



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the
James Doyle Sell Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

I had it on my list to have

FROM: J. H. COURTRIGHT

2-28-80

TCO or Ralph Hanreus contact

TO:

WKK - ~~16~~

Km because all contacts at
Some time ago. Doug Smith
my pet had failed in
dig up some data - (notes

on some examination) and
Chuck Barber inquired about
estimated Red Mt. (Patagonia)
status of Red Mt. last week
may contain .04 Mo in the
and wanted to know if
± 1.00% Cu zone — This
we had contacted Km.
Caused me to think again

about the possible 15

SKarn potential —

which might be at

least a miniature of

Carr Fork! I

Suggest contacting

Kerr McGee (casually, of

course) on the possibility

of a T.V.

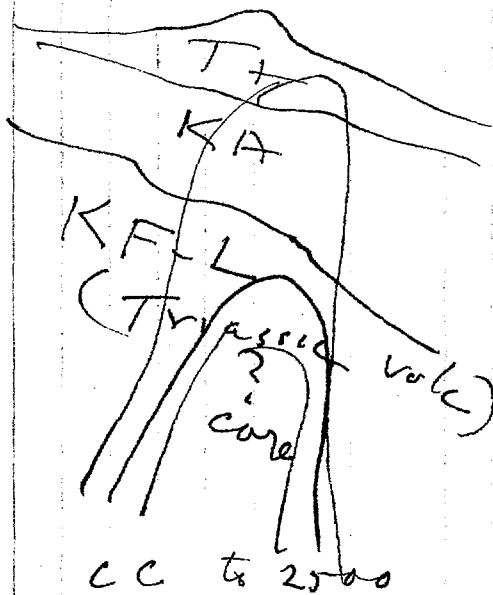
JHC.

1/28/80

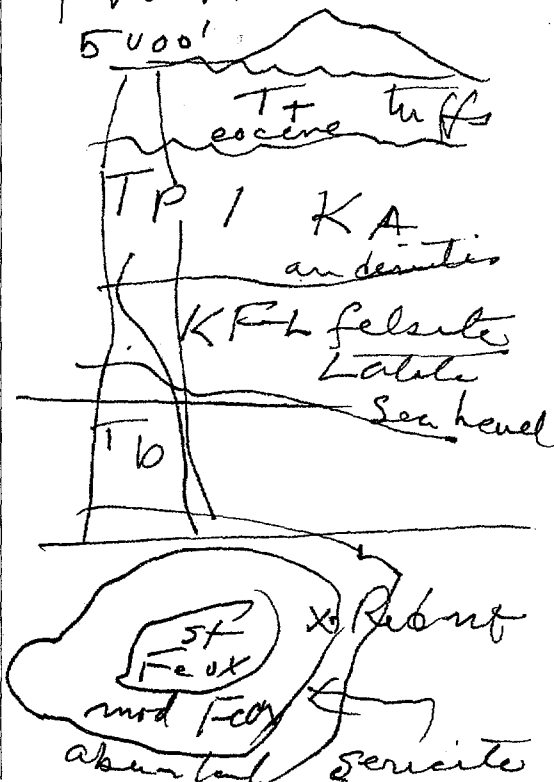
FROM: DOUGLAS M. SMITH, JR.

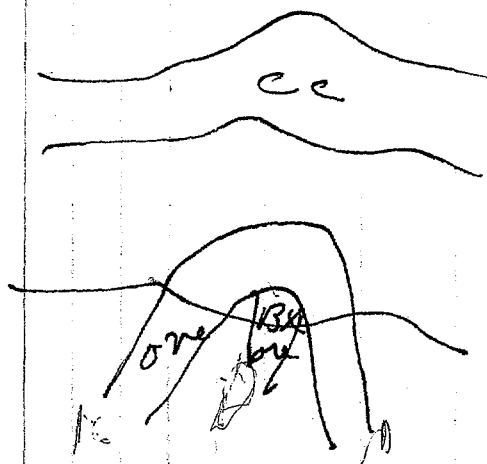
TO: J. H. C.

Dave Wolfe has no specific knowledge of the moly grade at Kerr-McGee's Red Mountain property. Judging from two assay logs he showed me I would guess the MoS_2 content of the hypogene Cu zone to be on the order of 0.06% which puts it second only to Mineral Park (0.06% MoS_2) in the U.S. (producers).

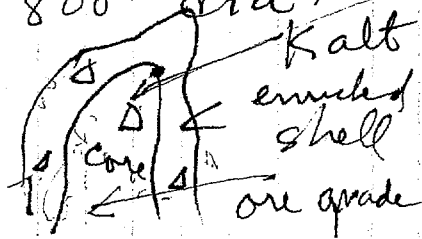


In Qumron
Red mt -
Frank Schoender
5000'



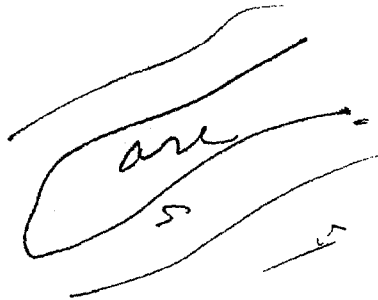


BX top at
 1700' elev - 1100' long axis
 ± 800' dia



ore between
500' + 1500'
elev. —

shell — potassic
inverted dome
low gr core

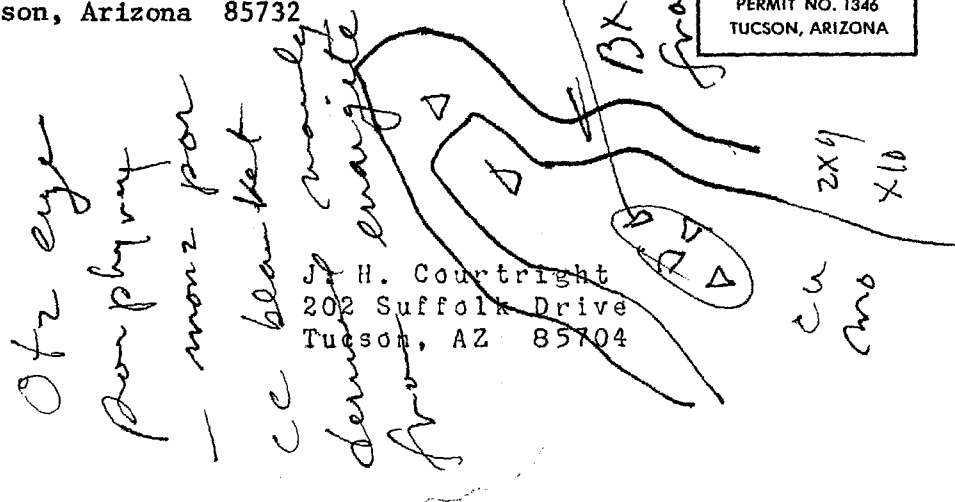


Michael R. Wolfhard, Secretary
Arizona Geological Society
P.O. Box 13628
Tucson, Arizona 85732

NON-PROFIT ORG.

U.S. POSTAGE
PAID

PERMIT NO. 1346
TUCSON, ARIZONA



ARIZONA GEOLOGICAL SOCIETY DINNER MEETING

Tuesday, October 6, 1981

THE HILTON INN, 1601 Miracle Mile Strip

SPEAKER: Jim Quinlan, Kerr McGee Corporation

SUBJECT: The Geology of the Red Mountain Porphyry
Copper Deposit, Patagonia, Arizona

Dinner reservations must be made before
5:00 p.m. on the Friday prior to the
meeting date.

SOCIAL HOUR	6:00 p.m.	MEMBER'S DINNER	\$7.00
DINNER	7:00 p.m.	NONMEMBER'S DINNER	\$9.00
MEETING	8:00 p.m.	STUDENT DINNER	\$3.50

JHC →

19 NOV 82

RED MTN. RESOURCES - 1980
Kearney-McGee

Thickness		m.t.	% Cu	% Mo	oz Au	oz Ag
760-1100'	* Breccia Pipe	49	1.14	.025	.004	0.15
200-1200'	WEST BLOCK	223	0.54	.005	.003	0.13
250-425'	EAST BLOCK	67	0.47	.010	.002	0.08
200-300'	CORE	46	0.36	.007	.001	0.09

⇒ Aggregate	385	0.58	0.009	.003	0.12
* Highgrade * Rimed pipe (60' min)	14	1.85	0.060	.004	0.25

F.R.H.

These are NOT for Direct QUOTATIONS
OUTSIDE ASARCO.

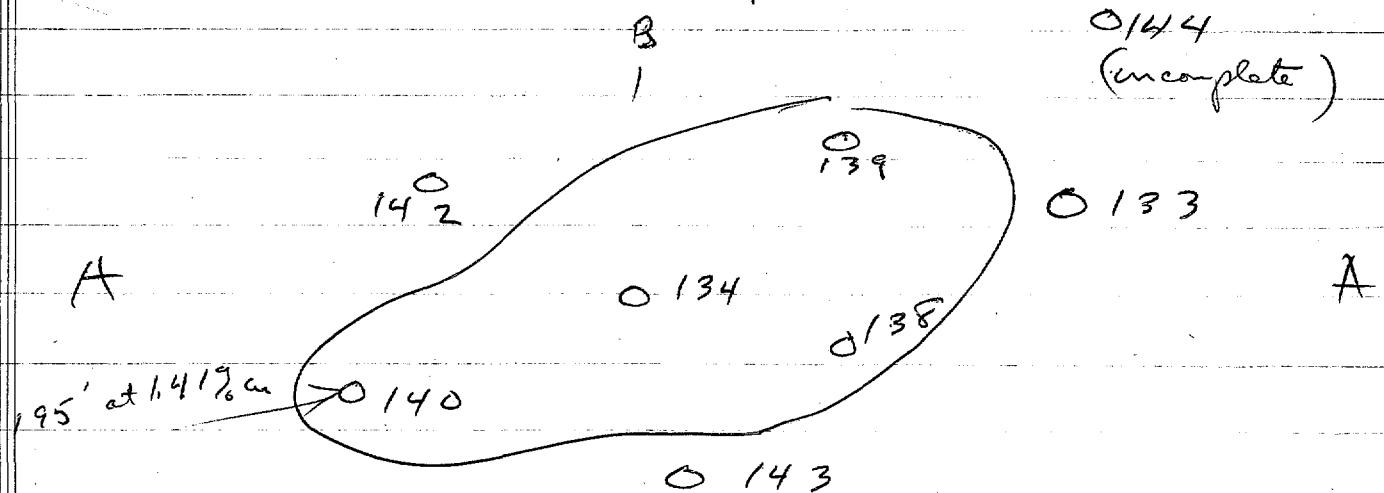
DATA from our 1981 review of Kearney-McGee DATA

9-13-72
Red Crest

JDL - 6-2-72 -

Ore zone 1600 x 2800

200 m assuming av 600' Thick



JDL - 9-6-70

~~210~~ 210 m tons 1.61% Cu -

Upper blk - 134, 138, 140
(incl dil 10% with .25 Cu)

98 mil @ .66% Cu

lower 134, 139

11.1 mil @ .58 -

JW Still - Oct 23, 1970

127 mil at sltly over .70% Cu

or .70 - .77 range

134	3620 - 3920 = 300'	@ .77
	4910 - 5194 = 284	.73
138	4410 - 4775 = 365	.72
139	4505 - 5050 = 545	.73
140	4505 - 4700 = 195	1.41

mill — ^{\$}1600 per ton day

mining 2.25
mill .80

Adm + gen 1.45

to conc. 3.50

FS+R @ 94/16 1.13

total op cost 4.63

7.56

4.63

Operating margin 2.93

Yr metal sales \$15,382,000

Dep at 34/16 1,984

Depletion 5,060

Taxable inc 8,337

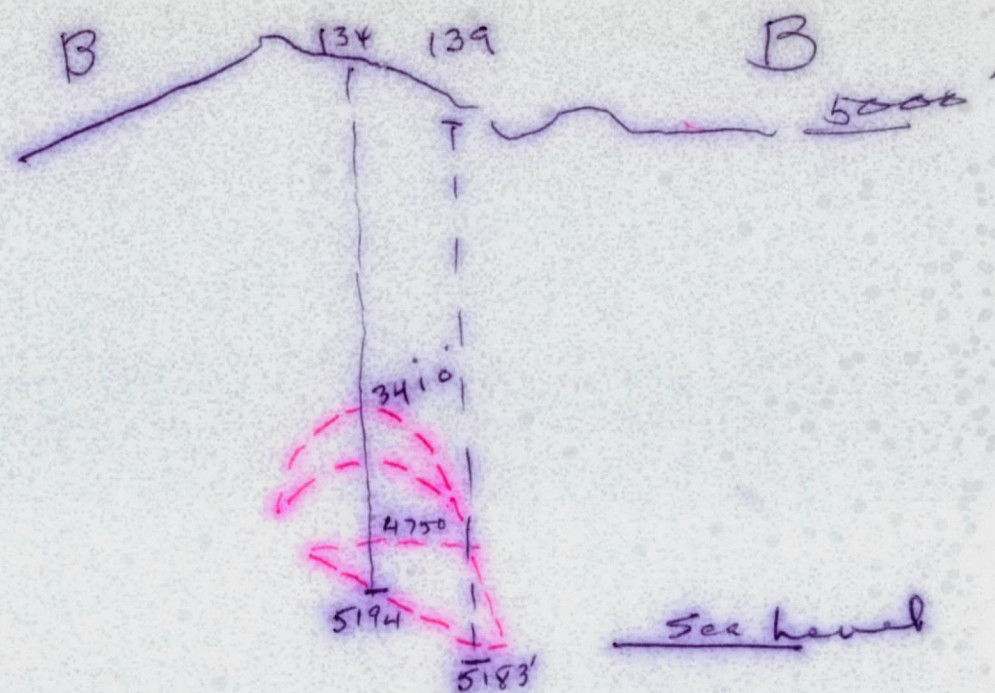
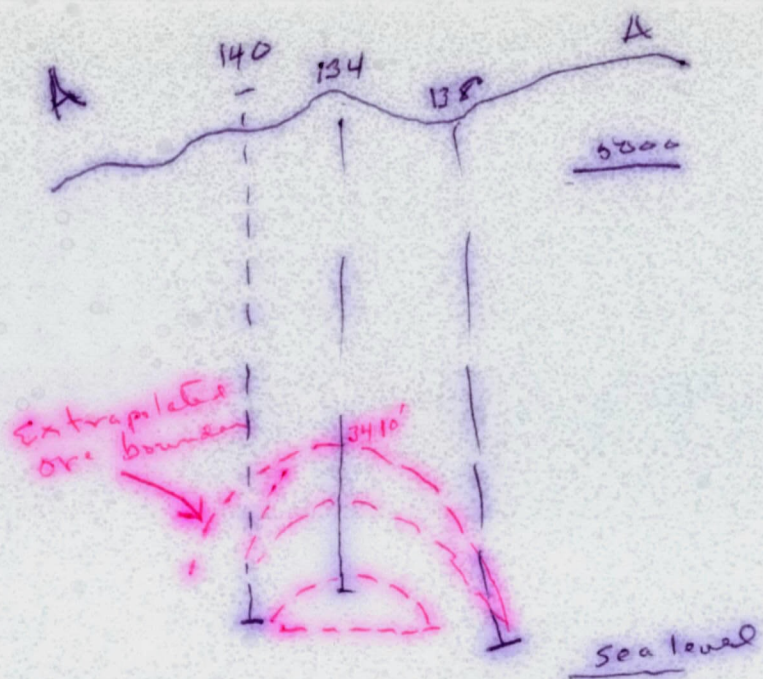
incor tax at 53% 4,418

Cash Flow \$10,963

~~Capex~~ 5 yr pay off —

at 14.3% \$76,745


Cap est at 15000 tpd — \$74,093,900



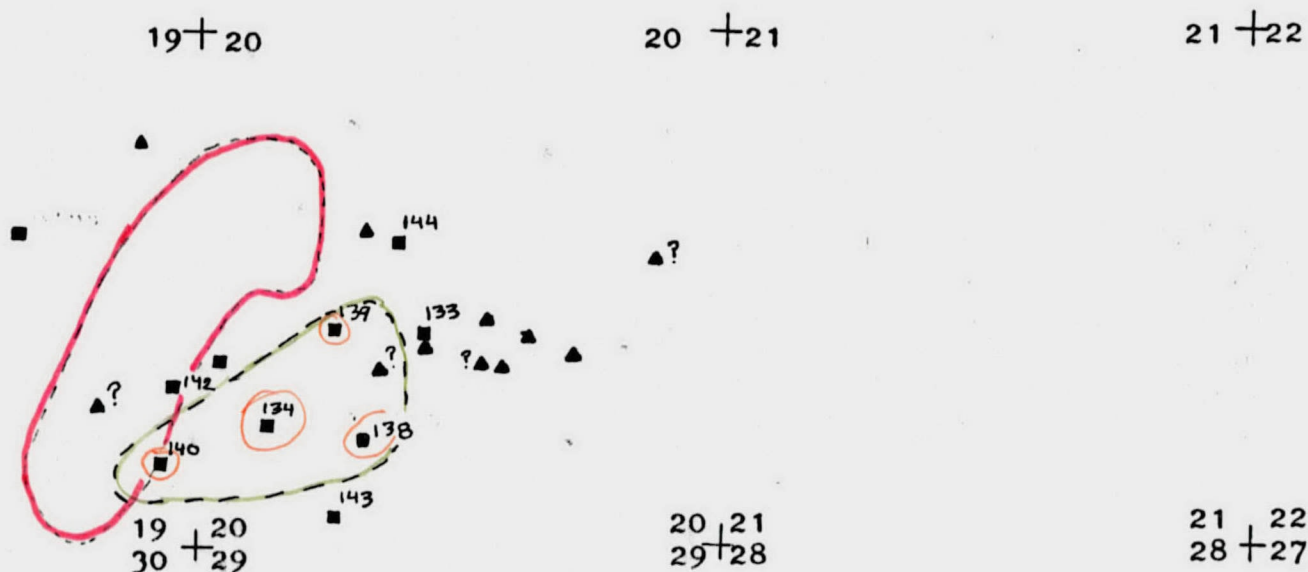


outline of Kerr-McGee molybdenum anomaly

AMERICAN SMELTING AND REFINING COMPANY

<i>area</i> RED MOUNTAIN - PATAGONIA	<i>data by</i>	<i>state</i> Arizona	<i>township-range</i> 122S;11E	<i>revisions - date</i>
<i>title</i> LOCATION MAP	<i>drawn by</i>	<i>county</i> Santa Cruz	<i>map number</i>	PLATE
<i>mining district</i> Harshaw	<i>date</i> Sept. 72			

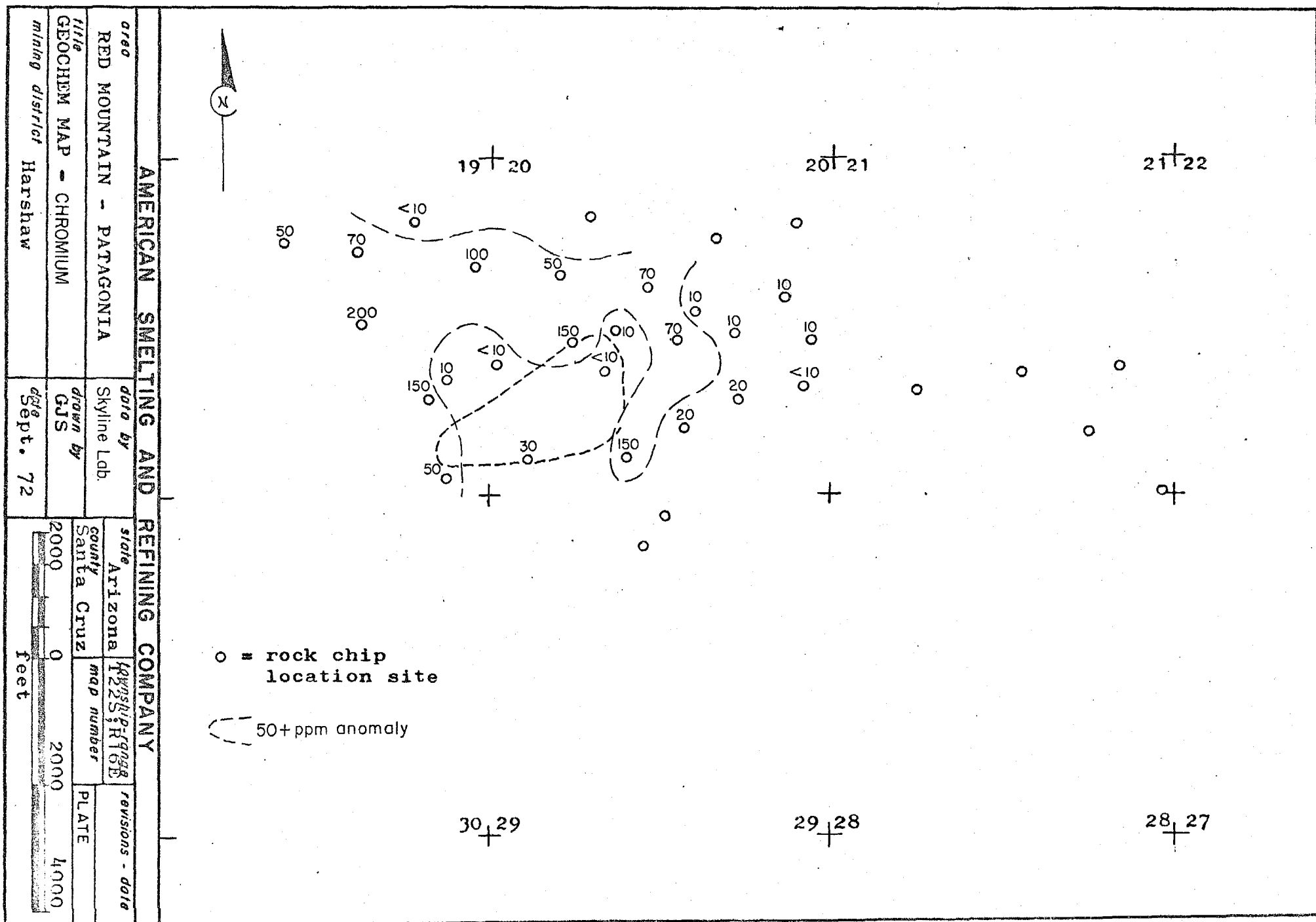
area		data by		style		revisions - date	
RED MOUNTAIN - PATAGONIA		GJS		Arizona		12-25-72	
title		drawn by		county		map number	
DRILL HOLE LOCATION MAP		GJS		Santa Cruz		PLATE	
mining district		date		feet			
Harshaw		Sept. 72		0 2000 4000			

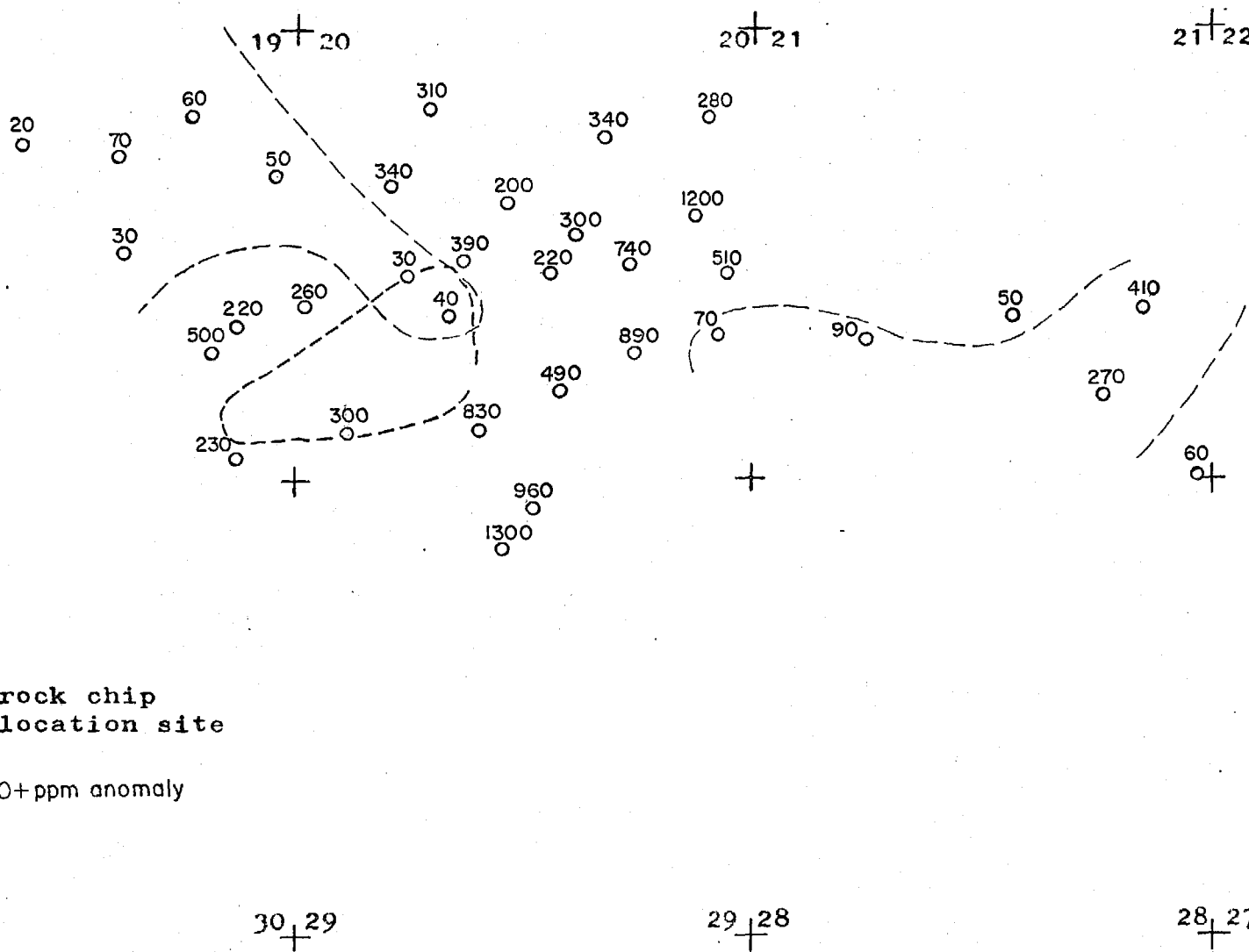


- ▲ old d.h.
- new d.h.
- ? d.h. covered
probable loc.

Drill Hole #	Final Depth (ft.)	Depth to Primary Ore (ft.)
133	5001	none
134	5194	3410 & 4750
138	5046	4410
139	5188	4595
140	5145	4505
142	5229	no ore grade
143	5231	no ore grade
144	1622	

--- "Possible" core of orebody (after Still, Lowell, & Still, June 72) --- monzonite porphyry (Kerr-McGee)

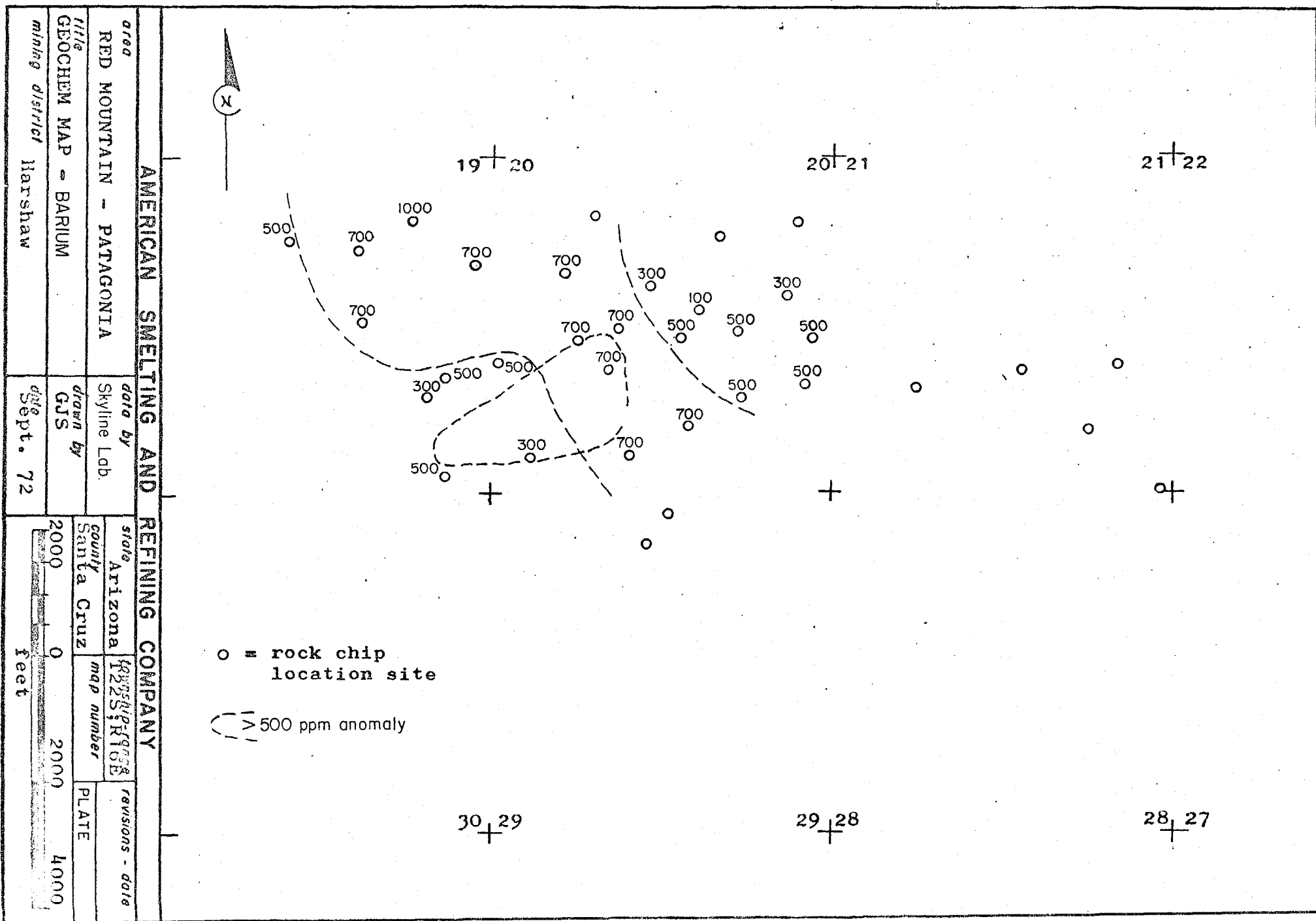


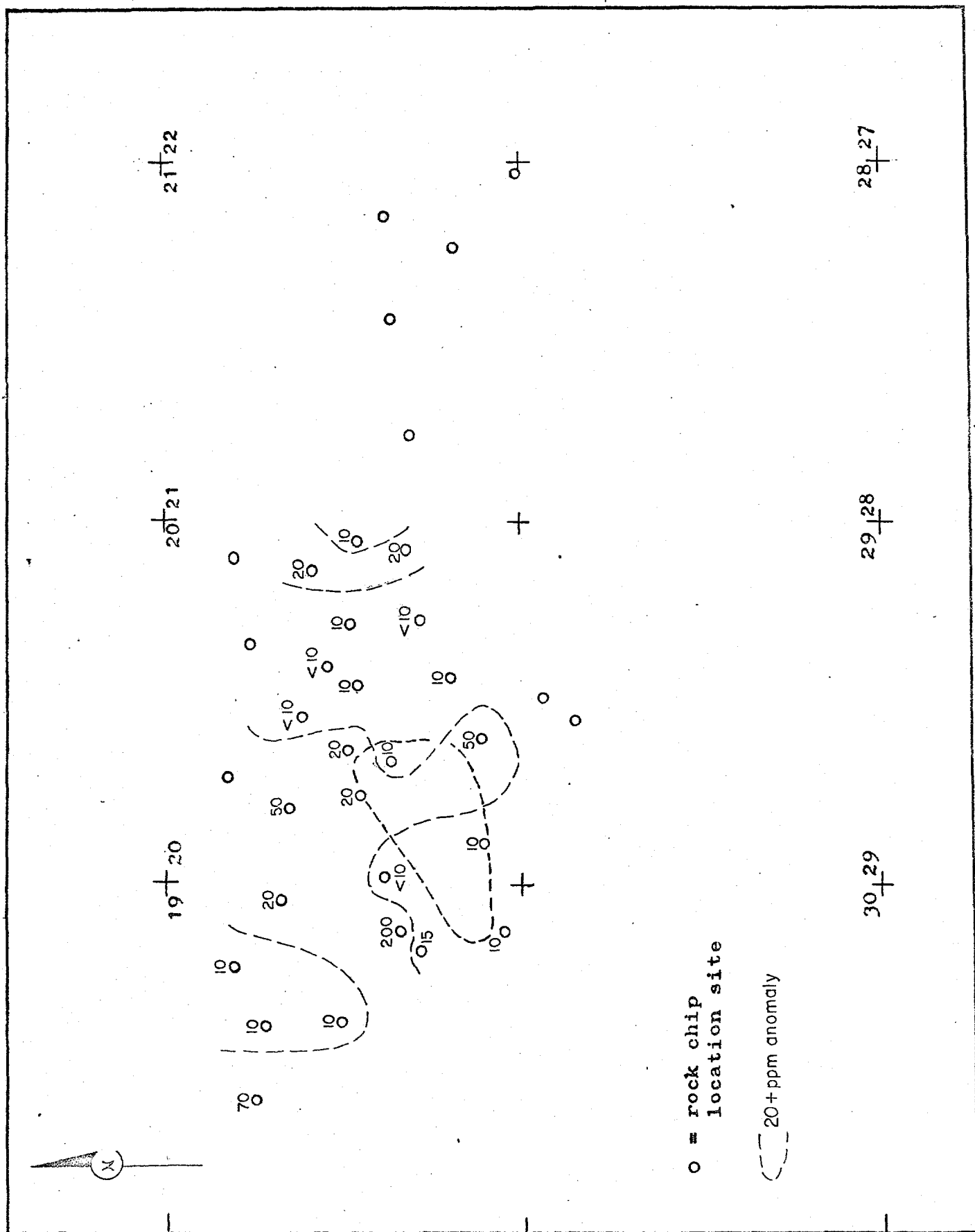


0 = rock chip
location site

() 100+ ppm anomaly

AMERICAN SMELTING AND REFINING COMPANY				
<i>area</i>			<i>date by</i>	
RED MOUNTAIN - PATAGONIA			RMGC	
<i>title</i>			<i>drawn by</i>	
GEOCHEM MAP - LEAD			GJS	
<i>mining district</i>			<i>date</i>	
Harshaw			Sept. 72	
		<i>state</i>	<i>county</i>	<i>shipments</i>
		Arizona	Santa Cruz	1225, 1110E
			<i>map number</i>	
		2000	0	2000
		feet		
		PLATE		
		revisions - date		
		4000		





AMERICAN SMELTING AND REFINING COMPANY				
area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	Skyline Lab.	Arizona	T22S; R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - BORON	GJS	Santa Cruz		
mining district	date	<div> <div>2000</div> <div>0</div> <div>2000</div> <div>4000</div> </div> <div>feet</div>		
Harshaw	Sept. 72			



21+22

290+

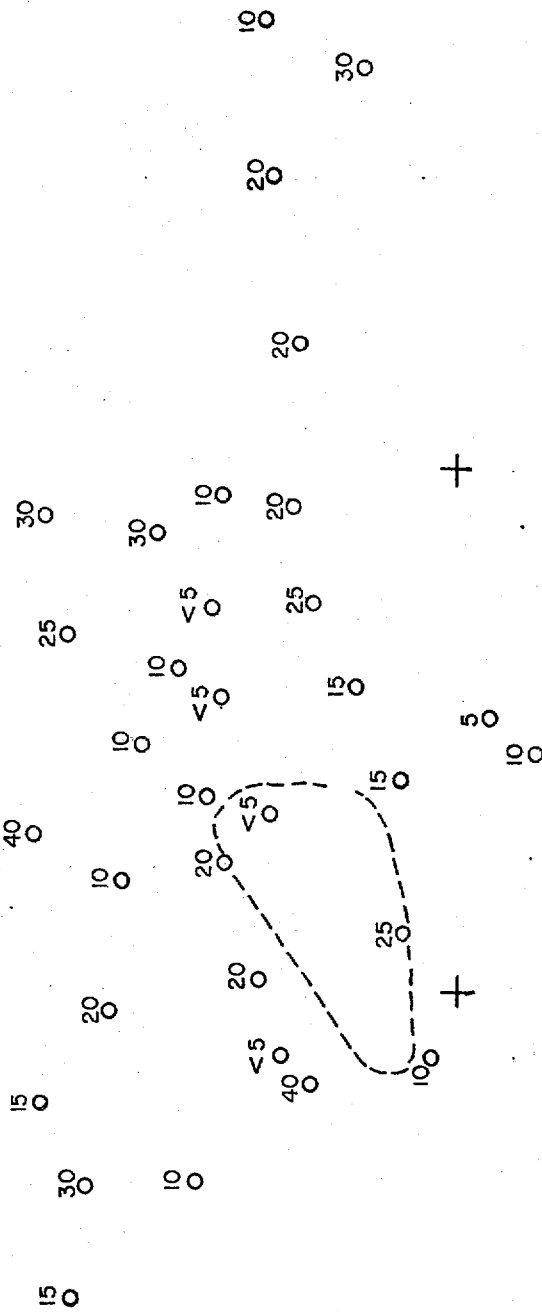
28+27

20+21

29+28

19+20

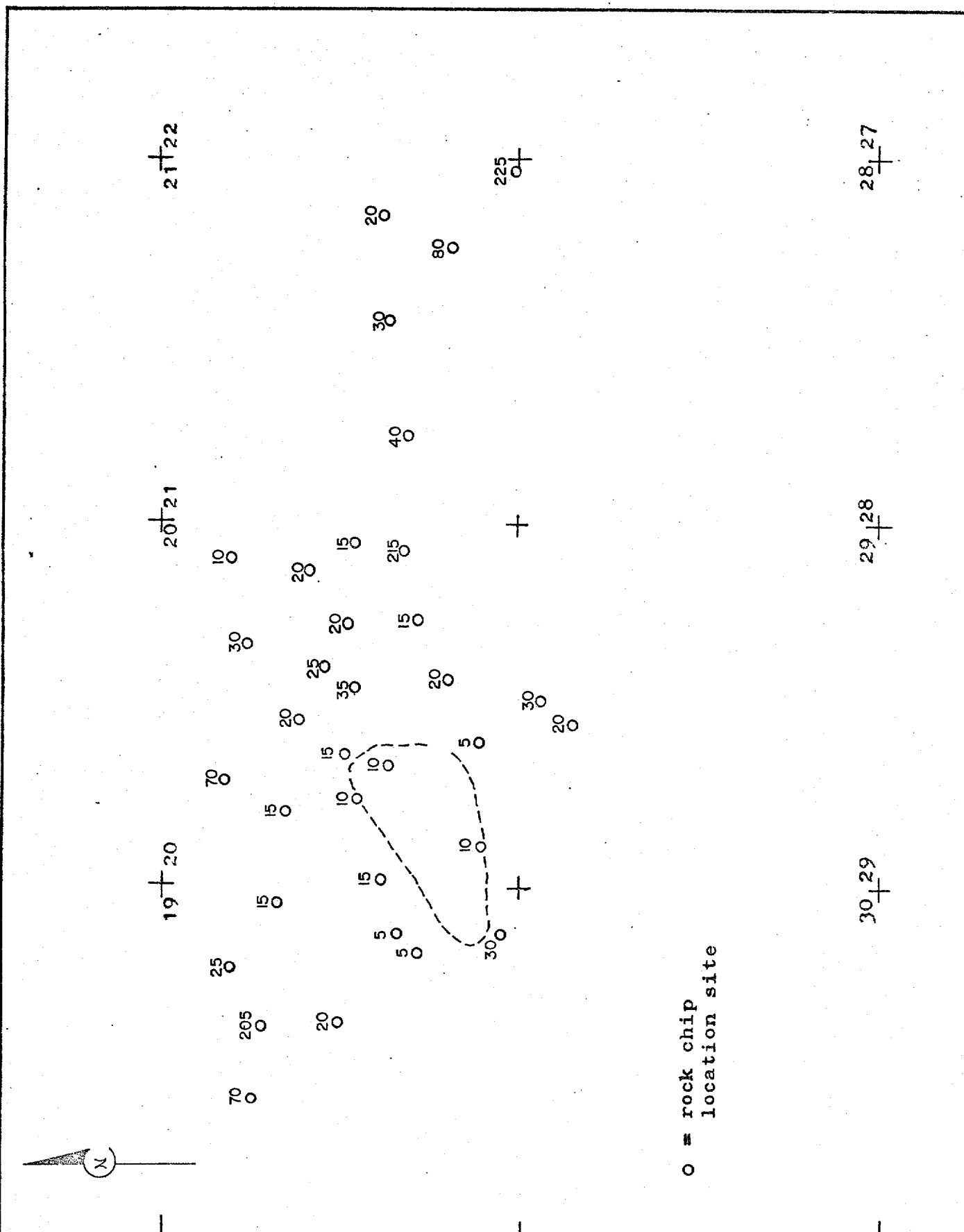
30+29



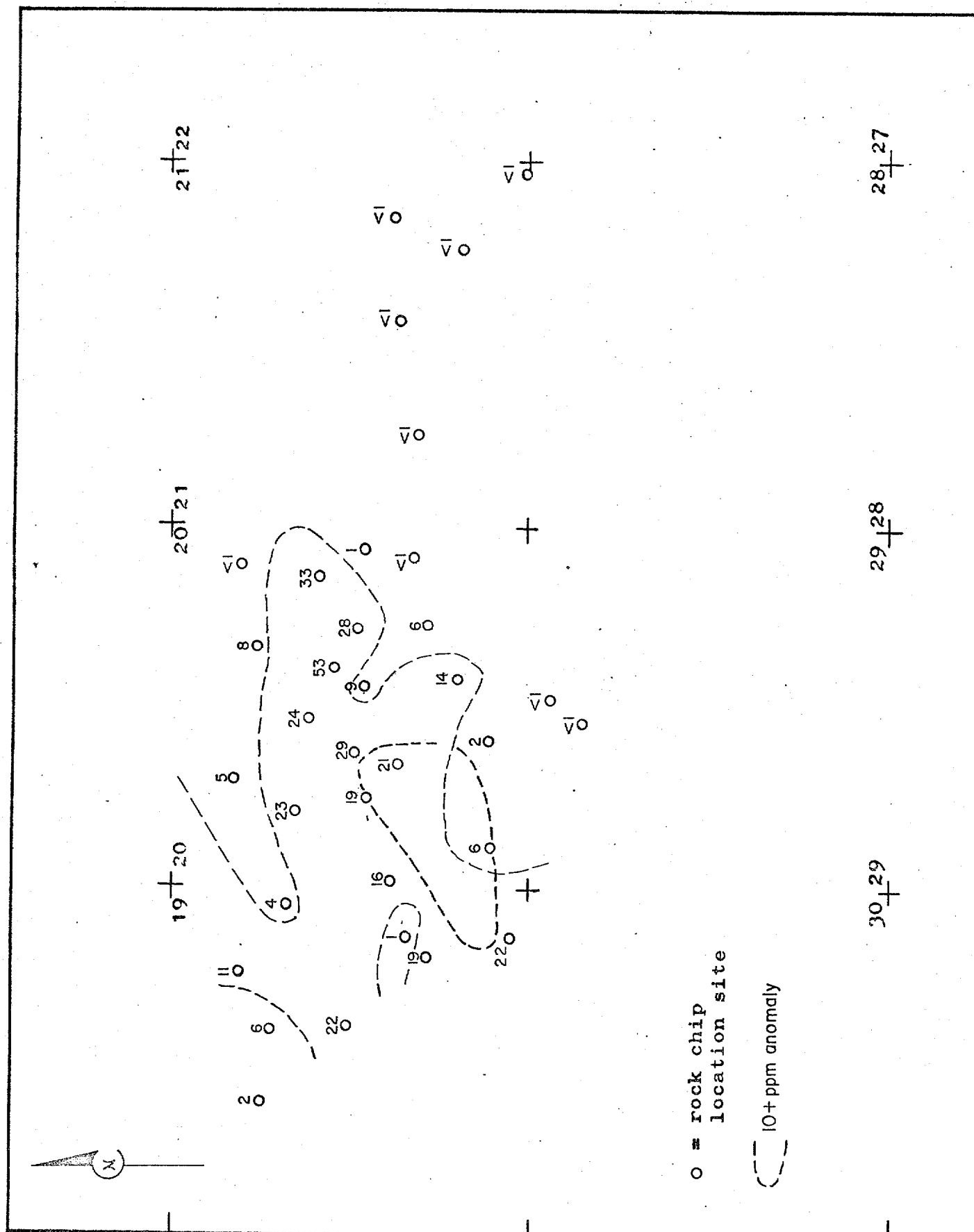
o = rock chip
+ = location site

AMERICAN SMELTING AND REFINING COMPANY

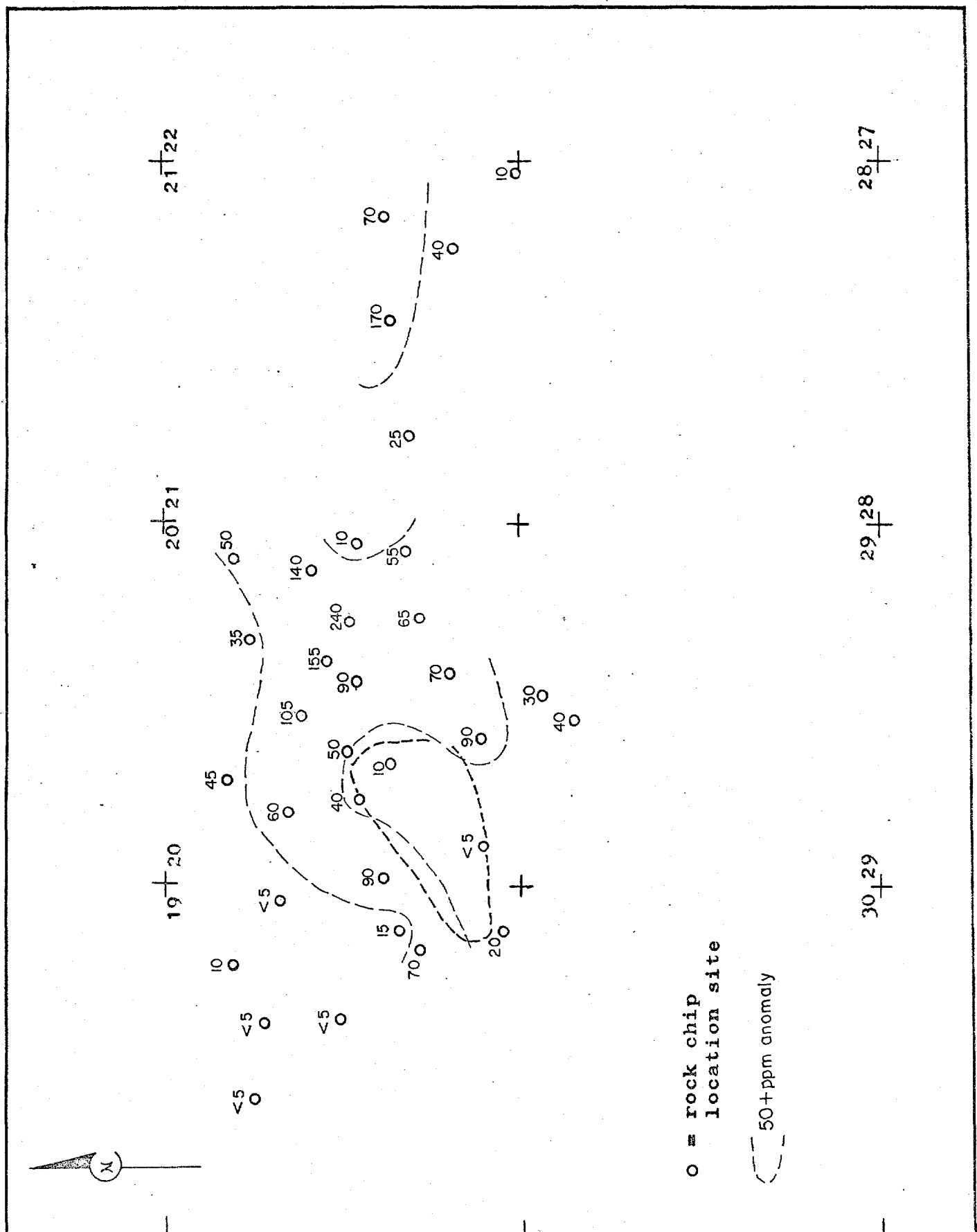
area RED MOUNTAIN - PATAGONIA	data by RMGC	state Arizona	township-range T22S;R16E	revisions - date
title GEOCHEM MAP - ZINC	drawn by GJS	county Santa Cruz	map number	PLATE
mining district Harshaw	date Sept. 72	<div> <div>2000</div> <div>0</div> <div>2000</div> <div>4000</div> </div> <div>feet</div>		



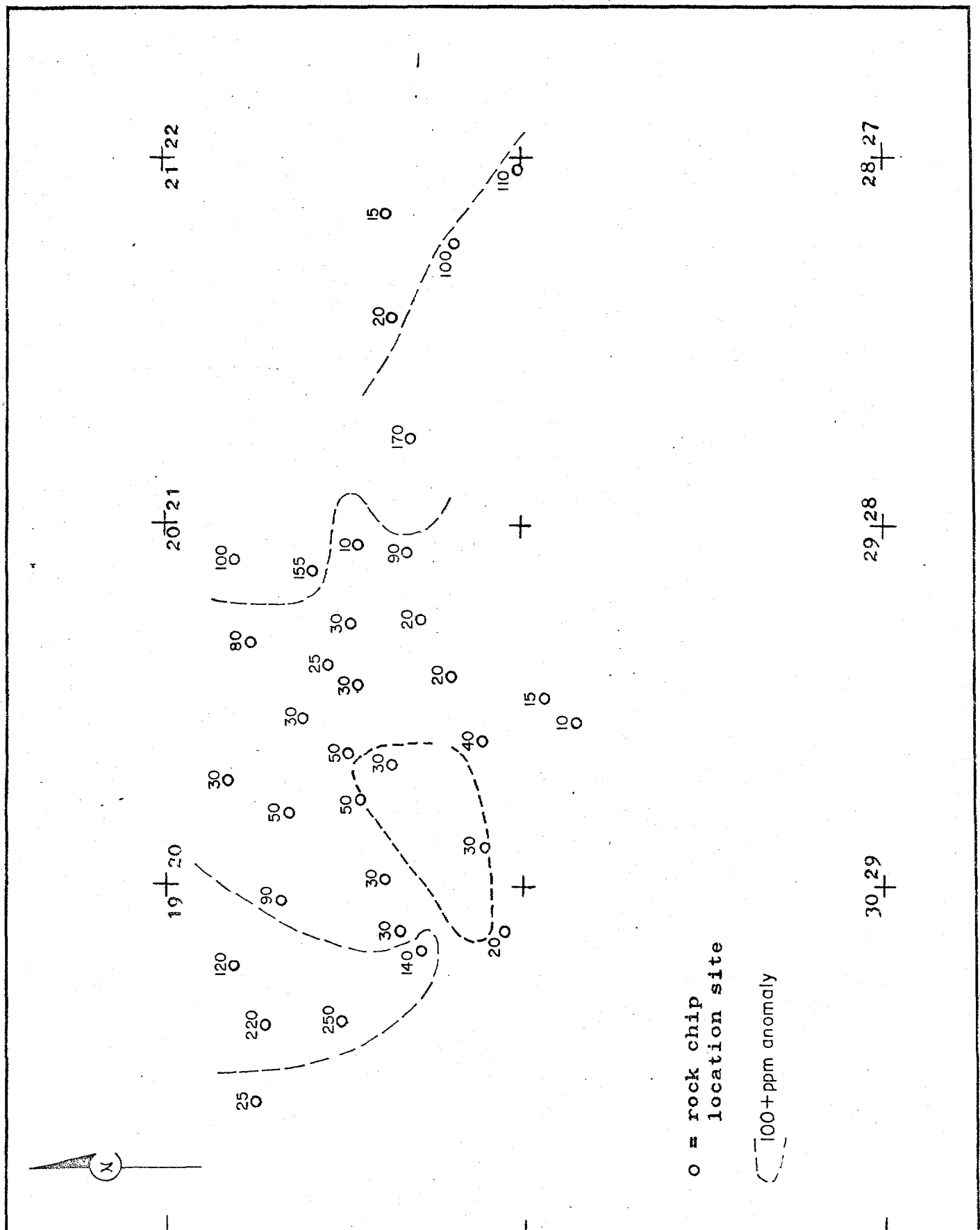
AMERICAN SMELTING AND REFINING COMPANY				
area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	RMGC	Arizona	1228; R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - MANGANESE	GJS	Santa Cruz		
mining district	date	2000 0 2000 4000		
Harshaw	Sept. 72	feet		




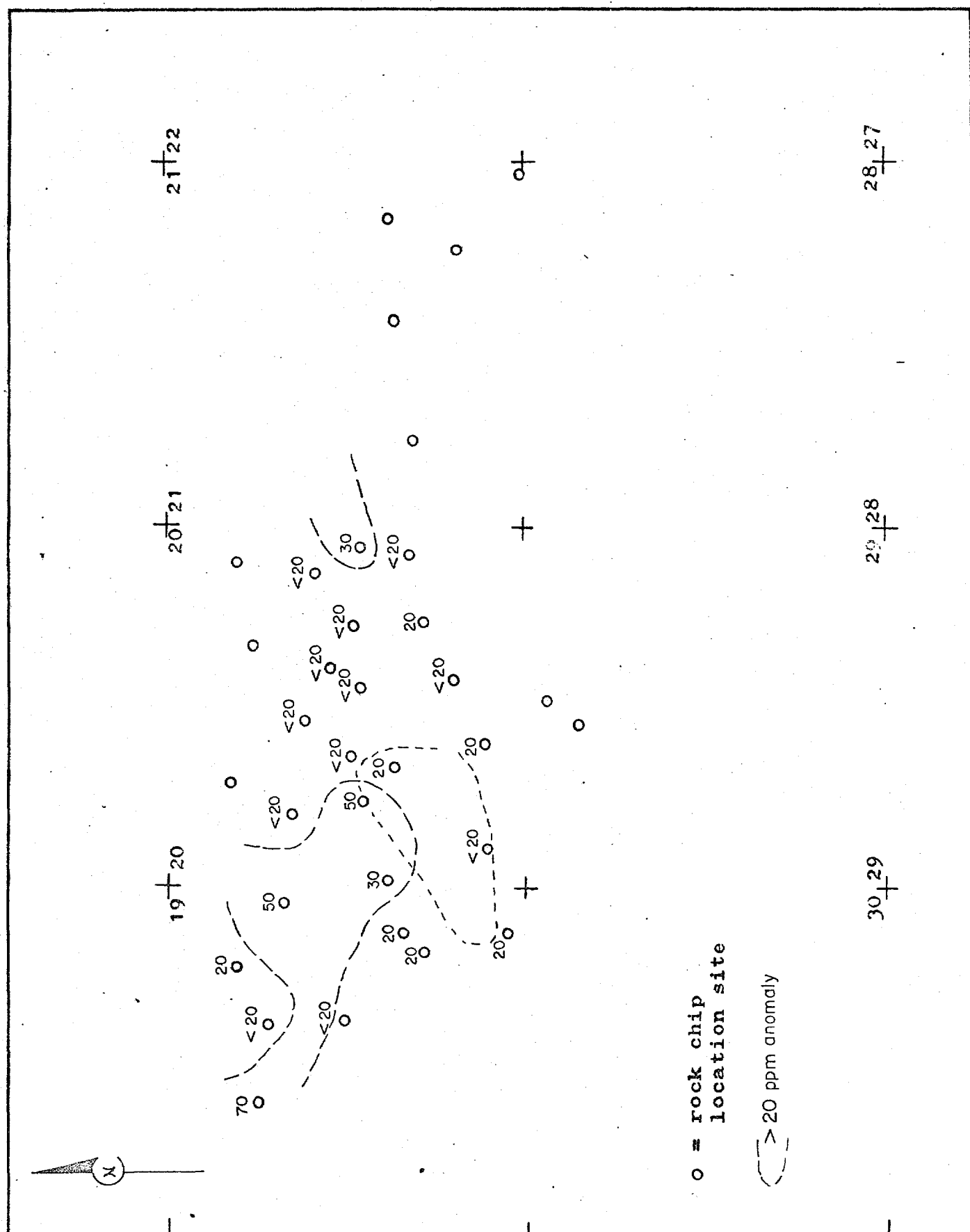
AMERICAN SMELTING AND REFINING COMPANY				
area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	RMGC	Arizona	122S-11E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - MOLYBDENUM	GJS	Santa Cruz		
mining district	date	2000 0 2000 4000		
Harshaw	Sept. 72	feet		



AMERICAN SMELTING AND REFINING COMPANY						
area		data by		state	township-range	revisions -- date
RED MOUNTAIN - PATAGONIA		RMGC		Arizona	T22S;R10E	
title		drawn by		county	map number	PLATE
GEOCHEM MAP - ARSENIC		GJS		Santa Cruz		
mining district		date		2000 0 2000 4000		
Harshaw		Sept. 72		feet		



AMERICAN SMELTING AND REFINING COMPANY						
area		data by		state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA		RMGC		Arizona	T22S; R10E	
title		drawn by		county	map number	PLATE
GEOCHEM MAP - COPPER		GJS		Santa Cruz		
mining district		date				
Harshaw		Sept. 72		feet		



AMERICAN SMELTING AND REFINING COMPANY				
area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	Skyline lab	Arizona	1225;R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - LANTHANUM	GJS	Santa Cruz		
mining district	date	2000 0 2000 4000 feet		
Harshaw	Sept. 72			



21+22

20+21

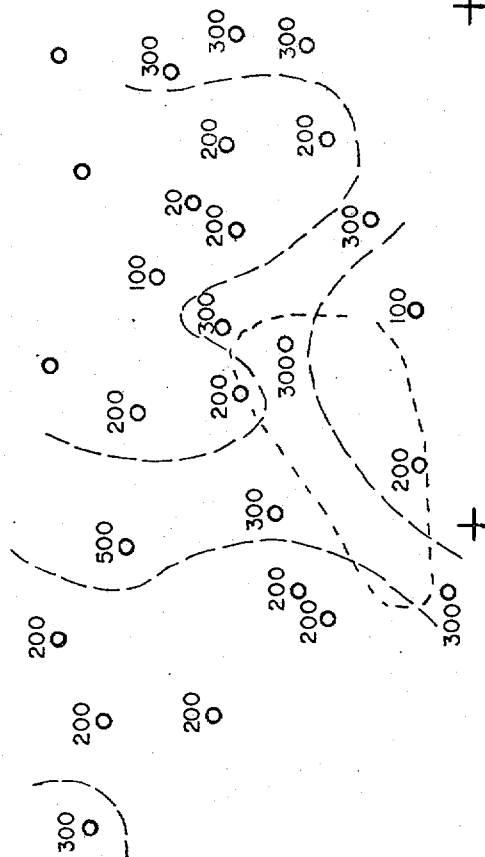
19+20

+

28+27

29+28

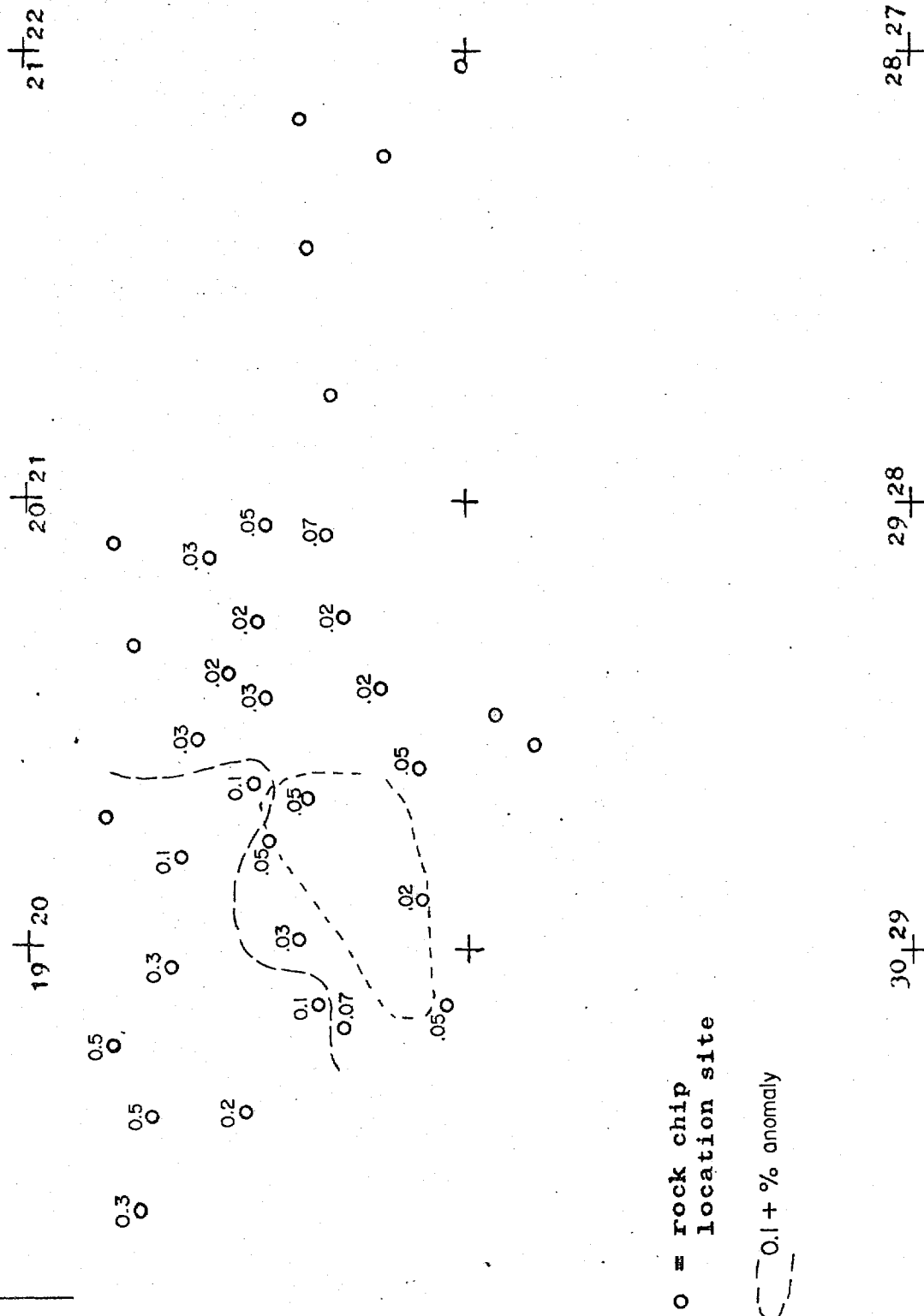
30+29



○ = rock chip
location site
--- 300+ ppm anomaly

AMERICAN SMELTING AND REFINING COMPANY

area RED MOUNTAIN - PATAGONIA	data by Skyline lab	state Arizona	township-range T22S; R16E	revisions - date
title GEOCHEM MAP - ZIRCONIUM	drawn by GJS	county Santa Cruz	map number	PLATE
mining district Harshaw	date Sept. 72	<div> <div>2000</div> <div>0</div> <div>2000</div> <div>4000</div> </div> <div>feet</div>		



AMERICAN SMELTING AND REFINING COMPANY

area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	Skyline lab	Arizona	T22S; R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - MAGNESIUM	GJS	Santa Cruz		
mining district	date	feet		
Harshaw	Sept. 72			



21+22

20+21

19+20

+

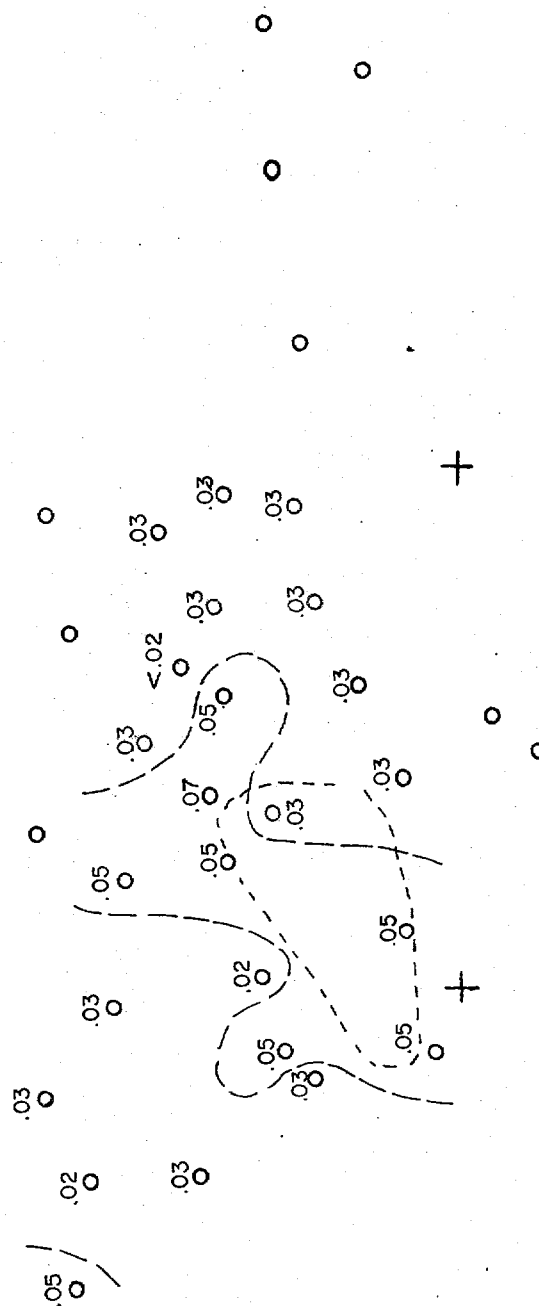
+

+

28+27

29+28

30+29



o = rock chip
location site

(---) 0.05 + % anomaly

AMERICAN SMELTING AND REFINING COMPANY

area	data by	state	low/high range	revisions - date
RED MOUNTAIN - PATAGONIA	Skyline lab	Arizona	1225:R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - CALCIUM	GJS	Santa Cruz		
mining district	date	2000	0	2000
Harshaw	Sept. 72			4000
			feet	



21+22

+

28+27

20+21

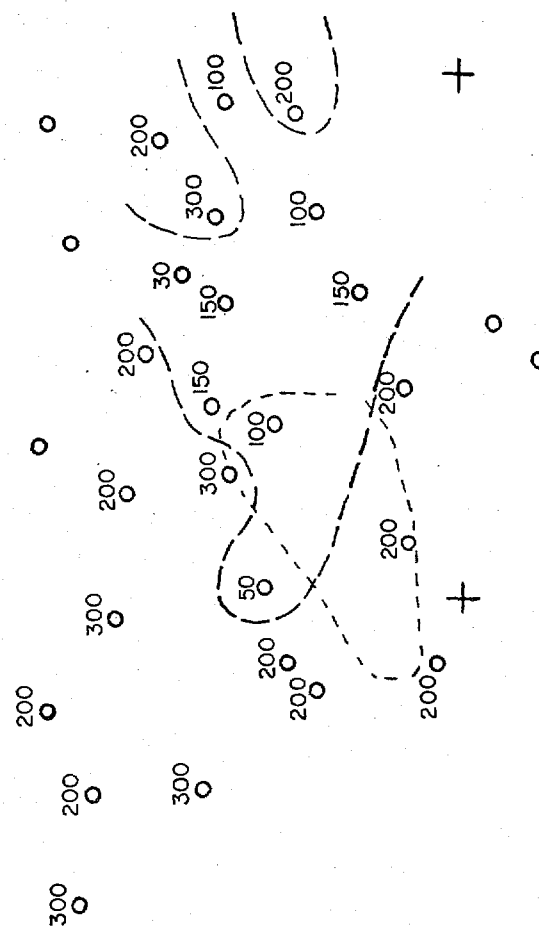
+

29+28

19+20

+

30+29



o = rock chip
location site
200+ppm anomaly

AMERICAN SMELTING AND REFINING COMPANY

area RED MOUNTAIN - PATAGONIA	data by Skyline lab	state Arizona	township-range 122S; R10E	revisions - date
title GEOCHEM MAP - VANADIUM	drawn by GJS	county Santa Cruz	map number	PLATE
mining district Harshaw	date Sept. 72	2000	0	2000 4000
				feet



21+22

20+21

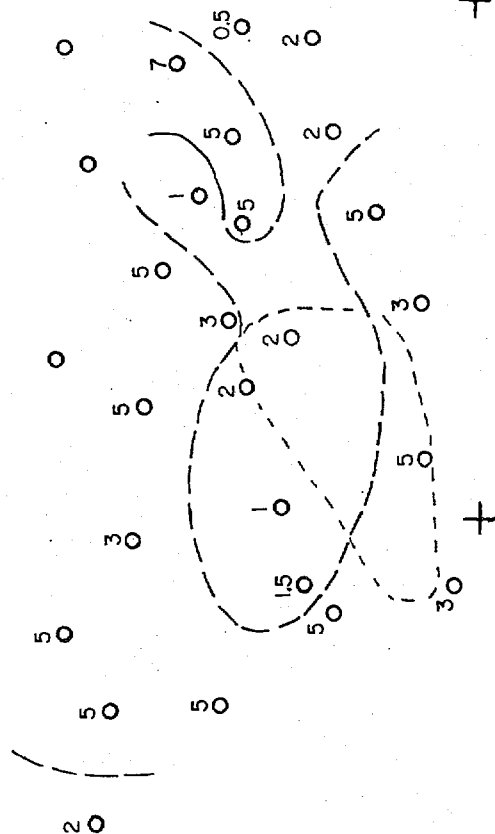
19+20

0+

28+27

29+28

30+29



○ = rock chip
location site

--- 3+ % anomaly

AMERICAN SMELTING AND REFINING COMPANY

area RED MOUNTAIN - PATAGONIA	data by Skyline lab	state Arizona	township-range T22S; R10E	revisions - date
title GEOCHEM MAP - IRON	drawn by GJS	county Santa Cruz	map number	PLATE
mining district Harshaw	date Sept. 72	2000	0	2000 4000
feet				



21+22

+

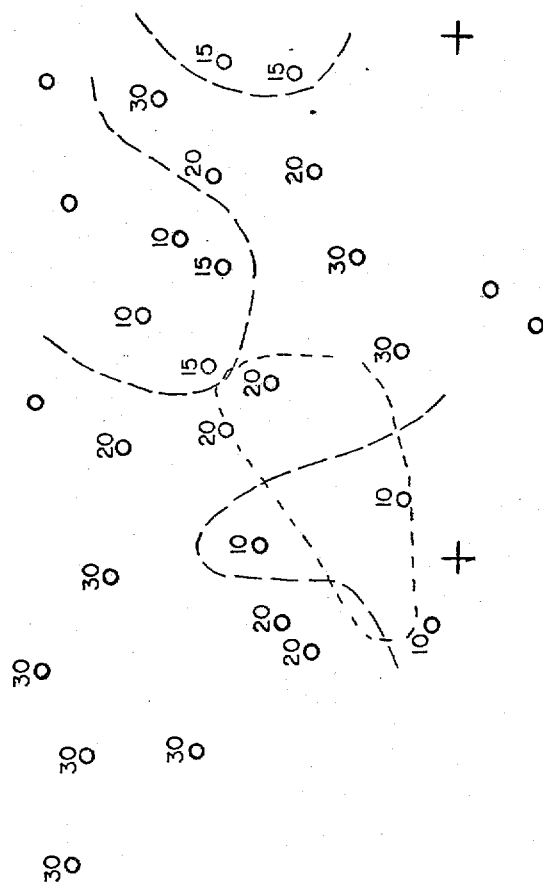
28+27

20+21

29+28

19+20

30+29



o = rock chip
location site
- - - 20+ppm anomaly

AMERICAN SMELTING AND REFINING COMPANY

area	data by	state	township-range	revisions - date
RED MOUNTAIN - PATAGONIA	Skyline lab	Arizona	T22S;R10E	
title	drawn by	county	map number	PLATE
GEOCHEM MAP - GALLIUM	GJS	Santa Cruz		
mining district	date	2000 0 2000 4000		
Harshaw	Sept. 72	feet		

March 3, 1976


J. H. C.
MAR 3 1976

FILE MEMORANDUM

Red Mountain
Kerr-McGee
Arizona

I telephoned Mr. Marion Bolton, Kerr-McGee Vice President Copper Project, in Patagonia, Arizona, yesterday to inquire if they might now be ready to entertain a joint venture program on the Red Mountain copper deposit.

Mr. Bolton said no, not at this time, but would contact me if they decide at a later date to a joint venture program.


W. L. Kurtz

WLK:lb

cc: RLBrown
TCOsborne
JHCourtright
FTGraybeal

JHC

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

December 23, 1974

W. L. K.

DEC 24 1974

FILE MEMORANDUM:

Red Mountain (Patagonia)
Santa Cruz County, Arizona

A rumor dispersed is that James Quinlan, former Chief Geologist of Lakeshore, has now joined Kerr-McGee as Project Chief for Red Mountain, (Patagonia).

He was apparently hired by a VP in Oklahoma and has nothing to do with the Tucson Office and Mr. Snyder.

A lesser rumor is that Russ Corn is moving back from the "porphyry uranium division" to the copper division (Tucson).


J. D. Sell

JDS:lb

cc: FTGraybeal

EXPLORATION SERVICES DIVISION

3422 SOUTH 700 WEST

SALT LAKE CITY, UTAH 84119

June 14, 1973

RECEIVED

JUN 15 1973

EXPLORATION DEPT.

J. H. C.

JUN 20 1973

RED MOUNTAIN AREA, ARIZONA

Mr. W. L. Kurtz
Tucson Office

Dear Bill:

I have read with interest Mr. Stathis' report of March 30, 1973, concerning a rock geochemistry study of the Red Mountain Area, Arizona. I agree in general with the majority of conclusions and recommendations presented in the report. I strongly concur with the recommendation that similar studies should be undertaken in other alteration environments.

With regard to the Red Mountain study I certainly agree with the suggestion that there is broad correlation between a number of trace element distribution patterns and the area of live limonite which is at least spatially related to the deep seated porphyry copper deposit. The geochemical "target" 6000ft.E. is intriguing but lack of live limonite and Mo presumably reduce its attractiveness to some degree. Considerable additional data from Red Mountain and other alteration zones are probably required before the potential significance of the "target" can be interpreted with any degree of confidence.

I agree with Mr. Osborne that this type of study would benefit from geochemical attention to the enclosing unaltered rocks. In fact, as there is always the possibility that some geochemical patterns are not restricted to the alteration zone and are related to processes other than that of mineralization, routine extension of geochemical coverage beyond the limits of the alteration zones is probably advisable.

Another factor worthy of consideration is the influence that supergene processes might have had on the surface geochemical patterns. Some pre-existing bedrock patterns might have been destroyed and others severely modified in the course of the moderate to severe weathering the area appears to have undergone.

In dealing with spectrographic emission and also possibly x-ray analytical data the possibility that the data might have been influenced by variations in the bulk composition of the samples should be borne in mind. Analytical procedures generally attempt to minimize these matrix effects but their potential seriousness is shown in the attached table from some work I did a number of years ago. In fact, I would strongly recommend more detailed attention be given to the precision and accuracy of the multi-element analytical techniques likely to be applied in future rock geochemical studies.

Yours very truly,

L. D. James

L. D. JAMES

LDJ:db

Encl.

cc: J.J. Collins/T.C. Osborne w/encl.

J.H. Courtright w/encl.

G.J. Stathis w/encl.

Table 6

Trace metal content 150 ppm.; germanium content 950 ppm.

+ positive;

- negative;

Major element composition %																	
SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	Ti	V	Cr	Mn	Co	Ni	Cu	Ge	Mo	Ag	Sn	Pb	Bi
100	-	-	-	-	+4.1	+2.6	+3.3	+2.0	+4.1	+5.3	+6.6	+2.1	+4.0	+2.6	+3.3	+4.0	+2.6
98.6	0.1	0.1	0.1	0.1	+4.0	+2.6	+2.3	+1.3	+4.1	+4.1	+3.3	+1.2	+4.0	+2.0	+2.0	+2.0	+2.0
99.2	0.2	0.2	0.2	0.2	+2.6	+1.3	+2.0	+1.3	+2.6	+4.0	+1.3	+1.1	+2.6	+1.2	+2.0	+1.0	+1.3
98.0	0.5	0.5	0.5	0.5	+3.3	+2.0	+2.0	+1.3	+2.6	+4.0	+3.3	+1.2	+3.3	+2.0	+2.0	<u>1.0</u>	+1.3
96.0	1.0	1.0	1.0	1.0	+2.6	+1.2	+2.0	<u>+1.2</u>	+2.0	+2.6	+1.3	+1.1	+2.0	1.0	+2.0	-1.5	<u>1.0</u>
92.0	2.0	2.0	2.0	2.0	+3.3	+1.3	+1.6	+1.4	+2.0	+2.6	+2.6	<u>+1.1</u>	+2.6	+2.0	+2.6	+2.6	+2.6
80.0	5.0	5.0	5.0	5.0	+2.0	+1.3	+1.6	+1.3	+2.0	+2.0	+2.0	-1.3	+1.	<u>1.0</u>	+2.0	+1.3	1.0
60.0	10.0	10.0	10.0	10.0	+1.3	<u>1.0</u>	<u>+1.3</u>	+1.6	+1.3	+1.2	+2.0	-1.3	<u>1.0</u>	+1.2	+2.0	+2.6	+2.0
20.0	20.0	20.0	20.0	20.0	<u>1.0</u>	-1.5	-1.2	+2.0	<u>1.0</u>	<u>1.0</u>	+1.3	-2.6	-1.5	-1.2	+1.3	+3.3	+3.3
10.0	35.0	35.0	10.0	10.0	-2.1	-2.1	-1.5	+2.6	-1.5	-1.2	<u>+1.3</u>	-3.8	-2.1	-1.9	+1.3	+2.6	+2.6



AMERICAN SMELTING AND REFINING COMPANY
EXPLORATION DEPARTMENT
120 BROADWAY, NEW YORK, N. Y. 10005

T. C. OSBORNE
ASSISTANT DIRECTOR OF EXPLORATION

MAY 16 1973

RECEIVED
MAY 16 1973
EXPLORATION DEPT.

Air Mail

May 14, 1973

Mr. W. L. Kurtz
Tucson Office

Arizona
Red Mountain Area

Dear Mr. Kurtz:

I have just now gotten to read Mr. Stathis' interesting report of March 30, which you transmitted April 19.

I note that Mo and Pb and perhaps other metals are anomalous in that general part of the alteration zone which overlies the Kerr-McGee deep ore. Ostensibly, this might suggest primary leakage-type halos through 3000 ft. of rock, but since a mappable capping of live limonite after chalcocite also overlies the deep ore, it appears more reasonable to relate the trace metal anomalies directly to the former near surface copper mineralization which is reflected by the capping. Still questionable is whether trace element work can detect deep ore beyond the limits of the primary copper zoning itself.

In respect to some details of the work, I would have felt better if a few samples of the volcanics had been taken outside the alteration zone for comparison, and I also have some reservations about the method of assigning anomalous levels, which apparently was subjective rather than statistical.

Please arrange to send Lloyd James a copy of the report, as I am sure his comments will be valuable.

Very truly yours,


T. C. Osborne

cc: ✓ JHCourtright
LDJames
SVon Fay

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

April 19, 1973

J. H. C.
APR 25 1973

Mr. T. C. Osborne
Assistant Director of Exploration
New York Office

Dear Sir:

file

This transmits Mr. Stathis' report on "A Geochemical Investigation of the Red Mountain Alteration Zone near Patagonia, Arizona". The significant findings of this study are stated in Mr. Stathis' covering letter to me. His report is heavy on analytical data and various methods of obtaining the analyses and I, therefore, refer you to page 1 and page 17 which summarize the "setting" and results.

As I have previously mentioned, the "setting" at Red Mountain, Arizona, is in many respects similar to the San Juan, Colorado, region. Stathis' work and Graybeal's work suggest a literature search of enargite occurrences (or arsenic occurrences) in the San Juans might well pinpoint areas in which to initiate work. I am sending a copy of Stathis' report to Mr. Von Fay.

Very truly yours,



W. L. Kurtz

WLK:1b
Enc.

cc: JHCourtright ✓
SVon Fay - w/enc.

JHC- Here is a preprint of Statist' Rpt. This makes
more sense than the map journal he performed the
other day.
SUMMARY AND CONCLUSIONS J. H. C.

MAR 21 1973

61/2 31 1973 W.L.V.
Sixty five rock samples were collected from a 4 square mile area of moderately to strongly altered, premineral, Paleocene, acid volcanic rocks at Red Mountain near Patagonia, Arizona. The altered, acid volcanic rocks are about 1200 feet thick and overlie a major, porphyry, primary, copper orebody which is 3400 to more than 5100 feet below the surface.

Fifty nine elements were analyzed for, mostly by semiquantitative emission spectroscopy and X-ray fluorescence methods, and 28 elements were found to be anomalous. The trace element analysis of the altered surface rock indicated a concentration of arsenic, copper, lead, molybdenum, and zinc and a conspicuous lack of antimony, beryllium, bismuth, tin and tungsten. The obvious conclusions follows that the altered zone exposed at Red Mountain has a mesothermal, base metal environment rather than a greⁱssen environment potential. The following conclusions have been made with respect to the trace element distribution at Red Mountain:

1. Arsenic, molybdenum and especially lead occur as anomalies over the deep, Kerr-McGee primary copper orezone.
2. Boron, chromium, and gallium form halos close to the surface projection of this deep orezone.
3. Lanthanum, manganese, and zinc form fringe halos at some distance away from the surface projection of the deep, primary orezone.
4. There is a possibility of another deep copper target, on Red Mountain and Kerr-McGee ground, located about 6000 feet east of the recent, porphyry copper discovery.

(This lacks the Mo anomaly)

An increasing amount of future, copper exploration ventures by ASARCO will be searching for deep, primary copper mineralization. An approach similar to that used at Red Mountain should be helpful in evaluating an altered area which might be interpreted to have a geochemical environment favorable for primary zoning at depth.

RECOMMENDATIONS

1. Combined use of semiquantitative emission spectrometer and X-ray fluorescence analyses ~~it~~ is recommended in order to evaluate altered areas for possible, deep primary copper mineralization.

2. Studies similar to that conducted at Red Mountain should be carried out in other known, altered environments i. e. epithermal precious metals, greissen etc. in order to recognize what trace elements assemblage characterizes that environment and how these elements are distributed, with respect to known mineralization.

3. Laboratories offering semiquantitative analyses should be investigated as to method, reliability, and cost.

in the Red Mtn environment - not a situation like
Kalamazoo or Red Hill.

Laboratory Comparisons Including Cost

Table 4 compares the list of elements scanned semiquantitatively by Fluo-X-Spec Lab. (x-ray) and Skyline Lab, Inc. (emission spec.). Choice of these commercial laboratories is not meant to be an endorsement that they are the best available for this work. The table is presented only to show what elements were scanned and to compare degree of sensitivity between the two analytical methods.

The following table shows those elements analyzed at Red Mountain by analytical methods other than x-ray or emission spec.

TABLE 5

SUMMARY OF RED MOUNTAIN ANALYSIS
BY METHODS OTHER THAN SEMIQUANTITATIVE

<u>Element</u>	<u>Analytical Method</u>	<u>Detection Limit</u>	<u>Cost</u>
ARSENIC	Colorimetric	5 ppm	\$1.50
CHROMIUM	Atomic absorption	5 ppm	1.50
COPPER	Atomic absorption	5 ppm	1.00
FLUORINE	Specific ion electrode	100 ppm	2.00
LEAD	Atomic absorption	10 ppm	1.00
MANGANESE	Atomic absorption	5 ppm	1.50
MERCURY	Atomic absorption	low parts per billion	2.00
MOLYBDENUM	Colorimetric	1 ppm	1.00
ZINC	Atomic absorption	5 ppm	1.00

NOTE: All analysis by Rocky Mountain Geochemical Corp. except for fluorine (Skyline Lab, Inc.) and mercury (ASARCO-Salt Lake City).

TABLE 6

SUMMATION AND COMPARISON OF THE
SEMIQUANTITATIVE RETURNS FROM RED
MOUNTAIN

EMISSION SPECTROGRAPH METHOD

Good Results for:

Barium, boron, calcium, chromium, columbium,
copper, gallium, iron, lanthanum, lead,
magnesium, manganese, molybdenum, scandium,
silver, strontium, titanium?, vanadium, and
yttrium.

Bad Results for:

arsenic, nickel?, and zinc

X-Ray FLUORESCENCE METHOD

Good Results for:

Arsenic, copper, iron, lead, nickel, rubidium,
selenium, strontium, titanium?, uranium, and
zinc.

Bad Results for:

Barium, chromium, gallium,
manganese, molybdenum,
vanadium, and yttrium

Note:

X-ray method does not report elements having an atomic number below 22,
i.e. beryllium, boron, calcium, magnesium, and scandium.

Cannot evaluate the zirconium results by either method.

It is concluded that the emission spectrograph method is preferred over the X-ray for geochemical studies similar to that conducted at Red Mountain. Arsenic and zinc are the only two significant trace elements that the emission spectrometer is not sensitive to. However, the X-ray method is quite sensitive to these two elements as proven by the Rocky Mountain lab. checks (colorimetric -arsenic and atomic absorption-zinc). Total cost for 54 element X-ray scan (Table 4) which includes arsenic and zinc is \$5.00 as compared to Rocky Mountain labs total charge of \$2.50 for combined arsenic and zinc analyses. This \$2.50 arsenic-zinc charge would be about average for most commercial labs using wet chemical analysis methods. Therefore for the extra \$2.50, the use of X-ray in conjunction with emission spec. is recommended when the situation arises requiring regional geochemical studies of altered areas. The additional trace elements that the X-ray scan is capable of analyzing, as compared to the

emission spectrograph, is certainly worth the extra \$2.50 per sample charge.

The X-ray method at \$5.00 per sample is half the cost of the emission spectrograph. The X-ray method alone is recommended for possible use in routine property examinations work and reconnaissance field studies. The X-ray method, as shown on Table 6, is considered accurate for arsenic, copper, lead and zinc. Commercial lab costs for conventional wet chemical analysis for all 4 elements would be at least \$4.00 per sample. The X-ray method is not very sensitive for molybdenum, however, colorimetric molybdenum assays can be made by most commercial labs at a cost of \$1.00 per sample.

Finally, the reader should keep in mind that the comparisons shown in Tables 2, 3, ~~xx~~ 4, and 6 are based only on data from two, recommended laboratories. It is beyond the purpose and scope of this report to have investigated other laboratories offering semiquantitative emission and X-ray spec. analyses. The detection limits shown on Table 4 and trace element comparisons made on Table 6 are not meant to imply finite limitations on what that particular analytical method is capable of, but only serve to show what the capabilities are of the two chosen laboratories. For example, The USGS laboratory reports emission spec. results for more elements on a routine basis and at greater sensitivity (including that for arsenic and zinc!) than does Skyline lab.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
AUG 30 1972

August 30, 1972

FILE MEMORANDUM

Red Mountain
Kerr-McGee

Dale Trubey said last week that Kerr-McGee has approximately \$1.5 million in the Red Mountain property and that options due in 1975 total about \$1.3 million.

He confirmed that eight drill holes intersect the ore zone, but that orebody limits have not been defined. Tonnage estimate is in the 200-400 million ton range and grade is better than 0.7% Cu.

Kerr-McGee geologists have recommended an additional sixteen (16) diamond drill holes.

W. L. Kurtz
W. L. Kurtz

WLK:lad

cc: JHCourtright ✓
RBCrist

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
MAR 6 1972

March 3, 1972

Memorandum for J. V. Desvaux
New York Office

file

Kerr-McGee
Request for Information
Eminence, Missouri Area

Zeb Jones, in charge of Kerr-McGee's Tucson office, inquired whether Asarco's drill data in the Eminence, Missouri area would be available.

In the past Kerr-McGee has made their drill data in southern Arizona available to us (Dacite Plateau, Tyrone). Since we are currently negotiating with Kerr-McGee to participate in exploration of their Thunder Mountain area in the Patagonia Mountain, it would benefit us if you can provide them with the drill data they want.

Please correspond with Mr. Dennis J. Ryan, Kerr-McGee Corporation, Oklahoma City, if you can arrange this.

ce = L. Kurtz
W. L. Kurtz

WLK:lad

cc: JHCourtright 

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

February 22, 1972

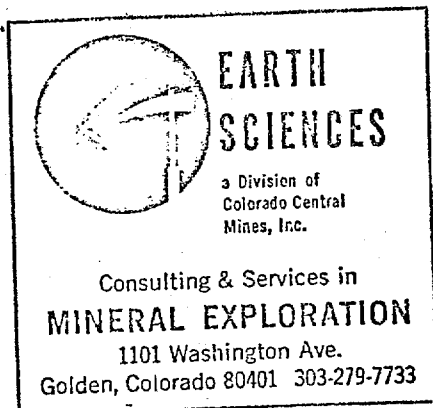
Mr. J. J. Collins
New York Office

*Red Mt.
Patagonia*

Dear John:


We should like to call to your attention the fact that Earth Sciences has obtained a prospecting permit for Potassium on a block of ground that fits exactly over Kerr-McGee's Iode claims at Red Mountain. Earth Sciences is staffed in part by professors of the Colorado School of Mines.

Xeroxed below is their latest ad in Geotimes.



W. L. Kurtz
W. L. Kurtz *lad*

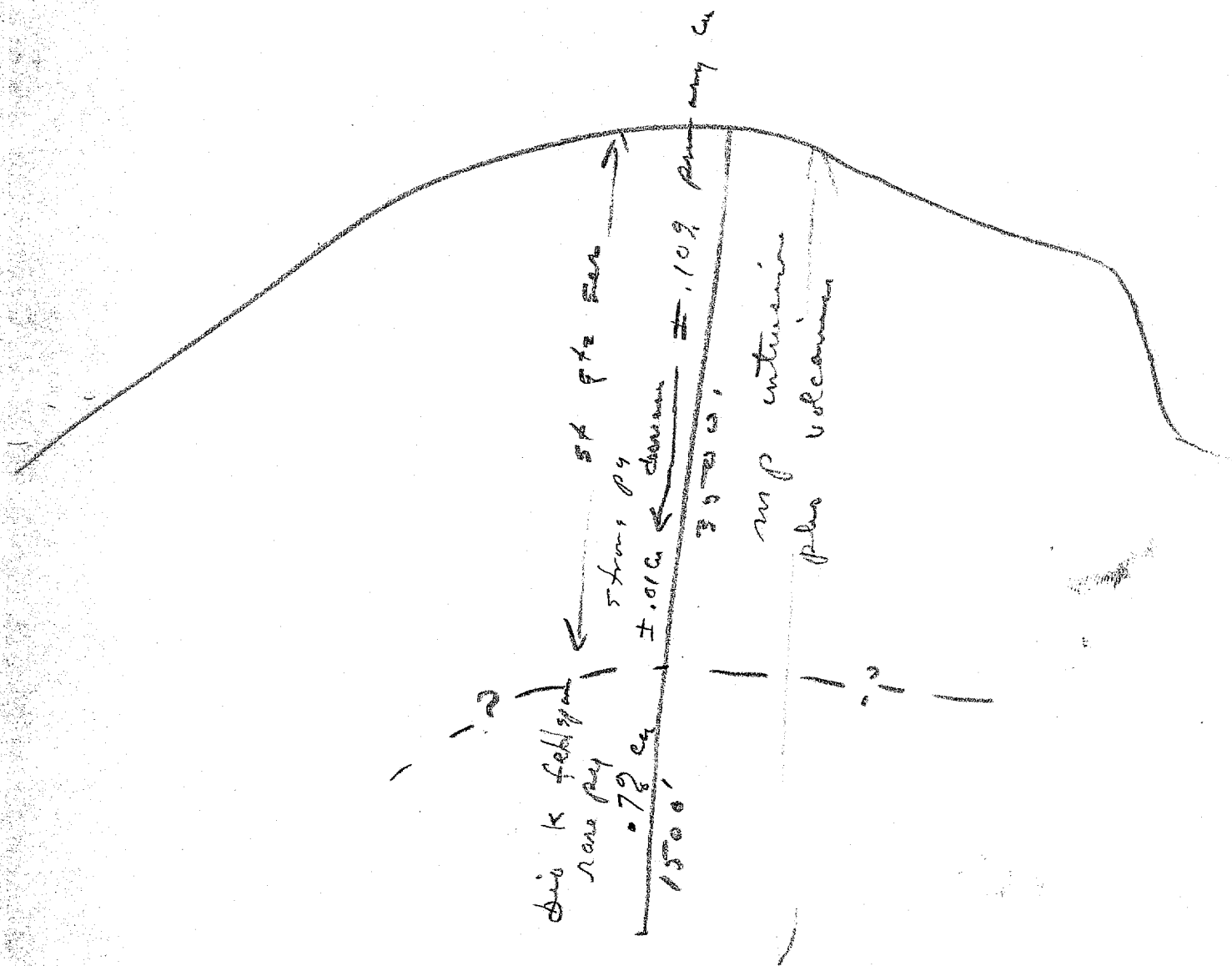
WLK:lad

cc: JHCourtright 
Denver Office
Spokane Office
Vancouver Office
Toronto Office

4-13-71

Red Mt., Patagonia - Ken H. Gee

As reported - Russ Com to WGS



file Rod Mt.
Patagonia
Hammel

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
SEP 23 1970

September 23, 1970

TO: Mr. J. J. Collins
New York, New York

FROM: W. E. Saegart

Re: Kerr McGee Red Mountain Project, Patagonia
District, Santa Cruz County, Arizona

Dear Mr. Collins:

I am enclosing a news release which appeared in this morning's Arizona Daily Star describing Kerr McGee's deep copper discovery at Red Mountain. This announcement is particularly distressing to us since this is the property which Kerr McGee had proposed for joint venture with ASARCO two years ago (reference is made to my letter to you of July 30, 1968 proposing joint venture exploration with Kerr McGee at Red Mountain).

I telephoned Zeb Jones, Kerr McGee's Southwestern Exploration Manager, today inquiring about the nature of their discovery. He advised that he is not at liberty at this time to discuss their exploration results.

Very truly yours,


W. E. Saegart

WES:mnw

Enc.

cc: J. H. Courtright ✓
W. L. Kurtz

ARIZONA DAILY STAR, Tucson, Az., Wednesday, Sept. 23, 1970



Red Mt

1) Albert Des Saubies + Luke

6/12/65 - 10 years 47 claims
rent \$200/claim/year = 9400/yr
up set price \$4000/claim

\$ 188,000

2) Des Saubies + Luke

6/12/65 - 20 years - 3 claims
rent \$30/claim/year = 640/yr
up set price \$4000/claim

\$ 32,000

3) W. B. Rogers et al

10/10/65 10 years 151 claims
rent \$110/claim per year plus \$10/yr each year
Oct, 1968 - \$130/claim or \$19,631
price \$4500/claim plus \$500/yr \$679,500 (1968)
after 1968

4) James Yancy

9/11/65 - 20 years 8 claims
rent \$100/claim/yr or \$800/yr
price \$15,000/claim

\$135,000

5) Helen K. Olson et al

6/12/68

2 claims

no info

Kerning has spent
\$300,000

all have 5% royalty
royalty & rent apply on price

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

October 3, 1968

SCB

J. H. C.

OCT 4 1968

S. I. B.

OCT 4 1968

AIR MAIL

Mr. H. L. Goodenough, Comptroller
American Smelting and Refining Company
120 Broadway
New York, N. Y., 10005

TUCSON OFFICE
Accounting
Kerr-McGee Agreement

Dear Sir:

We refer to the second paragraph of your letter of October 1, 1968, file M-796, and are glad you agree that the suggested proration is impractical. You are correct that our Exploration Department personnel submit time distribution sheets and that we are, therefore, in a position to charge any exploration project directly with its portion of salary and salary overhead expenses regardless of whether the employees concerned are assigned full-time or part-time to such project or are working in the field or in the office. We assume you will change Accounting Clause II of the proposed Kerr-McGee agreement to something workable.

As to your third paragraph, we disagree that we would be "charging ourselves for management costs." If we are committed to spend \$450,000 on a project and do not fully reflect our management and overhead costs against the project, then we put ourselves in the position of having to spend more than \$450,000 to meet a \$450,000 commitment.

Very truly yours,

K. A. von den Steinen

K. A. von den Steinen
Chief Accountant

KvdS/cj

cc: CPPollock

Harry Smith

JHCourtright

J.H.C.
OCT 4 1968

NEW YORK, October 1, 1968

S. I. S.

OCT 4 1968

Kerr-McGee Agreement

Mr. K. A. von den Steinen, Chief Accountant
Tucson Office

I have reviewed your memorandum to Mr. J. H. Courtright dated September 27 with those concerned.

(all)

We concur with you that it is "impractical to prorate a portion of the salaries and expenses of the 'district geologist' and also other employees whose time is not allocable directly to the project and a portion of the expense of maintaining and operating the Tucson exploration office." The intent behind this clause was to allow for the project to be charged for the time spent working on the project while in the Tucson office or elsewhere by those geologists and field personnel who would not be working 100% of the time on this project. It is my understanding that such personnel in the Exploration Dept. do submit a time distribution which can be used for this purpose.

In respect to changing the agreement to allow for a higher overhead percentage, we feel this is not necessary. In the first place it is not Asarco's practice to load exploration projects with management fees. The rare case in which we do so is usually governed by outside pressures. We are well aware that the rates used in such agreements never cover the costs of administration. In addition, we cannot see any purpose in charging ourselves for management costs. Such would be the case in the first phase of this agreement which calls for Asarco to lay out all funds up to \$450,000.

The 2% overhead rate is intended to cover all overhead costs, New York and Tucson, as is the 10¢ per ton figure. The former was suggested by Kerr-McGee, the latter by Mr. Pollock. Such rates are always open to negotiation at a later date should they be deemed insufficient.

H. L. GOODENOUGH

ORIGINAL SIGNED
H. L. GOODENOUGH
H. J. R.

EJK:aj

cc: C.P. Pollock
H. Smith
J.H. Courtright

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

September 27, 1968

J.H.C.
SEP 27 1968

Mr. J. H. Courtright
Building

*Red Mt
Kerr McGee*

TUCSON OFFICE
Accounting

With reference to the accounting clauses of the proposed revised agreement between Kerr-McGee and Asarco, I consider it impractical to prorate to the project, as specified in Clause 11, a portion of the salaries and expenses of the "district geologist" and other employees whose time is not allocable directly to the project and a portion of the expense of maintaining and operating the Tucson exploration office. Therefore, Clause 11 should be revised and the 2% overhead rate specified in Clause 12 considerably increased. Even were we to attempt to prorate the above expenses, the project still would not bear any of the Tucson Office accounting expense, or, when the property enters the development stage, of the Southwestern Mining Department administrative expense. Increasing the overhead percentage could be made to provide for these.

I do not know how the 10¢ per ton figure in Clause 12 was determined, but, if it is considered now as required to cover New York Office expense, it should be further increased to cover also Tucson Office expense.

With these exceptions, I believe we can live with the accounting clauses. Actually, it would be just as impractical to attempt to prorate Tucson Office exploration, accounting, or management office expenses as it would be similar New York Office expenses. These all should be combined and lumped into one overhead percentage figure. Assuming that we spend \$100,000 per year during the exploration period, a 2% overhead figure would give only \$2,000 which is entirely inadequate. I believe the figure should be at least 5%, as in our Hecla agreements, or even higher.

K. A. von den Steinen

K. A. von den Steinen
Chief Accountant

KvdS/cj
cc: CPPollock
HLGoodenough
Harry Smith

*WES account
- 1000000 9/27/68 120*

J. H. C.

SEP 26 1968

September 24, 1968

Mr. J. J. Collins

Re: Proposed Kerr-McGee Joint Venture,
Red Mountain, Santa Cruz County, Arizona

I refer to my memo. of September 20, 1968 with which I forwarded proposed revised draft agreement covering the above.

In said memo. I stated at the top of page 4 that

"the agreement is silent regarding the effects of possible breach, and I don't believe this will constitute a hazard to the parties, since I've inserted a precautionary statement (near the end of Section 15) that a termination for any cause other than the ones provided for, shall not affect the ownership interests of the parties in the venture."

I've had a change of mind and believe it will be better to spell out in detail the procedure and the effect in case of a breach by the Operator. Accordingly, I've prepared a new Section 27 and renumbered the succeeding two Sections. Please find herewith new pages 31, 32 and 33, which replace pages 31 and 32 in the draft accompanying my memo. of September 20. The new pages 32 and 33 are the same as the old pages 31 and 32 except for the renumbering. I suggest that all who received copies of my draft forwarded with my memo. of September 20, substitute these new pages in their copies of the draft in order to avoid confusion. I sent 4 copies of the draft agreement to Mr. Courtright and am again sending him 4 sets of the new pages 31 to 33 for substitution in such copies. My thought in sending these additional copies to Mr. Courtright is that if the revised draft is acceptable to Asarco without any change, he will have additional copies to submit to the Kerr-McGee representative.

enc.

Harry Smith

cc: HSGoodenough - w/a
Richter - w/a
→ JHCourtright - w/a (4) = A/M
WESAegirt - w/a - A/M
STRowditch - w/a - A/M

LEGAL DEPARTMENT
ASARCO

Mr. J. H. Courtwright
(with 4 enclosures)

New York, September 20, 1968

J. H. C.

OCT 4 1968

Mr. J. J. Collins

Re: Proposed Kerr McGee Joint Venture,
Red Mountain, Santa Cruz County, Arizona

In accordance with Mr. Pollock's memo. of September 11 to me, I've revised the draft agreement submitted by Kerr McGee (K) and forward herewith a copy of the proposed revision. The following comments may be helpful in reviewing the revised draft:

From our past experience with K, I believe it may be necessary to enlighten them as to the differences between an ordinary operating agreement in the oil industry and a joint venture of the type we envisage. In the former, numerous owners of acreage unite to choose an oil company as "operator", which performs its management functions as a contractor would and for a management fee including a profit for such services. In our case, we propose a joint venture which is in reality a partnership (except for income tax purposes) restricted to a very small number (in this case only two), with the "operator" functioning as a managing partner and with the management fee designed merely to compensate for services and overhead without any direct effort for a profit for the management service. K's "operating agreement" form shows some effort at adapting to the needs of a joint venture as described above, and perhaps this reflects K's experience with us in the Missouri area and after study of the drafts we had then submitted. However, I found certain changes desirable and kept these to a minimum. Although the revised draft submitted herewith differs in various respects from our usual form of joint venture

September 20, 1968

agreement, it's one I think Asarco can live with and one that should be acceptable to K. I comment below on some of the features of the revised draft.

Since Asarco will be spending all its own money during the so-called Initial Exploration, I think it should be unquestioned that Asarco may make such expenditures as it in its sole judgment determines to be best. When the moneys are contributed by both parties, approval of "work plans" by both will be needed. Such work plans will be required up to beginning of commercial production, and thereafter approval will be required of expenditures over \$50,000..

From our past experience I know K is insistent on retaining its accounting procedure provisions (Exhibit B). I've eliminated therefrom the provisions inapplicable to our situation. K should be informed that all purchases will be charged to the parties when made and the inventories will belong to the parties according to their proportionate interests. Inventory taking will be merely informative and an auditing procedure. If the venture goes into commercial production, I note that the authority of the "Operator" (Asarco) will not be as broad in making expenditures as under our usual form. For example in Exhibit B, the general language of Section II, paragraph 13, may not authorize such expenditures as charitable contributions, advertising, certain types of research work, etc. Prior to making any such

expenditure, approval of the partner should be obtained.

In the matter of "Operator's" liability for wrongful acts, I've maintained the position Asarco normally assumes in our usual forms of joint venture agreement. This is based on the above-mentioned analysis that the parties are general partners with one designated as a managing partner to act for both and without any attempt to make a business or a profit out of such management. Accordingly, the employees of the joint venture should be regarded as the employees of both parties, for determining rights and liabilities, even though nominally the "Operator" will treat such employees as its own, and any mistake, negligence or wrongful act (no matter how wrongful) of any such employees should be for the joint account and not be borne solely by the "Operator".

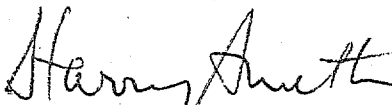
Again, in the case of Section 13 (Transfer of Interest) I accept these provisions reluctantly because they are contrary to the basic view of our joint venture as a general partnership in which each partner has a right to choose his other partners (delectus personae). I assume the chance of a sale of interest is remote and each will have a first refusal right, so I suppose we can live with the terms set forth in the draft.

I've added a simple arbitration provision (Section 26) so that the parties will have a simple, quick and relatively inexpensive way of determining any disputes which may arise. I

September 20, 1968

note the agreement is silent regarding the effects of possible breach, and I don't believe this will constitute a hazard to the parties, since I've inserted a precautionary statement (near the end of Section 15) that a termination for any cause other than the ones provided for, shall not affect the ownership interests of the parties in the venture.

I've not examined Exhibit A and assume Tucson will arrange to have done whatever title checking is deemed desirable. I've reviewed Mr. Bowditch's comments in his memo. of August 30 to Mr. Courtright, and without commenting thereon in detail, note that his points have been considered in the revision.


Harry Smith

enc.

cc: HLGoodenough - w/a
RRichter - w/a
→ JHCourtright - w/a 4- A/M ←
WESaegirt - w/a - A/M
SIBowditch - w/a - A/M

9/20/68

J. H. C
OCT 4 1968

OPERATING AGREEMENT

THIS AGREEMENT, made and entered into as of the day of _____, 1968, by and between KERR-McGEE CORPORATION, a Delaware corporation, and AMERICAN SMELTING AND REFINING COMPANY, a New Jersey corporation.

WITNESSETH:

THAT WHEREAS, the parties hereto desire to participate in an unincorporated joint program for exploration, development and production in the Area of Interest herein designated within the State of Arizona, such program being hereinafter referred to as the "project";

NOW, THEREFORE, it is agreed:

1. Definitions

As used in this Agreement, the following terms shall have the meanings assigned to them in this Section 1.

A. "Operator" shall mean American Smelting and Refining Company, herein designated as Operator under this Agreement when not acting as an owner of an interest herein.

B. "Non-Operator" shall mean Kerr-McGee Corporation.

C. "Area of Interest" shall mean and include all of Sections 12, 13, 24, 25 and 36, T.22S., R.15E., and all of Sections 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33 and 34, T. 22S., R.16E., Santa Cruz County, Arizona.

D. "Said Lands" shall mean all of the lands subject to this Agreement in which the parties have an interest whether by option, claim, or lease as shown on Exhibit A attached hereto.

E. "Exploration" or "Exploration Operations" when used herein shall refer to the activity or work of prospecting and searching for ores and minerals on, in, or under the lands and examining, measuring, and sampling a mineral deposit when found to gain knowledge of the size, shape, position, characteristics, and value of the deposit and shall include wide spaced drilling, close spaced drilling to point of mine studies.

F. "Development" or "Development Operation" when used herein shall refer to the activity or work of driving, drilling, or excavating an opening or openings to and in a proved deposit of ores or minerals in, on, or under the lands so as to gain access thereto, and the construction and equipping of a plant for operation for the purpose of mining and handling the same on a commercial basis.

G. "Producing" or "Producing Operations" or "Mining Operations" when used herein shall refer to the work of mining, extracting, handling, and sale of the ores or minerals discovered upon or within the lands and all other work incident thereto as may reasonably be required in connection therewith, and shall include periods of suspension of operations after commercial production begins.

H. "Mine" when used herein shall refer to any opening on the

lands, underground or otherwise, from which ore or minerals have been or are intended to be removed in commercial production.

I. "Salvage Value" of minerals and equipment shall mean the value of such minerals and equipment determined in accordance with the accounting procedure, attached hereto as Exhibit B, less the reasonably estimated costs of salvaging the same.

J. "Initial Exploration Period" when used herein shall refer to the period not to extend beyond November 1, 1971, during which the \$450,000.00 expenditure contemplated by Section 4 hereof is being made by American Smelting and Refining Company.

2. Title Examination and Loss of Leasehold or Claim

The parties hereto have been or will be provided with and have examined or will examine sufficient title information pertaining to interests presently owned in the area of interest. If for any reason title to the interests heretofore or hereafter acquired fails or is lost in whole or in part, such loss shall be borne by the parties without liability of one to the other and each shall bear the loss equal to its contribution to the cost thereof or investment therein at the time of title failure or loss.

3. Interest of the Parties

The parties hereto shall own the following undivided interests in the project and in the Said Lands and all properties that may be optioned, leased, rented, purchased, located, or otherwise ac-

quired pursuant to this Agreement, and in all minerals in place therein and minerals produced therefrom provided, however, that the interest of each may be forfeited or increased as provided in Section 12:

American Smelting and Refining Company - Sixty Per Cent (60%)

Kerr-McGee Corporation - Forty Per Cent (40%).

After the expenditures required during the Initial Exploration Period all the costs incurred under this Agreement shall be paid by each of the parties in proportion to its interest as its interest exists at the time such costs are incurred. All property in the project other than the above mentioned interests in lands and minerals in place and minerals produced, shall be owned by the parties in undivided interests in proportion to their contributions to the cost thereof, and each party shall be entitled to claim for income tax purposes the total expenditures made by such party hereunder for exploration or development or both. After the Initial Exploration Period, at the request of either party, the parties shall make such conveyances as may be appropriate to evidence the ownership interest of each of said parties in the above mentioned interests in lands.

4. Initial Exploration Expenditures

Except as otherwise provided in this paragraph, American Smelting and Refining Company shall be the sole contributor of funds for the first \$450,000.00 expended hereunder. Upon execution of this Agreement, it shall be required to expend in such

exploration and/or development operations hereunder as it may determine in its sole judgment, the sum of \$100,000 or more on or before November 1, 1969. If American Smelting and Refining Company has not withdrawn from the project in accordance with Section 12 hereof on or before October 1, 1969, it shall be required to expend before November 1, 1970, an additional \$100,000.00 or more in said operations. If American Smelting and Refining Company has not withdrawn from the project in accordance with Section 12 hereof on or before October 1, 1970, it shall be required to expend before November 1, 1971, in said operations, the difference between the total amount expended on the subject properties prior to November 1, 1970, and \$450,000.00. All expenditures made pursuant to this paragraph shall be in accordance with the accounting procedures attached hereto as Exhibit B, excepting from such amount all rentals and royalties paid under leases covering the Said Lands. During the Initial Exploration Period such rentals and royalties shall be paid by Kerr-McGee Corporation, and American Smelting and Refining Company shall reimburse Kerr-McGee Corporation for sixty per cent (60%) of all such rentals and royalties paid, as American Smelting and Refining Company's share thereof.

5. Work Plans

After the Initial Exploration Period, work to be performed hereunder for exploration or development of mineral deposits in the Area of Interest shall be in accordance with such plan or plans (hereinafter called "work plan") as Operator shall propose, it being understood that work plans leading to the diligent^{exploration and}/development of the project will be proposed at reasonable intervals

during the term of the project and at least once each year on or before each anniversary date hereof and that Operator shall consult with Non-Operator in the development of each work plan. A work plan shall describe work to be performed, set forth estimates of costs to be incurred in carrying out the work and give an estimated period of time required to perform the work.

Within thirty (30) days after proposal of a work plan in writing to Non-Operator by Operator, Non-Operator shall confirm to Operator in writing its approval or rejection of the work plan. The failure to reply within the allotted time shall constitute an approval of the work plan. Upon approval of the work plan by Non-Operator, the work plan shall become effective.

6. Technical Committee

A committee comprised of technical experts of the parties hereto shall be established to review the status of exploration, development and other technical matters of the joint operation of the properties from time to time and shall offer advice to the Operator.

7. Access to Premises

Operator agrees that Non-Operator shall have access at its sole risk to the lands hereunder at any reasonable time to inspect any operation, together with the right to inspect all drilling data, samples, cores, logs, and all other data pertaining to the

lands obtained by Operator while conducting the project, and upon reasonable request from Non-Operator, Operator agrees to furnish copies of all logs, assay reports, maps, or other documents connected with the project.

8. Land Acquisition

All interests heretofore acquired and now owned by the parties hereto or their agents within the Area of Interest shall be subject to the terms of this Agreement. In the event that any party hereto hereafter acquires or proposes to acquire (hereinafter referred to as the "acquiring party") during the term of this Agreement or within one year thereafter, by purchase, lease, or in any other manner any additional mining lands or mining rights in lands (hereinafter referred to as a "new mining right") located within the Area of Interest, the acquiring party shall notify the other party of such acquisition by written notice setting forth in such notice a description of the lands, the terms and conditions of the proposed acquisition including cost, the purpose of such acquisition, such estimates and information as the acquiring party may then possess concerning the proposed exploration or other use of such new mining right, including an estimate of exploration costs and all other pertinent information and data. For a period of thirty (30) days after the giving of such notice, the party to whom it is directed shall have the right to elect to participate in the acquisition, ownership and exploration of

such new mining right to the extent hereinafter set forth by giving to the acquiring party written notice of its election so to participate. If the other party does not elect to participate therein, such new mining right shall belong solely to the acquiring party and the other party hereto shall have no interest therein. If both of the parties hereto elect to participate in such new mining right, and this Agreement is then in effect, the same shall be acquired and owned in proportion to the respective interests of the parties in the project at the time of the acquisition and shall thereby become part of the Said Lands for all purposes of this Agreement, and the Operator shall pay any acquisition costs to the acquiring party and shall charge the same as a cost of the project and chargeable to the parties in proportion to their interests in the project; and if both of the parties hereto elect to participate in such new mining right and this Agreement has been heretofore terminated, the same shall be acquired and owned in the proportion of 60% to American Smelting and Refining Company and 40% to Kerr-McGee Corporation as tenants in common, and the said parties shall contribute to all the costs of acquisition in that proportion, but this Agreement shall not otherwise be revived, excepting only the continued application of this Section 8 as herein provided to said period after termination of this Agreement.

9. Surrender or Termination of Options, Claims or Leases Contributed to the Project.

All or any part of the Said Lands may be withdrawn from the project upon the written approval and concurrence of the Operator and Non-Operator. The Operator at any time may propose the withdrawal of any of the Said Lands from the project by giving written notice of the proposed withdrawal to Non-Operator. Within thirty (30) days after the giving of such notice, Non-Operator shall confirm in writing to Operator its approval or disapproval of the proposed withdrawal, provided, however, that if Non-Operator fails to give such timely written confirmation of its approval or disapproval, it shall be deemed to have approved and concurred in the proposed withdrawal. If Operator proposes a withdrawal as aforesaid and if Non-Operator disapproves of such withdrawal and the parties cannot agree within 30 days after such disapproval, the Operator shall have the authority to withdraw such of Said Lands from the project without the concurring approval of Non-Operator. Upon complying with the foregoing requirements for withdrawal, the Said Lands proposed to be withdrawn from the project shall be withdrawn therefrom, shall no longer be subject to the terms of this Agreement and are hereinafter referred to as "withdrawn lands." Any withdrawn lands which were initially contributed to the project by a party hereto shall be returned to such contributing party and the parties hereto agree to execute such instruments

as may be necessary to reconvey to, and revest in, such contributing party all of the right, title and interest of the other party therein or thereto. Both of the parties shall retain their respective undivided interests in any withdrawn lands which were acquired by the project as a new mining right, except that if the Operator has withdrawn any such new mining right without the approval of the Non-Operator as above provided for, then such new mining right shall be deemed withdrawn lands initially contributed to the project by Non-Operator and the preceding sentence shall apply thereto accordingly.

10. Operator's Powers and Rights

Operator shall have full, complete and exclusive control, charge, and supervision of Said Lands and all other real and personal property included in the project, and all exploration, development and mining operations conducted thereon. Operator agrees that it will attempt to explore, develop and operate said lands to the best of its ability and in accordance with the terms and conditions of any work plan which may be applicable thereto, using modern techniques and good and economical mining practice. All performance and operations by Operator hereunder shall be conducted with due regard for the development and preservation of Said Lands as a workable mine or mines and in keeping with the applicable federal and state mining laws and regulations;

provided, however, that it is understood and agreed that Operator shall not be liable to Non-Operator for inadvertent mistakes, errors, or omissions, or for any act or omission to act if done or omitted in good faith, or for any negligent or wrongful conduct of any of Operator's representatives or employees provided it be not in reckless disregard of Non-Operator's rights hereunder, and all claims, liabilities, losses, damages and expenses by reason of injury to person including death, or damage to property, arising out of Operator's performance of its obligations as Operator hereunder or any matter connected therewith, shall be deemed a cost of the project and chargeable to the party or the parties in accordance with their proportionate responsibility for contribution to costs hereunder, even though any such damage or injury be caused by the gross negligence or wilful wrong of any employee, representative or agent of Operator.

11. Operator's Duties and Obligations

Operator shall have the following duties and obligations:

(a) To manage, direct, and control all exploration, development, and mining operations in and under Said Lands in a prudent and workmanlike manner, and in accordance with the terms and conditions of each work plan if any is applicable thereto, and each lease and agreement affected thereby and all laws and valid regulations pertaining to the mining claims. Operator shall,

before incurring any item of expenditure not previously included in a work plan and chargeable to the joint account in excess of \$50,000, secure the approval of Non-Operator; provided, however, that consent or approval of Non-Operator to the opening of a mine shall constitute approval of all costs and expenditures incident to the opening and equipping of said mine for commercial production, including initial working capital which may be required. When in the judgment of Operator, the products from Said Lands cannot be produced and sold at an operating profit (i.e., without regard to amortization of capitalized items) by reason of low prices or otherwise, or such products or the metals derived therefrom cannot readily be sold at prevailing prices so that an unreasonable inventory would otherwise accumulate, mining operations in Said Lands shall be suspended or curtailed until such condition prompting suspension or curtailment has, in the judgment of both Operator and Non-Operator, ceased to exist or has been sufficiently alleviated.

(b) To keep true and correct books, accounts, and records of operations hereunder and to permit at all reasonable times, the inspection, examination, and auditing thereof by Non-Operator.

(c) To keep Said Lands free from liens and encumbrances occasioned by operations hereunder, except only the lien hereinafter granted to Operator.

(d) To furnish Non-Operator on or before the 25th day of each calendar month with a statement of minerals produced from the

lands during the preceding calendar month, and the receipt of any proceeds of Non-Operator's share of minerals produced when sold by Operator.

(e) After the Initial Exploration Period, to pay for the joint account of the parties hereto all rentals and royalties payable under the terms of each lease or agreement and charge same to the joint account, as provided in the Accounting Procedure attached hereto as Exhibit B.

(f) To pay all costs, expenses, and liabilities accruing or resulting from exploration, development, producing, and all other operations, including maintenance in periods of shut down and including all additions to and replacements of capital assets, and to account to Non-Operator in accordance with the provisions of said Accounting Procedure; provided, however, that if any provisions of said Accounting Procedure conflict with any provisions hereof, this Agreement shall be deemed to control.

At its option, Operator may require Non-Operator to advance its proportionate share of said costs hereunder, according to the following condition: On or before the 15th day of each calendar month, Operator shall submit to Non-Operator an itemized estimate of such costs for the succeeding calendar month, prepared in accordance with the terms and conditions of an approved work plan if applicable. Within ten (10) days after submission, Non-Operator shall pay to Operator its proportionate part of such estimate.

Should Non-Operator refuse or fail to pay its proportionate part of such estimate, the same shall bear interest at the rate of seven per cent (7%) per annum from the date of submission until paid, and Operator shall have the right at its option, such default continuing and without Operator being deemed to have made an election of remedies, to foreclose the lien provided herein upon the interests of Non-Operator. Adjustments between estimates and actual costs shall be made by Operator at the close of each calendar month and the accounts of the parties adjusted accordingly.

(g) To account for and distribute monthly to Non-Operator any income received by Operator for Non-Operator's account from whatever source received.

12. Withdrawal and Termination

(a) During the Initial Exploration Period, American Smelting and Refining Company shall have the right to withdraw, on or before November 1, 1969 or November 1, 1970, provided it has made the expenditures for the applicable period as set forth in Section 4, upon delivery of written notice to Kerr-McGee Corporation of notice of withdrawal at least thirty (30) days prior to the date of withdrawal. Upon such withdrawal this Agreement shall terminate, all properties contributed to the project by the parties hereto shall revert to the contributing party and neither American Smelting and Refining Company nor Kerr-McGee Corporation shall have any

further obligation or liability hereunder except that American Smelting and Refining Company shall remain liable for all amounts chargeable to it with respect to any work completed or contracted for by it on the subject properties.

(b) After the Initial Exploration Period, either party hereto shall have the right to voluntarily withdraw from the project and terminate its interest in and under this Agreement by giving written notice of such withdrawal to the other party. In the event of a voluntary withdrawal all of the rights and obligations of the withdrawing party under this Agreement shall terminate as of the date of the giving of notice of such withdrawal and all right, title and interest of the withdrawing party in and to the Said Lands, the project hereunder and all other property, real or personal, on or appertaining thereto, shall be deemed to have been transferred to the non-withdrawing party, provided, however, that: (1) the withdrawing party shall remain liable for all amounts chargeable to it pursuant to an effective work plan including costs incurred pursuant to such work plan after the effective date of the withdrawal but not in excess of the most recent cost estimates, and all liabilities accrued to date of withdrawal to the extent chargeable to it as owner of an interest in the project; and (2) the withdrawing party shall remain obligated to execute and deliver such instruments as may be necessary to formally effect the transfer of its interest in the Said Lands and all other property,

real or personal, on or pertaining thereto, to the non-withdrawing party.

(c) Subject to the terms of Section 8 and excepting any new mining rights belonging solely to the acquiring party pursuant thereto, a withdrawing party shall not conduct or become a party to any exploration program or prospecting venture nor obtain any interests within the Area of Interest for a period of one year from the actual date of its withdrawal, and for such period shall hold confidential any information acquired pursuant to this Agreement.

13. Transfer of Interest

No conveyance, assignment, or other transfer of either party's ownership interest in the project shall be made other than by sale for lawful money of the United States upon acceptance of a bona fide offer and unless same shall cover the entire undivided such interest of the assignor or seller, it being the intention of this provision to maintain the unit ownership, development, and operation of the project and the lands covered hereunder. The sale of a lesser interest than seller's said entire undivided interest or any transfer other than by sale as aforesaid of the whole or part of a party's interest may be made only upon securing the prior written consent of the other party hereto, and any attempted transfer in violation hereof shall be void.

No assignment of any interest shall become effective or be binding upon the Operator until the first day of the second calendar

month following that in which the assignor or assignee shall have furnished the Operator with an executed or photostatic copy thereof, together with the proper post office address of assignee. Any interest assigned shall be subject to the terms of this Agreement, and any assignment of interest, whether it be expressly so stated or not, shall operate to impose upon the assignee the proportionate part or share of any unpaid obligations theretofore chargeable hereunder to said assigned interest, and shall operate to make such assignee a party hereto from the effective date of such assignment, in place of the assignor and liable thereafter in place of the assignor for the performance of all obligations hereunder on the assignor's part to be performed (including the terms of this Section 13 which shall continue to apply to each assignee) but such assignment shall not operate to relieve the assigned interest or the assignor from any liability or obligation which accrued prior to the effective date of such assignment, and such assignor shall continue liable, jointly and severally with such assignee, for such last mentioned accruals.

In the event that either party hereto receives a bona fide offer in lawful money of the United States, which it is willing to accept for the purchase of its ownership interest in the project, from a person, firm, or corporation ready, willing, and able to purchase same, the party receiving such offer shall immediately give written notice thereof to the other party hereto, including in said notice the name and address of the offeror, the price

offered, and all other pertinent terms and conditions of the offer. The other party hereto, for a period of thirty (30) days following receipt of said notice, shall have the prior and preferred right and option to purchase the selling party's interest at the price and according to the terms and conditions specified in said offer and may exercise such right by giving written notice to the selling party within said 30-day period. If, however, such right and option is not exercised by giving written notice thereof within said thirty (30) days after the receipt of the above-mentioned notice, the party receiving said offer may accept same and complete said sale to the offeror in accordance with said offer within sixty (60) days after the expiration of said 30-day period; provided, that if the selling party fails to accept said offer or to complete said sale within said 60-day period, the preferred right and option of the other party hereunder shall be considered as revived and the party which received said offer shall not complete said sale to said offeror unless and until said offer has again been presented to the other party hereto, as hereinabove provided, and said other party has again failed to elect to purchase on the terms and conditions of said offer.

There shall be no preferential right to purchase in those cases where either party wishes to dispose of its interest by merger, reorganization, consolidation, or sale of all its assets,

or a sale or transfer of its interest to a subsidiary or parent company, or subsidiary of a parent company, or to any company in which either party hereto owns a majority of the stock, where the transferee assumes the obligations hereunder of such party and thereby becomes a party to this Agreement; and in any such case there shall not be applicable thereto the foregoing requirements that the transfer of interest shall be only by sale and in consideration of lawful money of the United States.

14. Insurance

Operator shall at all times comply with the requirements and maintain full coverage under the applicable Workmen's Compensation and/or Employer's Liability Laws of the State of Arizona and all costs applicable to the coverage and the protection provided thereby shall constitute a part of costs of operations and shall be charged to the joint account.

Operator shall carry with a reputable insurance carrier general personal injury and property damage public liability insurance, naming each of the parties hereto as insured, with limits of not less than \$100,000.00 as to any one person and \$300,000.00 as to any one accident, and property damage insurance with a limit of not less than \$100,000.00 for each accident and \$300,000.00 for any number of accidents.

Operator shall also carry with a reputable insurance carrier automobile public liability insurance, naming each party hereto

as insured, with limits of not less than \$100,000.00 as to any one person and \$300,000.00 as to any one accident, and automobile property damage insurance with a limit of not less than \$25,000.00 for each accident and premiums therefor shall be considered as operating expense direct to the applicable automotive equipment.

All premiums paid for insurance hereunder shall be charged to the joint account as provided in the Accounting Procedure, provided that Operator may, in lieu of carrying the above specified insurance, elect to be self-insured as to such insurance coverage, and in that event Operator may charge the joint account an amount equal to the premiums which Operator would have had to pay in order to obtain the above specified insurance and Operator will bear, without charge therefor to the joint account, any liabilities which would have been fully compensated by such insurance had Operator carried the same.

15. Term

This Agreement shall terminate upon the failure of American Smelting and Refining Company to meet the requirements of Section 4 above. Upon such termination all properties contributed to the project by the parties hereto shall revert to the contributing party and neither American Smelting and Refining Company nor Kerr-McGee Corporation shall have any further obligation or liability hereunder except that American Smelting and Refining

Company shall remain liable for all amounts chargeable to it with respect to any work completed or contracted for by it on the subject properties, and except that American Smelting and Refining Company shall become liable to Kerr-McGee Corporation in the sum of one dollar payable on demand if the former has performed no work hereunder on the subject properties.

After the Initial Exploration Period and subject to the right of withdrawal as herein provided, this Agreement shall remain in force and effect as to all the lands covered hereby not abandoned or surrendered either: (a) for and during the term of any mining lease or leases covering same and all extensions and renewals thereof, or (b) for as long as minerals can be mined at an operating profit from any of the mining claims included within the project, whichever period is longer. It is agreed, however, that such termination of this Agreement shall not relieve any party hereto from any liability which has accrued or attached prior to the date of such termination.

Except as otherwise provided in Section 12 and the first paragraph of this Section 15, termination of this Agreement for any cause shall not affect or impair the respective undivided ownership interests of the parties as they may exist at the time of such termination, in Said Lands and all property located thereon or otherwise belonging to the project.

Upon termination of this Agreement, and the parties retaining

their interests in the project on such termination, the Operator shall provide for the salvaging, liquidation, and other distribution of assets and properties in accordance with the interests of the parties hereto at that time.

16. Disposition of Production

Each of the parties hereto shall have the right to take in kind or separately dispose of its proportionate share of all ores and/or minerals produced from Said Lands. Any extra expenditure incurred by reason of the taking in kind or separate disposition by any party of its proportionate share of the ores and/or minerals so produced shall be borne by such party, and such party shall be required to construct, operate, and maintain, all at its own expense, any and all facilities which may be necessary to receive, store and dispose of its share of production at the rate it is produced. In the event Non-Operator shall fail to make the arrangements necessary to take in kind or separately dispose of its proportionate share of said ores and/or minerals, Operator shall have the right, subject to revocation at will by Non-Operator, to purchase for its own account or sell to others such share at not less than the market price prevailing in the area and not less than the price which Operator receives for its own share of the ores and/or minerals produced; provided that contracts of sale executed by Operator for Non-Operator's share of ore and/or minerals produced shall be only for such reasonable periods of time as are consistent

with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year.

If Non-Operator is not taking its share of such ores and/or minerals in kind, any proceeds received by Operator for Non-Operator shall be distributed or accounted for monthly to such party; provided, however, that Operator shall be entitled to retain and apply any proceeds of production accruing to Non-Operator on any unsatisfied expenses chargeable against Non-Operator as herein provided.

17. Taxes

Operator shall pay, as the same become due and payable, all taxes levied or assessed against said jointly owned mining property, and the production therefrom, and against all personal property acquired in operations hereunder including but not limited to ad valorem, production, severance, sales, use, and like taxes. Non-Operator shall reimburse Operator for its proportionate part of the total taxes so paid and the expenses incurred in connection with the rendering and payment thereof in accordance with the Accounting Procedure.

18. Rentals, Advance Royalties, and Assessment Work

After the Initial Exploration Period, Operator shall pay any and all rentals, delay rentals, advance royalties, royalties,

payments out of production and other obligations which may become due and payable under and by virtue of the mining leases, option agreements, and other agreements affecting said jointly owned mining property and shall charge the joint account.

Operator agrees to establish good and customary practices in the matter of processing said payments, but as stated in Section 10 hereof and without limiting the generality of the limitation of liability of Operator therein stated, Operator shall not be responsible on account of failure to pay any such payment or for any error in said payment, if such failure or error should be the result of any clerical mistake, error or oversight, or any failure of the mails or other means of transmission of the payment or by reason of any cause beyond its control.

Operator agrees to do and perform or cause to be done and performed, within the time required by law, the annual labor or assessment work on or for the benefit of the unpatented mining claims hereinbefore described, necessary to comply with the law of the United States and the State of Arizona, and upon completion of the annual labor for any particular year, Operator shall record within the requisite statutory period, an affidavit showing said work to have been performed. Operator shall charge Non-Operator for its proportionate share of the cost of all assessment work performed after the Initial Exploration Period.

It is understood that if this Agreement is terminated as to any claim at any time prior to ninety (90) days previous to expiration of the then existing annual labor year, Operator shall

be relieved from doing the assessment work for that claim for that annual labor year. So long as an exemption of annual labor or assessment work is authorized by law, Operator, may, at its option, file such notice or claim for exemption as may be required by law for all or any part of said mining claims for and on behalf of and in the name of Non-Operator, and Non-Operator does hereby appoint Operator its agent for that purpose.

19. Operator's Lien

Non-Operator hereby grants to Operator a lien upon its respective interest in the project together with the jointly owned equipment and other property and its interest in all production as security for payment of costs chargeable to it, together with any interest payable thereon. Operator shall have the right to bring any action at law or in equity to enforce collection of such indebtedness with or without foreclosure of such lien. In addition, upon default by Non-Operator in the payment of costs chargeable to it, Operator shall have the right to collect and receive from the purchaser or purchasers thereof the proceeds of Non-Operator's share of production, up to the amount owing by Non-Operator plus interest at the rate of seven per cent (7%) per annum until paid; each such purchaser shall be entitled to rely on Operator's statement concerning the existence and amount of any such default.

20. Change of Operator

Operator may resign from its duties and obligations at any time upon written notice of not less than 180 days given to Non-Operator. If Operator (1) shall become bankrupt or (2) should transfer its interest in the project (which requires compliance with requirements of Section 13 hereof), it shall cease to be Operator and Non-Operator shall become Operator without need of any further action; provided, however, that in the event of a transfer of the Operator's interest in the project made in connection with a corporate re-organization, consolidation or merger or made to a wholly-owned subsidiary or parent company, the transferee of the Operator shall assume the position of Operator.

Subject to the foregoing, if American Smelting and Refining Company ceases to be the initial Operator hereunder or if at any time while acting as initial Operator hereunder, through transfer or dilution pursuant to the terms hereof, the interest of American Smelting and Refining Company stated in terms of percentage in the project should be reduced to something less than that of Kerr-McGee Corporation, other than in connection with a corporate re-organization, consolidation, merger or transfer to a wholly-owned subsidiary or parent company, then in that event Kerr-McGee Corporation shall assume the position of Operator.

The Operator, upon ceasing to act in such capacity, shall deliver to its successor the custody of all of the assets, records,

books and other property, both real and personal, of the Project. A successor Operator, duly appointed in accordance with this Agreement, shall assume the responsibilities and duties of, and shall have the rights granted to, the Operator pursuant to this Agreement.

21. Relationship of the Parties

The ownership of the parties in the Said Lands and all other property, real and personal, located thereon or belonging to the project hereunder, shall be and is as tenants in common, and the liability of the parties shall be several and not joint or collective. It is not the purpose or intention of this Agreement to create, and same shall never be construed as creating, a joint venture, mining partnership, commercial partnership, or other partnership relations. Each party shall be responsible only for its obligations as herein set forth and shall be liable only for its proportionate share of the cost of exploring, developing and operating Said Lands.

Each of the parties hereto elects to be excluded from the application of all of the provisions of Sub-Chapter K of Chapter 1 of Subtitle A of the Internal Revenue Code of 1954, and Operator is hereby directed, and hereby agrees, to file such election with appropriate partnership returns for the first year in which this Agreement is in effect.

22. Laws and Regulations and Force Majeure

This Agreement shall be subject to all valid applicable laws and official rules and regulations, and in the event this Agreement or any of the provisions hereof, or the operations contemplated hereby, are found to be inconsistent with or contrary to any such valid laws or official rules or regulations, the latter shall be deemed to control, and this Agreement shall be regarded as modified accordingly, and, as so modified, to continue in full force and effect.

In the event of Operator being rendered unable wholly or in part, by force majeure, to carry out its obligations under this Agreement other than to make payment of amounts due hereunder, it is agreed that the obligations of the Operator so far as they are affected by such force majeure shall be suspended during the continuance of any liability so caused, but for no longer period, and such cause, so far as it may be done by means normally employed in performance and at comparable expense, shall be remedied with all reasonable dispatch.

The term "force majeure", as employed herein, shall mean Acts of God, strikes, lock-outs, or other industrial disturbances, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, any state or federal laws or regulations, or other matters beyond the reasonable control of the Operator, whether similar to matters herein specifically enumerated, or not, provided, however, that performance

shall be resumed within a reasonable time after such cause has been removed; and provided, further, that the Operator shall not be required against its will, to adjust any labor dispute or to question the validity of or to refrain from judicially testing the validity of any state or federal order, regulation, or law. This Agreement shall not terminate because performance hereunder is prevented or delayed by reason of any cause provided in this paragraph.

23. Notices

All notices hereunder shall be in writing. For the purpose of receiving notices as required by this Agreement, the parties designate the following addresses:

American Smelting and Refining Company
P. O. Box 5795
Tucson, Arizona 85716

with copy to:

American Smelting and Refining Company
120 Broadway
New York, New York 10005

Kerr-McGee Corporation
Kerr-McGee Building
Oklahoma City, Oklahoma 73102

These addresses may be changed upon written notice.

24. Information to Parties: Confidentiality

Operator shall keep Non-Operator informed, at reasonable intervals, of the progress and results of drilling and other explora-

tory and development work performed hereunder. The parties hereto agree to treat all data, reports, records and other information relating to the Area of Interest as confidential.

25. Furnishing of Data, etc. on Termination.

Each party shall, as soon as possible following termination pursuant to Section 12 or 15 hereof, complete the discharge of all of its proportional share of accrued or outstanding obligations to the other party or to third parties incurred under this Agreement and not previously met. Either party, upon termination and upon discharge of the above mentioned obligations, may, if it so chooses, quitclaim to the other party its interest in the Said Lands and any property located thereon or belonging to the Project or in any portion thereof. Upon termination of this Agreement, each of the parties shall be entitled to all information acquired under the Project, including copies of all maps, data, and reports which can be reproduced and which have not theretofore been furnished.

26. Arbitration

In case of any dispute or difference between the parties, the same shall be determined by arbitration proceedings in Tucson, Arizona in accordance with the rules of the American Arbitration Association.

27. Removal of Operator for Cause

In the event of any material breach by Operator, Non-Operator may elect to terminate Operator's right to act as such hereunder on account thereof, but in such case Non-Operator shall first give to Operator a written notice of its intention so to elect, specifying the particular default or defaults relied upon by it. Operator shall have a reasonable time (which in any case shall not be less than ninety days) after receipt of such notice in which to cure such specified default or defaults, and if such default or defaults are cured, there shall be no breach hereunder with respect to such default or defaults. No waiver of and no failure or neglect on the part of Non-Operator to give notice of a default or defaults shall affect any subsequent default or impair Non-Operator's rights resulting therefrom. If Operator should dispute that a breach has occurred, it shall so advise Non-Operator and the question shall be determined by arbitration as provided in Section 26 hereof. If the decision of the arbitrator(s) shall be that Operator was in breach, then it shall have the reasonable time aforesaid after said decision within which to cure the default or defaults before Non-Operator may terminate the right of Operator to act as such hereunder, and if such default or defaults be cured, there shall be no breach hereunder with respect to the same.

In the event of such termination of the right to act as Operator, the Operator shall be under no further obligation or liability hereunder as Operator to Non-Operator from and after the date of such termination except for its liabilities and obligations as Operator already accrued to the date of such termination, such Operator shall become Non-Operator, the former Non-Operator shall become Operator. This Section shall continue applicable to all successors of Operator.

28. Headings for Convenience Only

The headings used in this Agreement are for convenience only and shall be disregarded in construing this Agreement.

29. Miscellaneous

(a) This Agreement, and all the provisions hereof, shall inure to the benefit of, and be binding upon, not only the parties hereto, but also their respective successors and assigns.

(b) This Agreement shall be executed in two or more copies with each such executed copy to be considered an original.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement effective as of the date first above set forth.

KERR-McGEE CORPORATION

ATTEST:

By _____
Vice President

Secretary

AMERICAN SMELTING AND
REFINING COMPANY

ATTEST:

By _____
Vice President

Assistant Secretary

STATE OF OKLAHOMA)
 : ss.:
COUNTY OF OKLAHOMA)

On the _____ day of _____, A.D., 1968, personally
appeared before me, _____, who, being by me
duly sworn, did say, that he is a Vice President of KERR-McGEE
CORPORATION, and that said instrument was signed in behalf of
said corporation by authority of its by-laws, and said _____
_____ acknowledged to me that said corporation
executed the same.

My Commission Expires:

STATE OF NEW YORK)
 : ss.:
COUNTY OF NEW YORK)

On the _____ day of _____, A.D., 1968, per-
sonally appeared before me, _____, who,
being by me duly sworn, did say, that he is the Vice President of
AMERICAN SMELTING AND REFINING COMPANY, and that said instrument
was signed in behalf of said corporation by authority of its by-laws,
and said _____ acknowledged to me that said
corporation executed the same.

My Commission Expires:

EXHIBIT A

Attached to and made a part of that certain operating agreement between
Kerr-McGee Corporation and American Smelting and Refining Company.

MINING CLAIMS

<u>Contributor</u>	<u>Grantor</u>	<u>Date of Deed</u>	<u>Claims</u>	<u>Recording Data</u>
Kerr-McGee Corporation	Dale B. Trubey et ux	7/17/61	Joco 1 thru 41	Dkt 30 pp 432-472
			As amended	Dkt 30 pp 432-470
			Bear 1 thru 11	Dkt 30 pp 473-483
			As amended	Dkt 30 pp 473-483
			Deer 1 thru 10	Dkt 30 pp 484-493
			As amended	Dkt 30 pp 484-492
			Fox 1 thru 6	Dkt 31 pp 213-218
			Paty 1 thru 8	Dkt 30 pp 494-501
			As amended	Dkt 30 pp 498-501
			Wild Pig 1 thru 12	Dkt 31 pp 219-230
			As amended	Dkt 31 pp 219-230
			Paty 9	Dkt 31 pg 363
			As amended	Dkt 31 pg 363
			Wild Pig 13 thru 16	Dkt 31 pp 364-367
Kerr-McGee Corporation	Everett E. Jones et ux	6/11/63	Oops 1 and 2	Dkt 41 pp 426-427

<u>Contributor</u>	<u>Locator</u>	<u>Date of Location</u>	<u>Claims</u>	<u>Recording Data</u>
Kerr-McGee Corporation	Kerr-McGee Oil Industries, Inc.	1/24/63	Oops No. 3 thru 5	Dkt 41 pp 428-430
Kerr-McGee Corporation	Kerr-McGee Oil Industries, Inc.	3/18/65	Hank 26, 37, 38, 41	Dkt 59 pp 175-78
Kerr-McGee Corporation	Kerr-McGee Oil Industries, Inc.	10/19/62	Hank 1-2, 8-24, 26-28, 30-31	Dkt 39 pp 577-600
Kerr-McGee Corporation	Kerr-McGee Oil Industries, Inc.	1/23/63	Hank 32 thru 35	Dkt 41 pp 431-434
Kerr-McGee Corporation	Kerr-McGee Oil Industries, Inc.	12/2/62	Terry No. 1	Dkt 40 pg 400

<u>Contributor</u>	<u>Grantor</u>	<u>Date of Deed</u>	<u>Claims</u>	<u>Recording Data</u>
American Smelting and Refining Company			Flux 1 thru 5, 11, 15, 16, 18, 23, 25 Rockne	

MINING CLAIM LEASES

<u>Contributor</u>	<u>Lessor</u>	<u>Date of Instrument</u>	<u>Claims</u>	<u>Recording Data</u>
Kerr-McGee Corporation	Albert Des Saulles et ux & Albert Durward Link et ux	6/12/65	Blue Eagle No. 1 Old Boy Roger Log Cabin	Bk. 27 pg 40 Bk. 24 pg 260 Bk. 27 pg 40

MINING CLAIM LEASES (continued)

<u>Contributor</u>	<u>Lessor</u>	<u>Date of Instrument</u>	<u>Claims</u>	<u>Recording Date</u>
			St. Louis	Bk. 27 pg 41
			Darfee	Bk. 19 pg 360
			Heaveyside	Bk. 19 pg. 363
			Elmor	Bk. 19 pg 361
			Heaveyside No. 2	Bk. 19 pg 365
			Charlotte	Bk 19 pg 362
			Cowboy	Bk. 27 pg 39
			North Star	Bk 24 pg 258
			La Tuna No. 1	Dkt 3 pg 181
			Red Hawk No. 3	Dkt 3 pg 184
			Red Hawk No. 1	Dkt 3 pg 182
			Red Hawk No. 7	Dkt 3 pg 188
			Red Hawk No. 6	Dkt 3 pg 187
			Red Hawk No. 5	Dkt 3 pg 186
			Red Hawk No. 4	Dkt 3 pg 185
			Red Hawk No. 2	Dkt 3 pg 183
			St. Patrick No. 4	Dkt 30 pg 506

MINING CLAIM LENSES (continued)

<u>Contributor</u>	<u>Lessor</u>	<u>Date of Instrument</u>	<u>Claims</u>	<u>Recording Data</u>
Kerr-McGee Corporation	Albert Des Saulles et ux & Albert Durward Link et ux (continued)	6/12/65	St. Patrick No. 3 Border Side Hope No. 1 Hope No. 2 Hope No. 3 Hope No. 4 Blue Eagle No. 2 Blue Eagle No. 3 Esther South Red Mountain No. 1 South Red Mountain No. 2 South Red Mountain No. 3 South Red Mountain No. 4 South Red Mountain No. 5 South Red Mountain No. 6 South Red Mountain No. 7 South Red Mountain No. 8 United Verde No. 1 United Verde No. 2 United Verde No. 5 St. Patrick No. 1 St. Patrick No. 2 United Verde No. 4 United Verde No. 3 Steam Shovel	Dkt. 30. pg 505 Dkt 30 pg 383 Dkt. 30 pg 379 Dkt 30 pg 380 Dkt 30 pg 381 Dkt 30 pg 382 Dkt 31 pg 94 Dkt 30 pg 507 Dkt 30 pg 508 Dkt. 30 pg 348 Dkt 30 pg 349 Dkt 30 pg 350 Dkt. 30 pg 351 Dkt 30 pg 352 Dkt 30 pg 353 Dkt 30 pg 354 Dkt 30 pg 355 Dkt 31 pg 91 Dkt 31 pg 92 Dkt 31 pg 93

MINING CLAIM LEASES (continued)

<u>Contributor</u>	<u>Lessor</u>	<u>Date of Instrument</u>	<u>Claims</u>	<u>Recording Data</u>
Kerr-McGee Corporation	Helen Bohn, Doris K. Siebold, Albert Des Saulles et ux	6/12/65	Invincible, 'aka Invincible No. 1 Lime Bank No. 2 aka Invincible No. 2	Bk 27 pg 255 Bk 27 pg 257
Kerr-McGee Corporation	Albert Des Saulles et ux	6/12/65	Lime Bank Donna Marie Lime Bank No. 3	Bk 24 pg 528 Bk 24 pg 610 Bk 24 pg 536
Kerr-McGee Corporation	Albert Des Saulles et ux	6/12/65	Lime Bank No. 4 Lime Bank No. 5 Powder House Reed Tunnel Iron Bank	Bk 24 pg 537 Bk 24 pg 537 Bk 24 pg 543 Bk 24 pg 542 Bk 24 pg 524
Kerr-McGee Corporation	W.D. Roper, A.G. Frost, Gila Investors, Inc., Marie Roper, Earl Strong, Rafel Scroggins, Mary Harris, Leona Lines, Rodolfo Gabaldon, Spencer Hoopes, Eunice Collins, Ruskin Lines, John Boyd, Gherald Hoopes, Don Welker, Grant Godfrey, Raymond Godfrey	10/10/65	Ten Grand Nos. 1-12 Ten Grand No. 13-B Ten Grand Nos. 14-B, 15-B, and 16-B Ten Grand Nos. 17-30 Ten Grand No. 31 Ten Grand No. 32 Ten Grand Nos. 33-40 Ten Grand Nos. 41-46 Ten Grand No. 47	Dkt 14 pp 80-91 Dkt 30 pg 594 Dkt 30 pp 595-597 Dkt 14 pp 96-109 Dkt 14 pg 110 Dkt 14 pg 111 Dkt 14 pp 112-119 Dkt 14 pp 120-125 Dkt 30 pg 561

MINING CLAIM LEASES (continued)

<u>Contributor</u>	<u>Lessor</u>	<u>Date of Instrument</u>	<u>Claims</u>	<u>Recording Data</u>
			Ten Grand Nos. 48-50	Dkt 14 pp 127-129
			Ten Grand Nos. 51-57	Dkt 14 pp 130-136
			Ten Grand Nos. 58-78	Dkt 30ML pp 540-551
			Ten Grand Nos. 79-84	Dkt 25 pp 178-183
			Ten Grand Nos. 85-88	Dkt 30ML pp 578-580
			Ten Grand Nos. 89-103	Dkt 29 pp 155-169
			Ten Grand Nos. 104-126	Dkt 29 pp 170-192
			Ten Grand Nos. 127-128	Dkt 29 pp 372-373
			Ten Grand Nos. 129-130	Dkt 29 pp 374-375
			Ten Grand Nos. 131-136	Dkt 29 pp 376-381
			Ten Grand Nos. 137-138	Dkt 30 pp 549-550
			Ten Grand Nos. 139-142	Dkt 38 pp 455-458
			Tres Pobres Nos. 1-8	Dkt 31 pp 75-82
			Ten Grand No. 143	Dkt 38 pg 459
Kerr-McGee Corporation	James Yanez, Frank Vasquez et ux, Marlin E. Widger	9/1/65	Red Castle 1-9 incl.	Dkt 30 pp 395-403 incl.

EXHIBIT "B"

ACCOUNTING PROCEDURE

(JOINT OPERATIONS)

I. GENERAL PROVISIONS

1. Definitions

"Joint property" as herein used shall be construed to mean the subject area covered by the agreement to which this "Accounting Procedure" is attached.

2. Statements and Billings

Operator shall bill Non-Operator on or before the last day of each month for its proportionate share of costs and expenditures during the preceding month. Such bills will be accompanied by statements, reflecting the total costs and charges. Statements shall include all charges and credits to the joint account, summarized by appropriate classifications indicative of the nature thereof, except that charges and credits to the joint account for capital expenditures shall be shown in detail.

3. Payments by Non-Operator

Each party shall pay its proportion of all such bills within fifteen (15) days after receipt thereof. If payment is not made within such time, the unpaid balance shall bear interest at the rate of seven per cent (7%) per annum until paid.

4. Adjustments

Payment of any such bills shall not prejudice the right of Non-Operator to protest or question the correctness thereof. Subject to the exception noted in Paragraph 5 of this Section I, all statements rendered to Non-Operator by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. Failure on the part of Non-Operator to make claim on Operator for adjustment within such period shall establish the correctness thereof and preclude the filing of exceptions thereto or making of claims for adjustment thereon.

5. Audits

Non-Operator, upon notice in writing to Operator, shall have the right to audit Operator's accounts and records relating to the accounting hereunder for any calendar year within the twenty-four (24) month period following the end of such calendar year, provided, however, that Non-Operator must take written exception to and make claim upon the Operator for all discrepancies disclosed by said audit within said twenty-four (24) month period.

II. EXPLORATION, DEVELOPMENT, MINING AND OPERATING CHARGES

Subject to limitations hereinafter prescribed, Operator shall charge the joint account with the following items:

1. Rentals and Royalties

Delay or other rentals, when such rentals are paid by Operator for the joint account and are not charged to the contributing party; royalties, when not paid directly to royalty owners by the purchaser of ores or minerals produced.

2. Labor

A. Salaries and wages of Operator's employees directly engaged on or in connection with the joint property in the exploration, development, maintenance, mining and operations thereof, including salaries or wages paid to geologists, mining engineers and other employees who are temporarily assigned to and directly employed on or in connection with the joint property, prorated for the time devoted to such work.

B. Operator's cost of holiday, vacation, sickness and disability benefits, and other customary allowances applicable to the salaries and wages chargeable under paragraphs 2A and 11. These costs may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable under paragraphs 2A and 11. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

C. Costs of expenditures or contributions made pursuant to

assessments imposed by governmental authority which are applicable to Operator's labor cost of salaries and wages as provided under paragraphs 2A and 11.

3. Employee Benefits

Operator's current cost of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost.

4. Material

Material, equipment, and supplies purchased by Operator for use of the joint property. So far as it is reasonably practical and consistent with efficient and economical operation, only such material shall be purchased for or transferred to the joint property as may be required for prompt use; and the accumulation of surplus stocks shall be avoided unless prudent management indicates otherwise. No such items of property shall be furnished by Operator but all thereof shall be purchased from third parties, unless the parties mutually agree otherwise.

5. Transportation

Transportation of employees, equipment, material and supplies necessary for exploration, development, maintenance, mining and operations of the joint property.

6. Services

A. The cost of contract services and utilities procured from outside sources other than services covered by paragraphs 8 and 12 of this Section II.

B. Use of and service by Operator's exclusively owned equipment and facilities as provided in paragraph 5 of Section III entitled "Operator's Exclusively Owned Facilities."

7. Damages and Losses to Joint Property and Equipment

All costs or expenses necessary to replace or repair damages or losses incurred by fire, flood, storm, theft, accident, or any other cause whether or not occasioned by gross negligence or wilful wrong on the part of the Operator's employees, representatives or agents. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after report of the same has been received by Operator.

8. Legal Expense

All costs and expenses of handling, investigating and settling litigation or claims arising by reason of the joint operations or necessary to protect or recover the joint property, including, but not limited to, attorneys' fees, court costs, cost of investigation or procuring evidence and amounts paid in settlement or satisfaction of any such litigation or claims; provided, (a) no charge shall be made for the services of Operator's legal staff or other regularly employed personnel (such services

being considered to be Administrative Overhead under Section II), except by agreement with Non-Operator, and (b) no charge shall be made for the fees and expense of outside attorneys unless the employment of such attorneys is agreed to by Operator and Non-Operator.

9. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the properties which are the subject of this agreement, the production therefrom or the operation thereof, and which taxes have been paid by the Operator for the benefit of the parties hereto.

10. Insurance Premiums

Premiums paid for insurance required to be carried on the joint property for the protection of the parties; provided that Operator may, in lieu of carrying the above specified insurance, elect to be self-insured as to such insurance coverage, and in that event Operator may charge the joint account an amount equal to the premiums which Operator would have had to pay in order to obtain the above specified insurance and Operator will bear, without charge therefor to the joint account, any liabilities which would have been full compensated by such insurance had Operator carried the same.

11. District and Camp Expense (Field Supervision and Camp Expenses)

A pro rata portion of the salaries and expenses of Operator's district geologist and other employees serving the joint property and other properties of the Operator in the same operating area, whose time is not allocated directly to the properties, and a pro rata portion of the cost of maintaining and operating an office known as Operator's Tucson exploration office (or a comparable office if location changed), and necessary suboffices (if any), maintained for the convenience of the above-described office, and all necessary camps, including housing facilities for employees if required, used in the conduct of the operations on the joint property and other properties operated in the same locality. The expense of, less any revenue from, these facilities should be inclusive of depreciation or a fair monthly rental in lieu of depreciation on the investment. Such charges shall be apportioned to all properties served on some equitable basis consistent with Operator's accounting practice.

12. Administrative Overhead on Exploration, Development and Mining Operations

During exploration and development operations only, Operator may charge to the joint account each month as its indirect and overhead expense, a sum which shall be equal to 2% of the total amount of all moneys expended and the costs and expenses incurred during that month with respect to all operations and activities conducted by Operator under and in accordance with the provisions of this agreement except:

- a. Rentals and royalties as provided for in Section II, Paragraph 1.
- b. All litigation and claims and legal expenses as provided for in Section II, Paragraph 8.
- c. All taxes paid on the mineral interest.
- d. All salvage credits.

The above specific overhead rate may be amended from time to time by agreement between Operator and Non-Operator if, in practice, it is found to be insufficient or excessive.

In operating the joint property after commercial production begins, Operator may charge to the joint account each month, as its indirect and overhead expenses for said month, ten cents (10¢) per dry short ton (2,000 pounds) of ore milled; provided, however, that the total of said charges per calendar year shall not exceed One Hundred and Fifty Thousand Dollars (\$150,000). This charge for indirect and overhead expense shall be in lieu of any charge to the joint account for any part of the compensation or salaries paid to officers of Operator, to accounting and purchasing personnel in Operator's headquarter's office or to any other personnel in the service departments of Operator's headquarter's office; it being understood however that travel expense incurred by any such officers or headquarter's office personnel

while on trips made for the benefit of or on business of the joint account and/or the joint property shall be fully reimbursable to Operator as a direct expense incurred in the operation of the joint property. It shall also be in lieu of any charge to the joint account for any part of the cost of maintaining and operating Operator's headquarter's office or for any part of the cost (other than travel expenses incurred) of legal services of a routine nature, not involving claims or litigation, performed by Operator's legal department (or by counsel generally retained by Operator) at its headquarter's office. In this connection, it is noted that Operator's headquarter's office is located at New York City, New York, and references in this Exhibit B to Operator's headquarter's office shall mean Operator's said New York office.

13. Other Expenditures

Any expenditures, other than expenditures which are covered and dealt with by the foregoing provisions incurred by the Operator for the necessary and proper exploration, development, maintenance, mining and operation of the joint property. ✓

III. BASIS OF CHARGES TO JOINT ACCOUNT

1. Purchases

Material and equipment purchased and service procured shall be charged to the joint account when purchased or paid for and at the price paid by Operator after deduction of all discounts actually received.

2. Material Furnished by Operator

Material required for operations shall be purchased for direct charge to joint account whenever practicable and Operator shall not furnish such material from Operator's stocks without prior approval of the terms thereof by Non-Operator.

3. Operator's Exclusively Owned Facilities

The following rates shall apply to service rendered to the joint account by facilities owned exclusively by Operator:

A. Water, fuel, power, compressor and other auxiliary services at rates commensurate with cost of providing and furnishing such service to the joint account but not exceeding rates currently prevailing in the field where the joint property is located.

B. Automotive equipment at rates commensurate with cost of ownership and operation. Automotive rates shall include cost of oil, gas, repairs, insurance, and other operating expense and depreciation; and charges shall be based on use in actual service on, or in connection with, the joint account operations. Truck and tractor rates may include wages and expenses of driver.

C. A fair rate shall be charged for the use of Operator's fully owned machinery or equipment which shall be ample to cover maintenance, repairs, depreciation, and the service furnished the joint property; provided that such charges shall not exceed those currently prevailing in the area where the joint property is located.

D. A fair rate shall be charged for laboratory services performed by Operator for the benefit of the joint account, provided such charges shall not exceed those currently prevailing if performed by outside service laboratories.

E. Whenever requested, Operator shall inform Non-Operator in advance of the rates it proposes to charge.

F. Rates shall be revised and adjusted from time to time when found to be either excessive or insufficient.

IV. DISPOSAL OF EQUIPMENT AND MATERIAL

The disposition of major items of surplus material shall be subject to mutual determination by the parties hereto; provided Operator shall have the right to dispose of normal accumulations of junk and scrap material either by transfer or sale from the joint property.

V. INVENTORIES

1. Periodic Inventories, Notice and Representations

At reasonable intervals, inventories shall be taken by Operator of the joint account material, which shall include all such material as is ordinarily considered controllable by operators of mining properties. Written notice of intention to take

inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operator may be represented when an inventory is taken. Failure of Non-Operator to be represented at an inventory shall bind Non-Operator to accept the inventory taken by Operator, who shall in that event furnish Non-Operator with a copy thereof.

2. Special Inventories

Special inventories may be taken, at the expense of the purchaser, whenever there is any sale or change of interest in the joint property; and it shall be the duty of the party selling to notify all other parties hereto as quickly as possible after the transfer of interest takes place. In such case, both the seller and the purchaser shall be represented and shall be governed by the inventory so taken.

SEP 12 1968

Copied for KVDs
9-12-68
L2B

New York, September 11, 1968

MEMORANDUM FOR: Mr. Harry Smith

Proposed Kerr McGee Joint Venture
Red Mountain, Santa Cruz County, Arizona

Herewith for your review and suggestions is copy of Mr. Courtright's letter of September 5th and enclosed comments mentioned therein by Mr. Bowditch, together with the draft of proposed joint venture agreement between Asarco and Kerr McGee covering the Red Mountain Project adjacent to Flux property near Patagonia, Arizona.

I have reviewed the draft and it appears to me that Kerr McGee has again submitted one of their typical petroleum type agreements which we found in connection with our Missouri negotiations to be impractical and not suited for mining ventures. As you know, after months of negotiating and passing drafts back and forth with Kerr McGee, we finally gave up in disgust and terminated our negotiations in connection with the Missouri property.

However, our people in Tucson are quite anxious to undertake this joint venture if a satisfactory agreement can be concluded. I would appreciate it, therefore, if you would attempt a redraft to submit to Kerr McGee. I have asked Mr. Courtright to have the accounting procedure, Exhibit "B", scrutinized by Mr. von den Steinen to determine if the suggested accounting provisions are feasible. I have also told Mr. Courtright that the matter of an overhead charge will have to be settled and I suggested 10¢ per ton but not to exceed \$150,000 per year. Undoubtedly, you will find a number of provisions which will not be acceptable to you from a legal standpoint. You can make such revisions as appear necessary.

C. P. Pollock

Enc.

CC-JH Courtright ✓
WESaegart
SIBowditch

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

September 5, 1968

J.J. Collins, Chief Geologist,
ASARCO - New York Office

Red Mountain, Kerr-McGee Joint Venture
Santa Cruz County, Arizona

Dear Sir:

Enclosed with Mr. Bowditch's comments are two copies of the proposed Asarco-Kerr-McGee operating agreement on the latter's Red Mountain property located near Patagonia, Arizona.

The terms of this contract were outlined and the exploration possibilities discussed in Mr. Saegart's letters of July 30 and August 5.

In brief, Asarco may acquire a 60% interest by spending \$450,000 over a period of 3 years. The initial risk involves the expenditure of \$120,000 during the first year.

The exploration objective would be the Paleozoic limestones which may unconformably underlie the altered and mineralized volcanics and intrusive porphyries of Red Mountain. This unconformity was first recognized in the Flux area, one mile SW, and later in the Hardshell area, 4 miles southerly, where the limestones underlying volcanics contain extensive silver mineralization.

In view of the large extent of the Red Mountain alteration zone containing low grade but pervasive primary copper mineralization, the limestones at depth, if they exist, represent a substantial ore potential.

It is recommended that the terms of the enclosed agreement be approved and a mining authorization in the amount of \$125,000 be requested.

Yours very truly,

J.H. Courtright

JHC:lzb

Encl.

cc: KVdSteinen

WESaegart

SBowditch

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
SEP 3- 1968

August 30, 1968

To: Mr. J. H. Courtright

From: Mr. S. I. Bowditch

Proposed Kerr McGee Joint Venture
Red Mountain
Santa Cruz County, Arizona

In his letter of August 5 to Mr. Pollock, Mr. Saegart outlined the terms of the proposed Joint Venture agreement with Kerr-McGee in the Red Mountain area near Patagonia, and stated that Kerr-McGee would prepare a draft of the proposed agreement.

This has now been done, and I attach three copies to this memorandum, so that you can send two to New York for study and suggestions there. While longer and more detailed than most of the joint-venture agreements which I have seen that have been prepared in New York lately, it follows the same general principals, and in many cases uses nearly identical language.

I have the following comments:

- 1) Asarco is of course a New Jersey corporation (page 1).
- 2) I wonder if the distinction between "Exploration" and "Development" (page 2) is necessary, and, if so, if it corresponds to the definition of the Internal Revenue Service.
- 3) There is no specific mention of "original plant", "beginning of operations" and provision for working capital, as in our Hecla agreement.
- 4) In Article 13 - Transfer of Interest (page 11) there is a provision that no transfer of interest shall be made "other than for lawful money", yet, later, mergers, transfers to subsidiaries, etc., are mentioned. This, of course, does not necessarily involve cash. Should this be clarified?
- 5) In Article 14 - Insurance (page 12), there is provision that insurance premiums are chargeable to the joint account. Should this be amplified to state that premiums during the Initial Exploration Period are a legitimate part of ASARCO's expense?
- 6) In Article 16 - Disposition of Production (page 14) there is no mention of sale to an Asarco smelter and the usual protection we provide our partners in such cases.

- 7) On page 16, first line of last paragraph of Article 18, "is" should be "if".
- 8) In Article 23 - Notices (page 20) possibly the Tucson and New York addresses of Asarco should be reversed in order.
- 9) In the Accounting Procedure Appendix - Exhibit "B" - Section 12 on page 6 provides for an "overhead" charge of 2% of expenses during the exploration period, with later overhead charges to be negotiated. New York might prefer a higher percentage, and particularly to spell out the percentage to be used after the exploration period, at this time.

S. I. Bowditch

S. I. Bowditch

SIB:kc

Attachment

cc: WESaegart, w/att.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

6a19.18.0A
J. H. C.

AUG 19 1968

August 5, 1968

Mr. C.P. Pollock
American Smelting and Refining Co.
120 Broadway
New York, New York 10005

PROPOSED KERR-McGEE JOINT VENTURE,
SANTA CRUZ COUNTY, ARIZONA

Dear Sir:

This is in reference to my letter to Mr. J.J. Collins dated July 30 and our telephone conversation of August 1st concerning the subject Joint Venture. The possibilities of an Asarco Kerr-McGee Joint Venture at Red Mountain have been further explored with Messrs. Zeb Jones and Russel Korn, local representatives of Kerr-McGee.

A Joint Venture incorporating the terms as prescribed below, has been verbally authorized by Kerr-McGee's principal office in Oklahoma City.

PROPOSED RED MOUNTAIN JOINT VENTURE TERMS:

Kerr-McGee's exploration expenditures to date total \$300,000. With an expenditure of \$450,000 Asarco would earn a 60% equity in the property, with Kerr-McGee retaining a minority 40% equity. Asarco could earn this equity over a three year exploration period by making the following expenditures:

1st year.....	\$100,000 or more
2nd year.....	\$100,000 or more
3rd year.....	Balance of \$450,000 total expenditure.

We would have the right to terminate the agreement any time during the three year exploration period with a 30 day written notice providing that the minimum exploration commitment for that year had been satisfied.

The annual rentals for the 215 claims under lease-option to Kerr-McGee total approximately \$30,000. Asarco would be obligated to pay 60% of these rentals during each year that the Joint Venture is in effect.

During the three year exploration period, Asarco would be responsible for the performance and recordation of assessment work on all of the claims included in the Joint Venture agreement. These would include 130 Kerr-McGee locations, 215 claims on which Kerr-McGee holds valid lease-options and 12 Asarco locations which comprise the balance of our Flux property. Prior to this

August 5, 1968

Joint Venture proposal by Kerr-McGee, the Southwestern Mining Department and the Southwestern Exploration Department had jointly decided to abandon the remaining Flux claims. Since they are contiguous with the Kerr-McGee property and since the Joint Venture minimum exploration commitments are more than adequate to complete the assessment work requirements, we have incorporated the Flux claims into the Joint Venture property.

Following the \$450,000 expenditure by Asarco during the exploration period, expenditures for exploration, property or development would be shared by Asarco and Kerr-McGee on a 60-40 basis. Profits of course would also be divided with the same percentages.

The agreement would include a provision whereby property acquired or located by either company within the immediate vicinity of the existing claim groups would automatically be subject to the terms of the Joint Venture agreement. The area which would be affected by this provision would include all of sections 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33 and 34 in T22S, R16E and all of sections 12, 13, 24, 25, and 36 in T22S, R15E. If the Joint Venture continues beyond the three year exploration phase, the two companies by mutual agreement could reduce the acreage included in this provision.


A draft agreement incorporating the Joint Venture provisions described herein is to be prepared by Kerr-McGee for Asarco's preliminary examination. This draft will be forwarded to you together with our comments and recommendations.

Very truly yours,



W.E. Saegart

WES:lzb

cc: JHCourtright 
SIBowditch
JEKinnison

J. H. C.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

SEP 5-1968

August 5, 1968

Mr. C.P. Pollock
American Smelting and Refining Co.
120 Broadway
New York, New York 10005

PROPOSED KERR-McGEE JOINT VENTURE,
SANTA CRUZ COUNTY, ARIZONA

Dear Sir:

This is in reference to my letter to Mr. J.J. Collins dated July 30 and our telephone conversation of August 1st concerning the subject Joint Venture. The possibilities of an Asarco Kerr-McGee Joint Venture at Red Mountain have been further explored with Messrs. Zeb Jones and Russel Korn, local representatives of Kerr-McGee.

A Joint Venture incorporating the terms as prescribed below, has been verbally authorized by Kerr-McGee's principal office in Oklahoma City.

PROPOSED RED MOUNTAIN JOINT VENTURE TERMS:

Kerr-McGee's exploration expenditures to date total \$300,000. With an expenditure of \$450,000 Asarco would earn a 60% equity in the property, with Kerr-McGee retaining a minority 40% equity. Asarco could earn this equity over a three year exploration period by making the following expenditures:

1st year.....	\$100,000 or more
2nd year.....	\$100,000 or more
3rd year.....	Balance of \$450,000 total expenditure.

We would have the right to terminate the agreement any time during the three year exploration period with a 30 day written notice providing that the minimum exploration commitment for that year had been satisfied.

The annual rentals for the 215 claims under lease-option to Kerr-McGee total approximately \$30,000. Asarco would be obligated to pay 60% of these rentals during each year that the Joint Venture is in effect.

During the three year exploration period, Asarco would be responsible for the performance and recordation of assessment work on all of the claims included in the Joint Venture agreement. These would include 130 Kerr-McGee locations, 215 claims on which Kerr-McGee holds valid lease-options and 12 Asarco locations which comprise the balance of our Flux property. Prior to this

August 5, 1968

Joint Venture proposal by Kerr-McGee, the Southwestern Mining Department and the Southwestern Exploration Department had jointly decided to abandon the remaining Flux claims. Since they are contiguous with the Kerr-McGee property and since the Joint Venture minimum exploration commitments are more than adequate to complete the assessment work requirements, we have incorporated the Flux claims into the Joint Venture property.

Following the \$450,000 expenditure by Asarco during the exploration period, expenditures for exploration, property or development would be shared by Asarco and Kerr-McGee on a 60-40 basis. Profits of course would also be divided with the same percentages.

The agreement would include a provision whereby property acquired or located by either company within the immediate vicinity of the existing claim groups would automatically be subject to the terms of the Joint Venture agreement. The area which would be affected by this provision would include all of sections 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33 and 34 in T22S, R16E and all of sections 12, 13, 24, 25, and 36 in T22S, R15E. If the Joint Venture continues beyond the three year exploration phase, the two companys by mutual agreement could reduce the acreage included in this provision.

A draft agreement incorporating the Joint Venture provisions described herein is to be prepared by Kerr-McGee for Asarco's preliminary examination. This draft will be forwarded to you together with our comments and recommendations.

Very truly yours,

W.E. Saegart

WES:lzb

cc: JNCourtright
SIBowditch
JEKinnison

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 30, 1968

J. H. C.

AUG 19 1968

Mr. John J. Collins, Chief Geologist
ASARCO - New York Office

Red Mountain - Kerr-McGee Mng. Co.
Santa Cruz County, Arizona

Dear Sir:

The local exploration staff of Kerr-McGee have proposed a joint exploration program for a deep drilling test of their Red Mountain property near Patagonia in Santa Cruz County, Arizona. Kerr-McGee has been drilling in this area for a number of years in an effort to develop copper reserves in the siliceous rocks which are locally exposed. This exploration has defined large tonnages of 0.2% copper (primary). In addition, they have developed a thin enriched chalcocite blanket underlying a rather thick leached zone. The net result is a relatively small tonnage of ore in the enriched zone and a large waste to ore ratio which inhibits exploitation.

The Kerr-McGee geologists have provided us complete data covering their Red Mountain exploration to date. This information has been evaluated and summarized in the attached memorandum from J. E. Kinnison. The exploration objective for a joint exploration program, as suggested by Kerr-McGee, would be to test for better mineralization in the paleozoic carbonate sequence which may underlie the area.

The Flux Mine is located a little more than a mile southwest of the area containing Kerr-McGee's extensive drilling. Cretaceous sediments in the Flux Mine area dip steeply to the southwest and are unconformably overlain by tertiary volcanics which dip gently to the northeast. As shown on the diagrammatic section accompanying Mr. Kinnison's memo, this unconformity dips beneath Kerr-McGee Red Mountain prospect area. Paleozoic limestones should therefore exist beneath the unconformity within the large area of hydrothermal alteration in the exposed siliceous volcanic and intrusive rocks.

The depth to the unconformity surface in the Red Mountain area cannot be accurately predicted. We would hope that these underlying rocks could be intersected at depths between 2500' and 3500' in drill holes located between Red Mountain and Alum Gulch.

This proposal represents exploration in the "long shot" category because the proposed target is only inferred to exist through geological projection and because of the depth involved. On the positive side, the Red Mountain area exhibits a very large zone of pervasive alteration and mineralization. If the carbonate rocks underlie this zone within reasonable depths they would constitute a favorable environment for ore grade concentrations of chalcopyrite.

Mr. Collins,
Red Mtn. - Kerr-McGee

-2-

7-30-68

The Kerr-McGee Red Mountain property consists of 130 Kerr-McGee locations and 215 claims on which they hold lease-options. The leases carry 5% net mine value royalties and annual rentals totalling approximately \$30,000. These leases contain 10 and 20-year options to purchase (until 1975 and 1985). The total upset price on all 215 claims is approximately \$1,500,000.

The offer which has been proposed by Kerr-McGee would permit ASARCO to obtain up to a 50% equity interest or more, depending upon the extent of exploration monies expended. To date, Kerr-McGee has spent between \$200,000 and \$300,000 exploring this property. By matching this total, ASARCO could obtain a 50% interest. The initial commitment by ASARCO could be for a lesser amount with provisions for additional subsequent expenditures until the Kerr-McGee's total is matched.

In addition to an exploration commitment, ASARCO would also be obligated to share the annual rental payments on the leased claims. The assessment work for 1968 has already been completed.

Mr. J. H. Courtright was present during our initial discussions with the local Kerr-McGee staff. He and I both feel that although the risk is high the exploration objective offers the possibilities of large rewards. We believe that two deep holes would constitute a bare minimum test for the objectives which have been described above. Mr. Kinnison has plotted locations (in red) for two holes to test for mineralized sediments beneath the unconformity. The cost of these holes is estimated at \$110,000. One-half of the 1968 rental payments amounts to approximately \$15,000. The total initial commitment then for one year would be \$125,000.

If ASARCO is interested in a joint venture with this general framework and if you agree that this exploration objective is valid, we will proceed to draft an agreement with Kerr-McGee. The basic underlying data including Kerr-McGee drilling results, surface geochemical sampling, mapping, property maps and individual lease option agreements are available and can be transmitted in the event ASARCO wishes to become involved in this exploration program.

Yours very truly,

WES:lm
encl.

W. E. Saegart

cc: JHCourtright, w/encs
JEKinnison

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 26, 1968

TO: W. E. Saegart
FROM: J. E. Kinnison

RED MOUNTAIN EXPLORATION
KERR-McGEE, SANTA CRUZ COUNTY, ARIZONA

INTRODUCTION

Kerr-McGee, who has been drilling in the subject area for the past several years, has given us exploration maps and drill logs of Red Mountain, situated slightly to the northeast of our old Flux Mine. They propose a joint venture and further drilling. Informal conversation of recent date with their geologist in charge of the southwest, Russell Korn, indicates terms along the following lines: We could obtain a 50% interest by spending an amount equal to that which Kerr-McGee has already invested. By exceeding this amount, we can also obtain a controlling interest and thereby operating control.

The Red Mountain alteration zone has been known to Asarco for many years. The alteration is strong, but appears to be pyritic in its general nature. The principal area drilled out is confined to the western slope, in and adjacent to a molybdenum anomaly. Mr. Korn states this area-- about 6,000 x 3,000 feet-- contains numerous thin quartz stringers and intense sericite alteration. Kenyon Richard, in his report on the Sunnyside Breccia Pipe area south of Red Mountain (1951) indicates several very small breccia pipes on the western slope, although some lie outside of the molybdenum anomaly.

The geologic and topographic features are generalized on the attached map, with a cross-section through the area of principal interest.

There is a reasonable probability that Paleozoic limestones lie beneath Red Mountain. These limestones might have been better host rocks for mineralization than the volcanics and porphyry above which grade about .2% copper. Thus, this very low-grade copper might be increased to about .9% copper, perhaps similar to Mission in grade and tonnage. The point now is one for management to determine--is Asarco interested in the expensive exploration required in searching for possible deep ore--which in this case I estimate to begin at a depth of 2,500 to 3,500 feet? I should point out that there is no certainty that the Paleozoic limestones, if found beneath Red Mountain, would be raised to a grade approaching 1% because of being better host rocks.

I estimate drilling and related costs to be \$110,000 for two holes. Also, we would have to pay part of an annual claim rental, as Mr. Saegart has discussed in his transmittal statement.

DISCUSSION

Kerr McGee has drilled three deep diamond drill holes which will average about .2% copper, in various igneous rocks. These holes all were bottomed at approximately the same depth, which is about 1,000 feet below the elevation of the town of Patagonia, to the North. The majority of their drill holes are confined to that area within or adjacent to the molybdenum anomaly on the western slope of Red Mountain. Elsewhere, their holes are in small scattered groups, each group testing a particular area thought by them to represent better mineralization.

In the deep holes, I see no progressive increase in grade with increasing depth--which is the proposition put forth to us. There is, however, a quite different objective in searching for the Paleozoic limestones.

For reference I have used J. H. Courtright's report on the Flux Mine and Kenyon Richard's report on the Sunnyside areas, both done in 1951. Mr. Courtright recognized an important unconformity between Pre-ore low-dipping volcanics near the Flux, and steeply dipping Cretaceous sediments beneath. This unconformity dips toward, and must lie below, Red Mountain.

As I have shown on the attached map with cross section (compiled from Courtright's data), this unconformity should extend below Red Mountain, although the depth to it and its actual depth at any location can only be inferred. The Paleozoic limestones should lie within the alteration zone beneath the altered volcanics of Red Mountain, and they have not been penetrated by Kerr McGee's drill holes. These limestones could be better host for primary mineralization, as they are at Mission and Imperial.

This is a valid exploration objective, but it is inhibited at the very beginning by the drilling depth required to locate the unconformity, and determine what rocks lie beneath it. Taking advantage of topography, I have selected two principal drill locations and one alternate location, which are lower at the drill site collar than the collar elevation of the Kerr McGee deep holes. The depth of drilling which we would have to anticipate lies between 2,500 to 3,500 feet. I have discussed this with Mr. Wojcik and we have determined that several methods of drilling are available for these depths in these rocks, but that all methods average out to about \$15 per foot assuming 3,500 feet total depth. This cost includes direct contract cost, water, overhead, supervision, and other miscellaneous expenses. The technical details will not be listed at this time.

A simplified tabulation of estimated expense is:

Road work	\$ 1,000
Engineering and geology.....	4,000
Drilling to 3,500 feet, 2 holes	<u>105,000</u>

TOTAL	\$ 110,000
-------	------------

Mr. Saegart,

3,

7/26/68

The uncertainties for this exploration are numerous. The most critical are as follows:

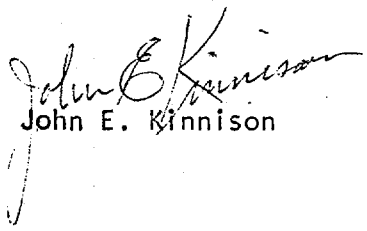
1. The depth to the unconformity, below which the Paleozoic limestones would lie is not known, nor can it be confidently projected. Surface mapping by Mr. Courtright in the Flux Area indicated a dip on this surface of about 50°, but he has pointed out that drill holes, put down many years after his report, intercepted this unconformity at a more shallow depth than a 50° projection would indicate, thus suggesting that the unconformity flattens in the direction of Red Mountain. This would be in accordance with the more shallow dips of the Wieland Canyon andesite, which is about 20° northeast. This lower angle of dip is shown in the cross section on the attachment.

2. The Cretaceous section is not well known, at the Flux or anywhere else in southern Arizona, and we do not know the stratigraphic position of the beds at the Flux Mine with respect to the base of the Cretaceous. However, the same thickness is indicated both at the Flux and also near Hardshell. The outcrops show in the Hardshell group of claims (att.) that the Cretaceous beds lie on the Paleozoic strata near American Peak, in the southern part of the claims.

3. The entire Paleozoic section, or parts thereof, may have been removed by intrusive rocks.


4. Unknown faults that could occur anywhere beneath the unconformity may duplicate the Cretaceous section in the Red Mountain Area.

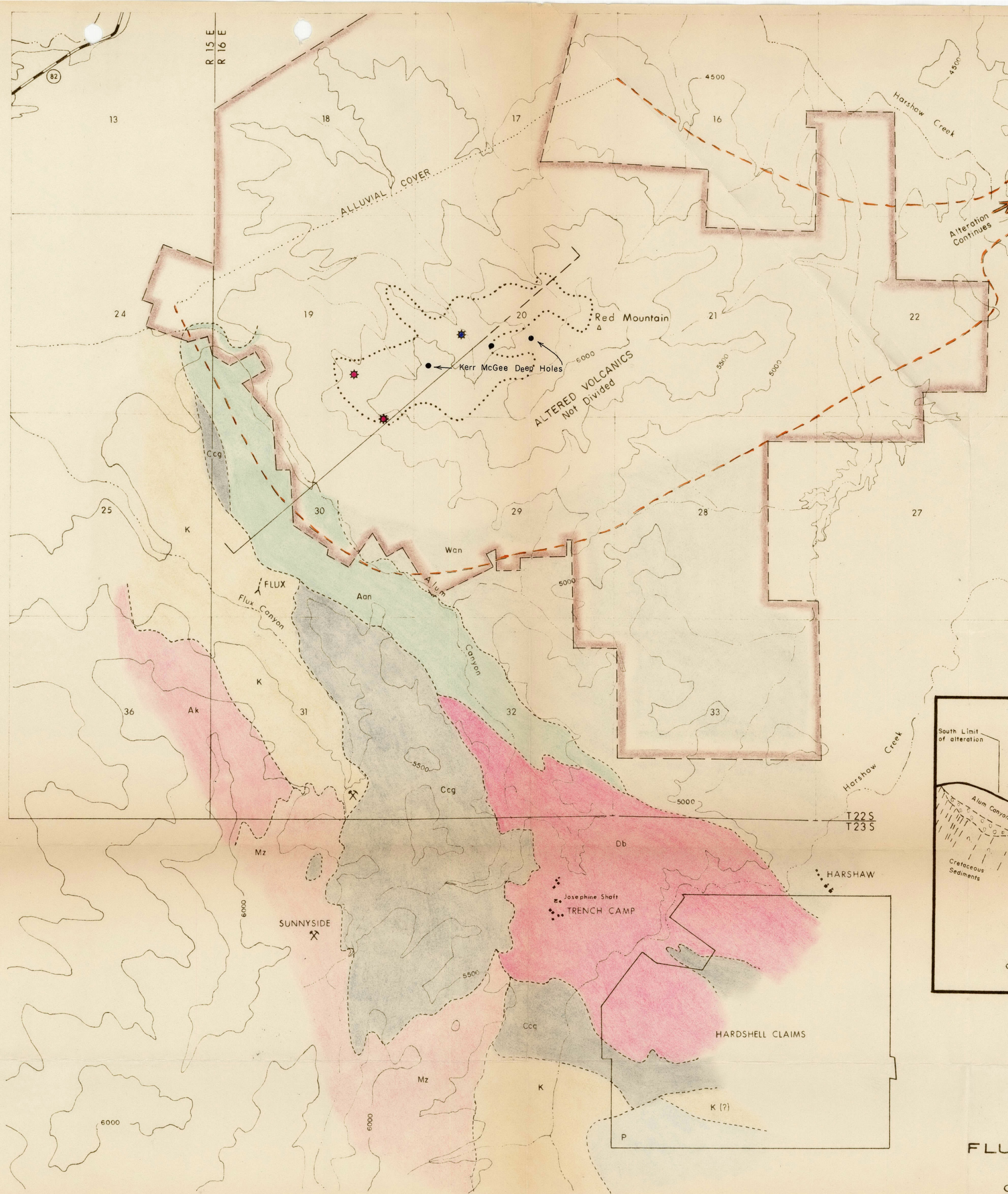
5. There is no guarantee that the Paleozoic limestones would have been more receptive to copper mineralization in the Red Mountain Area. Many tactite deposits are spotty and low-grade. Our Mission and Imperial ore bodies are exceptions.


John E. Kinnison

JEK:lab

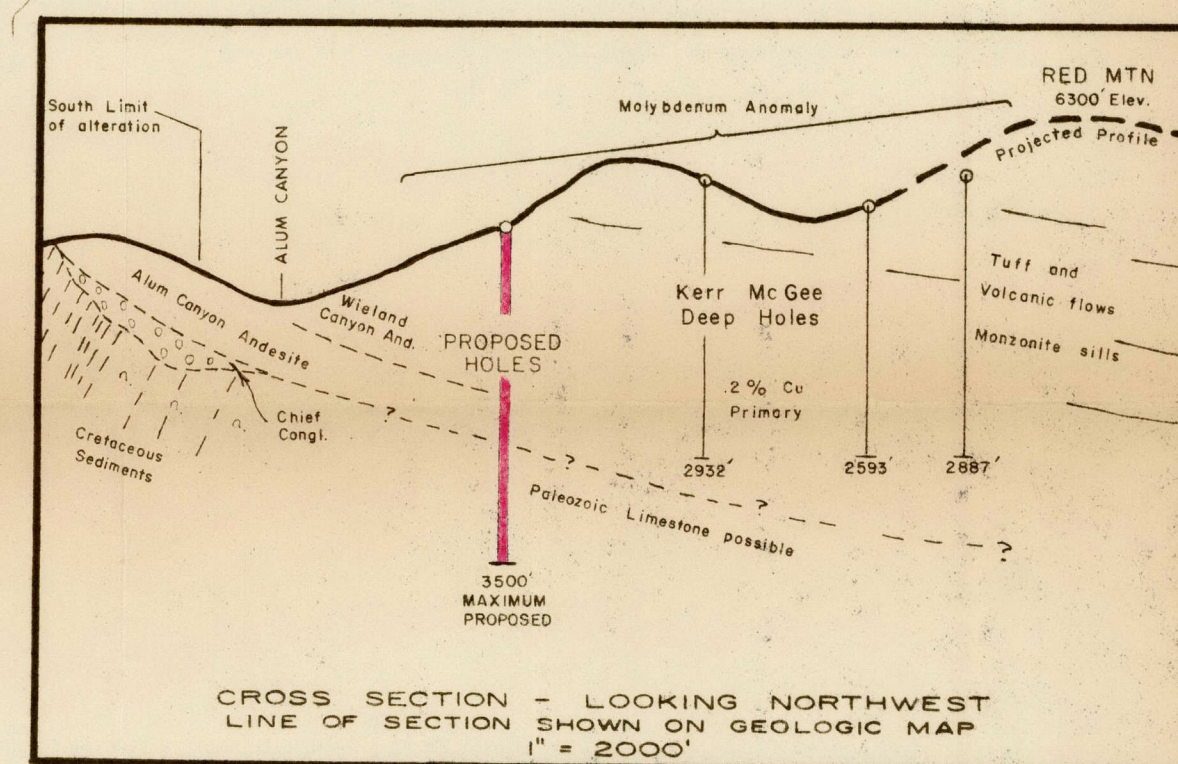
Attachment

cc: JHCourtright 
WESaegart (2) extra



EXPLANATION

- | | |
|--|--------------------------------|
| Mz | Monzonite |
| Db | Diabase - sills, dikes |
| Wan | Wieland Canyon Andesite - Flow |
| Aan | Alum Canyon Andesite - Flow |
| Ccg | Chief Conglomerate |
| Ak | Alaskite |
| K | Cretaceous Sedimentaries |
| P | Paleozoic - chiefly limestone |
| <p>..... Molybdenum Anomaly</p> | |
| <p>--- Kerr McGee Claim Outline</p> | |
| <p>--- Approximate Limit of Alteration</p> | |
| <p>★ Proposed Holes</p> | |
| <p>★ Alternate Proposed Holes</p> | |



EXPLORATION MAP FLUX - RED MOUNTAIN - HARSHAW SANTA CRUZ COUNTY, ARIZONA

Geology adapted from J. H. Courtright, 1951
U.S.G.S. Topographic Base

SCALE 1" = 2000'
Contour Interval 500'