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AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA
SOUTHWESTERN MINING DEPARTMENT

CONFIDENTIAL

J. H. C.

JUN 24 1975

Conoco — 860,000,000 tons

June 23, 1975

Memorandum to R. B. Meen

Subject: Meeting with Continental Oil Company
Regarding Asarco's Property Adjoining
the Proposed Conoco Operations,
Florence, Arizona

<u>mining</u>	in	under
mining	.40	.20
mining	total	1.50
Cost	- 54-694	2

Meeting Time: June 19, 1975, 1:40 p.m.

Present: Conoco: Mr. Ludwig W. Koch, General Manager,
Exploration and Operations,
Minerals Department
Mr. Alex Bisset, Project Manager
Mr. Frank Buchella, Senior Mining Engineer
Mr. Phil Nason, Project Geologist

Asarco: Mr. John J. Collins
Mr. Bill Kurtz
Mr. Harold Courtright
Mr. Tom Scartaccini

Mr. Koch called the meeting in order that the property controlled by Continental Oil Company and Asarco could be viewed in light of Conoco's proposed operations. Mr. Koch stated that Conoco had presented a proposal to Asarco in New York for a total purchase of the Asarco controlled property.

Evidently, this proposal was not viable; therefore, he had presented another option and wanted to go through it again so that it could be viewed at the location as it related to the Conoco proposed operation. This would allow for questions on the operation to be answered.

The second option in principal was a proposed agreement between Conoco and Asarco where the property, both Asarco's and Conoco's, would be developed as a unitized operation. Conoco in time would continue their interspaced drilling program onto the Asarco property and further define the ore body. They would then engineer it for any possible development.

At such time as the Asarco property would be put into production, Asarco would have an option to either join Conoco as a partner in the operation, let Conoco operate the property with Asarco retaining a royalty override, or operate

the property on its own. At the time Asarco exercised one of the various options, the drilling and engineering costs of the Asarco property incurred by Conoco during the interim would then be repaid to Conoco by Asarco.

One point that Mr. Koch interjected that was not brought out in New York previously was the fact that any stripping by Conoco into Asarco property that would benefit the Asarco mineralized area would also have to be repaid by Asarco to Conoco.

With this introduction, Conoco then presented the following information on the project.

1. A view at an overall Conoco and Asarco property map. This map showed the relationship of the Conoco plant facilities, the pit, the dumps (waste and tailing), and the various property leases Conoco has acquired or will acquire.
2. Sections showing the area along the Asarco-Conoco property boundary with the drill holes plotted. The mineralized area as Conoco knows it was also plotted and the mineralization was extended into the Asarco ground (copy given to Asarco).
3. A different plan map showing surface facilities with the final pit outline as now proposed by Conoco (copy given to Asarco).
4. A map showing seven ore polygons defining the ore reserves on Asarco and adjoining Conoco ground outside of the present pit as projected (copy given to Asarco).
5. A tabulation sheet showing the stripping ratios necessary to obtain the reserve in Item 4 at the various cut-off grades.
6. Plan maps of the Conoco pit showing the pre-mine, the oxide, oxide-sulfide and straight sulfide phases and final pit outline. We were told that the pre-mine would take approximately two years, the oxide phase would last four years, the oxide-sulfide phase would last 22 years, and the straight sulfide operation would last 14 years. This schedule assumes the starting of the oxide phase in 1979.
7. Sections showing the mineralization zones corresponding to the phases in Item 6.

In general discussion during the presentation, Conoco revealed the following information:

1. The total ore body carries an approximate stripping ratio of 2:1.

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2. The overall reserve is approximately .41 sulfide copper.
3. The cutoff grades used are .26 in oxide and .20 in sulfides.
4. The first few years of oxide-sulfide operation will have a sulfide head of approximately .46 copper.
5. Both oxide and sulfide material will be carried to the metal stage on the property.
6. The pit slope planned is 1.2:1. The pit will be an even slope to the bottom, which they hope will be about 2,000 feet.

oxide - .46
at .26
cutoff

Conclusions

1. From the discussion of grades, slopes and water problems, the Conoco property appears on the surface to be a very difficult project. The dewatering of the area, which is agricultural, and compensation for such is going to be a problem of major importance. The grades and the stripping ratios involved would appear to make this property a marginal one at best.
2. As can be seen by the attached section of the Conoco plan map, the Asarco property is necessary to Conoco as they have designed their pit.
3. Although Conoco does not intend to strip the Asarco property into the mineralized zone, they will need to advance 1600 feet into Asarco property for dewatering well placements and final pit slopes. They indicate on their sections that there is a north-south fault that defines to the east the majority of their ore body which the pit is designed to mine. This fault was just east of the Asarco-Conoco property line. They have ore indications west of the fault, but it is deeper and they do not include this in their present pit design. If Conoco did not take their pit to the limit that is indicated on the attached section, I would estimate, based on the information seen and from the discussions, that approximately 20 percent of their proposed pit could not be included in their present mining plans.
4. From Asarco's drilling and from projected information acquired from Conoco, the mineralization on the Asarco ground is deep and not conducive to an open pit (Asarco alone) operation. It is not of size or grade to warrant an underground operation.

5. The grades and tonnages shown by Conoco are for a unitized operation in order to recover the maximum amount of the mineralized area west of the Asarco-Conoco property line. This would include operating on Conoco ground both north and west of the Asarco property. However, the stripping ratios and grades involved do not show an economic operation at this time.

6. Mr. Koch was very candid in his statement that the acquisition of control of the Asarco property by Conoco is of prime importance to them at this time. The plans for the surface facilities included using the Asarco property for well dewatering sites, shop facilities, possible gravity tailing disposal, rerouting of the Hunt Highway, and the railroad track. These facilities could be rearranged in different locations; Conoco has the area to do this. However, the present design is the one that will give them their most efficient operation and provide the best initial access to the oxide ore body. If stripping into Asarco property is not in the future, then a major pit redesign will have to take place. This could have ramifications to Conoco. Conoco does not intend to strip into Asarco ground for approximately 15 years. Any potential at incorporating the removal of any potential Asarco ore would not take place for 25-30 years.

7. The overall pit is roughly circular and approximately 6500 feet in diameter.

8. The information Conoco has developed with their interspaced drilling (250 foot grid) has indicated a uniform ore body gradewise. They anticipate no change to the west.

9. Conoco has an exploratory shaft in operation with approximately 1500 feet of heading advanced from the shaft, 1000 feet in the west direction and 500 feet in the east direction. From the west heading several cross cuts have been driven. The ground encountered to date has been adverse. They are standing sets every five feet and have to crib and block everything. They are not able to leave any exposed ground. The sets are being squeezed and the bottom is heaving in places. They have had to come back and stand sets every 2½ feet. The timber being used is 10 inches by 10 inches. The workings are approximately 700 feet deep.

10. Water problems have not been too bad. They are developing about 120 gallons per minute in the shaft. The early test dewatering well indicates they can pull the water down relatively well. However, it is too early to tell much.

11. The amount of stripping that Conoco in time will perform to the benefit of Asarco's mineralized zone is approximately 50 million tons (calculation made by Asarco).

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12. The original slope design was 1.3:1. Conoco has since changed to 1.2:1 but are waiting on a slope stability report from Dames and Moore in order to make a final decision.

13. The Conoco design proposed if the Asarco ground was acquired would put the tailing disposal on Asarco ground. This would be gravity, and no pumping costs would be involved. The site would be near the river, and the possibility of water pollution will raise its ugly head.

Looking at the situation, I would define it as the Eisenhower-Palo Verde-Asarco situation in reverse. Both sides can benefit from the unitized operation. It is just a question of what is equitable to both parties. If the operation is not unitized, Conoco will have a portion of their ore reserve locked up. Asarco will not be able to mine its own property as it is. Therefore, possibly some middle ground could be found. For the best operation of their property, Conoco needs control of the Asarco property. This would free a portion of their locked-in ore. Also, operating as a unitized pit could possibly make the Asarco mineralized area economical. Something of an equitable nature could possibly be compensation for the property with a royalty override on the locked-in ore and any possible Asarco ore. To retain an interest in the Conoco operation would possibly also incorporate any liability that may arise from the water problems that they are going to encounter.

Conoco was quite open in their discussion and answered all questions asked. It would appear that they are serious about the project. However, they still have a great many loose ends to pull together before the final decisions are made. The project may not look as attractive for the immediate future based on the various factors involved (pilot plant testing results, water problems and copper price) as they presently view the situation. They could quite possibly be more willing to negotiate at the present time than at a later date.

T. E. Scartaccini

T. E. Scartaccini

TES:ka
Attachments

cc: TASnedden
NVisnes
JJCcollins
WLKurtz
JHCourtright

6/18/75
CONOCO

CUT-OFF COMPARISONS

	.15		.20		.25		.30	
	TONS X 10 ⁶	GRADE	TONS X 10 ⁶	GRADE	TONS X 10 ⁶	GRADE	TONS X 10 ⁶	GRADE
CONOCO OX.	193	.32	156	.36	127	.39	63	.50
ASARCO OX.	84	.36	78	.38	58	.52	40	.63
TOTAL OX.	277	.33	234	.37	185	.43	103	.55
CONOCO SUL.	150	.27	140	.28	65	.32	28	.42
ASARCO SUL.	60	.35	49	.39	42	.42	40	.45
TOTAL SUL.	210	.29	189	.31	107	.36	68	.44
CONOCO TOTAL	343	.30	296	.32	192	.37	91	.47
ASARCO TOTAL	144	.36	127	.38	100	.48	80	.54
TOTAL	487	.32	423	.34	292	.41	171	.50
* STRIPPING RATIO	5.1 : 1 TO 4.2 : 1		5.7 : 1 TO 4.7 : 1		8.9 : 1 TO 7.5 : 1		16.0 : 1 TO 13.5 : 1	

* RANGE

cut file
 Post-BHP
 Conoco data

ASARCO

JJC, Tom Scarfina
Sec. Faccini (TEC)

Posto Butte - Conoco

~~WELK, JHC~~

6-19-75 -

Conoco

Ludvig Koch, UP Expl + Operations
Alex Bissett -
Frank Buchalla
Phil Mason

Pit approx circular as planned - 7000' dia.
2000' deep - w/o - 2/1

Running pilot plant - vat leach - 75% recovery
- 100% recov of acid sol copper - have just
started agitation leach - also running flotation on sulf.

Oxide ore - .46 on .26 cut off
Sulfide " - .41 on .20 " "

Then calc. on Asarco ground 30 cut off :
Oxide 40 m at .63
Sul 40 m .45

Comm. calc.

Comb AR + Cons 171 .50 13/1 w/o
Average ore ^{zone} - majority in Pre E gr - \neq 2/1 sulf
in potassic zone cp4/py - 2/1

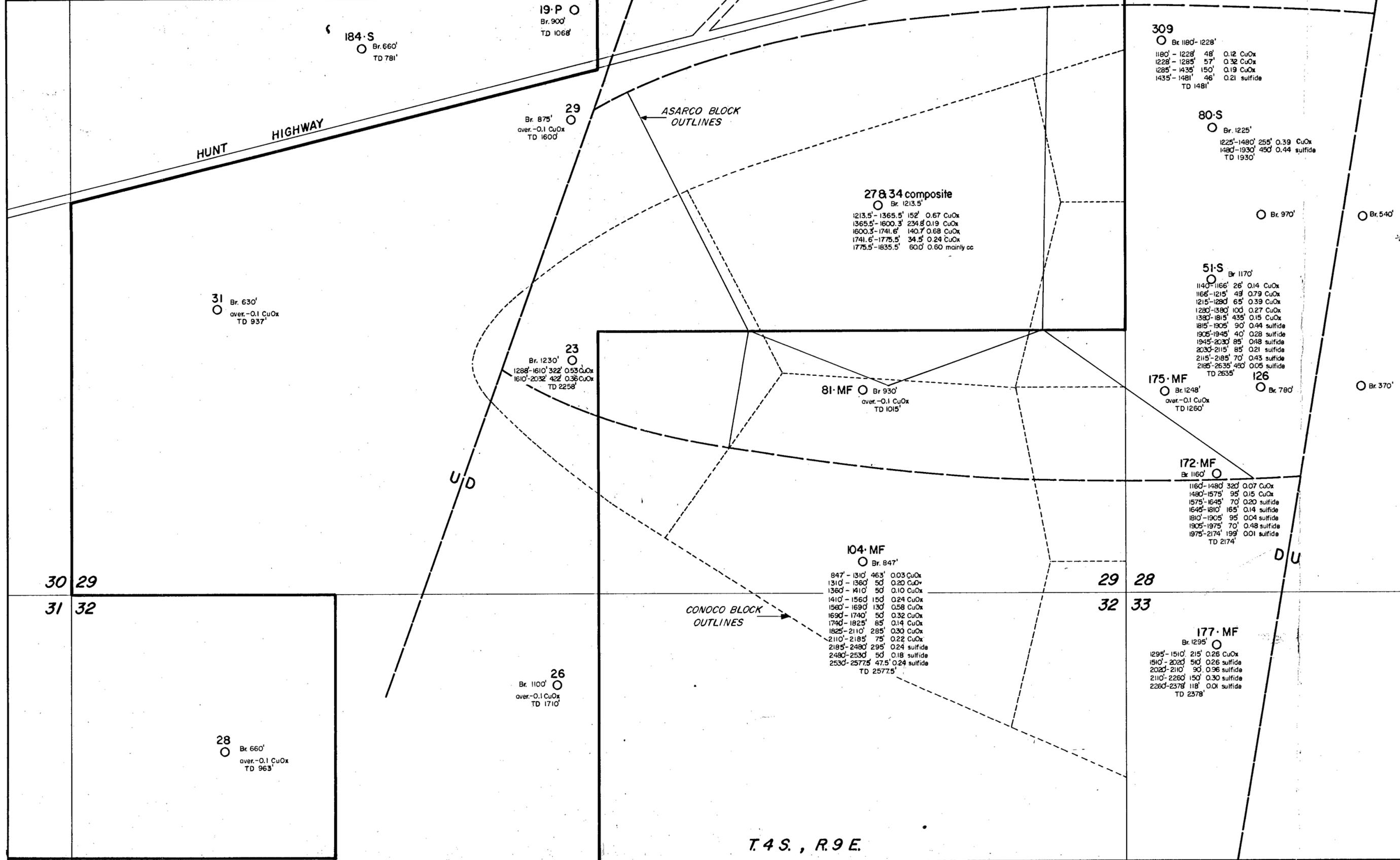
ASARCO Calc

combined blocks 259 m - .47 4/0 ?

60 m pre mine

120 m oxide plant at 30,000 tpd

JHC



oxide grade
 RBC { ASARCO - 175 @ .465
 Conoco 83 @ .34 }
 (15)

Con - { ASARCO 144 @ .36
 Conoco 343 @ .30 }

Conoco spend 60 m - Halperny
 12-5-75

Sul A 44 m 127
 C

file Posten Butte

J.H.C.
DEC 5 1975