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09/26/88

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: RED MOUNTAIN PROJECT

ALTERNATE NAMES:
TEN GRAND MINE
GEM
CARLTON

SANTA CRUZ COUNTY MILS NUMBER: 98

LOCATION: TOWNSHIP 22 S RANGE 16 E SECTION 21 QUARTER W2
LATITUDE: N 31DEG 30MIN 14SEC LONGITUDE: W 110DEG 43MIN 09SEC
TOPO MAP NAME: ELGIN - 15 MIN

CURRENT STATUS: EXP PROSPECT

COMMODITY:
COPPER

BIBLIOGRAPHY:
ADMMR RED MOUNTAIN PROJECT FILE
USGS PP 658-E, P. 22
USGS BULL. 582, GENERAL REFERENCE
USGS PP 658C, P 81
ECONOMIC GEOLOGY, VOL. 70,# 8, P. 1437-1447
MAPS UPSTARIS IN FLAT STORAGE, 3RD DRAWER

RED MOUNTAIN PROJECT

Skillings Mining Review, April 27, 1974, p. 4
" " " June 28, 1975, p. (Jim Quinlan, project mgr.)

MAPS - Upstairs in flat storage area in third drawer

CORN, R.M. 1975 ALTERATION-MINERALIZATION ZONING, AT RED MTN, AZ., ECONOMIC GEOLOGY V. 70 pp. 1437-1447

USGS PP 658-E, p. 22

USGS Bull 582

USGS PP 658-E, p. 81

Economic Geology, Vol. 70 p. 1437-1447

Mt. Hughes 7.5 (included in file)

KERR-McGEE CORPORATION
P. O. BOX 870 • PATAGONIA, ARIZONA 85624

June 15, 1976

Mr. G. W. Irvin
Department of Mineral Resources
Room 208, State Office Bldg.
415 West Congress
Tucson, Arizona 85701

Dear Jerry:

It was good to visit with you on the phone and I trust you can get down Patagonia way one of these days.

I trust that you will find the enclosed paper by Russ Corn on the Alteration-Mineralization Zoning of Red Mountain of interest.

Sincerely yours,

J. J. Quinlan
Project Manager
Red Mountain Copper

JJQ:js

Enclosure

Copy of the reprint from Economic Geology No. 8, December, 1975
Filed in Tucson Office GI

Filed- RED MOUNTAIN KEER MCGEE

put in file

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY (SHORT FORM)
May be Reproduced
May Be Inserted Into Mine File Or Added To "Rumor Page"

1. **Information from:** Cominco American Resources Inc.

   Address: E. 15120 Euclid Ave

   Spokane, WA 99216

2. **Phone:** (509) 922-8767

3. **Mine:** Red Mountain

4. **ADMMR Mine File:** RED MOUNTAIN PROJECT

5. **County:** Santa Cruz

6. **MILS Number** 98

7. **Operational Status:** Developed Deposit

8. **Summary of information received, comments, etc.:**

Cominco American has entered into a joint venture agreement with Kerr McGee to develop the Red Mountain porphyry copper deposit. Cominco reportedly holds an option to buyout the entire Kerr McGee interest but will probably not exercise it. The relatively shallow chalcocite enrichments are hoped to be developed rather than the deep mineralization for which the deposit is known. Drill work is planned for this spring. James Finch is the geologist in charge of the project. A small Tucson office is to be opened. Some temporary help may be hired.

Date: February 23, 1989 Harrison E. Matson

(signature) ADMMR

Russell Corn said that the holes drilled into the orebody at Red Mountain were widely spaced. He did not agree with the grade or estimated reserves of the field engineer, but only said too high and too much. GWI WR 6/21/76

CJH WR 10/16/81: Visitor: Jim Hoopes, Technical Assistant (Geology), Chenron Resources, 3841 N. Oracle Rd., Tucson, AZ 85705. Tel: 887-3256. Wanted information on AZ Cu production and AZ vs. U.S. and world Cu production. This is a new office in Tucson (will be entered in the new Exploration Co. directory). Chevron Resources is a Dvision of Chevron Industries, Inc. They are currently interested in major porphyty copper deposits, particularily the Red Mountain Project Mine, Harshaw District, Sec. 21, T22S R16E, Santa Cruz County.

RED MOUNTAIN PROJECT SANTA CRUZ COUNTY

Active Mine List Oct. 1966 - Expl. - E. E. Jones, Project Supt.
" " " April 1967 -
" " " Nov. 1967 - Expl.
" " " April 1968 -

Mine visit to the Red Mountain Project of Kerr-McGee. Road in good shape - no one around. GWI WR 5-6-67

Active Mine List Oct. 1968 - Expl.
Active Mine List April 1969 - Expl. - E. E. Jones, Proj. Supt., Kerr-McGee Oil, 1637 E. 18th St., Tucson

Kerr-McGee announced a probable ore body on Red Mountain in the amount of 100,000,000 tons of low grade deep ore. GWI QR 10-1-70

The major activity in Santa Cruz County is Kerr McGee at Red Mountain. GWI AR 73-74

Jim Quinlan called to say he was leaving Hecla to go to work for Kerr-McGee on their Red Mountain Project south of Patagonia. GW WR 11/15/74

I talked to a clerk in Kerr-McGee's office at Patagonia who said that shaft work had not been started at their Red Hill property. She said exploration was continuing with two drills presently working. VBD WR 5/14/75

Diamond drilling continues at Red Mountain south of Patagonia by Kerr-McGee. VBD WR 8/7/75

I talked to Don Bolton, v.p. of Kerr-McGee Corp., at their Red Mt. office in Patagonia. Evaluation of the deposit there continues. Development has not yet started. VBD WR 9/11/75

References: SMR 4/27/74, p. 4
" 6/28/75

PRINTED 06/15/98

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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

PROPERTY:

RED MOUNTAIN

OPERATOR\OWNER:

Kerr-McGee Corp.
P. O. Box 25861
Oklahoma City, OK 73125
405-270-1313

LOCATION INFORMATION:

TOWNSHIP 22 S RANGE 16 E SECTION 20
COUNTY - Santa Cruz AZMILS - 98
DESCRIPTION - 3 miles south of Patagonia

ORE TYPE AND RESERVE INFORMATION:

Sulfide - 569 MILLION TONS AT 0.57% Cu (a)

SOURCES:

(a) Red Mountain Prospectus by Roe, R.R., Kerr Mcgee Corp., December 1995.

COMMENTS:

Resource includes 3 parts: 140 mt at 0.34% chalcocite blanket, 380 mt at 0.58% sulfide deposit, and 49 mt at 1.14% breccia pipe. Additional gold, silver and molybdenum values reported.

Red Mt, Santa Cruz — file

December 5, 1995

PROSPECTUS

RED MOUNTAIN
Santa Cruz County, Arizona

Kerr-McGee Corporation

• *Introduction*

Kerr-McGee Corporation, as sole owner and operator of the Red Mountain, Arizona copper project, hereby offers the property for sale or other mutually acceptable arrangement on a non-exclusive basis.

Kerr-McGee holds thirty-six (36) patented lode mining claims at Red Mountain totaling approximately 493 acres. These are maintained indefinitely via county taxes which currently total $1,946 per year.

The property is located at the northern end of the Patagonia Mountains, two miles southeast of the community of Patagonia, Arizona and 18 miles northeast of Nogales, Arizona/Nogales, Sonora. It is located in Township 22 South, Range 16 East in the Hardshaw Mining District, Santa Cruz County, Arizona.

Kerr-McGee has controlled the Red Mountain property since the early 1960's. Approximately 190,000 feet of drilling in 76 diamond core holes and five rotary drill holes have been completed. Twenty-five holes exceed 5,000 feet in depth, at a maximum depth of 5,790 feet.

Exploration data are extensive and include: drill lithology/alteration logs and drill sample geochemistry, detailed mapping of surface geology and alteration (by numerous workers), and preliminary resource calculations, engineering and leachability studies. This prospectus is designed to summarize the exploration data, and the reader is advised that Kerr-McGee nor any of its employees or agents shall have any liability to you or any of your agents or employees resulting from your or their use of the prospectus.

• *Geology and Mineralization*

Red Mountain is a high-sulfidation porphyry copper system with a vertical zonation of alteration and mineralization of over two vertical km. The deposit is hosted by a Late Cretaceous-Early Tertiary stratovolcanic complex of which three layered units are recognized. The uppermost unit, up to 2,400 feet (730 m) thick, is referred to as the **Tuff unit**, and consists of rhyolitic to dacitic tuffs, flows, and breccias. Below that are about 3,000 feet (915 m) of andesitic to trachyandesitic flows, breccias, sills, and dikes referred to as the **Andesite unit**. The lowest unit has not been completely penetrated by drilling and is referred to as the **Felsite-latite unit**. It consists of volcanic conglomerate and breccias, silicified tuffs, flows(?), interlayered and cut by latite sills and dikes, and is interbedded with the lower portion of the Andesite unit. All units generally have a north strike and dip to the east at about 15°.

The layered volcanics are intruded by porphyritic granodiorite and quartz monzonite which occur as dikes and irregular bodies in outcrop and drill holes. The most volumetrically significant intrusion is an irregularly shaped monzonite porphyry stock on the western edge of the porphyry system.

Alteration is zoned laterally and vertically in relation to the copper mineralization and appears to be related to three hydrothermal events closely related in time and origin. It is more fully described in the paper by Quinlan (1986).

Copper mineralization at Red Mountain can be divided into three zones: 1) an upper level chalcocite blanket deposit, 2) a deep level bulk sulfide deposit, and 3) a breccia pipe within the core of the deep porphyry system. The chalcocite blanket is hosted by the Tuff Unit, the deep level sulfide deposit is hosted by the Andesite and Felsite-latite unit, and the breccia pipe is hosted dominantly by the Felsite-latite unit. Principal hypogene sulfides are pyrite and chalcopyrite. Bornite and enargite have been identified in the drill core from the lower and upper portions of the system, respectively. Also present, but not common, are molybdenite, tennantite, galena and sphalerite.

Secondary chalcocite is present mainly in the blanket deposit, within the pyritic plume of the porphyry system. The chalcocite blanket is an irregular, east-northeast trending tabular zone that contains several distinct enrichment horizons. Chalcocite typically occurs as replacements and coatings of original pyrite grains. Copper oxides, although present, are minimal.

The chalcocite blanket lies at an average elevation of 5,000 to 5,100 feet (1,525-1,555 m) above sea level, approximately 2,500 feet (760 m) higher than the top of the deep sulfide deposit. The blanket resource is 0-1,000 feet (0-305 m) below the present erosional surface.

The deep level bulk sulfide deposit, although incompletely delineated, is roughly elliptical in plan with a low sulfide, low copper core which appears to be a nearly classic copper-sulfide shell. The axis of the ellipse trends northeasterly. The top of this deposit is generally at an elevation of about 1,500 feet (460 m) above sea level, or 4,000 feet (1,220 m) below the surface.

The breccia pipe deposit lies within the southern part of the low sulfide, low copper, core of the deep level bulk deposit and appears elliptical in plan. It measures about 800 feet to 1,100 feet (245 × 335 m) in plan diameter and extends downward from about 1,750 feet (535 m) above sea level to 4,000 feet (1,220 m) below the surface.

No drill holes have intersected an intrusion responsible for the Red Mountain alteration/mineralization system. Fluid inclusions studies (Bodnar and Beane, 1980) suggest early vein-filling fluids are sourced from the volcanic wall rocks, but that later fluids originated from unidentified magmatic source(s) at depth.

Gold mineralization in the Red Mountain porphyry system was first noted in routine assays of drill hole composite samples collected for evaluation of shallow copper potential. Random intercepts ranging in thickness from a few feet to a few tens of feet with values ranging from 0.02 opt to 0.06 opt gold were encountered above and roughly coincident with the chalcocite blanket in an area measuring roughly 500 × 1,000 feet (150 × 300 m). Gold mineralization occurs at the base of totally oxidized, hematically stained rocks that form the oxidized cap, generally near the uppermost zone of chalcocite enrichment. Chalcocite mineralization occurs in the zone of partial oxidation characterized by jarosite ± hematite + sulfides.

The geology, alteration, and mineralization of the Red Mountain area has been described by a number of authors, and much information is publicly available. A selected bibliography is presented below.

• ***Copper Resources***

SHOULD BE 6.48 billion lb. (THERE FOR AVERAGE GRADE IS 0.57%. NJN 6-98)

Geological resources have been estimated for the three parts of the deposit as currently known, and total approximately 569 million short tons containing almost 650 million lbs. Cu. The chalcocite blanket contains approximately 140 million short tons @ 0.34% Cu, including 19 million tons @ 0.69% copper. The chalcocite blanket mineralization is believed to be SX leachable, based on preliminary column leach tests. The deep level bulk sulfide deposit contains approximately 380 million short tons grading 0.58% copper, 0.009% molybdenum, 0.003 ounces gold per ton and 0.12 ounces silver per ton in the explored portion of the copper shell, using a cutoff of 0.3% copper. The breccia pipe contains approximately 49 million short tons grading 1.14% copper, 0.025 molybdenum, 0.004 ounces gold per ton and 0.15 ounces of silver per ton utilizing a 0.3% copper cutoff. These preliminary estimates reflect a geological resource, and computation of a mineable reserve is subject to a more rigorous evaluation, respectful of current economic conditions.

• ***Exploration Potential***

The chalcocite blanket resource is still in the early stages of exploration. Additional drilling is required to verify and possibly expand the current resource. Additional core logging and sampling may also identify precious metal concentrations and exploration opportunities which could enhance the economics of the blanket resource.

Only about one-half of the deep copper shell has been explored. The western limb of the deposit needs additional drilling to define the width and base of the copper shell. The open northeastern portion of the shell is considered very prospective, and the full vertical extent of the Cu porphyry system has never been penetrated. Additionally, other undiscovered breccia pipes may exist within the system.

• ***Details***

For further information, please contact:

Mr. H.W. Holmberg or Mr. R.R. Roe (405/270-3780)
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, OK 73125
(Fax 405/270-3010)

SELECTED BIBLIOGRAPHY

Bodnar, R.J., and Beane, R.E., 1980, Temporal and spatial variations in hydrothermal fluid characteristics during vein filling in preore cover overlying deeply buried porphyry copper-type mineralization at Red Mountain, Arizona: Econ. Geol., v. 75, p. 876-893.

Chaffee, M.A., Hill, R.H., Sutley, S.J., and Watterson, J.R., 1981, Regional geochemical studies in the Patagonia Mountains, Santa Cruz County, Arizona: Jour. of Geochemical Exploration, v. 14, p. 135-153.

Corn, R.M., 1975, Alteration-mineral zoning, Red Mountain, Arizona: Econ. Geol., v. 70, p. 1437-1447.

Drewes, Harold, 1971 A, Geologic map of the Mount Wrightson Quadrangle, southeast of Tucson, Santa Cruz and Pima Counties, Arizona: U.S. Geol. Survey Misc. Geol. Inv. Map I-614.

_____, 1971 B, Mesozoic stratigraphy of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Surv. Prof. Paper 658-C.

_____, 1972 A, Cenozoic rocks of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 746.

_____, 1972 B, Structural geology of the Santa Rita Mountains, southeast of Tucson, Arizona: U.S. Geol. Survey Prof. Paper 748.

Graybeal, F.T., 1984, Metal zoning in the Patagonia Mountains, Arizona: Arizona Geological Society Digest, v. 15, p. 187-197.

_____, 1994, The Sunnyside porphyry copper system, Patagonia Mountains, Arizona: abst, "Bootprints along the Cordillera", AGS, SME & USGS, October 1994.

Kistner, D.J., 1984, Fracture study of a volcanic lithocap, Red Mountain Porphyry Copper Prospect, Santa Cruz County, Arizona: unpub. M.S. Thesis, Univ. of Arizona, 75 p.

Quinlan, J.J., 1986, Geology and silicate-alteration zoning at the Red Mountain porphyry copper deposit, Santa Cruz County, Arizona: Arizona Geol. Society Digest, v. XVI, p. 294-304.

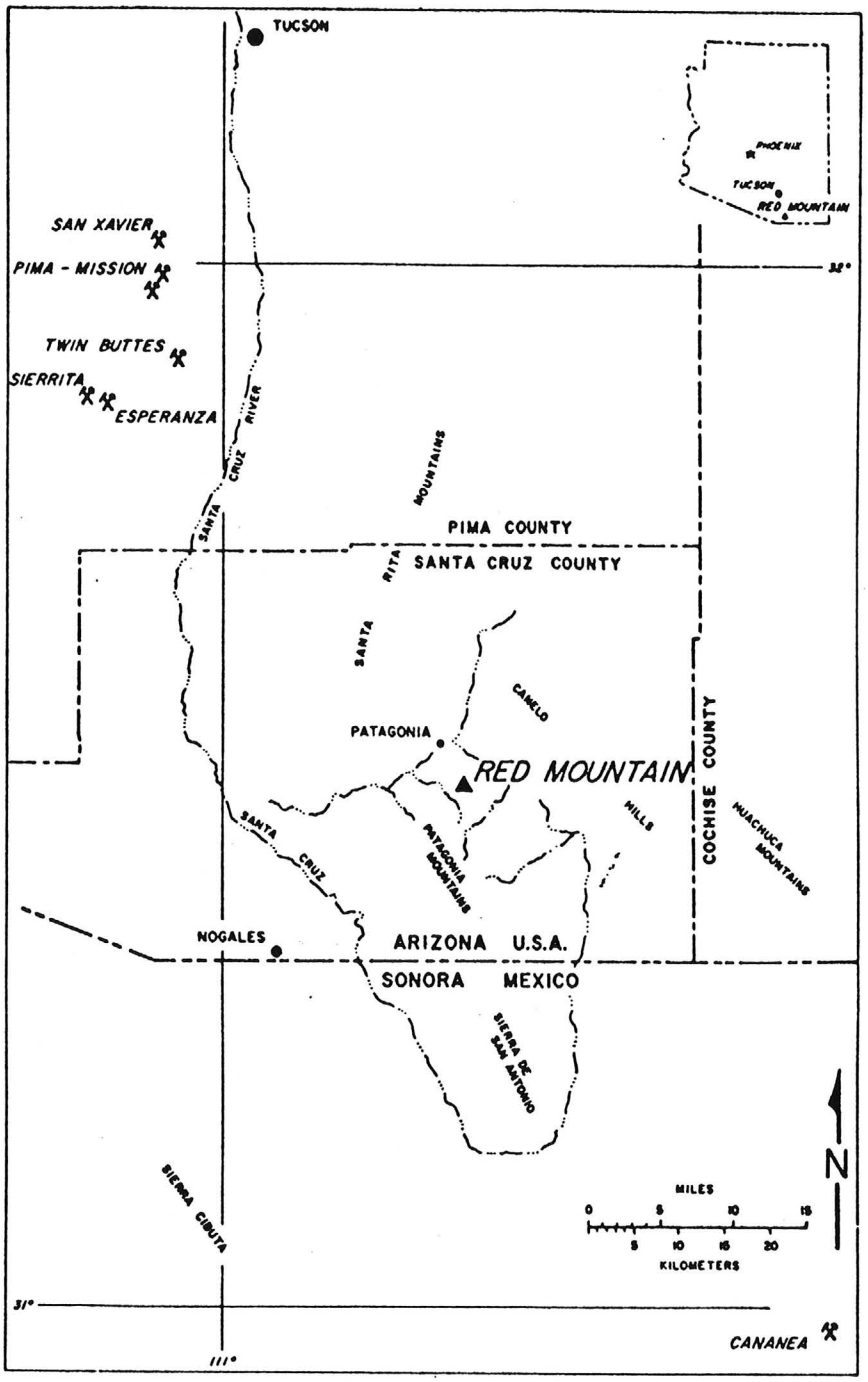
Schrader, F.C., 1915, Mineral deposits of the Santa Rita and Patagonia Mountains, Arizona, with contributions by J.M. Hill: U.S. Geol. Survey Bull. 582.

Simons, F.S., 1971, Mesozoic stratigraphy of the Patagonia Mountains and adjoining areas, Santa Cruz County, Arizona: U.S. Geol. Survey Prof. Paper 658-E.

_____, 1974, Geologic map and sections of the Nogales and Lochiel Quadrangle, Santa Cruz County, Arizona: U.S. Geol. Survey Misc. Inv. Series I-762.

RRR:nh/12-5-95
redmtnpr.rrr

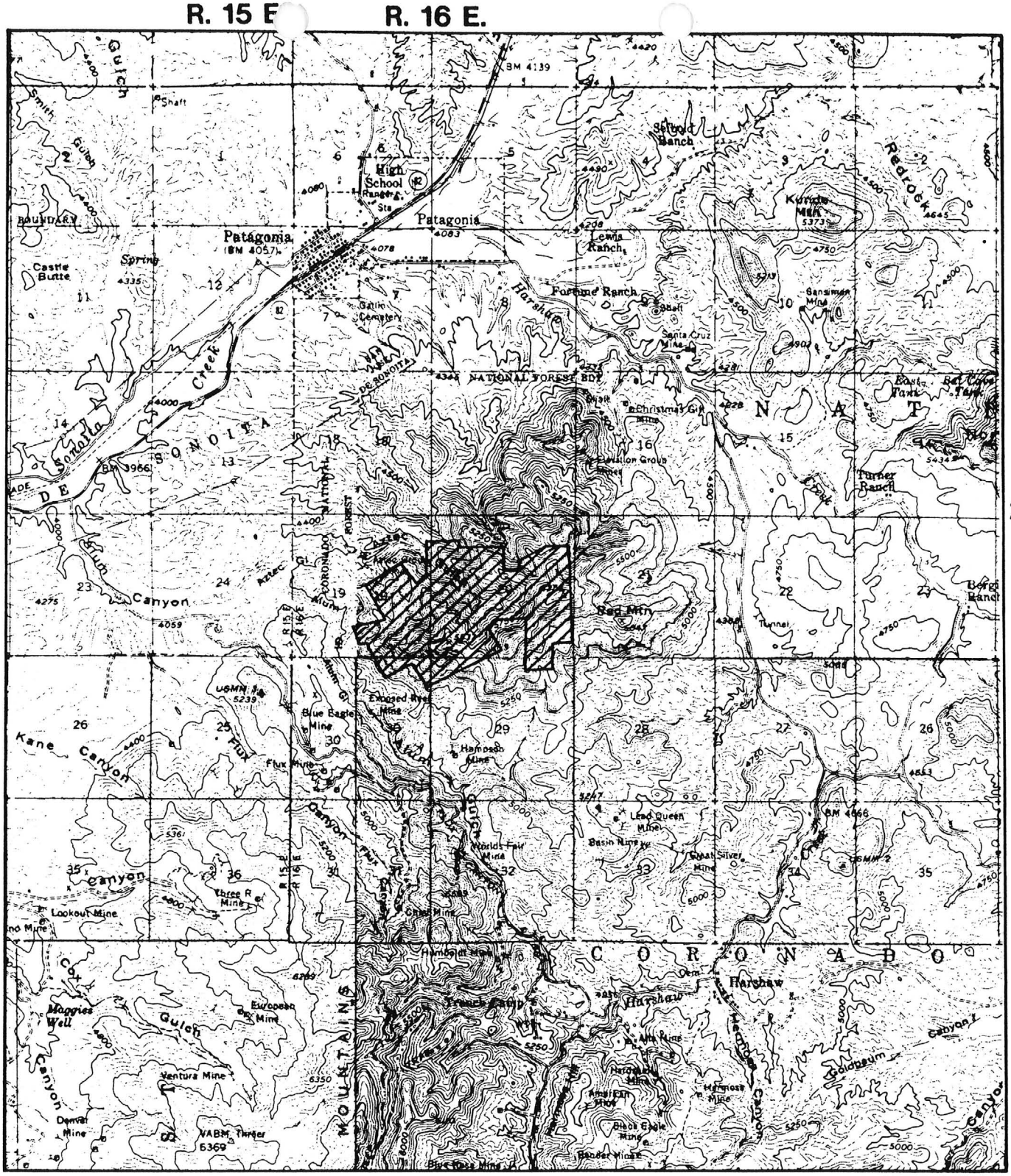
KERR - McGEE CORPORATION



INDEX MAP
TO LOCATION OF RED MOUNTAIN

SANTA CRUZ COUNTY, ARIZONA

KERR-McGEE CORPORATION



APPROXIMATE KERR-McGEE LAND

RED MOUNTAIN: PAT. LODE CLAIMS

RED MOUNTAIN PROPERTY MAP
SANTA CRUZ COUNTY, ARIZONA

SCALE 1:62,500

TOPOGRAPHIC BASE FROM USGS 15' QUADRANGLE MAPS
ELGIN (1958), LOCHIEL (1958), NOGALES (1958), MT. WRIGHTSON (1958)

GM RED MTN CLAIMS (4) SANTA CRUZ CO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ARIZONA STATE OFFICE
P.O. Box 16563
3707 N. 7th Street
Phoenix, Arizona 85011

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0046M
A MC 11838
A MC 19143
(943-TR)

CERTIFIED MAIL --RETURN RECEIPT REQUESTED

October 8, 1987

Mr. Leo Smith
Casa Adobes Plaza
7109 N. Oracle Rd.
Tucson, Arizona 86704

Dear Mr. Smith:

Enclosed are corrective patents 02-88-0002 and 02-88-0003 to Kerr-McGee Corporation and James A. Yanez et al., respectively.

These patents are issued to replace former patents 02-82-0030 and 02-82-0029 dated May 11, 1982 which have been cancelled.

The new patents are identical, in all respects as to the mining claims, legal descriptions, exceptions and acreage. The purpose of reissuance was to include a reservation to the United States of the Leasing Act minerals as required by law. Note, the reservation does not apply to the Charlotte Elnor, Heaveyside, Heaveyside No. 2, and United Verde No. 1 lode mining claims in the Kerr-McGee Corporation patent.

The Kerr-McGee Corporation corrective patent 02-88-0002 is issued for the Aagh No. 7, Aagh No. 16, Andes No. 2, Charlotte, Elnor, Hank No. 1, Hank No. 2, Hank No. 8, Hank No. 9, Hank No. 10, Hank No. 11, Hank No. 17, Hank No. 18, Hank No. 19, Heaveyside, Heaveyside No. 2, Hope No. 3, Hope No. 4, South Red Mountain 5, South Red Mountain No. 1, South Red Mountain No. 2, South Red Mountain No. 3, South Red Mountain No. 4, South Red Mountain No. 6, Ten Grand No. 98, Ten Grand No. 103, Ten Grand No. 121, Ten Grand No. 122, Ten Grand No. 123, Ten Grand No. 124, Ten Grand No. 125, Ten Grand No. 126, United Verde No. 1, lode mining claims, Mineral Survey 4771, containing 492.97 acres in Sections 19, 20, 21, 29, 30, T. 22, S., R. 16 E., GSR Mer., Arizona.

The James A. Yanez corrective patent 02-88-0003 is issued for the Red Castle No. 2, 8 and 9 lode mining lciams, Mineral Survey 4767, containing 51.132 acres in Section 19 and 20, T. 22 S., R. 16 E., GSR Mer., Arizona.

It is the responsibility of the patentees to record the patents in the Santa Cruz County Recorder's office located in Nogales, Arizona.

Sincerely

John T. Mezes
Chief, Branch of Lands and
Minerals Operations

Enclosures: Patent
02-88-0002
02-88-0003

cc: Dept. of Revenue
Santa Cruz County Recorder
Santa Cruz Assessor
Janel Smith
Dept. of Mineral Resources ✓
DSC w/ enclosure
FS Regional Office w/enclosure
DM-PDO w/enclosure

* GENERAL REFERENCES

REFERENCE 1 F1 < USBM FILES; RED MOUNTAIN MINE, RED MOUNTAIN PROJECT >

REFERENCE 2 F2 < UNPUBLISHED DATA, EARTH SCIENCES, INC. (OBTAINED BY R.B. HALL, U.S. GEOLOGICAL SURVEY, 1975)

REFERENCE 3 F3 < ADMR FILE DATA, RED MOUNTAIN >

REFERENCE 4 F4 < SIMONS, FRANK S., 1972, MESOZOIC STRATIGRAPHY OF THE PATAGONIA MOUNTAINS AND ADJOINING AREAS, SANTA CRUZ COUNTY, ARIZONA; USGS PROFESSIONAL PAPER 658-E, p. 22 >

C30< MOLYBDENITE; SPHALERITE; BORNITE >
C43< CONSIDERABLE KAOLINITE, PYROPHYLLITE, AND SERICITE LOCALLY. LEAD EXCEEDING 100 PPM IN HIGH PYRITE ALTERATION ZONES, DIMINISHING WITH DEPTH; MOLYBDENUM EXCEEDING 20 PPM THROUGHOUT PHYLLIC ALTERATION ZONES; ZINC AVERAGES 20-100 PPM IN NEAR-SURFACE LEACHED ZONE; CHALCOPYRITE INCREASES WITH DEPTH, AVERAGING 0.1-0.7% CU >
L110< COMPRISE 289 UNPATENTED CLAIMS (151 UNDER OPTION FROM W.D. ROPER, 45 FROM A. DESAULLES, 11 FROM J. YANEZ, 4 FROM CARLTON SPALDING, 93 CLAIMED BY KERR-MCGEE); DIAMOND DRILLING CONDUCTED BY SEXTON BROS. DRILLING CONTRACTORS, METTLER BROS. DRILLING CO., JOY DRILLING CO.
M110< AND ASSOCIATED MOLYBDENITE ORE ZONE. THICKNESS IS 455 FT; ALUNITE DEPOSIT DIMENSIONS: MAX. LENGTH 10,000 FT., MAX. WIDTH 10,000 FT., MAX. THICKNESS 800 FT. >
M220< MINING >
K5< INTRUSIVES, AT GREAT DEPTHS >
N70< HIGHLY ALTERED >
N75< ALTERATION; WITH DEPTH SULFUR DECREASES AND CHANGES FROM NEAR-SURFACE SULFUR-RICH PHYLLITIC ALTERATION; THROUGH WEAK POTASSIC ALTERATION, TO LOW SULFUR POTASSIC ALTERATION AT DEPTH >
N80< ON SURFACE INDICATES SURFACE OXIDATION AND LEACHING; FELSIC VOLCANIC ROCKS ARE PERVASIVELY ALTERED SOLFATARICALLY >
N85< DATED AT 72.1 ± 2.2 m.y. (SIMONS, F.S., 1974); BASAL CONTACT BETWEEN TUFFACEOUS VOLCANICS AND UNDERLYING TRACHYANDESITE IS ROUGHLY HORIZONTAL; THICKNESS OF RED MOUNTAIN VOLCANICS ESTIMATED AT 1500 FT. >

F5< SCHRADER, FRANK C., 1915, MINERAL DEPOSITS OF THE SANTA RITA AND PATAGONIA MOUNTAINS, ARIZONA; USGS BULLETIN 582 >
F6< DREWES, HARALD, 1971, MESOZOIC STRATIGRAPHY OF THE SANTA RITA MOUNTAINS, SOUTHEAST OF TUCSON, ARIZONA; USGS PROFESSIONAL PAPER 658-C, 81 p. >
F7< CORN, R.M., 1975, ALTERATION-MINERALIZATION ZONING, RED MOUNTAIN, ARIZONA; ECONOMIC GEOLOGY, VOL. 70, p. 1437-1447 >
F8 < UNPUBLISHED DATA, 1979, JAN C. WILT, U.S. GEOLOGICAL SURVEY >
F9< ABGMT CLIPPINGS FILE, RED MOUNTAIN MINING CO. >
F10< BLM MINING DISTRICT SHEET 721 >

MILS# 98

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER B10 <> *RECORD TYPE B20 <X,1,M> DEPOSIT NUMBER B40 <>
*REPORT DATE G1 <8,2,V,0,3> (YR. MO.) *INFORMATION SOURCE B30 <1,2> *FILE LINK IDENT. B50 <USBM-004023 0332 / USBM-004023 0027 >
*REPORTER(SUPERVISOR) G2 < CALDER, SUSAN R. > (last, first, middle initial) ( ) (last, first, middle initial)
*REPORTER AFFILIATION G5 < ABGMT > *SITE NAME A10 < RED MOUNTAIN MINE >
SYNONYMS A11 < RED MOUNTAIN PROJECT; TEN GRAND MINE; GEM; CARLTON PROPERTY >

LOCATION

*MINING DISTRICT/AREA A30 < HARSHAW DISTRICT >
*COUNTY A60 < SANTA CRUZ > *STATE A50 <A,Z> *COUNTRY A40 <U,S>
*PHYSIOGRAPHIC PROV A63 <1,2,V>
*DRAINAGE AREA A62 <1,5,0,5,0,3,0,1,V, LOWER COLORADO> *LAND STATUS A64 <4,1,V,0,1,V,(,1,9,7,9,)>
*QUADRANGLE NAME A90 < ELGIN ( ) > *QUADRANGLE SCALE A100 <6,2,5,0,0>
SECOND QUAD NAME A92 < MT. HUGHES (1,9,4,8,) > SECOND QUAD SCALE A91 <2,4,0,0,0>
*ELEVATION A107 <5,8,4,7,V,F,T>

UTM
*NORTHING A120 <3,4,8,5,2,3,0>
*EASTING A130 <5,2,4,9,5,4>
*ZONE NUMBER A110 <+,1,2>

*ACCURACY
ACCURATE (ACC) (circle)
ESTIMATED EST <>

GEODETIC
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*LONGITUDE A80 <1,1,0,-,4,3,-,0,7,W>

CADASTRAL
*TOWNSHIP(S) A77 <0,2,2,5,S,V> *RANGE(S) A78 <0,1,6,E,V>
*SECTION(S) A79 < 21 >
*SECTION FRACTION(S) A76 < CENTER OF SW >
*MERIDIAN(S) A81 < GILA AND SALT RIVER >

*POSITION FROM NEAREST PROMINENT LOCALITY A82 < 2.5 MILES SE OF PATAGONIA >
*LOCATION COMMENTS A83 < CLAIMS EXTEND INTO SECTIONS 20 AND 17, ON THE NORTHERN AND EASTERN SLOPES OF RED MOUNTAIN >

* ESSENTIAL INFORMATION
+ ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

COMMODITY C10 <Cu, Mo, Zn, AL3, K, Au>
C20 <ALUNITE; CHALCOCITE; PYRITE; ENARGITE; CHALCOPYRITE; TETRAHEDRITE; MAGNETITE;
COMMODITY SUBTYPES C41 <
ORE ANALYTICAL DATA C43 <X-RAY, CHEMICAL, AND THIN SECTION DATA INDICATE VARIABLE TENOR OF ALUNITE WITH
COMM. INFO. COMMENTS C50 <

* SIGNIFICANCE

	PRODUCER	NON-PRODUCER
MAJOR PRODUCTS	MAJOR <Cu,	MAIN COMMODITIES PRESENT C11 <
MINOR PRODUCTS	MINOR <Pb, Zn,	MINOR COMMODITIES PRESENT C12 <
POTENTIAL PRODUCTS	POTEN <Mo,	
OCCURRENCES	OCCUR <AL3, K, Au,	OCCURRENCES OCCUR <

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SML) MED LGE (circle one)	PRODUCTION UND NO (circle one)

*STATUS

EXPLORATION OR DEVELOPMENT

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20 <3>	STATUS AND ACTIVITY A20 < >

*DISCOVERER L20 <
*YEAR OF DISCOVERY L10 < > *NATURE OF DISCOVERY L30 <B> *YEAR OF FIRST PRODUCTION L40 < > *YEAR OF LAST PRODUCTION L45 <
*PRESENT/LAST OWNER A12 <KERR-MCGEE OIL INDUSTRIES, INC. (1966-1975); EARTH SCIENCES, INC. (1975)
*PRESENT/LAST OPERATOR A13 <KERR-MCGEE OIL INDUSTRIES, INC.; EARTH SCIENCES, INC.
EXPL./DEV. COMMENTS L110 <KERR-MCGEE CONDUCTED DEEP DRILLING EXPLORATION FOR COPPER ORE; EARTH SCIENCE CONDUCTED SHALLOW PERCUSSION DRILLING EXPLORATION FOR ALUNITE; RED MOUNTAIN INTERESTS

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40 <REPLACEMENT (ALUNITE DEPOSITS); DISSEMINATED (COPPER DEPOSITS)
DEPOSIT FORM/SHAPE M10 <IRREGULAR; BLANKET-LIKE
*DEPTH TO TOP M20 <3410> *UNITS M21 <FT> *MAXIMUM LENGTH M40 < > *UNITS M41 <
*DEPTH TO BOTTOM M30 <5194> *UNITS M31 <FT> *MAXIMUM WIDTH M50 < > *UNITS M51 <
*DEPOSIT SIZE M15 (SMALL) M15 <MEDIUM> M15 <LARGE> (circle one) *MAXIMUM THICKNESS M60 <455> *UNITS M61 <FT>
STRIKE M70 < > *DIP M80 <
DIRECTION OF PLUNGE M100 < > *PLUNGE M90 <
DEP. DESC. COMMENTS M110 <SIGNIFICANT COPPER MINERALIZATION ENCOUNTERED FROM 3410 FT TO 5194 FT BELOW SURFACE; ALUNITE DEPOSITS FOUND NEAR SURFACE; IN AN AREA OF 4000-5000 ACRES; AVERAGE COPPER

DESCRIPTION OF WORKINGS

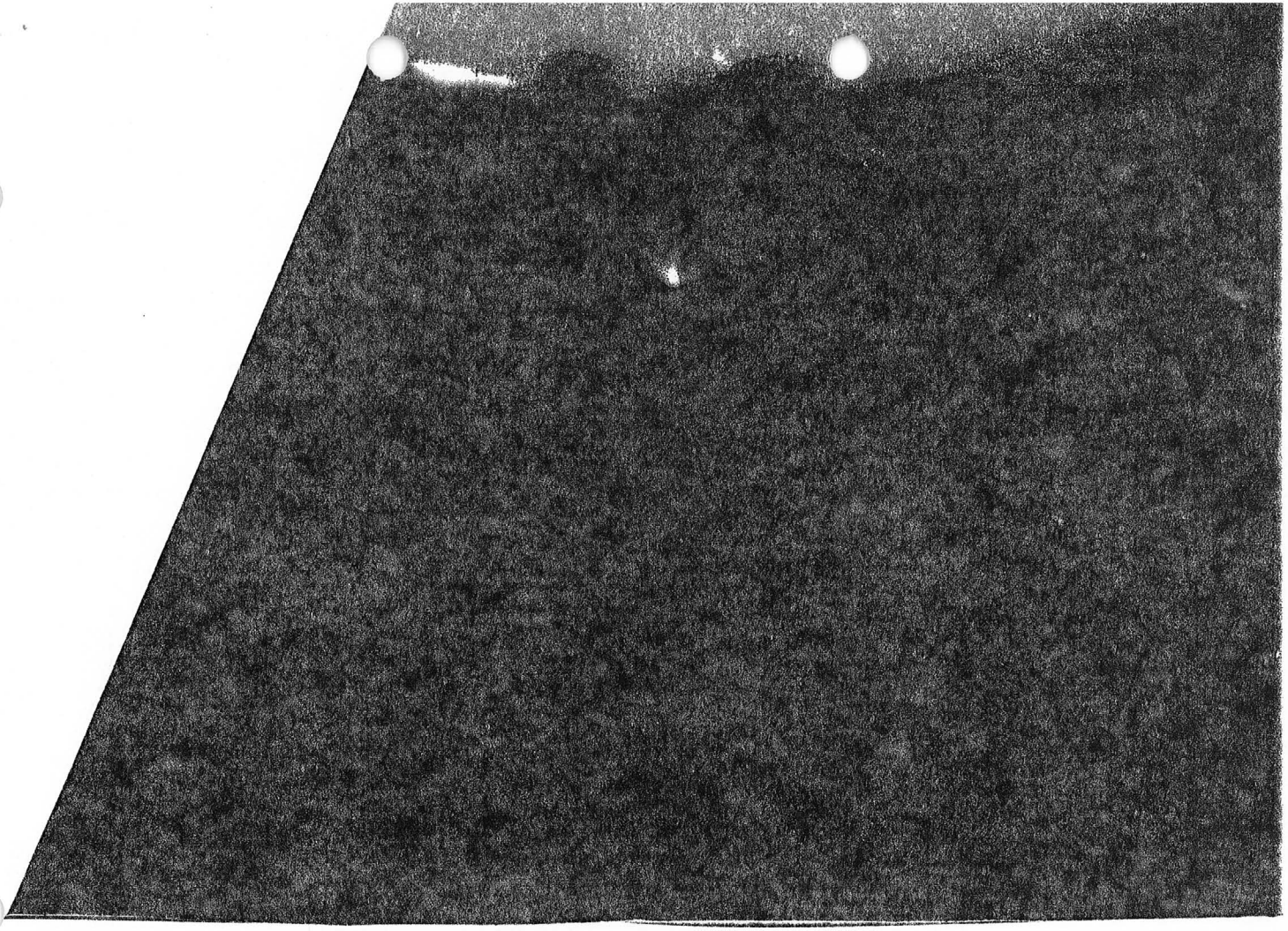
Workings are: SURFACE M120 UNDERGROUND M130 BOTH (M140) (circle one)
*DEPTH BELOW SURFACE M160 <1000> *UNITS M161 <FT> *OVERALL LENGTH M190 <1685> *UNITS M191 <FT>
*LENGTH OF WORKINGS M170 < > *UNITS M171 < > *OVERALL WIDTH M200 <1630> *UNITS M201 <FT>
*OVERALL AREA M210 <1,101,550> *UNITS M211 <SQ. FT.
DESC. OF WORK. COM. M220 <COPPER EXPLORATION WORKINGS INCLUDED OVER 10 DRILL HOLES, A FEW OVER 1000 FT. DEEP, AND A 628 FT EXPLORATION TUNNEL INTO THE MOUNTAIN; TEN GRAND CLAIM WORKINGS INCLUDED A 1500 FT. TUNNEL; ALUNITE EXPLORATION CONSISTED OF SURFACE DRILLING ONLY (NO

GEOLOGY

*AGE OF HOST ROCK(S) K1 <L.C.R.E.T.-T.E.R.T., 40.4 ± 6.0 my (K/AR DATING; DREWES, 1971)
*HOST ROCK TYPE(S) K1A <LATITIC TO TRACHYTIC TUFFACEOUS VOLCANICS; ALTERED RHYOLITE PORPHYRY
*AGE OF IGNEOUS ROCK(S) K2 <L.C.R.E.T.-T.E.R.T.,
*IGNEOUS ROCK TYPE(S) K2A <INTRUSIVE BRECCIA AND QUARTZ MONZONITE PORPHYRY
*AGE OF MINERALIZATION K3 <L.C.R.E.T.-T.E.R.T.,
*PERT. MINERALS (NOT ORE) K4 <QUARTZ, EPIDOTE, CHLORITE, ANHYDRITE, SERICITE, ALUNITE, KAOLINITE, PYROPHYLLITE
*ORE CONTROL/LOCUS K5 <DISSEMINATIONS OF CHALCOPYRITE, BORNITE, AND MOLYBDENITE IN POROUS FRACTURED
*MAJ. REG. TRENDS/STRUCT. N5 <E-W AND N-S TRENDING FAULTS IN TERTIARY VOLCANICS
*TECTONIC SETTING N15 <RED MOUNTAIN FAULT BLOCK; DOWNTHROW TO NORTH
*SIGNIFICANT LOCAL STRUCT. N70 <RED RHYOLITE EXHIBITS SOME FLOW-BANDED STRUCTURE; ANDESITE AND RHYOLITE ARE
*SIGNIFICANT ALTERATION N75 <HIGH PYRITIC, PHYLLIC ALTERATION SURROUNDED BY PYRITIC-ARGILLIC AND PROPYLLITIC
*PROCESS OF CONC./ENRICH. N80 <HYPOGENE ENRICHMENT OF FRACTURED INTRUSIVES; GOSSAN AND SOME OXIDIZED COPPER
*FORMATION AGE N30 <
*FORMATION NAME N30A <
SECOND FM AGE N35 <
SECOND FM NAME N35A <
*IGNEOUS UNIT AGE N50 <
*IGNEOUS UNIT NAME N50A <
SECOND IG. UNIT AGE N55 <
SECOND IG. UNIT NAME N55A <
GEOLOGY COMMENTS N85 <RED MOUNTAIN VOLCANICS HAVE BEEN CORRELATED WITH GRINGO GULCH VOLCANICS TO NORTH AND WEST WHICH GIVE ABOVE K/AR DATES; RED MOUNTAIN VOLCANICS OVERLIE TRACHYANDESITE OF MEADOW VALLEY

GENERAL COMMENTS

GENERAL COMMENTS GEN <



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RESERVES AND POTENTIAL RESOURCES TABLES

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RESERVES AND POTENTIAL RESOURCES

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST.	GRADE
1			E1A	E1B	E1C	E1D
2			E2A	E2B	E2C	E2D
3			E3A	E3B	E3C	E3D
4			E4A	E4B	E4C	E4D
5			E5A	E5B	E5C	E5D
6			E6A	E6B	E6C	E6D

CE OF INFORMATION E7

MENTS E8

(circle if this table is used)

RESERVES ONLY

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST.	GRADE
1	AL3 ORE	EST	H1A 0,0,1,0,0,0,0,	H1B ST	H1C 1975	H1D 29% AL3
2			H2A	H2B	H2C	H2D
3			H3A	H3B	H3C	H3D
4			H4A	H4B	H4C	H4D
5			H5A	H5B	H5C	H5D
6			H6A	H6B	H6C	H6D

CE OF INFORMATION H7 UNPUBLISHED DATA OBTAINED BY R. B. HALL, 1975

MENTS H8 RESERVES INFERRED BY R.B. HALL, 1975; EARTH SCIENCES INC. RESERVE DATA ARE PROPRIETARY

(circle if this table is used)

POTENTIAL RESOURCES

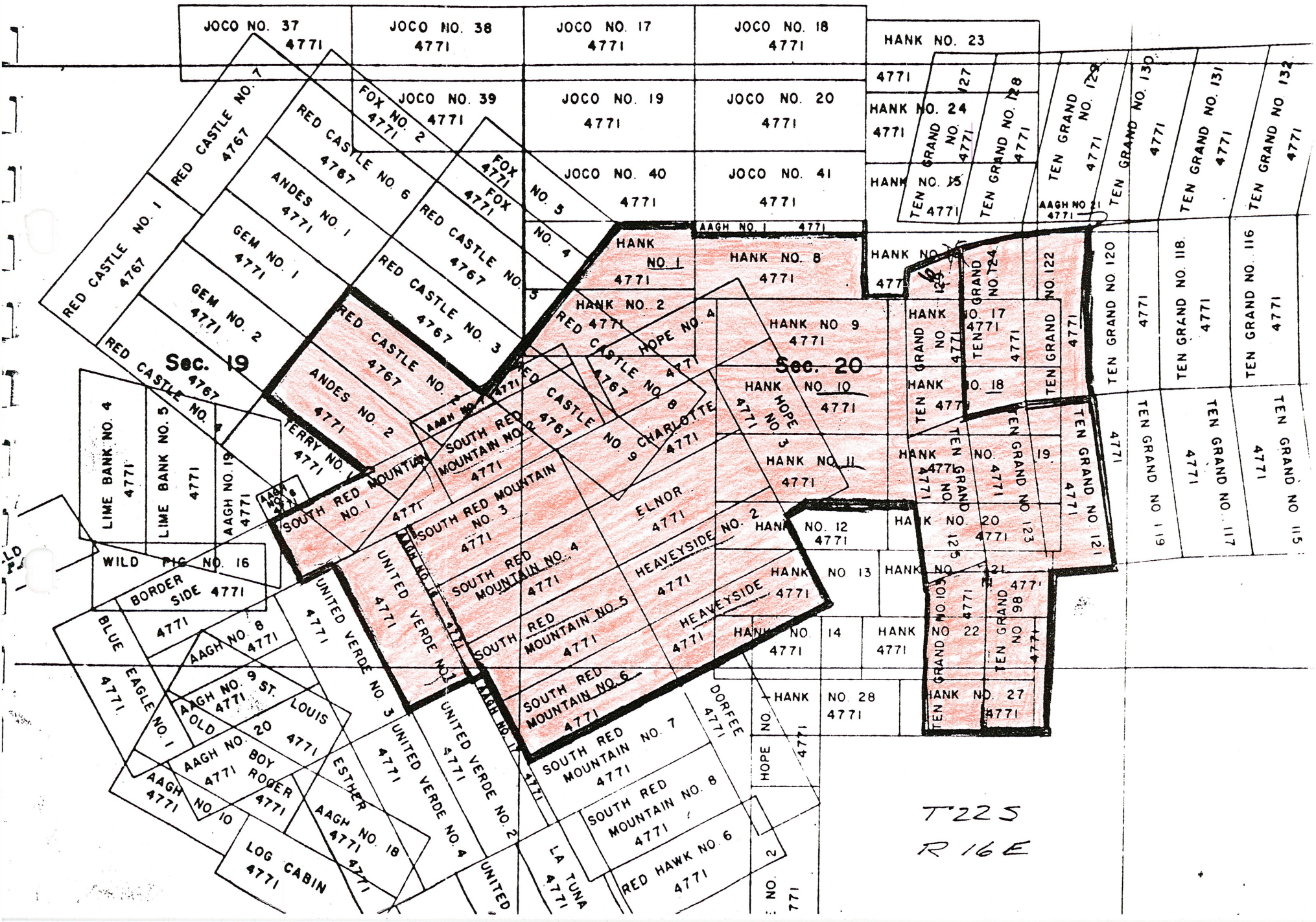
(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST.	GRADE
	AL3 ORE		J1A 0,0,2,0,0,0,0,	J1B ST	J1C 1975	J1D 24% AL3
			J2A	J2B	J2C	J2D
			J3A	J3B	J3C	J3D
			J4A	J4B	J4C	J4D
			J5A	J5B	J5C	J5D
			J6A	J6B	J6C	J6D

CE OF INFORMATION J7 RECONNAISSANCE DATA OBTAINED BY R. B. HALL, 1975

ENTS J8 RESOURCE ESTIMATE BY R. B. HALL, 1975; EARTH SCIENCES INC. DRILLING DATA ARE PROPRIETARY AND ARE NOT AVAILABLE.

Mining claims patented by Kerr-McGee Corp. on Red Mountain property (Santa Cruz Co.).



Mapped by the Army Map Service
Edited and published by the Geological Survey

Control by USGS, USC&GS, and USCE

Topography from aerial photographs by stereoplanigraph methods
Aerial photographs taken 1946. Field check 1948
Revised by the Geological Survey 1958

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

Unchecked elevations are shown in brown

Dashed land lines indicate approximate locations

Mt. Hughes 7.5

1000

13°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1958

FOR SALE BY
A FOLDI

Red Mountain
Santa Cruz Co.

Kerr-McGee approves use of fire tower site

"Daily Reporter", Jul 29, 1982

Not for publication

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine	Red Mountain Project	Date	Sept. 4, 1963
District	Harshaw District - Santa Cruz County	Engineer	Axel L. Johnson

Subject: Field Engineer's Report. Information from Henry Vizcaino, Kerr-McGee Oil Ind.

References: Report of June 17, 1963 and Oct. 2, 1962

Location: See report of June 17, 1963

Number of Claims: See report of June 17, 1963 & report of Oct. 2, 1962

Present Activity: Geologic mapping by company geologists, with 3-4 men working.
Diamond drilling on contract by Joy Drilling Co.
Access road construction on contract by Richard Taylor, Nogales.

Review of Present Operations: Joy Drilling Co. is drilling on contract using two drill rigs, each working 2 shifts. Drilling is proceeding rather slowly on account of difficult ground. Drilling is being done on 2,000 to 2,500 ft. centers, depending somewhat on topography and accessibility. Mr. Vizcaino reported that 10 holes had been drilled to date, and that a few of these have been over 1,000 ft. deep.

Access roads for the drilling is being built by Richard Taylor, Nogales, on contract.

The geologic mapping and planning of the drill holes and the filing and mapping of the drill cores is being supervised by the Tucson office of the Kerr-McGee Oil Industries located at 1637 E. 18th St., Tucson, Arizona - E. E. (Zeb) Jones, Project Supt. This is a District Office and the company also has a District Office at 600 Coal Ave., SW., Albuquerque, New Mexico. Their main office is located in Oklahoma City, Oklahoma.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine: Red Mountain Project Date: Oct. 2, 1962 & Sept. 6, 1962

District: Harshaw District, Santa Cruz County Engineer: Axel L. Johnson

Subject: Field Engineers Report. Information from E. E. (Zeb) Jones & Personal Visit.

Location From 1 to 3 miles south of Patagonia.

Number of Claims 289 unpatented claims ---- 151 claims under option from W. D. Roper, 45 claims under option from Albert Des Saulles, and 93 claims located in the name of Kerr-McGee Oil Industries, Inc. Company is also bargaining for a few additional clai ms presently held by James Yanez, Carlton Spalding, et. al.

Owners Kerr-McGee Oil Industries owns 93 claims outright, and has 196 claims under option from the parties mentioned above. Kerr-McGee maintains an office at 1637 E. 18th St., Tucson. E. E. (Zeb) Jones is the Project Supervisor.

Principal Minerals Copper

Present Mining Activity Mine exploration by geological mapping and diamond drilling. 5 men working under the direction of E. E. (Zeb) Jones, Project Supervisor. In addition, diamond drilling and access road construction has been let out on contract.

Past History See reports of the "Ten Grand Mine" exploration work by W. D. Roper, under dates of May 4, 1961, Sept. 7, 1961, and Nov. 9, 1961.

Review of Recent Operations

Diamond drilling is now being done under contract by Sexton Bros. Drilling Contractors, Cortex, Colo., using one diamond drill rig; and also by Metler Bros. Drilling Co., Tucson, Ariz., with one diamond drill rig. NX cores are being used pricipally by both contractors.

Mr. Jones reports that two holes have been finished by the Sexton Bros. Co., and a third hole started, and that Metler Bros., who started drilling quite recently, are drilling on the first hole. The field engineer visited the property on Sept. 6, when Sexton Bros. were still drilling the first hole. All the drilling to date has been done on the claims which were located by Kerr-McGee, but drilling on the claims optioned from Roper and Des Saulles will be done shortly.

Richard Taylor of Nogales has the contract for the construction of the access roads. At the time of the engineers visit on Sept. 6, about one mile of old road had been repaired, and one mile of new road built. Mr. Jones now reports that another access road has been started, which will come in from the east side, and will cross the properties of W. D. Roper and Albert Des Saulles. This will be about 2 miles in length, and connect up with the road previously built.

RED MOUNTAIN PROJECT

SANTA CRUZ COUNTY
HARSHAW DIST.

[redacted]

Taken from MINING WORLD, October, 1962

[redacted]

Taken from MINING WORLD, Jan. 1963, p 38

Not for Publication

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Red Mountain Project Date June 17, 1963

District Harshaw District, Santa Cruz County Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from Russell Corn, District Geologist, Kerr-McGee Oil Industries, Inc.

Location: From 1 to 3 miles south of Patagonia.

Number of Claims: In addition to the 289 unpatented claims reported on Oct. 2, 1962, the company has taken options on about 15 additional claims, one group of 4 claims owned by Carlton Spalding and another group of 11 claims owned by James Yanez.

Present Mining Activity: Geologic mapping by the company geologists. Diamond drilling and access road construction on contract.

Review of Recent Operations: Sexton Bros. Drilling Contractors, Cortez, Colo. discontinued drilling in April and Metler Bros., Tucson, some time previous to this. The diamond drilling is now done under contract to Joy Drilling Co., with 1 diamond drill rig working 2 shifts. NX and BX cores are used. About 10 holes have been drilled to date, including all three drilling companies. Drilling is being done on 2,000 to 2,500 ft. centers, depending on accessibility.

Richard Taylor, Nogales, is building access roads, this work also being done on contract.

KERR-McGEE OIL INDUSTRIES, INC.

[redacted]

Taken from MINING WORLD, November, 1961, p 50

Reprinted from
Economic Geology
Vol. 70, 1975, pp. 1437–1447

Alteration-Mineralization Zoning, Red Mountain, Arizona

RUSSELL M. CORN

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Ten Grand Mine Date May 4, 1961

District Harshaw District, Santa Cruz Co. Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from W. D. Roper and personal visit.

Location About 5 miles SE of Patagonia, and on west side of the Patagonia-Wash. Camp road.

Number of Claims 136 unpatented claims. 57 of these were located in 1959, and the remaining claims were located this year.

Owners W. D. Roper, Box 865, Patagonia and 1503 W. Relation St., Safford. (major int.)
Operators Richard Himebaugh, Patagonia
A. G. Frost, Patagonia

Principal Minerals Copper

Present Mining Activity Driving an adit into the mountain, which is now in 280 ft. 7 men working. Work is being done on 3 shifts, 6 days per week. Richard Himebaugh was given contract to do the work, starting next week.

Geology and Mineralization Mr. Roper reports That they have favorable gossan on the surface, and that the ground is fractured and the rocks porous. He also reports red oxidized rocks, with some oxidized copper ores on the surface.

Past History None. This is a new development.

Old Mine Workings None.

New Mine Workings Adit, which is now in 280 ft. Expect to drive it in about 600 to 700 ft.

Review of Recent Operations Work on the adit was started in January or February of this year, but was not worked continuously until about March 15. Engineer visited the property on March 9. The adit was reported to be in 150 ft. at that time, but no one was working it at the time. Mr. Roper reports that the progress is 10 to 12 ft. per day at the present time, with 7 men working. Work is done on 3 shifts, 6 days per week. A double drum slusher is used for the mucking, the muck being scraped up into an mine car, and trammed out on a dump. The slusher is moved up every 80 ft. of advance. Mr. Roper reports that Richard Himebaugh has been given the contract to do the work, starting next week. The adit is now in 280 ft., and he expects that it will be continued to a distance of 600 to 700 ft. There is no ore in the adit now, but Mr. Roper expects that they will hit ore after they get in another 400 ft. Mine equipment consists of 2 air compressors, 1 double drum slusher, and several mine cars.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Ten Grand Mine Date Nov. 9, 1961

District Harshaw District, Santa Cruz Co. Engineer Axel L. Johnson

Subject: Present Status. Information from John Boyd and personal visit.

References Reports of Sept. 7, 1961, and May 4, 1961.

Present Status. Property now idle. All work has been discontinued.

Recent operations Timbering of the adit, referred to in my report of Sept. 7, was discontinued about Sept. 14, and no further work is planned. No further work on the property is now being considered, and no further diamond drilling is planned. All the equipment now on the property will be removed by Dec. 1.

Reason given was insufficient ore showings.

See: Red Mountain Prospect (file)

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Ten Grand Mine Date Sept. 7, 1961

District Harshaw District, Santa Cruz Co. Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from John Boyd & Personal Visit.

References Report of May 4, 1961

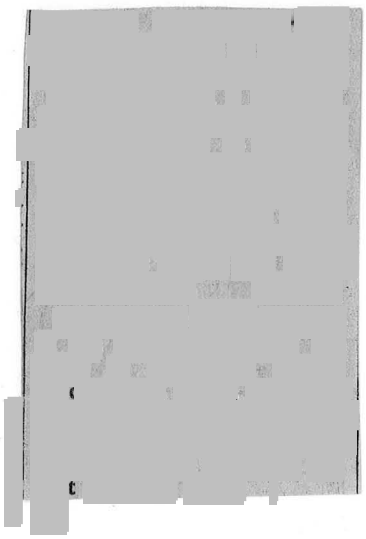
Present Mining Activity Timbering adit. 3 men working.

Recent Operations One diamond drill hole was drilled last month on contract to Metler Bros. The diamond drill hole is reported as being drilled 270 ft. deep, at an angle of 12 degrees from vertical. Results of drilling was not disclosed.

Future plans Owners plan on driving cross cuts from the main adit some time next January. They also plan on doing more diamond drilling some time next year.

TEN GRAND MINE

Republic - 6-25-61
(John L. Parker)



See: MINING WORLD, August, 1961, p 47
