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* NO.227(NOVEMBER 23, 1990) * GEORGE CROSS NEWS LETTER LTD. * FORTY-THIRD YEAR OF PUBLICATION *

ASARCO

Exploration Department
Western USA

W. L. Kurtz
Manager

August 24, 1992

Mr. Daniel G. Innes
President
West Pride Industries Corp.
P.O. Box 10102
701 W. Georgia St.
Vancouver, B.C. V7Y 1C6
Canada

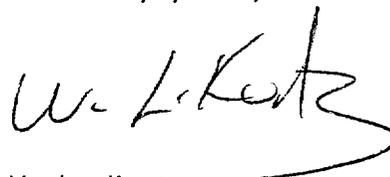
Middlemarch Property
Cochise County, Arizona

Dear Mr. Innes:

Mr. Sell will be out of the country for some time, so I am responding to your recent submittal of the Middlemarch Property.

We are not interested in exploring this property at the present time. We are actively seeking gold deposits and would like to review any gold properties you may have.

Sincerely yours,



W. L. Kurtz

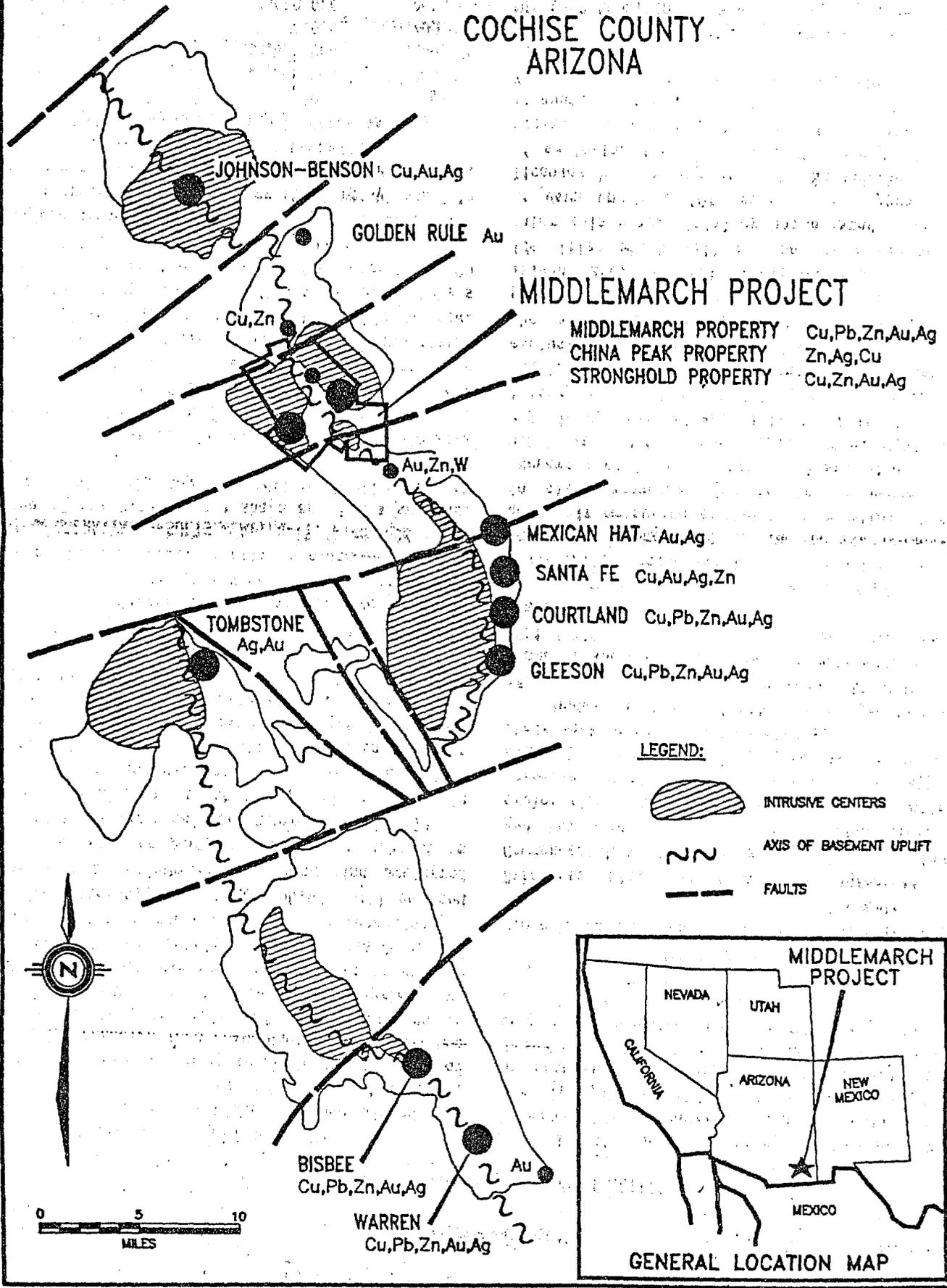
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cc: J.D. Sell

See letter Report of Innes 11-2

see letter of Innes 11-2

WEST PRIDE INDUSTRIES CORP. MIDDLEMARCH PROJECT COCHISE COUNTY ARIZONA



Aa. 3. 16. 13

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

July 14, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

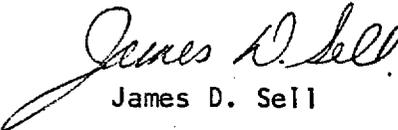
Middlemarch Canyon
Central Dragoon Mountains
Cochise County, Arizona

Summary and Conclusions

No direct lead was observed in the structurally complex Middlemarch Canyon area of the Central Dragoon Mountains in light of porphyry copper exploration.

Undoubtedly a Laramide-type intrusion and mineralization period was active in the district and resolving of the structural problems and drilling for defining the probable Laramide intrusive source would be a long term project.

Continued build-up of basic geologic-mineralogic and drill hole data is recommended.


James D. Sell

JDS:1b

Middlemarch Canyon
Central Dragoon Mountains
Cochise County, Arizona

A Mr. H. Birchfield contacted this office on a group of claims, of which he was represented as the spokesman, in the area of Middlemarch Canyon, T. 18 S., R. 22 and 23 E., Cochise County.

Kerr-McGee had recently held the claims under option and after coring three holes stated that they would not extend the option.

The basic geology of the area is covered by USGS Professional Paper 281, General Geology of Central Cochise County, Arizona, by J. Gilluly (1956), with the newer topographic base being the Pearce 15-minute quadrangle.

A brief reconnaissance of the area was conducted in June covering the claim group and visiting the various mines. As shown by Gilluly, two main intrusives are known in the area: 1) the Cochise Peak quartz monzonite and 2) the Stronghold granite. The quartz monzonite is thought to belong to the Jurassic-Triassic series found further south at Courtland-Gleeson. The Stronghold granite is post-major thrust faulting and was dated by Damon at 22 ± 3 m.y. (mid-Tertiary).

Attachment A is the Cochise Stronghold portion of Gilluly's geologic map and contains the approximate outline of the Birchfield holdings as optioned by Kerr-McGee.

Also shown is the location of the three Kerr-McGee drill holes. Addenda M-1 through M-3 is a Drill Hole Summary for the three holes and also has the average copper, lead, and zinc values intercepted. Filed with the File Copy of this report is a set of preliminary (untyped) logs, assay sheets, and a topographic-location map of the drill holes and claims, which was secured from Kerr-McGee.

Drill hole M-1 was collared in Jurassic quartz monzonite which was weakly altered but with appreciable iron along fractures and partial flooding of the rock. Rarely did any copper value exceed 100 ppm, and most averages were around or below 50 ppm copper. Only one zone (1139-1170 feet) of tactite development in the Bisbee Formation contained values of interest, which were 0.14% lead and 0.26% zinc. Several fault zones were penetrated and units below were highly oxidized indicating variable movement of sulfide-bearing units into position against oxidized units. The Kerr-McGee geologist believes that most rock change contacts were sheared or fault contacts in the holes drilled. The interception of Stronghold granite at 1193 feet in the drill hole (Addendum M-1) supports the concept that the main mass of Stronghold granite dips under the spur of sediments and Jurassic intrusive at a shallow angle and the spur is an even shallower skim of rafted or roof block than expressed in Gilluly's cross-sections IV and V (P.P. 281, plate 6).

Hole M-2 was collared in the Middlemarch Mine area, one of the better producing areas, in Bisbee formation of tectonized sediments. Mineralization is generally of low tenor and variable, probably as a result of fault slices as much as change of rock host, and the best zone of pervasive epidote-garnet at 520-560 ran only 0.14% copper, 0.24% lead, and 0.59% zinc. The hole cut several alaskite blocks of possible Laramide age and one Laramide(?) quartz monzonite (which may be bleached Jurassic quartz monzonite) all as probable fault slices with Bisbee formation units often in sheared contact. All suspected Laramide units averaged less than 100 ppm copper and low zinc values. The lowest alaskite at 833-858 feet was highly brecciated with filling of epidote-chlorite-quartz with galena and sphalerite. The zinc assay was 0.23% with no lead values given and copper being only 75 ppm. Again, the Bisbee unit below the breccia dropped sharply in the amount of tactite development compared to Bisbee units further up the hole and contained low values (67 ppm copper, 214 ppm zinc).

Although the presumed Laramide rock units are variably and moderately altered, they contain very low sulfide values and it is probable that had the drill hole been completed beyond the 935-foot total depth it would have cut Stronghold granite shortly.

Hole M-3 was collared further south in an area of Bisbee Gance Conglomerate cut by felsite sills (possibly fine-grained dikes and sills of Stronghold granite affinity). Weak pyritic limonites are in the area and the drilling (to 535 feet total depth) encountered only low copper-zinc values in very variable alteration, mainly silicification. Only a few copper values exceed 100 ppm, with averages for various groupings being 50 or less ppm copper.

Attachment B is the base map with the mineral deposits as noted in Arizona Bureau of Mines Bulletin 187, Index of Mining Properties in Cochise County, Arizona. The deposits are noted by index mine list number and the type of host rock -- being either Paleozoic or Cretaceous units. Deposit 8, Middlemarch Mine produced from both units. Table 1 is the deposit description taken from Bulletin 187 and added to the right side is a Productive Tonnage Ranking based on tons of ore produced.

As shown on the map, the mineral deposits fall in a northwest-trending belt subparallel to the district structure and fall on either side of the exposed main mass of Jurassic quartz monzonite, which is also apparently elongated to the northwest. The quartz monzonite can only be determined to be pre-Paleozoic in age in the Middlemarch area, but further south Gilluly has found similar quartz monzonitic intrusives which are pre-Cretaceous in age and Gilluly assigns the Cochise Peak quartz monzonite as Jurassic-Triassic. Apparently Kerr-McGee and Snyder would agree. The Stronghold granite has an age date of 22 m.y. Based on these observations it is concluded that the Cretaceous sediments could not have been mineralized by the Jurassic intrusives and it is doubtful that the mid-Tertiary event was responsible, which suggests a probable Laramide source for the bulk of the tactite and sulfide alteration-mineralization.

As Gilluly's full map (Plate 5, P.P. 281) shows, there is a strong northwest trend to the major continuous faults of the district, the Jurassic Cochise Peak intrusive appears to have a northwesterly-trending contact, and a large swarm of dikes related to the Stronghold granite are subparallel in the northwest trend. It is probable that a Laramide intrusive sequence was also emplaced in this trend and probably near the area now occupied by the Stronghold granite. The overall elongation of the Stronghold granite in a northeasterly direction suggests a principal opening in that direction which is also the favored trend for Laramide intrusives in Southern Arizona. The vast amount of jumbled and "thrust" rock units is basically restricted to several miles from the south contact of the Stronghold (similar relationship on the north side) and it is likely that the disturbed units are related to gravity sliding from the upbowing of the Stronghold intrusive and are much shallower units than suggested by Gilluly.

Using the information on Attachment B and in Table I, two metal production plans were roughed out. Attachment C-1 has eight deposit control points and for Paleozoic hosts suggests a strong lead-zinc arc covering the Jurassic intrusive with a copper-zinc and a copper band further east. Westward are lead and zinc production desposits. Overall, it suggests, from the east, a copper trend, then a copper-zinc, then lead-zinc, then lead and zinc as one goes westward. Attachment C-2 is similarly constructed for Cretaceous host deposits and with six control deposits it shows a strong coincident of the copper trend over the Jurassic quartz monzonite with a copper-zinc on the east (and possibly to the west) with lead-zinc on the far west. Perhaps the only validity of such maps is to suggest an overall north to northwest trend which is reflected also in the fault slice distribution for the most part.

In viewing the core at Kerr-McGee's office and in conversation with them, it was suggested that they utilized the alteration-mineralization in the Cretaceous as a guide to the district. They feel the Cretaceous was more widespread and intact and hence more easily interpretable. They were testing for additional replacement zones in the Cretaceous and looking for favorable mineralized (Laramide) units in the stable block under the exposed faulting. As hole M-1 indicated, the cover units are undoubtedly a relatively thin unit lying over the Stronghold granite, which decreases the exploration potential.

Hole M-3 was shallow (535 feet to T.D.) and encountered felsite sills and dikes (probably of Stronghold granite affinity, although of a darker color and no apparent sanidine content) in Bisbee formation. Many of the skeleton core samples contained zones which had a "fluidized" matrix appearance. Increased silica was also evident in the core. Although very low copper values were found, it is suggestive that increased silica-fluid activity, possibly from a deeper Laramide source, may be below hole M-3 or in a southern direction from the Kerr-McGee drilling toward the Black Diamond Mine.

Bear Creek has recently staked claims around the Black Diamond Mine (Deposit location 3 on Attachment C-1) which also contained appreciable copper values as the only metal produced. The claims are "B.D." and No. 23 thru No. 32 are in Docket 1003, page 110 thru 120, Cochise County. The location work was

performed by Paul S. Hansen (Stump Mining of Tucson) on May 12-13, 1975. The full amount of ground covered by BCMC has not been checked.

Dave Hackman related that Bear Creek geologists are busy in the area at the present time.

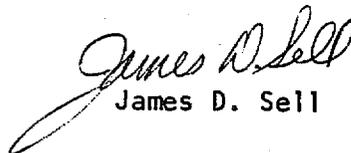
Kerr-McGee apparently conducted some IP work, after initiation of the drilling, and found several anomalous areas which "probably should have been tested." We do not have the IP results, but apparently it will be available to Birchfield in the near future.

General Comments

Dave Snyder is very critical of the package land arrangements as now known. As noted in the file copy claim map, eight groups of claims are shown which are controlled(?) by at least three groups of people -- Mr. Birchfield, a Mr. Owens, and a Mr. Grimes. Birchfield apparently was the spokesman for the entire group, but no real firm deals. After drilling commenced, some five or six other people wrote to Kerr-McGee stating that the drill hole was on "their" claim. The claim map is idealized but in reality the claims are jumbled and overlapping-gapping, except as restaked and set by Kerr-McGee.

Table 2 lists the claim owners as shown by Kerr-McGee. Mr. Dave Hackman, a geologist recently hired by Birchfield, can be contacted at phone 326-9516, Tucson.

Also with the File Copy is the Forest Service Operating Plan filed by Kerr-McGee, with Amendment No. 1. Also on file is the Forest Service Manual, Emergency Directive No. 3, covering mining claims and exploration.


James D. Sell

JDS:1b
Atts.

Mine
List
Number

Table 1 Middle Pass District - Mineral (Mine) Deposits

Production
Tonnage
Rank

MINING DISTRICT AND MINES	LOCATION T. R. Sec.	MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES	
1. Abril mine (Dos Hermanos; Bargin Mines, Inc., Shattuck Denn Mng. Co.)	17S 23E So. Cen. 34	Zn, Cu, Pb-, Mo-, Ag-, Au-, (Bi, Li, Cd, Ga, Co, W)	Sphalerite, chalcopyrite, minor galena, sparse molybdenum, and minor rare min- erals in irregular pyrometamorphic depos- its with garnet, epidote, and other lime- silicates in a tectite zone in Pennsylvanian- Permian Naco Group limestone cut by gran- itic intrusive and rhyolite porphyry dikes.	Adit workings. Nearly 30,000 tons of zinc-copper ore produc- ed intermittently since 1914 but mainly during 1945-1952.	Wilson, 1951, p. 23-26 USAEC Prelim. Rec. Rpt. D- 502, 1952 Warner et alia, 1959, p. 95, 97 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	1
2. American group mine (Escapule)	18S 23E NE 1/4 3	Pb, Zn, Ag, Cu-, Au-	Partially oxidized lead and zinc mineral- ization in folded and faulted Cambrian A- brigo Limestone close to strong thrust fault breccia.	Shallow adit workings. A small tonnage of ore produced in 1933.	ABM file data	13
3. Black Diamond mine (Englander; Black Diamond Copper Mng. Co.)	18S 24E So. 1/2 19, 20 N 1/2 29, 30	Cu, Ag, Fe, Pb-, Au-, (Ti)	Chalcopyrite, bornite, argentite, and cop- per carbonates and oxides with magnetite and hematite in irregular, tabular, pyro- metamorphic bodies in silicified Missis- sippian Escabrosa Limestone.	Tunnel and shaft workings. At least 7,000 tons of ore produced intermittently from 1903 to a- bout 1957.	Copper Handbook, 1907 Tenney, 1925-1927, p. 219-220 Cederstrom, 1946a, p. 86-87 Harrer, 1964, p. 22-24 ABM file data	3
4. Christmas mine (Dragoon; Dragoon Copper Mng. & Smitng Co., Gia- coma Bros.	18S 23E No. Cen. 13	Cu, Ag, Au, Pb-	Copper carbonates, bornite, and chalcop- pyrite with minor galena and lead carbon- ate in irregular pyrometamorphic replace- ments in Cretaceous Bisbee Group limestone along a contact with a porphyry intrusion.	Tunnel and shaft workings. A total of some 250 tons produced in 1905 and 1948.	Copper Handbook, 1906 ABM file data	6
5. Cobre Loma mine (Cobre Loma Copper Co., Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S 23E SE 1/4 2 NE 1/4 11	Cu, Zn-, Ag-	Chalcopyrite, bornite, pyrite, and minor sphalerite in a pyrometamorphic tectite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intru- sive.	Tunnel workings. Probable up to 5,000 tons of ore produced from 1915 to 1920.	ABM file data	4
6. Festerling mine (Elsicor)	18S 23E NE 1/4 24	Cu, Zn, Ag, Pb-, Au-	Chalcopyrite, sphalerite, and minor galena in irregular replacement bodies along faults in Cretaceous Bisbee Group limestone.	Surface and shaft workings. A few tens of tons of ore produced between 1937 and 1947.	ABM file data	11
7. Garnet and Moonlight groups (Escapule Mine group)	18S 23E So. 1/2 24	Pb, Zn, Ag, Cu-, Au-, (Mo, V)	Oxidized lead, zinc and minor copper min- eralization in bedded replacement deposits in folded and faulted Cambrian A- brigo Limestone.	Adit workings. Approximately 50 tons were produced intermit- tently from 1938 to 1955.	ABM file data	10
8. Middlemarch mine (Missouri; Middlemarch Copper Co., Arizon Middle- march Copper Co.)	18S 23E Cen. 12	Cu, Zn, Ag, Au, Pb-	Copper, zinc, and minor lead carbonates and sulfides in an oval-shaped chimney ore- body associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds.	Adit and shaft workings. Some 5,000 or more tons of ore pro- duced intermittently from the early 1900's to the 1950's.	Cederstrom, 1946, a, p. 87-88 ABM file data	5
9. Muhelm mine (Zinc Basin, White Metal)	18S 23E E. Cen. 10	Pb, Zn, Ag, (Bi)	Anglesite and hemimorphite in an oxidized pyrometamorphic deposit in badly deformed Cretaceous Bisbee Group limy beds along a strong thrust fault.	Adit workings. About 200 or more tons of ore produced in the 1920's.	Cederstrom, 1946 a, p. 89 Wilson, 1951, p. 28 Cooper, 1962 ABM file data	7
10. San Juan mine (Gordon)	18S 23E Cen. 10	Zn, Pb-, Ag-, (Bi, Be, Li, Ga, Cd)	Sphalerite with minor galena, iron oxides, and helvite in irregular mantle-type bodies of pyrometamorphic limy silicates in impure shaly Abrigo Limestone, where it is cut by faults.	Adit workings. Over 17,000 tons of ore produced since 1913 but mainly during 1947 and 1951.	Cederstrom, 1946 a, p. 88-89 Wilson, 1950, p. 20-23 Burnham, 1959, p. 30 Warner et alia, 1959, p. 96 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	2
11. Silver Cloud mine (Escapule)	18S 23E W. Cen. 25	Cu, Pb, Zn, Ag, Au	Base metal sulfides in small orebodies and vein-like deposits along faults in altered Cretaceous Bisbee Group limestone.	Shaft and adit workings. A few tons were produced intermit- tently from 1921 to 1955.	Cederstrom, 1946 a Wilson, 1951, p. 28 ABM file data	12
12. Standard Tungsten mine (Head Center, Black Prince, Johnny Boy; Standard Tungsten Corp.)	18S 23E Cor. 13, 14, 23 & 24	W, Pb, Ag, Cu-, Ba-	Spotty, straw-colored, coarsely crystalline scheelite with minor base metal sulfides and barite in replacement bodies in intensely silicified Mississippian and Pennsylvanian limestones.	Shaft, adit, and surface work- ings. About 1.5 tons of tungsten concentrates and some 75 tons of sorted barite produced in 1932.	Dale et alia, 1960, p. 57-59 Stewart & Pilster, 1960, p. 10-11 ABM file data	9
13. White Tail mine (Grant group)	18S 23E E. Cen. 10	Zn, Pb-, Ag-, Cu-	Oxidized and siliceous zinc ore with minor lead and copper in irregular masses in fault breccia made up largely of Paleozoic lime- stone fragments.	Tunnel workings. Some 105 tons of ore produced in 1917-1918 and about 45 tons in 1965.	ABM file data	8

From: Index of Mining Properties in Cochise County, Arizona,
by Stanton B. Keith, Arizona Bureau of Mines Bulletin 187
(1973), p. 68-69

TABLE 2: Names of Claim Owners

Velma Owens
538 N. Hobson
Mesa, Arizona 85203

Howard Birchfield
P.O. Box 161
Pearce, Arizona 85625

Hillard B. Grim
Route 3, Box 57a
Willcox, Arizona 85643

James Dalzell
Suite 1002
Tucson Federal Savings Bldg.
32 N. Stone Avenue
Tucson, Arizona 85701

Drill Hole Summary
 M-1, Middlemarch Project
 T18S, R23E, Sec. 11 abd
 Kerr-McGee Corp.
Cochise County, Arizona

- Drill hole M-1 spudded 9/18/74, NQ to 142', NX to 1746' T.D., Joy Drilling Co.
 First pyrite @ 41 ft., end of oxidation effects at ±60 ft.
- 0-99 Jurassic quartz monzonite, abundant chlorite, some biotite alteration, minor sericite, pyrite. Ave: 20 ppm Pb, 6 ppm Mo.
 - 99-103 Diabase, clay-sericite, pyrite. 56 ppm Cu, 17 ppm Pb, -1 ppm Mo.
 - 103-140 Quartz monzonite, abundant chlorite with minor clay-sericite, pyrite. Ave: 54 ppm Cu, 9 ppm Pb, -1 ppm Mo.
 - 140-857 Quartz monzonite, abundant chlorite-calcite, with epidote, some clay-sericite, pyrite. Ave: 50 ppm Cu.
 - 857-863 Fault breccia.
 - 863-1031 Jurassic quartz monzonite, 5-10% oxidized, sparse quartz and epidote, with chlorite-biotite, sparse pyrite. Lower portion has abundant clay, gouge, and shearing with cubic pyrite in same. Suggest post-shearing mineralization. Ave: 39 ppm Cu (last 40 ft. also contained ave: 12 ppm Pb, 91 ppm Zn).
 - 1031-1052 Cretaceous Bisbee frm., recrystallized lms to limy shale, with silica, chlorite, epidote, and pyrite. Ave: 44 ppm Cu, 16 ppm Pb, and 61 ppm Zn.
 - 1052-1054 Laramide(?) latite, quartz and sanidine (probably Stronghold granite), cut by chlorite-epidote with disseminated-veinlet pyrite. (Ten-foot sample 1050-1060 ran 58 ppm Cu, 16 ppm Pb, and 68 ppm Zn.)
 - 1054-1139 Cretaceous Bisbee frm., hornfelsed shale and recrystallized lms with chlorite-epidote, sparse pyrite, 50% oxidized. Ave: 44 ppm Cu, 29 ppm Pb, 132 ppm Zn (with last 30 ft. averaging 43 ppm Cu, 64 ppm Pb, and 293 ppm Zn).
 - 1139-1193 Bisbee frm., local intense zones of epidote-garnet with strong silicification, clay-specularite-calcite association, chalcopyrite and sphalerite. Ave: (1139-1170) 69 ppm Cu, 1473 ppm Pb, 0.26% zinc, and 9 ppm Ag; (1170-1193) 200 ppm Cu, 74 ppm Pb, 225 ppm Zn, and 2 ppm Ag.
 - 1193-1301 Tertiary Stronghold Granite, at 20° to core axis, 80% oxidized, argillized, chlorite on fractures, spare disseminated chalcopyrite. Ave: 26 ppm Cu, 13 ppm Pb, 17 ppm Zn, -1 ppm Ag.
 - 1301-1354 Tertiary Rhyolite dike, chilled borders, argillic, chlorite, weak disseminated pyrite, contains quartz eyes. Ave: 13 ppm Cu, 12 ppm Pb, 30 ppm Zn.
 - 1354-1746 Tertiary Stronghold Granite, argillic and oxidized with Bisbee clasts, pebble dike of Stronghold granite at 1493-1502, with oxidation and argillic decreasing sharply below dike, weak pyrite. Ave: 12 ppm Cu, 5 ppm Zn, 20 ppm Pb, Tr. Ag, nil Au.

Note: Fault breccia at 857 ft. has oxidized rock below which grades into sulfides. Oxidation below latite at 1052 ft. apparently continues to pebble dike at 1493 ft. with weak pyrite below.

See File Copy for complete Kerr-McGee log and assay sheets.

Drill Hole Summary
 M-2, Middlemarch Project
 T18S, R23E, Sec. 12 cab
 Kerr-McGee Corporation
Cochise County, Arizona

Drill Hole M-2, spudded Dec.(?) 1974, NX to 935' T.D., Joy Drilling Co.
 First pyrite prior to 60 feet.

- 0-337 Cretaceous Bisbee frm., variably oxidized throughout, with variable diopside, calcite, some garnet, chlorite, sericite with py, chalcopryrite, and sphalerite in variable, spotty values. (See assay sheet for variability.) Ave: 44 ppm Cu, 443 ppm Zn.
- 337-345 Fault.
- 345-426 Bisbee frm., as above, becoming intensely silicified below 379 ft. with strong garnet, tremolite, epidote with minor sulfides. Ave: 58 ppm Cu, 60 ppm Zn (excluding last zinc which ran 0.18% Zn).
- 426-474 Laramide dike (lamprophyre), very dark to black in color, has disintegrated appearance, with blocks of Bisbee, lower contact at 5°-10°. Ave: 81 ppm Cu, 75 ppm Zn.
- 474-520 Bisbee frm., variable epidote-garnet, tremolite, silicification, with variable lead and zinc, cut by 3'-6" dikes at 514', 516', & 519'. Ave: 106 ppm Cu, 366 ppm Zn.
- 520-581 Bisbee frm., pervasive epidote-garnet and silica with zones of py, cp, magnetite, sphalerite. Lamprophyre dike at 542'-544', and thin dike zones at 574'-580'. Ave: (520'-560') 0.14% Cu, 0.24% Pb, 0.59% Zn, 0.08 oz. Ag; (560'-581') 68 ppm Cu, 71 ppm Pb, 201 ppm Zn, Tr. Ag.
- 581-603 Alaskite (Laramide?), silicified, local zones of quartz-tremolite veinlets, weak py, very fine grained, may be fluidized. Ave: 163 ppm Cu, 241 ppm Zn.
- 603-642 Bisbee frm., coarse grained epidote-tremolite-garnet alteration with disseminated py and minor cp. Ave: 79 ppm Cu, 331 ppm Zn.
- 642-715 Alaskite, intense silicification in areas of included Bisbee frm. blocks which are intensely altered with some mineral. Ave: 93 ppm Cu, 165 ppm Zn.
- 715-768 Bisbee frm. intermixed with Alaskite. Ave: 71 ppm Cu, 240 ppm Zn.
- 768-786 Laramide(?) Quartz Monzonite, contact at 10° to core axis, finer grained and less chlorite than Jurassic quartz monzonite, some clay, chlorite, sericite, and pyrite. (May indeed be Jurassic q.m. [J.D.S. visual].) Ave: 62 ppm Cu, 75 ppm Zn.
- 786-833 Bisbee frm., intense chlorite-epidote with calcite, pyrite. Ave: 107 ppm Cu, 68 ppm Zn (excludes one sample running 0.21% Zn).
- 833-858 Alaskite, brecciated, with epidote-chlorite-quartz with galena and sphalerite. Ave: 75 ppm Cu, 0.23% Zn (no lead assays). (Core skeleton mainly tactite-carbonate as if part of Bisbee.)
- 858-935 Bisbee frm., sharp decrease in epidote, garnet, tremolite, with little sulfide, sericite, and chlorite. Ave: 67 ppm Cu, 214 ppm Zn.
 T.D.

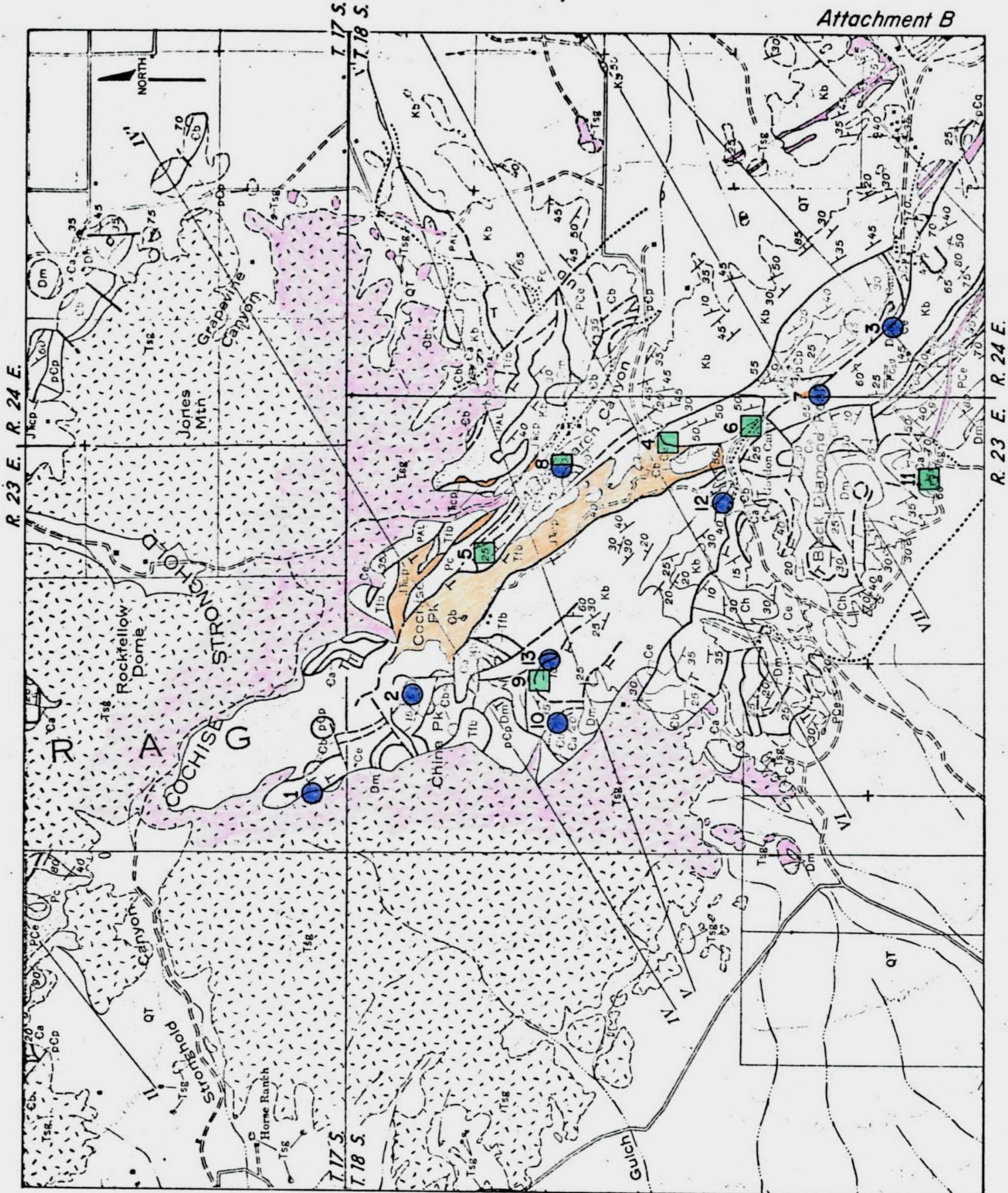
See File Copy for complete Kerr-McGee log and assay sheets.

Drill Hole Summary
M-3, Middlemarch Project
T18S, R23E, Sec. 12 dcd
Kerr-McGee Corporation
Cochise County, Arizona

Drill Hole M-3, spudded Feb.(?) 1975, NX to 535' T.D., Joy Drilling Co.
Very shallow oxidation.

- 0-54 Felsite sills in Bisbee Gance conglomerate, pervasive silicification with calcite and pyrite, some chalcopyrite. Ave: 32 ppm Cu, 59 ppm Zn.
- 54-108 Bisbee Gance, recrystallized, silicified, calcite veinlets, weak pyrite. Ave: 39 ppm Cu, 47 ppm Zn.
- 108-280 Felsite sills in Gance, as above, locally epidote, has breccia appearance, locally strong sulfide but sparse overall. Ave: (108-150) 38 ppm Cu, 59 ppm Zn (excludes one high sample of 0.04% Zn); (150-280) less than 0.01% Cu, no zinc assays.
- 280-535 Bisbee Gance with numerous felsite dikelets, spotty tremolite-actinolite with some garnet, variable silicification, quartz-pyrite and calcite, stronger sulfides (up to 4% in dikes), no copper visible, parts have a sandy-pebble cgl with fluidized appearance. Ave: 55 ppm Cu, no zinc assays. Note: Assays for gold-silver show interesting values, but Snyder (K-M, verbal) reports unable to verify on rechecks and suggests all Au-Ag values to be suspect.

See File Copy for complete Kerr-McGee log and assay sheets.



EXPLANATION

- Jurassic-Triassic Cochise Peak quartz monzonite
- Tertiary Stronghold granite

MINERAL HOST

- Paleozoic
- Cretaceous
- 7** Mine List No.

Base from J. Gilluly, U.S.G.S. PP 281

**MINERAL DEPOSITS OF
CENTRAL DRAGON MOUNTAINS**

(after Ariz. Bur. Mines Bull. 187)

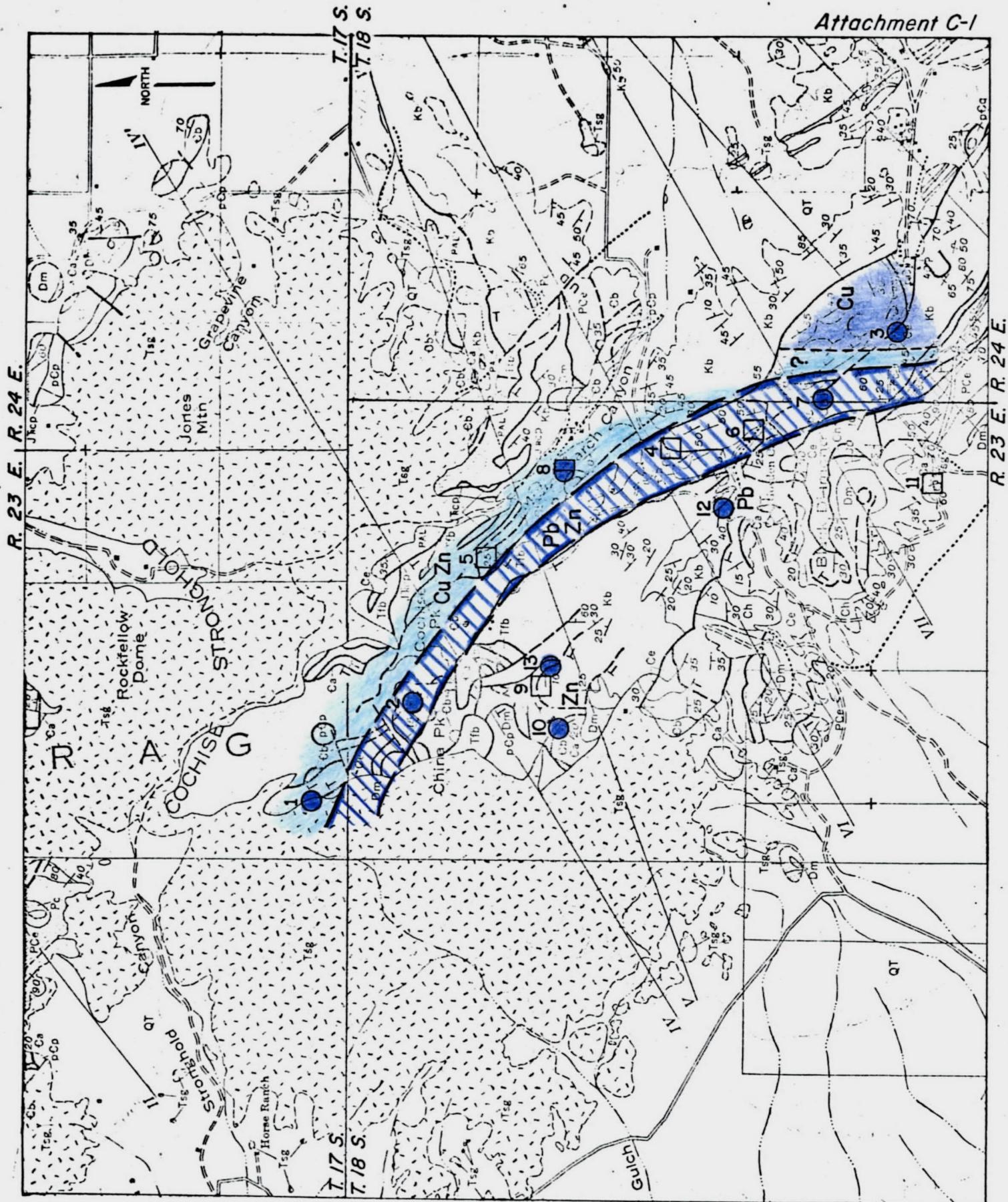
Cochise County, Arizona

SCALE 1:62,500

JD Sell

July 1975

Xerox Orig.
MVK 2860



Base from J. Gilluly, U.S.G.S. P.P. 281

MINERAL HOST

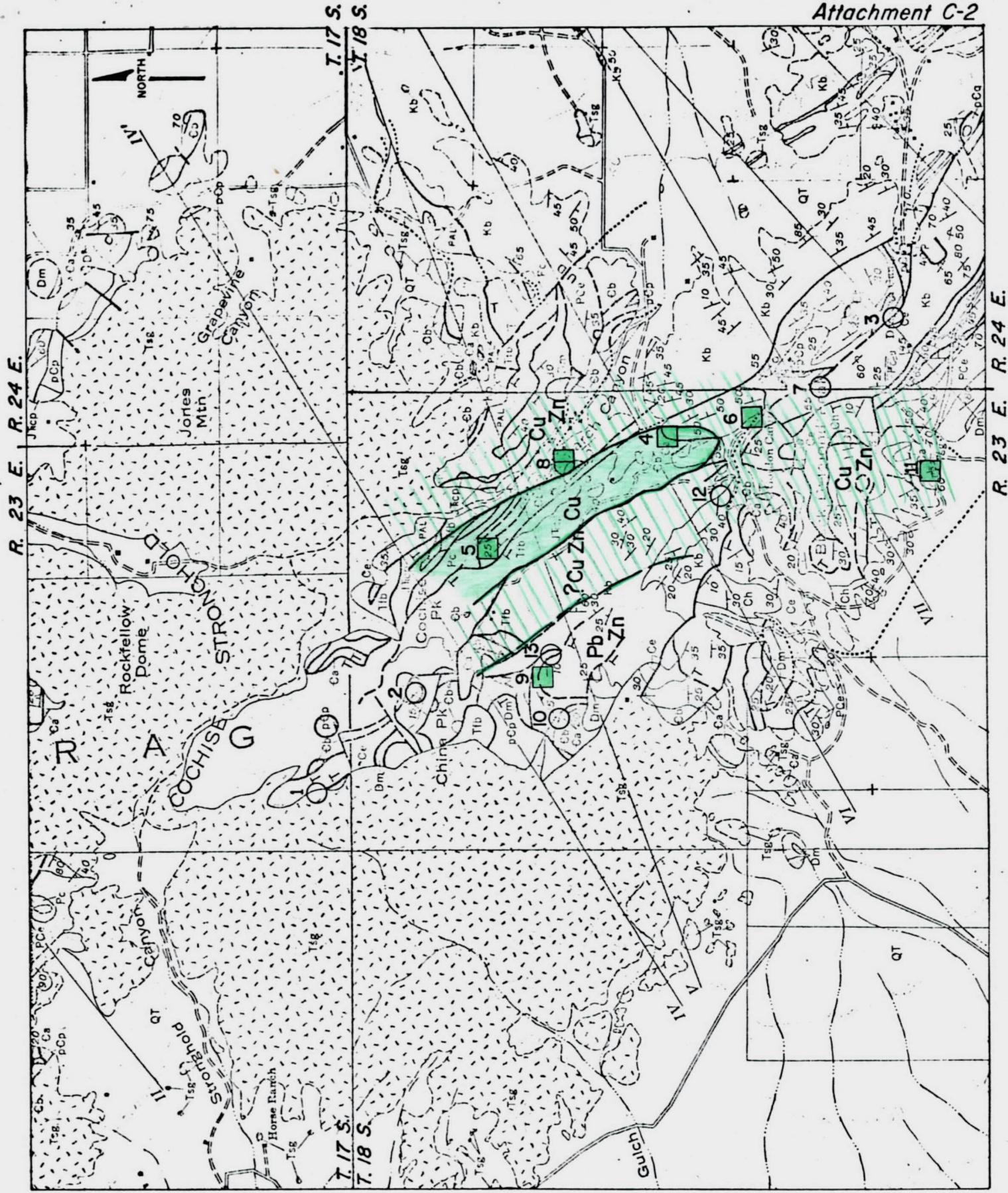
● Paleozoic

7 Mine List No.

POSSIBLE METAL PRODUCTION TRENDS
PALEOZOIC HOST
CENTRAL DRAGON MOUNTAINS

Cochise County, Arizona

SCALE 1:62,500



Base from J. Gilluly, U.S.G.S. PP. 281

MINERAL HOST

Cretaceous

7 Mine List No.

POSSIBLE METAL PRODUCTION TRENDS

CRETACEOUS HOST

CENTRAL DRAGON MOUNTAINS

Cochise County, Arizona

SCALE 1:62,500

OPERATING PLAN
Amendment No. 1

MIDDLEMARCH AREA
WILCOX RANGER STATION
CORONADO NATIONAL FOREST

Exploration is nearing completion on Drill Hole No. 1, located in the NW/4, NE/4 Section 11, Township 8 South, Range 23 East. The results obtained in this drill hole dictate that the proposed and approved second drill hole located in the SE/4, NE/4 of Section 11, Township 8 South, Range 23 East be deferred for the present time. Kerr-McGee requests that Items 4 through 6 be amended to the following:

ITEM 4. Amended Location Map (Attached)

ITEM 5. Amended Surface Disturbance Map (Attached)

ITEM 6. We plan to initiate an Induced Polarization survey over the general area of Drill Hole No. 1. This survey will be conducted from existing roads and will cause no disturbance.

We also request approval of three (3) drill sites and access roads, as shown on the attached location and surface disturbance maps.

Drill Site "A" will be occupied upon completion of Drill Hole NO. 1, and will test an I. P. anomaly. Drill Site "A" is located on an existing road and will cause only a minimal amount of new disturbance. The existing road will only be regraded where absolutely necessary.

Drill Site "B" will test surface mineralization south of the Middlemarch Mine and will require approximately 1700 feet of new road

fifteen (15) feet wide and a twenty by forty (20 X 40) foot drill site totaling approximately 0.6 acres of disturbance.

Drill Site "C" is an extension of an existing road and will require approximately 1100 feet of access road fifteen (15) feet wide, a twenty (20) by forty (40) foot drill site, and result in approximately 0.4 acres of new disturbance. The existing road is adequate and will require no grading for use.

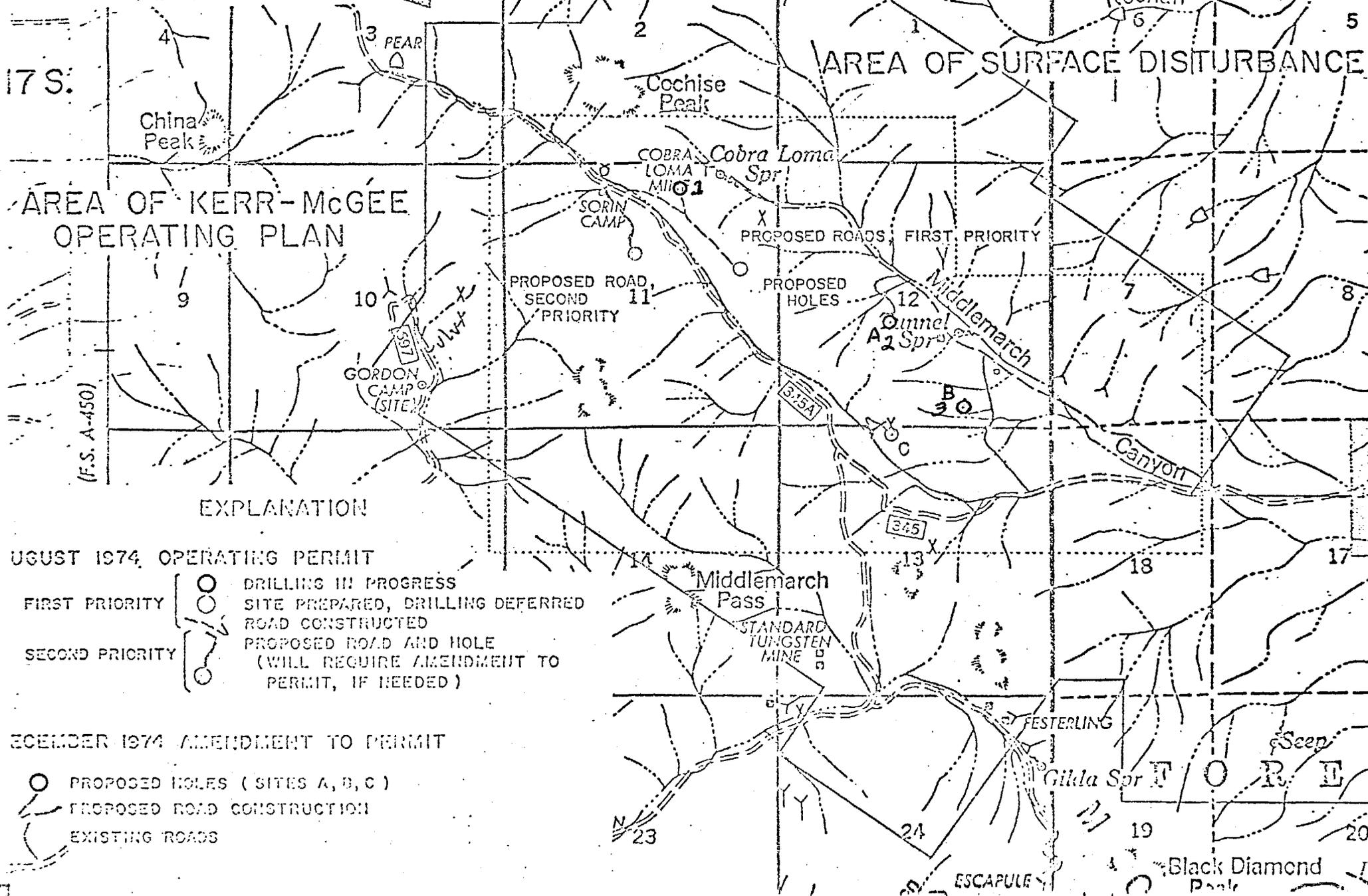
All new disturbed areas will be outsloped with no berm; with Kelly dips where required for erosion control, and the banks and road surface will be seeded with Lehman's Lovegrass immediately after construction. Site "B" will be constructed, but Site "C" access road will be started near the completion of the drill hole on Site "B".

The access road to the two drill sites approved (Drill Hole No. 1) will be inhibited by wiring close the gate near the water well in Sorin Canyon. Closing and reclamation of this road will be deferred for the time being.

MIDDLEMARCH AREA
COCHISE COUNTY, ARIZONA

2" = 1 MILE

AMENDED
ITEM 4



AREA OF KERR-McGEE
OPERATING PLAN

AREA OF SURFACE DISTURBANCE

EXPLANATION

AUGUST 1974 OPERATING PERMIT

- | | | |
|-----------------|---|---|
| FIRST PRIORITY | ○ | DRILLING IN PROGRESS |
| | ○ | SITE PREPARED, DRILLING DEFERRED |
| | — | ROAD CONSTRUCTED |
| SECOND PRIORITY | — | PROPOSED ROAD AND HOLE |
| | ○ | (WILL REQUIRE AMENDMENT TO PERMIT, IF NEEDED) |

DECEMBER 1974 AMENDMENT TO PERMIT

- | | |
|---|--------------------------------|
| ○ | PROPOSED HOLES (SITES A, B, C) |
| — | PROPOSED ROAD CONSTRUCTION |
| — | EXISTING ROADS |

R. 23 E.

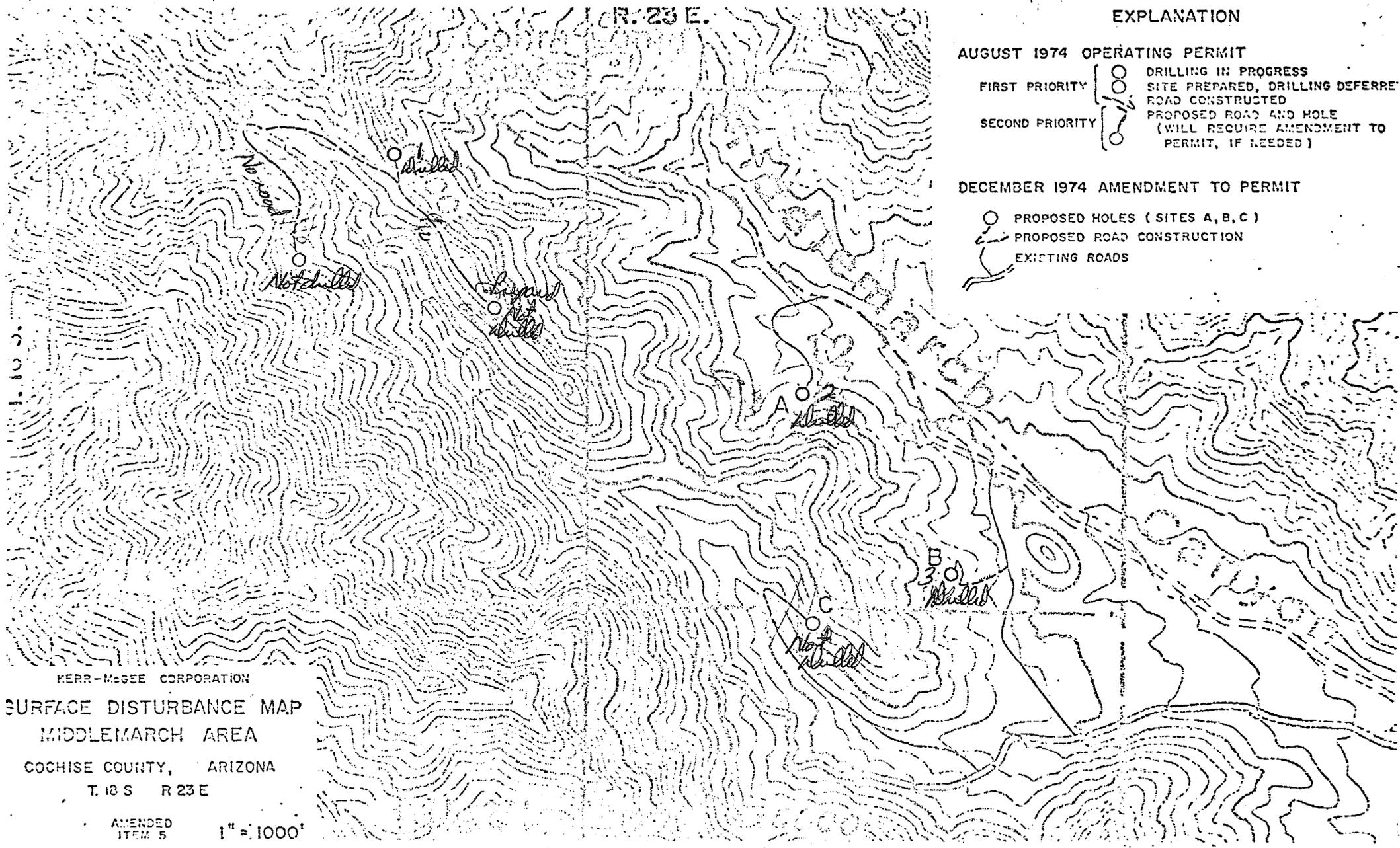
EXPLANATION

AUGUST 1974 OPERATING PERMIT

- | | | |
|-----------------|--|---|
| FIRST PRIORITY | | DRILLING IN PROGRESS |
| | | SITE PREPARED, DRILLING DEFERRED |
| SECOND PRIORITY | | ROAD CONSTRUCTED |
| | | PROPOSED ROAD AND HOLE
(WILL REQUIRE AMENDMENT TO PERMIT, IF NEEDED) |

DECEMBER 1974 AMENDMENT TO PERMIT

- | | |
|--|--------------------------------|
| | PROPOSED HOLES (SITES A, B, C) |
| | PROPOSED ROAD CONSTRUCTION |
| | EXISTING ROADS |



KERR-McGEE CORPORATION

SURFACE DISTURBANCE MAP MIDDLEMARCH AREA

COCHISE COUNTY, ARIZONA

T. 18 S. R. 23 E.

AMENDED
ITEM 5

1" = 1000'

District MIDDLE MARCHHole MP-1Page 2

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization	
				Cu	Mo					
88						Granite Wong	below 25' chlorite becomes less prominent, with large, pink K-spars slightly rounded.	calcite-sericite-py. VITS, local weak Mu.	local py. SURF on VITS, no dissem. mineralization	
99.5						Diabase	dk. gray-black, Mg fresh plaq. & K-spv	clay-sericite with calcite veinlets, no mag. white or biotite	3-4% dissem. py with minor vtg cpy.	
103'						Quartz Wong	below diabase, the chlorite content as sericite, grain- boundary fillings irregular, chlorite mantled locally porphyritic rocks	chlorite no magnetite all feldspars are predominantly fresh, 10-20% oxidation	minor py. assoc. w/ chlorite VITS, pass. very fq, very sparse grains cpy.	
									below 122' - sparse epidote - qtz - chlorite VITS with magnetite abundant py and minor cpy. local near-vertical calcite - py. VITS.	
									below 130' - sp-py-qty VITS are sparse (41 on 5 feet). assess TESTAC. sulfide content < 1%.	
									145' - sericite on sparse calcite - chlorite VITS.	
									151' - near-horizontal epidote - mag. white VITS	
									169' - 10% minor dissem w/ biotite & chlorite very abundant - 10% of rocks	very sparse grains cpy. on chlorite VITS
									171' - 2" vit. (2) ex ^o - qtz - chlor. with spots py. acc. grains cpy.	

District MIDDLEMARCHHole M-1Page 3

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
170						Quartz Monz.	below 176' rock is somewhat brecciated, fractures impregnated with late calcite increasing abundance of chlorite as mts. and grain-boundary fillings	weak, minor py. on chlorite seams with local cpy.	
							below 183' - quartz - chlorite mts increasing to 1/5'		
								below 207' - wk. chrysom py. as-cc. with chlorite; acc. grain cpy.	
								228' - mod. ab. cpy on chlor-mag sp. fracture with ab. py.	
								coppr is intimately as-cc. with the green chlorite flakes, a phlogopite that didn't quite make biotite, rather than the greasy dull chlorite of propylitic zone.	
								251-53' - mod. - vertical qtz - chlor. epidote mts. with moderately abundant cpy, py.	
							intense chlorite alteration	250-270' - numerous qtz - chlorite epidote mts. at all angles with considerably abundant py and minor cpy	
							Chlorite zone below 270' - intense increasing very weak, acilligat. of chlorite, local py. - vertical veins mts. with minor sp. py. of py. and increasing calcite mts. to 250	decreased py and cpy to almost nil.	

District MIDDLEMARCHHole M-1Page 4

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
378						Diabase 15-18'	Co. H. gray rock Diabase 1-2" K-py epidote, remobilized and revealed with silica, chlorite	intense chloritization with local chlorite - epidote mts.	weak py. on chlorite fractures (@ 30°), some py. with chlorite. thick bands in individual grains
								403 - carbonate - chlorite - py breccia veins	395' 1/2" chlorite - py vlt @ 30° with weak cpy.
						423-29 - Diabase fragments in core			404 - magnetite - epidote - cpy. plus in granite
							abundant chlorite mts @ 30-45°		424 - mag - epidote - py. vlt.
							below 400' - chlorite - clay(?) - wollastonite py matrix? mass vertical in almost feldspar dikes		minor cpy. assoc. with heavy chlorite.
							below 400' - numerous qtz - chlorite - wollastonite mts @ 60° and more vertical with py.		minor local concentrations cpy on chlorite selvages of qtz vlt.
							400' - abundant vertical epidote mts, parallel to ESD, with intermittent chlorite - qtz breccia dikes		chlorite - qtz - breccias contain minor py. very spotty cpy.
							550' increasing chlorite with local chlorite - clay breccias in core cpy.		increased cpy with TS 421/10

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
535						Quartz Wolframite	quartzite VHS @ 30' and vertical cuts all other VHS except chlorite VHS @ 30'	sparse grains epy - dissem. with red halos similar to radiation halos around Cu - bornite grains at White Sulph. - abs. with black mineral - Titanite or Kreninite	
							615-650 -sharp increase in epidote and quartzite - pyrite VHS and epidote - epidote - pyrite VHS w/ secondary K-spr + limonite	increased pyrite in VHS little or no epy. or epy dissem in zones of heavy chlorite T.S. until < 1%	
						Rock contains to be fractured with 1-2" K-spr + limonite + limonite healed by chlorite	local zones contain bold 650' and 615' 650-700'	increased py. to 1% - 1 1/2% spotty, very minor epy	
							10-20' with CD-mount and K-spr below 710 to 740'		
							numerous chlor. VHS @ 60' cut by complementary set of chlor. VHS cut by ep - calcite VHS	weak py. on epidote VHS and second stage chlor.	
							765-66' - strong epidote veining		
						brecciated nature of rock continues to	799' - feldspar totally replaced with pervasive sericite to 807'		
							increasing chlor - calcite VHS, epidote VHS continue to be ab.	weak py. on VHS << 1%	

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
1000						JURASSIC QUARTZ MONZ.	Rock is extremely variable, from pink K-spr phos in mg. ground mass to zones of qtz, phos veins in black, silicified ground mass, asile is locally intensely stained, granulated w/ chlorite filling between grains	5-10% oxidation on fractures; sparse qtz. Uts., ab. near-vertical and horizontal epidote	sparse pyrite on fractures.
1070							rock becomes v. black	ab. chlorite - biotite	sparse grains dissem. py; cpq weakly epidotized
1031						Cretaceous Bisbee Fm.	fg-mg. reallized lms. pebble conglomerate to limy shale; lt. grayish-white (bleached) to dk. black silicified	intense reallization with numerous calcite uts, interstitial silica replacement weak py & cpq assos. w/ chlorite Uts. in qtzite Passes w/ strong epidote veining - chlorite is almost a remobilization breccia feature.	sulfide content <<1%, predom. on fractures. py. content locally strong on chlorite Uts
1051S						LARAMIE (?) LATITE	fg. qtz and sanidine xls. in v. gray-phanitic lt. gray ground mass dipping @ 30° to core axis	cut by epidote and chlorite Uts; most matrics are chlorite and occur within sanidine xls.	dissem. & veined py. ~.5% with sparse grains dissem. cpq.
1054						Cretaceous Bisbee	hemiphsed sl. & intensely reallized lms. as above with thin intervals lms. congl.	chlorite & epidote on fractures, rock is lt. gray-green gray with alt. pervasive reallization w/ hematizing 50% oxidized	weak sulfide - py. on fractures <<1%
1079							1079 - Kls shale (limy)		with beginning calc-silicate on alt. in thin "eyes"

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
1079						Cretaceous Risbee Fm.	sh. - weak calc-silicate alteration in limy "eyes" with local pervasive epidote abund. calc. vts, chlorite vts, weak garnet in calc-silicate alt.	little to no sulfides 1102-1103 - chlorite-epidote-clay zone with 1% pyrite, little mb. cpy. 1090 - sparse, near-vertical ep, py vts - oxidized below 1092 - Kb shale - intensely fractured, shaly	
						1105 - FANED			
1108						LARAMIDE (?) LATE DKE	vtg., H. pink with qtz & sandstone phenos.	clay-ser - chlorite vts. calcite - cpy vts.	vtg. weak disse. py, sparse grains spy.
1113						Tertiary Stronghold Gr	vf-mg granite	argill. with carbonate, chlorite, and epidote vts.	wk. py. assoc. w/ chlorite vts.
1124						Cretaceous Risbee Fm.	lms. & lms. pebble congl.	clay-chlorite, calcite vts, epidote vts. 1127 - pervasive epidote- chlorite, specularite below 1134 - garnet alteration assoc. with ep - spar.	minor pyrite mod. ab. 5-10% py with local stringers sphalerite, weak cpy.

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
1139						Cretaceous Bisbee Fm.	lms. & lms. pebble congl.	sharp loss of epidote, garnet and sphalerite	very minor pyrite
								below 1140' - local zones intense garnet - epidote and leached, sp. calcite local specularite	sphalerite assoc. with ep-gar. Cpy. dissem. in ep. relict calcite
								Weakly magnetic	1158-68 - pervasive ep-gar-chlor cd. with moderate sphalerite and weak sp. on fractures.
								1168-1186 - white rock, no ep., sparse chlorite, strong silicification (Tronite)	1168-7" zone spec. - sphalerite sp. assoc. w/ chlorite.
								1186-1192.5' - pervasive bl-gr. ep-chlor-grw - clay-spec. - calcite	1181-82 - float ore-grade cpy assoc. with change from spec. to mag.
									Sulfides minor above and below 81-82 zone.
1142.5						Tertiary Stronghold Gr.	@ 20' to core mg. granite w/ fractured, sheared	chlorite, 80% altered oxidized, chlorite on fractures, argillized	.5-1% py. on fractures decr. away from w/ very sparse dissem. sp. - davidite grains K6
1301						Quartzite Dike	vfg. granular rock with fractured K-spar phenocr - no dip apparent chill borders	argilliz., chlorite	weak to 1-2% dissem. & veined py., sparse grains dissem. epy. -
1354						Stronghold Gr.	as above.		
							1372- 3" K6 frag. in Stronghold	argilliz.	

District MIDDLEMARCH

Hole M-1

Page 10

Depth	Int.	Core Rcvy	Samp. No.	Cu	Assays Mo	Rock Type	Rock Description	Alteration	Mineralization
1300						Stronghold Gr.	Post-ore rocks not logged in detail		
						1493-1502	Pebble dike, dissen. Py. pebbles mostly not stronghold.		
						1550		oxidation and argillization decreases sharply.	
						below 1565	rock much less shattered, broken, with no change in alteration and mineralization to 1746 TD.	argillic alt. sharply decreased.	weak pyrite
1746									
							TOTAL DEPTH		

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016333
RECEIVED 9-30-74
REPORTED 10-2-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD PPM	COPPER PPM	ZINC %		MOLYBDENUM PPM
31510	100-103		17	56			< 1
31511	105-110		6	46			1
31512	115-120		7	39	$\frac{59}{51278}$		< 1
31513	125-130	$\frac{9}{5144}$	9	33			< 1
31514	126		14	80			< 1
31515	135-140		8	73			< 1



CHARGE \$ 31.50

INVOICE

M-1

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

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Kerr-McGee Corporation
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Tucson, Arizona 85726

JOB # 016416
RECEIVED 10-15-74
REPORTED 10-17-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %	MOLYBDENUM %
31516	145	150		52		
31517	155	160		48		
31518	165	170		54		
31519	175	180		40		
31520	185	190	5' sample	53		
31521	195	200		49		
31522	205	210		62		
31523	215	220		43		
31524	225	230		36		
31525	235	240		40		
31528	260	270	10' sample	49		
31529	275	280		37		
31530	285	290		41		
31531	295	300		36		
31532	300	310		45		
31533	310	320		45		
31534	320	330		42		
31535	330	340		35		
31536	340	350		43		
31537	350	360		47		
31538	360	370		51		
31539	370	380		42		
31540	380	390		42		
31541	390	400		63		
31542	400	410		40		
31543	410	420		53		
31544	420	430		53		
31545	430	440		48		
31546	440	450		52		
31547	450	460		45		

CHARGE _____

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

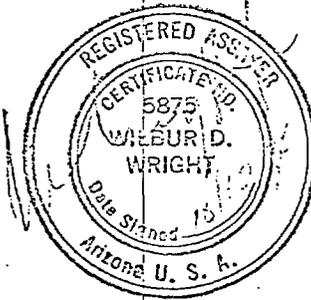
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PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016377
RECEIVED 10-8-74
REPORTED 10-10-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %		MOLYBDENUM %
31527	250 -	260		316			
31528	260	- 270		140			



CHARGE \$ 4.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

M-1

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

α

FELIX K. DURAZO
ARIZONA REG. NO. 8206
WIL WRIGHT
ARIZONA REG. NO. 5875

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TUCSON, ARIZONA 85725

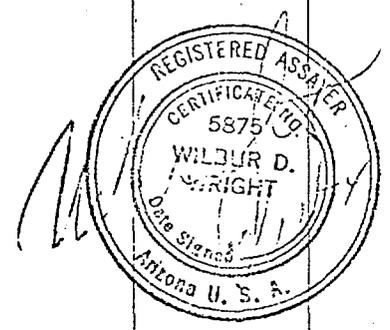
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PHONE 602-294-5811

Kerr-McGee Corporation

Page 2 of 2

JOB # 016416 Continued
RECEIVED _____
REPORTED _____

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %	MOLYBDENUM %
31548	460	470		42		
31549	70	80		49		
31550	80	90		51		
31551	90	500		33		
31552	500	10		35		
31553	10	20		39		
31554	20	30		39		
31555	30	40		41		
31556	40	50		44		
31557	50	60		24		
31558	60	70		30		
31559	70	80		53		
31560	80	90		30		
31561	90	600		37		
31562	600	10		40		
31563	10	20		42		
31564	20	30		37		
31565	30	40		37		
31566	40	50		23		
31567	50	60		36		
31568	60	70		40		
31569	70	80		38		
31570	80	90		33		
31571	90	700		28		
31572	700	10		36		
31573	10	20		36		
31574	20	30		33		
31575	730	740		30		
		\$ 116.00--Assays				
		116.00--Sample Prep.				



CHARGE \$ 232.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
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WIL WRIGHT
ARIZONA REG. NO. 8878

P.O. BOX 7517
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Kerr-McGee Corporation
P.O. Box 27543
Tucson, Arizona 85726

JOB # 016461
RECEIVED 10-23-74
REPORTED 10-25-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %	MOLYBDENUM %
31576	740	750		45		
31577	50	40		96		
31578	60	70		50		
31579	70	80		44		
31580	40	90		49		
31581	90	800		51		
31582	800	10		64		
31583	10	20		68		
31584	20	30		57		
31585	30	40		59	50	
31586	40	50		62	72) 3579	
31587	50	60		56		
31588	60	70		61		
31589	70	80		68		



\$ 28.00

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

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Kerr-McGee Corporation
 P.O. Box 26547
 Tucson, Arizona 85726

JOB # 016563
 RECEIVED 11-13-74
 REPORTED 11-15-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %		MOLYBDENUM %
31590	880-890			83			



PRICE \$ 2.00

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

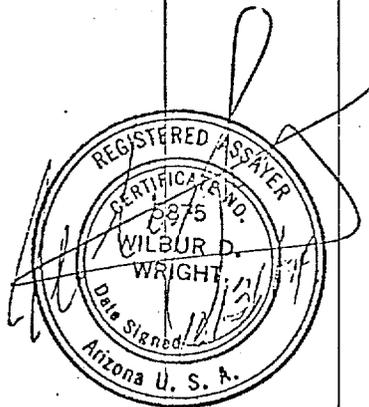
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016478
RECEIVED 10-28-74
REPORTED 10-31-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %		MOLYBDENUM %
31591	890	900		37			
31592	900	910		31			
31593	910	920		24			
31594	920	930		31			
31595	930	940		28			
31596	940	950		33			
31597	950	960		21			
31598	960	970		19			
31599	970	980		25			
31600	980	990		36			



CHARGE \$ 20.00

INVOICE

177-1
M. dd 1 - March

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5878

P.O. BOX 7517
TUCSON, ARIZONA 85725

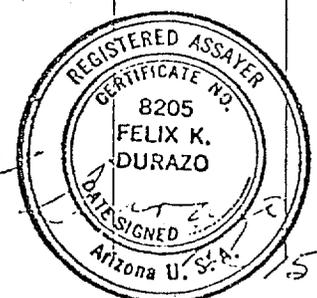
710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 016567
RECEIVED 11-13-74
REPORTED 11-15-74

SAMPLE NUMBER	GOLD OZ.*	SILVER PPM	LEAD PPM	COPPER PPM	ZINC PPM	MOLYBDENUM %
32301	Nil	< 1	10	50	62	990-1000
32302	Nil	< 1	12	34	82	1000-1010
32303	Nil	< 1	16	28	150	1010-1020
32304	Nil	< 1	10	46	70	1020-1030
32305	Nil	< 1	20	46	52	1030-1040
32306	Nil	< 1	12	42	72	1040-1050
32307	Nil	< 1	16	58	68	1050-1060
32308	Nil	< 1	8	54	52	1060-1070
32309	Nil	< 1	8	40	36	1070-1080
32310	Nil	< 1	8	58	58	1080-1090
32311	Nil	< 1	14	30	54	1090-1100
32312	Nil	< 1	14	28	50	1100-1110
32313	Nil	< 1	22	38	102	1110-1120
32314	Nil	< 1	22	62	76	1120-1130
32315	Nil	2	148	30	.07%	1130-1140
32316	Nil	12	1840	92	.26%	1140-1150
32317	Nil	6	800	80	.24%	1150-1160
32318	Nil	8	1780	34	.28%	1160-1170
32319	Nil	2	42	20	56	1170-1180
32320	Nil	2	146	540	480	1180-1190
32321	Nil	< 1	34	40	140	1190-1200
32322	Nil	< 1	14	48	24	1200-1210
32323	Nil	< 1	10	44	14	1210-1220
32324	Nil	< 1	12	58	12	1220-1230
32325	Nil	< 1	8	40	10	1230-1240

CHARGE \$ 219.50



[Handwritten signature]

INVOICE

15-74

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO: 8205
WIL WRIGHT
ARIZONA REG. NO. 8875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 016604
RECEIVED 11-21-74
REPORTED 11-22-74

COPY

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD PPM	COPPER PPM	ZINC PPM		MOLYBDENUM %
32326	Nil	Trace	32	12	20	12.0 - 1250	
32327	Nil	Trace	10	10	16	1250	1260
32328	Nil	Trace	12	14	25	1260	1270
32329	Nil	Trace	11	12	24	1270	1280
32330	Nil	Trace	8	12	10	1280	1290
32331	Nil	Trace	8	11	13	1290	1300
32332	Nil	Trace	14	14	31	1300	1310
32333	Nil	Trace	11	16	30	1310	1320
32334	Nil	Trace	13	12	32	1320	1330
32335	Nil	Trace	10	12	31	1330	1340
32336	Nil	Trace	13	14	32	1340	1350
32337	Nil	Trace	12	13	24	1350	1360
32338	Nil	Trace	6	10	20	1360	1370
32339	Nil	Trace	5	11	18	1370	1380
32340	Nil	Trace	6	17	30	1380	1390
32341	Nil	Trace	5	10	28	1390	1400
32342	Nil	Trace	6	12	20	1400	1410
32343	Nil	Trace	7	8	17	1410	1420
32344	Nil	Trace	5	7	14	1420	1430
32345	Nil	Trace	6	10	20	1430	1440
32346	Nil	Trace	6	10	21	1440	1450
32347	Nil	Trace	5	12	25	1450	1460
32348	Nil	Trace	5	11	22	1460	1470
32349	Nil	Trace	4	12	18	1470	1480
32350	Nil	Trace	4	10	21	1480	1490
32351	Nil	Trace	8	8	24	1490	1500
32352	Nil	Trace	3	16	21	1500	1510
32353	Nil	Trace	4	18	18	1510	1520
32354	Nil	Trace	6	20	16	1520	1530
32355	Nil	Trace	4	10	18	1530	1540

CHARGE _____

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

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PHONE 602-254-5311

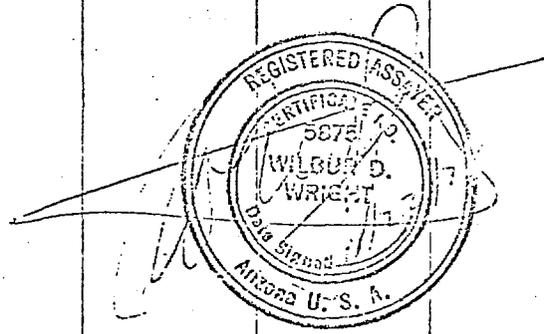
Kerr-McGee Corp.

Page 2 of 2

JOB # 016604 Continued
RECEIVED _____
REPORTED _____

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD PPM	COPPER PPM	ZINC PPM	MOLYBDENUM %
32356	Nil	Trace	5 $\frac{4}{20/196}$	13 $\frac{12}{21/196}$	10 $\frac{20}{20/197}$	1540 - 1550
32357	Nil	Trace	6 $\frac{4}{20/196}$	12 $\frac{12}{21/196}$	16 $\frac{20}{20/197}$	1550 - 1560

COPY



CHARGE \$ 304.00

* Gold and Silver reported in Troy oz. per 2,000 lb. ton.

INVOICE

M-1

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5875

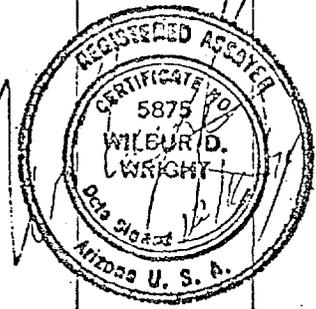
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 016690
RECEIVED 12-12-74
REPORTED 12-16-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %	MOLYBDENUM %
32358	1560	1570		51		
32359		1580		47		
32360		1590		44		
32361		1600		44		
32362		1610		37		
32363		1620		41		
32364		1630		39		
32365	1630	1640		33		



CHARGE \$ 16.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 5205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

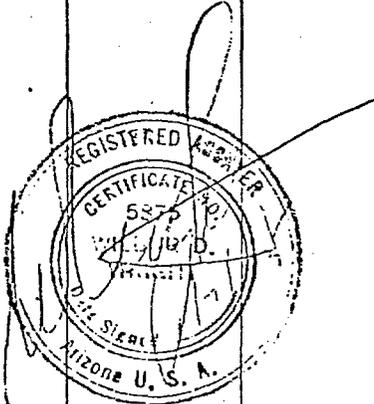
710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016769
RECEIVED 12-75
REPORTED 1-7-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PM	ZINC %	MOLYBDENUM %
32366	1640-1650			42		
32367	1650-1660			40		
32368	1660-1670			28		
32369	1670-1680			34		
32370	1680-1690			40		
32371	1690-1700			46		
32372	1700-1710			38		
32373	1710-1720			34		
32374	1720-1730			26		
32375	1730-1740			30		
32376	1740-1746 T.D.			26		

COPY



CHARGE \$ 22.00

INVOICE

KERR-McGEE CORPORATION

District MIDDLE MARCH
 Hole No. M-2
 Spudded _____
 Completed _____
 Total Depth 935 ft.
 Driller Joy Wfg.
 Logged By D.A. Wolfe

County COCHISE State Arizona
 Claim _____ Sec. T. R.
 Elevation _____
 Hole Size NX
 Core Size _____
 Hole Angle _____
 Collar Coords. _____

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
20'						Cretaceous Bisbee Fm.	H. gray, vfg. - lg. limestone with interspersed lms. cemented lms. pebble- cobble conglomerate	intensely silicified with interstitial silica, 100% oxidized to 25', 20% oxidation (100% on fract) to 2-3% pyrite dissem. with bio. or Hg. diopside development (?) Calcite vlt. abundant, sparse qtz, vlt.	2-3% dissem. py. - weakly oxidized to 100%, original 1-2% py. or vlt. 100% ox. to 200' with weak malachite.
								below 60' - numerous fractures exhibit malachite - montmorillonite with is probably late stage.	
							96-97 - black, biotized kaupophyre with dissem. py.		91.5' - 92' - several 1/2" qtz - spec. vlt. @ 50' with scales of Zn S. weak cpy. in chkr, 3% dissem. py.
							106-111 - vfg. sandy unit	100% ox.	mal - cpy.?
							112' - pebble lms. congl. shows strong redification with vfg; yellow-green Ca-rich garnets after leach?		
							115-119 - sandy lens w/ qtz vlt. to 141 - ditto		

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
120'						K' SISREE Fm.	slight increase in qtz-py VHS below 100'		
						159 - dk. gray - black lms. with siliceous shale carrying sp. - remobilized, silicified, <= 1% py	local zones oxidation w/ almost no sulfides in between.	Sulfides <= 10%	
						192 - shale, black, intensely fractured	strong chlorite - sericite w/ abundant CaCO ₃ VHS.	3-5% py. dissem. and on celadite VHS; no other apparent mineralization	
						236 - silic. lms. + dike material	intense silicification	J48 - 52 - wk. ZnS Assoc. with ep. 252 - 55 - strong ZnS w/ minor PbS replacement - silic. lms with local ep - gal. 256 - wk. azurite - chrysocolla	
						259 - dk. gray - bl. shale, fractured	intense chlor. - ser. alt cut by late, near-vertical CaCO ₃ - py (marcasite) VHS.	little to mod. dissem. py, no observable ep.	
						→ dike or st. gray shale 312 - lms. - contact is fault (?) breccia	intense, pervasive clay - sericite alt. cut by celadite VHS.	decreased py, no observed ZnS, or ep.	165,
						337 - 345 - Fault 346 - shale, black, as above.			

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
379						Change	Either sh. becomes intensely silicified or indistinguishable contact with lamprophyre dike is present.	intense silicification, chlor-py vhs.	no discern. sulfides 1/2-1% py on fractures
409						Bisbee Fm.	lms, silicified,	strong gov-translite-ep.	little to no sulfides 400-422 - abnd. PbS in ep - clay alt.
426						Laramide dike	as above at 379 with cobbles of blocks of Bisbee	Bisbee is intensely calc-silicified, dike has qtz - cp vhs.	2-4% dissem. py. 454' - 3" blob of Bisbee lms - clay-ep - ZnS.
							lower contact @ 5-10'		
474						Bisbee sh.	highly sheared, fractured with ab. chlor - murchieite vhs.	sericite - chlorite	2-3% pyrite
						487 lms. congl.		sporadic ep-gov replacement pyrrhotite dissem. in calc.	ZnS - PbS dissem. in porous ep. 491-72' 1-2% py in Translite alteration blabs.
							below - 500' - recrystallized Translite, very weak epidote.		pyrrhotite, wk. py., weak PbS - ZnS assoc. with py
						3 small 3-6" dikes @ 514 & 516, 519		silicification + epidote increases around dikes wk. gov. development along dikes	517 - cpy. dissem. around ap-pyrr. blabs.

District MIDDLEMARCHHole M-2Page 4

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
520						Bisbee lms congl.	as above	increasing epidote, garn sparse Qtz UHS.	522-34 - pervasive epidote - garn in ZnS, PbS in 1:1 abundance.
									Wk. cpq assoc. with py - chlor centers below 520'
							548 - 547.5' - black lamprophyro. dike	pervasive ep - silica alt. 535 - 542	mod. abundant dissemin PbS, minor ZnS
								below dike - dominant garn, minor ep alt.	1 foot zone massive magnetite cpq - ZnS replacement @ 544 - 45'
								alt. decreases from ep. pervasive at 549 to wk ep. @ 554'	continuing with decreased cpq, increase PbS, ZnS to 547'
								below 554' - intense silica - tremolite alt. with sparse centers garnet alteration	sporadic garn - cpq centers with lead - Zn stringers
							thin zones of dike material 574 - 580'	ep. UHS.	sharp decrease @ 559 to << 1% cpq.
581						Alaskite (Laramide?)	vfg. white to H. gray alaskite	silicified up local zones of Qtz - tremolite veinlets	wk. py. << 1% on Qtz. UHS.
603						Bisbee lms. congl.	course pebble lms cemented congl.	course-grained garn-ep - tremolite alteration - many large blobs of Tremolite line garnet centers.	1/2% dissemin. py. minor py. and very sparse dissemin. garn cpq

District MIDDLEMOUNTHole M-2Page 5

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
64 ±						Alaskite	H. gray - white alaskite with local dk. gray. Zones containing dk. Inssd. chlorite & assoc. py. intermixed is intrusive bx? with lms. congl. of Bisbee fm.	alaskite is interwoven silicified w/ local dk. ults. Bisbee exhibits intense qtz - ep - tremolite act. w/ some chlor.	pyrr. & py in equal amts. totaling 1%, local blocks of qtz - ep. act. in Bisbee shows assoc. epq grains as do local chlorite blocks.
							large block of Bisbee from 680 - 700 in alaskite alaskite internally shattered, fractured, reheated.		stronger qtz contains locally more abundant epq but with total sulf. < 1% with py + pyrr >> epq.
715						Bisbee lms. congl.	as above, white and brownish-green mottled color due to white lms - qtz	strong qtz, mod ep. - local visible blocks silic. lms. - local qtz - mag - chlor. centers tremolite act. decreased	centers contains very minor epq.
735						Bisbee w/ intermixed alaskite		less garnet.	less sulfides
768						Lavamite? quartz lms.	collected @ 10° core angle @ 90° of 2. more, is much finer grained than massive qtz with considerably less chlorite " more dissemin. pyrite; rock is extremely granulated, shaggy, patchy, silicified	clay - chlorite - sericite dissem. epidote	.5% dissem. py. through rock no visible epq.

District MIDDLEMARCHHole M-2Page 6

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
786						Bisbee sh. - 33.	intermixed sh. (black) and ss. internally shattered	intense chlorite-epidote all fractures filled w/ calcite	< 1% py, no apparent cpd
833						Alaskite	fractured w/ epidote and Qtz. "proccia vtz"		
							846-58 epidote- proccia - rock type??	chlorite cemented	855-858 - abundant intergrow PbS - ZnS
858						Bisbee lms. cong.	definite separation from above material	Sharp decrease in ep. sporadic epidote - garn- thrombolite with little to no sulfide	lesser amts. ZnS, PbS
896						Shale	black, mod. fracturing	sericite - chlorite	1% py - predominantly dissem.
955	TD					Bottom of Hole - Shale			

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

111-6
Middlemark

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016770
RECEIVED 1-2-75
REPORTED 1-7-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC PPM	MOLYBDENUM %
32377	20-25			14	122	
32378	44-47			24	162	
32379	57-60			34	66	
32380	60-70			34	78	
32381	70-80			36	210	
32382	80-90			32	320	
32383	90-100			33	94	
32384	100-110			20	340	
32385	110-120			64	280	
32386	120-130			62	265	
32387	130-140			67	580	
32388	140-150			39	680	
32389	150-160			50	940	
32390	160-170			34	365	
32391	170-180			24	76	
32392	180-190			29	226	
32393	190-200			40	86	
32394	200-210			30	81	
32395	210-220			32	86	
32396	220-230			34	74	
32397	230-240			49	106	
32398	240-250			35	93	
32399	250-260			32	.78%	
32400	260-270			34	128	
32901	270-280			50	78	
32902	280-290			126	40	
32903	290-300			46	51	
32904	300-310			26	60	
32905	310-320			18	44	
32906	320-330			106	74	

COPY

CHARGE _____

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

TABLE 11/15/75 #2

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corp.

Page 2 of 2

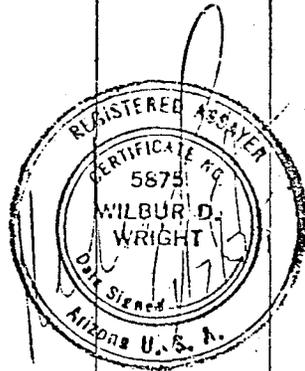
JOB # 016770 Continued

RECEIVED _____

REPORTED _____

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM ^{2/1/75}	ZINC PPM ^{2/1/75}	MOLYBDENUM %
32907	330-340			99	120	
32908	340-350			65	72	

COPY



CHARGE \$ 81.75

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

M-2

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

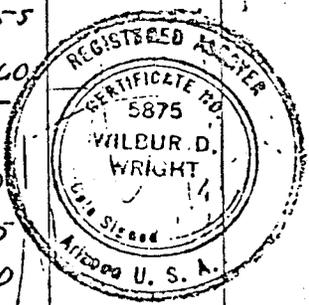
710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016776
RECEIVED 1-6-75
REPORTED 1-8-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD PPM	COPPER PPM	ZINC PPM	MOLYBDENUM %	
360	32909			32	51	350-360	
370	32910			51	56	360-370	
380	32911			62	40	370-380	
390	32912			66	54	380-390	
400	32913			68	36	390-400	
410	32914			60	66	400-410	
420	32915			50	102	- 420	
430	32916			64	.18%	- 430	
440	32917			59	76	- 440	
450	32918			56	39	- 450	
460	32919			68	102	- 460	
470	32920			140	85	- 470	
480	32921			152	71	- 480	
490	32922			184	255	- 490	
500	32923			52	.08%	- 500	
510	32924			28	104	500-510	
520	32925			112	.06%	- 520	
530	32926	Nil	Trace	.22%	52	.24%	520-530
535	32927	Nil	.06	126	164	124	530-535
540	32928	Nil	.13	.59%	60	.64%	535-540
545	32929	Nil	.03	120	.25%	.15%	- 545
550	32930	Nil	.10	.56%	268	1.22%	- 550
555	32931	Nil	.06	.20%	34	.29%	- 555
560	32932	Nil	.19	.07%	.69%	1.60%	555-560
565	32933	Nil	Trace	86	97	270	560-565
570	32934	Nil	Trace	76	42	146	- 570
575	32935	Nil	Trace	62	44	136	- 575
580	32936	Nil	Trace	58	90	251	- 580

COPY



CHARGE \$ 166.25

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 5825
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

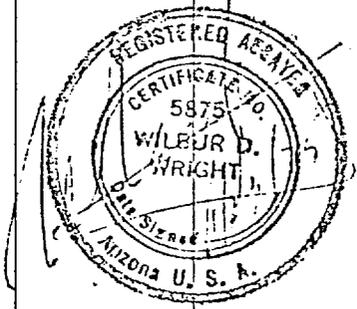
710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016881
RECEIVED 1-17-75
REPORTED 1-23-75

COPY

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC PPM	MOLYBDENUM %
32937	530	555		302	440	
32938	555	570		124 ^{1/2}	160 ²⁴¹	
32939	590	600		633 ^{1/2}	124 ³⁷²⁴	
32940	600	610		83	232	
32941	610	620		100 ^{1/2}	455 ²⁴¹	
32942	620	630		68 ^{1/2}	540 ^{1/2 23}	
32943	636	646		64	98	
32944	646	658		46	68	
32945	650	660		74	160	
32946	660	676		106	620	
32947	670	680		118 ^{1/2}	60 ^{1/2}	
32948	680	690		148 ^{1/2}	176 ^{1/2}	
32949	690	700		34	126	
32950	700	710		182	36	
32951	710	720		33	74	
32952	720	730		34	98	
32953	730	740		51 ^{1/2}	88 ²⁴⁰	
32954	740	756		114 ^{1/2}	710 ^{1/2}	
32955	750	760		74	82	
32956	760	770		82	224	
32957	770	780		62	75	
32958	780	790		186	2140	



CHARGE \$82.50

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

COPY

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016901
RECEIVED 1-23-75
REPORTED 1-28-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC PPM	MOLYBDENUM %
32959	790	800		128	82	
32960	800	810		88 ¹⁰ / ₅₇₅₀	122	
32961	810	820		94 ¹⁰ / ₅₇₅₀	62 ⁷ / ₄₁₃₀	
32962	820	830		68 ¹⁰ / ₆₁₀	40 ⁴ / ₅₁₃₀	
32963	830	840		76	32	
32964	840	850		84	.29%	
32965	850	860		46 ¹⁰ / ₁₅₀	.16%	
32966	860	870		56	.03%	
32967	870	880		56	.06%	
32968	880	890		118	.04%	
32969	890	900		86 ¹⁰ / ₁₁₀₀	70	
32970	900	910		44	64 ¹⁰ / ₁₁₅₀	
32971	910	920		48	120 ¹⁰ / ₁₁₅₀	



CHARGE \$ 57.50

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 5205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 016946
RECEIVED 1-30-75
REPORTED 2-4-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC PPM	MOLYBDENUM %
32972	920 -	930		58	72	
32973	930	942 ^{935?}		66 ⁶⁷ ₁₁₅₃₄	82 ²¹⁹ ₁₁₁₀₈	
<p style="font-size: 2em; margin-left: 20px;">E.G.H.</p> <div style="text-align: center; margin-top: 200px;"> </div>						

CHARGE \$ 7.50

INVOICE

KERR-McGEE CORPORATION

District MIDDLEMARCH
 Hole No. # M-3
 Spudded _____
 Completed _____
 Total Depth 535'
 Driller John M. Fg.
 Logged By D. A. Wolfe

County Cochise State ARIZ.
 Claim _____ Sec. _____ T. _____ R. _____
 Elevation _____
 Hole Size _____
 Core Size NX
 Hole Angle VERTICAL
 Collar Coords. _____

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
0						Felsite ^{sills} + Bisbee Glance	vfg-aphanitic H. gray med. gray quartz - felsite sills @ 90° to core axis cutting Bisbee lms. congl. - silicified, esp. pebble congl.	pervasive silicification of sills and Glance, Calcite vits. in Glance	1% py. max. with sparse ep. grain, local pyr.
59						Glance	lms. congl.	lms. matrix silicified, Calcite vits. sills	very wk. py. assoc. with quartz, rich pebble frags.
108						Felsite sills + breccia	felsite (as above) intrudes as sills, cuts interbedded Glance, forming Felsite intrusive breccia-appearance	as above; local sparse grains epidote	locally 2-3% py. III' - sparse in assoc. with epidote stringer
							below 175' - sparse felsite intruding between larger pebbles of Glance	as above	

Depth	Int.	Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
330						Brecciated Glance cut by felsite	numerous felsite stringers within Glance	lms. pebbles show increasingly thicker bands of recrystallization with local trem-actinolite. Strong relict - actinolite below 320	2% pyrite
							felsite has appearance of having been injected into lms causing almost no alteration - silicification may post-date intrusion	below 370' - wk. spotty garnet developed in lms. near injected felsite	
								actinolite veinlets @ 30° cut both lms. and felsite	1-2% pyrite, locally concentrated
								40' - occasional quartz veinlet cuts felsite; cuts but is deflected by lms.	
						430-435 - thin dikes of dk. gray felsite (?) with gradational contacts @ 30°	qtz. vts in dikes, calcite vts in lms.	lms. adj. to gray dikes is hornfelsed with quartz and calcite vts, bleaching along qtz-pyrite veinlets	2-4% sulfides in dikes
								Shale fragments are hornfelsed.	

MIDDLE MARCH

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

M-3 Copy
Middlemarch

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5875

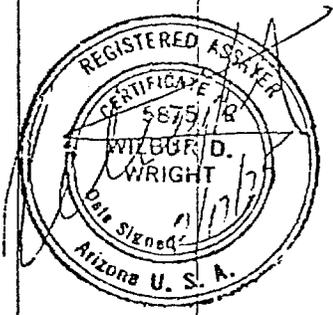
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB # 017018
RECEIVED 2-10-75
REPORTED 2-17-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC PPM	MOLYBDENUM %
32974	4-10			56	42	
32975	10-20			18	72	
32976	20-30			24	66	
32977	30-40			22	42	
32978	40-50			42	72	
32979	50-60			40	44	
32980	60-70			46	44	
32981	70-80			62	50	
32982	80-90			24	48	
32983	90-100			32	46	
32984	100-110			30	60	
32985	110-120			44	.04%	
32986	120-130			24	68	
32987	130-140			40	66	
32988	140-150			44	44	



CHARGE \$ 58.00

* Gold and Silver reported in tray oz. per 2,000 lb. ton.

INVOICE

MIDDLE MARCH 5

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

Copy

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

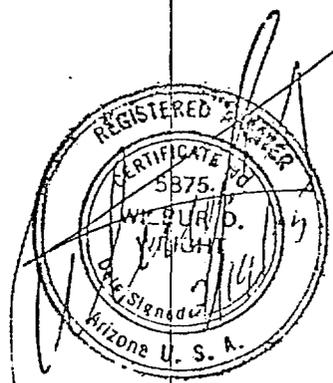
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 017031
RECEIVED 2-13-75
REPORTED 2-19-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC %	MOLYBDENUM %
32989	150-160			<.01		
32990	160-170			<.01		
32991	170-180			<.01		
32992	180-190			<.01		
32993	190-200			<.01		
32994	200-210			<.01		
32995	210-220			<.01		
32996	220-230			<.01		
32997	230-240			<.01		
32998	240-250			<.01		
32999	250-260			<.01		
33000	260-270			<.01		



CHARGE \$ 36.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 017028
RECEIVED 2-13-75
REPORTED 2-21-75

	SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER PPM	ZINC %	MOLYBDENUM %
- 300	31282	Nil	.03		34	-300	
- 325	31283	Nil	.03		30	300-325	
- 350	31284	Nil	Nil		29	325-350	
- 375	31285	Nil	Nil		28	350-375	
- 400	31286	.102	Nil	<i>~ reported 1093-4</i>	102	375-400	
- 525	31291	.056	Nil		94	400-525	
- 575	31292	.094	Nil		66	525-575	

CHARGE \$ 56.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

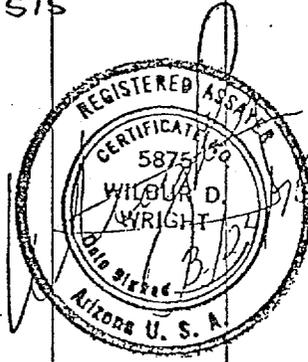
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 017269
RECEIVED 3-19-75
REPORTED 3-24-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC %	MOLYBDENUM %
31293	Nil	.09	375-380			
31294	Nil	.12	380-385			
31295	Nil	.09	385-390			
31296	Nil	.08	390-395			
31297	Nil	.09	395-400			
31298	Nil	.10	500-505			
31299	Nil	.09	505-510			
31300	Nil	.09	510-515			



CHARGE \$ 48.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 5878

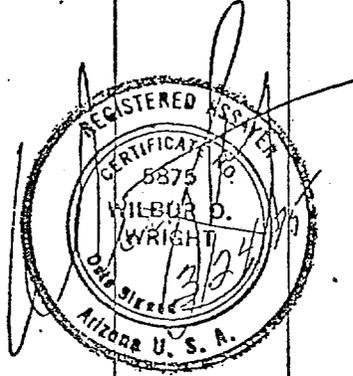
P.O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-294-5811

Kerr-McGee Corporation
P.O. Box 26547
Tucson, Arizona 85726

JOB# 017268
RECEIVED 3-19-75
REPORTED 3-24-75

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC %		MOLYBDENUM %
33365	.006	.10	515-520				
33366	Nil	.12	520-525				
33367	Nil	.09	525-530				
33368	Nil	.10	530-535				



CHARGE \$ 24.00

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

Mine List Number

Table 1 Middle Pass District - Mineral (Mine) Deposits

Production Tonnage Rank

MINE LIST NUMBER	LOCATION			MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES	PRODUCTION TONNAGE RANK
	T.	R.	Sec.					
1. Abril mine (Dos Hermanos; Bargin Mines, Inc., Shattuck Denn Mng. Co.)	17S	23E	So. Cen. 34	Zn, Cu, Pb-, Mo-, Ag-, Au-, (Bi, Li, Cd, Ga, Co, W)	Sphalerite, chalcocopyrite, minor galena, sparse molybdenum, and minor rare minerals in irregular pyrometamorphic deposits with garnet, epidote, and other silicates in a tectite zone in Pennsylvanian-Permian Naco Group limestone cut by granitic intrusive and rhyolite porphyry dikes.	Adit workings. Nearly 30,000 tons of zinc-copper ore produced intermittently since 1914 but mainly during 1945-1952.	Wilson, 1951, p. 23-26 USAEC Prelim. Rec. Rpt. D-502, 1952 Warner et alia, 1959, p. 95, 97 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	1
2. American group mine (Escapule)	18S	23E	NE 1/4 3	Pb, Zn, Ag, Cu-, Au-	Partially oxidized lead and zinc mineralization in folded and faulted Cambrian Abrigo Limestone close to strong thrust fault breccia.	Shallow adit workings. A small tonnage of ore produced in 1938.	ABM file data	13
3. Black Diamond mine (Englander; Black Diamond Copper Mng. Co.)	18S	24E	So. 1/4 19, 20 N 1/4 29, 30	Cu, Ag, Fe, Pb-, Au-, (Ti)	Chalcocopyrite, bornite, argentite, and copper carbonates and oxides with magnetite and hematite in irregular, tabular, pyrometamorphic bodies in silicated Mississippian Escabrosa Limestone.	Tunnel and shaft workings. At least 7,000 tons of ore produced intermittently from 1903 to about 1957.	Copper Handbook, 1907 Tenney, 1925-1927, p. 219-220 Cederstrom, 1946a, p. 86-87 Harrer, 1964, p. 22-24 ABM file data	3
4. Christmas mine (Dragoon; Dragoon-Copper Mng. & Smlng Co., Giacomina Bros.)	18S	23E	No. Cen. 13	Cu, Ag, Au, Pb-	Copper carbonates, bornite, and chalcocopyrite with minor galena and lead carbonates in irregular pyrometamorphic replacements in Cretaceous Bisbee Group limestone along a contact with a porphyry intrusion.	Tunnel and shaft workings. A total of some 250 tons produced in 1905 and 1948.	Copper Handbook, 1906 ABM file data	6
5. Cobre Loma mine (Cobre Loma Copper Co., Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	SE 1/4 2 NE 1/4 11	Cu, Zn-, Ag-	Chalcocopyrite, bornite, pyrite, and minor sphalerite in a pyrometamorphic tectite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intrusive.	Tunnel workings. Probable up to 5,000 tons of ore produced from 1915 to 1920.	ABM file data	4
6. Festerling mine (Elsicor)	18S	23E	NE 1/4 24	Cu, Zn, Ag, Pb-, Au-	Chalcocopyrite, sphalerite, and minor galena in irregular replacement bodies along faults in Cretaceous Bisbee Group limestone.	Surface and shaft workings. A few tens of tons of ore produced between 1937 and 1947.	ABM file data	11
7. Garnet and Moonlight groups (Escapule Mine group)	18S	23E	So. 1/4 24	Pb, Zn, Ag, Cu-, Au-, (Mo, V)	Oxidized lead, zinc and minor copper mineralization in bedded replacement deposits in folded and faulted Cambrian Abrigo Limestone.	Adit workings. Approximately 50 tons were produced intermittently from 1938 to 1955.	ABM file data	10
8. Middlemarch mine (Missouri; Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	Cen. 12	Cu, Zn, Ag, Au, Pb-	Copper, zinc, and minor lead carbonates and sulfides in an oval-shaped chimney orebody associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds.	Adit and shaft workings. Some 5,000 or more tons of ore produced intermittently from the early 1900's to the 1950's.	Cederstrom, 1946, a, p. 87-88 ABM file data	5
9. Muheta mine (Zinc Basin, White Metal)	18S	23E	E. Cen. 10	Pb, Zn, Ag, (Bi)	Anglesite and hemimorphite in an oxidized pyrometamorphic deposit in badly deformed Cretaceous Bisbee Group limy beds along a strong thrust fault.	Adit workings. About 200 or more tons of ore produced in the 1920's.	Cederstrom, 1946 a, p. 89 Wilson, 1951, p. 23 Cooper, 1962 ABM file data	7
10. San Juan mine (Gordon)	18S	23E	Cen. 10	Zn, Pb-, Ag-, (Bi, Be, Li, Ga, Cd)	Sphalerite with minor galena, iron oxides, and helvite in irregular manto-type bodies of pyrometamorphic limy silicates in impure shaly Abrigo Limestone, where it is cut by faults.	Adit workings. Over 17,000 tons of ore produced since 1913 but mainly during 1947 and 1951.	Cederstrom, 1946 a, p. 88-89 Wilson, 1950, p. 20-23 Burnham, 1959, p. 30 Warner et alia, 1959, p. 96 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	2
11. Silver Cloud mine (Escapule)	18S	23E	W. Cen. 25	Cu, Pb, Zn, Ag, Au	Base metal sulfides in small orebodies and vein-like deposits along faults in altered Cretaceous Bisbee Group limestone.	Shaft and adit workings. A few tons were produced intermittently from 1921 to 1955.	Cederstrom, 1946 a Wilson, 1951, p. 28 ABM file data	12
12. Standard Tungsten mine (Head Center, Black Prince, Johnny Boy; Standard Tungsten Corp.)	18S	23E	Cor. 13, 14, 23 & 24	W, Pb, Ag, Cu-, Ba-	Spotty, straw-colored, coarsely crystalline scheelite with minor base metal sulfides and barite in replacement bodies in intensely silicated Mississippian and Pennsylvanian limestones.	Shaft, adit, and surface workings. About 1.5 tons of tungsten concentrates and some 75 tons of sorted barite produced in 1932.	Dale et alia, 1960, p. 57-59 Stewart & Pfister, 1960, p. 10-11 ABM file data	9
13. White Tail mine (Grant group)	18S	23E	E. Cen. 10	Zn, Pb-, Ag-, Cu-	Oxidized and siliceous zinc ore with minor lead and copper in irregular masses in fault breccia made up largely of Paleozoic limestone fragments.	Tunnel workings. Some 105 tons of ore produced in 1917-1918 and about 45 tons in 1965.	ABM file data	8

From: Index of Mining Properties in Cochise County, Arizona, by Stanton B. Keith, Arizona Bureau of Mines Bulletin 187 (1973), p. 68-69

Mine List Number

Table 1 Middle Pass District - Mineral (Mine) Deposits

Production Tonnage Rank

MINING DISTRICT AND MINES	LOCATION T. R. Sec.	MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES	Production Tonnage Rank
1. Abril mine (Dos Hermanos; Bargin Mines, Inc., Shattuck Denn Mng. Co.)	17S 23E So. Cen. 34	Zn, Cu, Pb-, Mo-, Ag-, Au-, (Bi, Li, Cd, Ga, Co, W)	Sphalerite, chalcocopyrite, minor galena, sparse molybdenum, and minor rare minerals in irregular pyrometamorphic deposits with garnet, epidote, and other silicates in a tectite zone in Pennsylvanian-Permian Naco Group limestone cut by granitic intrusive and rhyolite porphyry dikes.	Adit workings. Nearly 30,000 tons of zinc-copper ore produced intermittently since 1914 but mainly during 1945-1952.	Wilson, 1951, p. 23-26 USAEC Prelim. Rec. Rpt. D-502, 1952 Warner et alia, 1959, p. 95, 97 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	1
2. American group mine (Escapule)	18S 23E NE 1/4 3	Pb, Zn, Ag, Cu-, Au-	Partially oxidized lead and zinc mineralization in folded and faulted Cambrian Abrigo Limestone close to strong thrust fault breccia.	Shallow adit workings. A small tonnage of ore produced in 1938.	ABM file data	13
3. Black Diamond mine (Englander; Black Diamond Copper Mng. Co.)	18S 24E So. 1/2 19, 20 N 1/4 29, 30	Cu, Ag, Fe, Pb-, Au-, (Ti)	Chalcocopyrite, bornite, argentite, and copper carbonates and oxides with magnetite and hematite in irregular, tabular, pyrometamorphic bodies in silicated Mississippian Escabrosa Limestone.	Tunnel and shaft workings. At least 7,000 tons of ore produced intermittently from 1903 to about 1957.	Copper Handbook, 1907 Tenney, 1925-1927, p. 219-220 Cederstrom, 1946a, p. 86-87 Harret, 1964, p. 22-24 ABM file data	3
4. Christmas mine (Dragoon; Dragoon-Copper Mng. & Smelting Co., Giacomo Bros.)	18S 23E No. Cen. 13	Cu, Ag, Au, Pb-	Copper carbonates, bornite, and chalcocopyrite with minor galena and lead carbonate in irregular pyrometamorphic replacements in Cretaceous Bisbee Group limestone along a contact with a porphyry intrusion.	Tunnel and shaft workings. A total of some 250 tons produced in 1905 and 1948.	Copper Handbook, 1906 ABM file data	6
5. Cobre Loma mine (Cobre Loma Copper Co., Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S 23E SE 1/4 2 NE 1/4 11	Cu, Zn-, Ag-	Chalcocopyrite, bornite, pyrite, and minor sphalerite in a pyrometamorphic tectite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intrusive.	Tunnel workings. Probable up to 5,000 tons of ore produced from 1915 to 1920.	ABM file data	4
6. Festerling mine (Elsicor)	18S 23E NE 1/4 24	Cu, Zn, Ag, Pb-, Au-	Chalcocopyrite, sphalerite, and minor galena in irregular replacement bodies along faults in Cretaceous Bisbee Group limestone.	Surface and shaft workings. A few tens of tons of ore produced between 1937 and 1947.	ABM file data	11
7. Garnet and Moonlight groups (Escapule Mine group)	18S 23E So. 1/2 24	Pb, Zn, Ag, Cu-, Au-, (Mo, V)	Oxidized lead, zinc and minor copper mineralization in bedded replacement deposits in folded and faulted Cambrian Abrigo Limestone.	Adit workings. Approximately 50 tons were produced intermittently from 1938 to 1955.	ABM file data	10
8. Middlemarch mine (Missouri; Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S 23E Cen. 12	Cu, Zn, Ag, Au, Pb-	Copper, zinc, and minor lead carbonates and sulfides in an oval-shaped chimney orebody associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds.	Adit and shaft workings. Some 5,000 or more tons of ore produced intermittently from the early 1900's to the 1950's.	Cederstrom, 1946, a, p. 87-88 ABM file data	5
9. Muhelm mine (Zinc Basin, White Metal)	18S 23E E. Cen. 10	Pb, Zn, Ag, (Bi)	Anglesite and hemimorphite in an oxidized pyrometamorphic deposit in badly deformed Cretaceous Bisbee Group limy beds along a strong thrust fault.	Adit workings. About 200 or more tons of ore produced in the 1920's.	Cederstrom, 1946 a, p. 89 Wilson, 1951, p. 28 Cooper, 1962 ABM file data	7
10. San Juan mine (Gordon)	18S 23E Cen. 10	Zn, Pb-, Ag-, (Bi, Be, Li, Ga, Cd)	Sphalerite with minor galena, iron oxides, and helvite in irregular mantle-type bodies of pyrometamorphic limy silicates in impure shaly Abrigo Limestone, where it is cut by faults.	Adit workings. Over 17,000 tons of ore produced since 1913 but mainly during 1947 and 1951.	Cederstrom, 1946 a, p. 88-89 Wilson, 1950, p. 20-23 Burnham, 1959, p. 30 Warner et alia, 1959, p. 96 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	2
11. Silver Cloud mine (Escapule)	18S 23E W. Cen. 25	Cu, Pb, Zn, Ag, Au	Base metal sulfides in small orebodies and vein-like deposits along faults in altered Cretaceous Bisbee Group limestone.	Shaft and adit workings. A few tons were produced intermittently from 1921 to 1955.	Cederstrom, 1946 a Wilson, 1951, p. 28 ABM file data	12
12. Standard Tungsten mine (Head Center, Black Prince, Johnny Boy; Standard Tungsten Corp.)	18S 23E Cor. 13, 14, 23 & 24	W, Pb, Ag, Cu-, Ba-	Spotty, straw-colored, coarsely crystalline scheelite with minor base metal sulfides and barite in replacement bodies in intensely silicated Mississippian and Pennsylvanian limestones.	Shaft, adit, and surface workings. About 1.5 tons of tungsten concentrates and some 75 tons of sorted barite produced in 1932.	Dale et alia, 1960, p. 57-59 Stewart & Pfister, 1960, p. 10-11 ABM file data	9
13. White Tail mine (Grant group)	18S 23E E. Cen. 10	Zn, Pb-, Ag-, Cu-	Oxidized and siliceous zinc ore with minor lead and copper in irregular masses in fault breccia made up largely of Paleozoic limestone fragments.	Tunnel workings. Some 105 tons of ore produced in 1917-1918 and about 45 tons in 1965.	ABM file data	8

From: Index of Mining Properties in Cochise County, Arizona, by Stanton B. Keith, Arizona Bureau of Mines Bulletin 187 (1973), p. 68-69

68

69

Mine List Number

Table 1 Middle Pass District - Mineral (Mine) Deposits

Production Tonnage Rank

MINE LIST NUMBER	LOCATION		MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES	PRODUCTION TONNAGE RANK	
	T. R.	Sec.						
1. Abril mine (Dos Hermanos; Bargin Mines, Inc., Shattuck Denn Mng. Co.)	17S	23E	So. Cen. 34	Zn, Cu, Pb-, Mo-, Ag-, Au-, (Bi, Li, Cu, Ga, Co, W)	Sphalerite, chalcopyrite, minor galena, sparse molybdenum, and minor rare minerals in irregular pyrometamorphic deposits with garnet, epidote, and other ilmenosilicates in a tectite zone in Pennsylvanian-Permian Naco Group limestone cut by granitic intrusive and rhyolite porphyry dikes.	Adit workings. Nearly 30,000 tons of zinc-copper ore produced intermittently since 1914 but mainly during 1945-1952.	Wilson, 1951, p. 23-26 USAEC Prelim. Rec. Rpt. D-502, 1952 Warner et alia, 1959, p. 95, 97 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	1
2. American group mine (Escapule)	18S	23E	NE 1/2 3	Pb, Zn, Ag, Cu-, Au-	Partially oxidized lead and zinc mineralization in folded and faulted Cambrian Abrigo Limestone close to strong thrust fault breccia.	Shallow adit workings. A small tonnage of ore produced in 1938.	ABM file data	13
3. Black Diamond mine (Englander; Black Diamond Copper Mng. Co.)	18S	24E	So. 1/2 19, 20 N 1/2 29, 30	Cu, Ag, Fe, Pb-, Au-, (Ti)	Chalcopyrite, bornite, argentite, and copper carbonates and oxides with magnetite and hematite in irregular, tabular, pyrometamorphic bodies in silicified Mississippian Escabrosa Limestone.	Tunnel and shaft workings. At least 7,000 tons of ore produced intermittently from 1903 to about 1957.	Copper Handbook, 1907 Tenney, 1925-1927, p. 219-220 Cederstrom, 1946a, p. 86-87 Harrer, 1964, p. 22-24 ABM file data	3
4. Christmas mine (Dragon; Dragon-Copper Mng. & Smltng Co., Giacomina Bros.)	18S	23E	No. Cen. 13	Cu, Ag, Au, Pb-	Copper carbonates, bornite, and chalcopyrite with minor galena and lead carbonate in irregular pyrometamorphic replacements in Cretaceous Bisbee Group limestone along a contact with a porphyry intrusion.	Tunnel and shaft workings. A total of some 250 tons produced in 1905 and 1948.	Copper Handbook, 1906 ABM file data	6
5. Cobre Loma mine (Cobre Loma Copper Co., Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	SE 1/2 2 NE 1/2 11	Cu, Zn-, Ag-	Chalcopyrite, bornite, pyrite, and minor sphalerite in a pyrometamorphic tectite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intrusive.	Tunnel workings. Probable up to 5,000 tons of ore produced from 1915 to 1920.	ABM file data	4
6. Festerling mine (Elsicor)	18S	23E	NE 1/2 24	Cu, Zn, Ag, Pb-, Au-	Chalcopyrite, sphalerite, and minor galena in irregular replacement bodies along faults in Cretaceous Bisbee Group limestone.	Surface and shaft workings. A few tons of ore produced between 1937 and 1947.	ABM file data	11
7. Garnet and Moonlight groups (Escapule Mine group)	18S	23E	So. 1/2 24	Pb, Zn, Ag, Cu-, Au-, (Mo, V)	Oxidized lead, zinc and minor copper mineralization in bedded replacement deposits in folded and faulted Cambrian Abrigo Limestone.	Adit workings. Approximately 50 tons were produced intermittently from 1938 to 1955.	ABM file data	10
8. Middlemarch mine (Missouri; Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	Cen. 12	Cu, Zn, Ag, Au, Pb-	Copper, zinc, and minor lead carbonates and sulfides in an oval-shaped chimney orebody associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds.	Adit and shaft workings. Some 5,000 or more tons of ore produced intermittently from the early 1900's to the 1950's.	Cederstrom, 1946, a, p. 87-88 ABM file data	5
9. Muhelm mine (Zinc Basin, White Metal)	18S	23E	E. Cen. 10	Pb, Zn, Ag, (Bi)	Anglesite and hemimorphite in an oxidized pyrometamorphic deposit in badly deformed Cretaceous Bisbee Group limy beds along a strong thrust fault.	Adit workings. About 200 or more tons of ore produced in the 1920's.	Cederstrom, 1946 a, p. 89 Wilson, 1951, p. 28 Cooper, 1962 ABM file data	7
10. San Juan mine (Gordon)	18S	23E	Cen. 10	Zn, Pb-, Ag-, (Bi, Be, Li, Ga, Cd)	Sphalerite with minor galena, iron oxides, and helvite in irregular manto-type bodies of pyrometamorphic limy silicates in impure shaly Abrigo Limestone, where it is cut by faults.	Adit workings. Over 17,000 tons of ore produced since 1913 but mainly during 1947 and 1951.	Cederstrom, 1946 a, p. 88-89 Wilson, 1950, p. 20-23 Burnham, 1959, p. 30 Warner et alia, 1959, p. 96 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	2
11. Silver Cloud mine (Escapule)	18S	23E	W. Cen. 25	Cu, Pb, Zn, Ag, Au	Base metal sulfides in small orebodies and vein-like deposits along faults in altered Cretaceous Bisbee Group limestone.	Shaft and adit workings. A few tons were produced intermittently from 1921 to 1955.	Cederstrom, 1946 a Wilson, 1951, p. 28 ABM file data	12
12. Standard Tungsten mine (Head Center, Black Prince, Johnny Boy; Standard Tungsten Corp.)	18S	23E	Cor. 13, 14, 23 & 24	W, Pb, Ag, Cu-, Ba-	Spotty, straw-colored, coarsely crystalline scheelite with minor base metal sulfides and barite in replacement bodies in intensely silicified Mississippian and Pennsylvanian limestones.	Shaft, adit, and surface workings. About 1.5 tons of tungsten concentrates and some 75 tons of sorted barite produced in 1932.	Dale et alia, 1960, p. 57-59 Stewart & Pfister, 1960, p. 10-11 ABM file data	9
13. White Tall mine (Grant group)	18S	23E	E. Cen. 10	Zn, Pb-, Ag-, Cu-	Oxidized and siliceous zinc ore with minor lead and copper in irregular masses in fault breccia made up largely of Paleozoic limestone fragments.	Tunnel workings. Some 105 tons of ore produced in 1917-1918 and about 45 tons in 1965.	ABM file data	8

From: Index of Mining Properties in Cochise County, Arizona, by Stanton B. Keith, Arizona Bureau of Mines Bulletin 187 (1973), p. 68-69

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Mine List Number

Table 1 Middle Pass District - Mineral (Mine) Deposits

Production Tonnage Rank

MINING DISTRICT AND MINES	LOCATION			MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES	Production Tonnage Rank
	T.	R.	Sec.					
1. Abril mine (Dos Hermanos; Bargin Mines, Inc., Shattuck Denn Mng. Co.)	17S	23E	So. Cen. 34	Zn, Cu, Pb-, Mo-, Ag-, Au-, (Bi, Li, Cd, Ga, Co, W)	Sphalerite, chalcopyrite, minor galena, sparse molybdenum, and minor rare minerals in irregular pyrometasomatic deposits with garnet, epidote, and other silicates in a tectite zone in Pennsylvanian-Permian Naco Group limestone cut by granitic intrusive and rhyolite porphyry dikes.	Adit workings. Nearly 30,000 tons of zinc-copper ore produced intermittently since 1914 but mainly during 1945-1952.	Wilson, 1951, p. 23-26 USAEC Prelim. Rec. Rpt. D-502, 1952 Warner et alia, 1959, p. 95, 97 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	1
2. American group mine (Escapule)	18S	23E	NE 1/4 3	Pb, Zn, Ag, Cu-, Au-	Partially oxidized lead and zinc mineralization in folded and faulted Cambrian Abrigo Limestone close to strong thrust fault breccia.	Shallow adit workings. A small tonnage of ore produced in 1938.	ABM file data	13
3. Black Diamond mine (Englander; Black Diamond Copper Mng. Co.)	18S	24E	So. 1/2 19, 20, N 1/2 29, 30	Cu, Ag, Fe, Pb-, Au-, (Ti)	Chalcopyrite, bornite, argentite, and copper carbonates and oxides with magnetite and hematite in irregular, tabular, pyrometasomatic bodies in silicified Mississippian Escabrosa Limestone.	Tunnel and shaft workings. At least 7,000 tons of ore produced intermittently from 1903 to about 1957.	Copper Handbook, 1907 Tenney, 1925-1927, p. 219-220 Cederstrom, 1946a, p. 86-87 Harrer, 1964, p. 22-24 ABM file data	3
4. Christmas mine (Dragoon; Dragoon-Copper Mng. & Smlng Co., Glacoma Bros.)	18S	23E	No. Cen. 13	Cu, Ag, Au, Pb-	Copper carbonates, bornite, and chalcopyrite with minor galena and lead carbonate in irregular pyrometasomatic replacements in Cretaceous Bisbee Group limestone along a contact with a porphyry intrusion.	Tunnel and shaft workings. A total of some 250 tons produced in 1905 and 1948.	Copper Handbook, 1906 ABM file data	6
5. Cobre Loma mine (Cobre Loma Copper Co., Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	SE 1/4 2, NE 1/4 11	Cu, Zn-, Ag-	Chalcopyrite, bornite, pyrite, and minor sphalerite in a pyrometasomatic tectite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intrusive.	Tunnel workings. Probable up to 5,000 tons of ore produced from 1915 to 1920.	ABM file data	4
6. Festerling mine (Elsicor)	18S	23E	NE 1/4 24	Cu, Zn, Ag, Pb-, Au-	Chalcopyrite, sphalerite, and minor galena in irregular replacement bodies along faults in Cretaceous Bisbee Group limestone.	Surface and shaft workings. A few tens of tons of ore produced between 1937 and 1947.	ABM file data	11
7. Garnet and Moonlight groups (Escapule Mine group)	18S	23E	So. 1/2 24	Pb, Zn, Ag, Cu-, Au-, (Mo, V)	Oxidized lead, zinc and minor copper mineralization in bedded replacement deposits in folded and faulted Cambrian Abrigo Limestone.	Adit workings. Approximately 50 tons were produced intermittently from 1938 to 1955.	ABM file data	10
8. Middlemarch mine (Missouri; Middlemarch Copper Co., Arizona Middlemarch Copper Co.)	18S	23E	Cen. 12	Cu, Zn, Ag, Au, Pb-	Copper, zinc, and minor lead carbonates and sulfides in an oval-shaped chimney orebody associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds.	Adit and shaft workings. Some 5,000 or more tons of ore produced intermittently from the early 1900's to the 1950's.	Cederstrom, 1946, a, p. 87-88 ABM file data	5
9. Muhelm mine (Zinc Basin, White Metal)	18S	23E	E. Cen. 10	Pb, Zn, Ag, (Bi)	Anglesite and hemimorphite in an oxidized pyrometasomatic deposit in badly deformed Cretaceous Bisbee Group limy beds along a strong thrust fault.	Adit workings. About 200 or more tons of ore produced in the 1920's.	Cederstrom, 1946 a, p. 89 Wilson, 1951, p. 28 Cooper, 1962 ABM file data	7
10. San Juan mine (Gordon)	18S	23E	Cen. 10	Zn, Pb-, Ag-, (Bi, Be, Li, Ga, Cd)	Sphalerite with minor galena, iron oxides, and helvite in irregular manto-type bodies of pyrometasomatic limy silicates in impure shaly Abrigo Limestone, where it is cut by faults.	Adit workings. Over 17,000 tons of ore produced since 1913 but mainly during 1947 and 1951.	Cederstrom, 1946 a, p. 88-89 Wilson, 1950, p. 20-23 Burnham, 1959, p. 30 Warner et alia, 1959, p. 96 Cooper, 1962 Meeves, 1966, p. 56 ABM file data	2
11. Silver Cloud mine (Escapule)	18S	23E	W. Cen. 25	Cu, Pb, Zn, Ag, Au	Base metal sulfides in small orebodies and vein-like deposits along faults in altered Cretaceous Bisbee Group limestone.	Shaft and adit workings. A few tons were produced intermittently from 1921 to 1955.	Cederstrom, 1946 a Wilson, 1951, p. 28 ABM file data	12
12. Standard Tungsten mine (Head Center, Black Prince, Johnny Boy; Standard Tungsten Corp.)	18S	23E	Cor. 13, 14, 23 & 24	W, Pb, Ag, Cu-, Ba-	Spotty, straw-colored, coarsely crystalline scheelite with minor base metal sulfides and barite in replacement bodies in intensely silicified Mississippian and Pennsylvanian limestones.	Shaft, adit, and surface workings. About 1.5 tons of tungsten concentrates and some 75 tons of sorted barite produced in 1932.	Dale et alia, 1960, p. 57-59 Stewart & Pfister, 1960, p. 10-11 ABM file data	9
13. White Tail mine (Grant group)	18S	23E	E. Cen. 10	Zn, Pb-, Ag-, Cu-	Oxidized and siliceous zinc ore with minor lead and copper in irregular masses in fault breccia made up largely of Paleozoic limestone fragments.	Tunnel workings. Some 105 tons of ore produced in 1917-1918 and about 45 tons in 1955.	ABM file data	8

From: Index of Mining Properties in Cochise County, Arizona, by Stanton B. Keith, Arizona Bureau of Mines Bulletin 187 (1973), p. 68-69



Southwestern Exploration Division

August 20, 1976

TO: F. T. Graybeal

FROM: J. D. Sell

Middlemarch Canyon
Central Dragoon Mountains
Cochise County, Arizona

Mr. Howard Birchfield came into this office on August 18 to discuss holdings in Middlemarch Canyon. He insists that he and Owens are in agreement and working together and have some 400 claims in order covering the Middlemarch Mine area. They (Birchfield & Owens) say they will dewater the Middlemarch adit and winze to check the lower portion of the "breccia pipe" after September 1, 1976. This will take care of the assessment year. They are willing to have Asarco explore their ground free during that year (Sept. 1, 1976-Sept. 1, 1977). If the decision to continue is made after that time, then only expenditures to keep the claims in order will be required. Any "ore body" found by Asarco would have a 2% royalty override to B & O. If the breccia pipe is real and has sufficient ore, then Birchfield reserves the right to mine it (up to 200,000 tons) to recoup all their previous assessment, etc. expenditures on the property. However, if Asarco's work reveals the ore body is restricted to the breccia pipe and/or it is an integral part of the mineralization and should not be "guttled," then they will back off of any mining on their part (subject to some vague words such as "...assuming you put it into production within a short time."). Homestake Mining optioned the property in 1974, and a Xerox copy of Jon Cameron's report is attached. The HMC maps are available from Birchfield, as well as the geophysical maps (which were apparently filed and recorded for assessment work).

Kerr-McGee optioned the property in 1975 and drilled three core holes (see my report to WLK dated July 14, 1975 on the Middlemarch Canyon). K-M DDH-3 is located in the same general area as the rotary hole #1 of HMC report, while K-M DDH-2 is in the same general area as rotary hole #2. Logs and assays by K-M suggest very low values in both of their holes, although Bisbee group tactites were encountered.

Birchfield says the best report was written by Mr. Kelly, mine superintendent at Middlemarch, in 1916 (October). The report is available at the Arizona Dept. of Mineral Resources, Tucson (Jerry Irvin).

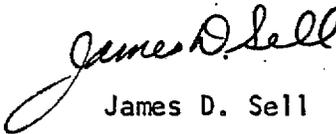
Asarco file Aa-3.16.13 indicates that we dewatered the shaft and winze in 1914 down to the 6th level. J. Kruttschnitt sampled the 5th level which suggested an area of 40' x 80' would average 1.37% copper(?). The 4th level indicated a similar size averaging 1.5% (excluding one 7.99% assay). No assay was given for the face of the 25-foot drift on the 6th level. The assays by J.K. did not reach the "4-5% copper" expressed in Kruttschnitt's early letters as being the ore on those levels and hence the justification

August 20, 1976

for dewatering the workings. Our files also contain a four-page (October 1912) report and maps by Mr. Kelly, General Manager. He also dewatered the workings and had found the No. 6 level station caved, so he sunk below the level to establish a new station but had only proceeded a short distance before the work was stopped on order of the Board of Directors.

Birchfield stated that Hugh Steele of Newmont had old clippings which suggested that Kelly deepened the winze and went into disseminated mineralization in two rather long crosscuts from the 8th level (also see J. Cameron's Note No. 1 and Note No. 12). This information may be in Kelly's 1916 report on file with Irvin.

Numerous stratigraphic, structural, and mineralogic problems remain. Work during a year's free time, plus a look at the newly dewatered workings, might be sufficient to put together a knowledgeable picture of the district.


James D. Sell

JDS:lb
Att.

JOHN S. SUMNER

728 North Sawtelle
Tucson, Arizona 85716
May 4, 1974

Dr. John C. Ruckmick
Homestake Mining Company
7700 Tanque Verde Road
Tucson, Arizona 85715

Dear John:

I have reviewed the resistivity and induced-polarization data gathered by Mining Geophysical Surveys and the magnetometer survey by Tom Kuhl on the Middlemarch mine, Cochise County, Arizona. The IP survey, the specifications of which I gave in an earlier letter, seems to have accomplished its objectives, and the data are in good order.

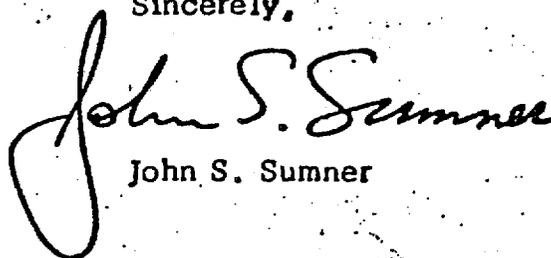
All of the IP traverses find a moderate to strong IP response, and resistivities are moderately low. The two effects are seldom coincident, indicating structural complexities or anisotropic materials. Upon comparison of the IP data with the surface geologic map, it is apparent that carbonaceous and pyritic rocks in the Bisbee Group are responsible for much of the anomalous response on the east side of the survey area.

Although no definite deep drilling targets are revealed by the IP survey, a zone of anomalous response plunges to the west in the north-central part of the survey area. It would be feasible to test this zone with two 1,000-foot vertical drill holes, one located 900 feet west of the spread center on Line 3 and the other 900 feet west of the spread center on Line 2.

No further IP surveying or other geophysical work is recommended on the Middlemarch mine area at this time. However, if deep mineralization is revealed during the drill exploration program, drill-hole IP surveys should be considered.

Please call me if there are questions concerning my analysis.

Sincerely,


John S. Sumner

JSS:h

TO G. A. Hansen
FROM J. W. Cameron

DATE June 3, 1974
SUBJECT Dragoon Project,
Cochise Co., Arizona

SUMMARY:

Based on all information available, as reviewed below, the author recommends that we drop the Dragoon Project and spend our time and monies on projects of higher priority. We must give notice of surrender before July 1, 1974, as outlined in the Owens agreement.

A high grade, near surface deposit with a significant tonnage is not indicated. A deeply buried lower grade deposit may lie somewhere vertically or laterally distant from the Middlemarch vicinity, but this high risk, high cost type target does not fit our present exploration priorities.

DISCUSSION:

Factors to be considered in making this decision are discussed below:

1. Underground workings in the Middlemarch mine encountered a fault zone and then "aplitic granite" below the seventh level. In the author's opinion this fault may represent Gilluly's (Gilluly, James, 1946, U.S. Geol. Survey Prof. Paper 209 and 1956, U.S. Geol. Survey Prof. Paper 281) thrust zone (as discussed below). This would preclude downward extension of the mineralized breccia pipe which was our initial target (see Figure 1). Regardless of the existence of the thrust

zone, the occurrence of the "aplitic granite" in the workings, but not at the surface vertically adjacent, indicates that the "aplitic granite" or equivalent Stronghold granite probably comprises the greatest mass of rock under the breccia pipe area (Figure 1).

2. Rotary drill hole #1 (location given on Figures 1 and 2) showed expected alteration of host rocks assuming that an unexposed intrusive existed at approximately 600 feet below the collar, i.e., 450 feet of "silicified limestone" (probably microbreccia), no mention of possible fault zone at 450 feet, then 50 feet of "black, dense, pyritic limestone", and finally, 40 feet of "hornfels". There was no increase in base metal content with depth in the hole. There was an increase in pyrite at the 450 foot interface, from which the pyrite content remained higher but varying to the bottom of the hole. "Minor pyrite" existed at 540 feet. The pyrite was disseminated with some vein control.
(#3 on HMC map) HB
3. Rotary drill hole #2 (Figure 2) was collared in "skarn" with $\frac{1}{2}\%$ pyrite. At 125 feet rhyolite with a slightly greater pyrite content was intersected and continued to 200 feet. Skarn existed from 200 to 235 feet. At 235 feet granite with "epidote, garnet, chlorite, sericite, and traces of pyrite" was cut. The granite continued unchanged to 400 feet.
(#2 on HMC map) HB
4. Rotary drill hole #3 (Figure 2) contained 320 feet of "silicified limestone" with "granite(?) fragments" from 150 to 210 feet. The pyrite content was +0.25%. At 260 feet a "large volume of water" was encountered. This feature is similar to the water encountered in the Middlemarch mine below the 7th level and may again represent Gilluly's thrust zone. The hole ended at 320 feet.
(#2 on HMC map) HB
5. James Gilluly (references cited above) gave evidence to indicate that the Middlemarch area is underlain by a thrust fault. If this is the case, and if thrusting is post-Stronghold granite, then the root system of the near surface alteration zone may be laterally separated by a great distance, possibly more than several miles (as discussed by Harold D. Drewes Evidence for large-scale thrust faulting in southeastern Arizona and other papers).

6. A schematic cross section of the Middlemarch area was drawn using the above discussion and geology outcrop map. This cross section is attached (Figure 1) and the location of the section is shown on Figure 2. This section closely correlates with the known geology and geophysics. General sequence of events given in this schematic section are: intrusion of Cochise Peak quartz monzonite, deposition of Glance Conglomerate and Bisbee Formation, emplacement of Stronghold granite with contact alteration, mid-Tertiary thrusting with generation of mylonite (microbreccia) which was injected into the Glance, formation of the Middlemarch breccia pipe (with base metal mineralization), continued thrusting, and finally, intrusion of the quartz latite porphyry dikes with development of strong alteration zones in sedimentary rocks.
7. The initial geological cross section (JCR, JBH, and TFK, January, 1973) was probably rather accurate, based on known outcrop and drill hole data. This cross section is attached (Figure 3) and can be compared with the schematic cross section even though the scales are only approximately equal.
8. Major structures in the Middlemarch area have two main trends: a) N80°E as shown by offset of the Bisbee Formation and surface magnetic trends north of the Middlemarch mine, also N80°E trending latite porphyry dikes northeast of the Middlemarch and, b) N30°W as illustrated by the quartz latite porphyry dikes (Figure 2)
9. Known extent of economic mineralization in the breccia pipe (Middlemarch mine) is 50' x 75' x 350' with possible vertical extent to 600 feet. These dimensions yield a potential tonnage of 100,000 to possibly 180,000 tons of rock with a grade of less than 2% Cu and 5% Zn. Of this tonnage, two-thirds to one-third has been mined. That leaves from 35,000 to possibly 120,000 tons. This tonnage and grade probably would not justify Homestake's attention. The strongest known accumulation of base metals in this area is in this breccia pipe. The horizontal extent of the mineralization in the pipe may or may not become greater at depth, but probably remains constant.
10. Alteration in the outcrop areas is generally very weak, i.e., with weak epidote and pyrite in the limey rocks and very weak pyrite ± argillization in the igneous rocks. Locally strong garnet alteration occurred adjacent to the latite porphyry dikes.

There appears to be a vague district-wide zoning of base and precious metals as shown on the Noble maps and as discussed in the literature. In general, that zoning shows Pb-Ag-Zn in north areas, Zn deposition further south (north and west of Middlemarch), Cu-Zn-Ag mineralization in the Middlemarch mine, and strongest copper mineralization south of the Middlemarch area (approximately 2 miles).

11. Induced polarization and resistivity surveys indicated responsive and conductive shallow, tabular zones dipping to the east at low angles (pyrite deposition in the Bisbee Formation) with an underlying poorly responsive and conductive massive zone (barren granite). This geophysical data is noted in the attached reports by W. G. Wieduwilt and John S. Sumner. There was indication that the Middlemarch breccia pipe ends between 300 and 600 feet below its outcrop.

Surface geology above the indicated "fence" anomalies (plan map of Wieduwilt) showed strong evidence that the anomalous "fence" targets are geophysical expressions of increased permeability and water saturation in and around the latite porphyry dikes, i.e., there is no surface expression of shallow (± 600 ft.) mineralized zones.

Bear Creek ran "Radial Induced Polarization" in this area and the area to the west, as noted by Greg McKelvey. The "RIP" data gave no indication of large targets at depth.

12. The microbreccia is one geological feature that is intriguing. The microbreccia (described by John M. Guilbert in the attached report) has a horizontal extent of 1200 by greater than 2800 feet (see Figure 2). This is a uniquely recognized feature in southern Arizona and because of its uniqueness it is difficult to assess its economic ramification. The microbreccia contains $\pm 3\%$ pyrite which is in part pre-brecciation and possibly completely pre-brecciation. If Guilbert's first interpretation was accepted ("carbonate-cemented polyphase fault breccia material") then this interpretation would augment Gilully's thrusting evidence, i.e., the microbreccia was generated during thrusting, was collected along the western margin of the thrust plate, and was injected (crosscutting intrusive features) into the Glance

Conglomerate - a very unplastic member in the thrust plate. Therefore, the microbreccia is considered to be a mylonite of thrust fault origin.

The microbreccia contains a rather uniform content of sulfide minerals, averaging 2 weight percent. The sulfide minerals are pyrite, pyrrhotite, and trace amounts of chalcopyrite. This sulfide content appears not to be genetically associated with the base metal mineralization in the breccia pipe (Middlemarch), and is probably pre-thrusting in age, possibly syngenetic with the Bisbee, etc.

13. Kerr McGee (personal communication with Dave Wolfe of Kerr McGee) has some exploration interest in the area. Their interest stems from the drilling activity of Cyprus, Superior, Quintana, Conoco, and others in the Texas Canyon area 12 miles to the north. Deposits there are said to be near surface oxide Cu deposits and deep sulfide deposits containing chalcopyrite in a skarn environment.
14. The San Juan mine (Zn) lies two miles west of Middlemarch. This property was staked by HMC and is not part of the Owens agreement. We have until August, 1975, to do additional work on the San Juan. However, our interests in the San Juan area would probably be reduced if we dropped the Middlemarch area properties.
15. A last consideration is Howard Birchfield. Birchfield's position has not been resolved. Leo Smith (of Verity and Smith) stated a) that we would have to withstand liability to a drilling contractor brought onto the Owens property in event of physical abuse by Birchfield, b) that we could conceivably get involved in a lengthy expensive litigation without the option to drop the litigation and, c) Birchfield and Owens may not be the only parties with property interest in the Middlemarch area. Smith named two other parties who may or may not be associated with Birchfield.

CONCLUSIONS:

Based on the above discussion, there appears to be several conclusions:

Note: Birchfield says he is not on good terms with Hornetake as he forced a drill rig off the property. (HMC did not have an option with Birchfield, only one with Owens). They have not given him any data & this report was gained thru a third party. He is doubtful that he could secure Smith's report, or the rest (conclusions) of this report. JAS



Southwestern Exploration Division

September 15, 1976

TO: F. T. Graybeal

FROM: J. D. Sell

Middlemarch Canyon
Central Dragoon Mountains
Cochise County, Arizona

Mr. H. Birchfield called this A.M. to say that he has the money and the equipment is coming in next week, a 100 hp. submersible pump, to remove the water from the shaft and expose the 800 level workings.

Concurrently he expects to have a wagon drill and will drill out the "pit" area in an attempt to find additional ore.

Birchfield expects the work to be completed within thirty days and will keep us informed on both projects.



J. D. Sell

JDS:lb

GOLD HILL MINING COMPANY
8 W. PASEO REDONDO
TUCSON, ARIZONA 85705
602-622-5297

~~ETG~~ → JDS
Sounds like an
aggressive bunch.

10/8/74

Mr. Sells.

Howard Birchfield asked
that I mail the enclosed copy of
a letter to Hodgen, who has
advanced the money to
de-water the shaft at Middlemarch

Hope to see you out
there after the water is out

Bill Egan

October 6, 1976

Mr. Jack Hodgden
Bass Building
Enid, Okla. 73701

Dear Jack:

Charlie remarked that you asked about the Cobre Loma. That property is up the canyon from Middlemarch. The road is a little rougher but we drive to it with ease in pickups. The tunnel portal is on a hillside--not steep--and the dump drifts toward the wash.

We are of strong opinion that it is a very good property. The tunnel followed a vein and ends in ore. The face is high grade. The difficulty is that there has been no drilling or other exploration. We could not get a contract with a smelter based upon present information. Part of the dump which is described in the writings is still there and can be worked into our shipments when we get into operation.

There is another mine, named San Juan, on our claims. It is west of Middlemarch and higher on the mountain. It is silver and zinc. The San Juan has produced more ore than Cobre Loma and more recently. It has a sizeable ore body blocked out and it will be easy to put into operation. But again, there is not sufficient proven ore to be the basis of a smelter contract. It may add considerably to our shipping when we are in position to handle it.

The big things about Middlemarch are that the descriptions indicate enough ore to justify a contract, that ASARCO is sufficiently impressed with the possibilities to have agreed to send their geologists and engineers to study the de-watered shaft and then, if they find the facts to be as indicated, enter into a contract to take the ore at their mill in Deming, New Mexico. They want a minimum of 300 tons a day for the long pull but will be reasonable with us in the beginning. Our only concern about ASARCO is that someone may come along with ore and take their mill capacity before we are ready. We know of no such possibility and do not expect it to happen. ASARCO has shown some interest in our property as a whole for a big operation and, I think, will always lean in our favor. There is some indication that we may have a large low grade deposite deep under ground, a thing that ASARCO can handle but we can't--at least for a long time. The more or less surface parts of the property which are within our capability are:

1. Middlemarch--shaft to be pumped and mining started.
2. San Juan--improve road access and start mining.

3. Open pit area--do small amount of drilling. If found OK, start mining.
4. Cobre Loma--do small amount of drilling to determine depth of vein under tunnel--and start mining.
5. Silver Hill--drill uncovered vein of high grade silver ore.
6. Tungsten--do small drilling program on exposed scheelite veins.

The above may sound like a lot of mines but 245 claims cover 4,900 acres in a highly mineralized area. There are showings of uranium and other ores which have not been studied to any appreciable degree.

If the ASARCO deal fails, we have three routes:

1. Build our own mill--a thing which we are not considering because of the job to be done, the cost and the fact that it would have to be some place else in order to get water.
2. Make a deal for an existing mill at Pearce, nine miles east of the property. The owners have no ore for the mill and are in trouble. It would have to be partially re-equipped for our needs--and might not have the capacity which we want. If we ship to ASARCO, we will be hauling our ore by this mill.
3. There is a big custom mill in Tonto Basin northeast of Phoenix. They have a good reputation for recovery. Ore is being hauled to them from the Glove mine 40 miles south of Tucson. I think that they are pretty much out of our picture because of the long haul, their high rates and the fact that they want to market the concentrates at a profit to themselves. In cases of small high grade operations, where owners cannot contract with smelters, they are good.

All of this may seem like "running off at the typewriter" but I thought that it might be well to give you a little summary and then answer the questions which come to your mind.

Hasta la Vista,

Bill

Wm. S. Edgemon

WSE/lid

⊕ We will have to build
stock piles to guarantee steady flow.