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To: D. C. White

From: Arthur J. Fernandez

Date: November 18, 1987

Subject: Engineering and Surveying at UVX

Comments in two of your recent memos deserve response.

First, the memo dated Oct. 31.

Your and Dr. Hodder's comments, where they apply to your work, on M. Janeck's letter are well taken. We may have expected too much from his brief visit.

Fire, underground, is never a "non-issue." The possibility of spontaneous combustion of massive sulfides at the UVX is an issue to be considered. Experience of past operators does not make the UVX immune to fire. Old sulphide stopes may be inaccessible to us, but air is capable of going where no man can. And we are helping that process by re-opening old drifts anywhere in the mine.

The hoisting capability of the Edith shaft is yet unproven. We can only estimate what tonnage could be brought to the surface in a full production mode. Right now we are not lowering material and supplies at a rate remotely resembling the quantities required for production. Mr. Janeck's estimate was based on the time required to hoist one drift round and a conservative figure for lowering supplies. It does not seem to me that Mr. Janeck is suggesting a new shaft, only an "enlarged mining plant."

As to the Recommendations. (Your numbers)

1. I am also concerned about the location problem in the Morgan Drill station area. Work has been in progress to reconcile the problem. In greater earnest since we broke into the Audrey. May I suggest that you check the preparation of the existing base maps for errors while our work proceeds. Revisions will be made on the basis of all our work.

2. Jose may be available for this work.

3. The definition of ore is always economic.

Our short term goal has to be the determination of "geologic reserves." (The term ore is purposely left out.) From that reserve, mineable reserves will be determined by a feasibility study. The various project and marketing schemes conceivable at this point rely on understanding the "total potential." Reserve estimates, for now, need to be concerned with the chemical make up of the rock. How much Au? Ag? SiO₂? Fe? Al? So far, the gold we have found can be extracted (technically), therefore no rock type should be favored over another.

To: DCW
November 18, 1987

The danger here is to reduce the exploration potential by saying this or that may not be economic to mine. In other words, it is too early to apply a mining cutoff to the mineral deposit.

Regarding your memo of Nov. 15.

I take particular exception to comment number 3. You and Dan were there when Jose and I were marking the drift. You and Dan were there when I was explaining to Pete what the marks meant. Knowing what we were doing, it seems to me that you did not have to include this comment in the memo. A plan to control track grade at the face and to connect the 902w are in place. Also, I do not think Dan would have worded the comment quite the way you did. In fact, in conversations the day after his visit to the mine we discussed all the issues your memo raised and more and I did not sense the same tone from him in person that you relay in the memo. Besides, how Pete, Jose and I plan to control drift headings is not pertinent to the geology of the UVX.

In closing, maybe you should pay attention to your own writing; ". . . it is not our place to comment on direct mining issues."

M E M O

TO: Carole A. O'Brien, Anthony F. Budge
FROM: Don White
DATE: November 15, 1987
SUBJECT: Visit to the U.V.X. by Dan Maxwell

Dan Maxwell of Southwest Exploration, Inc., Silver City, NM, visited the U.V.X. for better than half a day, Nov. 12, 1987. At Carole's request I gave him a complete tour and listened to any comments he had. Some reactions he had are worth passing along.

- 1) The timbering now being done in areas of bad back is not proper. He feels the using of 2"x8/10" and 3"x8/10" on their broad sides is overly costly and not as strong in the event of heavy ground. He says lagging should not be used for timbering high backs, rather he recommends 4"x6" or 4"x8" timbers resting on their narrow sides to minimize timber cost and maximize strength.
- 2) His impression of the track work is poor. He says the turns and switches in particular are not suitable for production haulage. Indeed my own experience is difficulty in negotiating many spots with light rolling-stock and I notice drill steel (pry-bars) at many sites, indicative of frequent derailments. I have also noticed several locomotive derailments at key places, both time consuming and hazardous. Pete's crews are clearly hired from drifting backgrounds and lay rail only for lack of anyone else to do so. Improvements in the rail system will be required as production nears.
- 3) Rail grade control has been almost non-existent. There is still no system for laying rail at predetermined gradients as required for linkages of tunnels being worked on from opposite ends to form a circuit (as on the 902-W, 950 level).
- 4) Blast-hole drilling in chert is going to be a major cost/time factor in overall mining costs/plans. Caving of the holes upon withdrawal of the drill steel, or even inability to withdraw the drilled steel, is now costing much time, broken steel, etc. The sooner systems are worked out to handle chert drilling the better. Many parameters may be varied. Bit type (button vs. chisel vs. knockoff cross-type) water usage, hole diameter (fewer, larger blast-holes may be advantageous) and possible use of sleeves, disposable or reusable, are all to be considered.
- 5) Dan suspects that heap leaching may be a viable alternative for that portion of UVX reserves amenable to leaching (mainly the silica grit; no crushing or grinding needed, high recoveries probable - one bottle roll thus far suggests 93% recovery of Au in first 24 hours). He suggests costing this alternative (his estimate about \$5./s.t. including plant and operating costs) and consideration of the Martin Limestone terraces just NE of the UVX (below Bell's houses, on Verde property) as sites within 0.1 mile of gentle downgrade haulage with intrinsic safety in that the limestone would neutralize any HCN leakage.

- 6) We talked about the smelter flux market and the chemical characteristics of flux that are deleterious. In that context our iron content was covered, and I was referred onward to Mr. Eric Partelpoeg, Asst. Supt. of P.D.'s Hidalgo, NM Smelter (505-436-2211). Mr. Partelpoeg confirms that indeed iron in any form, sulfide or oxide, is deleterious in that it consumes energy and increases the mass of slag. However, our iron oxides will not aggravate any SO₂ emissions problem. Our nearly alumina-free, high silica, high gold and high silver values have sufficient appeal that the standard smelter flux contract (all we have looked at thus far) is not sacred. Mr. Don Farquhar of P.D.'s Morenci office (602-865-4521) who apparently would head up any flux contract negotiations for P.D., would probably consent to an increased iron allowance in light of the chemical characteristics and quantity of UVX flux available. This needs to be investigated.

DW:sk

ENGINEERING MEMO

February 2, 1988

Attached are the results of reconciling Del Tierra's survey and A. F. Budge's survey of the existing drill holes. Drill hole collar coordinates have been adjusted to agree with Del Tierra's survey. Where Del Tierra did not survey drill holes, their control points were used to adjust A. F. Budge's survey. Elevations were found to be in reasonably good agreement, therefore little adjustment was required. Drill hole bearings were also left for the most part unadjusted, because of the high variance in repeated measurements. The same is true of the hole inclinations. The exception to this is the 902 drill holes, here Del Tierra's survey was used.

Please note also that the coordinates and elevations have been rounded to the nearest tenth of a foot. The hole bearings have been rounded to the nearest half degree. The hole inclinations have been rounded to the nearest degree. These roundings are consistent with the precision to which we can measure these quantities.

A handwritten signature, possibly reading "JH", is located in the lower right quadrant of the page.

A. F. Budge (Mining) Ltd.

UVX

Engineering Summary Sheet

February 2, 1988 (replaces summary dated 12/24/87)

MORGAN DDS DRILL HOLE DATA

DDH	Collar Data			Bearing	Inclin.
	Northing	Easting	Elevation		
M-1	11547.0	7071.3	4189.7	S47.5°W	+45°
M-2	11547.9	7072.3	4190.8	S49°W	+60°
M-3	11544.5	7078.0	4188.4	S15°E	+20°
M-4	11546.1	7077.3	4190.6	S16°E	+50°
M-5	11544.6	7077.8	4187.4	S20.5°E	+11°
M-6	11546.2	7077.9	4189.0	S22°E	+28°
M-7	11545.0	7071.2	4189.0	S46.5°W	+25°
M-8	11544.4	7074.9	4189.7	S17.5°W	+43°
M-9	11542.8	7075.9	4189.5	S6°W	+22°
M-10	11546.9	7078.8	4188.6	S36°E	+22°
M-11	11546.4	7078.9	4188.1	S23.5°E	+25°

A. F. Budge (Mining) Ltd.

UVX

Engineering Summary Sheet

February 2, 1988 (replaces summary dated 12/24/87)

902 DDS DRILL HOLE DATA

DDH		Collar Data		Bearing	Inclin.
902-1	11378.4	7208.8	4189.9	S13.5°E	+39°
902-2	11377.1	7206.1	4187.0	S12.5°W	+15°
902-3	11378.4	7202.9	4188.0	S43°W	+26°
902-4	11377.4	7209.1	4186.8	S11°E	+14°
902-5	11380.9	7202.2	4187.8	S66°W	+24°
902-6	11381.5	7203.0	4190.4	S67°W	+43°
902-7	11380.2	7203.9	4190.8	S44°W	+45°

A. F. Budge (Mining) Ltd.

UVX

Engineering Summary Sheet

February 2, 1988 (replaces summary dated 12/24/87)

809 & 806 DDS DRILL HOLE DATA

DDH	Collar Data			Bearing	Inclin.
	Northing	Easting	Elevation		
809-1	11784.0	6909.3	4328.0	S22°W	+25°
809-2	11783.5	6911.9	4328.1	Due South	+27°
809-3	11783.0	6913.1	4325.2	S14°E	-5°
809-4	11785.0	6907.8	4327.7	S40°W	+25°
809-5	11783.0	6911.6	4327.1	S1.5°W	+15°
809-6	11784.8	6908.3	4327.8	S33°W	+25°
809-7	11784.7	6907.5	4327.2	S40.5°W	+18°
809-8	11784.0	6911.8	4329.0	S1.5°W	+35°
809-9	11783.6	6916.8	4325.2	S36°E	-5°
806-1	11897.4	7331.9	4332.4	S31°W	-4°

A. F. Budge (Mining) Ltd.

UVX

Engineering Summary Sheet

February 2, 1988 (replaces summary dated 12/24/87)

901 DDS DRILL HOLE DATA

DDH	Collar Data			Bearing	Inclin.
	Northing	Easting	Elevation		
901-1	11690.0	7754.6	4182.9	S42.5°W	+12°
901-2	11689.8	7754.7	4180.1	S40°W	-20°
901-3	11691.3	7751.7	4184.8	S62°W	+18°

A. F. BUDGE (MINING) LTD.

UVX MINE

STATION	COORDINATES		ELEVATION
	N.	E.	

Starting Coordinates:

S-1 (Surface)	12,038.22	7,787.07
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S-2 (Surface)	12,022.26	8,085.76
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Distance and Bearing from above coordinates: S.86°56'29"E., 299.116 ft.

Coordinates determined by Del Tierra Engineering & Mining Corp:

Edith Shaft wire (Surface)	11,998.641	7,787.799
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Audrey Shaft wire (Surface)	12,004.365	8,000.576
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Distance and Bearing from above coordinates: N.88°27'33"E., 212.854 ft.

Edith Shaft wire (Underground)	11,998.641	7,787.799
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Audrey Shaft wire (Underground)	12,004.361	8,000.463
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Distance and Bearing from above coordinates: N.88°27'33"E., 212.741 ft.

95A	11,869.449	7,785.626	4,184.98
901	11,720.419	7,785.467	4,185.68
101 (901DDS)	11,695.588	7,763.733	4,187.38
102	11,696.666	7,542.466	4,183.84
103	11,697.280	7,317.466	4,184.01
104	11,654.698	7,268.039	4,184.69
105 (Morgan DDS)	11,553.135	7,077.123	4,186.54
106	11,514.040	7,056.846	4,186.68
107	11,455.086	7,069.655	4,187.59
108	11,415.973	7,099.978	4,187.00
109	11,383.143	7,130.622	4,188.04
110	11,334.766	7,159.809	4,186.93
111	11,287.031	7,271.246	4,183.60
112	11,266.937	7,317.902	4,182.61

UVX MINE

STATION	COORDINATES		ELEVATION
	N.	E.	
95B	11,931.714	7,850.792	
95C	12,006.092	7,953.746	
95D	11,999.262	7,992.377	
902DDS	11,393.166	7,208.792	4,190.11
901-6	11,444.326	7,783.54	4,180.87
201	11,233.908	7,592.655	4,182.73
202	11,248.776	7,608.706	4,183.12
902W-1	11,251.262	7,533.117	4,184.29
(Old) 852	11,727.75	7,785.89	4,177.21 (Track)
(New) 852	11,727.619	7,785.784	4,185.64 (Spad)

800 LEVEL

EDITH SHAFT

Wire	11,998.641	7,787.799	4,333. (Sill)
800S	11,954.816	7,780.675	4,342.59
28	11,869.896	7,030.657	4,331.54
(Old) 64	11,835.88	6,965.86	
(New) 64	11,834.323	6,965.837	4,330.16
(Old) 67	11,870.23	6,940.90	
(New) 67	11,868.700	6,940.830	
(Old) 72	12,026.16	7,081.38	
(New) 72	12,024.57	7,081.259	
800DDS	11,792.183	6,911.871	4,332.57

A. F. BUDGE (MINING) LTD.

UVX MINE

DDH #	COORDINATES		ELEVATION	INCLINE	BEARING
	N.	E.			

DRILL HOLES

902-1	11,378.428	7,208.794	4,189.85	+38°31'	S.13°29'E.
902-2	11,377.113	7,206.076	4,186.99	+14°40'	S.12°42'W.
902-3	11,378.431	7,202.862	4,188.03	+25°52'	S.42°50'W.
902-4	11,377.356	7,209.104	4,186.84	+14°22'	S.11°02'E.
902-5	11,380.937	7,202.159	4,187.81	+24°07'	S.65°50'W.
902-6	11,381.451	7,202.971	4,190.41	+43°29'	S.67°06'W.
902-7	11,380.155	7,203.865	4,190.81	+44°53'	S.43°56'W.

901 DDS (Station 101)

901-1	11,690.036	7,754.639	4,182.86	+11°43'	S.42°31'W.
901-2	11,689.821	7,754.692	4,180.06	-19°19'	S.40°10'W.

Morgan DDS (Station 105)

M-10	11,546.382	7,079.130	4,188.63	+23°42'	S.37°03'E.
M- 5	11,544.291	7,077.772	4,187.23	+11°42'	S.20°45'E.
M- 7	11,544.582	7,070.631	4,188.97	+25°52'	S.45°20'W.

MEMORANDUM

TO: Carole A. O'Brien ✓

FROM: R.W. Hodder and D.C. White

DATE: October 31, 1987

SUBJECT: Review of current memoranda, drill holes 809-8 and 809-9, plus 902-1 and 902-2.

Introduction

Since our last joint review memorandum of September 3, 1987, 2 of 3 recommended holes in the 809 zone have been drilled and 2 of 11 recommended holes have been drilled in the 902 zone. The drive on the 950 level to the 911 drill station has penetrated chert with gold in the south part of the 1205/Gold Stope zone and is 20 feet north of the planned location of the 911 drill station. In addition M. Janeck has commented on direct mining costs and because this comment contains some misconceptions of previous work we begin with it.

1) M. Janeck memorandum of October 2, 1987.

Page 1, 5th paragraph, line 3, Mr. Janeck states "Reserves are considered as drill indicated." This may be his consideration but it is not implied in our statements to date except for the M-3 zone where we felt the density of drilling and the construction of plans and vertical cross sections provided the control for such a calculation. We have been careful to call estimates of tonnage and grade in zones other than M-3, "estimates of potential" as in Table 2, our memo of September 3, 1987.

Also in the 5th paragraph, lines 6 through 9, Mr. Janeck notes an apparent discrepancy between a total potential of 468,000 tons of 0.22 ounces of gold equivalent per ton in Table 2 and 532,000 tons of 0.21 ounces of gold equivalent per ton in Table 3. There is no discrepancy. Table 2 is titled "Comparison of Successive Estimates of Potential in Verde Area" and the derivation of the 468,000 tons is explained as a potential for the Verde Area only. Table 3 is titled "Gold reserve totals for the UVX project, updated to September 3, 1987" and the derivation of the 532,000 tons is shown as Verde area potential plus that of the 1205/Gold Stope and the Florencia areas.

Page 2, 2nd paragraph, raises the problem of fire underground because of the combustability of massive sulfide. There is an inference here that past operations of UVX had fires or fire hazards. This was certainly so at the United Verde where the main orebody was massive sulfide. Fire did not occur at the UVX where precautions were taken within the main copper orebody and where there is virtually no sulfide mineral content in the silica-rich areas under current exploration. We are disturbed to see this non-issue raised at a time when the real issues of defining potential warrant full attention.

Page 2, 4th paragraph, line 2, "ore bodies in the vicinity of 11,600N; 6,900E are rather flat...." Actually in this southeast part of the 809 zone dips are steep.

Although it is not our place to comment on direct mining issues, they are important in the definition of ore which is a joint exploration and engineering function. Hence, we are concerned that Mr. Janeck's memo does not fully appreciate what can go down or come up the existing shaft, as he suggests (page 2, last paragraph) using stope jumbos and load-haul dumps which would be a problem to get underground and (page 3, paragraph 7) that present plant capacity is 30 to

50 tons per 24 hours. This tonnage is currently hoisted in just a few hours. Consideration of a new shaft throws a new light on potential at UVX and would require a much expanded exploration target. We would like to see the definition of ore refined on the basis of the type of material, its size, shape, and grade, so that we can reasonably estimate reserves as the data are gathered. For this, direct negotiations with smelter customers must be recommended.

We do echo Mr. Janeck's concern for the problem with accurate location of present headings underground relative to old workings and do press for a reconciliation of surveys as soon as possible so that proper plans and sections will be ready when reserve calculations are to be done.

2) Drill holes 809-8 and 809-9.

Hole 809-8 was drilled at +33° from the 809 station to test the updip extension of intersections in hole 809-2 which was drilled at +23° from the 809 station. (fig. 1, RWH & DCW, Sept. 3, '87)

Hole 809-2 had the following intersections

Block 1, 19' true width, 0.33 oz/t Au, 1.4 oz/t Ag, 0.35 oz/t Au(eq), 2% Fe

Block 3, 12' true width, 0.07 oz/t Au, 2.0 oz/t Ag, 0.10 oz/t Au(eq), 4% Fe

Hole 809-8 had the following intersections

Block 1, 5' true width, 0.21 oz/t Au, 1.6 oz/t Ag, 0.24 oz/t Au(eq), 3% Fe

Block 3, 4' true width, 0.15 oz/t Au, 5.6 oz/t Ag, 0.24 oz/t Au(eq), 3% Fe

Hence, hole 809-8 diminishes width and grade of Block 1 and the width of Block 3, but increases grade of Block 3. In Block 1, grade x width for hole 809-2 is 6.6 and in 809-8 it is 1.2. In Block 3, grade x width for hole 809-2 is 1.2, and for hole 809-8 it is 1.0. A revision of the estimate of potential and calculation of a drill indicated reserve will follow reconciliation of surveys and construction of plans and vertical sections.

In hole 809-8 gold in excess of 0.10 oz/t occurs in and adjacent to a beige massive and banded chert breccia. As noted previously (Sept. 3) this rock type is typically barren.

Hole 809-9 was drilled at -5° and directed 20° south easterly of hole 809-3 from the 809 drill station. Hole 809-3 was not used in the September 3rd estimate of potential in the 809 zone as its 2 gold-bearing intersections are en echelon to the north and east and not contiguous with intersections in hole 809-2, the closest of the holes which define the 809 zone.

Hole 809-3 has the following intersections

7' true width of 0.21 oz/t Au, 0.4 oz/t Ag, 0.22 oz/t Au(eq), 3% Fe

5' true width of 0.15 oz/t Au, 1.5 oz/t Ag, 0.18 oz/t Au(eq), 5% Fe

Hole 809-9 had the following intersections

28' true width of 0.21 oz/t Au, 0.09 oz/t Ag, 0.21 oz/t Au(eq), 2% Fe

26' true width of 0.19 oz/t Au, 1.2 oz/t Ag, 0.21 oz/t Au(eq), 3% Fe

These are contiguous intersections and together are

54' true width of 0.20 oz/t Au, 1.0 oz/t Ag, 0.22 oz/t Au(eq), 2.5% Fe

The current interpretation is that these 2 holes may indicate a separate, en echelon part of the 809 zone, or that it may be an up plunge extension of the north end of the M-3 zone. We will be looking at these possibilities during map construction after reconciliation of underground surveys. The configuration of the diorite is critical in this area but from the present data compilation does permit continuity of the M-3 zone through holes 809-3 and 809-9 into the 809-zone.

3) Drill holes 902-1 and 902-2.

Hole 902-1, drilled S5°E and +40° is the first test of the 902 chert zone. It is collared in diorite at the 902 drill station, cut 165' of chert, and ended in the 824 stope. Most of this is the grey chert breccia, which, next to gritty chert breccia has been the most auriferous material encountered. However, in 902-1 there are only 3 assays intervals with more than 0.10 oz/t Au:

91-93,	0.199 oz/t Au,	7.82 oz/t Ag,	3% Fe
93-96,	0.11 oz/t Au,	1.68 oz/t Ag,	10% Fe

and 207-209,	0.102 oz/t Au,	2.65 oz/t Ag,	10% Fe
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The visual inspection of the core from this hole is much more encouraging than the assays. There are significant assays in old working within 40 feet of the 207-209 interval in hole 902-1 and the impression is that a hole slightly more easterly and at a lesser inclination would intersect these permissive rocks with a greater gold content. We have seen this several times in the drilling program, most recently in the reverse sense where hole 809-8 has less gold in 2 separate intervals than the previously drilled, less inclined hole 809-2. The point is, we do not understand the gold distribution and cannot count on empirical relationships to hold over short distances. We will be looking into the similarities and differences in the chert breccias of holes 809-2 and 809-8.

Hole 902-2 has just terminated in tectonically brecciated chert between hanging and footwall strands of the Verde fault and was to be the test of the area between fault strands. Assays are not yet in hand. There is approximately 15' of good looking gritty chert east of the hanging wall strand of the fault but none between fault strands where the hole terminated.

4) The 991 crosscut toward the 911 drill station.

The 906 crosscut has been reopened on the 950 level and sampled where it crosses that breccia on the south extension of the 1205/Gold Stope zone. These samples are reported in the DCW figure of October 19, 1987 in which the most significant are is 10' true width of 0.49 oz/t Au, 3.3 oz/t Ag for 0.55 oz/t Au(eq) in gritty chert breccia.

The new drive has left the old 906 at the west contact of hanging wall chert with diorite and is proceeding southeasterly as the 991 crosscut, totally within chert breccia. Assays have not yet been received for samples of the 991 crosscut. One striking feature of chert breccia in this new drive is the preponderance of beige massive and banded chert breccia in a hematite-rich matrix, and the increasing matrix support and vugginess of the breccia as are proceeds south. The openness of the breccia may reflect proximity to the Florencia fault, or something more primary.

Recommendations

1. Clearly the surveying has to be done now to resolve location of drill stations and new and old workings. We need to construct a new base at 1" to 40', or preferably 1" to 20' for reserve calculation in the near future and right now for location of drill holes relative to old workings and target zones. If other work precludes this work by staff then we would recommend it be done by contractors available as close as Mayer or Prescott.
2. Base map preparation which will be the foundation of planning and reserve calculation needs to be underway as soon as the survey grids are reconciled. It is recommended that DCW hire a draftsman to make level plans at 1" to 40' of mine workings and drill holes with assay intervals as soon as possible. Otherwise we foresee a bottleneck upon completion of current drilling. DCW does not have the time to prepare the base maps while drilling is in progress.
3. Reserve calculations will benefit from an economic definition of ore, a definition which will extend the consideration of the natural cutoff in grade we have used to date in estimating and projecting potential. It would be of great help to have discussed the reasonableness of the smelter flux product originally envisaged versus a multiproduct concept or a gold-only operation. The alternative is to do a reserve statement expressing the various options of products but it would help to guide this with a realistic look at what might be profitably marketed.

SERGEANT, HAUSKINS & BECKWITH

TABULATION OF TEST RESULTS

Job No. E87-11

W/O 1

HOLE NO	DEPTH	UNIFIED CLASS	L.L.	P.I.	SIEVE ANALYSIS-ACCUM % PASSING												LAB NO
					#200	#100	#50	#40	#30	#16	#10	#8	#4	.25"	.375"	.5"	
					.75"	1"	1.5"	2"	2.5"	3"	3.5"	4"	6"	8"	10"	12"	
BURRO CLAY	---	SH	96	52	36	41	53	66	78	93	97	98	100				7-11-1
LYLES UPPER GREEN CLAY	---	SC	94	60	19	27	40	50	62	89	98	99	100				7-11-2
BC-1 CLAY	---	MH	102	59	52	60	72	82	91	99							7-11-3

Burro clay

STANDARD Proctor -

72 pcf
max dry density

up to moist 43.5%

Permeability - 0.66×10^{-7}
cm/sec

MINE RESCUE EMERGENCY CALL OUT LIST

STATE MINE INSPECTORS OFFICE, PHX. PH: 255-5971

1. EDDIE MARTIN 432-2690 BISBEE or 244-8244 PHX. AFTER HOURS
2. ALEX SINCLAIR 931-6652
3. TONY STOKS 995-9558
4. BILL FELLOWS 254-6640
5. JIM MATT 944-4310
6. FRANK SEPULVEDA 243-0415

PHOENIX STATION AREA

1. SHERIFFS OFFICE, M.C.S.O.
JIM LANGSTON, S&R COORD. 256-1011 or 256-1895 day time
988-3131 home 256-1030 pager
2. C.A.M.R.A.
RALPH HOLZHAUS PH: 911, or MCSO 256-1011
OR 1-800-352-4553
3. FRANK SEPULVEDA, SMI, EAST I-17, 243-0415
4. ANGE OLYERA, SMI, WEST I-17, 278-7485

PRESCOTT AREA

1. SMI, DAVID HAMM PH: 772-9505
2. YAVAPAI COUNTY SHERIFF
CALVIN STEWART PH: 445-2231
3. PETE FLOREZ MINE SUPERINTENDANT
A.F. BUDGE MINING LTD. JEROME ARIZ.
634-9034
4. TED HOLMES, MINE MANAGER
GLADIATOR MINE, CROWN KING, ARIZ.
442-9485
5. WILBUR SWEET MINE MANAGER
STUKEY MINE, BAGDAD ARIZ.
633-2324

BULLHEAD CITY AREA

1. SMI, DAVID HAMM PH: 772-9505, Prescott residence.
2. MOHAVE COUNTY SHERIFF
SGT. JENE MYLAM, Operations Officer PH: 753-2141 Dispatch or 757-4108 home.
3. BULLHEAD CITY FIRE DEPT
CAPT. JOE ANDERSON PH: 758-3971
4. NATIONAL PARK SERVICE
KATHERINE STATION PH: 754-3272 or RON PARRISH, ranger, PH: 754-4423

GLOBE, MIAMI AREA

1. SMI GARY COTHRUN, PH: 425-3968
2. PINTO VALLEY COPPER CO. PH: 425-7611
3. GILA COUNTY S.O.
Jim Weeks, GCSO PH: 474-2208 North Half
John Holmes, GCSO PH: 425-4440 South Half

YUMA AREA

1. SMI, JOE RAMIREZ, PH: 836-3281 Casa Grande Residence
2. YUMA FIRE DEPT. JOHN TEAGUE, PH: 783-5960
3. YUMA COUNTY S.O. CLAYTON (BUZZ) ODEN, PH: 783-4427

BISBEE AREA

1. SMI, JOHN TAYLOR PH: 883-1223 Tucson Residence.
2. PHELPS DODGE MINE
BAKER OHMSTEAD 432-3781 work, or 432-7382 home
3. COCHISE COUNTY S.O.
CMDR. LARRY DEVER, PH: 432-2267 dispatch or 586-2221

TUCSON AREA

1. SMI, JOHN TAYLOR PH: 883-1223 or HUGH KELLEY PH: 293-1196
2. PIMA COUNTY S.O.
Sgt. CHUCK McHUGH PH: 622-3366 dispatch or 882-2850 Search & Rescue
3. TUCSON FIRE DEPT.
DENNIS Van AUKEN, Battalion Chief, PH: 791-3200
4. S.A.R.A.
TOM FALKNER PH: 795-9637 or 795-5884

Rev. 9-30-87

January 12, 1988

To: A. F. Budge

From: A. J. Fernandez

RE: Survey instrument purchase

An in depth analysis of the differences between our survey and Harvey Smith's indicates that systematic errors in measuring angles are responsible for the differences. The surveys agree closely near the shaft. The magnitude of the differences increase as we traverse away.

Our survey on the surface and shaft to shaft traverse underground was done with a rented Topcon theodolite, reading to six seconds of angle. From the shafts to the drill stations and to the headings, we used our own simple transit, which reads to one minute of angle. Harvey Smith used a Ziess theodolite which reads to 5 seconds. We both used a steel tape to measure horizontal distances. Without comparing directly, but back-calculating from Harvey's report, our distances agree.

I have received price quotes on several theodolites. The specifications I outlined were: 1) A theodolite which reads to 20 seconds of angle. 2) Eye-piece prisms (to survey raises; we cannot use ours for raises) 3) Tripod included. The quotes ranged from \$3400 for a Topcon TL20DE to \$5500 for a Wild T-16. (Note: The Topcon quote was made in November.)

I have used both instruments, with more time using the Wild. I favor the Wild T-16 for several reasons. First, it is faster and less cumbersome to set-up and use. The optics are far superior in the T-16. This is important as we will use the

instrument essentially in the dark. The Wild seems to be more rugged, less sensitive to jarring. The Wild has a more compact carrying case, better suited to our use underground.

Our instrument sells for \$800 new. It currently has a trade-in value of about \$200.

MEMO

To: File

April 15, 1987

From: A.J. Fernandez

Subject: Conceptual Design of Skip Loading Pocket; Safety Concerns

On April 14, Howard King presented his conceptual design of the 950 Level ore pocket and skip loading station to Pete Flores and myself. We both are pleased with the design. There are, however, several concerns that will have to be addressed in the final detailed design. These are primarily safety problems that can be "engineered out" as long as we recognize the hazards and commit to reducing the risks.

First, due to the close proximity of the pocket opening to the shaft and the large cross section of the opening, all traffic in and out of the 950 level will necessarily have to pass over the opening. Several options are feasible to prevent persons from falling into the hole or slusher trench. A removable cover over one-half the opening and hand rails elsewhere may be all that is needed.

Another potential problem is the rail switch to the tail drift. Derailment of a loaded train or the switch left in the wrong position could cause cars to enter the shaft. Total elimination of this hazard would mean some radical changes in the conceptual design as well as being cost prohibitive. The probable solution to this problem is careful construction and maintenance of the railway, some fool-proof switch locking/indicator system and careful drafting and strict enforcement of standard operating procedures.

The operation of a slusher to muck the slusher trench to the ore pocket also has some inherent safety problems. All the appropriate guards need to be designed into the system.

Since the skip loader operator will probably make several trips per shift from the 950 station to the skip loading station, the accessway should be improved. The work station itself will require careful detailing not only for reducing hazards, but also for "human engineering" concerns. Communication with the hoistman must be provided. The operator needs to safely view the position of the skip from time to time. Safety interlocks to prevent both doors from being open simultaneously should be considered. A means to minimize muck overflow should be provided should the upper door fail in the open position. Procedures for clearing a flooded chute must be well planned. Water sprays and adequate ventilation must be provided for dust control.

Bridging is always a concern in muck pockets. Small, capped holes can be placed near the top door to allow the passage of wooden poles and/or explosives to free hang-ups. Again, a carefully written standard operating procedure must be designed.

A third, emergency, guillotine type door located near the end of the skip loading chute could be useful. A third door would provide the means to stop all muck flow to the shaft.

This conceptual design has many advantages. The safety problems inherent to it are a concern, but can be minimized or eliminated by design, construction and careful formulation and strict adherence to safe operating procedures.

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: March 19, 1987

Subject: Bi-Weekly Activity Report

Copies of all metallurgical reports on the Vulture are being reviewed by Kappes-Cassidy and Ed Jucevic. The copies for Kappes-Cassidy were delivered by Pete Hahn. The initial comments made to Pete were that the column tests could have been continued for a bit longer. The recovery curves do not truly flatten out; indicating the possibility of slightly better recovery with more time. I expect we will have written comments some time next week. Dan Kappes is out of town this week, but will review our data before a report is made.

I am scheduled to meet with SHB tomorrow for a status report and discussion of design and permitting work. Now that it is unlikely that we will mine in the area of the Mill Wash, I have directed SHB to not prepare an application to appropriate surface water. Should we need this permit in the future it could easily be prepared from existing data. We will still design and permit a leach pad sufficient for all the potential ore, but only construct enough pad to accomodate the tails and high grade ore. Originally two solution ponds were to be used. We now envision one pond divided, by a berm, into two solution storage areas. This way, should we expand the operation, a second pond would be

constructed to compliment the first.

We will be refiling some of the mining claims to the west of the patented claims as mill site claims. This will allow us to use this area as waste dumps, if needed. This area was drilled last week to verify the underlying rock is unmineralized.

I have drafted a new drill hole location map for the Vulture on corrected grid coordinates. While surveying the new drill holes last week, we rechecked other holes to verify Milt Hood's relative positioning. My new map will be the basis for Don White's geologic sections you requested. Today I will be redrafting cross sections of the east pit to design a pit to extract the high grade material.

I should have in hand next week our permit to do hydrologic testing of the Vulture well. I will need to purchase a water meter. We will need a meter on the well to monitor water usage during operation. A pump test will be scheduled as soon as possible and require some one at the well for about 24 hours continuously.

Tuesday past, Carole and I met with Bob Phillips of Echo Bay Mines. Mr. Phillips is in charge of Echo Bay's activities at Congress, Az. They are driving a decline to test and confirm a deposit of about 500,000 tons of 0.3 OPT gold. We had a general discussion of our mutual interests as related to milling ores.(Vulture ore?) The gold at the Congress deposit is associated with pyrite mineralization. Therefore, should Echo Bay decide to construct a mill, it would probably be a flotation mill producing an iron pyrite concentrate of high gold values.

This type of mill would not be suitable to treat Vulture ore. We will keep the lines of communication with Echo Bay open just in case some mutual interest should become more beneficial.

One day soon, I intend to tour the Anamax Twin Buttes Mine south of Tucson. The mine is shut down and all the equipment and facilities are up for sale. Some of the equipment may be of use to us.

High grade $\approx \pm .08$ — OPT

Section	TONS	Grade	RST. STRIP
20650	3000	.080	1:1
20700	4000	.125	1:1
20750	7000	.125	1:1
21050	1000	.080	1.5:1
21400	25000	.060	3.5:1
21450	30000	.067	3:1
21550	24600	.039	3.8:1
21550	21400	.134	4:1
21600	13800	.082	5:1
TOTAL	126,800	.087	3.5:1

@ 55% Recovery 6070 ounces Au

Gross Revenue : \$ 2,428,000

Mining cost	\$ 800,000
Crushing	\$ 317,000
Agg. stacking levies	<u>723,000</u>
	\$ 1,840,000

Net

2,428,000
<u>1,840,000</u>
\$ 588,000

EAST Pit High Grade

3/15/87

Bench	Area (FT ²) $\times \frac{20}{12}$	Tons	
1940	16,450	27,400	
1960	30,500	50,800	
1980	46,000	76,700	
2000	62,450	104,100	
2020	82,400	137,300	
2040	101,400	169,000	
	TOTAL	565,300	TONS TOTAL MATERIAL

Ore on sections 21400 to 21600

Sec	TONS	GRADE
21400	25000	.060
21450	30000	.067
21500	24600	.089
21550	21400	.134
21600	13800	.082

TOTAL 114,800 @ .084 450,500 WASTE 3.9% / SR.

Sections 20650, 20700, 20750 + 21050

Sec	TONS	Grade	WASTE
20650	3000	.080	3000
20700	4000	.125	4000
20750	4000	.125	4000
21050	<u>1000</u>	<u>.080</u>	<u>1500</u>
	12,000	.110	12,500 1:1 SR.

RECAP

EAST PIT

114 800 TONS @ .084 450 000 TONS WASTE SR. 3.9:1

OTHER AREAS

12,000 TONS @ .110 12500 TONS WASTE SR 1:1

TOTAL 126 800 TONS @ .086 462,500 TONS WASTE 3.6:1 SR.

~~10% dilution + with .040 material~~

~~139,480 TONS @ .082~~

~~449,820 TONS WASTE~~

~~3.2:1 SR.~~

A quick evaluation of possible high grade zones near surface and in the east end of the pit, indicate approximately 125,000 tons at 0.087 OPT available. This may be taken at a stripping ratio of about 3.5:1. These numbers are rough and I will refine them over the weekend. These numbers confirm that the tails will cover the capital and sunk costs.

Base DATA:

125,000 tons @ 0.087 OPT Au

55% Recovery

6070 ounces recoverable

Gross Revenue: \$ 2,428,000

Mining \$ 800,000

Crushing 317,000

Agglomeration, Stacking, Leach 723,000

TOTAL \$ 1,840,000

NET \$ 588,000

OPERATING COST SUMMARY:

	Per TON	TOTAL
MINING	\$ 1.00	225,000
Agglomeration (minus reagents)	0.50	112,500
STACKING	0.40	90,000
REAGENTS	2.00	450,000
Personnel (ZINC plant)	2.25	506,250
Assaying & REFINING	0.20	45,000
Fuel & electric power	<u>0.35</u>	<u>78,750</u>
	\$ 6.70	\$ 1,507,500

OPERATING COST /ounce Au = \$212.30

TOTAL COST (OPERATING AND CAPITAL) = 283.05 /ounce Au

CASH FLOW SUMMARY:

GROSS REVENUES	\$2,840,000
CAPITAL COST	502,300
OPERATING COST	<u>1,507,500</u>
NET	830,200

SUNK COST (AS of 2/28/87) 670,000

NET PROJECT PROFIT \$160,200

This is an evaluation of processing the Vulture tailings alone. I have revised Frank Mellis's past estimates based on new information. Metallurgical parameters ~~recovery~~ are based on Dawson's work of 5/84.

The gold price is assumed to be \$400/ounce.

BASE DATA: 225,000 TONS OF TAILS
 0.045 oz/TON Au
 70% Recovery
 7100 Recoverable ounces

Gross Revenues: $7100 \times 400 = \$2,840,000$

CAPITAL COST SUMMARY:

A. Zinc Precipitation Equipment @ SITE	\$ 302,600
B. Building 25'x20'	25,000
C. Electrical, including generator	21,000
D. Process piping in PLANT	2,000
E. Spray piping	7,500
F. LEACH PAD	80,000
G. Solution Ponds	19,500
H. FINAL ERECTION	6,500
TOTAL A THROUGH H	\$ 464,100
I. Engineering	15,000
J. Contingency @ 5%	23,200

TOTAL ESTIMATED Capital Cost \$ 502,300

CAPITAL COST/ounce Au = \$ 70.75

Vulture TAILS ONLY EVALUATION

Assumptions: 225,000 TONS OF TAILS
0.045 oz/TON Au
70% Recovery/Recoverable oz. 7100
\$400/oz Au Price

Gross Revenues:

$$225,000 \times .045 \times .70 \times \$400 = \underline{\underline{\$2,835,000}}$$

CAPITAL COSTS:

A. Zinc Precipitation Equipment @ SITE	\$ 302,600
B. Building 25x20 pre-engineered	25,000
C. Electrical including generator	21,000
D. Process Piping in plant	2,000
E. Spray Piping	7,500
F. PAD 80,000 sq ft	80,000
G. Ponds	19,500
H. Final Erection	6,500
TOTAL A-H	\$ 464,100
I. Engineering	15,000
J. Contingency @ 5%	<u>23,200</u>
TOTAL ESTIMATED Cap Cost	\$ <u><u>502,300</u></u>

CAP COST/ounce Au \$70.75

Operating Cost Summary:

	<u>PER TON</u>	<u>TOTAL</u>
MINING	\$ 1.00	\$ 225,000
Agglomeration (minus reagents)	0.50	112,500
Stacking	0.40	90,000
Reagents	2.00	450,000
Personnel (zinc plant)	2.25	506,250
Assaying & Refining	0.20	45,000
Fuel & Power	0.35	78,750
	<u>\$ 6.70</u>	<u>\$ 1,507,500</u>
operating cost/ounce Au = \$ 212.30		

RECAP:

Gross Revenues	2835,000
Capital Cost	502,300
Operating Cost	<u>1,507,500</u>
Net Project Cash Flow	825,200
Sunk Costs (AS of 12/86)	<u><u>630,000</u></u> 500,000
NET project Profit	\$ 325,200
	215,200

$$\text{TOTAL Cost (op + cap)} = \$283.05/\text{oz Au.}$$

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: December 12, 1986

Subject: Weekly Activity Report

On Monday, I attended the Annual Meeting of the Arizona Conference of AIME. The technical talks on Homestake's McLaughlin project and Newmont's Nevada operations provided useful information and insights. Don White's talk on the U.V.X. was very well done and his model was the hit of the geology session.

Progress on the Vulture metallurgical testing has improved. Bottle roll tests are complete. Assays and crushing information should be available next week. Columns should be loaded next week.

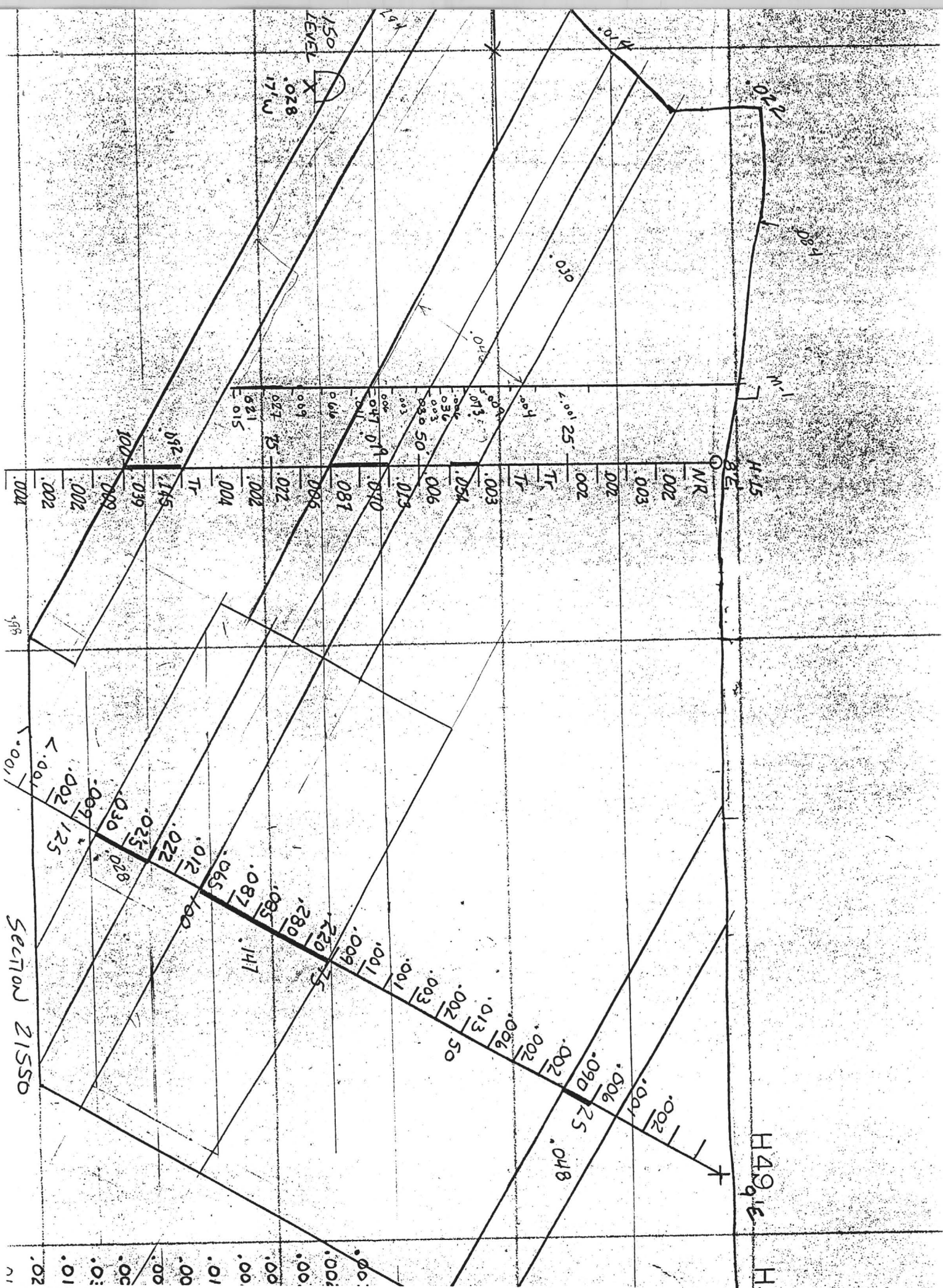
Prelim. enclosed We have received a proposal from Sergeant, Hauskins and Beckwith, geotechnical engineers, for work at the Vulture. I met with them Thursday to clarify their proposal. SHB will revise this proposal and re-submit it next week. We are still looking for other local firms capable of this work.

The survey done by Harvey Smith at the Vulture is complete and we have received the maps with co-ordinates. As suspected, they do not agree with M. Hood's survey. We have decided to use H. Smith's survey and will adjust Hood's maps to agree. This does not effect the ore reserves or pit design, but it does shift

the pit about 40 ft. to northwest.

Enclosed with this memo is a copy of the M-1 and M-2 metallurgical core holes plotted on the Vulture cross-sections. The assays are a combination of the latest from Dawson Labs and Iron King. Note that the assay intervals vary from 2 ft. to 5 ft.

We have outlined other options for waste disposal at the UVX in regards to the current work plan. There is a good chance that we will not have to use the Audrey shaft.



Notes on Nevada trip September 1986

McCoy formerly Tenneco Minerals now Echo Bay Mines Ltd.
Battle Mountain, Nev.

reserves currently under revision; expected to be 50-65% over
published estimates
reserves below present pit being evaluated for potential
underground mining (drilling below 600 feet has encountered some
3 OPT Au intercepts; average of 0.3 OPT Au)
published reserves:

Total: 6,000,000 tons @ 0.055 OPT Au
High grade: 4,000,000 tons @ 0.072 OPT Au
Low grade: 2,000,000 tons @ 0.022 OPT Au

4:1 waste to ore ratio

In this ratio ore is crushable ore (high grade) and waste
includes low grade ore (0.016 to 0.022 OPT Au)
low grade is called mine run ore and is stacked on the
leach pads as is

Brown and Root is the mining contractor
56,000 TPD; 50,000 tons per week ore

equipment fleet:

1- Caterpillar 992C FEL
1- Michigan 475 FEL
1- Liebherr hydraulic shovel
10- Terex 85 ton trucks
1- Wabco 50 ton water truck
2- Cat D-9 dozers
1- Cat D-8 dozer
1- Cat 14G? grader
1- Ingersoll-Rand DM25 blast-hole drill
1- Gardner-Denver blast-hole drill

Merrill-Crowe plant

1300 gpm throughput
too early to tell what recovery will be

precipitate is shipped to Borealis Mine for smelting

plant heads range from 0.050 to 0.025 OPT Au

best day 9/9/86 395 ounces Au in 24 hr. period

direct operating cost: \$210 per ounce Au

capital cost: \$7.3 million

Notes on Nevada trip September 1986

McCoy (continued)

Brown and Root's contract mining rates
waste to dump (including low grade) \$0.77 per ton
ore to crusher \$0.86 per ton
crushing and stacking \$1.12 per ton (McCoy supplies the electric power)

Echo Bay Mines bought Tenneco Minerals for \$130 million

The engineering department has a complete geological and mine planning system running on a desktop IBM AT computer.

Cimarron

Drilling- going well- dry sampling very efficient and appears to be reliable; wet sampling (below about 300 feet) is very messy and may have some problems but we are not drilling deep into the water table; gold values may be lost in water and mud not collected

Access to the site is rough and would require considerable work for a mining operation. Alternate routes will need to be assessed.

Availability of adequate water supply near the site is unknown.

Future bulk sampling could be done via the west adit, but not without some cleanup work.

The Dacite hill south of the Central adit is the most prominent topographical feature in the area and would restrict mining to the south. The slope of the face of the hill towards the recent drilling is about 45°

Leach pad construction may be difficult as there are no flat areas easily accessible from the mine site.

January 9, 1986

Mr. Budge:

Shortly after you called today, I spoke with Frank Millsaps. Over the previous night (Thursday) Dawson ran a quick permeability test on the $-1/4$ inch material from the bottle roll sample. From these results, Frank determined that the material should be agglomerated. Therefore, a column will be loaded with $-1/8$ inch material (agglomerated).

The reason for using $-1/8$ inch material is that we can extrapolate results to $-1/4$ inch more easily than from $-1/4$ to $-1/8$. Also, if we loaded the column with $-1/4$ inch material, we believe the results would only indicate running a column with $-1/8$ inch material anyhow.

The column should be loaded Monday, January 12.

Regards,

A handwritten signature in cursive script, appearing to read 'Joe', written in dark ink.

Joe

To: Anthony F. Budge
A.F. Budge Limited
Retford, Notts., DN22 7SW

From: DMEA Ltd., Scottsdale, AZ 85251

Date: December 19, 1986

Tony:

Re: Vulture Metallurgy

The initial results from the Bottle Roll tests on the Vulture ore are:

Footwall rock	74 percent overall recovery @ - 1 inch.
Hangingwall rock	58 percent overall recovery @ - 1 inch.
Qpi rock	36 percent overall recovery @ - 1 inch.

FW recoveries are satisfactory. The HW recovery could be better, and the Qpi is poor.

Bottle roll tests are NOT conclusive, and provide only a general guide to recoveries at various rock sizes in heaps.

Columns of HW and FW rock, crushed to - 3/8 inch, will be loaded today for a 12-day leach cycle.

Two separate bottle roll tests, on Qpi, crushed to - 1/2 inch and - 1/4 inch, will also be started today.

We need the latter tests in order to get a feeling for the weight-size recoveries from the "train" of smaller size particles produced by crushing to different maximum sizes.

The Qpi rock is the most important in terms of tons and ounces. The main thing we have learned today is that it won't leach satisfactorily at - 1 inch size. A large portion may have to be crushed fine and agglomerated.

B>

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: December 12, 1986

Subject: Weekly Activity Report

On Monday, I attended the Annual Meeting of the Arizona Conference of AIME. The technical talks on Homestake's McLaughlin project and Newmont's Nevada operations provided useful information and insights. Don White's talk on the U.V.X. was very well done and his model was the hit of the geology session.

Progress on the Vulture metallurgical testing has improved. Bottle roll tests are complete. Assays and crushing information should be available next week. Columns should be loaded next week.

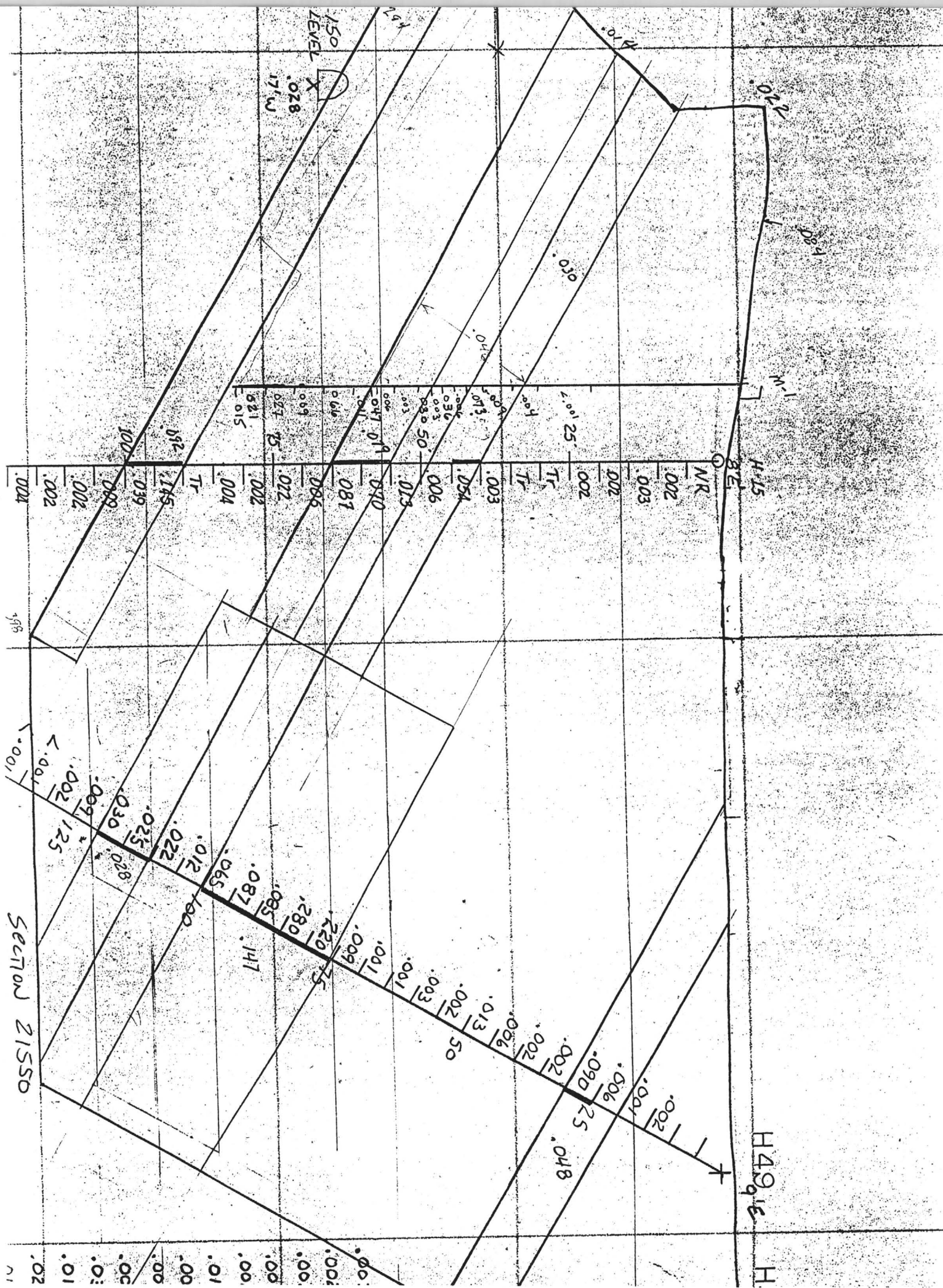
*Prelim.
enclosed* We have received a proposal from Sergeant, Hauskins and Beckwith, geotechnical engineers, for work at the Vulture. I met with them Thursday to clarify their proposal. SHB will revise this proposal and re-submit it next week. We are still looking for other local firms capable of this work.

The survey done by Harvey Smith at the Vulture is complete and we have received the maps with co-ordinates. As suspected, they do not agree with M. Hood's survey. We have decided to use H. Smith's survey and will adjust Hood's maps to agree. This does not effect the ore reserves or pit design, but it does shift

the pit about 40 ft. to northwest.

Enclosed with this memo is a copy of the M-1 and M-2 metallurgical core holes plotted on the Vulture cross-sections. The assays are a combination of the latest from Dawson Labs and Iron King. Note that the assay intervals vary from 2 ft. to 5 ft.

We have outlined other options for waste disposal at the UVX in regards to the current work plan. There is a good chance that we will not have to use the Audrey shaft.



MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: January 22, 1987

Subject: Bi-Weekly Activity Report

Sergeant, Hauskins and Beckwith (SHB) began work on January 12. Tuesday the 13th, SHB collected maps and data from our office. I met with Larry Hansen and two other engineers of SHB at the mine as an initial site visit on Thursday. This week SHB plans to excavate several test pits in the possible pad areas and along the course of the diversion ditch. I will arrange the backhoe to avoid SHB's 10% markup. Samples for cyanide testing will be collected at this time as well. SHB will be reporting to me next week concerning the drainage diversion. At that time we will discuss the design criteria and the regulatory requirements of protecting the site. Many factors will affect what we can do. We must bear in mind that we are required to protect the site not only during operation but the site must be left in an environmentally safe condition.

The ground magnetic survey south of the Vulture is under way. Initially, readings will be taken on lines 200 feet apart at 25 foot stations. More detailed data will be taken as favorable areas are outlined. As long as the weather cooperates, Don and I foresee completion the first week of February.

As part of the final site selection for leach pad and waste dumps, it is recommended that several holes be drilled in the selected areas to insure that we will not place material over potential ore zones. These condemnation holes and drill holes on targets from the ground magnetic survey should be drilled concurrently.

The column test of Qpi material from the Vulture is underway. The results from the hanging wall and foot wall material are due in any day. I should be able to call you next week with those results.

I have in hand Frank Millsaps' outline of equipment requirements for the crushing plant. I am evaluating it and will begin preparing the application for an Air Quality permit.

The drifter performed well on its first hole, drilling 104 feet in about 4 hours. There are problems with the sampling technique which we are working out.

The results of the test work done on the Cimarron material look very good. It's safe to say that it is ideal leach rock. However, it is still premature to call it a mine. Pete Hahn and I discussed his ideas for further work this spring. He will be drafting a proposal soon for our review.

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: January 30, 1987

Subject: Vulture Status

Our position on the critical path is on schedule. The metallurgical results on the hanging wall and foot wall material will be complete early next week. The Qpi should follow a week or so later. Frank has moved ahead and completed flowsheets for the plant design. That, with the mercury values determined (approximately 5 ppm) and our present results, gives us start on the design of the plant. Therefore the plant design should come in on schedule, even if the Qpi results are delayed.

As Carole relayed to you, Frank recommends that the footwall and hanging wall material should be agglomerated. His recommendation is based on observation of segregation in the columns. The segregation indicates the possibility of channeling in the heap. We do not need to run an agglomerated column test.

Therefore, it will be necessary to agglomerate all the material. This has been an assumption in my economic analyses all along.

The crushing plant equipment requirements have been determined. This equipment list will be incorporated with other site equipment needs, including the gold recovery plant, into the Air Quality Permit application.

The bulk of SHB's work of Phase I is complete. SHB has scheduled a meeting with the Arizona Department of Health Services (ADHS) on Tuesday, February 3 to discuss the project. During this meeting we hope to learn what requirements and restrictions ADHS will impose. SHB's recent phone conversations with ADHS indicate that a more restrictive attitude has been adopted since the time SHB assisted in permitting Copperstone two months ago.

Following discussions with ADHS and the completion of laboratory work, SHB and I will discuss their findings and recommendations. The outcome will be more detailed direction for Phase II.

Notes on Nevada trip September 1986

Haywood-Santiago Nevex Gold Silver City, Nevada

350,000 tons @ 0.070 OPT Au on leach pad
(thought to be 0.100 OPT in pit; loss attributed to
poor sampling during exploration and mining dilution)

7:1 waste to ore ratio

52° pit slope angle

presently 55% of gold recovered; first lift achieved 65%
recovery

Merrill-Crowe plant 250 gpm throughput or 1500 TPD of solution

direct operating cost; \$225 per ounce Au

capital cost unavailable

pads constructed on waste from pit
2 feet of clay placed in 1 foot lifts
plastic liner on top of clay

Degerstrom was contracted to mine, crush, agglomerate and
stack the ore; mining ore and waste for \$1.40/ton; crush,
agglomerate and stack for \$2.35/ton

precipitate is smelted on site and dore is shipped via U. S.
Postal Service to Salt Lake City

$$\begin{array}{r} \$1.40 \times 8 = 11.20 \\ + 2.35 \\ \hline \$13.55 / \text{ton} \end{array}$$

$$\$257.8 / \text{oz}$$

$$\$10.23 / \text{ton processing?}$$

MEMO

To: FILE

From: A.J. Fernandez

Date: April 1, 1987

Subject: Available Used Equipment of UNC

For about 20 years United Nuclear Corporation operated several underground uranium mines in the Ambrosia Lake and Church Rock districts of New Mexico. These mines are shutdown with little prospect of reopening in the near future. UNC declares that they are out of the mining business for good. They have elected to sell their equipment themselves rather than through a dealer.

The items of most interest to us are the skips and cages, ore bins, emergency hoists and ventilation fans. Assorted other items, such as, electric motors, wire rope, slushers, slusher parts, raise liners, pipe fittings and ventilation pipe, are available. Pete Flores has UNC's most recent inventory.

UNC has several skips and cages very close to size and configuration we require for the UVX. Modification would not be very drastic or difficult. A highly reputable shop called Western Machine Shop, in the Gallup area was toured and found to have the equipment and skilled personnel required to modify a skip/cage to our specifications.

A 50 ton ore bin constructed to load trucks is also available. This bin could be utilized in several ways at the

UVX, depending on the final configuration of the plant.

The emergency hoist we saw probably exceeds our needs, but could be acquired at a very reasonable price; less than a new smaller one.

UNC also has a large number and assortment of ventilation fans from 5 hp to 200 hp. Most appear to be in usable condition and spare parts, some new, are available.

Miguel Mirabal, UNC's man-in-charge, seems flexible on terms and prices. Plus, he offered assistance in arranging transportation for whatever we needed. New parts and equipment are priced at 60% of the invoiced price. Since most of the new materials were bought in the late seventies and early eighties, 60% of invoice is now probably less than half. Even that may be negotiable.

UNC warrants our consideration when we need equipment or supplies.



A. F. Budge (Mining) Limited

7340 E. Shoeman Lane, Suite 111 "B" (E)

Scottsdale, AZ 85251-3335

(Business Office)

Telephone: (602) 945-4630

Telex: 751739

March 24, 1987

M. Coke Reeves
President
Colorado Gold & Silver, Inc.
Brooks Tower, Suite 8K
1020 15th Street
Denver, CO 80202

Dear Mr. Reeves:

Thank you for the recent information on the Arizona
Desert Placer (Playa) property, which is being returned to you.

We have a full complement of projects at the present
time, and due to limited resources, cannot accommodate additional
acquisitions or joint ventures.

We appreciate you contacting us on this matter.

Very truly yours,

A.J. Fernandez
Sr. Mining Engineer

AJF/ca

encls.



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Scottsdale, AZ 85251-3335

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Telex: 751739

June 1, 1987

Neal A. Degerstrom, President
N. A. Degerstrom, Inc.
N. 3303 Sullivan Rd.
Spokane, Wa. 99216

Dear Sir:

A. F. Budge (Mining) Limited is currently in the engineering and feasibility stages of a heap leach gold mine in central Arizona near Wickenburg. The operation will entail the re-processing of 225,000 tons of amalgamated tailings and mining approximately 500,000 tons of ore and 1,250,000 tons of waste.

Your company was referred to us as a possible candidate to mine this material on a contract basis. Should this be of interest to your company, please send us a letter to that effect and information on your company and its qualifications.

Please feel free to contact me at the number above for any further information you may require.

Sincerely,

A. J. Fernandez

Senior Mining Engineer

MEMO

To: A.F. Budge

From: A.J. Fernandez

Date: June 4, 1987

Subject: Compressor for UVX

A decision on the new compressor boils down to the question; do we foresee substantial exploration drilling in the future? Without the diamond drill, our own compressor is sufficient for planned stoping in the M-3 zone. Expansion of stoping beyond the M-3 zone would require further diamond drilling and possibly greater compressor capacity. In other words, more drilling, more tons, more producing stopes, more air.

The cost savings between the current compressor set up and the new compressor would be lost in mobilization and demobilization in the first few months. Hence, we realized cost savings only if we pursue a long term drilling program (six months or longer), followed by production from more than three stopes.

By my calculation, the quote on the 300 hp compressor from Ingersoll-Rand is about \$1500 higher than the quote we have on the 350 hp Gardner-Denver. I used \$1.64 as an exchange rate from this mornings Wall Street Journal.

Should we decide on a long term drilling program, then it would be recommended to acquire the new compressor on a lease-purchase basis.