File Copy
Surname
J. W. Alt
Keehan
Kiilsgaard
Selfridge
H. Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

MAR 12 1956

Mr. Joseph G. Kostelnik, Secretary
Centroid Consolidated Mines, Inc.
650 North First Avenue
Phoenix, Arizona

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mine
Yuma County, Arizona

Dear Mr. Kostelnik:

Your application for aid for an exploration project and other reports available to us in Washington concerning your application have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information, although noting a small amount of copper mineralization on your property, indicates to us that the probability of disclosing significant ore reserves is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

E. O. Mittendorf

Administrator

JWAlt/er 3/7/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS,
Senator Carl Hayden (2)
Region III (2)
Chron.

R.G.B.

File Copy
Surname
J. W. Alt
Gehen
Kiilsgaard
Selfridge
Hyperman

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

MAR 12 1956

Hon. Carl Hayden
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mines
Yuma County, Arizona

My dear Senator Hayden:

With reference to the cited application, we wish to advise you that this application for Government exploration assistance has been denied. We have written to Mr. Joseph C. Kostelnik, Secretary, Centroid Consolidated Mines, Inc., 650 North First Avenue, Phoenix, Arizona, advising him of this action. For your information we are enclosing copies of this letter.

If we can be of any further assistance to you at any time, I trust that you will feel free to call upon us.

Sincerely yours,

E. O. Mittendorf

Administrator

Enclosures (2)

JWAlt/er 3/7/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals Div.
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

R.C.R.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION 500
WASHINGTON 25, D. C.

March 7, 1956

Memorandum

To: The Administrator

From: Chief, Base Metals Division

Subject: Denial of Application, Docket No. DMEA-4057 (Copper), Centroid Consolidated Mines, Inc., Centroid Consolidated Mines, Yuma County, Arizona

The cited application, dated November 8, 1955, was received by this office on November 14.

The Applicant proposed to explore the property by 4 diamond drill holes aggregating 2,100 feet at an estimated cost of $21,840.00.

The property was examined by the Field Team on January 4, 1956 and this office received their report on February 27.

The Field Team found upon examination of this property that ore mineralization is confined to discontinuous veinlets that occupy fractures in both granite and dikes and that most of the observed veinlets range from one-eight to one-half inch in width.

Prior exploration of the property by shaft sinking, drifting, and drilling failed to discover any extensive mineralization. Geological conditions did not favor or indicate any significant reserves of ore.

The Field Team states: "The property of the Centroid Mining Company has been explored by mine workings and by drilling, none of which yielded encouraging results. The minor showings of copper are not of economic significance and apparently do not warrant additional exploration; therefore it is recommended that the application be denied."

We concur with the recommendations of the Field Team and the commodity members of the USGS and the USBM that this application be denied.

for J. W. Ad

W. R. Griswold

File Copy
Surname
J. Alt

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION 500
WASHINGTON 25, D. C.

March 7, 1956

Memorandum

To: The Administrator

From: Chief, Base Metals Division

Subject: Denial of Application, Docket No. DMEA-4057 (Copper), Centroid Consolidated Mines, Inc., Centroid Consolidated Mines, Yuma County, Arizona

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We concur with the recommendations of the Field Team and the commodity members of the USGS and the USBM that this application be denied.

for J. W. Alt
W. R. Griswold

W. R. Griswold

JWAlt/er

Copy to: Docket
Base Metals
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

RECEIVED
MAR - 5 1956

March 5, 1956

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Field Team Examination Reports, Docket No. DMEA - 4057 (copper), Centroid Consolidated Mines, Inc., Yuma County, Arizona, $21,840.00

The Examination Reports of this property by John N. Faick, Geological Survey, and T. M. Romslo, Bureau of Mines, has been reviewed and found adequate.

It was proposed to explore the property by 4 diamond drill holes aggregating 2,100 feet at an estimated cost of $21,840.00.

Examination of the property showed that the mineralization consists of discontinuous veinlets ranging from one-eighth to one-half inch in width as fracture fillings in the granite and dikes.

Prior exploration of the property by shaft sinking, drifting, and drilling failed to discover any extensive mineralization. In addition, geological conditions did not favor or indicate any significant reserves of ore.

For these reasons the examiners recommended denial of the application for Government assistance to explore the property.

I concur with this recommendation.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals (2)
Thor Kiilsgaard, U.S.G.S.
R. W. Geehan
F i l e s

RECEIVED
MAR - 5 1956

March 5, 1956

Memorandum

To: W. E. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of Field Team Examination Reports, Docket No. DMEA - 4057 (copper), Cardwell Consolidated Mines, Inc., Pima County, Arizona, $21,840.00

The Examination Reports of this property by John E. Faink, Geological Survey, and T. E. Hamala, Bureau of Mines, has been reviewed and found adequate.

It was proposed to explore the property by 4 diamond drill holes aggregating 2,100 feet at an estimated cost of $21,840.00.

Examination of the property showed that the mineralization consists of disseminations veinlets ranging from one-eighth to one-half inch in width as fracture fillings in the granite and dikes.

Prior exploration of the property by shaft sinking, drifting, and drilling failed to discover any extensive mineralization. In addition, geological conditions did not favor or indicate any significant reserves of ore.

For these reasons the examiners recommended denial of the application for Government assistance to explore the property.

I concur with this recommendation.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals (2)
Thor Killingard, U.S.G.S.
R. W. Seaborn
Files

CIVESJ

File Copy
Surname
J. Alt
Griswold
Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

MAR - 5 1956

Hon. Carl Hayden
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mines
Yuma County, Arizona

My dear Senator Hayden:

This is to acknowledge your letter of March 1, and to advise you that just recently we have received the Field Team report regarding the cited property.

This report is being studied and you will be notified promptly of our decision regarding the Applicant's request for Government exploration assistance.

As requested, we are returning the copy of our letter to you, dated January 27, 1956.

Sincerely yours,

G. O. Mitscont

Administrator

Enclosure

JWAlt/er 3/2/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

R.C.L.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
MAR - 2 1956

March 2, 1956

Re: DMEA 4057
Centroid Cons. Mines, Inc.
Yuma Co., Arizona
$21,840.00 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The applicant requested assistance in diamond drilling to test at depth a long known and well prospected mineralized area.

The proposed work consists of:--

(a) Diamond drilling, etc.		$17,850.00
(b) Engineering, etc.		2,850.00
(c) Fuel, water, etc.		1,140.00
	Total	$21,840.00

The examiners found that the ore mineralization is confined to discontinuous veinlets that occupy fractures in both granite and dikes. Unfavorable results followed the prospecting and exploration of the best known showings. The most highly mineralized surface showing yielded a 3.8-foot sample that assayed 1.79% copper, the only sample taken.

With the results of extensive work, and geologic conditions against it, the examiners conclude the minor showings of copper do not warrant additional exploration and with the Field Team recommend denial of the application.

I concur with that recommendation.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
MAR - 2 1956

March 2, 1956

Re: DMEA 4057
Centroid Cons. Mines, Inc.
Yuma Co., Arizona
$21,840.00 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

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With the results of extensive work, and geologic conditions against it, the examiners conclude the minor showings of copper do not warrant additional exploration and with the Field Team recommend denial of the application.

I concur with that recommendation.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-3/2/56

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Meyer, 3623

CARL HAYDEN, ARIZ., CHAIRMAN
RICHARD B. RUSSELL, GA.
DENNIS CHAVEZ, N. MEX.
ALLEN J. ELLENDER, LA.
LISTER HILL, ALA.
HARLEY M. KILGORE, W. VA.
JOHN L. MCCLELLAN, ARK.
A. WILLIS ROBERTSON, VA.
WARREN G. MAGNUSON, WASH.
SPESSARD L. HOLLAND, FLA.
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HENRY DWORSHAK, IDAHO
EVERETT MCKINLEY DIRKSEN, ILL.
CHARLES E. POTTER, MICH.

EVERARD H. SMITH, CLERK
THOMAS J. SCOTT, ASST. CLERK

500

United States Senate

COMMITTEE ON APPROPRIATIONS

RECEIVED
MAR - 2 1956

March 1, 1956

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

This refers to your courteous letter of January 27, a copy of which is enclosed for identification, concerning the application of the Centroid Consolidated Mines, Inc.

I shall appreciate your advice as to the present status of this application.

Yours very sincerely,

Carl Hayden

U. S. S.

P. S. Please address reply to me, sending me original and one copy. Kindly return enclosure.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED
FEB 23 1956

February 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, Docket DMEA 4057 (Copper), Centroid Consolidated Mines, Inc., Yuma County, Arizona

Enclosed are the original and three copies of the Report of Examination on the subject property.

The field examiners concur that DMEA aid is not warranted in further exploration of the Centroid property, because geological conditions are not favorable for a significant amount of copper ore. They recommend that the application be denied, and we concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

DMEA
Date Rec'd.

RECEIVED

TRANSMITTED

JAN 30 1956

BUREAU OF MINES
Denver, Colorado

FEB 16 1956

Box 4097
Tucson 5, Arizona

January 27, 1956

Memorandum

To : W. M. Traver, Executive Officer, DMEA Field Team, Region III

From : Superintendent, Southwest Experiment Station

Subject : Field Examination Report, Docket DMEA-4057 (Copper), Centroid Consolidated Mines, Inc., Ellsworth Mining District, Yuma County, Arizona.

Enclosed are original and 8 copies of the section on Summary, Conclusions and Recommendations by J. N. Faick of the Geological Survey and T. M. Romslo of the Bureau of Mines, and the section on Engineering by Romslo for the above report. A separate section on Geology will be submitted by the Survey.

As there seems little chance of making a significant discovery of ore by further exploratory work the DMEA examiners recommend that Government aid be denied the applicant. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. M. Traver (8)
J. F. Shaw
J. N. Faick
DMEA-4057
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

RECEIVED
FEB 23 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED
FEB 16 1956

DMEA-4057 (Copper), Centroid Consolidated Mines, Inc., Yuma County, Arizona

John N. Faick, Geologist
U.S. Geological Survey

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

January 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

RECEIVED
FEB 23 1956
TRANSMITTED
FEB 16 1956

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By John N. Faick[1] and T. M. Romslo[2]

The Centroid Consolidated Mines, Inc. applied for Governmental aid in exploration of its property in Yuma County, Ariz. The application was received by the Defense Minerals Exploration Administration on November 14, 1955. It proposed exploration for copper by diamond drilling 2,100 feet in 4 holes. Total cost of the drilling was estimated at $21,840.00. A field examination of the property was carried out under docket DMEA-4057.

The applicant's property first was worked in 1906 when an inclined shaft was sunk to a depth of 322 feet. Later a 300-foot vertical shaft and another inclined shaft, 386 feet deep, were sunk. Approximately 200 feet of drifts were driven from 3 levels of the inclined shaft, and a 400-foot drift and a 150-foot crosscut was driven from near the bottom of the vertical shaft. Several short adits and numerous shallow trenches and pits were excavated. Essentially all of this work was done prior to 1953 when the application lengthened one of the adits, extended the 386-foot inclined shaft to its present bottom, and drilled several surface diamond drill holes. Work was discontinued in October 1955.

1/ Geologist, U. S. Geological Survey
2/ Mining Engineer, U. S. Bureau of Mines

The only major workings accessible during the examination were the adits. Available production records are confined to a shipment, during 1936, of about 39 tons of ore containing 0.91 percent copper. Additional small tonnages may have been shipped from the workings of Centroid claim No. 17.

The Centroid property is underlain by granite that grades into gneissic and schistose rocks at places. Intruding the granite are several basic dikes that trend either northwesterly or easterly. The dikes apparently occupy the principal fractures and faults in the granite. Other fractures and faults are present at several places.

Ore mineralization is confined to discontinuous veinlets that occupy fractures in both the granite and dikes. Most of the observed veinlets range from one-eighth to one-half inch in width. At a few places several of these veinlets occur in a single fracture zone. Chalcopyrite, the primary ore mineral, is associated with specular hematite, quartz, jasper, siderite, and pyrite. The secondary minerals are limonite, chrysocolla, malachite, azurite, and chalcocite.

Exploration of probably the largest and most highly mineralized zone by an inclined shaft and drifts, and 2 diamond drill holes resulted in unfavorable findings. Total known production from these workings is the reported 39 tons of 0.91 percent copper ore. At the surface, the zone pinches and swells along its traceable

length of about 200 feet. A sample of the widest (3.8 feet) and probably the most highly mineralized portion of the zone at the surface assayed 1.79 percent copper. Both diamond drill holes penetrated the projected extension of the zone. Only one of the holes encountered minor amounts of chalcopyrite in a zone comparable to that sampled.

It can be concluded with the presence of significant reserves of copper ore on the Centroid property are not expectable on the basis of unfavorable geologic conditions and the disappointing results of rather extensive exploratory work. It follows that Governmental aid in exploration at this property is not warranted.

DMEA-4057 (COPPER), CENTROID CONSOLIDATED MINES, INC.
YUMA COUNTY, ARIZONA

TRANSMITTED

FEB 16 1956

Engineering Report

By T. M. Romslo
Mining Engineer
U. S. Bureau of Mines

January 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

RECEIVED
FEB 23 1956

DMEA-4057 (COPPER), CENTROID CONSOLIDATED MINES, INC.
YUMA COUNTY, ARIZONA

CONTENTS

Engineering report — Page

Introduction ---------- 1
Location and accessibility ---------- 1
Topography, physical features and climate ---------- 2
History and production ---------- 2
Extent and ownership of the property ---------- 4
Present status ---------- 4
Description of the deposits ---------- 5
Ore reserves ---------- 7
Conclusions and recommendation ---------- 7

ILLUSTRATIONS

Figure No. — Following page

1 Location map ---------- 1
2 Claim map ---------- 4
3 Geologic map ----------(See Geological Report)

RECEIVED
FEB 23

INTRODUCTION

The Defense Minerals Exploration Administration received an application from the Centroid Consolidated Mines, Inc., for aid in a proposed exploratory project at the corporation's property in Yuma County, Ariz. The application, dated Nov. 14, 1955, proposed exploration for copper by drilling 4 diamond drill holes for a total depth of 2,100 feet. Cost of the work was estimated at $21,840.00. The application was docketed as DMEA-4057, reviewed by the Operating Committee, then sent to the Field Team, Region III, for a field examination of the property.

The property was examined for the Defense Minerals Exploration Administration on January 4, 1956 by J. N. Faick, geologist, U. S. Geological Survey and T. M. Romslo, mining engineer, U. S. Bureau of Mines. They were accompanied by C. J. Lunenschloss, J. C. Kostolnik, and G. F. Blair, respectively the corporation's president, secretary, and treasurer. Also present was Charles H. Dunning, Consulting mining engineer for the corporation.

LOCATION AND ACCESSIBILITY

The applicant's property is about 8 air-miles due north of Wenden, Ariz., a village on U. S. Highway 60 and 70, and the Atchison, Topeka and Santa Fe Railway. The property is situated in Secs. 7, 18 and 19, T. 7 N., R. 12 W. and Secs. 12, 13 and 24, T. 7 N., R. 13 W., Ellsworth Mining District, Yuma County, Ariz. (figure 1).

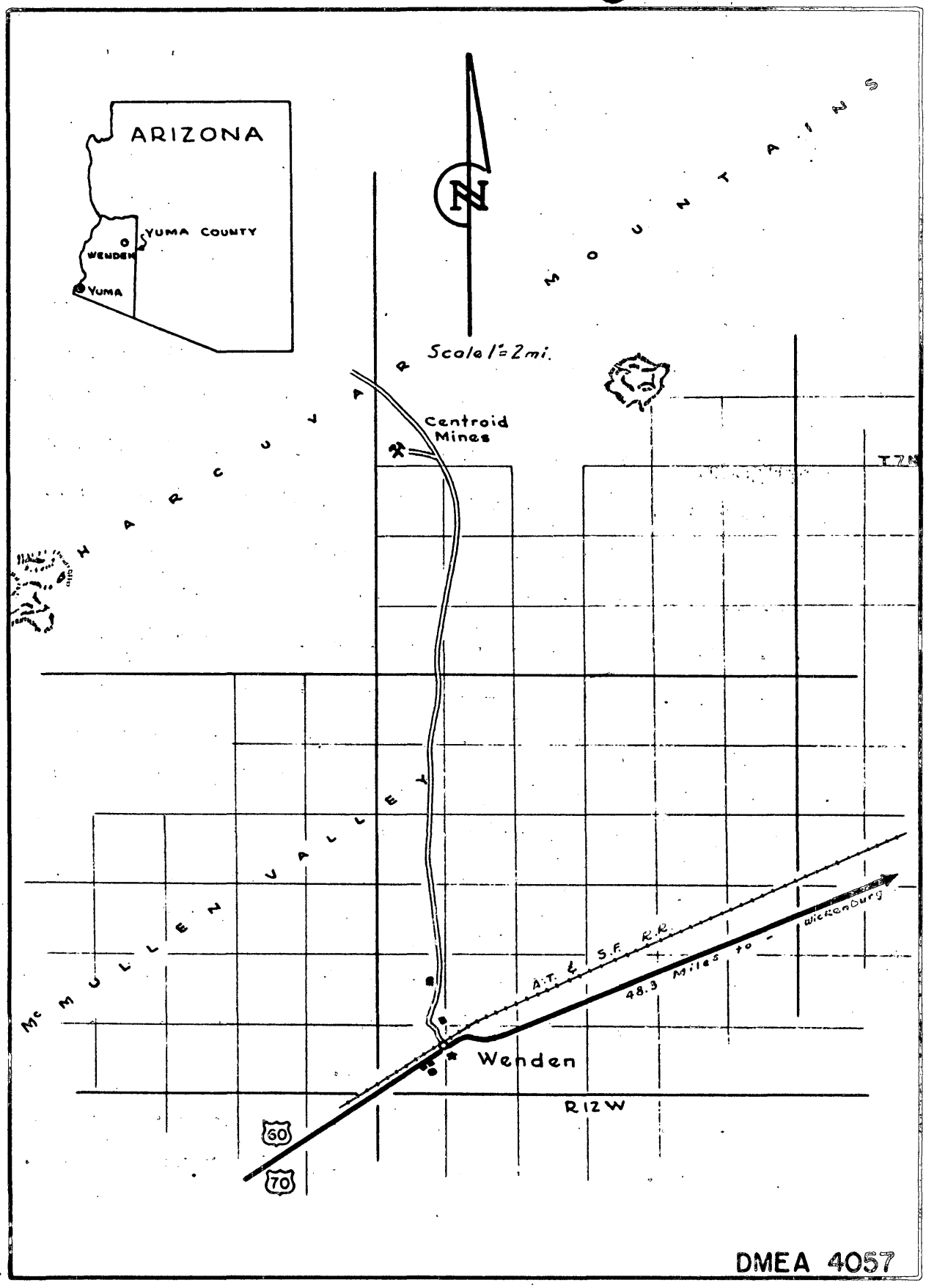

FIG.-1- LOCATION MAP, CENTROID CONSOLIDATED MINES INC.

YUMA COUNTY, ARIZONA

years ago the dump contained a considerable quantity of both carbonate and sulphide copper ore, which has since been gleaned and removed. There appears to be very little geological reason for sinking the shaft where it is.

"The "Main Shaft" was sunk by Wm. B. Harris in the 1930's. It is vertical and attained a depth of 350 feet with a long crosscut to the south at the bottom. This crosscut cut at least one copper mineralized zone, called the "October Vein" but general mineralization was sparse, indicating that further depth, or a different location for exploration, was necessary.

"The Horse Whim shaft was sunk on an incline of 40 degrees, starting on an iron outcrop, and following the dip of the formation. Various "leads" were followed by crosscuts and drifts, with some showing of copper ore in irregulr occurrences.

"A diamond drill hole was put down from a location approximately 900 feet northeast of the collar of this shaft, at a course toward the shaft, and a dip of 45 degrees to intersect this zone at about 600 feet on its dip, or 475 feet vertical. Log of this hole, together with cores, are available for inspection.

"Cores were not systemically assayed, but several zones were cut showing copper mineralization, although below commercial grade. This additional depth has shown a distinct improvement over the conditions in either the Horse Whim or vertical shafts.

"After removal of the drill, when the cores were re-examined, it was discovered that the last bit of core again showed copper mineralization.

"Another diamond drill hole was put down on the Black Hawk claim, at a vertical angle of 55 degrees, to cut the Cunningham Fault zone. The zone itself did not core, but some 21 feet in the east wall showed a small copper content.

"The outcrop of this fault is heavily mineralized with iron in places, but although the fault zone has no doubt been tested in many places, it has never produced a copper orebody."

According to Carl J. Luenschloss, president of the corporation, Centroid Consolidated Mines intermittently explored the property from the latter part of 1952 to October 1955. During this period,

access roads were built, the diamond drilling mentioned by Dunning was done, the Horse Whim shaft was deepened from 250 to 385 feet from the surface, and the adit west of the Van Eck shaft was extended from 175 to 250 feet from its portal. Since then, a caretaker has lived on the property.

Readily available records of production from the Centroid Consolidated Mines are confined to the corporation's record of 1 shipment from an unknown location in the Horse Whim shaft. This shipment amounted to 38.69 tons of ore containing 0.91 percent copper and 0.43 ounce gold and 0.40 ounce silver a ton.

EXTENT AND OWNERSHIP OF THE PROPERTY

The property comprises a group of 12 unpatented and 31 unpatented lode mining claims (figure 2). It is reportedly owned by the applicant, Centroid Consolidated Mines, Inc., 650 N. First Ave., Phoenix, Ariz. Officers of the corporation are: Carl J. Luenschloss, president; Albert M. Regully, vice president; A. C. Haigler, vice president; W. R. Murhamer, vice president; Joseph C. Kostolnick, secretary; and Glen F. Blair, treasurer.

PRESENT STATUS

Camp

The camp consists mainly of 5 small bunk houses, a 20- by 30-foot warehouse, a 12- by 20-foot change room, and a 10- by 10-foot light plant building, and a 6,500-gallon water storage tank. Two

of the bunk houses are equipped with stoves and refrigerators. Electricity for lighting is furnished by a 32 K. W. plant. Water for domestic purposes is pumped from the main shaft with a gasoline engine.

Mine Workings

The principal mine workings include the vertical Main shaft and the inclined Horse Whim and Van Eck shafts (figures 2 and 3). The Main shaft, equipped with a headframe, is reportedly 300 feet deep. Workings from the shaft are confined to one level, the 300, and consist of a 400-foot south crosscut from which a 150-foot drift has been driven in a westerly direction. The Horse Whim shaft is equipped with headframe, a gasoline-powered single-drum hoist, and a skip. It reportedly has an inclined depth of 386 feet. A total of about 200 feet of drifts have been run from the 150-, 215- and 375-foot levels. The only data on the Van Eck shaft is its reported depth of 322 feet. Other principal workings include a 250-foot adit near the Horse Whim shaft and 4 short adits near a shaft on Centroid No. 17 claim.

None of the shafts presently are accessible.

DESCRIPTION OF THE DEPOSITS

The applicant's property is underlain by granite, that at places grades into gneissic and schistose rocks. Several basic dikes intrude the granite. These dikes trend either northwesterly or easterly and apparently occupy the principal fractures and faults in the granite. Other faults and fractures are evident at several places.

Ore mineralization is confined to discontinuous veinlets that occupy fractures in both the granite and dikes. Most of the observed veinlets are from one-eighth to one-half inch in width. At a few places several veinlets are present in a single fracture zone that may be as much as 18 inches wide. The primary minerals are specular hematite, quartz, jasper, barite, siderite, pyrite, and chalcopyrite. Secondary minerals are limonite, chrysocolla, malachite, azurite, and chalcocite. None of these were present in appreciable concentrations.

Probably the largest and most strongly mineralized zone observed is that explored by the Horse Whim shaft and workings, and by 2 diamond drill holes. The zone strikes from N. 10 W. to N. 30 W. and dips 30 to 40 degrees northeast. At the surface the zone pinches and swells along its traceable length of about 200 feet. This zone consists mainly of limonite, copper stains, and small amounts of quartz in altered granite. The widest and most highly mineralized portion of the zone at the surface was sampled by the examining team. The sample representing a width of 3.8 feet assayed 1.79 percent copper. According to the applicant, no zones of significant copper mineralization were developed by the shaft and its workings, but the applicants state that material at the bottom of the shaft contained about 2 percent copper. Core of the 2 diamond drill holes

was inspected by the examining team. It is believed that both holes penetrated the projected horizon of the mineralized zone. Only one of the holes encountered minor amounts of chalcopyrite in a zone comparable to that sampled.

ORE RESERVES

The Centroid property contains no measurable, indicated, or inferred reserves of copper ore.

CONCLUSIONS AND RECOMMENDATION

Copper mineralization on the Centroid property occurs as discontinuous veinlets at widely scattered places in fractured granite. Several such veinlets are present in probably the largest and most highly mineralized zone. Exploration of this zone has indicated that it contains little or no minable ore reserves in view of the low copper content and limited extent.

Governmental aid in additional exploration of the Centroid property is not warranted because geological conditions are not favorable for the finding of significant reserves of copper ore.

MINERAL DEPOSITS
RECEIVED
FEB 13 1956
U.S.
GEOLOGICAL SURVEY
DENVER, COLORADO

DMEA
Date Rec'd.
FEB 14 1956
BUREAU OF MINES
Denver, Colorado

Box 4126 University Station
Tucson, Arizona

February 8, 1956

TRANSMITTED
FEB 16 1956

MEMORANDUM

To: E. N. Harshman E.N.H.

From: John N. Faick

Subject: DMEA application 4057, Centroid Consolidated Mines, Ellsworth District, Yuma County, Arizona

Transmitted herewith are the original and 8 copies of my geological report on the examination of the above subject property. Denial of the application is recommended because of the small size, low grade, and erratic distribution of the mineralized zones. Geological conditions do not indicate that significant ore reserves exist on the Centroid property.

The Survey's copy of the brochure is enclosed.

John N. Faick

John N. Faick

JNF:ms

Enclosures

cc. Harshman (8)
Sterns

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

U. S. DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FIELD TEAM, REGION III

TRANSMITTED

FEB 16 1956

GEOLOGY

EXAMINATION REPORT

DMEA 4057

CENTROID CONSOLIDATED MINES COMPANY, INC.

YUMA COUNTY, ARIZONA

(Copper)

By
John N. Faick
Geologist
U. S. Geological Survey

February 8, 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
FIELD TEAM III

EXAMINATION REPORT

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CENTROID CONSOLIDATED MINES COMPANY, INC.
YUMA COUNTY, ARIZONA
(Copper)

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INTRODUCTION

The claims which constitute the properties of the Centroid Consolidated Mines Company, Inc. are situated in the Cunningham Pass area (fig. 1), about 8 miles north of Wenden, Yuma County, Arizona. Many attempts have been made during the last half century to exploit the deposits of the Cunningham Pass area. Three shafts and many hundreds of feet of underground workings have explored a small area south of the Pass, and west of it a shaft and a couple of adits developed a small deposit from which a few shipments of ore might have been produced. The property apparently was known as the "Robinson" at one time.

Reports have been prepared on the property (fig. 2) by W. Tovote, in January 1919, by Chas. Dunning in 1935, and by E. W. Mills in 1937, and these reports are said to be filed with the State Corporation Commission in Phoenix, Arizona. The property was examined in 1953 by R. Burton Rose, and by W. E. Kartchner, Geologists, both of San Jose, California. The reports by Dunning and Kartchner, a company prospectus, and several miscellaneous maps and reports were made available to the writer. The report which follows is based on inspection of the outcrops and shallow workings and is supplemented by the data provided by the applicant. None of the workings were entered more than a few feet because of inaccessibility or hazardous conditions.

GEOLOGY

The Cunningham Pass area (fig. 3) is underlain by granite, the character of which varies considerably from place to place. Most of the granite is coarse grained, slightly porphyritic, and in places is moderately pegmatitic. In some places, especially in the vicinity of Cunningham Pass, the granite is gneissic to schistose and is distinctly banded. Possibly some of this granite or gneiss is an intensely metamorphosed sediment. Several basic dikes, possibly diorite, intrude the granite. The dikes can readily be grouped into 2 sets, one set trending northwesterly and one set trending easterly. These dikes apparently occupy some of the principal fractures and faults in the granite; therefore, are an expression of the structural deformation which the granite has undergone. Faults and fractures not occupied by dikes are evident in several places on the property but none of them are sufficiently outstanding as to deserve special mention.

The granite and the dikes which intrude it are weakly and erratically mineralized throughout a relatively large area. The primary or hypogene minerals noted are specular hematite, quartz, jasper, barite, siderite, calcite, pyrite and chalcopyrite. Magnetite has been reported in some of the veins in the district but was not seen by the writer. Small amounts of chalcocite, which is probably of secondary origin, were observed with the chalcopyrite. Other secondary minerals are limonite, chrysocola, malachite and azurite. None of these minerals were found in appreciable concentrations at any place.

Most of the minerals mentioned above occur in narrow veinlets in fractured granite or dikes, and in a few places are found along the contacts between the dikes and granite. Most of the veinlets observed are only about 1/8 to 1/2 inch wide, but in some places there are several of these in a single fracture zone that might be as great as 18 inches wide. Specimens found on the dumps indicate that individual veins in the workings must attain widths of a few inches; however, the workings were not entered and the subsurface character of the veins could not be determined. However, it is believed that inspection of the outcrops and dumps provide suitable evidence of the character of the deposits, and there is no geological reason to believe the deposits change in size or quality with increasing depth.

In addition to the minor veins mentioned above there are stockworks in which veinlets occupy fractures in relatively large breccia masses. One of these stockworks is in the west corner of the Jubilee No. 2 claim and has been explored by an adit about 250 feet long. This forms a low hill which is resistant to erosion because of the presence of quartz veins and silicification of the granite which accompanied formation of the veins. Individual blocks in this breccia are very large, some of them being 2 or 3 feet across, and the veinlets seen by the writer are very narrow, and in nearly every respect are similar to those seen elsewhere on the property. The outcrop of the stockwork is strongly iron stained, apparently due to oxidation of siderite and pyrite in the quartz veinlets. Trace amounts of chalcopyrite were noted in some of the veinlets.

The largest and most strongly mineralized zone observed by the writer is exposed near the collar of the Horse Whim shaft (figs. 3 and 4) and apparently was explored by this shaft. This zone consists mostly of limonite and copper stains associated with small amounts of quartz in an altered granite. The most strongly mineralized zone is about 3.8 feet thick and there is about 5 feet of altered granite in the footwall and possibly slightly more in the hanging wall. The zone developed by the Horse Whim shaft strikes from N 10 W to N 40 W and dips from 30 to 40 degrees northeast. It is traceable for about 200 feet along the surface where its outcrop is marked by iron stain similar in appearance to that at the outcrop of the breccia or stockwork on the Jubilee No. 2 claim.

Attempts to develop ore bodies at Cunningham Pass were first concentrated on the narrow high-grade fissure veinlets in the granite and dikes, and later attempts were made to reach a zone of secondary enrichment which many operators believe exists below the zone of oxidation. Attempts were also made to hand sort and ship comparatively low-grade high-silica ores for fluxing purposes. In recent years major efforts were devoted to proving that the area contained large low-grade deposits, and that an extensive zone of secondary enrichment, containing copper, gold and silver, exists at greater depths than any previously obtained.

There is virtually no geological evidence to support the operator's conclusions that larger or richer deposits exist at greater depth. There are no gossans of appreciable size and no leached outcrops that might indicate the presence of significant amounts of ore minerals. On the dumps and in the diamond drill core there is chalcopyrite and pyrite, which indicates that a zone of primary mineralization lies at a shallow

depth. Trace amounts of a mineral identified in the field as chalcocite indicates that a zone of enrichment was found by the workings at comparatively shallow depth. Although pyrite and chalcopyrite are found disseminated in some of the diamond drill core, this mineral appears to occur principally near zones of fracturing, and does not occur in sufficient amounts throughout a large enough area to constitute a "porphyry" type copper deposit.

EXPLORATION AND DEVELOPMENT

The property has been explored by at least 4 shallow shafts, many hundreds of feet of workings, and a few drill holes. On the Jubilee claim No. 5 is located the vertical Main shaft, which is reported to be 300 feet deep. On the 300 level a 600 ft. long crosscut was driven southward. This cut a diorite dike from 200 to 300 feet, and from 300 to 326 feet cut a brecciated mineralized fault, according to reports. This breccia zone is called the October vein and it is said to contain pyrite, chalcopyrite, bornite and chalcocite. On the Jubilee No. 2 claim the inclined Horse Whim shaft was sunk to a depth of 386 feet and about 500 feet of drifts and crosscuts were driven.

Several very small cuts explore mineralized zones on the low ridge west of Cunningham Pass. The largest deposit here was explored by a shaft of unknown depth, and by a couple of adits. Raises extend from the lower to the upper adit and it appears likely that a small amount of ore may have been stoped from this small deposit. At these workings the minerals are about the same as found elsewhere in the area.

The deposits were explored by 3 diamond drill holes, the locations of which are shown on fig. 4. Generalized logs of these holes are given in Table I.

TABLE I

Hole #1 Bearing S 45° W, Inclination -45°, Black Hawk No. 1 Claim

0-216 (Bott.) Light colored, fine grained granite.
55 ft. of core recovered.

Hole No. 2 Bearing Due South, Inclination -84°

0-100	BX core, granite, foliated in upper part. Aplitic and pegmatitic in lower part. Numerous hematite stringer veins in upper part. Thickest is about 2".
100-125	Granite, foliated. AX core.
125-150	Dark colored, basic dike.
150-158	Orthoclase and quartz, 3" Brecciated and cemented with siderite (?) at about 153.
158-198	Dike; trace of hematite.
198-224	Granite 2" of hematite cementing qtz. breccia at 198 ft. Granite is foliated.
224-228	Dike, basic.
228-271	Granite, Sl. foliated. Dike at 242-244.
271-283	Core missing.
283-293	Granite.
293-310	Granite.
310-320	Granite. Traces of disseminated chalcopyrite
320-336	Specularite (estimated 40%) cementing brecciated granite. A few very small masses and veinlets of chalcopyrite in both specularite and granite.
336-366	Small amounts of chalcopyrite in strongly altered granite. Traces of specularite. Very poor core recovery. Apparently fault zone. Minor calcite.

Hole No. 3 Bearing S. 67° W., Inclination -45°

0-355	Impure granite.
355-377	Dike. Veinlets chalcopyrite in dike at 375.
377-380	Granite. Trace chalcopyrite at 380'.
380-383	Dike
383-484	Granite, very poor recovery. Slight alteration. Traces of chalcopyrite.
395-405	Sludge assay Cu 0.30, Au Trace, Ag 0.80
405-420	Sludge assay Cu 0.05, Au Trace, Ag 0.60
484-510	Dike
510-525	Granite
525-539	Dike
539-546	Granite, slightly altered
546-550	Granite
550-595	Core missing. Granite reported. Traces of chalcopyrite reported at bottom
595'	total depth

SAMPLES, GRADE AND PRODUCTION

Analyses of the ore that are available to the examiners are shown on fig. 4. Only one mineralized zone warranted sampling by DMEA. This was near the collar of the Horse Whim shaft, where a sample was cut across a zone 3.8 feet thick and was found to contain 1.79 percent copper. This is the largest zone observed, and appeared to be the richest; therefore, no other samples were cut. The only shipping record available indicates that 39.69 tons of ore was shipped from the Horse Whim shaft to Magma Copper Co., Superior, Arizona December 7, 1936. It is claimed that additional shipments, possibly amounting to a few hundred tons of ore, were shipped by sorting the dumps, but there is little evidence to support this statement.

Former operators cut Samples A to H, inclusive, for assay in several places in the mine workings. According to a prospectus on the property, dated August 5, 1952, "These assays were taken from the better looking ore showings, and are selected samples taken from ore in place."

Analyses available to the writer are shown in Table II.

TABLE II
ANALYSES OF SAMPLES, CENTROID CLAIMS

Description	Percent Copper
39 tons shipped to Magma Copper Co.	0.91
Average of 5 gossan samples cut by W. Tovote	1.33
DMEA, 3.8 ft. wide at Horse Whim Shaft	1.79
Selected sample of Horse Whim dump, reported by applicant	1.6
Sample "A", 14 ft. face, W. drift, 375 level	1.6
Sample "B", Face, E. XC, 375 level	1.8
Sample "C", Bottom of Horse Whim Shaft	2.45
Sample "D", Shaft, depth 300 feet (probably 265 ft.;fig.4)	7.6
Sample "E", Drill cuttings at 215 level	1.4
Sample "F", 150 level drift	8.95
Sample "G", Oxide ore on 150 level drift	32.9
Sample "H", Coatings on wall, 215 level	4.2

If the abnormally high-grade samples, the efflorescent coatings and secondarily enriched ores are discarded from this list of samples the remainder would have an average grade of about 1.5 percent copper. This is the same as the writer's estimated grade of the ore material seen in the dumps and in the diamond drill core.

ORE RESERVES

The small size of the mineralized zones and the erratic distribution of the ore throughout a large area prevent making an acceptable estimate of ore reserves, and no estimate was made. There is no measured or indicated ore of minable grade. Possibly considerable ore containing about 1.5 percent copper might be inferred, but it could not be profitably recovered. No evidence was seen by the writer to support the applicant's idea that a large enriched zone exists at greater depth, or that a porphyry copper type of deposit exists in the Cunningham Pass area.

CONCLUSIONS AND RECOMMENDATIONS

The property of the Centroid Mining Company has been explored by mine workings and by drilling, none of which yielded encouraging results. The minor showings of copper are not of economic significance and apparently do not warrant additional exploration; therefore it is recommended that the application be denied.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED
FEB 23 1956

February 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, Docket DMEA 4057 (Copper), Centroid Consolidated Mines, Inc., Yuma County, Arizona

Enclosed are the original and three copies of the Report of Examination on the subject property.

The field examiners concur that DMEA aid is not warranted in further exploration of the Centroid property, because geological conditions are not favorable for a significant amount of copper ore. They recommend that the application be denied, and we concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

2/27/56
(date)

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DMEA
Date Rec'd.
JAN 30 1956

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FEB 16 1956

BUREAU OF MINES
Denver, Colorado

Box 4097
Tucson 5, Arizona

January 27, 1956

Memorandum

To : W. M. Traver, Executive Officer, DMEA Field Team, Region III

From : Superintendent, Southwest Experiment Station

Subject : Field Examination Report, Docket DMEA-4057 (Copper), Centroid Consolidated Mines, Inc., Ellsworth Mining District, Yuma County, Arizona.

Enclosed are original and 8 copies of the section on Summary, Conclusions and Recommendations by J. N. Faick of the Geological Survey and T. M. Romslo of the Bureau of Mines, and the section on Engineering by Romslo for the above report. A separate section on Geology will be submitted by the Survey.

As there seems little chance of making a significant discovery of ore by further exploratory work the DMEA examiners recommend that Government aid be denied the applicant. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. M. Traver (8)
J. F. Shaw
J. N. Faick
DMEA-4057
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA-4057 (Gunner), Centroid Consolidated Mines, Inc.,
Yuma County, Arizona

John H. Faick, Geologist
U.S. Geological Survey

T. M. Donnelly, Mining Engineer
U. S. Bureau of Mines

January 1956

Reviewed by
DMEA OPERATING COMMITTEE

_____
(date)

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FEB 16 1956

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By John M. Faick[1] and T. M. Ramale[2]

The Centroid Consolidated Mines, Inc. applied for Governmental aid in exploration of its property in Yuma County, Ariz. The application was received by the Defense Minerals Exploration Administration on November 14, 1955. It proposed exploration for copper by diamond drilling 2,100 feet in 4 holes. Total cost of the drilling was estimated at $21,840.00. A field examination of the property was carried out under docket DMEA-4057.

The applicant's property first was worked in 1906 when an inclined shaft was sunk to a depth of 122 feet. Later a 300-foot vertical shaft and another inclined shaft, 386 feet deep, were sunk. Approximately 200 feet of drifts were driven from 3 levels of the inclined shaft, and a 400-foot drift and a 150-foot crosscut were driven from near the bottom of the vertical shaft. Several short adits and numerous shallow trenches and pits were excavated. Essentially all of this work was done prior to 1953 when the applicant lengthened one of the adits, extended the 386-foot inclined shaft to its present bottom, and drilled several surface diamond drill holes. Work was discontinued in October 1955.

1/ Geologist, U. S. Geological Survey
2/ Mining Engineer, U. S. Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE

(date)

The only major workings accessible during the examination were the adits. Available production records are confined to a shipment, during 1936, of about 39 tons of ore containing 0.91 percent copper. Additional small tonnages may have been shipped from the workings of Centroid claim No. 17.

The Centroid property is underlain by granite that grades into gneissic and schistose rocks at places. Intruding the granite are several basic dikes that trend either northwesterly or easterly. The dikes apparently occupy the principal fractures and faults in the granite. Other fractures and faults are present at several places.

Ore mineralization is confined to discontinuous veinlets that occupy fractures in both the granite and dikes. Most of the observed veinlets range from one-eighth to one-half inch in width. At a few places several of these veinlets occur in a single fracture zone. Chalcopyrite, the primary ore mineral, is associated with specular hematite, quartz, jasper, siderite, and pyrite. The secondary minerals are limonite, chrysocolla, malachite, azurite, and chalcocite.

Exploration of probably the largest and most highly mineralized zone by an inclined shaft and drifts, and 2 diamond drill holes resulted in unfaverable findings. Total known production from these workings is the reported 39 tons of 0.91 percent copper ore. At the surface, the zone pinches and swells along its traceable

length of about 200 feet. A sample of the widest (3.8 feet) and probably the most highly mineralized portion of the zone at the surface assayed 1.79 percent copper. Both diamond drill holes penetrated the projected extension of the zone. Only one of the holes encountered minor amounts of chalcopyrite in a zone comparable to that sampled.

It can be concluded with the presence of significant reserves of copper ore on the Centroid property are not supportable on the basis of unfavorable geologic conditions and the disappointing results of rather extensive exploratory work. It follows that Governmental aid in exploration at this property is not warranted.

DMEA-4037 (COPPER), CENTROID CONSOLIDATED MINES, INC.
YUMA COUNTY, ARIZONA

TRANSMITTED

FEB 16 1956

Engineering Report

By T. M. Rennie
Mining Engineer
U. S. Bureau of Mines

January 1956

Reviewed by
DMEA OPERATING COMMITTEE

(date)

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DMEA-4057 (COPPER), CENTROID CONSOLIDATED MINES, INC.
YUMA COUNTY, ARIZONA

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Extent and ownership of the property — 4
Present status — 4
Description of the deposits — 5
Ore reserves — 7
Conclusions and recommendation — 7

ILLUSTRATIONS

Figure No. — Following page

1 Location map — 1
2 Claim map — 4
3 Geologic map — (See Geological Report)

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INTRODUCTION

The Defense Minerals Exploration Administration received an application from the Centroid Consolidated Mines, Inc., for aid in a proposed exploratory project at the corporation's property in Yuma County, Ariz. The application, dated Nov. 14, 1955, proposed exploration for copper by drilling 4 diamond drill holes for a total depth of 2,100 feet. Cost of the work was estimated at $21,040.00. The application was docketed as DMEA-4057, reviewed by the Operating Committee, then sent to the Field Team, Region III, for a field examination of the property.

The property was examined for the Defense Minerals Exploration Administration on January 4, 1956 by J. N. Faick, geologist, U. S. Geological Survey and T. M. Rusale, mining engineer, U. S. Bureau of Mines. They were accompanied by O. J. Lessenschloss, J. C. Kostelnik, and G. F. Blair, respectively the corporation's president, secretary, and treasurer. Also present was Charles H. Dunning, Consulting mining engineer for the corporation.

LOCATION AND ACCESSIBILITY

The applicant's property is about 8 air-miles due north of Wenden, Ariz., a village on U. S. Highway 60 and 70, and the Atchison, Topeka and Santa Fe Railway. The property is situated in Secs. 7, 18 and 19, T. 7 N., R. 12 W. and Secs. 12, 13 and 24, T. 7 N., R. 13 W., Kilgworth Mining District, Yuma County, Ariz. (figure 1).

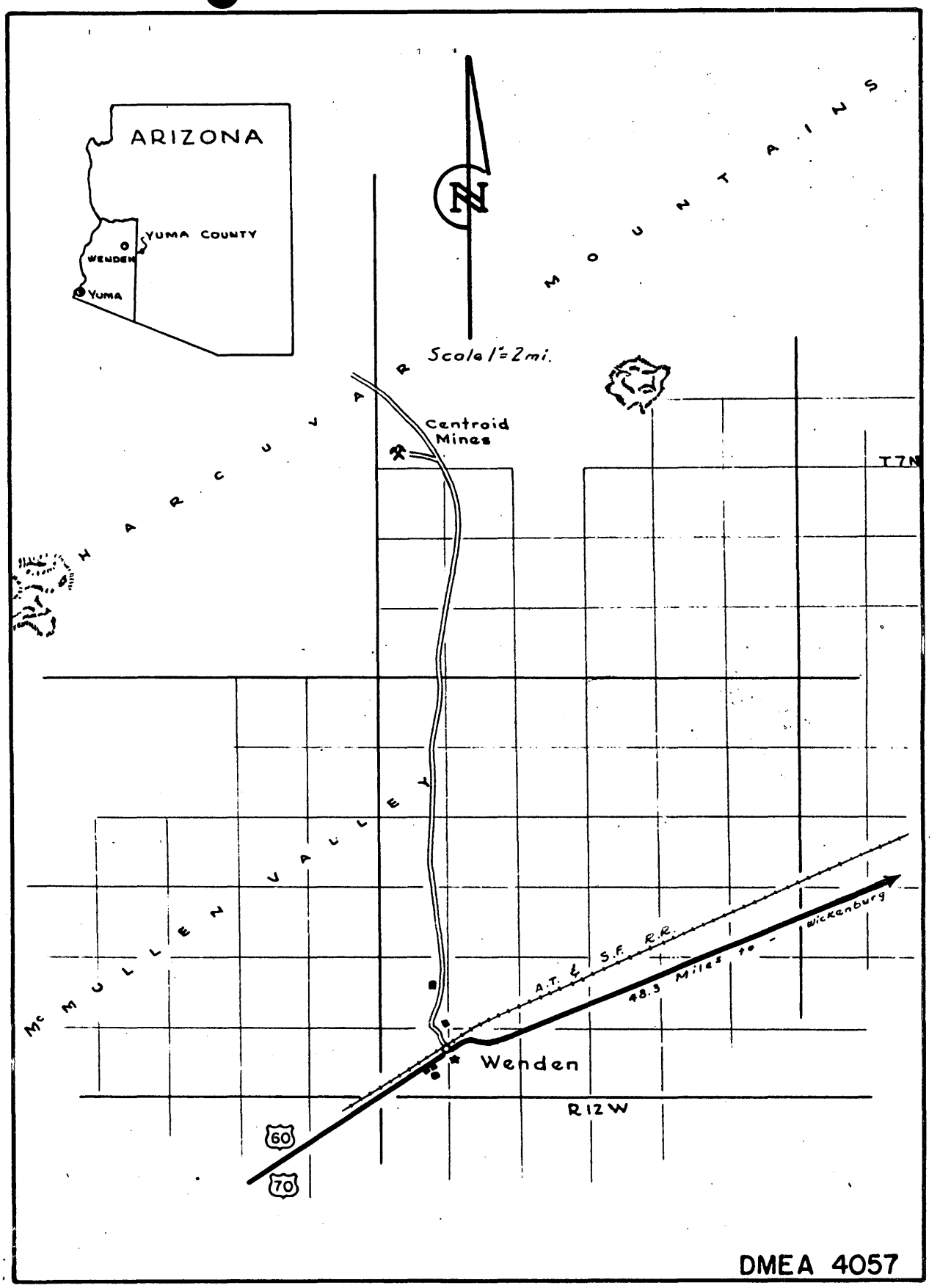

FIG.-1- LOCATION MAP, CENTROID CONSOLIDATED MINES INC.

YUMA COUNTY, ARIZONA

The property may be reached from Mexican by traveling north for 8.7 miles on the county-maintained Cunningham Pass dirt road, thence 0.25 mile west on a graded road to the mine camp. The camp is visible from the road junction that is signed "Centroid Mines".

TOPOGRAPHY, PHYSICAL FEATURES AND CLIMATE

The Centroid Consolidated Mines are situated in the moderately rugged Cunningham Pass area at the crest of the northeasterly trending Hercules Mountains. Altitudes on the property range from about 700 to 1,800 feet.

Vegetation is mainly confined to a very light and scattered growth of forage grasses, and a few varieties of desert shrubs.

Summers are hot and winters are mild. Annual precipitation probably is near 10 inches. It occurs principally as heavy rainfalls during July and August, and light rainfalls during January and February.

There are no permanent streams in the district. Water for domestic and mining purposes is obtained from old mine workings and wells.

HISTORY AND PRODUCTION

Charles H. Dunning, in a report attached to the application, states the following regarding history and development of the Centroid Consolidated Mines' property:

"The oldest work on the group was the Van Ess shaft on the Jubilee No. 2 claim. This shaft is supposedly 325 feet deep, at an incline of 54 degrees. It was sunk about 1906. I know of no one who is familiar with the underground workings, but I believe that some

years ago the dump contained a considerable quantity of both carbonate and sulphide copper ore, which has since been gleaned and removed. There appears to be very little geological reason for sinking the shaft where it is.

"The 'Main Shaft' was sunk by Wm. B. Harris in the 1930's. It is vertical and attained a depth of 350 feet with a long crosscut to the south at the bottom. This crosscut cut at least one copper mineralized zone, called the "October Vein" but general mineralization was sparse, indicating that further depth, or a different location for exploration, was necessary.

"The Reyes Main shaft was sunk on an incline of 40 degrees, starting on an iron outcrop, and following the dip of the formation. Various "leads" were followed by crosscuts and drifts, with some showing of copper ore in irregular occurrences.

"A diamond drill hole was put down from a location approximately 800 feet northeast of the collar of this shaft, at a course toward the shaft, and a dip of 48 degrees to intersect this zone at about 600 feet on its dip, or 475 feet vertical. Log of this hole, together with cores, are available for inspection.

"Cores were not systematically assayed, but several zones were put showing copper mineralization, although below commercial grade. This additional depth has shown a distinct improvement over the conditions in either the Reyes Main or vertical shafts.

"After removal of the drill, when the cores were re-examined, it was discovered that the last bit of core again showed copper mineralization.

"Another diamond drill hole was put down on the Black Hawk claim, at a vertical angle of 55 degrees, to cut the Cunningham Fault zone. The zone itself did not core, but some 21 feet in the west wall showed a small copper content.

"The outcrop of this fault is heavily mineralized with iron in places, but although the fault zone has no doubt been tested in many places, it has never produced a copper orebody."

According to Carl J. Lamschlose, president of the corporation, Centroid Consolidated Mines intermittently explored the property from the latter part of 1955 to October 1965. During this period,

access roads were built, the diamond drilling mentioned by Dunning was done, the Keyes Shim shaft was deepened from 250 to 385 feet from the surface, and the adit west of the Van Eck shaft was extended from 175 to 250 feet from its portal. Since then, a caretaker has lived on the property.

Readily available records of production from the Centroid Consolidated Mines are confined to the corporation's record of 1 shipment from an unknown location in the Keyes Shim shaft. This shipment amounted to 28.69 tons of ore containing 0.91 percent copper and 0.43 ounce gold and 0.40 ounce silver a ton.

EXTENT AND OWNERSHIP OF THE PROPERTY

The property comprises a group of 12 unpatented and 31 unpatented lode mining claims (figure 2). It is reportedly owned by the applicant, Centroid Consolidated Mines, Inc., 650 N. First Ave., Phoenix, Ariz. Officers of the corporation are: Carl J. Lamschless, president; Albert M. Regnily, vice president; A. G. Haigler, vice president; M. R. Mortsmer, vice president; Joseph G. Kostelnick, secretary; and Glen F. Blair, treasurer.

PRESENT STATUS

Camp

The camp consists mainly of 5 small bunk houses, a 20- by 30-foot warehouse, a 12- by 20-foot change room, and a 10- by 16-foot light plant building, and a 6,500-gallon water storage tank. Two

of the bunk houses are equipped with stoves and refrigerators. Electricity for lighting is furnished by a 32 K. W. plant. Water for domestic purposes is pumped from the main shaft with a gasoline engine.

Mine Workings

The principal mine workings include the vertical Main shaft and the inclined Horse Whim and Van Eck shafts (figures 2 and 3). The Main shaft, equipped with a headframe, is reportedly 300 feet deep. Workings from the shaft are confined to one level, the 300, and consist of a 400-foot south crosscut from which a 150-foot drift has been driven in a westerly direction. The Horse Whim shaft is equipped with headframe, a gasoline-powered single-drum hoist, and a skip. It reportedly has an inclined depth of 386 feet. A total of about 200 feet of drifts have been run from the 150-, 215- and 375-foot levels. The only data on the Van Eck shaft is its reported depth of 322 feet. Other principal workings include a 250-foot adit near the Horse Whim shaft and 4 short adits near a shaft on Centroid No. 17 claim.

None of the shafts presently are accessible.

DESCRIPTION OF THE DEPOSITS

The applicant's property is underlain by granite, that at places grades into gneissic and schistose rocks. Several basic dikes intrude the granite. These dikes trend either northwesterly or easterly and apparently occupy the principal fractures and faults in the granite. Other faults and fractures are evident at several places.

Ore mineralization is confined to discontinuous veinlets that occupy fractures in both the granite and dikes. Most of the observed veinlets are from one-eighth to one-half inch in width. At a few places several veinlets are present in a single fracture zone that may be as much as 18 inches wide. The primary minerals are specular hematite, quartz, jasper, barite, siderite, pyrite, and chalcopyrite. Secondary minerals are limonite, chrysocolla, malachite, azurite, and chalcocite. None of these were present in appreciable concentrations.

Probably the largest and most strongly mineralized zone observed is that explored by the Horse Mine shaft and workings, and by 2 diamond drill holes. The zone strikes from N. 10 W. to N. 30 W. and dips 30 to 40 degrees northeast. At the surface the zone pinches and swells along its traceable length of about 200 feet. This zone consists mainly of limonite, copper stains, and small amounts of quartz in altered granite. The widest and most highly mineralized portion of the zone at the surface was sampled by the examining team. The sample representing a width of 3.8 feet assayed 1.79 percent copper. According to the applicant, no zones of significant copper mineralization were developed by the shaft and its workings, but the applicants state that material at the bottom of the shaft contained about 2 percent copper. Core of the 2 diamond drill holes

was inspected by the examining team. It is believed that both holes penetrated the projected horizon of the mineralized zone. Only one of the holes encountered minor amounts of chalcopyrite in a zone comparable to that sampled.

ORE RESERVES

The Centroid property contains no measurable, indicated, or inferred reserves of copper ore.

CONCLUSIONS AND RECOMMENDATION

Copper mineralization on the Centroid property occurs as discontinuous veinlets at widely scattered places in fractured granite. Several such veinlets are present in probably the largest and most highly mineralized zone. Exploration of this zone has indicated that it contains little or no minable ore reserves in view of the low copper content and limited extent.

Governmental aid in additional exploration of the Centroid property is not warranted because geological conditions are not favorable for the finding of significant reserves of copper ore.

DMEA
Date Rec'd.

FEB 14 1956

BUREAU OF MINES
Denver, Colorado

Box 4126 University Station
Tucson, Arizona

RECEIVED
FEB 23 1956

February 8, 1956

TRANSMITTED
FEB 16 1956

MEMORANDUM

To: E. N. Harshman

From: John N. Faick

Subject: DMEA application 4057, Centroid Consolidated Mines, Kilsworth District, Yuma County, Arizona

Transmitted herewith are the original and 8 copies of my geological report on the examination of the above subject property. Denial of the application is recommended because of the small size, low grade, and erratic distribution of the mineralized zones. Geological conditions do not indicate that significant ore reserves exist on the Centroid property.

The Survey's copy of the brochure is enclosed.

John N. Faick

John N. Faick

JNF:ms

Enclosures

cc. Harshman (8)
Storms

Reviewed by
DMEA OPERATING COMMITTEE

(date)

U. S. DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

RECEIVED
FEB 23 1956
TRANSMITTED
FEB 16 1956

FIELD TEAM, REGION III

GEOLOGY

EXAMINATION REPORT

DMEA 4057

CENTROID CONSOLIDATED MINES COMPANY, INC.

YUMA COUNTY, ARIZONA

(Copper)

By
John N. Faick
Geologist
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE

February 8, 1956

(date)

INTRODUCTION

The claims which constitute the properties of the Centroid Consolidated Mines Company, Inc. are situated in the Cunningham Pass area (fig. 1), about 8 miles north of Wenden, Yuma County, Arizona. Many attempts have been made during the last half century to exploit the deposits of the Cunningham Pass area. Three shafts and many hundreds of feet of underground workings have explored a small area south of the Pass, and west of it a shaft and a couple of adits developed a small deposit from which a few shipments of ore might have been produced. The property apparently was known as the "Robinson" at one time.

Reports have been prepared on the property (fig. 2) by W. Tovote, in January 1919, by Chas. Dunning in 1935, and by E. W. Mills in 1937, and these reports are said to be filed with the State Corporation Commission in Phoenix, Arizona. The property was examined in 1953 by R. Burton Rose, and by W. E. Kartchner, Geologists, both of San Jose, California. The reports by Dunning and Kartchner, a company prospectus, and several miscellaneous maps and reports were made available to the writer. The report which follows is based on inspection of the outcrops and shallow workings and is supplemented by the data provided by the applicant. None of the workings were entered more than a few feet because of inaccessibility or hazardous conditions.

GEOLOGY

The Cunningham Pass area (fig. 3) is underlain by granite, the character of which varies considerably from place to place. Most of the granite is coarse grained, slightly porphyritic, and in places is moderately pegmatitic. In some places, especially in the vicinity of Cunningham Pass, the granite is gneissic to schistose and is distinctly banded. Possibly some of this granite or gneiss is an intensely metamorphosed sediment. Several basic dikes, possibly diorite, intrude the granite. The dikes can readily be grouped into 2 sets, one set trending northwesterly and one set trending easterly. These dikes apparently occupy some of the principal fractures and faults in the granite; therefore, are an expression of the structural deformation which the granite has undergone. Faults and fractures not occupied by dikes are evident in several places on the property but none of them are sufficiently outstanding as to deserve special mention.

The granite and the dikes which intrude it are weakly and erratically mineralized throughout a relatively large area. The primary or hypogene minerals noted are specular hematite, quartz, jasper, barite, siderite, calcite, pyrite and chalcopyrite. Magnetite has been reported in some of the veins in the district but was not seen by the writer. Small amounts of chalcocite, which is probably of secondary origin, were observed with the chalcopyrite. Other secondary minerals are limonite, chrysocola, malachite and azurite. None of these minerals were found in appreciable concentrations at any place.

Most of the minerals mentioned above occur in narrow veinlets in fractured granite or dikes, and in a few places are found along the contacts between the dikes and granite. Most of the veinlets observed are only about 1/8 to 1/2 inch wide, but in some places there are several of these in a single fracture zone that might be as great as 18 inches wide. Specimens found on the dumps indicate that individual veins in the workings must attain widths of a few inches; however, the workings were not entered and the subsurface character of the veins could not be determined. However, it is believed that inspection of the outcrops and dumps provide suitable evidence of the character of the deposits, and there is no geological reason to believe the deposits change in size or quality with increasing depth.

In addition to the minor veins mentioned above there are stockworks in which veinlets occupy fractures in relatively large breccia masses. One of these stockworks is in the west corner of the Jubilee No. 2 claim and has been explored by an adit about 250 feet long. This forms a low hill which is resistant to erosion because of the presence of quartz veins and silicification of the granite which accompanied formation of the veins. Individual blocks in this breccia are very large, some of them being 2 or 3 feet across, and the veinlets seen by the writer are very narrow, and in nearly every respect are similar to those seen elsewhere on the property. The outcrop of the stockwork is strongly iron stained, apparently due to oxidation of siderite and pyrite in the quartz veinlets. Trace amounts of chalcopyrite were noted in some of the veinlets.

The largest and most strongly mineralized zone observed by the writer is exposed near the collar of the Horse Whim shaft (figs. 3 and 4) and apparently was explored by this shaft. This zone consists mostly of limonite and copper stains associated with small amounts of quartz in an altered granite. The most strongly mineralized zone is about 3.8 feet thick and there is about 5 feet of altered granite in the footwall and possibly slightly more in the hanging wall. The zone developed by the Horse Whim shaft strikes from N 10 W to N 40 W and dips from 30 to 40 degrees northeast. It is traceable for about 200 feet along the surface where its outcrop is marked by iron stain similar in appearance to that at the outcrop of the breccia or stockwork on the Jubilee No. 2 claim.

Attempts to develop ore bodies at Cunningham Pass were first concentrated on the narrow high-grade fissure veinlets in the granite and dikes, and later attempts were made to reach a zone of secondary enrichment which many operators believe exists below the zone of oxidation. Attempts were also made to hand sort and ship comparatively low-grade high-silica ores for fluxing purposes. In recent years major efforts were devoted to proving that the area contained large low-grade deposits, and that an extensive zone of secondary enrichment, containing copper, gold and silver, exists at greater depths than any previously obtained.

There is virtually no geological evidence to support the operator's conclusions that larger or richer deposits exist at greater depth. There are no gossans of appreciable size and no leached outcrops that might indicate the presence of significant amounts of ore minerals. On the dumps and in the diamond drill core there is chalcopyrite and pyrite, which indicates that a zone of primary mineralization lies at a shallow

depth. Trace amounts of a mineral identified in the field as chalcocite indicates that a zone of enrichment was found by the workings at comparatively shallow depth. Although pyrite and chalcopyrite are found disseminated in some of the diamond drill core, this mineral appears to occur principally near zones of fracturing, and does not occur in sufficient amounts throughout a large enough area to constitute a "porphyry" type copper deposit.

EXPLORATION AND DEVELOPMENT

The property has been explored by at least 4 shallow shafts, many hundreds of feet of workings, and a few drill holes. On the Jubilee claim No. 5 is located the vertical Main shaft, which is reported to be 300 feet deep. On the 300 level a 600 ft. long crosscut was driven southward. This cut a diorite dike from 200 to 300 feet, and from 300 to 386 feet cut a brecciated mineralized fault, according to reports. This breccia zone is called the October vein and it is said to contain pyrite, chalcopyrite, bornite and chalcocite. On the Jubilee No. 2 claim the inclined Horse Whim shaft was sunk to a depth of 386 feet and about 500 feet of drifts and crosscuts were driven.

Several very small cuts explore mineralized zones on the low ridge west of Cunningham Pass. The largest deposit here was explored by a shaft of unknown depth, and by a couple of adits. Raises extend from the lower to the upper adit and it appears likely that a small amount of ore may have been stoped from this small deposit. At these workings the minerals are about the same as found elsewhere in the area.

The deposits were explored by 5 diamond drill holes, the locations of which are shown on fig. 4. Generalized logs of these holes are given in Table I.

TABLE I

Hole #1 Bearing S 45° W, Inclination -45°, Black Hawk No. 1 Claim

0-216 (Bott.) Light colored, fine grained granite.
55 ft. of core recovered.

Hole No. 2 Bearing Due South, Inclination -84°

0-100	AX core, granite, foliated in upper part. Aplitic and pegmatitic in lower part. Numerous hematite stringer veins in upper part. Thickest is about 2".
100-125	Granite, foliated. AX core.
125-150	Dark colored, basic dike.
150-158	Orthoclase and quartz, 3" brecciated and cemented with siderite (?) at about 153.
158-198	Dike; trace of hematite.
198-224	Granite 2" of hematite cementing qtz. breccia at 198 ft. Granite is foliated.
224-228	Dike, basic.
228-271	Granite, sl. foliated. Dike at 242-244.
271-283	Core missing.
283-293	Granite.
293-310	Granite.
310-320	Granite. Traces of disseminated chalcopyrite
320-336	Specularite (estimated 40%) cementing brecciated granite. A few very small masses and veinlets of chalcopyrite in both specularite and granite.
336-366	Small amounts of chalcopyrite in strongly altered granite. Traces of specularite. Very poor core recovery. Apparently fault zone. Minor calcite.

Hole No. 3 Bearing S. 67° W., Inclination -45°

0-355	Impure granite.
355-377	Dike, Veinlets chalcopyrite in dike at 375.
377-380	Granite. Trace chalcopyrite at 380'.
380-383	Dike
383-484	Granite, very poor recovery. Slight alteration. Traces of chalcopyrite.
395-405	Sludge assay Cu 0.30, Au Trace, Ag 0.80
405-420	Sludge assay Cu 0.05, Au Trace, Ag 0.60
484-510	Dike
510-525	Granite
525-539	Dike
539-546	Granite, slightly altered
546-590	Granite
590-595	Core missing. Granite reported. Traces of chalcopyrite reported at bottom
595'	total depth

SAMPLING, GRADE AND PRODUCTION

Analyses of the ore that are available to the examiners are shown on fig. 4. Only one mineralized zone warranted sampling by BMEA. This was near the collar of the Horse Whim shaft, where a sample was cut across a zone 3.8 feet thick and was found to contain 1.79 percent copper. This is the largest zone observed, and appeared to be the richest; therefore, no other samples were cut. The only shipping record available indicates that 39.69 tons of ore was shipped from the Horse Whim shaft to Magma Copper Co., Superior, Arizona December 7, 1936. It is claimed that additional shipments, possibly amounting to a few hundred tons of ore, were shipped by sorting the dumps, but there is little evidence to support this statement.

Former operators cut samples A to H, inclusive, for assay in several places in the mine workings. According to a prospectus on the property, dated August 5, 1952, "These assays were taken from the better looking ore showings, and are selected samples taken from ore in place."

Analyses available to the writer are shown in Table II.

TABLE II
ANALYSES OF SAMPLES, CENTROID CLAIMS

Description	Percent Copper
39 tons shipped to Magma Copper Co.	8.91
Average of 5 gossan samples cut by W. Tovote	1.33
BMEA, 3.8 ft. wide at Horse Whim Shaft	1.79
Selected sample of Horse Whim dump, reported by applicant	1.6
Sample "A", 14 ft. face, W. drift, 375 level	1.6
Sample "B", Face, E. XC, 375 level	1.8
Sample "C", Bottom of Horse Whim Shaft	2.45
Sample "D", Shaft, depth 300 feet (probably 265 ft.; fig.4)	7.6
Sample "E", Drill cuttings at 215 level	1.4
Sample "F", 150 level drift	8.95
Sample "G", Oxide ore on 150 level drift	32.9
Sample "H", Coatings on wall, 215 level	4.2

If the abnormally high-grade samples, the efflorescent coatings and secondarily enriched ores are discarded from this list of samples the remainder would have an average grade of about 1.5 percent copper. This is the same as the writer's estimated grade of the ore material seen in the dumps and in the diamond drill core.

ORE RESERVES

The small size of the mineralized zones and the erratic distribution of the ore throughout a large area prevent making an acceptable estimate of ore reserves, and no estimate was made. There is no measured or indicated ore of minable grade. Possibly considerable ore containing about 1.5 percent copper might be inferred, but it could not be profitably recovered. No evidence was seen by the writer to support the applicant's idea that a large enriched zone exists at greater depth, or that a porphyry copper type of deposit exists in the Cunningham Pass area.

CONCLUSIONS AND RECOMMENDATIONS

The property of the Centroid Mining Company has been explored by mine workings and by drilling, none of which yielded encouraging results. The minor showings of copper are not of economic significance and apparently do not warrant additional exploration; therefore it is recommended that the application be denied.

File Copy
Surname

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

JAN 27 1956

Hon. Carl Hayden
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mines
Yuma County, Arizona

My dear Senator Hayden:

This is to acknowledge your letter of January 23, and to advise you that the Field Team states in their monthly report that the cited property will be examined this month.

You may be assured that, upon receipt of the Field Team report, this application for Government exploration assistance will be given our immediate attention, and you will be advised when final action is taken.

As requested, we are returning the copy of our letter to you, dated December 22, 1955.

Sincerely yours,

A. O. Mittendorf

Administrator

Enclosure

JWAlt/bjl (1/27/56)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Pennington
Mr. Kiilsgaard
Region III (2)
Chron.

R.C.G.

CARL HAYDEN, ARIZ., CHAIRMAN
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CHARLES E. POTTER, MICH.

EVERARD H. SMITH, CLERK
THOMAS J. SCOTT, ASST. CLERK

500

United States Senate

COMMITTEE ON APPROPRIATIONS

January 23, 1956

RECEIVED
JAN 24 1956

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration
Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

This refers to your letter of December 22, copy enclosed for identification, concerning the application of the Centroid Mines.

I shall appreciate your advising me of the present status of this matter.

Yours very sincerely,

Carl Hayden

U. S. S.

P. S. Please address reply to me sending me original and one copy. Kindly return enclosure.

File Copy
Surname
J-Alt
Finished

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

DEC 22 1955

Hon. Carl Hayden
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mines
Yuma County, Arizona

My dear Senator Hayden:

This is to acknowledge your letter of December 20, and to advise you that the cited application for Government exploration assistance was reviewed by the Base Metals Division of the Defense Minerals Exploration Administration and was referred to Mr. W. M. Traver, Executive Officer, DMEA Field Team, Region III, for a field examination on November 28.

We will advise you when the Field Team report is received and final action taken on this application.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

JWAlt/bjl (12/21/55)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Kiilsgaard
Mr. Pennington
Region III (2)
Chron.

CARL HAYDEN, ARIZ., CHAIRMAN

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United States Senate

COMMITTEE ON APPROPRIATIONS

December 20, 1955

RECEIVED
DEC 21 1955

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration
Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

Referring to my letter of November 9, a copy of which is attached, I shall be obliged for your full advice as to the present status of the Centroid Consolidated Mines application.

Yours very sincerely,

Carl Hayden

U. S. S.

P. S. Please address reply to me; sending me original and one copy.

CARL HAYDEN, ARIZ., CHAIRMAN
RICHARD L. NEUBERGER, OREG.
ALEXANDER WILEY, WIS.
EVERETT M. DIRKSEN, ILL.
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THOMAS J. SCOTT, ASST. CLERK

United States Senate
COMMITTEE ON APPROPRIATIONS

RECEIVED
DEC 21 1955

November 9, 1955

P. O. Box 1468
Phoenix, Arizona

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration
Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

Attached is a copy of a letter addressed to you on November 8, by the Secretary of the Centroid Consolidated Mines of Phoenix, Arizona.

I shall appreciate your keeping me advised of the status of the application submitted by this company.

Yours very sincerely

Carl Hayden

U. S. S.

COPY FOR YOUR INFORMATION

RECEIVED
DEC 16 1955

December 8, 1955

Docket

Memorandum

To: W. R. Storms

From: Acting Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4057 (Copper), Centroid Consolidated Mines, Inc., Centroid Consolidated mine, Yuma County, Arizona

Enclosed is an application submitted by Centroid Consolidated Mines, Inc., in the amount of $21,840.00.

A field examination and suitable report are required. The examination report should be sent directly to the Executive Officer Region III, with a copy of the memo of transmittal to this office.

Your attention is called to copy of letter from Senator Hayden. Please notify Executive Officer as soon as examination has been completed, with a copy of your memo to this office.

JOHN F. SHAW

John F. Shaw

Enclosures

cc: E. H. Harshman
J. H. Faick
W. M. Trever (3)
J. F. Shaw

Sec, Op. Com (2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED
DEC 12 1955

December 7, 1955

[illegible] New Customhouse
Denver 2, Colorado

Betty

Docket

Memorandum

To: J. F. Shaw (With brochure)
J. N. Fuich

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4057 (Copper), Centroid Consolidated Mines, Inc., Centroid Consolidated mine, Yuma County, Arizona

Enclosed is the subject application in the amount of $21,840.00. Also attached is a copy of a letter from the Chairman of the Operating Committee dated November 28, 1955 and attached memoranda of review by H. E. Nelson and J. W. Pennington. Attached also is a copy of a letter from Carl Hayden, U. S. Senator from Arizona.

A field examination and suitable report are requested. Will you please advise this office as soon as the field examination has been completed, so that we may reply to Senator Hayden's letter.

E. M. Harshman

E. M. Harshman

Enclosures

HMC:ab

cc: Sec. Op. Comm. (2).
Harshman
Docket 4057
Chron.

(6)

CARL HAYDEN, ARIZ., CHAIRMAN

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DENNIS CHAVEZ, N. MEX.
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EVERARD H. SMITH, CLERK
THOMAS J. SCOTT, ASST. CLERK

United States Senate

COMMITTEE ON APPROPRIATIONS

DMEA
Date Rec'd.
RECEIVED
DEC 12 1955
DEC 5 1955
BUREAU OF MINES
Denver, Colorado

December 2, 1955

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Dear Mr. Traver:

It is my understanding that application for Government assistance to explore the properties of the Centroid Consolidated Mines, Inc., Docket No. DMEA-4057 (Copper) has been referred to your office for field examination.

I shall appreciate your advising me at such time as you have completed this examination.

Yours very sincerely,

Carl Hayden

U. S. S.

P.S. Please address reply to me; sending me original and one copy.

File Copy
Surname
J. A. Selfridge

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

NOV 28 1955

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mine
Yuma County, Arizona

Dear Mr. Traver:

A review of the cited application, of which you have a copy, indicates that it will need a complete study by the Field Team. Will you please have an examination made of this property and submit your recommendations to us.

Enclosed are copies of memorandums dated November 16 and November 17, 1955, by N. E. Nelson, USGS, and J. W. Pennington, USBM, respectively, giving their recommendations.

Sincerely yours,

George C. Selfridge
By ESJ
Chairman, Operating Committee

Enclosures

JWAlt/er 11/25/55
Copy to: Docket
Admr R File
Oper. Committee
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:
P. F. Yopes By ESJ
Member, Bureau of Mines
Thor H. Kiilsgaard By ESJ
Member, Geological Survey

R.C.K.

File Copy
Surname
J. All.
Kiilsgaard
Selfridge
Yoder

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

NOV 28 1955

Mr. Joseph C. Kostolnik, Secretary
Centroid Consolidated Mines, Inc.
650 N. First Avenue
Phoenix, Arizona

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mine
Yuma County, Arizona

Dear Mr. Kostolnik:

The application for Government assistance to explore the cited property has been reviewed by the Base Metals Division of the Defense Minerals Exploration Administration, and has been referred for a field examination, to:

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Bldg
Denver 2, Colorado

The Regional Office will contact you at an early date as to when an examination is to be made. Any assistance that you may give the members of the Field Team during the examination will be appreciated.

Sincerely yours,

Frank E. Jennison

ACTING Administrator

JWAlt/er 11/25/55
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Chron.
Region III (2)

R.G.B.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

RECEIVED
NOV 18 1955

November 17, 1955

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of application, Docket No. DMEA 4057 (copper) Centroid Consolidated Mines, Yuma County, Arizona, application dated November 8, 1955, received November 15, 1955, $21,840

According to the examination report of C. H. Dunning, submitted with the application, the general area that has been partially explored by the Van Eck shaft, the Main shaft, the Horse Whim shaft, and diamond drill hole No. 3, is sparsely mineralized. It is the engineer's (Dunning's) belief that further depth or a different location for exploration is necessary.

The opinion to explore at further depth is based on Kartchner's theory that copper mineralization should improve with depth. However, supporting evidence for selection of the proposed drill sites is insufficient.

To obtain the information required for evaluation of the application, it is recommended that a Field Team examination be made of the property.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
R. W. Geehan
Thor Kiilsgaard, U.S.G.S.
F i l e s

RECEIVED
NOV 18 1955

November 17, 1955

Memorandum

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From: J. W. Pennington, Branch of Base Metals

Subject: Review of application, Docket No. DMEA 4057 (copper) Centroid Consolidated Mines, Yuma County, Arizona, application dated November 8, 1955, received November 15, 1955, $21,840

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J. W. Pennington

J. W. Pennington

JWPennington/vr

Copy to: Division of Minerals
Branch of Base Metals
J. W. Pennington
R. W. Geehan
Thor Kiilsgaard, U.S.G.S.
F i l e s

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
NOV 17 1955

November 16, 1955

Re: DMEA 4057
Centroid Consolidated Mines
Centroid Consolidated Mine
Yuma County, Arizona
$21,840 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application.

The applicant requests assistance in exploring at depth by four diamond drill holes a long-known mineralized area which has been prospected by shafts, adits, and drilling.

The work proposed consists of:

	Estimated cost
(a) Diamond drilling, etc.	$17,850.00
(b) Engineering & Geological Consultants Supervision - Watchman	2,850.00
(c) Fuel, water, analytical work, contingencies	1,140.00
	$21,840.00

Except for the core from Hole No. 3 (old) little information is available concerning the results of probably extensive underground work. Shaft dumps have been sorted for what ore was sent to them which may have been little since the records indicate no ore was produced.

A map which accompanies the application (Central Portion Group) shows many cuts, trenches, etc., but no data concerning the reason for or the results of the work. That further work is justified appears doubtful, unless the general nature of the surface suggests leaching with possible secondary enrichment, a supposition not supported by the log of drill hole No. 3.

Referral to the Field Team for appraisal, perhaps an examination, is recommended.

N. E. Nelson

N. E. Nelson

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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
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N. E. Nelson

N. E. Nelson

H. M. Meyer, 3623

cc: Director's reading 4212
Branch reading 4212
DMEA (3) ✓
Docket file

NENelson:jeh
11/16/55

File Copy
Surname

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

NOV 16 1955

Hon. Carl Hayden
United States Senator
Post Office Box 1468
Phoenix, Arizona

Re: Docket No. DMEA-4057 (Copper)
Centroid Consolidated Mines, Inc.
Centroid Consolidated Mine
Yuma County, Arizona

My dear Senator Hayden:

This is to acknowledge your letter of November 9, 1955, and to inform you that we will keep you advised as to the status of the cited application which was received by us on November 14.

As requested, we are returning the copy of Mr. Joseph C. Kostelnik's letter to Mr. C. O. Mittendorf, dated November 8, 1955.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

as to your Washington Office.

JWAlt/er 11/15/55
Copy to: Docket
Admr & File
~~Op. Committee~~
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

CARL HAYDEN, ARIZ., CHAIRMAN

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EVERETT MC KINLEY DIRKSEN, ILL.
CHARLES E. POTTER, MICH.

EVERARD H. SMITH, CLERK
THOMAS J. SCOTT, ASST. CLERK

Com

United States Senate

COMMITTEE ON APPROPRIATIONS

November 9, 1955

P. O. Box 1468
Phoenix, Arizona

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration
Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

Attached is a copy of a letter addressed to you on November 8, by the Secretary of the Centroid Consolidated Mines of Phoenix, Arizona.

I shall appreciate your keeping me advised of the status of the application submitted by this company.

Yours very sincerely,

Carl Hayden

U. S. S.

P.S. Please address reply to me sending me original and one copy. Kindly return enclosures.

P.P.S. Kindly address reply to the Arizona address given above.

RECEIVED
NOV 14 1955

November 15, 1955
Subject: DMEA-4057
Re: Exploration Assistance
Centroid Consolidated Mines

Centroid Consolidated Mines
650 N. First Avenue
Phoenix, Arizona

Gentlemen:

The receipt of your application dated November 8, 1955, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4057 and referred to the Base Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

CENTROID CONSOLIDATED MINES
650 N. 1st Avenue
Phoenix, Arizona

November 8, 1955

RECEIVED
NOV 14 1955

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration
Administration
Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

After conferring with the United States Bureau of Mines, Tucson, Arizona, and following their advice and recommendations, we are herewith enclosing completed Forms No. MF 103; Reference Sheets Nos. 1 and 2 covering mining claims; maps and drilling graphs and engineers reports of C. H. Dunning, Arizona Mining Engineer, Phoenix, Arizona.

Awaiting your favorable reply.

Yours very truly,

CENTROID CONSOLIDATED MINES, INC.

Joseph C. Kostolnik
Secretary

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. OMEA-4057
Metal or Mineral Copper
Date Received 11-14-55
Estimated Cost $21,840.00
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Centroid Consolidated Mines 650 N.First Ave. Phoenix, Ariz. Carl J. Lunenschloss, President. Albert M. Reguly V.Pres. A.C.Haigler, V.Pres. W.R.Murhamer, V.Pres, Joseph C. Kostolnik, Secretary. Glen F. Blair, Treasurer. John J. McGrath,Asst. Treas. 650 N. 1st Ave.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. Incorporated in the state of Arizona

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract Ellsworth Mining District, Cunningham Pass, Yuma County, Arizona, in Sec. 7, 18 and 19, Township 7 N. R. 12 West and Sec. 12, 13 and 24, Township 7 N. Range 13 West

(*b*) State any mine name by which the property is known. Centroid Consolidated Mines

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise owner 12 Patented and 31 unpatented Claims

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it None

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See ref. sheet

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See engineers report

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. No current prod.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See Engineers report

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See Engineers report

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.
See Engineers report

RECEIVED
NOV 14 1955

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Copper

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See Engineers report

(*c*) The work will start within 30 days and be completed within 4 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. Considerable mining expr.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)?

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated November 8th, 195[illegible]

Centroid Consolidated Mines
(Applicant)

By C. J. Lamerschloss Pres.
Joseph C. Fairbank Sec.
Glen F. Blair - Treasurer

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

Reference Sheet #1

Par. 3. (f) Names of Unpatended Claims Location Notice Recorded in Yuma County, Arizona.

Name of Claim		Docket	Page
Jubilee No. 3	Amended Location	62	115
Oversight	" "	50	482
Capella No.2	" "	50	485
Capella No. 3	" "	50	486
Capella No.4	" "	50	487
Capella No.5	" "	50	488
Capella No.9	" "	62	114
Hancock No.5	" "	50	480
Centroid No.1	" "	52	255
Centroid No.2	" "	52	256
Centroid No.3	" "	52	257
Centroid No. 5	" "	62	116
Centroid No. 6	Book of Mines -	33	52
Centroid No. 7	Book of Mines -	33	53
Centroid No. 8	Amended Location	62	117
Centroid No. 9	" "	62	118
Centroid No.10	" "	62	119
Centroid No.11	" "	62	120
Centroid No.12	" "	62	121
Centroid No.13	" "	50	483
Centroid No.14	" "	50	484
Centroid No.16	" "	50	476
Centroid No.17	" "	50	477
Centroid No.18	" "	50	478
Centroid No.19	" "	50	479
Centroid No.20	" "	50	481
Centroid No.21	" "	52	258
Centroid No.22	" "	52	259
Centroid No.23	" "	52	260
Centroid No.24	" "	52	261
Centroid No.25	" "	52	262

Total 31 Claims

Par. 4 Physical Discription

(a) Exploration operations. Diamond drilling program just completed.
1055 feet drilled in 3 locations.
Previously drilled 1116 feet in 2 locations.
Total drilled 2171 feet.
1 Incline shaft down 385 ft. (ore on dump)
Main shaft (vertical) down 350 ft. with about 600 ft cross-cut
(now has about 50 feet of water which can be used for drilling operations.
1 Tunnel in about 250 feet. Also various shafts 60 to 100 ft. deep.

CENTROID CONSOLIDATED MINES
650 N. 1st AVENUE
PHOENIX, ARIZONA

Reference Sheet #2

Par. 5, (d) Our Registered Mining Engineer will direct and approve program.
Supervission by men who have considerable mining experience and who supervised our previous drilling.

Par. 6. Independent Contract

(a)	Diamond drilling (4 locations) 2100 ft. @ $8.50 per ft.	$17,850.00
(b)	Engineering & Geological Consultants	750.00
	Supervission - Watchman	2,100.00
(c)	Fuel, oil & gas (at mine during drilling operations)	90.00
(d)	Water supply (pump maintenance, piping etc.)	150.00
(g)	Analytical work, assays, reports, accounting	300.00
(h)	Contingencies (cementing, casings, etc.)	600.00
	Total cost of drilling program	$ 21,840.00

Par. 3. Applicant's Property rights

(c) Names of 12 Patented Claims

Jubilee No. 2	Hancock No. 1
Jubilee No. 4	Hancock No. 2
Jubilee No. 5	Hancock No. 3
Black Hawk	Hancock No. 4
Black Hawk No. 1	Centroid No. 4
Black Hawk No. 3	Centroid No. 15

CENTROID CONSOLIDATED MINES
650 N. 1st AVENUE
PHOENIX, ARIZONA

CHARLES H. DUNNING
MINING ENGINEER
PHOENIX, ARIZONA

OFFICE
817 W. MADISON ST.
PHONE ALPINE 3-6272

RESIDENCE
1635 W. EARLL DR.
PHONE AMHERST 5-1132

November 3, 1955

Centroid Consolidated Mines Company
Phoenix, Arizona

Gentlemen:

Pursuant to your request I have made an examination of your Centroid group of mining claims. The purpose of the examination was to supply the technical data to attend an application for a DMEA exploration loan.

LOCATION

The group consists of 12 patented and ~~19~~ 31 unpatented mining claims located in the Cunningham Pass area of the Ellsworth Mining District, 10 miles north of Wenden, Yuma County, Arizona.

The legal description of the claims is attached elsewhere to this application.

GEOLOGY

The terrain consists of a basement of granite gneiss, varying in phase through true schist, to pegmatite. This old intrusion has been invaded by later intrusions of a basic type. These, together with mountain building, caused faulting and brecciation, and the later intrusions were accompanied by mineralizing solutions that have deposited copper in favorable channels and zones.

The geology of the location has been well studied and written up by Dr. Wayne E. Kartchner, under date of June 15, 1953, and reference is made to his report. One opinion expressed therein is of special interest and is as follows:

> "Hematite and siderite are intimately associated with the chalcopyrite, indicating deposition by the same processes. Presence of the siderite suggests the present topographical surface is at approximately the upper horizon of copper mineralization and deposition.
>
> Small stringers of chalcocite were seen cutting into the chalcopyrite giving evidence of secondary sulphide enrichment even at the shallow depth of the Horse Whim shaft. This feature gives promise of more en-

richment in deeper zones."

The main Cunningham Pass fault cuts through the easterly portion of the property, causing the "pass" through the mountains. Whether this is post-mineral, or pre-mineral, or what the displacement was, is unknown to me, but it does not seem to effect any of the economic aspects under consideration.

HISTORY and DEVELOPMENT

The oldest work on the group was the Van Eck shaft on the Jubilee No. 2 claim. This shaft is supposedly 322 feet deep, at an incline of 54 degrees. It was sunk about 1906. I know of no one who is familiar with the under-ground works, but I do know that some years ago the dump contained a considerable quantity of both carbonate and sulphide copper ore, which has since been gleaned and removed. There appears to be very little geological reason for sinking the shaft where it is.

The "Main Shaft" was sunk by Wm. B. Harris in the 1930's. It is vertical and attained a depth of 350 feet with a long crosscut to the south at the bottom. This crosscut, cut at least one copper mineralized zone, called the "October Vein", but general mineralization was sparse, indicating that further depth, or a different location for exploration, was necessary.

The Horse Whim shaft was sunk on an incline of 40 degrees, starting on an iron outcrop, and following the dip of the formation. Various "leads" were followed by crosscuts and drifts, with some showing of copper ore in irregular occurrences.

A diamond drill hole was put down from a location approximately 900 feet northeast of the collar of this shaft, at a course toward the shaft, and a dip of 45 degrees to intersect this zone at about 600 feet on its dip, or 475 feet vertical. Log of this hole, together with cores, are available for inspection.

Cores were not systemically assayed, but several zones were cut showing copper mineralization, although below commercial grade. This additional depth has shown a distinct improvement over the conditions in either the Horse Whim or ver-

tical shafts.

After removal of the drill, when the cores were re-examined, it was discovered that the last bit of core again showed copper mineralization.

Another diamond drill hole was put down on the Black Hawk claim, at a vertical angle of 55 degrees, to cut the Cunningham Fault zone. The zone, itself, did not core, but some 21 feet in the east wall showed a small copper content.

The outcrop of this fault is heavily mineralized with iron in places, but although the fault zone has no doubt been tested in many places, it has never produced a copper orebody.

DISTRICT HISTORY

Practically adjoining the Centroid group on the northwest is the old Critic Mine, that has had a considerable record of profitable copper production. The Arizona Department of Mineral Resources files show a definite record of direct shipments, without dates, of 1772 tons averaging .75 oz gold, and 11.5% copper. Total production of $500,000 was estimated by Elgin Holt, field engineer for the department, in a report dated: January 10, 1940.

Directly adjoining the Centroid on the north is the Little Giant. The dump indicates a shaft of several hundred feet in depth, and to my personal knowledge this dump, like the Van Eck, contained considerable copper some years ago. It has since been gleaned. There is no authentic data that I know of regarding the underground developments.

MINING FACILITIES

A high tension commercial power line, from Parker Dam to Phoenix, passes over the property. Also, a main natural gas line.

Ample water could no doubt be obtained from wells put down in the valley between the mine and Wenden.

The ten miles of road to the railroad at Wenden is a well

maintained county highway.

Reasonable freight rates have long been established from Wenden to the various smelters.

Mining activity of many types supplies an experienced labor pool in the district.

REFERENCE to MAPS

A map is attached showing the central portion of the claims, the past development, holes already drilled, and the drill holes advised for further exploration.

EXPLORATION ADVISED

Following Dr. Kartchner's theory that improvement should be expected in copper content (and therefore in size) of commercial ore zones; and considering the fact that drill hole No. 3 had again penetrated copper bearing rock at its bottom, I would advise putting down another hole parallel to this, about 150 feet to the east, and deeper. The results should be correlated with the previous hole, and would show trends, or consistency, or lack of consistency, and also explore the formation at further depth. If successful, the first hole (i.e. No. 3) could then be deepened.

On the entire group the area showing the best surface mineralization in a zone about 200 feet wide coursing through near the west corner of Hancock #2, with a northerly course, and headed directly for the Little Giant workings.

A south-west northeast ridge cuts through this zone, and there are cuts showing considerable copper in sub zones trending north and south, on the south side, top, and north side of this ridge.

Here there should be two diamond drill holes cutting the whole zone at a 45 degree angle from strategic points to the east; one on the south side of the ridge, and one on the north, cutting the zone at 400 to 500 feet depth. Good drill sites are available, and length of the holes would be approximately the same as the depths cut.

CHARLES H. DUNNING
MINING ENGINEER

On the Black Hawk #1 claim a drill hole was started with a south-west course and a 45 degree vertical angle. This only reached a depth of 216 feet - too shallow to prove anything. This is fairly potent territory and this hole should be continued to a depth of over 500 feet to properly explore this region.

The above program sums up as follows:

Hole No.	Site	Course	Dip	Depth
6	Centroid #16	West	45	500
7	Centroid #17	West	45	500
8	Near Camp	South-west	55	800
9	Deepen old #5	Southwest	45	300
				2100 Total

The above exploratory program should prove whether or not a coordinate drilling program is justified.

Respectfully submitted,

Chas H Dunning

REGISTERED MINING ENGINEER
CERTIFICATE EXPIRES
CHARLES H. DUNNING
DEC 31, 1955
ARIZONA, U.S.A.

CENTROID CONSOLIDATED MINES
650 N. 1st AVENUE
PHOENIX, ARIZONA

REGISTERED

30061

INTERIOR DEPT
NOV 14 1955
SECRETARY'S
MAIL CENTER

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration Administration
Department of the Interior
Washington 25,
D. C.

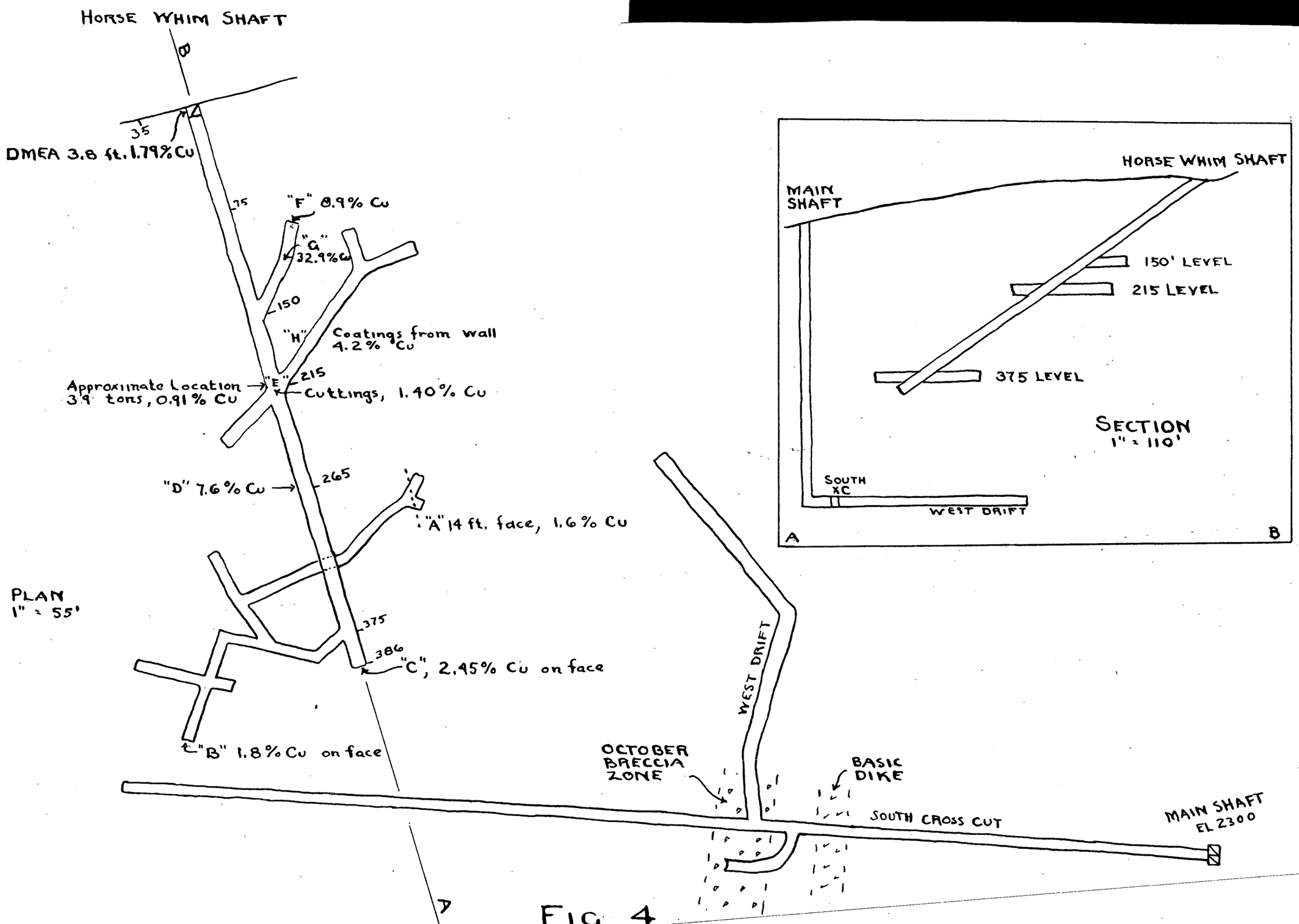
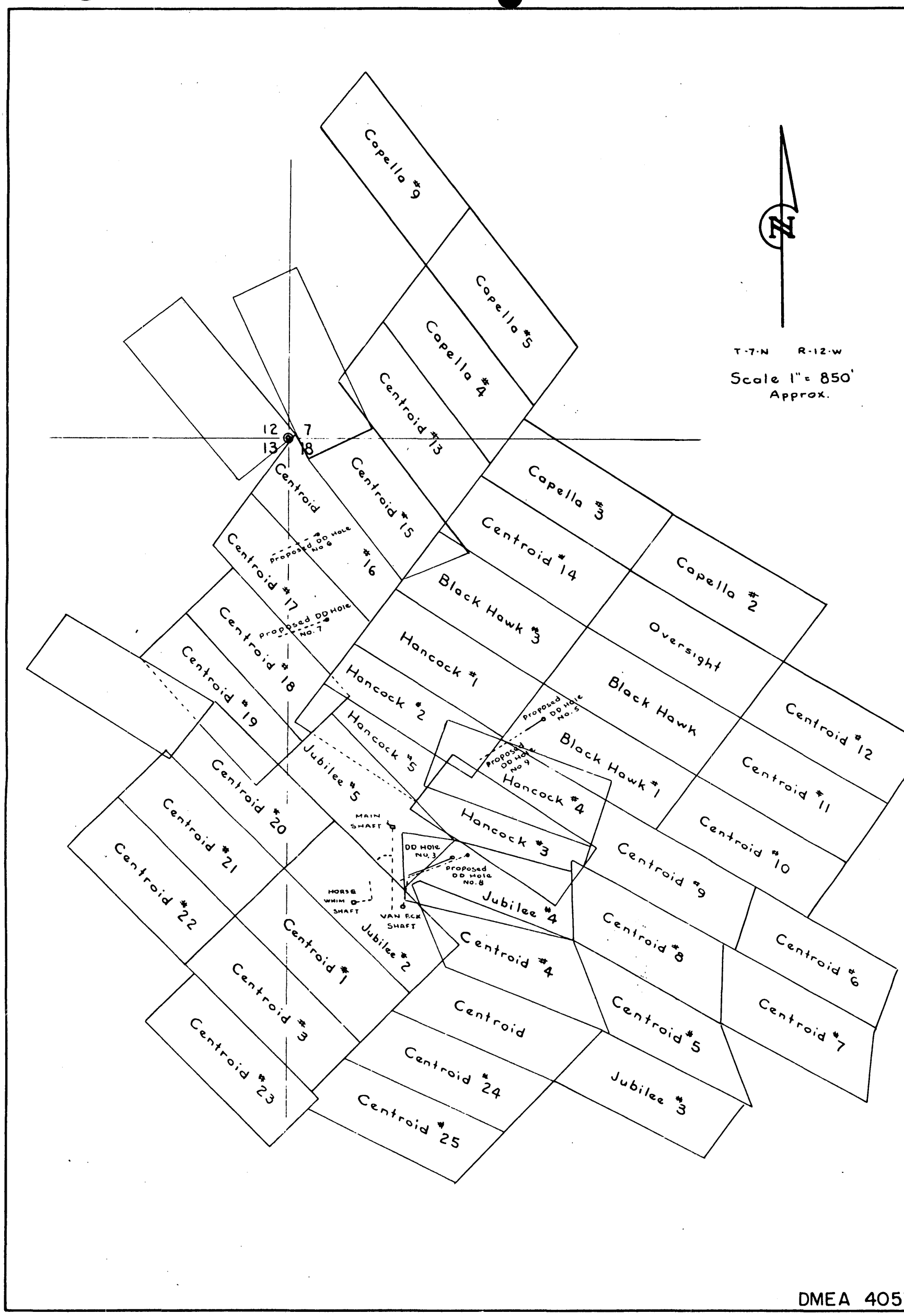


FIG 4

MAIN WORKINGS, CENTROID CONSOLIDATED MINES, YUMA COUNTY, ARIZONA, DMEA 4057

Compiled from Company data, Scale approximate



DMEA 4057

FIG.-2-CLAIM MAP, CENTROID CONSOLIDATED MINES INC.

YUMA COUNTY, ARIZONA

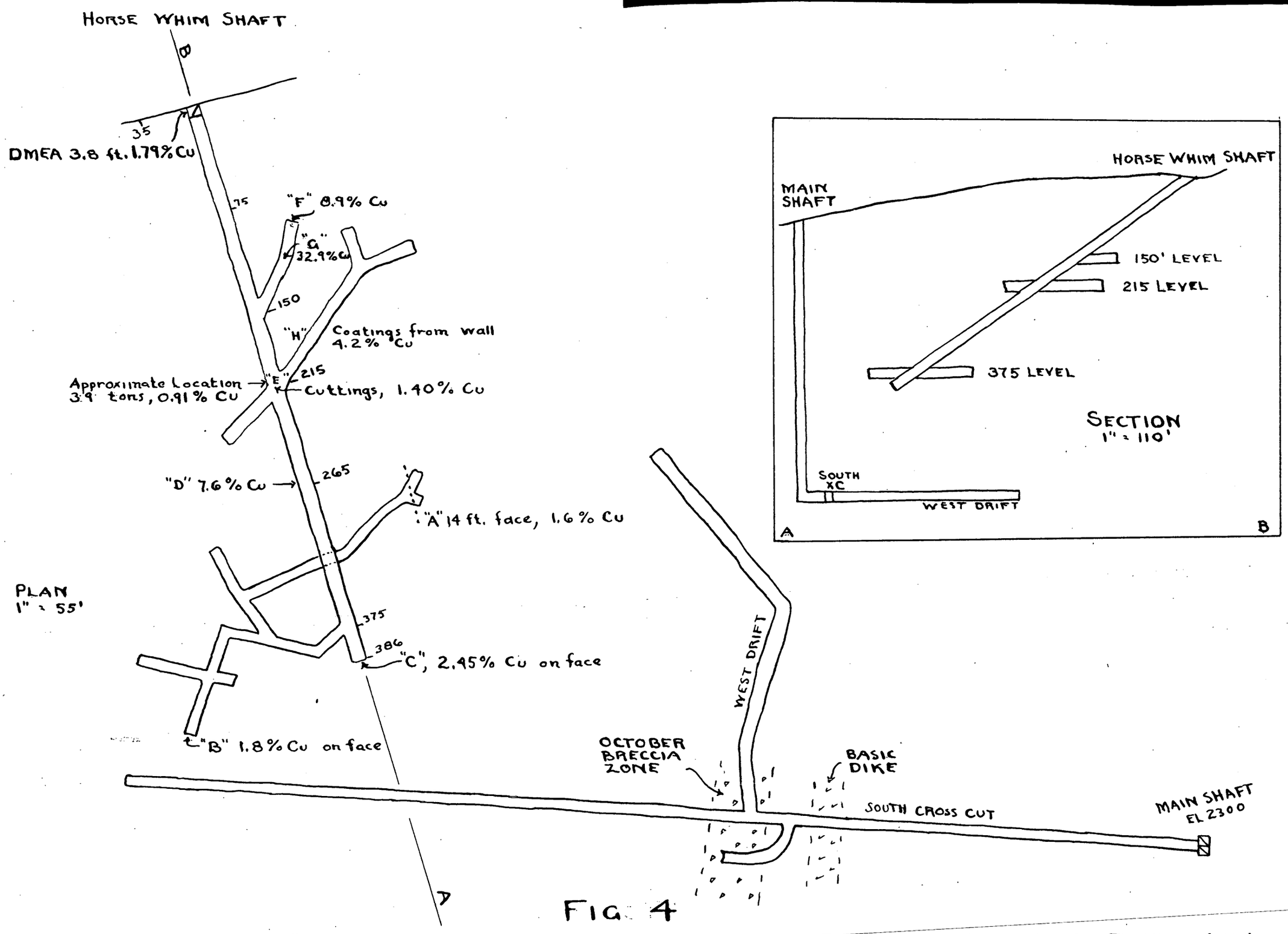


FIG. 4

MAIN WORKINGS, CENTROID CONSOLIDATED MINES, YUMA COUNTY, ARIZONA, DMEA 4057

Compiled from Company data, Scale approximate

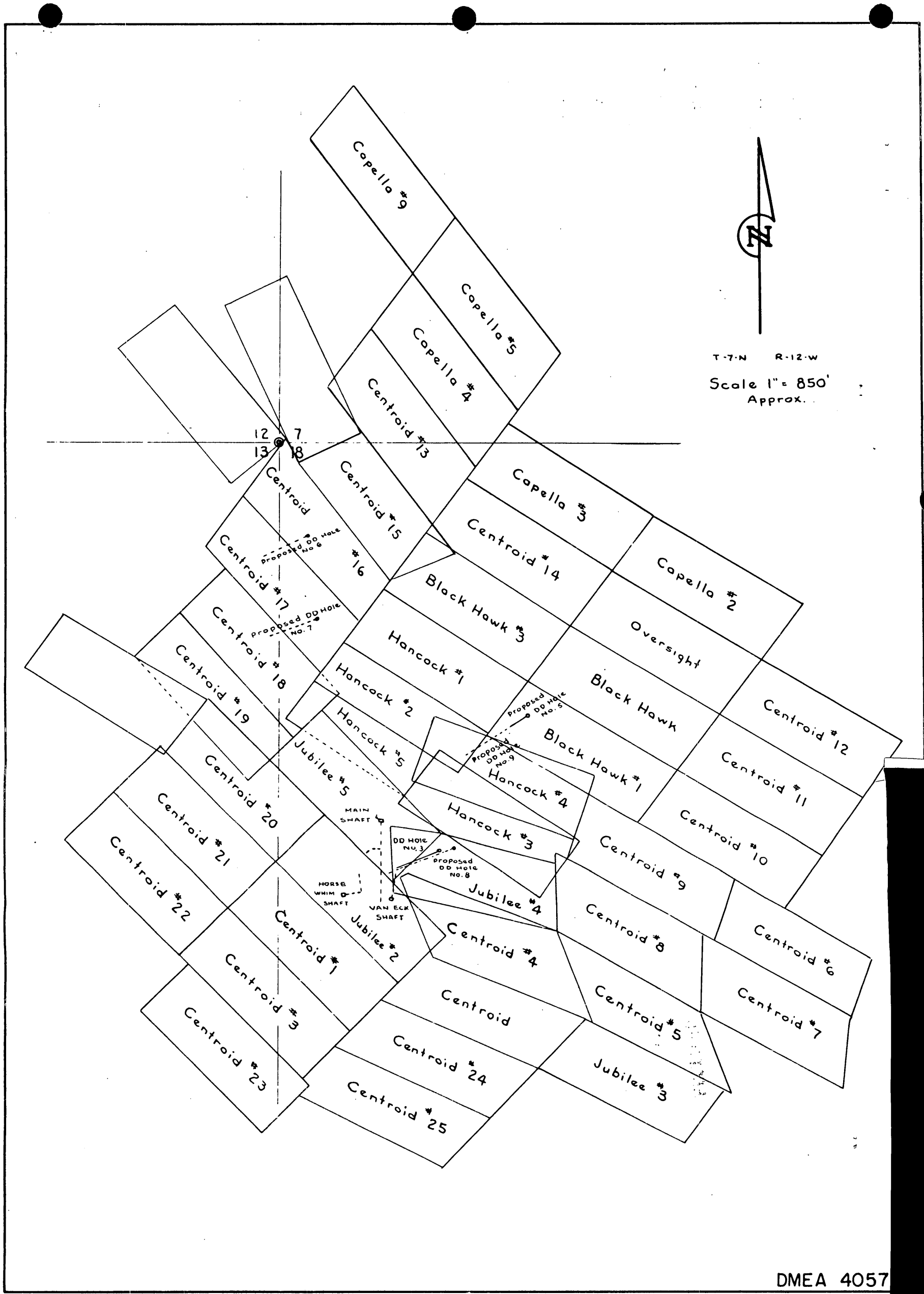


FIG.-2-CLAIM MAP, CENTROID CONSOLIDATED MINES INC.

YUMA COUNTY, ARIZONA

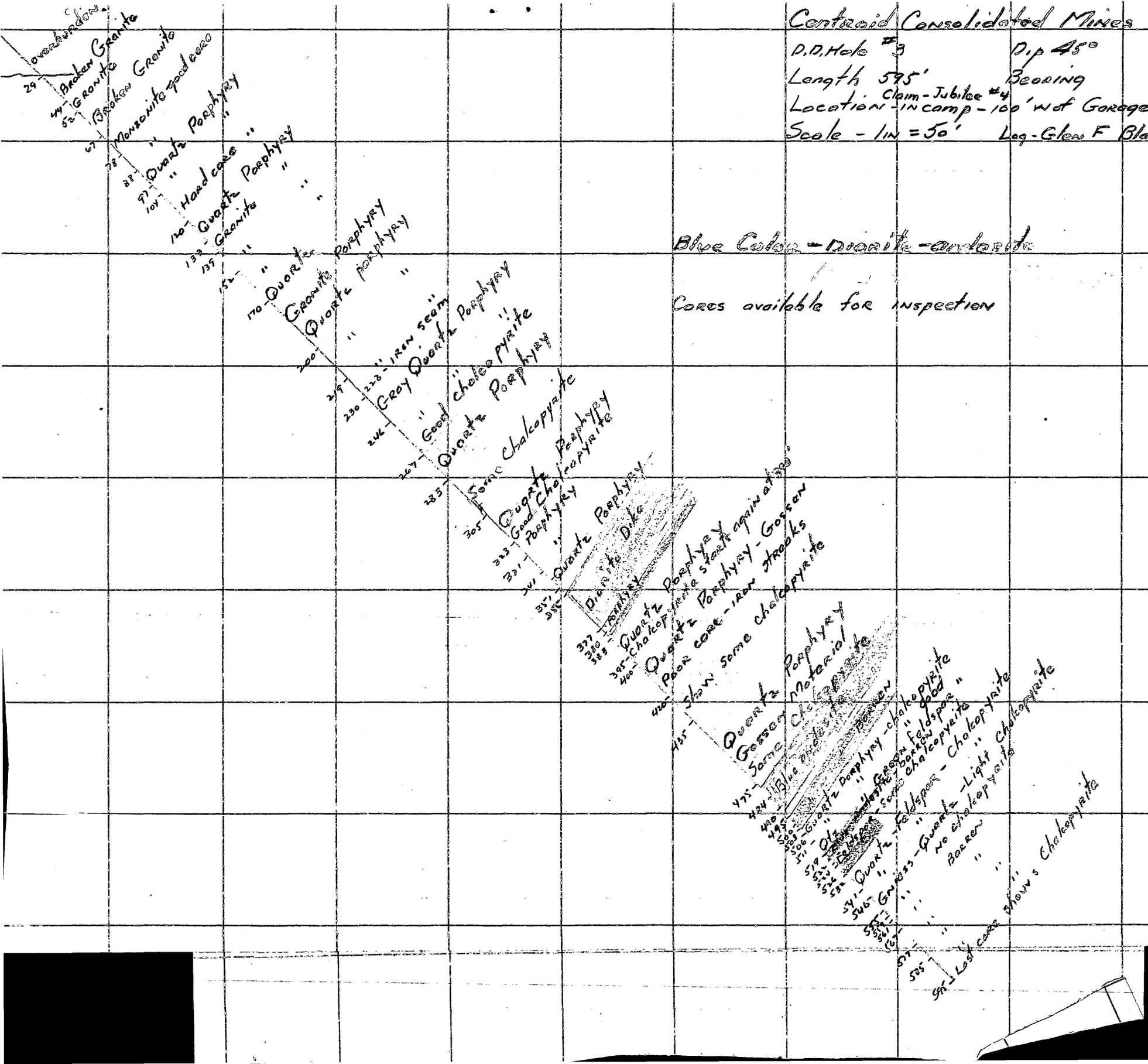
Centroid Consolidated Mines

D.D. Hole #3 Dip 45°

Length 595' Bearing

Location - Claim - Jubilee #4 in camp - 100' W of Garage

Scale - 1in = 50' Log - Glen F Blair



Blue Color - Diorite - andesite

Cores available for inspection

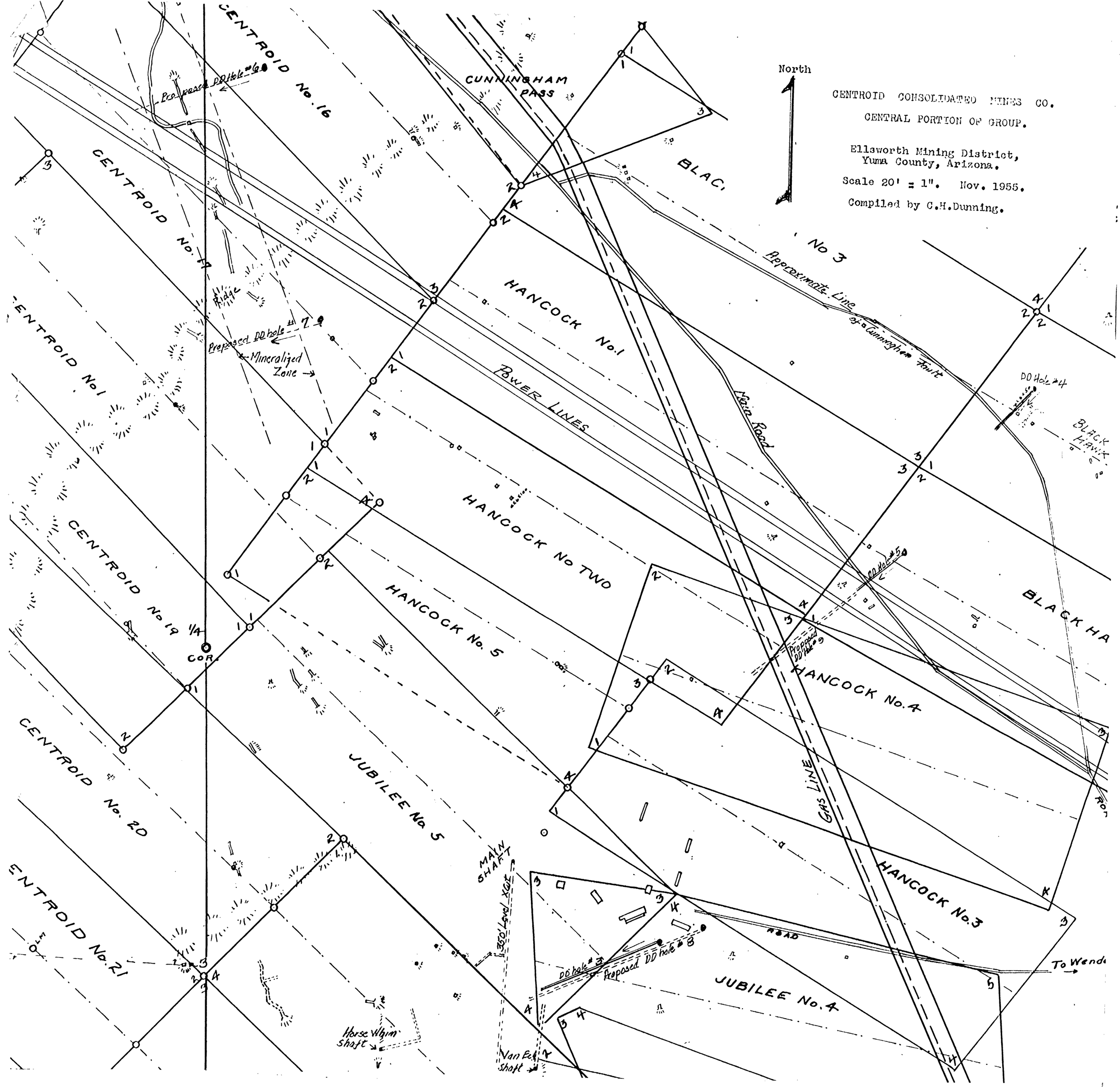
Area in Red Shows Enclosed Map of Mr Dunning

MAP OF
CENTROID CONSOLIDATED MINES GROUP
ELLSWORTH MINING DISTRICT
J. WILLIAM WAARA ENGINEER
PRESCOTT ARIZONA
SCALE 1 IN = 200 FT

T 7 N
R. 13 W. R. 12 W.

SEC. 12
SEC. 13

CAPELLA No 5
CAPELLA No 4
CENTROID No 18
CENTROID No FIFTEEN
CAPELLA No 3
CENTROID No 16
CAPELLA No 2
CUNNINGHAM
BLACK HAWK No 7
OVERSIGHT
CENTROID No 14
CENTROID No 12
HANCOCK No 1
BLACK HAWK
CENTROID No 11
HANCOCK No TWO
BLACK HAWK No 1
HANCOCK No 5
HANCOCK No 4
CENTROID No 10
JUBILEE No 5
HANCOCK No 3
JUBILEE No 4
CENTROID No 21
CENTROID No 22
JUBILEE No 2
CENTROID No FOUR
CENTROID No 1
CENTROID No 3
CENTROID No 23
CENTROID No 2 2
CENTROID No 24
CENTROID No 25
Centroid #1
Centroid #2
Centroid #10
Centroid #9
Centroid #8
Centroid #5
Jubilee #3
Capella #4


CENTROID CONSOLIDATED MINES CO.
CENTRAL PORTION OF GROUP.
Ellsworth Mining District,
Yuma County, Arizona.
Scale 20' = 1". Nov. 1955.
Compiled by C.H.Dunning.
North
CENTROID No. 16
CENTROID No. 17
CENTROID No 1
CENTROID No 19 1/4
CENTROID No. 20
CENTROID No. 21
CUNNINGHAM PASS
BLAC
No 3
HANCOCK No.1
HANCOCK No TWO
HANCOCK No. 5
HANCOCK No. 4
HANCOCK No. 3
JUBILEE No. 5
JUBILEE No. 4
BLACK HA
Proposed DD Hole #6
Ridge
Proposed DD hole #7
Mineralized Zone
Approximate Line of Cunningham Fault
DD Hole #4
BLACK HAWK
Main Road
POWER LINES
DD hole #5
Proposed DD hole #9
GAS LINE
MAIN SHAFT
350' Level Xcut
ROAD
DD hole #3
Proposed DD hole #8
To Wenda
Horse Whim Shaft
Van Eck Shaft
COR.

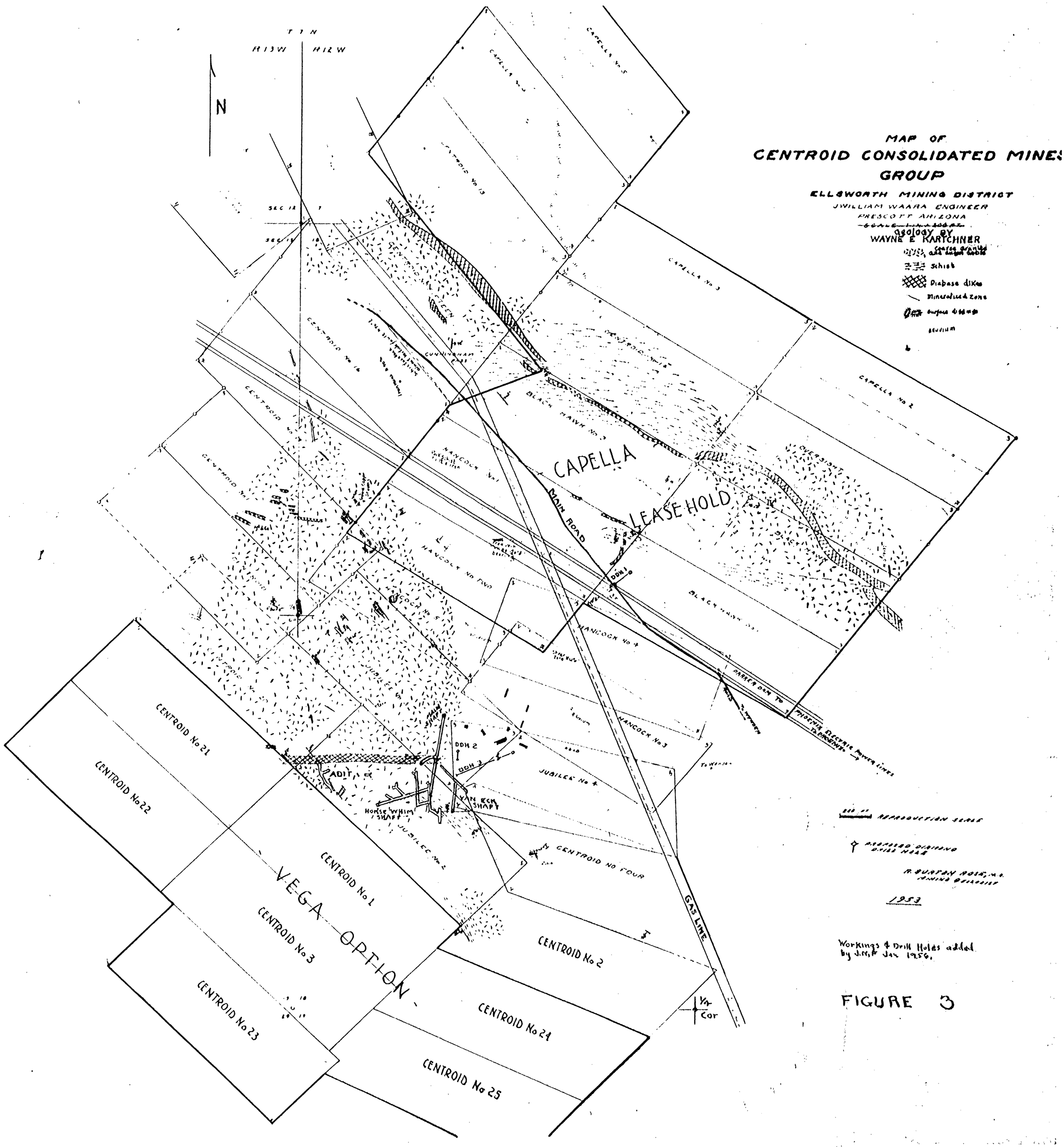
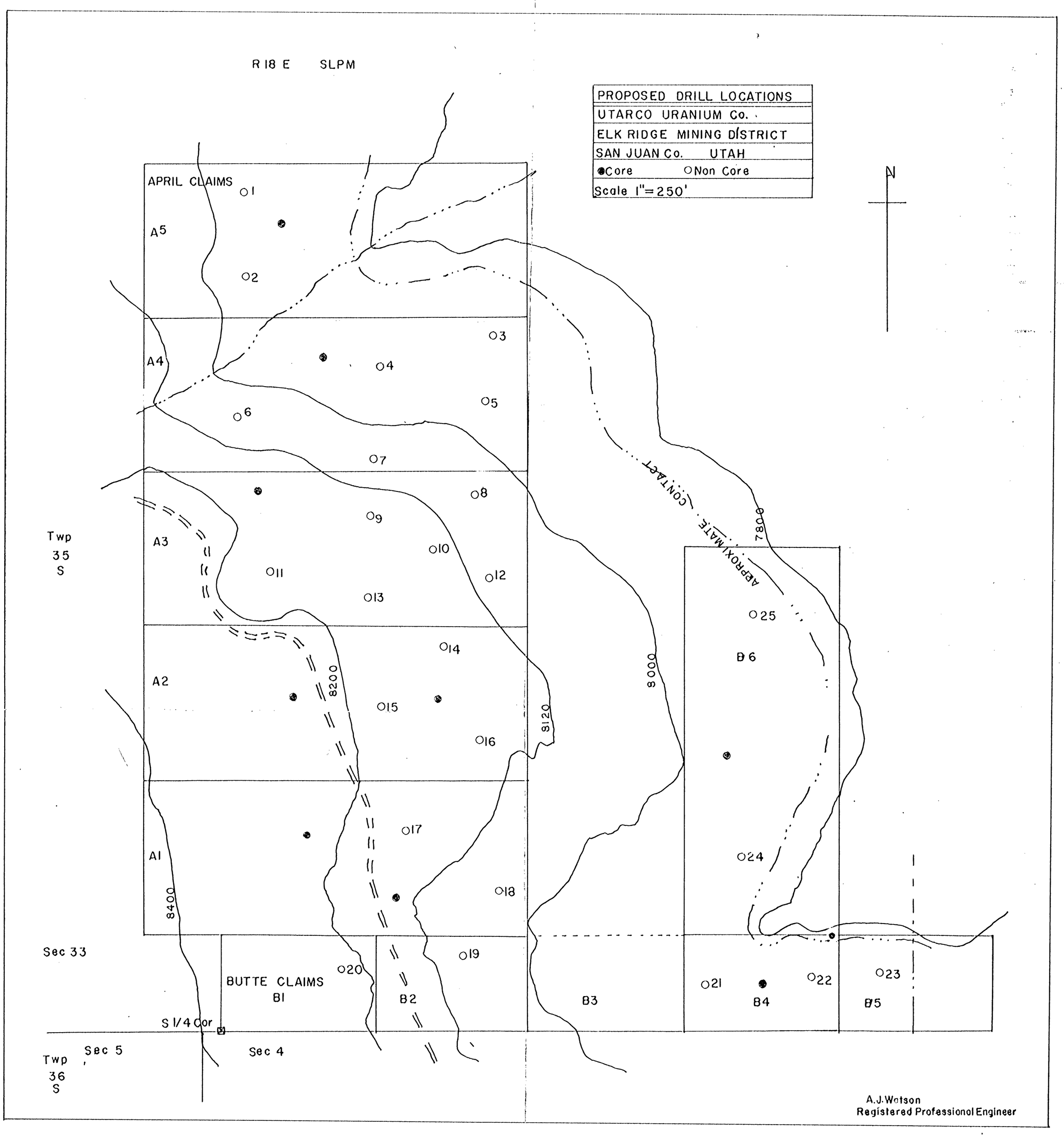

MAP OF
CENTROID CONSOLIDATED MINES
GROUP
ELLSWORTH MINING DISTRICT
J. WILLIAM WAARA ENGINEER
PRESCOTT ARIZONA
GEOLOGY BY
WAYNE E KARTCHNER
Schist
Diabase dikes
Mineralized zone
Alluvium
T 1 N
R 13 W
R 12 W
N
SEC 12
SEC 13
CAPELLA No 5
CAPELLA No 4
CENTROID No 13
CAPELLA No 3
CAPELLA No 2
CENTROID No 16
CENTROID No 15
CENTROID No 1
CENTROID No 20
CUNNINGHAM
BLACK HAWK No 3
HANCOCK No 1
CAPELLA
LEASE HOLD
MAIN ROAD
OVERSIGHT
BLACK HAWK
HANCOCK No TWO
HANCOCK No 5
JUBILEE No 5
DDH 1
BLACK HAWK No 1
HANCOCK No 4
HANCOCK No 3
DARKER DAM TO
PHOENIX ELECTRIC POWER LINES
TO PRESCOTT
JUBILEE No 4
DDH 2
DDH 3
MAIN SHAFT
ADIT
HORSE WHIM SHAFT
VAN RICK SHAFT
JUBILEE No 2
CENTROID No FOUR
GAS LINE
CENTROID No 21
CENTROID No 22
CENTROID No 1
CENTROID No 3
CENTROID No 23
VEGA OPTION
CENTROID No 2
CENTROID No 24
CENTROID No 25
Cor
REPRODUCTION SCALE
PROPOSED DIAMOND DRILL HOLE
R. BURTON ROSE, M.D.
MINING ENGINEER
1953
Workings & Drill Holes added
by J.M.F Jan 1956.

FIGURE 3


R 18 E SLPM
PROPOSED DRILL LOCATIONS
UTARCO URANIUM Co.
ELK RIDGE MINING DISTRICT
SAN JUAN Co. UTAH
●Core ○Non Core
Scale 1"=250'
N
APRIL CLAIMS
A5
A4
A3
A2
A1
01
02
03
04
05
06
07
08
09
010
011
012
013
014
015
016
017
018
019
020
021
022
023
024
025
B6
B1
B2
B3
B4
B5
BUTTE CLAIMS
8400
8200
8120
8000
7800
APPROXIMATE CONTACT
Twp 35 S
Sec 33
S 1/4 Cor
Sec 5
Sec 4
Twp 36 S
A.J.Watson
Registered Professional Engineer

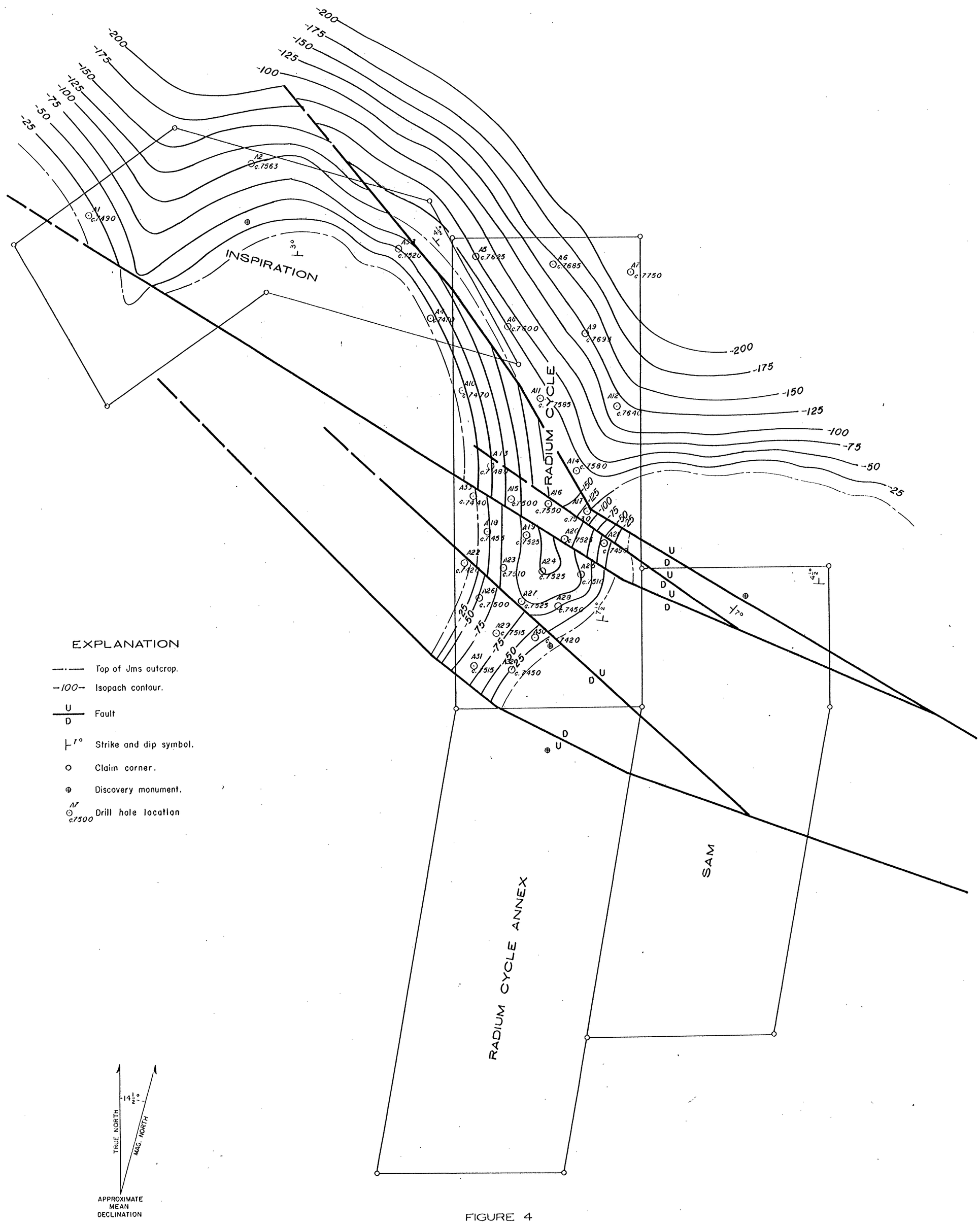


FIGURE 4

PRICE EXPLORATION COMPANY

RADIUM CYCLE GROUP

PARADOX MINING DISTRICT

Sec. 8., T. 48 N., R. 19 W.

MONTROSE COUNTY, COLORADO

ISOPACH MAP OF BRUSHY BASIN—
SURFACE TO TOP OF SALT WASH OUTCROP

(September, 1955)

SCALE 200 0 200 400 FEET

Isopach contour interval = 25 feet.