very favorable geochem statistics. Its Cu/As ratio (fig. 1) is very low, its As values are extremely high - approximately 1/3 of the samples contain +1000 ppm As (fig. 2). The Sb values are by far the highest anywhere on the project (fig. 4). 35% of the samples have anomalous gold although the average of these samples is low (.320 ppm or .009 o/T - see fig. 3). The Cu and Mo values are relatively low. Several samples also have weakly anomalous Hg. These parameters suggest that the observed alteration is the upper portion of a gold mineralized system. It has observed dimensions of 1800' long x 50'-100' wide, although only 1000' of strikelength is on available property.

E. The Pope Zone also has favorable geochemistry, though less so than the A. J. Zone. The average Cu/As ratio is very low (1.9 - see fig. 1) and the average As values are second only to the A. J. Zone (361 ppm - see fig. 2). 35% of the samples have anomalous Au and the average of these samples is 670 ppb (.020 o/T). However, the average Au value is skewed by two samples: PZ-6 (1.02 ppm) and PZ-7 (2.51 ppm). Both are grab samples from prospect dumps.

Note on the geochem and geologic maps that there is an increase in intensity of alteration and in Au-As-Sb anomalies from the NE to the SW at the Pope Target. The widest and most intense alteration and best geochem anomalies occur where the NE trending shear zone intersects the detachment fault. Hence there is an obvious drill target to the southwest at and below the detachment fault surface.

F. The Loop Fault, Klippe, and BC 45 targets all show geochemical signatures more akin to the porphyry Cu system than the detachment Au system (fig.'s 1 - 6). Hence these are now much less attractive targets. It may be worthwhile to drill the Loop Fault zone as this has the lowest Cu/As ratio, lowest Mo concentrations, and highest Sb concentrations of the three targets and it appears to be the most structurally prepared.

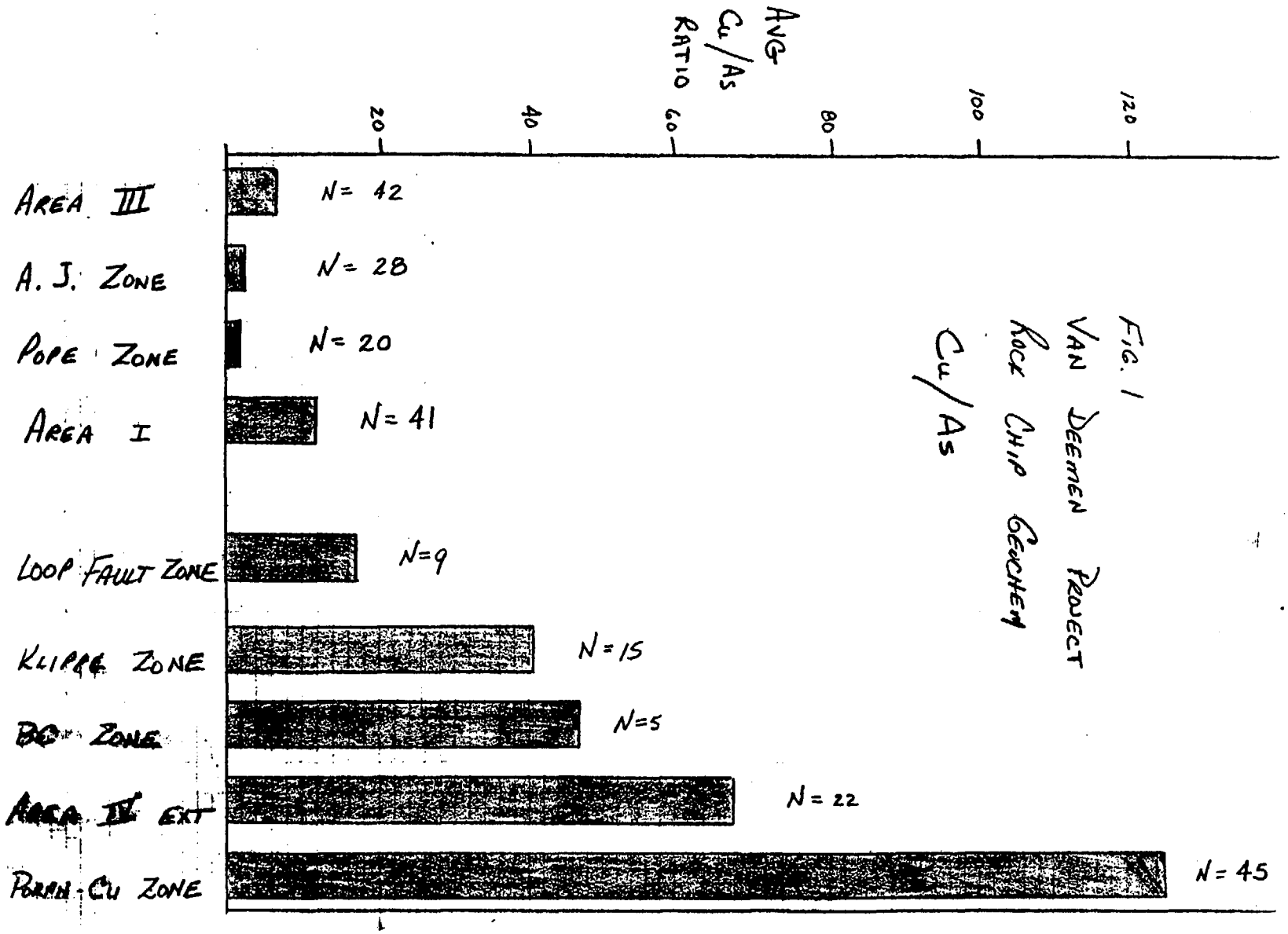


FIG. 1
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
Cu/As

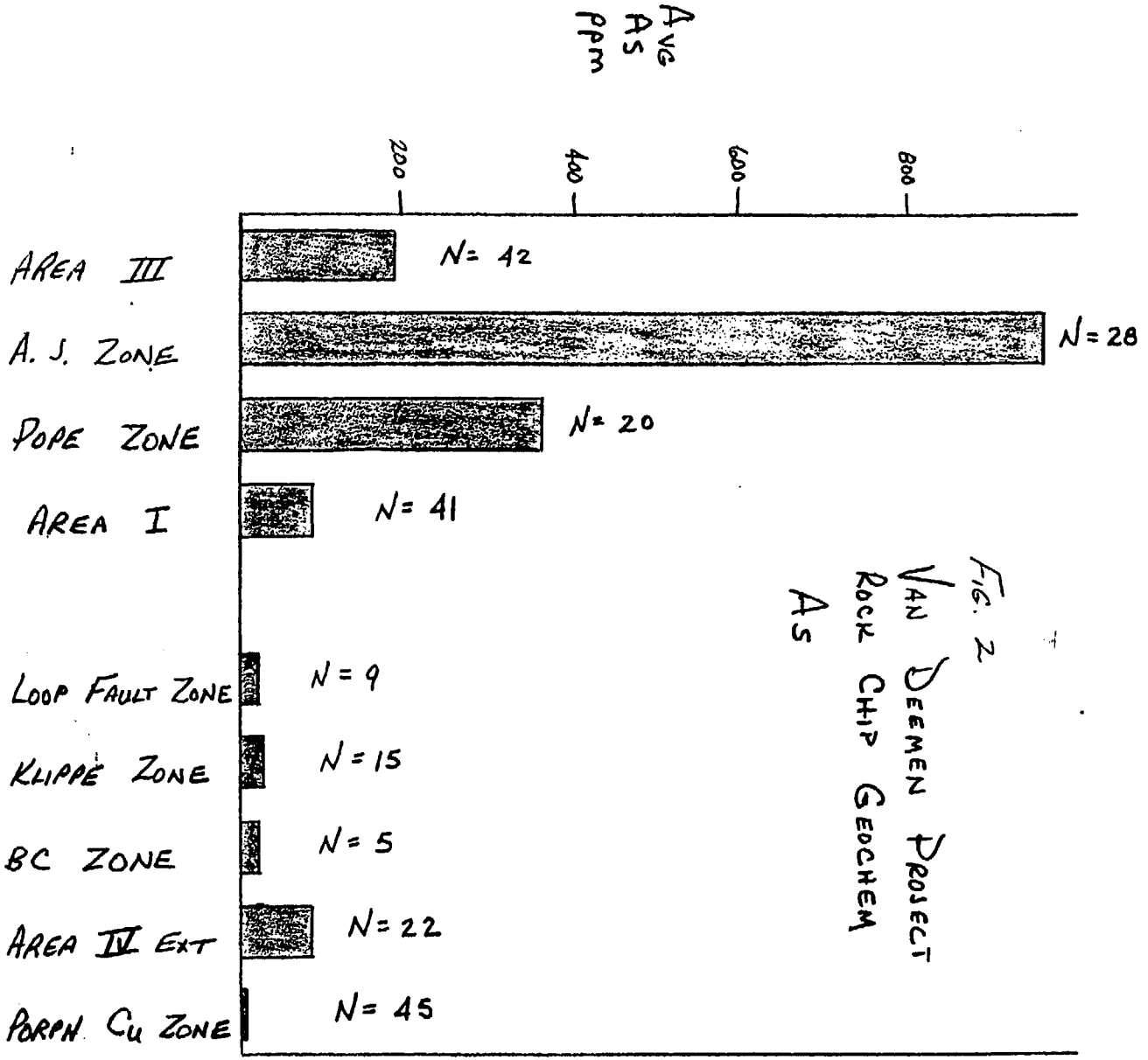


FIG. 2
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
AS

FIG. 3
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
Au

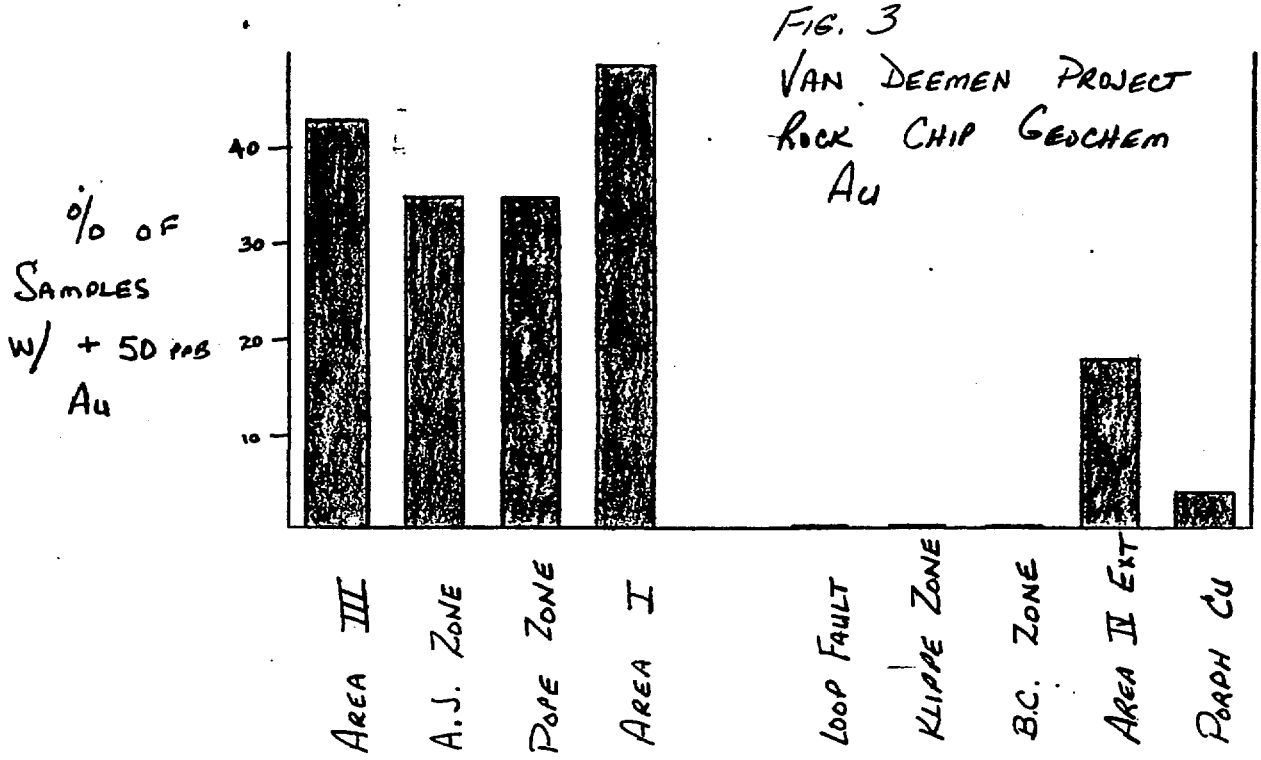
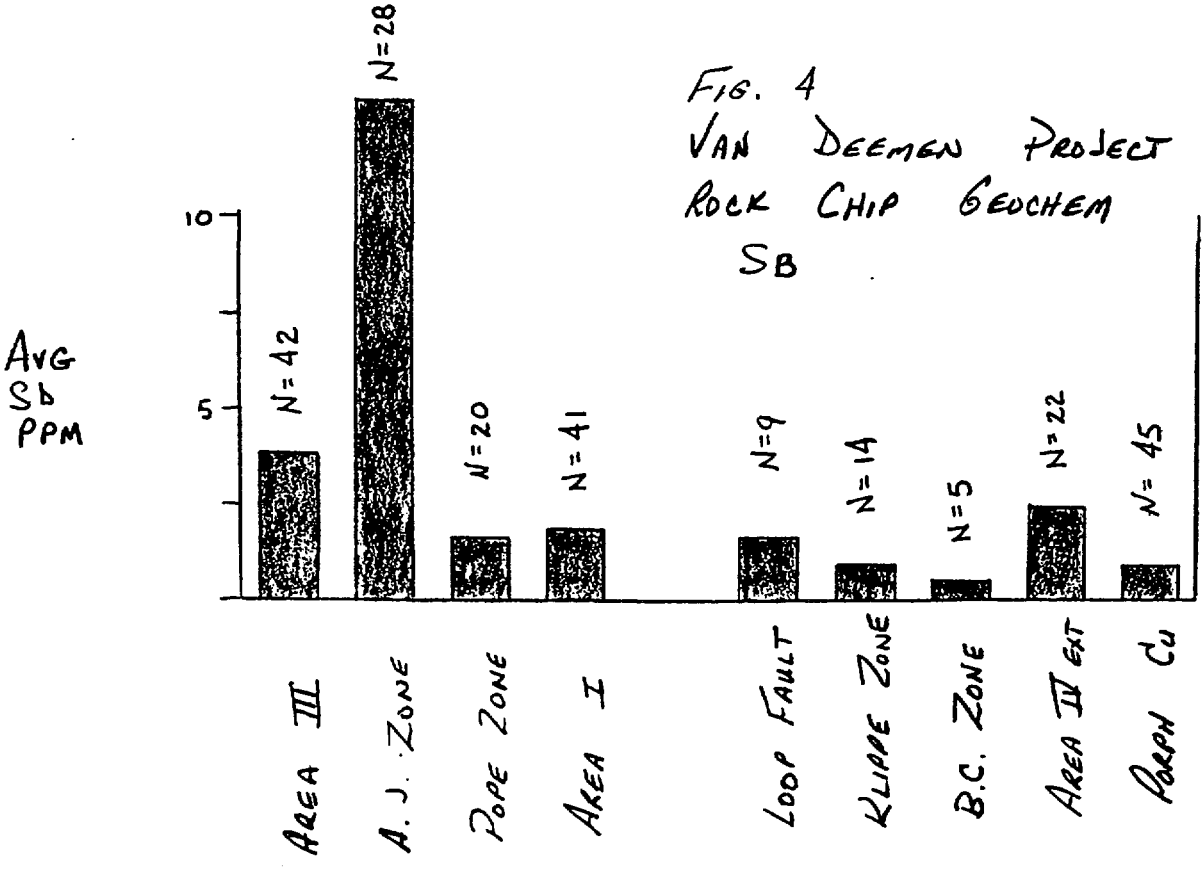


FIG. 4
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
SB



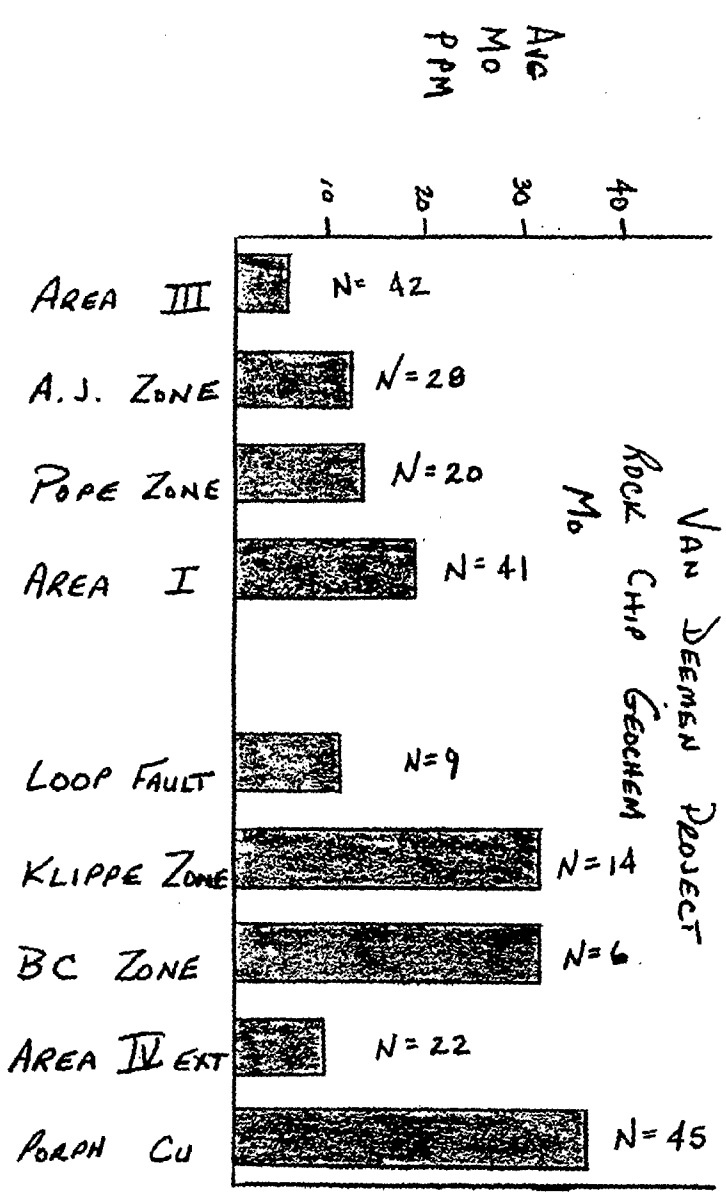


FIG. 6
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
Mo

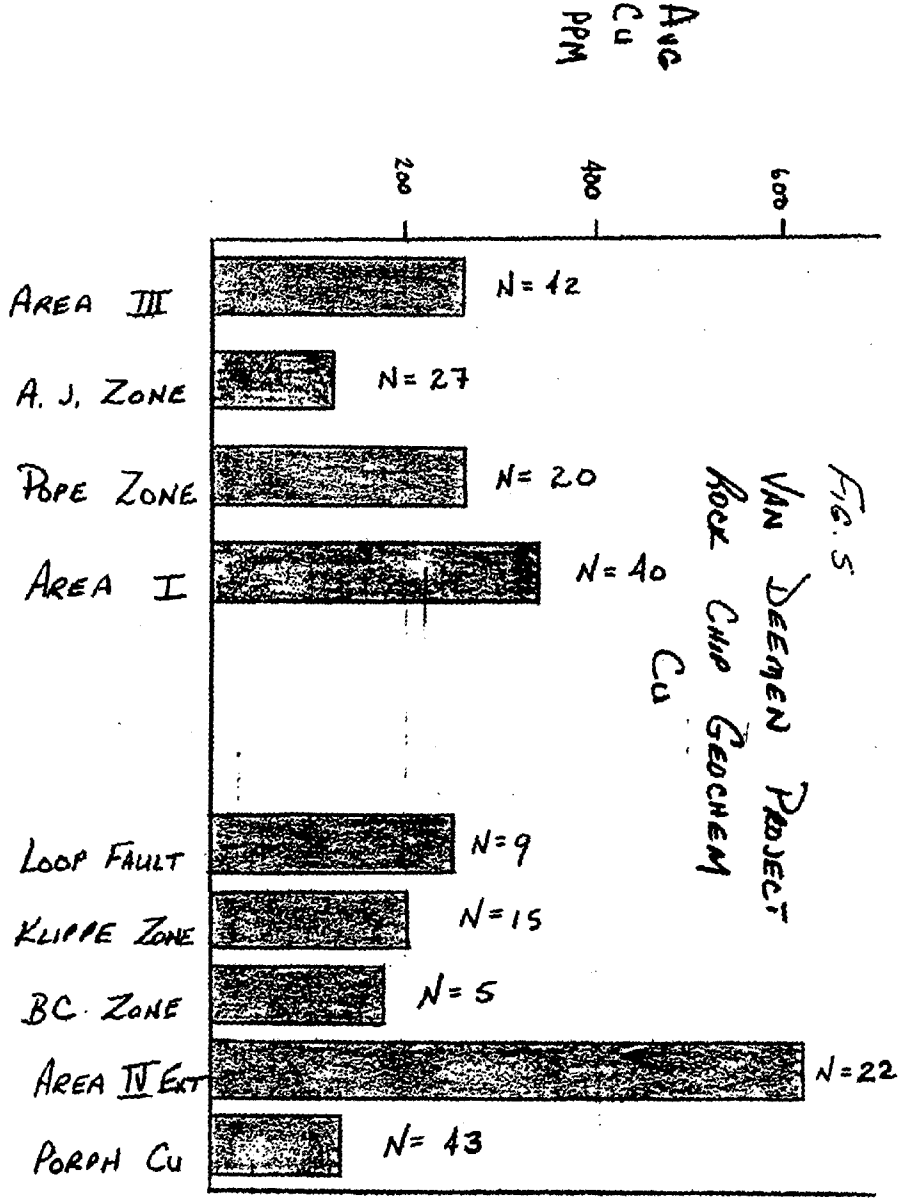


FIG. 5
VAN DEEMEN PROJECT
ROCK CHIP GEOCHEM
Cu

FIG. 7

AREA III

Au vs. Cu/As

N = 39

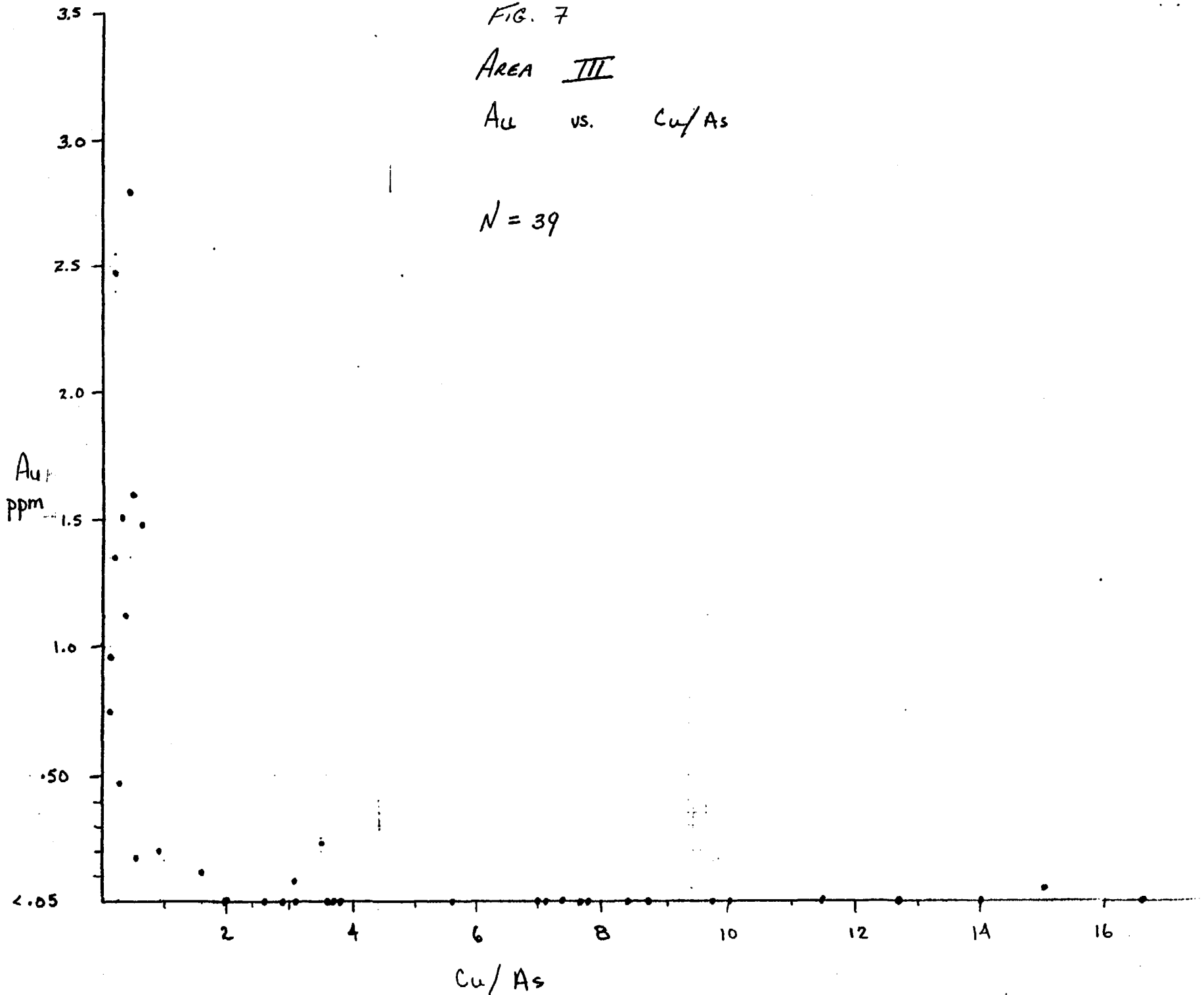
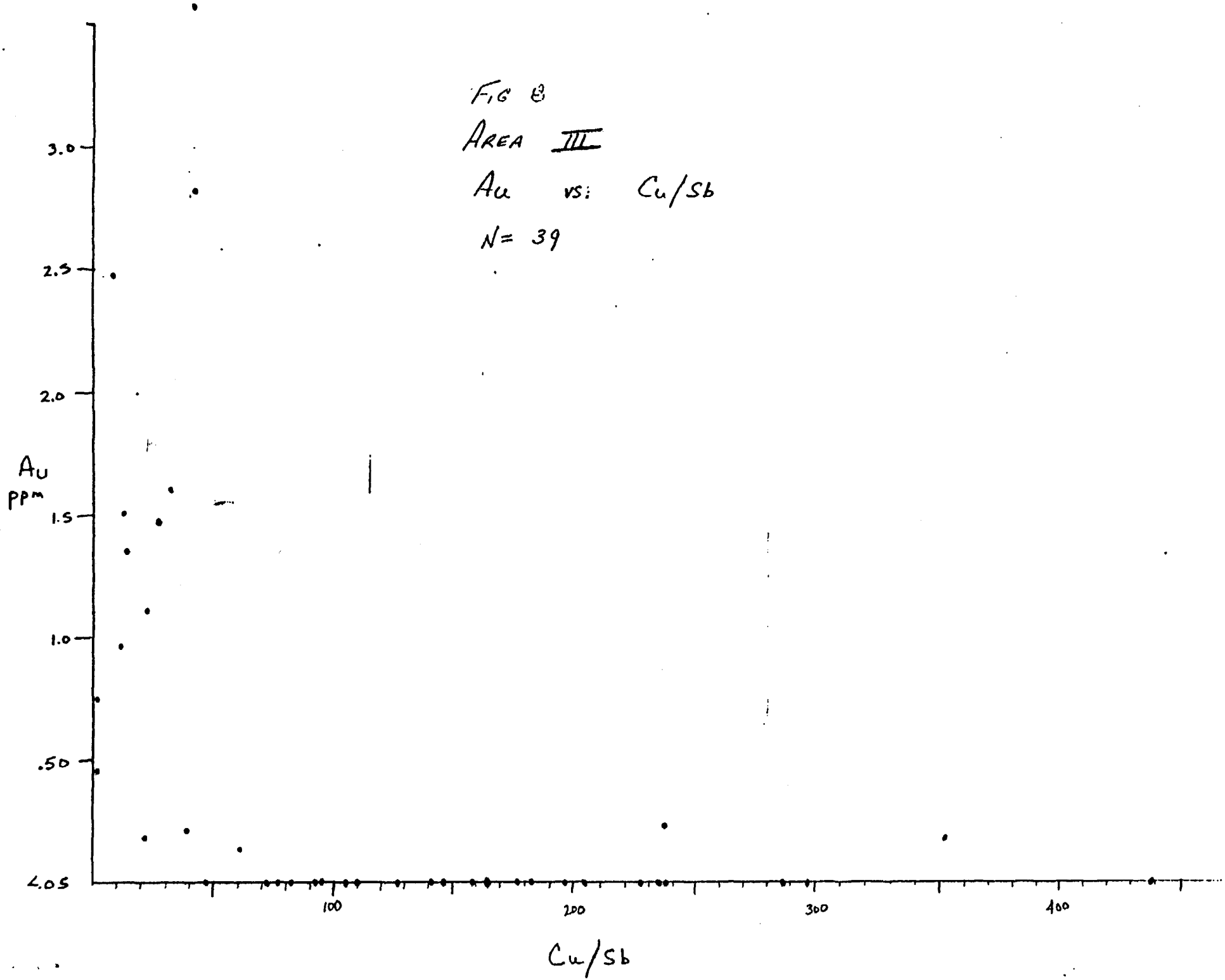


FIG 8

AREA III

Au vs: Cu/Sb

N = 39



PETER A. DROBECK

Exploration and Mining Geologist

114 Tucker, Suite #5
Kingman, Arizona 86401
602 - 753-1100

Memo to: Warren Geiger, Evan Sleeman, Jay Butterworth
From : Peter Drobeck
Subject: Van Deemen Project Progress Report
Date : August 10, 1987

I. Area III Reserve Estimate

With the drilling program complete, a cross-sectional reserve estimate was made for Area III (West Lost Pan Gulch) based on 40 drill-holes. This estimate found a total geologic reserve of 615,573 tons grading .036 o/T Au containing 22,441 oz.Au. A crude pit was designed to determine a stripping ratio. This pit contains the following oxidized reserves:

Proven: 131,429 tons grading .033 o/T containing 4378 oz Au
Probable: 241,666 tons grading .036 o/T containing 8783 oz Au
Possible: 126,332 tons grading .035 o/T containing 4441 oz Au
Total: 499,427 tons grading .035 o/T containing 17,602 oz Au
Waste: 1,697,763 tons
Strip Ratio: 3.4:1
Cut-off: 15' grading .015 o/T

This reserve was calculated by the following procedure:

1. Geologic cross-sections were prepared on 100' centers using the drill logs and surface map (see enclosed geologic sections).
2. Updated grade distribution sections were prepared to show the trends of the gold mineralization. Gold assays were contoured at .005 o/T (anomalous), .015 o/T (low-grade ore), and .050 o/T (medium grade ore). These sections are enclosed.
3. Ore blocks were constructed using geologic and grade distribution sections. Cut-off is .015 o/T Au over a minimum 15' drilled width. The ore blocks were classified as oxidized, sulfide, or mixed oxide-sulfide. They were also classified as proven, probable, or possible based on the following criteria:

Proven: Ore block bounded by two drill holes within 75' and reserves exist nearby on the adjoining section. Grade was calculated by averaging all assays bounding the block.

Probable: Ore block bounded by two drill holes more than 75' apart but less than 150' apart in which case grade was calculated by averaging all assays bounding the block or ore block within 25' of a drill hole where there are no intercepts above cutoff within 150' of the drill hole in which case grade was calculated by averaging the one intercept's assays.

Possible: Ore block unbound by a drill hole: some blocks are 50' projections of probable ore blocks where no drill information exists, other blocks are projections from adjoining cross-sections.

4. All ore blocks were added to obtain the total geologic reserve (615,573 tons grading .036 o/T Au).
5. A crude open pit was designed using 50° wall with no catch benches and no ramps. It is believed that the rock could hold a 55 - 60° wall so that the addition of catch benches and ramps will probably increase the stripping ratio less than 10%.
6. Ore blocks within the pit and waste within the pit were added up to determine the potentially mineable reserves and strip ratio. Cross-sections showing these ore blocks are enclosed and are colored to differentiate proven, probable, and possible reserves.

II. Drill Results

The last drill assay results have been received and show the following:

AREA III			
VDRC87-126:	.033 o/T Au	over 10'	From 10 - 20' (oxidized)
	.037 o/T Au	over 25'	From 100 - 125' (sulfide)
	.051 o/T Au	over 15'	From 105 - 120' (sulfide)
VDRC87-127:	.035 o/T Au	over 10'	From 140 - 150' (mixed)
VDRC87-128:	.025 o/T Au	over 20'	From 65 - 85' (oxide)
	.036 o/T Au	over 10'	From 75 - 85' (oxide)
	.017 o/T Au	over 15'	From 125 - 140' (oxide)
VDRC87-129:	.073 o/T Au	over 15'	From 0 - 15' (oxide)
	.035 o/T Au	over 60'	From 90 - 150' (oxide)
AREA IV			
VDRC87-113:	.024 o/T Au	over 30'	From 55 - 85' (mixed)
VDRC87-114:	.021 o/T Au	over 15'	From 85 - 100' (mixed)
VDRC87-124:	.019 o/T Au	over 20'	From 75 - 95' (oxide)
VDRC87-125:	.029 o/T Au	over 15'	From 35 - 50' (oxide)
AREA II			
VDRC87-130:	.080 o/T Au	over 20'	From 230 - 250' (oxide)
VDRC87-131:	all less than .010		

These two holes are 100' offsets from VDRC87-80 which had 15' grading .257. Although the mineralized zone continues to hole #130, potentially underground mineable grades were not encountered.

III. Metallurgy

I have not received the report on the column leach tests yet but was told the results verbally. The unsilicified ore sample showed recoveries of 73% but the silicified ore sample showed recoveries of only 56%. Both columns were crushed to $-\frac{1}{2}$" and agglomerated.

IV. Geology

The 1" = 100' mapping has been compiled by Hillemeyer and is enclosed herein. We still need to compile this mapping onto our 1" = 400' map and compile the northern portion of mapping.

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section A-A'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	837	80'	5154	A			✓	✓			650	80'	4000	.028	112	No
2	550	80'	3384	B		✓		✓			640	80'	3939	.028	110	✓
				C			✓	✓			50	80'	308	.028	9	✓
				D			✓	✓			55	80'	338	.028	9	No

TOTAL TONS 8538

TOTAL PROVEN:	—	—	—
TOTAL PROBABLE:	3939	.028	110
TOTAL POSSIBLE:	308	.028	9
TOTAL ALL CATEGORIES:	4247	.028	119

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section B-B'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	5875	100'	45,190	A			✓	✓			750	100'	5769	.031	179	No
2	585	100'	4500	B		✓		✓			303		2331	.031	72	No
				C		✓		✓			72		554	.031	17	✓
				D		✓		✓			1582		12,169	.036	434	✓
				E		✓		✓			281		2161	.049	106	✓
				F		✓		✓			44		338	.049	16	No
				G			✓	✓			350		2692	.049	132	No

TOTAL TONS 49,690

TOTAL PROVEN:	—	—	—
TOTAL PROBABLE:	14,884	.037	557
TOTAL POSSIBLE:	—	—	—
TOTAL ALL CATEGORIES:	14,884	.037	557

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section C-C'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	5850	100'	44,998	A			✓	✓			750	100'	5767	.022	127	No
2	989	100'	7607	B			✓	✓			120		923	.022	20	No
				C			✓	✓			1575		12,114	.036	432	✓
				D			✓	✓			260		2000	.049	98	✓
				E			✓	✓			367		2823	.049	138	No

TOTAL TONS 52,605

TOTAL PROVEN:	—	—	—
TOTAL PROBABLE:	—	—	—
TOTAL POSSIBLE:	14,114	.038	530
TOTAL ALL CATEGORIES:	14,114	.038	530

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area III Cross-section D-D'

WASTE				ORE												
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	13,625	100'	104,803	A			✓		✓		660	100'	5077	.022	110	✓
				B			✓		✓		240		1846	.022	41	✓
				C			✓		✓		345		2654	.070	186	No
				D			✓		✓		360		2769	.070	194	✓
				E			✓		✓		375		2884	.070	202	✓
				F		✓			✓		480		3692	.049	180	✓
				G			✓		✓		165		1269	.027	34	✓
				H			✓		✓		184		1415	.027	38	✓
				I			✓			✓	500		3846	.027	104	No
				J			✓		✓		75		577	.080	46	✓
				K			✓		✓		575		4423	.080	352	No
				L			✓		✓		650		5000	.080	398	No
				M			✓		✓		650		5000	.080	398	No

TOTAL TONS 104,803

TOTAL PROVEN:	3692	.049	180
TOTAL PROBABLE:	9230	.037	346
TOTAL POSSIBLE:	6607	.048	319
TOTAL ALL CATEGORIES:	19,529	.043	845

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area III Cross-section E-E'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	6425	100	49,421	A			✓	✓			750	100'	5769	.022	127	✓
				B			✓	✓			260		2000	.070	140	NO
				C			✓	✓			480		3692	.049	181	NO
				D			✓	✓			275		2115	.027	57	NO
				E			✓		✓		650		5000	.080	400	NO

TOTAL TONS 49,421

TOTAL PROVEN:	—		
TOTAL PROBABLE:	—		
TOTAL POSSIBLE:	5769	.022	127
TOTAL ALL CATEGORIES:	5769	.022	127

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section F-F'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	5500	100	42,306	A		✓		✓			500	100	3846	.023	88	✓
2	3463	100	26,637	B		✓		✓			500		3846	.044	168	✓
				C		✓		✓			3915		30,114	.034	1023	✓
				D		✓		✓			165		1269	.021	27	✓
				E		✓		✓			135		1038	.021	22	No
				F		✓		✓			300		2308	.051	118	No
				G	✓			✓			250		1923	.048	91	No

TOTAL TONS 68,943

TOTAL PROVEN:			
TOTAL PROBABLE:	39,075	.033	1306
TOTAL POSSIBLE:			
TOTAL ALL CATEGORIES:	39,075	.033	1306

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section G-G'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	13,055	100'	100,419	A		✓		✓			350	100'	2692	.021	56	✓
2	1785	(	13,730	B	✓			✓			165		1269	.019	24	✓
3	7280	(	55,998	C	✓			✓			700		5384	.022	117	✓
				D		✓		✓			120		923	.026	24	✓
				E		✓		✓			175		1346	.026	35	No
				F		✓		✓			600		4615	.018	82	✓
				G			✓	✓			2550		19,615	.039	765	✓

TOTAL TONS 170,147

TOTAL PROVEN:	6653	.021	141
TOTAL PROBABLE:	8230	.020	162
TOTAL POSSIBLE:	19,615	.039	765
TOTAL ALL CATEGORIES:	34,498	.031	1068

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section H-H'

WASTE				ORE												
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	7630	100'	58,689	A		✓		✓			570	100'	4384	.020	88	✓
2	14,330	(	110,226	B		✓		✓			650		5000	.045	223	✓
3	1120	)	8615	C		✓		✓			750		5769	.045	258	✓
				D			✓	✓			750		5769	.031	181	No
				E		✓		✓			224		1723	.041	70	✓
				F	✓			✓			1390		10,691	.034	367	✓
				G	✓			✓			1592		12,245	.025	305	✓
				H		✓		✓			663		5096	.020	101	✓
				I			✓	✓			500		3846	.020	77	✓
				J		✓		✓			87		669	.020	13	No
				K			✓	✓			712		5476	.020	110	No

TOTAL TONS 177,530

TOTAL PROVEN:	22,936	.029	672
TOTAL PROBABLE:	21,972	.034	740
TOTAL POSSIBLE:	9991	.020	200
TOTAL ALL CATEGORIES:	54,899	.029	1612

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section I - I'

WASTE				ORE												
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	8105	100'	62,343	A		✓		✓			345	100'	2653	.018	48	✓
2	437	(	3361	B			✓	✓			276	(	2123	.032	68	No
3	10,110	(	77,766	C		✓		✓			453	(	3484	.032	111	✓
4	1000	(	7692	D	✓			✓			2875	(	22,114	.032	704	✓
				E	✓			✓			812	(	6245	.031	195	✓
				F	✓			✓			475	(	3654	.029	106	✓
				G		✓		✓			1935	(	14,884	.028	422	✓
				H		✓		✓			21	(	161	.038	6	✓
				I		✓		✓			247	(	1900	.021	39	No
				J			✓	✓			650	(	5000	.024	120	No
				K		✓		✓			330	(	2538	.024	61	No
				L	✓			✓			515	(	3961	.041	162	✓
				M	✓			✓			1345	(	10,345	.027	283	✓
				N		✓		✓			750	(	5769	.027	156	✓
				O		✓		✓			725	(	5577	.027	150	No

TOTAL TONS 151,162

TOTAL PROVEN:	46,319	.031	1450
TOTAL PROBABLE:	26,951	.028	743
TOTAL POSSIBLE:	—		
TOTAL ALL CATEGORIES:	73,270	.030	2193

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section J-J'

WASTE				ORE												
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	18,350	100	141,148	A		✓		✓			1247	100'	9592	.023	219	✓
2	1525		11,730	B			✓	✓			520		4000	.023	92	✓
3	3155		24,268	C		✓		✓			495		3807	.021	80	✓
4	35		269	D	✓			✓			975		7500	.023	173	✓
5	5660		43,536	E		✓		✓			375		2884	.026	75	✓
6	2250		17,307	F			✓	✓			702		5400	.026	140	✓
				F1			✓	✓			48		370	.026	10	No
				G		✓		✓			31		238	.062	15	No
				H		✓		✓			519		3992	.062	249	✓
				I		✓		✓			2484		19,106	.070	1353	✓
				J	✓			✓			1330		10,230	.057	586	✓
				K	✓			✓			1088		8369	.019	159	✓
				L		✓		✓			500		3846	.016	61	✓
				M			✓	✓			500		3846	.016	61	✓
				M1			✓	✓			500		3846	.016	61	No
				N		✓		✓			629		4838	.043	208	✓
				O	✓			✓			975		7500	.039	296	✓

TOTAL TONS 238,258

TOTAL PROVEN:	33,599	.036	1214
TOTAL PROBABLE:	48,619	.047	2265
TOTAL POSSIBLE:	13,246	.022	293
TOTAL ALL CATEGORIES:	95,464	.040	3772

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section J-J'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
				P		✓		✓			72	100'	554	.036	20	✓
				Q		✓		✓			303	⟩	2330	.036	84	No
				R			✓	✓			750	⟩	5769	.036	207	No

TOTAL TONS see p. 1

TOTAL PROVEN: see p. 1
TOTAL PROBABLE:
TOTAL POSSIBLE:

TOTAL ALL CATEGORIES:

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section K-K'

WASTE				ORE												
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	20,700	100'	159,224	A		✓		✓			750	100'	5769	.061	352	✓
2	21,850		168,070	A1			✓	✓			275		2115	.061	129	✓
3	945		7268	B		✓		✓			1175		9038	.025	224	✓
4	4438		34,137	C			✓	✓			350		2692	.025	67	✓
				D			✓	✓			1800		13,845	.038	532	No
				E			✓	✓			184		1415	.038	54	✓
				F		✓		✓			975		7500	.038	285	✓
				G		✓		✓			2268		17,445	.032	558	✓
				H	✓			✓			1260		9692	.039	375	✓
				I	✓			✓			1110		8538	.040	346	✓
				J		✓		✓			72		554	.021	12	✓
				K		✓				✓	203		1561	.021	33	No
				L			✓		✓		500		3846	.021	82	No

TOTAL TONS 368,699

TOTAL PROVEN:	18,230	.040	721
TOTAL PROBABLE:	40,306	.036	1431
TOTAL POSSIBLE:	6222	.040	250
TOTAL ALL CATEGORIES:	64,758	.037	2402

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE

Area III Cross-section L-L'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	2990	100'	23,000	A		✓		✓			700	100'	5384	.057	308	✓
2	1350	(	10,384	B			✓	✓			1000	(	7692	.057	438	✓
3	17,422	)	134,010	C		✓		✓			3000	)	23,076	.035	815	✓
4	850		6538	D			✓	✓			2560		19,692	.035	695	✓
				E			✓	✓			3000		23,076	.035	815	✓
				F			✓	✓			440		3385	.035	119	No

TOTAL TONS 173,932

TOTAL PROVEN:			
TOTAL PROBABLE:	28,460	.039	1123
TOTAL POSSIBLE:	50,460	.039	1948
TOTAL ALL CATEGORIES:	78,920	.039	3071

VAN DEEMEN PROJECT
CROSS-SECTIONAL RESERVE ESTIMATE
Area III Cross-section M-M'

WASTE				ORE											
BLOCK	AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	BLOCK	CATEGORY						AREA Ft.²	STRIKE Ft.	TONS 13 Ft.³/T	GRADE o/T AU	oz AU	WITHIN PIT
					Proven	Probable	Possible	Oxide	Sulfide	Mixed						
1	10,295	100'	84,035													

TOTAL TONS 84,035

TOTAL PROVEN: _____
TOTAL PROBABLE: _____
TOTAL POSSIBLE: _____

TOTAL ALL CATEGORIES: _____

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MT. PERKINS QUADRANGLE
ARIZONA—NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)

3055 IV (BOULDER CITY) · 3155 IV (SENATOR MOUNTAIN) · 3055 I (BLACK CANYON) · 3055 III (NELSON) · 3155 III (WHITE HILLS) · 3054 IV (SEARCHLIGHT) · 3054 I (SPIRIT MTN.)

114°45′ · 114°30′ · 35°45′ · 35°30′ · 35′ · 40′

704 000m.E. · 705 · 706 · 707 · 709 · 710 · 711 · 712 · 713 · 716 · 717 · 718 · 719 · 720 · 721 · 724 · 725 000m.E.

R. 65 E. · R. 66 E. · R. 21 W. · R. 22 W.

760 000 FEET (NEV.) · 270 000 FEET (ARIZ.) · 210 000 FEET (ARIZ.) · 810 000 FEET (NEV.)

1 720 000 FEET (ARIZ.) · 280 000 FEET (NEV.) · 1 640 000 FEET (ARIZ.) · 360 000 FEET (NEV.)

3958 000m.N. · 3956 · 3955 · 3954 · 3953 · 3952 · 3951 · 3950 · 3949 · 3948 · 3947 · 3946 · 3944 · 3943 · 3942 · 3941 · 3940 · 3939 · 3938 · 3937 · 3936 · 3935 · 3934 · 3933 · 3932 000m.N.

T. 25 S. · T. 26 S. · T. 27 S. · T. 27 N. · T. 26 N. · T. 25 N. · T. 24 N.

16 MI. TO U.S. 95 NELSON 4.7 MI.

HOOVER DAM 27 MI. · KINGMAN (U.S. 66) 48 MI.

CLARK CO · MOHAVE CO

COLORADO RIVER

LAKE MEAD NATIONAL RECREATION AREA

LAKE MOHAVE

COLORADO RIVER

APPROX. EDY

ARIZONA NEVADA

MAXIMUM ELEV 647

DETRITAL VALLEY

BLACK MOUNTAINS

COTTONWOOD VALLEY

Lonesome Wash · Techatticup Wash · Canyon · Eldorado Wash · Eagle · Montana · Wash · Aztec Wash · Opal Mountain · Fire Mountain · Nelsons Landing · Capital Camp · Prospects · JEEP TRAIL

Eldorado · USLM 2695 · Pope Mine · Tunnel · Van Deemen Mine · Liberty Mine · USLM 1101 · Gold Bug Mine · Mohave Mine · Porter Mine · Tunnel · Mockingbird Mine · Dandy Mine · Great West Mine · Tunnels · Cottonwood Spring · Mt Perkins · Mt Davis VABM 2034 · Tunnels · Golden Door Mine · Coyote Spr · Klondyke Mine · Dixie Gold Mine · Dixie Queen Mine · BM 2560 · BM 2418

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1954. Field check 1959

Polyconic projection. 1927 North American datum
10,000-foot grids based on Arizona coordinate system, west zone and Nevada coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

Dashed land lines indicate approximate locations
Land lines unsurveyed in Ts. 27 and 28 S.–R. 66 E., and parts of T. 25 N.–R. 22 W. and Ts. 26 and 27 N.–R. 21 W.

GN · MN · 1°23′ 25 MILS · 15½° 276 MILS

UTM GRID AND 1959 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

ARIZONA
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Medium-duty · Light-duty · Unimproved dirt · U. S. Route · State Route

The west half of this area also covered by 1:24 000-scale maps of Fire Mountain and Mt. Davis, 7.5 minute quadrangles, surveyed 1959

MT. PERKINS, ARIZ.–NEV.
N3530—W11430/15

1959

AMS 3055 II—SERIES V798

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1967

ASARCO

Exploration Department
Frederick T. Graybeal
Chief Geologist

September 30, 1988

Mr. J. D. Sell
Tucson Office

Van Deeman Mine
Mohave County, Arizona

Dear Mr. Sell:

With regard to your letter of September 1, 1988, Mr. Brown has no problem with your suggested terms although it would be nice if we could delay the advance until the first of January, 1989. If not, we will make the payment at such earlier time as is required. Please keep me advised of any progress you make.

Very truly yours,

F. T. Graybeal

F. T. Graybeal

cc: W. L. Kurtz

Arizona Star Resource Corp.
Gary Nordin, President
Vancouver, BC, Canada
ph. 604 / 681-8371

4/5/88 Contacted G. Nordin "Will send data & option thoughts" (a data package sent by P Drobeck arrived in Tucson several days later) Plan visit.

4/12/88 Called but Nordin out. Sec. said she'd check as to why we have not yet received anything from Nordin.

4/27 Called again. Still out. Sec. said that he'd be in tomorrow & would return call.

4/27 Called P Drobeck (he was out) Told answering tape that we are ready to drill 20 holes — what's the holdup?!

4/29 call again G Nordin. at meeting. He'll return call!
during phone busy time I caught him Clyde Johnson associates — he'll send down proposal - Assume put in 5000 + feet of drilling 10 holes x 500' = 5000 est 20 holes.

1710–609 GRANVILLE ST.
P.O. BOX 10363 STOCK EXCHANGE TOWER
VANCOUVER, B.C.
V7Y 1G5
(604) 683-7265
FAX (604) 683-5306

George Cross News Letter

"Reliable Reporting"

NO.222(1988)
NOVEMBER 18, 1988

PUBLISHED DAILY
SUBSCRIPTION RATE
$300.00 PER YEAR
FAX (604) 683-5306

NO.222(1988)
NOVEMBER 18, 1988

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BEMA GOLD CORPORATION

Ore Reserves Based on Current Evaluation

PROJECT	MINEABLE RESERVE	WASTE: ORE	MINEABLE OUNCES - TO DATE	ADDITIONAL INFERRED RESERVE	TOTAL OUNCES
Champagne Mine, Idaho	2.30 mt @ 0.038 oz/t Au equiv.	1:1	87,400	2.0 mt @ 0.038 oz/t Au	163,400
Buffalo Gulch Mine, Idaho	5.0 mt @ 0.029 oz/t Au	1.7:1	145,000	2.0 mt @ 0.029 oz/t Au	203,000
Erickson Reef Mine, Idaho	2.8 mt @ 0.06 oz/t Au	2:1	168,000	1.7 mt @ 0.06 oz/t Au	270,000
Friday Mine, Idaho	2.0 mt @ 0.038 oz/t Au	2:1	76,000	0.5 mt @ 0.038 oz/t Au	95,000
Indian Rose Mine, California (Figures represent Bema interest - 35% of project)	1.75 mt @ 0.024 oz/t Au	2.8:1	42,000	1.4 mt @ 0.03 oz/t Au	84,000
Van Deemen Mine, Arizona (Figures represent Bema interest - 40% of project)	0.4 mt @ 0.034 oz/t Au or 1.0 mt @ 0.034 total	3.5:1	13,600	0.2 mt @0.034 oz/t Au or 0.5 mt @ 0.034 total	20,400
Harrison Mine, B.C.	2.8 mt @ 0.1 oz/t Au	-	280,000	2.1 mt @ 0.1 oz/t Au	490,000
TOTALS:			812,000		1,325 800

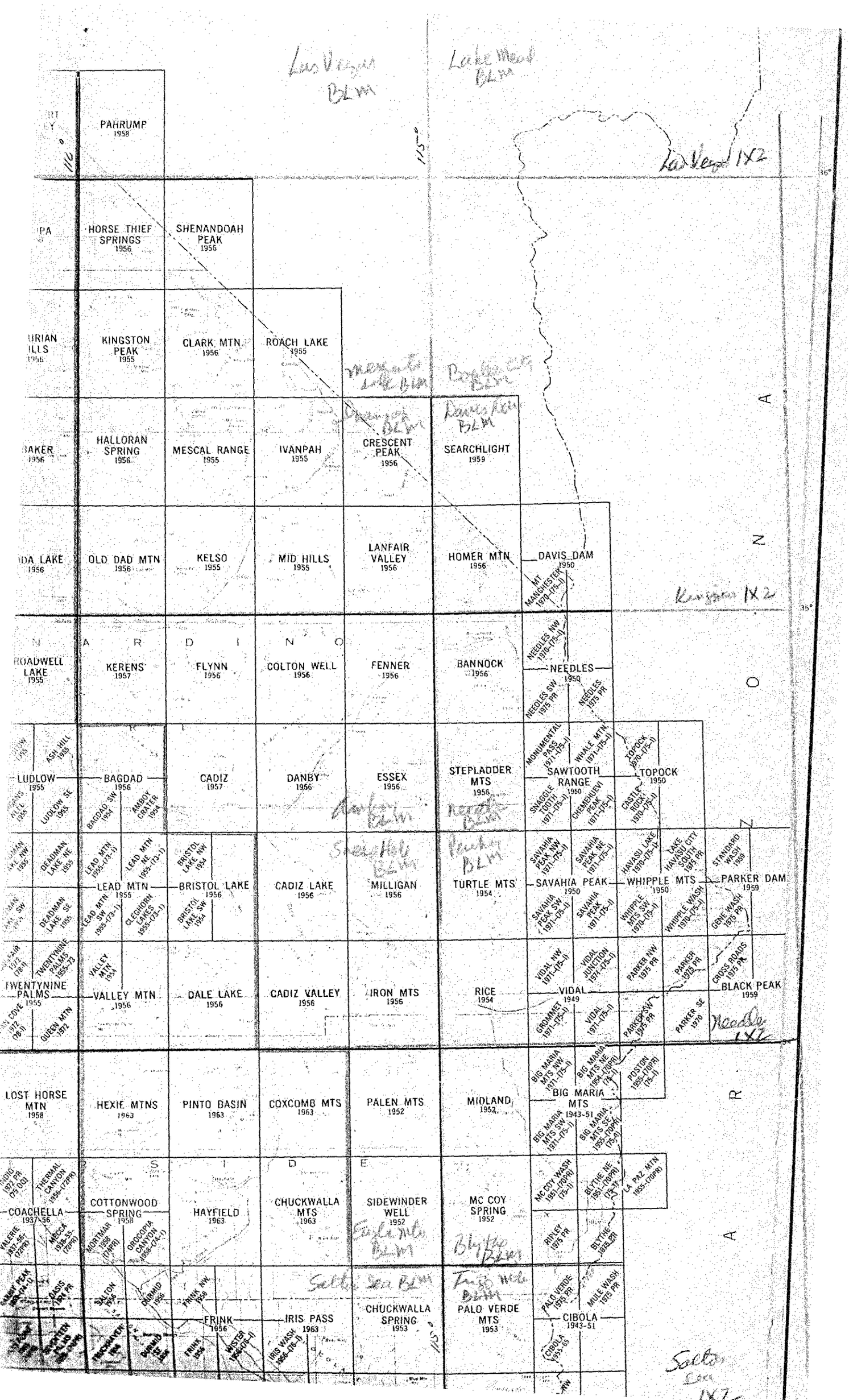
Projected U.S. Gold Production 1989-1991

	1989	1990	1991
Metal prices/ounce	$400 Au $6.20 Ag	$450 Au $7.0 Ag	$450 Au $7.0 Ag
CHAMPAGNE MINE			
Production-ounces Au (equiv.)	17,500	19,000	19,000
Pre-tax net profit (Bema)	$2,637m	$3.800m	$3.800m
Operating cost per ounce	$137	$185	$185
BUFFALO GULCH MINE			
Production-ounces Au	--	13,000	15,000
Pre-tax net profit (Bema)	--	$1.468	$1.503m
Operating cost per ounce	--	$153	$256
ERICKSON REEF MINE			
Production-ounces Au	--	10,000	27,300
Pre-tax net profit (Bema)	--	$1.170m	$5.581m
Operating cost per ounce	--	$141	$141
FRIDAY MINE			
Production-ounces Au	--	--	9,100
Pre-tax net profit (Bema)	--	--	$0.306m
Operating cost per ounce	--	--	$211
INDIAN ROSE MINE (Figures represent Bema interest-35% of Project.)			

California 15' Topo's

Bannock
Big Maria Mts
Black Peak (AZ)
Blythe ~~NE~~ 7½
Blythe NE 7½
Cadiz
Cadiz Lake
Cadiz Valley
Clark Mtn
~~Crescent Peak (NV)~~
Colton Well
Crescent Peak (NV)
Danby
Davis Dam (NV)
Essex
Fenner
Flys~~sa~~ NW
Halloran Spring
Homer Mts
Horse Thief Springs
Iron Mts
~~Dug~~ Kalso
Kerens
~~Kokomo (NV)~~
Kingston Peak
Lanfair Valley
La Paz Mtn 7½ (AZ)
Mescal Range
McCoy Springs
McCoy Wash 7½
Mid Hills
Midland
Milligan
Needles (AZ)
Old Dad Mtns
Pahrump (NV)
Palen Mtn
Parker 7½
Parker NW 7½
Parker SE 7½
Parker SW 7½
Parker Dam (AZ)
Poston 7½
Rice
Ripley 7½
Roach Lake
Savahia Peak
Sawtooth Range
Searchlight (NV)
Shenandoah Peak (NV)
Sidewinder Well
Stepladder Mtns
Topock (AZ)
Turtle Mts

Vidal
Whipple Mts

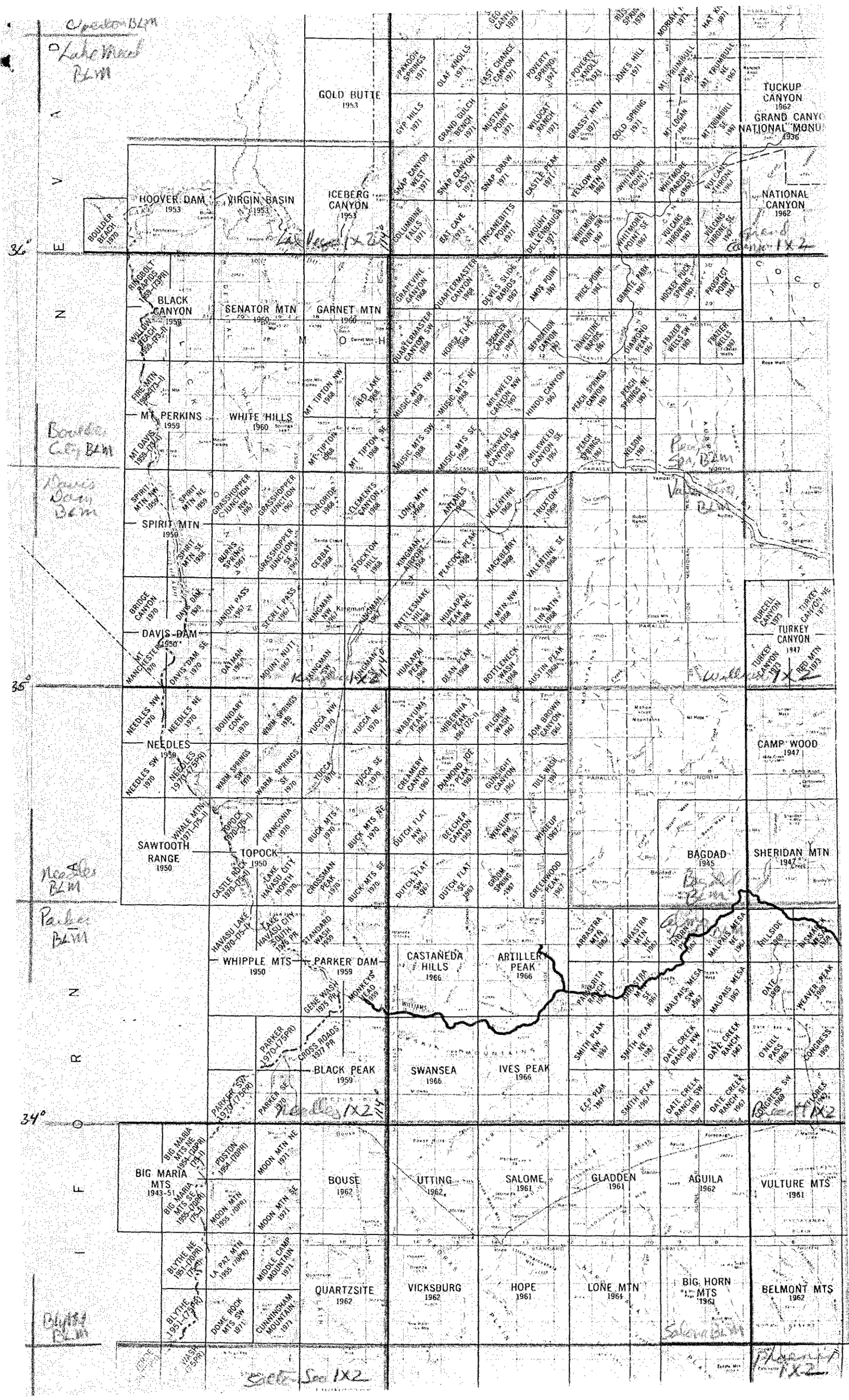

PAHRUMP 1958
HORSE THIEF SPRINGS 1956
SHENANDOAH PEAK 1956
KINGSTON PEAK 1955
CLARK MTN 1956
ROACH LAKE 1955
HALLORAN SPRING 1956
MESCAL RANGE 1955
IVANPAH 1955
CRESCENT PEAK 1956
SEARCHLIGHT 1959
OLD DAD MTN 1956
KELSO 1955
MID HILLS 1955
LANFAIR VALLEY 1956
HOMER MTN 1956
DAVIS DAM 1950
MT MANCHESTER 1970 (75-II)
KERENS 1957
FLYNN 1956
COLTON WELL 1956
FENNER 1956
BANNOCK 1956
NEEDLES NW 1970 (75-II)
NEEDLES 1950
NEEDLES SW 1975 PR
NEEDLES 1975 PR
LUDLOW 1955
BAGDAD 1956
CADIZ 1957
DANBY 1956
ESSEX 1956
STEPLADDER MTS 1956
MONUMENTAL PASS 1971 (75-II)
WHALE MTN 1971-(75-II)
SAWTOOTH RANGE 1950
TOPOCK 1970-(75-I)
TOPOCK 1950
SNAGGLE TOOTH 1971-(75-II)
CHEMEHUEVI PEAK 1971-(75-II)
CASTLE ROCK 1970-(75-I)
LEAD MTN 1955
BRISTOL LAKE 1956
CADIZ LAKE 1956
MILLIGAN 1956
TURTLE MTS 1954
SAVAHIA PEAK NW 1971-(75-II)
SAVAHIA PEAK NE 1971-(75-II)
SAVAHIA PEAK 1950
SAVAHIA PEAK SW 1971-(75-II)
SAVAHIA PEAK 1971-(75-II)
HAVASU LAKE 1970-(75-I)
WHIPPLE MTS 1950
WHIPPLE MTS SW 1970-(75-II)
LAKE HAVASU CITY SOUTH 1975 PR
WHIPPLE WASH 1970-(75-II)
STANDARD WASH 1959
PARKER DAM 1959
GENE WASH 1975 PR
TWENTYNINE PALMS
VALLEY MTN 1956
DALE LAKE 1956
CADIZ VALLEY 1956
IRON MTS 1956
RICE 1954
VIDAL NW 1971-(75-II)
VIDAL JUNCTION 1971-(75-II)
VIDAL 1949
PARKER NW 1975 PR
PARKER 1975 PR
CROSS ROADS 1975 PR
BLACK PEAK 1959
GROMMET 1971-(75-I)
VIDAL 1971-(75-II)
PARKER SW 1975 PR
PARKER SE 1970
LOST HORSE MTN 1958
HEXIE MTNS 1963
PINTO BASIN 1963
COXCOMB MTS 1963
PALEN MTS 1952
MIDLAND 1952
BIG MARIA MTS NW 1971-(75-II)
BIG MARIA MTS NE 1964-(70PR) (75-II)
POSTON 1955-(70PR) (75-II)
BIG MARIA MTS 1943-51
BIG MARIA MTS SW 1971-(75-II)
BIG MARIA MTS SE 1955-(70PR) (75-I)
COACHELLA 1937-56
COTTONWOOD SPRING 1958
HAYFIELD 1963
CHUCKWALLA MTS 1963
SIDEWINDER WELL 1952
MC COY SPRING 1952
MC COY WASH 1951-(70PR) (75-II)
BLYTHE NE 1951-(70PR) (75-II)
LA PAZ MTN 1955-(70PR)
RIPLEY 1975 PR
BLYTHE 1975 PR
PALO VERDE 1975 PR
MULE WASH 1975 PR
FRINK 1956
IRIS PASS 1963
CHUCKWALLA SPRING 1953
PALO VERDE MTS 1953
CIBOLA 1943-51
CIBOLA 1955-65
Las Vegas BLM
Lake Mead BLM
Las Vegas 1X2
Kingman 1X2
Needles 1X2
Socorro 1X2
Mexicali BLM
Phoenix BLM
Prescott BLM
Safford BLM
Tucson BLM
Yuma BLM
Silver Peak BLM
Ely BLM
Salt Lake City BLM
Las Vegas BLM
Lake Mead BLM
Barstow BLM
Needles BLM
Blythe BLM
Salton Sea BLM
Tucson BLM
Yuma BLM
115°
110
35°
36°

ARIZONA 15' Quads

Aguila
Artillery Peak
(Artillery Peak – See 7½' Quads here & for 3 quads East)
Belmont Mts
Big Horn Mts
Black Canyon
Bouse
Castaneda Hills
Cunningham Mtn 7½
(Davis Dam – See 7½' Quads here & 4 quads East).
Dome Rock Mts SW 7½
Garnet Mtn
Gladden
Hoover Dam (NV)
Hope
Iceberg Canyon (NV)
Ives Peak
(Ives Peak – See 7½ Quads here & 3 Quads East)
Lone Mtn
Middle Camp Mts 7½
Moon Mtn 7½
Moon Mtn NE 7½
Moon Mtn SE 7½
Mt Perkins
Mt Tipton 7½
Mt Tipton NW 7½
Mt Tipton SE 7½

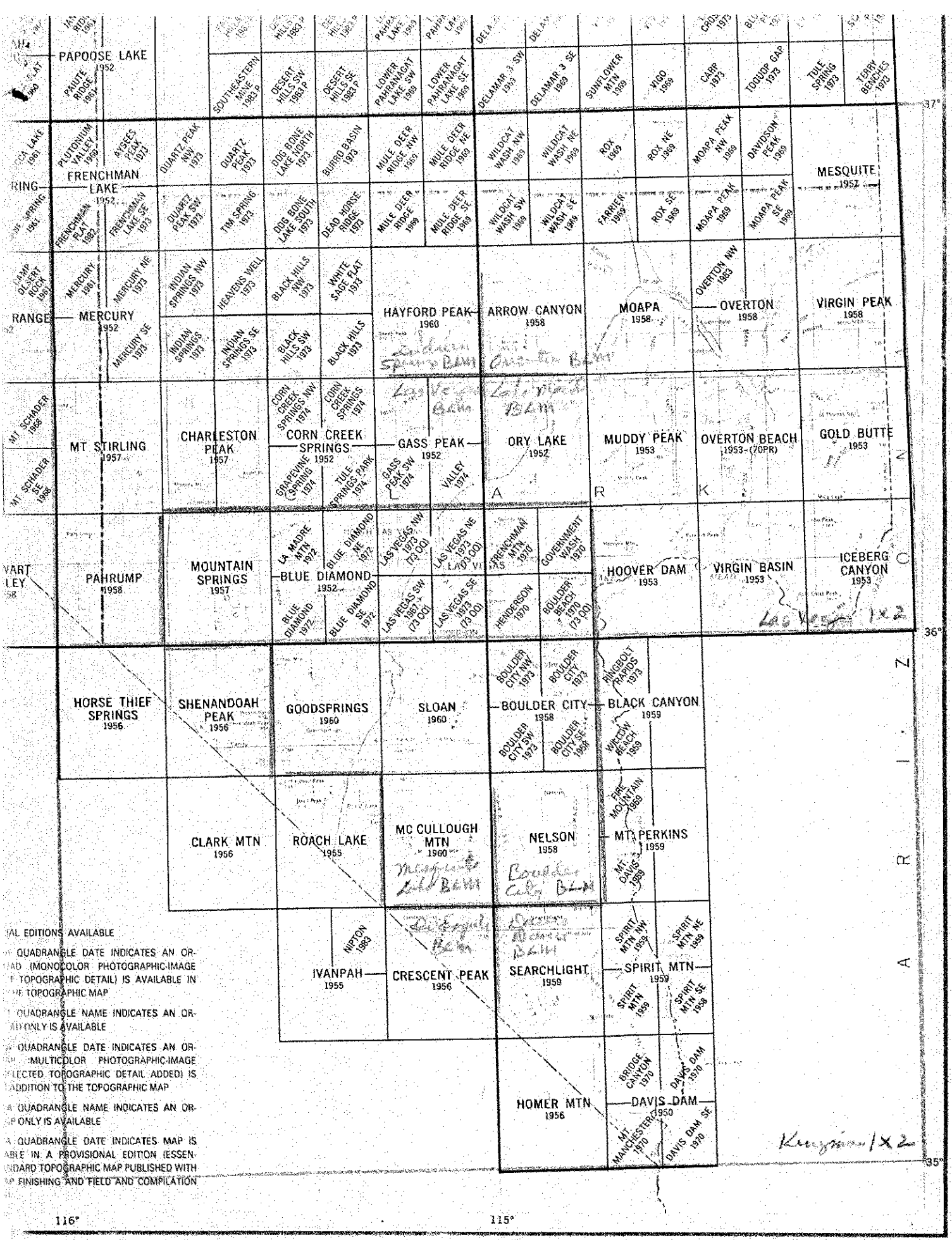
AZ Cont

Needles — See 7½' Quads here & 4 Quads East
Quartzite
Red Lake 7½'
Salome
Senator Mts
Spirit Mts (See 7½' Quads here & 4 Quads East)
Swansea
Topock (See 7½' Quads here & 3 Quads East)
Utting
Vicksburg
Virgin Basin (NV)
Vulture Mts
White Hills


Las Vegas 1X2
Grand Canyon 1X2
Boulder City BLM
Lake Mead BLM
Needles BLM
Parker BLM
Blythe BLM
Salome BLM
Wickenburg 1X2
Phoenix 1X2
Prescott 1X2
Kingman 1X2
Needles 1X2
Parker 1X2
Quartzsite 1X2
Salome 1X2
Wickenburg 1X2
GOLD BUTTE 1953
HOOVER DAM 1953
VIRGIN BASIN 1953
ICEBERG CANYON 1953
TUCKUP CANYON 1962
GRAND CANYON NATIONAL MONUMENT 1936
NATIONAL CANYON 1962
BLACK CANYON 1959
SENATOR MTN 1960
GARNET MTN 1960
MT PERKINS 1959
WHITE HILLS 1960
SPIRIT MTN 1959
DAVIS DAM 1950
TURKEY CANYON 1947
NEEDLES 1958
CAMP WOOD 1947
SAWTOOTH RANGE 1950
TOPOCK 1950
BAGDAD 1945
SHERIDAN MTN 1947
WHIPPLE MTS 1950
PARKER DAM 1959
CASTANEDA HILLS 1966
ARTILLER PEAK 1966
BLACK PEAK 1959
SWANSEA 1966
IVES PEAK 1966
BIG MARIA MTS 1943-51
BOUSE 1962
UTTING 1962
SALOME 1961
GLADDEN 1961
AGUILA 1962
VULTURE MTS 1961
QUARTZSITE 1962
VICKSBURG 1962
HOPE 1961
LONE MTN 1964
BIG HORN MTS 1961
BELMONT MTS 1962
114° W
36°
35°
34°

NV 15' Quads

Blue Diamond
Boulder Beach 7½
Boulder City
Frenchman Mtn 7½
Goodsprings
Government Wash 7½
Henderson 7½
Las Vegas NW 7½
Las Vegas NE 7½
Las Vegas SW 7½
Las Vegas SE 7½
McCullough Mtn
Mountain Springs
Nelson
Sloan



AL EDITIONS AVAILABLE

QUADRANGLE DATE INDICATES AN OR-AD (MONOCOLOR PHOTOGRAPHIC-IMAGE TOPOGRAPHIC DETAIL) IS AVAILABLE IN E TOPOGRAPHIC MAP

QUADRANGLE NAME INDICATES AN OR-D ONLY IS AVAILABLE

QUADRANGLE DATE INDICATES AN OR-MULTICOLOR PHOTOGRAPHIC-IMAGE LECTED TOPOGRAPHIC DETAIL ADDED) IS ADDITION TO THE TOPOGRAPHIC MAP

QUADRANGLE NAME INDICATES AN OR-P ONLY IS AVAILABLE

QUADRANGLE DATE INDICATES MAP IS BLE IN A PROVISIONAL EDITION (ESSEN-DARD TOPOGRAPHIC MAP PUBLISHED WITH P FINISHING AND FIELD AND COMPILATION

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1984

ADDITIONAL INFORMATION CONCERNING THE PROGRESS OF MAPPING IN NEVADA MAY BE OBTAINED FROM THE TOPOGRAPHIC DIVISION, U. S. GEOLOGICAL SURVEY, 345 MIDDLEFIELD ROAD, MENLO PARK, CALIFORNIA, 94025, OR THE NATIONAL CARTOGRAPHIC INFORMATION CENTER, U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092.

* NO.33(FEBRUARY 15, 1991) * GEORGE CROSS NEWS LETTER LTD. * FORTY-FOURTH YEAR OF PUBLICATION *

FOR THE RECORD

JDS

C.Kunkes, owner
235 Unpat Lode Claims
4.5% NSR with $2 million buy out.

ASARCO EXPLORATION RECORD

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

JV: 50% Fischer-Watt/50% Ariz. Star Res.

Section I General Indexing

① Name(s) of Property or Area: Van Deemen Mine (also Van Deeman) Weaver or Minnesota Mining Dists.			② ~~County~~: Mohave County		③ State or Province: Arizona		
			④ USGS Quad.: Mt.Perkins 15'		⑤ File or Core No.		
⑥ Latitude: 35°42'N	⑦ Longitude: 114°33'W	⑧ AMS Sheet: Kingman	Township: 27N	Range: 21W	Section: 29,30 32,21	⑨ Examined by: F.R.Koutz	⑩ Date: 2/8-9/87
					⑪ Office: SWED Tucson	⑫ Field Days: (area) 2 plus	Date Typed: 7/9/87

Section II Sources of Information

⑬ References

Author	Date	Title	Publications	Vol. No.
Ariz.Star Res.	8/13/86	Prospectus (USE)+Fischer-Watt Gold Co.(OTC)	12/4/86 Prelm Prosp	
Wilkens, J.(+Heidrick,T.)	1984	AGS Fall Field Trip Guidebook + 1"=1000' map of N.Black Mtns.		
Brownlee, D.J.+Poloni,J.R.	1981	Rpts on VanDeemen Proj.,Pacific Cypress Min.,Ltd (w/o maps)		

Section III Appraisal

Asarco Files "Pope Mine Area-Gold Bug"

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

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

- [ ] Stacked detach Fault
- [X] Geologic Concept
- [X] Geochem Anomaly
- [ ] Geophy Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Gold ore	few 1000 max.	±.2 opt Au

⑰ Reserves [X] Measured [ ] Estimated

Commodity	Tons	Grade
1.2/1 o/w,.01 c/o	or 716,000T	.042 opt Au
.5-1.5/1 w/o	2.6 mt	.042 opt Au
"potential"	2-10 mt	.04-.05

⑱ Num. Drill Holes: 178+ thru 1986
Approx Total Footage: 15,000

⑲ Excavations: Many Trenches. ±500' UG workings.

⑳ [ ] Spectro. Analysis Attached

㉑ [ ] Assays Attached

㉒ [X] Geochem Results ~~Attached~~ +500

Section IV Geologic Data

㉓ Commodity or Contained Metals: Au-Ag As, Mo ± Hg anomal. (±Cu?)

㉔ Ore Minerals-Major: Au FeOx>MnOx (py>>cpy) Minor: malachite

㉕ Host Rocks-Major: gr-dior.gneiss-schist Patsy Mine And Minor: biot.Qtz Monz

㉖ Age of Host Rocks: pE (±peg-aplites) 18.6(22-40?)m.y. Laramide

Dikes: diorite-rhyol. Miocene/Laramide

㉗ Nature of Exposures: fair. Mostly on WSW facing pediment surface. 800' Local relief, 2900' av.elev. Much of detach. buried by grav. broken by high ⚡ faults. Deeper holes chloritic, grey chips + py

㉘ Alteration: Hem > Goeth after py>>cpy, loc.jaros., Tr.malach in old works. White bleached (clay-ser.) zones in schist. Chl schist (cont. pg. 2)

㉙ Total Extent: 40' av. thick.,600-800'x300-400' ea.3 zones.

㉚ Structure: 5-15°W-dipping detachment fault (other subparallel low angle listric faults above & below). ENE to E&N-S orthogonal Basin & Range faults. Brecciation (cont. pg.2)

㉛ Ore Occurrence: Au° with FeOx ± silica in low angle fault breccia and associated higher angle feeders ± rhyolite dikes. Irregular oxidation: deeper along Fx. Not all Bx mineralized. (cont. pg. 2)

㉜ Age of Mineralization: Miocene (Laramide??)

㉝ Conclusions & Recommendations: Ex-Utah Int. (Cu-Mo), Freeport (1980), Cypress Pac. (1981-82), Amselco (83-84) Zone 1-2 miles W of Pope Mine similar and will be drilled summer 1987. (10,000' of fill-in/step-out drilling now in progress.) Higher grade >0.1 opt Au zones narrow--seldom above an acre. Will make difficult to mine-plan. Reserves could be easily doubled or tripled. Much of early drilling was in barren parts of lower plate. Prelim. metallurgy indicates crushing/agglomer. prob. necessary. If reserves confirmed could go into (cont. page 2)

(For additional space use extra sheets)

Van Deemen Mine

28. Alteration: prob. metamorphic (mafic schist)

30. Structure: along silicif. faults. Upper plate volc. rotated: dip 30-60° W.

31. Ore Occurrence: Orthogonal Faults offset flat Bx zone locally.

33. Conclusions & Recommendations: production in 1988. Unoxid. mineraliz. maybe not recoverable.

Note: Amir Mines Ltd (VSE) is buying out 54% of AZ Star CGNL 5/22/87 and apparently is making an offer for controlling interest of Fischer-Watt's half. Amir Mines is in cahoots with Glamis Gold on a number of projects in W. US.

JDS

ASARCO

Exploration Department
Southwestern United States Division
James D. Sell
Manager

June 22, 1987

Mr. Perry Durning
Fischer-Watt Mining Co., Inc.
114 Trecker Ave., Suite 7
Kingman, AZ 86401

Van Deeman Area
Mohave County, AZ

Dear Perry:

Asarco thanks you for the aid you have given Fleetwood Koutz of this office in his review of the Mohave County areas.

Of the ones you have an interest in, the Van Deeman area is approaching the size and grade we would be interested in.

Thus should F-WMC have need for influx of someone like Asarco, we would be please to review the data and terms for possible participation at any level.

Sincerely,

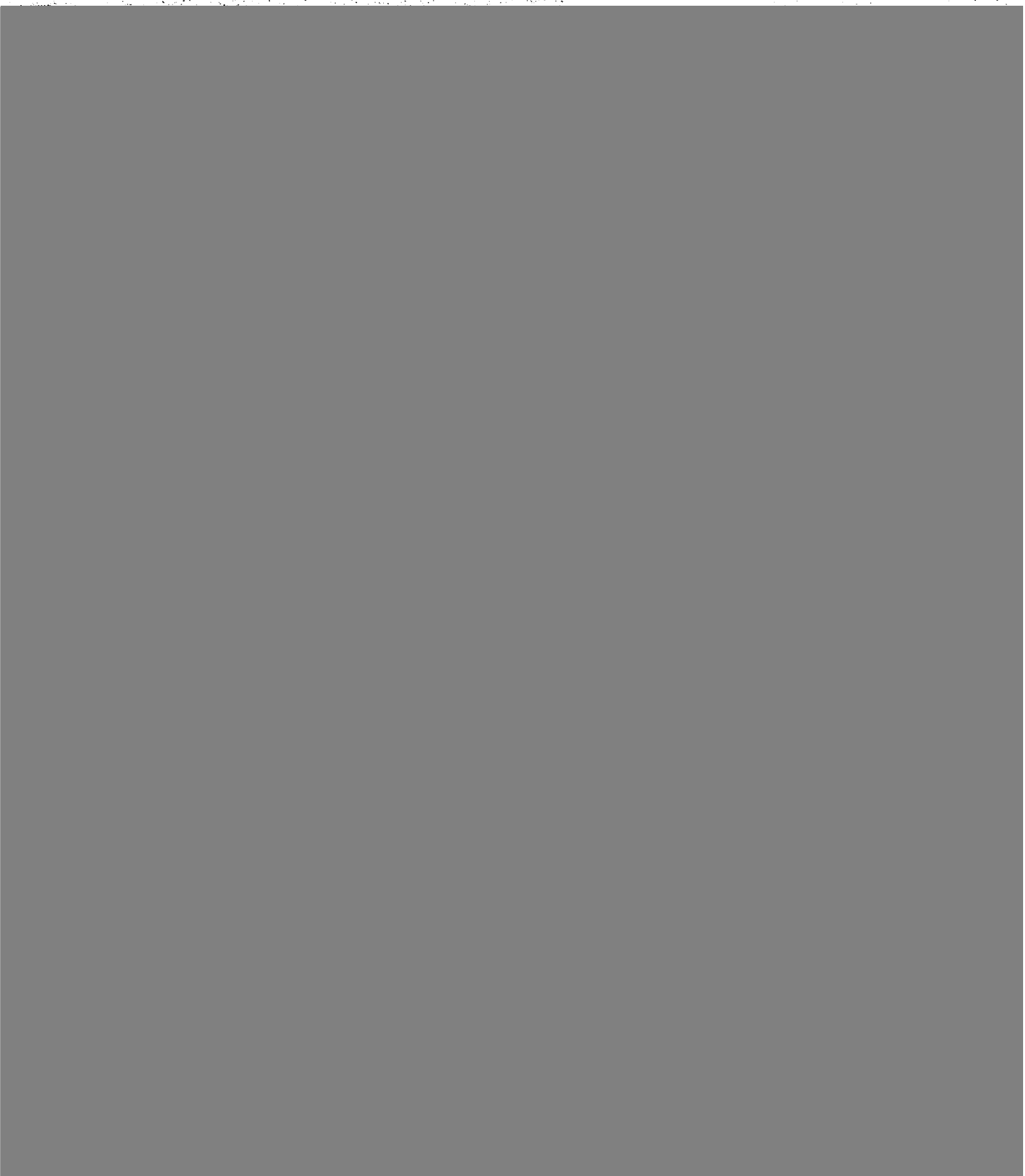
James D. Sell

JDS:mek

cc: W.L. Kurtz
F.R. Koutz

6/22. Solicited RL Brown of this.

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



ASARCO

Southwestern Exploration Division

JDS

April 7, 1988

FILE NOTE

Van Deemen Area
Sec. 29-30, T27N, R21W
Mohave County, AZ

The recent Cordilleran field trip No. 4 traversed the Van Deemen area and is here included as Attachment A.

The interesting aspect of the Van Deeman low-angled fault is that it is not a detachment fault stricto senso in that it was initiated as a moderate to high-angled fault and subsequently tilted along with the basement to essentially its present position. Subsequent flattish fault movement rotated the present overlying volcanics and spread them westward. A detailed map is shown in Figure 12 of article.

During this phase of brittle shearing, quartz veins were emplaced and brecciated and most of the gold is in this brittle phase unit.

James D. Sell

James D. Sell

JDS:mek
Attachment (file copy only)

cc: F.T. Graybeal
W.L. Kurtz
M.A. Miller