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

C O P Y

June 18, 1953.

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 3006 (Zinc-Copper) Eureka Mine, Yavapai County, Arizona.

Enclosed are the original and three copies of the final report on the subject docket, the original and one copy of Form 3b, and a copy of the letter of denial to the applicant.

/s/ W. H. KING
W. H. King

/s/ A. H. KOSCHMANN
A. H. Koschmann

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
6-26-53
(date)

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

C O P Y

June 18, 1953.

224 New Customhouse
Denver 2, Colorado

Mr. J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

Re: Docket DMEA-3006

Dear Mr. Williams:

Reference is made to your application for Government aid on the Eureka Mine.

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

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of strategic minerals by your proposed exploration program is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

/s/ W. H. KING
W. H. King
Field Team, Region IV

HMC:cwm

cc: Administrator, DMEA
WRStorms
RFRobinson
Subject
AHKoschmann (2)
Chron.

/s/ A. H. KOSCHMANN
A. H. Koschmann
Field Team, Region IV

Reviewed by
DMEA OPERATING C
6-26-5
(date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

June 18, 1953.

Memorandum

To: DMEA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 3006 (Zinc-Copper), Eureka Mine, Yavapai County, Arizona.

Enclosed are nine copies of the final report on the subject docket. The Survey did not participate in the examination.

The applicant requested $50,000.00 to sink the present winze an additional 200 feet, drive levels at each 100 feet and raise from the present bottom of the winze level for ventilation.

The examining engineer found no evidence to indicate that further exploration of the property would be likely to disclose significant amounts of strategic minerals and he recommends that the application be denied.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
6-26-53
(date)

MINING DIVISION
REGION IV

June 10, 1953

Memorandum

To : W. H. King, Chief, Mining Division, Region IV

From : Chief, Mining Methods Br., Mining Div., Region IV

Subject : Report on Docket DMEA-3006, Eureka Zinc-Copper Prospect, Eureka Mining District, Yavapai County, Ariz.

Enclosed are original and 8 copies of a report on the above property by Lloyd L. Farnham of the Bureau of Mines. A separate report on the geology will not be submitted by the Geological Survey.

As there seems little likelihood of making a significant discovery of copper, zinc or rare earths by the proposed exploration work, the examiner recommends that the application for a lease be denied. I concur with his recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. H. King (8)
DMEA-3006
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE

6-26-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3006, Eureka Zinc-Copper Prospect

Eureka Mining District, Yavapai County, Arizona

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

June 1953

Reviewed by
DMEA OPERATING COMMITTEE
6-26-53
(date)

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By L. L. Farnham[1/]

J. Ward Williams and William White applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $50,000. The application was docketed as DMEA-3006. The funds requested were for the purpose of exploring a zinc-copper prospect situated in the Eureka mining district of Yavapai County, Arizona.

The Eureka claim upon which the mineralization occurs was located in the early nineties. Since that time the property has been worked intermittently by various lessees and eventually developed to a depth of 250 feet below the surface. The oxidation in the upper portions of the deposit produced a grade of copper ore that during periods of high prices, it was possible to ship. The total production may have amounted to as much as 2,000 tons of selected ore which apparently contained about 8 percent copper and 11 percent zinc.

The ore, consisting of sphalerite and chalcopyrite, replaced pre-Cambrian schists within a small fold that plunged steeply to the northeast. In plan the ore body was crescent-shaped in conformance with the folding. As developed by an inclined shaft and 2 levels the deposit appeared quite uniform in size. On the bottom level the ore had an average width of some 5 feet and was limited to a length of 75 feet, thus having a potential of not more than 40 tons per foot of

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1/ Mining Engineer, Bureau of Mines

depth extension. The primary ore exposed on the bottom level contained about 5 percent copper and 12 percent zinc with minor amounts of gold and silver. Material for this grade, if found in large enough quantities, would ordinarily be minable. However, in this case the ore body was so limited in size as to have little, if any, significance as a source of copper and zinc.

As there is no evidence to indicate that further exploration of the property would be likely to disclose larger ore bodies, it is recommended that the application for a loan be denied.

DMEA-3006, EUREKA ZINC-COPPER PROSPECT
EUREKA MINING DISTRICT, YAVAPAI COUNTY, ARIZONA

Engineering Report

By L. L. Farnham
U. S. Bureau of Mines

June 1953

DMEA-3006, EUREKA ZINC-COPPER PROSPECT
EUREKA MINING DISTRICT, YAVAPAI COUNTY, ARIZONA

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INTRODUCTION

Late in April 1953, J. Ward Williams and William White applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $50,000. The application was docketed as DMEA-3006. The funds requested were for the purpose of exploring the old Eureka zinc-copper deposit in the Eureka district of Yavapai County, Ariz. at greater depth. The property was visited on May 12, 1953.

ACKNOWLEDGMENTS

Acknowledgments are made to E. A. Scholz for maps and sample data concerning the deposit. Scholz, a former member of the Geological Survey, examined the property in 1944 during the Survey's study of the Bagdad quadrangle. Thanks are extended also to William White for his assistance during the examination.

LOCATION AND PHYSICAL FEATURES

The Eureka claim is situated about 7.5 air-line miles southwest of Bagdad in the southern portion of sec. 2, T. 13 N., R. 10 W., Eureka mining district, Yavapai County, Arizona (figure 1).

The property can be most easily reached by traveling 34 miles northwesterly from Congress on graded State Highway 93 to a branch road leading to Bagdad. Proceed northward on this Bagdad branch for 2.7 miles to its intersection with the old Kingman-Hillside road, take left fork and continue westerly for 3.7 miles to a faint side road branching right. It is 0.9 mile on this latter branch to the portal of the Eureka adit.

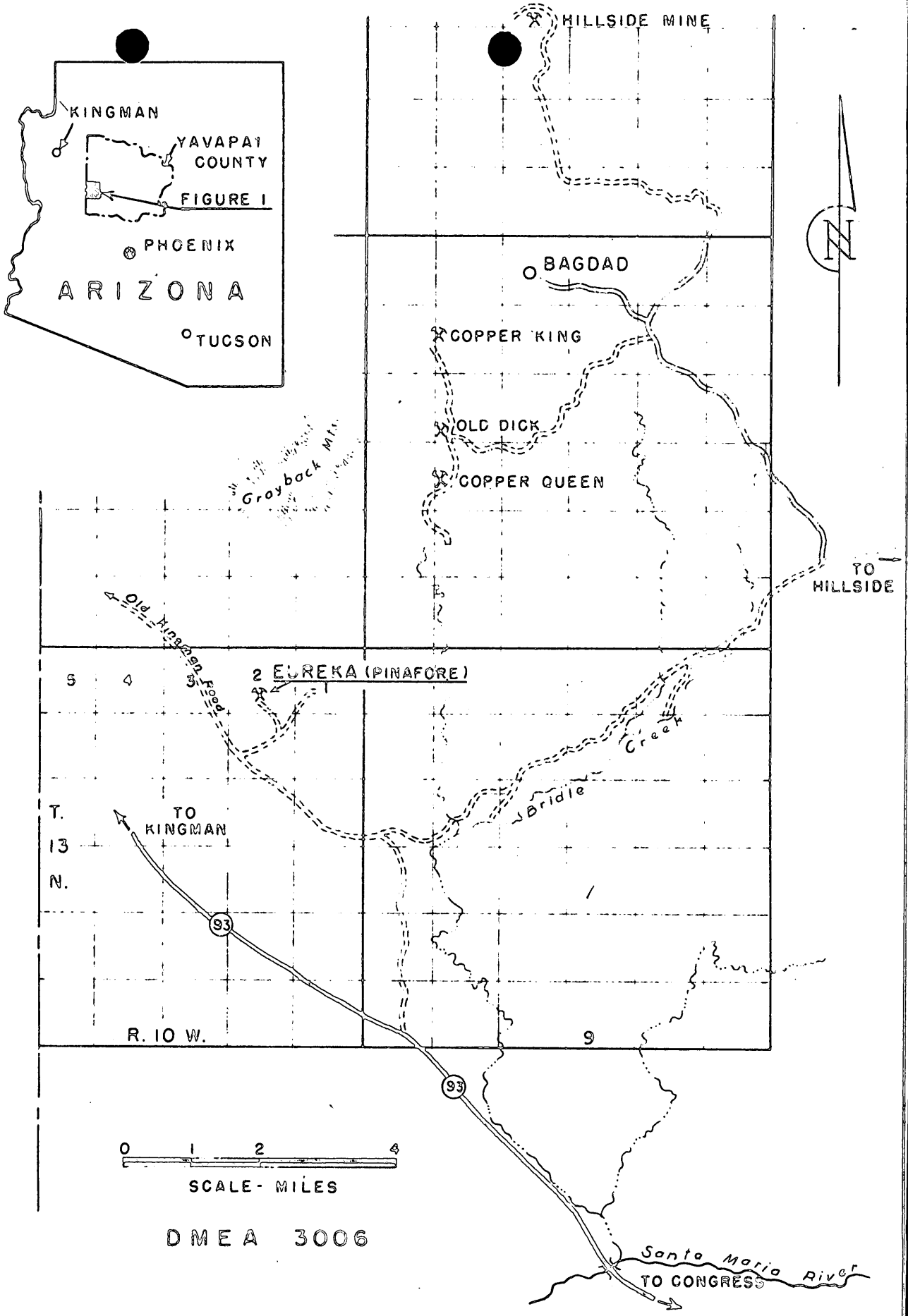


FIGURE 1. - LOCATION MAP - EUREKA CLAIM
YAVAPAI COUNTY, ARIZONA

The topography of the area is moderately rugged. The altitude ranges between 3,000 and 3,500 feet above sea level. The climate is arid and water is scarce. Congress, a station on the Santa Fe railroad, is the most accessible shipping point.

HISTORY AND PRODUCTION

The Eureka claim was located in the eighties and patented in the early nineties. The property has been developed largely by various lessees working intermittently during periods of high copper prices. The most serious attempt to determine the potential of the deposit was made in the late thirties when a group headed by C. G. Scalerth, then consulting engineer for the Magnad Copper Corp., sank the present winze to a depth of 145 feet below the adit level. After completing about 130 feet of lateral work from the bottom of this winze the venture was terminated. Shortly thereafter other parties secured the property and applied to the Reconstruction Finance Corporation for a development loan. Following an examination of the deposit by Ralph Yontz, the loan was not approved. A few years later lessees mined all the ore exposed by the former work and removed the track, pipe and all other equipment. The property has remained idle for the past 7 years.

The total production from the deposit is not known but it probably has not exceeded 2,000 tons. The only available records show that during the latter part of the Premium Price Plan, 693 tons of selectively mined and secondarily enriched copper ore was shipped to the Clarkdale smelter.

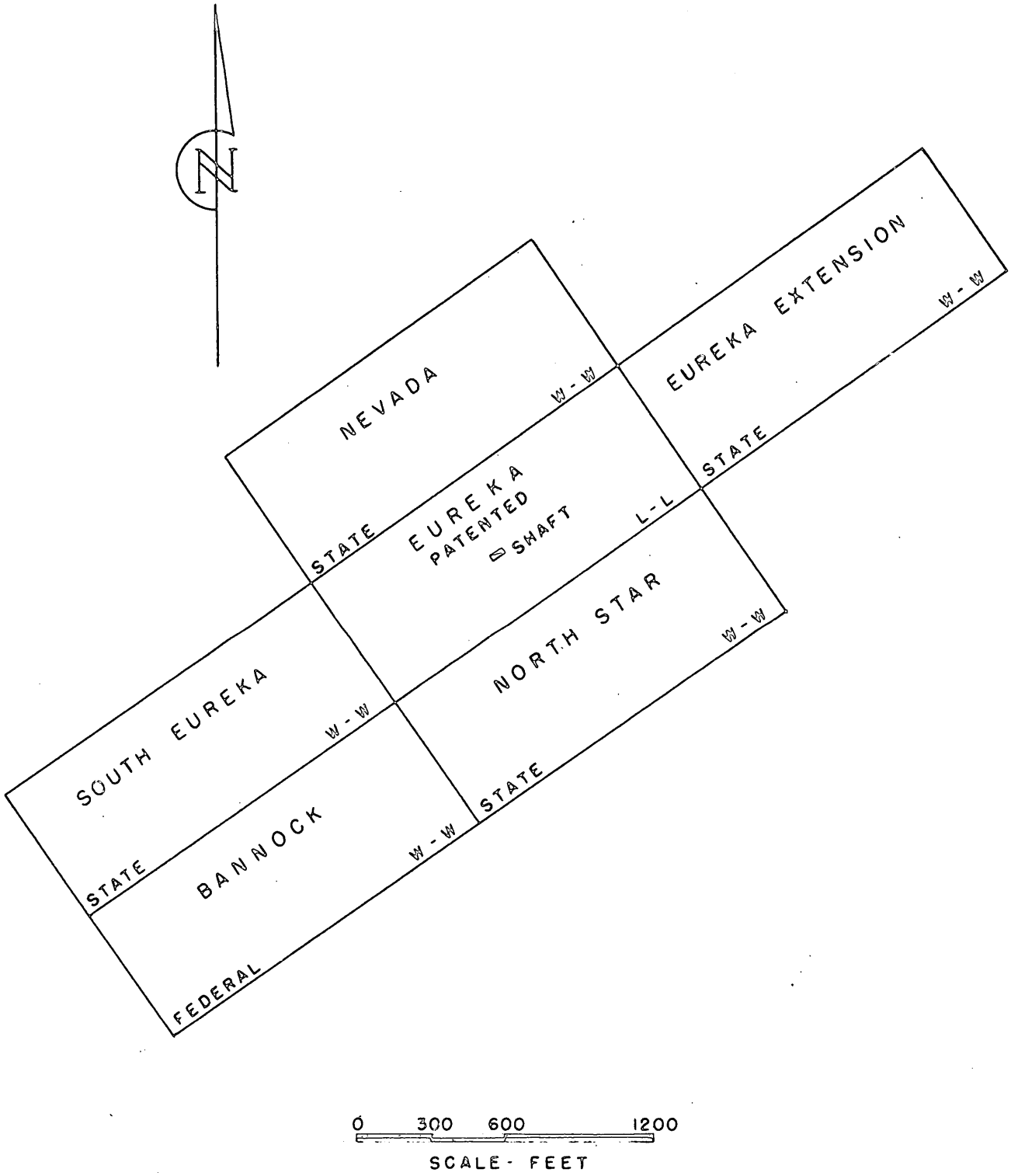
OWNERSHIP AND EXTENT

The applicants have a lease and option on the Eureka, a full-sized patented lode claim owned by John W. Lawler and M. L. Lynch of Prescott, Arizona. The purchase price of the property is $40,000, payable in 5 years by a 10 percent royalty on the net smelter value of the ore produced. In addition to the Eureka, 5 adjoining claims were recently located by the applicants (figure 2).

DESCRIPTION OF THE DEPOSIT

The Eureka or Pinafore prospect lies along the western side and close to the southerly end of a broad northeasterly trending belt of pre-Cambrian (Yavapai) schists. Granite basement rocks border the schists on the west and surround the belt at no great distance southwest of the property. Numerous and various sized dikes and irregular bodies of pegmatitic material invade the schist in the vicinity of the granite contact and are abundant on the Eureka claim. From their southern terminus the schists extend northeasterly for approximately 13 miles to the Hillside mine. About midway within the schists and several miles northeast of the Eureka are the Old Dick and Copper King properties, both of which in recent years have produced quite notable amounts of zinc-copper ore (figure 1).

The mineralization on the Eureka claim is associated with a small shear zone in the schist that is bounded by 2 fault fractures. The fractures are about 25 feet apart at the southern end of the mineralization, but appear to converge along their northward projection. The most westerly or footwall fracture of the zone strikes N. 70° E.,



DMEA 3006

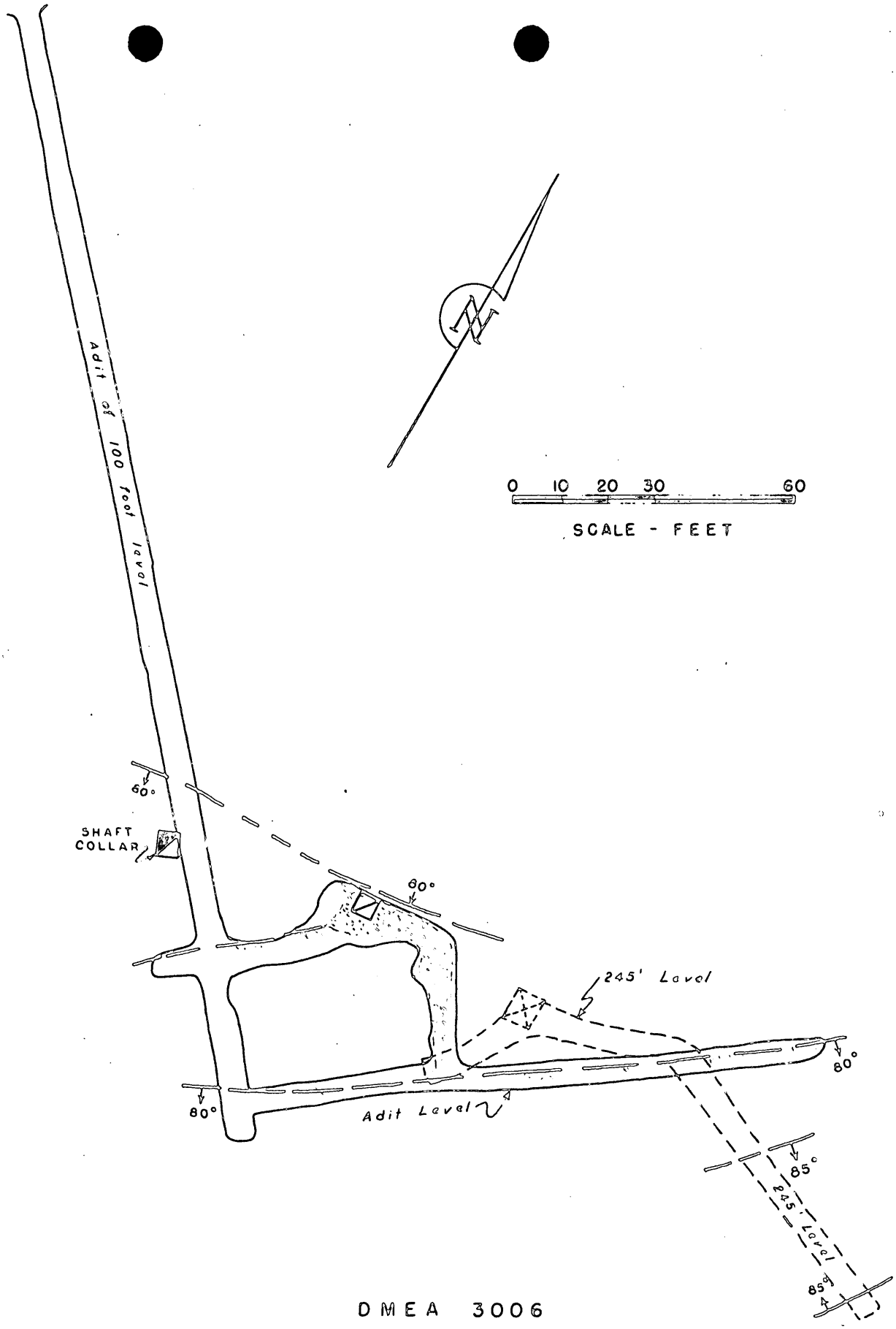
FIGURE 2. - EUREKA CLAIMS

YAVAPAI COUNTY, ARIZONA

while the hanging wall shear trends N. 50° E. Both dip about 80° southeasterly. The schists were well exposed on the surface along the strike of the shear zone yet any evidence of ore mineralization was limited to a length of about 100 feet.

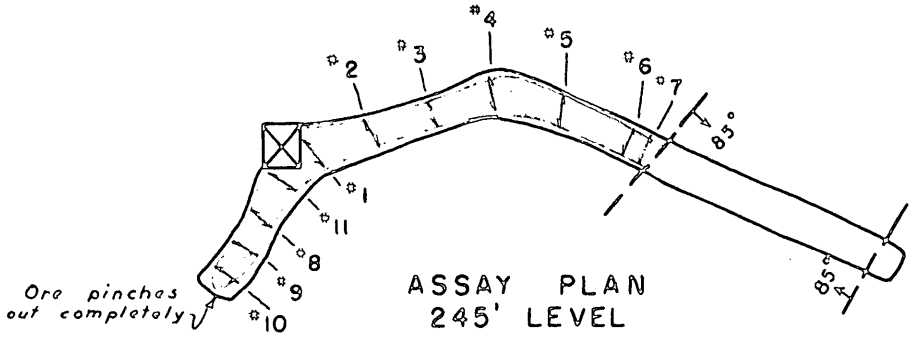
All the ore formerly mined occurred in an irregular steeply plunging crescent-shaped body that occupied a small fold along the footwall fracture (figure 3). An inclined shaft had followed this mineralized body from its outcrop to an adit level some 100 feet below the surface. From the adit level a steeply inclined winze had continued to follow the mineralization for an additional 145 feet or to a total depth of about 245 feet below the outcrop (figure 4). All the better ore had been gouged from the sides of the openings so that at the time of the visit the shaft and much of the lower portion of the winze were not accessible. Judged by the size of the outcrop and the visible stope openings above the adit level, this ore body had an average width of about 5 feet and a maximum curved length of some 65 feet (figure 3). The better ore on the bottom, or 245-foot level, as mapped by the Geological Survey in 1944, had an average width of 5.4 feet and a length of about 75 feet (figure 4).

In the upper portions of the deposit the ore was largely oxidized and contained in addition to the common oxide minerals of iron, copper and zinc, a large proportion of secondary chalcocite. The primary sulphides found on the lower level consisted of massive dark colored sphalerite, pyrite and chalcopyrite.



DMEA 3006

FIGURE 3. - PLAN OF EUREKA (PINAFORE) WORKINGS
YAVAPAI COUNTY, ARIZONA

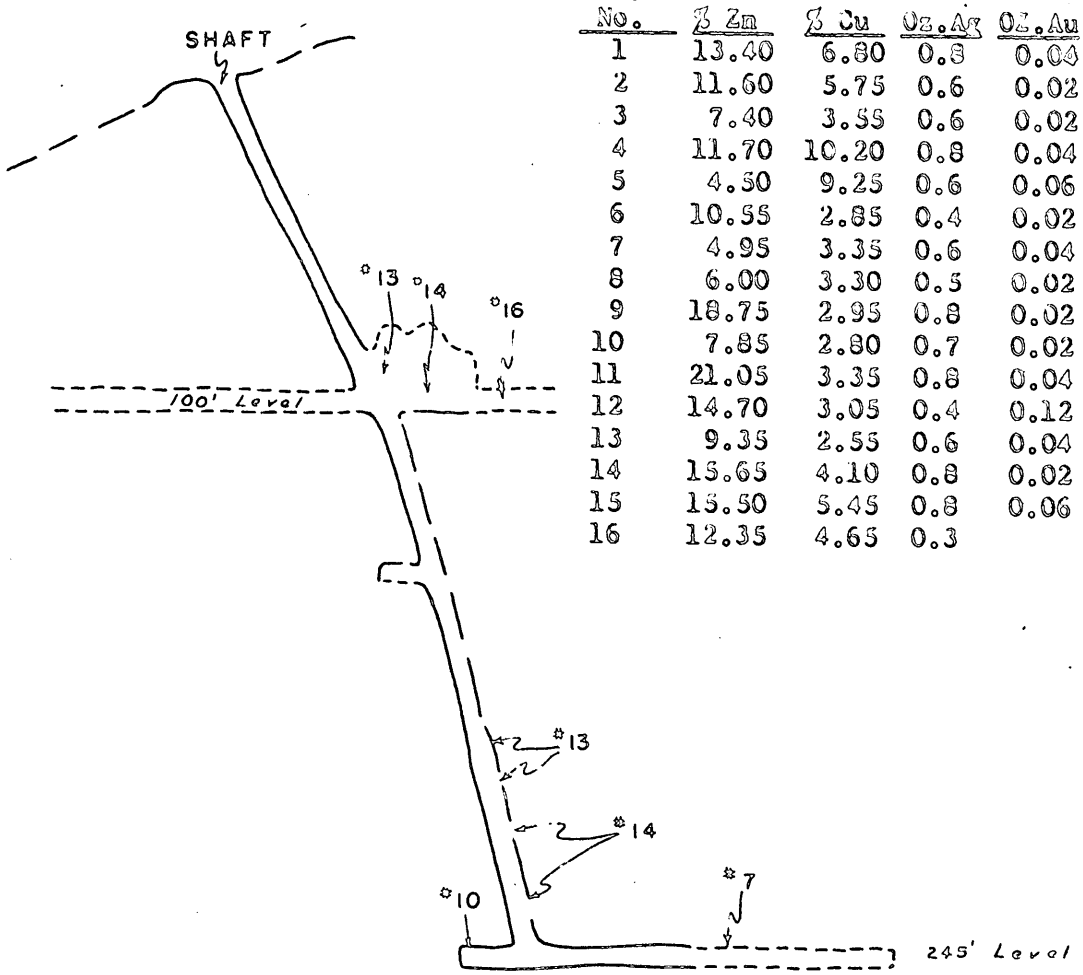


ASSAY PLAN
245' LEVEL

SCALE - 1" = 30'

ASSAY DATA

Sample No.	% Zn	% Cu	Oz. Ag	Oz. Au	Width
1	13.40	6.80	0.8	0.04	7'
2	11.60	5.75	0.6	0.02	6'
3	7.40	3.55	0.6	0.02	5.5
4	11.70	10.20	0.8	0.04	5'
5	4.50	9.25	0.6	0.06	4.5
6	10.55	2.85	0.4	0.02	5'
7	4.95	3.35	0.6	0.04	5'
8	6.00	3.30	0.5	0.02	5.3
9	18.75	2.95	0.8	0.02	4.3
10	7.85	2.80	0.7	0.02	5'
11	21.05	3.35	0.8	0.04	7'
12	14.70	3.05	0.4	0.12	8'
13	9.35	2.55	0.6	0.04	5'
14	15.65	4.10	0.8	0.02	5'
15	15.50	5.45	0.8	0.06	4.5'
16	12.35	4.65	0.3		3'



VERTICAL SECTION
SCALE - 1" = 50'

AFTER U. S. G. S. - MARCH 1944

DMEA-3006

FIGURE 4.- ASSAY DATA - EUREKA (PINAFORE) PROSPECT
YAVAPAI COUNTY, ARIZONA

The hanging wall fault fracture, as exposed by the 1,250-foot drift on the adit level, ranged from 1.5 to 3.5 feet in width and contained in addition to much gouge, some short pods showing oxide copper minerals. It was obviously too poorly mineralized to constitute ore. A few short raises had been driven in the better mineralized spots but no stoping on this fracture had been attempted.

The southeasterly trending prong of the crescent-shaped ore body ended against this hanging wall fault on the adit level as it did apparently on the bottom level (figures 3 and 4). However, there was no drag ore at the intersection or any other evidence on the adit level to indicate that the hanging wall fracture had displaced the ore.

Some unidentified radioactive minerals evidently were present in places along the pegmatite that formed the footwall of the ore body. However, the reactions of a Geiger counter did not appear to indicate that any appreciable quantity of radioactive material was present.

ORE RESERVES

There is no minable ore remaining in the accessible mine workings. The ore body which furnished the production was judged to have an average horizontal cross sectional area of not more than 400 square feet. Using a factor of 10 cubic feet per ton, the potential of the deposit would be of the order of 40 tons per foot of depth extension.

The available smelter settlement sheets, covering 693 tons of selected ore that was shipped from this ore body, showed that its average content was 0.02 ounces of gold, 1.2 ounces of silver per ton, 8.37 percent copper, and 11.7 percent zinc. Probably 50 percent of the copper content of this material was due to secondary enrichment. The primary ore exposed on the bottom level, as sampled by Ralph Yeutz for the Reconstruction Finance Corporation, averaged 0.03 ounces of gold, 0.5 ounces of silver per ton, 4.9 percent copper, and about 12 percent zinc (figure 4).

ECONOMIC CONSIDERATIONS

At the present time the nearest available markets for ore of this nature are in the vicinity of Salt Lake City, Utah and the custom mill of the American Smelting & Refining Co. at Deming, N. Mex. Under the existing schedule at the latter mill, an ore containing 5 percent copper and 12 percent zinc would have the following value:

Copper Payments. (Based on market price of 30¢ a pound)
5% less 0.2% = 96 lbs. x 60% = 57.6 lbs. @ (30¢ less 6.58¢) = $13.49
Zinc payments. (Based on price of 11¢ a pound)
12% less 0.5% = 230 lbs. x 73% = 167.9 lbs. @(11¢ less 6.7¢)= 7.22

Copper payments	$13.49 a ton
Zinc payments	7.22 a ton
Total	$20.71
Less treatment	4.00
Net value f.o.b. Deming	$16.71
Less rail freight-Congress to Deming	7.00
	9.71
Less trucking - 40 miles @ 10¢ ton mile	4.00
	5.71
Less 10% Royalty	$0.57
Net value of ore <u>in place</u>	$5.14 a ton

PROPOSED EXPLORATION AND COSTS

The proposed exploration as set forth in the application was worded as follows:

"Development program is to sink the present winze an additional 200 feet, taking off levels at each 100 feet. To raise from present bottom of winze level in the copper ore section of the mineralization for a connection to the existing tunnel level northeast drift on copper vein. This primarily for aid to ventilation. To explore the radioactive zone for rare earths".

Under the applicant's cost estimates, the application reads as follows:

Basis, 6 months

(a)	Contract work: Sinking winze, $60 per foot x 200 feet -		$12,000
	Contract work: Raises, drifts & crosscuts, $30 x 250 ft.		7,500
(b)	Hoistmen, trammers, laborers, $96 a day		13,624
	Supervisor and engineering, $800 a month)		7,500
	General mine foreman, $450 a month)		
(c)	Explosives furnished by contractor		
(d)	Diesel fuel, gasoline, shovels, picks, etc.,	$600	
	Used rails	300	
	Cables, buckets	300	
	Rental, 315 cfm compressof @ $415	2,490	
	Used pickup truck	800	
	Used hoist	350	
	3 used jackhammers	1,050	
	Drill steel & jackbits	500	
	Blower & ventilation pipe	300	6,690
(e)	Lumber @ $80 per 1,000 ft.		1,000
	Repair to winze timber		500
(f)	2 small shacks and tent		350
(g)	Workmens compensation insurance, etc.		300
(h)	Contingencies		536
	Six months development work		$50,000

It appears extremely doubtful that all of this proposed work could be satisfactorily accomplished for $50,000 as estimated by the applicant. In order to start the proposed sinking, the present winze would have to be rehabilitated throughout by retimbering and the back filling of the open spaces around the new timber sets. This in itself would cost several thousand dollars more than was estimated by the applicant. Under item (g) the workmens compensation insurance etc., would amount to about 14.5 percent of the labor cost or over $3,000, instead of $300 as estimated in the application. Thus it appears that the proposed underground work would be likely to cost not less than $60,000. On the basis of the indicated potential of the deposit, namely 40 tons of ore per foot of depth, the proposed sinking to an additional depth of 200 feet could be expected to indicate 8,000 tons of ore, hence the cost of the exploration alone would probably amount to more than $7 a ton.

Following the visit to the property, the applicants submitted an alternative proposal which consisted of exploring the deposit at greater depth by means of core drilling. Under this latter program 4 diamond drill holes were proposed, all to be drilled from the surface and aimed to cut the deposit at depths that ranged from 150 to some 200 feet below the bottom of the present winze. The applicant estimated that this program involving about 1,760 feet of drilling, would cost $14,000.

If the probability existed that the deposit might become substantially larger at greater depth, then drilling before attempting the underground work would appear feasible.

CONCLUSIONS AND RECOMMENDATIONS

The Eureka ore body is much too small to be of significance. There was no evidence on the surface or underground that would indicate the probability that other or larger mineralized areas existed or that the present ore body would be likely to increase materially in size at greater depth. Consequently any further exploration does not appear warranted and it is recommended that the application for an exploratory loan be denied.

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

Griswold
Betty

224 New Customhouse
Denver 2, Colorado

June 18, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
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From: Field Team, Region IV

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A. H. Koschmann
A. H. Koschmann

Enclosures

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

224 New Customhouse
Denver 2, Colorado

June 18, 1953.

Mr. J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

Re: Docket DMEA-3006

Dear Mr. Williams:

Reference is made to your application for Government aid on the Eureka Mine.

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

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of strategic minerals by your proposed exploration program is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

W. H. King
W. H. King
Field Team, Region IV

HMC:cwm

cc: Administrator, DMEA
WRStorms
RFRobinson
Subject
AHKoschmann (2)
Chron.

A. H. Koschmann
A. H. Koschmann
Field Team, Region IV

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

June 18, 1953.

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The applicant requested $50,000.00 to sink the present winze an additional 200 feet, drive levels at each 100 feet and raise from the present bottom of the winze level for ventilation.

The examining engineer found no evidence to indicate that further exploration of the property would be likely to disclose significant amounts of strategic minerals and he recommends that the application be denied.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

MINING DIVISION
REGION IV

Memorandum

June 10, 1953

To : W. R. King, Chief, Mining Division, Region IV

From : Chief, Mining Methods Br., Mining Div., Region IV

Subject : Report on Docket DMEA-3006, Eureka Zinc-Copper Prospect, Eureka Mining District, Yavapai County, Ariz.

Enclosed are original and 8 copies of a report on the above property by Lloyd L. Farnham of the Bureau of Mines. A separate report on the geology will not be submitted by the Geological Survey.

As there seems little likelihood of making a significant discovery of copper, zinc or rare earths by the proposed exploration work, the examiner recommends that the application for a loan be denied. I concur with his recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. R. King (8)
DMEA-3006
DF

WRStorms:frj

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3006, Eureka Zinc-Copper Prospect

Eureka Mining District, Yavapai County, Arizona

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

June 1953

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By L. L. Farnham[1/]

J. Ward Williams and William White applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $50,000. The application was docketed as DMEA-3006. The funds requested were for the purpose of exploring a zinc-copper prospect situated in the Eureka mining district of Yavapai County, Arizona.

The Eureka claim upon which the mineralization occurs was located in the early nineties. Since that time the property has been worked intermittently by various lessees and eventually developed to a depth of 250 feet below the surface. The oxidation in the upper portions of the deposit produced a grade of copper ore that during periods of high prices, it was possible to ship. The total production may have amounted to as much as 2,000 tons of selected ore which apparently contained about 8 percent copper and 11 percent zinc.

The ore, consisting of sphalerite and chalcopyrite, replaced pre-Cambrian schists within a small fold that plunged steeply to the northeast. In plan the ore body was crescent-shaped in conformance with the folding. As developed by an inclined shaft and 2 levels the deposit appeared quite uniform in size. On the bottom level the ore had an average width of some 5 feet and was limited to a length of 75 feet, thus having a potential of not more than 40 tons per foot of

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1/ Mining Engineer, Bureau of Mines

depth extension. The primary ore exposed on the bottom level contained about 5 percent copper and 12 percent zinc with minor amounts of gold and silver. Material for this grade, if found in large enough quantities, would ordinarily be minable. However, in this case the ore body was so limited in size as to have little, if any, significance as a source of copper and zinc.

As there is no evidence to indicate that further exploration of the property would be likely to disclose larger ore bodies, it is recommended that the application for a loan be denied.

DMEA-3006, EUREKA ZINC-COPPER PROSPECT
EUREKA MINING DISTRICT, YAVAPAI COUNTY, ARIZONA

Engineering Report

By L. L. Farnham
U. S. Bureau of Mines

June 1953

DMEA-3006, EUREKA ZINC-COPPER PROSPECT
EUREKA MINING DISTRICT, YAVAPAI COUNTY, ARIZONA

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INTRODUCTION

Late in April 1953, J. Ward Williams and William White applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $50,000. The application was docketed as DMEA-3006. The funds requested were for the purpose of exploring the old Eureka zinc-copper deposit in the Eureka district of Yavapai County, Ariz. at greater depth. The property was visited on May 12, 1953.

ACKNOWLEDGMENTS

Acknowledgments are made to E. A. Scholz for maps and sample data concerning the deposit. Scholz, a former member of the Geological Survey, examined the property in 1944 during the Survey's study of the Bagdad quadrangle. Thanks are extended also to William White for his assistance during the examination,

LOCATION AND PHYSICAL FEATURES

The Eureka claim is situated about 7.5 air-line miles southwest of Bagdad in the southern portion of sec. 2, T. 13 N., R. 10 W., Eureka mining district, Yavapai County, Arizona (figure 1).

The property can be most easily reached by traveling 34 miles northwesterly from Congress on graded State Highway 93 to a branch road leading to Bagdad. Proceed northward on this Bagdad branch for 2.7 miles to its intersection with the old Kingman-Hillside road, take left fork and continue westerly for 3.7 miles to a faint side road branching right. It is 0.9 mile on this latter branch to the portal of the Eureka adit.

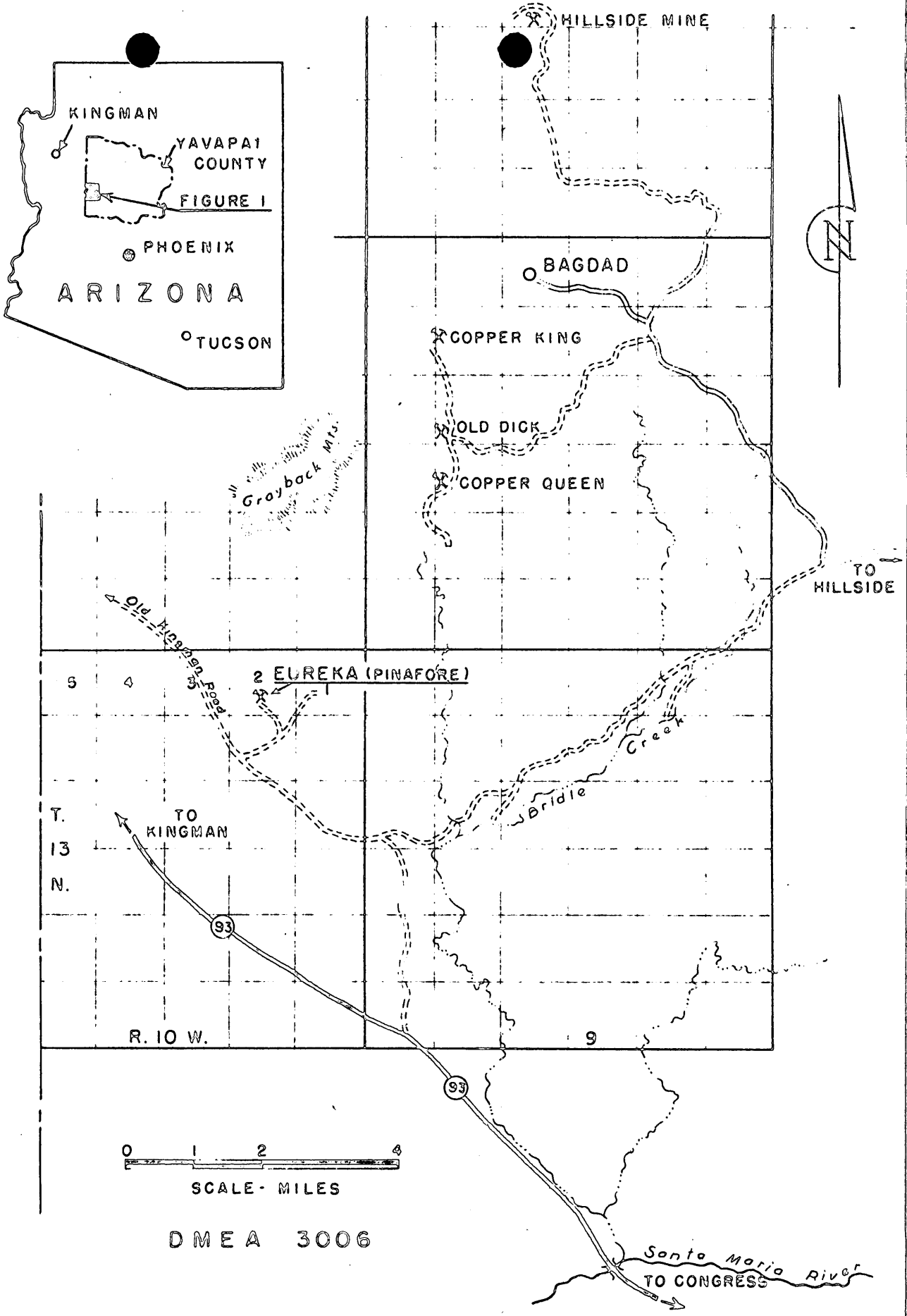


FIGURE 1. - LOCATION MAP - EUREKA CLAIM
YAVAPAI COUNTY, ARIZONA

The topography of the area is moderately rugged. The altitude ranges between 3,000 and 3,500 feet above sea level. The climate is arid and water is scarce. Congress, a station on the Santa Fe railroad, is the most accessible shipping point.

HISTORY AND PRODUCTION

The Eureka claim was located in the eighties and patented in the early nineties. The property has been developed largely by various lessees working intermittently during periods of high copper prices. The most serious attempt to determine the potential of the deposit was made in the late thirties when a group headed by C. Q. Schlerth, then consulting engineer for the Bagdad Copper Corp., sank the present winze to a depth of 145 feet below the adit level. After completing about 130 feet of lateral work from the bottom of this winze the venture was terminated. Shortly thereafter other parties secured the property and applied to the Reconstruction Finance Corporation for a development loan. Following an examination of the deposit by Ralph Yontz, the loan was not approved. A few years later lessees mined all the ore exposed by the former work and removed the track, pipe and all other equipment. The property has remained idle for the past 7 years.

The total production from the deposit is not known but it probably has not exceeded 2,000 tons. The only available records show that during the latter part of the Premium Price Plan, 693 tons of selectively mined and secondarily enriched copper ore was shipped to the Clarkdale smelter.

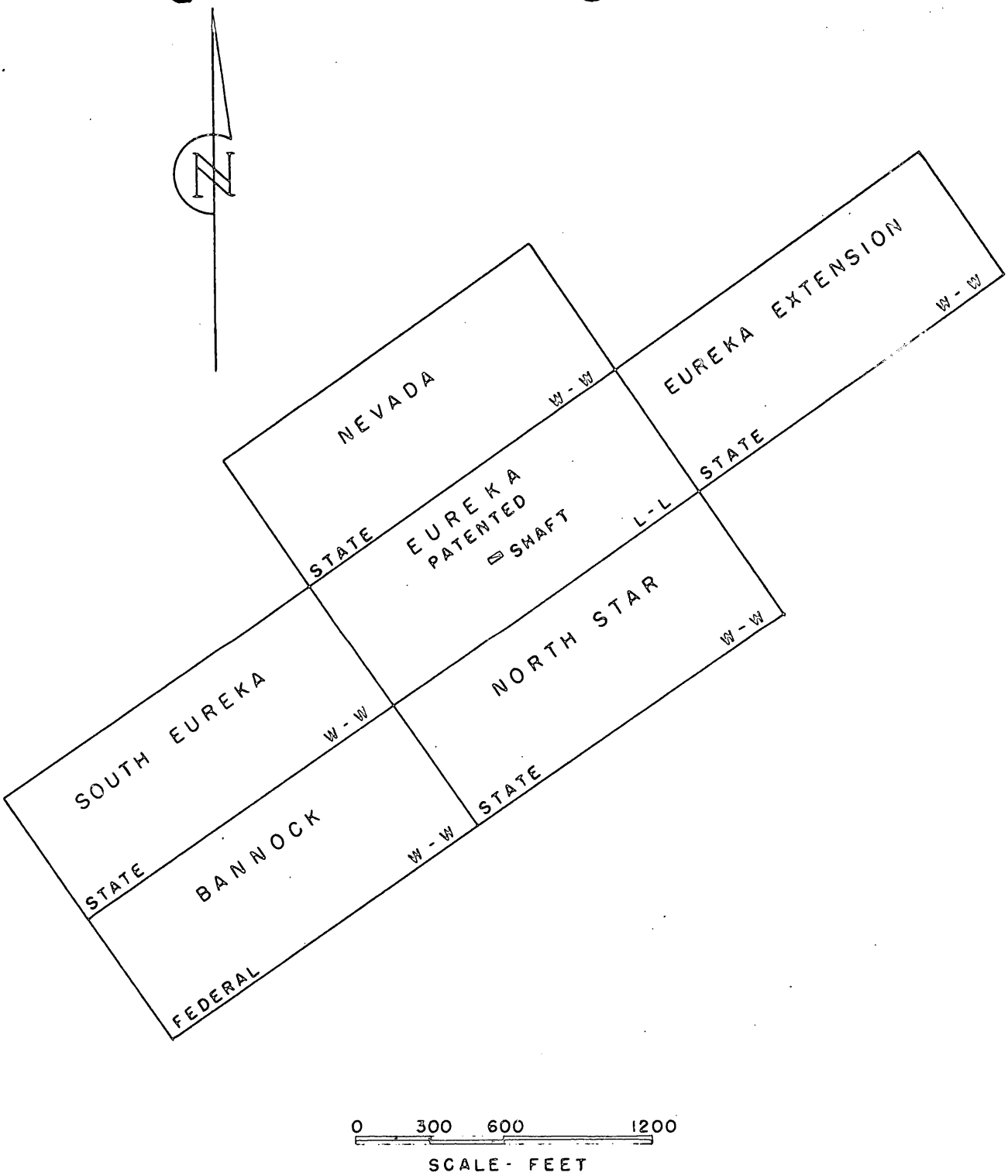
OWNERSHIP AND EXTENT

The applicants have a lease and option on the Eureka, a full-sized patented lode claim owned by John W. Lawler and M. L. Lynch of Prescott, Arizona. The purchase price of the property is $40,000, payable in 5 years by a 10 percent royalty on the net smelter value of the ore produced. In addition to the Eureka, 5 adjoining claims were recently located by the applicants (figure 2).

DESCRIPTION OF THE DEPOSIT

The Eureka or Pinafore prospect lies along the western side and close to the southerly end of a broad northeasterly trending belt of pre-Cambrian (Yavapai) schists. Granite basement rocks border the schists on the west and surround the belt at no great distance southwest of the property. Numerous and various sized dikes and irregular bodies of pegmatitic material invade the schist in the vicinity of the granite contact and are abundant on the Eureka claim. From their southern terminus the schists extend northeasterly for approximately 13 miles to the Hillside mine. About midway within the schists and several miles northeast of the Eureka are the Old Dick and Copper King properties, both of which in recent years have produced quite notable amounts of zinc-copper ore (figure 1).

The mineralization on the Eureka claim is associated with a small shear zone in the schist that is bounded by 2 fault fractures. The fractures are about 25 feet apart at the southern end of the mineralization, but appear to converge along their northward projection. The most westerly or footwall fracture of the zone strikes N. 70° E.,



DMEA 3006

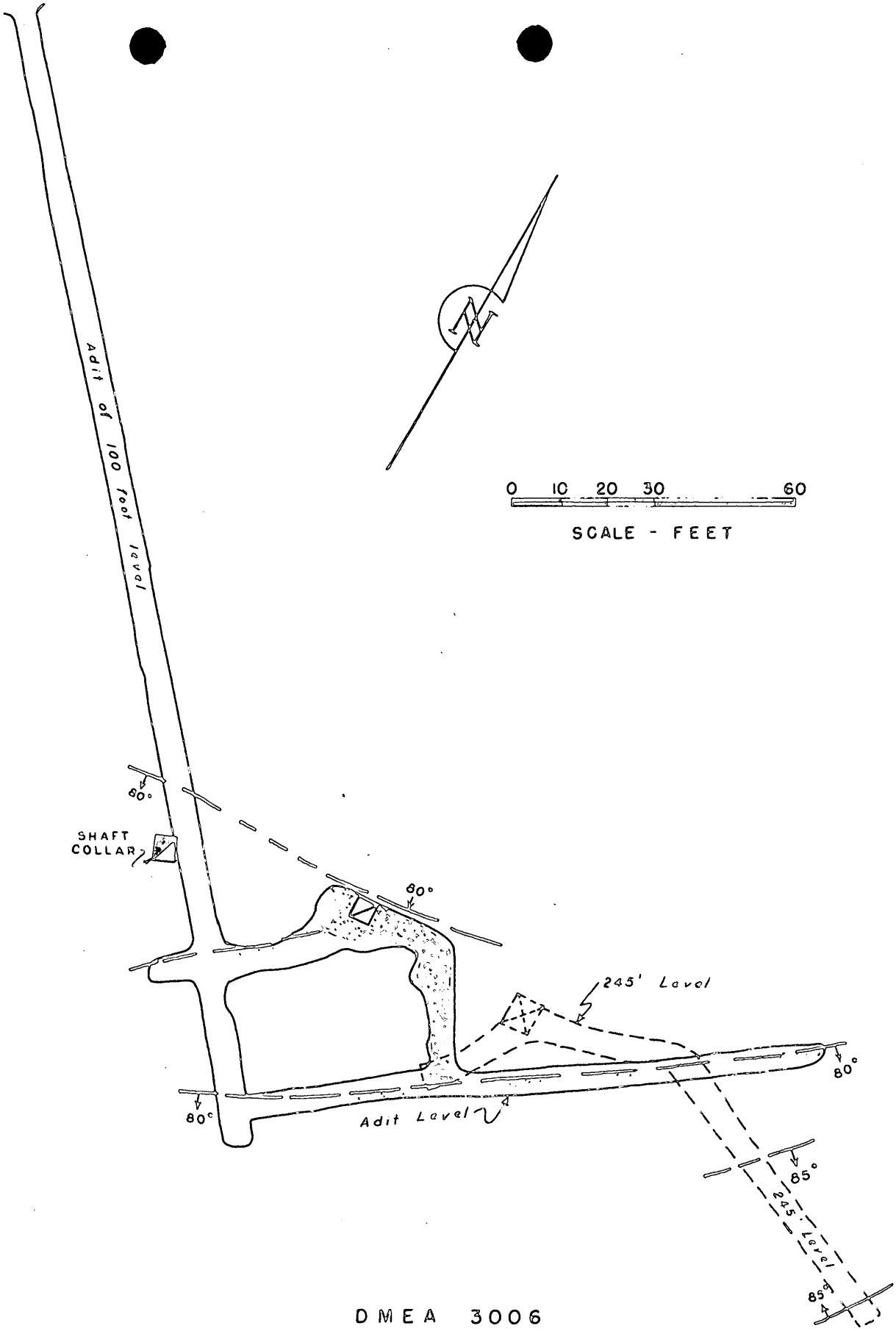
FIGURE 2. - EUREKA CLAIMS

YAVAPAI COUNTY, ARIZONA

while the hanging wall shear trends N. 50° E. Both dip about 80° southeasterly. The schists were well exposed on the surface along the strike of the shear zone yet any evidence of ore mineralization was limited to a length of about 100 feet.

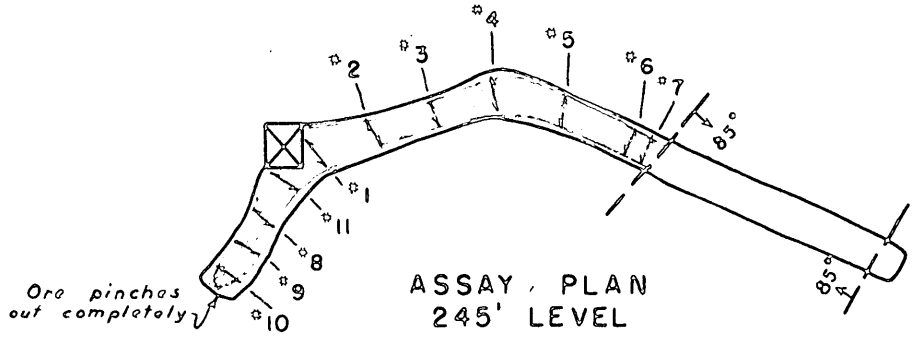
All the ore formerly mined occurred in an irregular steeply plunging crescent-shaped body that occupied a small fold along the footwall fracture (figure 3). An inclined shaft had followed this mineralized body from its outcrop to an adit level some 100 feet below the surface. From the adit level a steeply inclined winze had continued to follow the mineralization for an additional 145 feet or to a total depth of about 245 feet below the outcrop (figure 4). All the better ore had been gouged from the sides of the openings so that at the time of the visit the shaft and much of the lower portion of the winze were not accessible. Judged by the size of the outcrop and the visible stope openings above the adit level, this ore body had an average width of about 5 feet and a maximum curved length of some 65 feet (figure 3). The better ore on the bottom, or 245-foot level, as mapped by the Geological Survey in 1944, had an average width of 5.4 feet and a length of about 75 feet (figure 4).

In the upper portions of the deposit the ore was largely oxidized and contained in addition to the common oxide minerals of iron, copper and zinc, a large proportion of secondary chalcocite. The primary sulphides found on the lower level consisted of massive dark colored sphalerite, pyrite and chalcopyrite.



DMEA 3006

FIGURE 3. - PLAN OF EUREKA (PINAFORE) WORKINGS
YAVAPAI COUNTY, ARIZONA

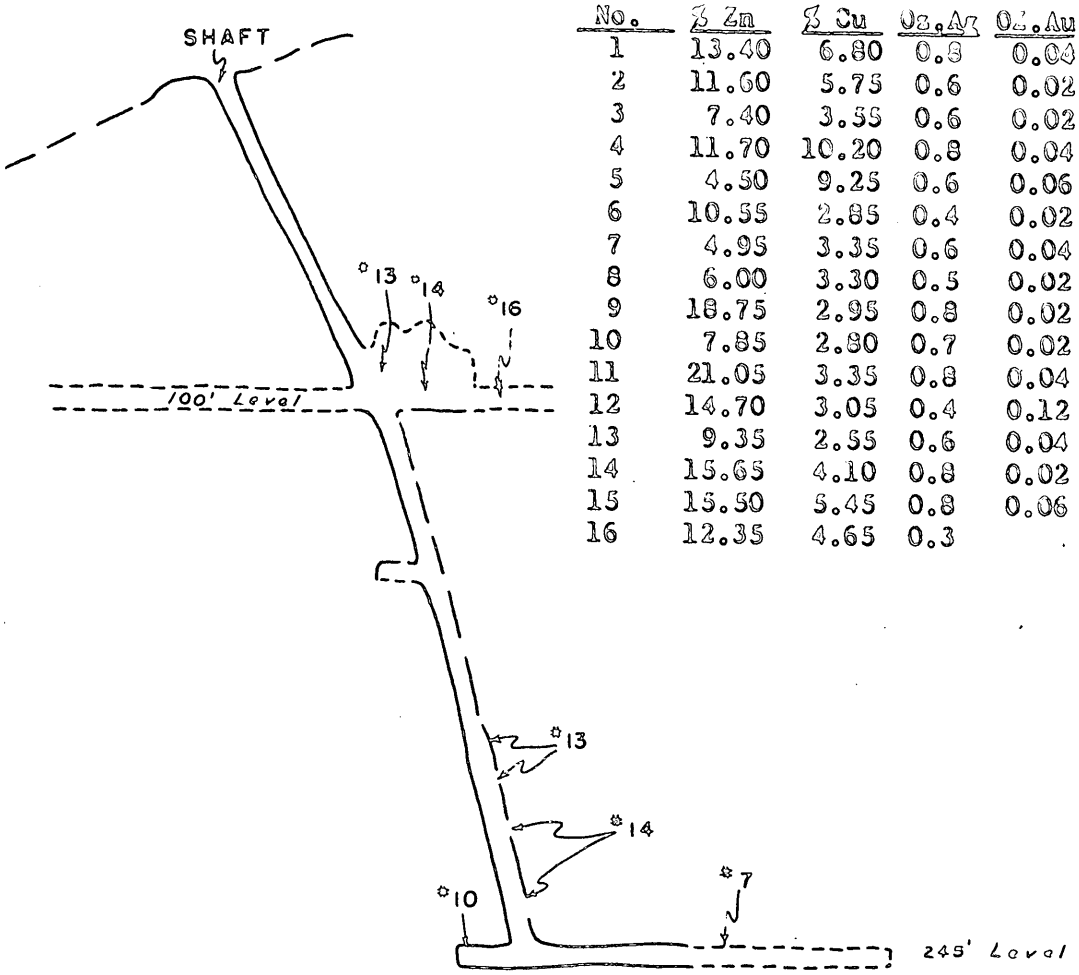


ASSAY PLAN
245' LEVEL

SCALE - 1" = 30'

ASSAY DATA

Sample No.	% Zn	% Cu	Oz. Ag	Oz. Au	Width
1	13.40	6.80	0.8	0.04	7'
2	11.60	5.75	0.6	0.02	6'
3	7.40	3.55	0.6	0.02	5.5
4	11.70	10.20	0.8	0.04	5'
5	4.50	9.25	0.6	0.06	4.5
6	10.55	2.85	0.4	0.02	5'
7	4.95	3.35	0.6	0.04	5'
8	6.00	3.30	0.5	0.02	5.3
9	18.75	2.95	0.8	0.02	4.3
10	7.85	2.80	0.7	0.02	5'
11	21.05	3.35	0.8	0.04	7'
12	14.70	3.05	0.4	0.12	8'
13	9.35	2.55	0.6	0.04	5'
14	15.65	4.10	0.8	0.02	5'
15	15.50	5.45	0.8	0.06	4.5'
16	12.35	4.65	0.3		3'



VERTICAL SECTION
SCALE - 1" = 50'

AFTER U. S. G. S. - MARCH 1944

DMEA-3006

FIGURE 4.- ASSAY DATA - EUREKA (PINAFORE) PROSPECT
YAVAPAI COUNTY, ARIZONA

The hanging wall fault fracture, as exposed by the 1,250-foot drift on the adit level, ranged from 1.5 to 3.5 feet in width and contained in addition to much gouge, some short pods showing oxide copper minerals. It was obviously too poorly mineralized to constitute ore. A few short raises had been driven in the better mineralized spots but no stoping on this fracture had been attempted.

The southeasterly trending prong of the crescent-shaped ore body ended against this hanging wall fault on the adit level as it did apparently on the bottom level (figures 3 and 4). However, there was no drag ore at the intersection or any other evidence on the adit level to indicate that the hanging wall fracture had displaced the ore.

Some unidentified radioactive minerals evidently were present in places along the pegmatite that formed the footwall of the ore body. However, the reactions of a Geiger counter did not appear to indicate that any appreciable quantity of radioactive material was present.

ORE RESERVES

There is no minable ore remaining in the accessible mine workings. The ore body which furnished the production was judged to have an average horizontal cross sectional area of not more than 400 square feet. Using a factor of 10 cubic feet per ton, the potential of the deposit would be of the order of 40 tons per foot of depth extension.

The available smelter settlement sheets, covering 693 tons of selected ore that was shipped from this ore body, showed that its average content was 0.02 ounces of gold, 1.2 ounces of silver per ton, 8.37 percent copper, and 11.7 percent zinc. Probably 50 percent of the copper content of this material was due to secondary enrichment. The primary ore exposed on the bottom level, as sampled by Ralph Youtz for the Reconstruction Finance Corporation, averaged 0.03 ounces of gold, 0.5 ounces of silver per ton, 4.9 percent copper, and about 12 percent zinc (figure 4).

ECONOMIC CONSIDERATIONS

At the present time the nearest available markets for ore of this nature are in the vicinity of Salt Lake City, Utah and the custom mill of the American Smelting & Refining Co. at Deming, N. Mex. Under the existing schedule at the latter mill, an ore containing 5 percent copper and 12 percent zinc would have the following value:

Copper Payments. (Based on market price of 30¢ a pound)	
5% less 0.2% = 96 lbs. x 60% = 57.6 lbs. @ (30¢ less 6.58¢) =	$13.49
Zinc payments. (Based on price of 11¢ a pound)	
12% less 0.5% = 230 lbs. x 73% = 167.9 lbs. @(11¢ less 6.7¢)=	7.22
Copper payments	$13.49 a ton
Zinc payments	7.22 a ton
Total	$20.71
Less treatment	4.00
Net value f.o.b. Deming	$16.71
Less rail freight-Congress to Deming	7.00
	9.71
Less trucking - 40 miles @ 10¢ tom mile	4.00
	5.71
Less 10% Royalty	$0.57
Net value of ore <u>in place</u>	$5.14 a ton

PROPOSED EXPLORATION AND COSTS

The proposed exploration as set forth in the application was worded as follows:

"Development program is to sink the present winze an additional 200 feet, taking off levels at each 100 feet. To raise from present bottom of winze level in the copper ore section of the mineralization for a connection to the existing tunnel level northeast drift on copper vein. This primarily for aid to ventilation. To explore the radioactive zone for rare earths".

Under the applicant's cost estimates, the application reads as follows:

Basis, 6 months

(a)	Contract work: Sinking winze, $60 per foot x 200 feet -		$12,000
	Contract work: Raises, drifts & crosscuts, $30 x 250 ft.		7,500
(b)	Hoistmen, trammers, laborers, $96 a day		13,624
	Supervisor and engineering, $800 a month) General mine foreman, $450 a month)		7,500
(c)	Explosives furnished by contractor		
(d)	Diesel fuel, gasoline, shovels, picks, etc.,	$600	
	Used rails	300	
	Cables, buckets	300	
	Rental, 315 cfm compressof @ $415	2,490	
	Used pickup truck	800	
	Used hoist	350	
	3 used jackhammers	1,050	
	Drill steel & jackbits	500	
	Blower & ventilation pipe	300	6,690
(e)	Lumber @ $80 per 1,000 ft.		1,000
	Repair to winze timber		500
(f)	2 small shacks and tent		350
(g)	Workmens compensation insurance, etc.		300
(h)	Contingencies		536
	Six months development work		$50,000

It appears extremely doubtful that all of this proposed work could be satisfactorily accomplished for $50,000 as estimated by the applicant. In order to start the proposed sinking, the present winze would have to be rehabilitated throughout by retimbering and the back filling of the open spaces around the new timber sets. This in itself would cost several thousand dollars more than was estimated by the applicant. Under item (g) the workmens compensation insurance etc., would amount to about 14.5 percent of the labor cost or over $3,000, instead of $300 as estimated in the application. Thus it appears that the proposed underground work would be likely to cost not less than $60,000. On the basis of the indicated potential of the deposit, namely 40 tons of ore per foot of depth, the proposed sinking to an additional depth of 200 feet could be expected to indicate 8,000 tons of ore, hence the cost of the exploration alone would probably amount to more than $7 a ton.

Following the visit to the property, the applicants submitted an alternative proposal which consisted of exploring the deposit at greater depth by means of core drilling. Under this latter program 4 diamond drill holes were proposed, all to be drilled from the surface and aimed to cut the deposit at depths that ranged from 150 to some 200 feet below the bottom of the present winze. The applicant estimated that this program involving about 1,760 feet of drilling, would cost $14,000.

If the probability existed that the deposit might become substantially larger at greater depth, then drilling before attempting the underground work would appear feasible.

CONCLUSIONS AND RECOMMENDATIONS

The Eureka ore body is much too small to be of significance. There was no evidence on the surface or underground that would indicate the probability that other or larger mineralized areas existed or that the present ore body would be likely to increase materially in size at greater depth. Consequently any further exploration does not appear warranted and it is recommended that the application for an exploratory loan be denied.

April 29, 1953

Mr. J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

Subject: DMEA-3006
Re: Exploration Assistance
Eureka Mine

My dear Mr. Williams:

The receipt of your application dated April 23, 1953 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3006 and referred to Mr. W. H. King, Executive Officer, Region IV, Bureau of Mines, 224 New Customhouse Building, Denver 2, Colorado.

Kindly refer to DMEA-3006 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Chief, Operations Control
and Statistics Division

J. Ward Williams
Mining Engineer

April 23, 1953

Administrator
Bureau of Mines
224 New Customhouse Bldg.
Denver 2, Colorado.

Sir:

I send herewith in quadruplicate an application for aid in an exploration project, pursuant to DMEA order-1 under the defense production act of 1950, as amended.

The principal metals to be explored for and developed are zinc and copper.

The attached MF-103 form questions have been answered in detail in supplemental pages accompanying this application.

Under section 5 - (b), the engineer who will be in charge of the program is the writer.

Answering section 7 - (b). Our share of the costs will be supplied by a syndicate sponsored by the First California Company of 647 S. Spring Street, Los Angeles 14, California.

I attach a copy of Lease and Option to purchase, covering the patented lode mining claim "Eureka", on which the initial development work will be started.

To amplify the details as given in my answers, I submit a copy of a report on the Eureka property, written by C.R. King consulting engineer who was engaged by the First California Company to make the examination.

Yours very truly

J. Ward Williams

address;
745 Holmby Ave.
Los Angeles 24
California.

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 27 1953

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. DMEA-3006
Metal or Mineral
Date Received 4/22/53
Estimated Cost
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: (J. Ward Williams 745 Holmby Ave. Los Angeles 24, Calif.
OPERATORS (Hortense H. Williams " " " " " "
(William White 331 South Warren St. Bishop, Calif.
(Florence O. White " " " " " "

(*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.

(*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

SEE ATTACHED LIST

(*b*) State any mine name by which the property is known. "EUREKA MINE"

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise HOLD LEASE AND OPTION ON PATENTED CLAIM * LOCATOR OF UNPATENTED FIVE 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. I COPY OF LEASE ATTACHED

(*e*) If you own the land, describe any liens or encumbrances on it NO LIENS OR ENCUMBRANCES

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

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.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*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.

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

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

16—66551-1

SEE ATTACHED STATEMENT

5. *The exploration project.*—(*a*) [redacted]e the mineral or minerals for which you wis[redacted] explore ZINC * COPPER * LEAD * RARE EARTHS

(*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.

(*c*) The work will start within AT ONCE days and be completed within SIX 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.

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?

☐ 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 April 23, 1953

Operators - Williams & White

J. Ward Williams
(Applicant)

By Hortense Hallock Williams

William White

Florence O White

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.

Address for correspondence:

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

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

3 - (a) and (d) and (f)

(a) Group of six contiguous lode mining claims in Eureka Mining District, Yavapai County, State of Arizona, as follows:

1 Patented claim: "Eureka" controlled under Lease and Option to Purchase. Lot 1683A, recorded in Book of Deeds 76, pages 413 - 417.

(f) 4 Unpatented claims located as state claims and recorded as follows;

"Nevada"	Book	of	Mines	14	Page	217
"South Eureka"	"	"	"	14	"	218
"North Star"	"	"	"	14	"	216
"Eureka Extension"	"	"	"	14	"	215

1 Unpatented claim located as federal claim and recorded as follows;

"Bannock"	Book	of	Mines	14	Page	219

(d) Attached one (1) notarized copy of Lease and Option on Patented Claim "Eureka".

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

#4 (a) (b) (c) (d) (e)

(a) Within the area of the Eureka patented claim the following listed work has been done in past years;

The development consists of a shaft from surface to a depth of approximately 100 feet, this shaft was sunk in oxide ore.

A Crosscut tunnel from northwest side of mountain was driven 225 feet and connected with bottom of shaft. An additional approximately 160 feet of development on this tunnel level was done, some of it copper oxide ore.

A winze was put down from tunnel level to a depth of approximately 150 and was sunk the entire distance in zinc-copper ore. All accessible with exception of bottom of winze.

(b)

No complete records of past ore production, it is estimated that the leasers shipped approximately 2,000 tons of copper oxide ore with about 8% copper content. The sulphide zinc-copper ore taken from the winze was thrown over the surface dump. Some of this was gathered up later and shipped, probable metal contents 25% zinc and 4.5% copper.

(c) The Eureka Mine is located near the southern end of a wide belt of metamorphic rocks striking NE - SW and traced for a distance of about 12 miles from northeast of the Bagdad Copper property to 2 miles southwest of the Eureka Mine.

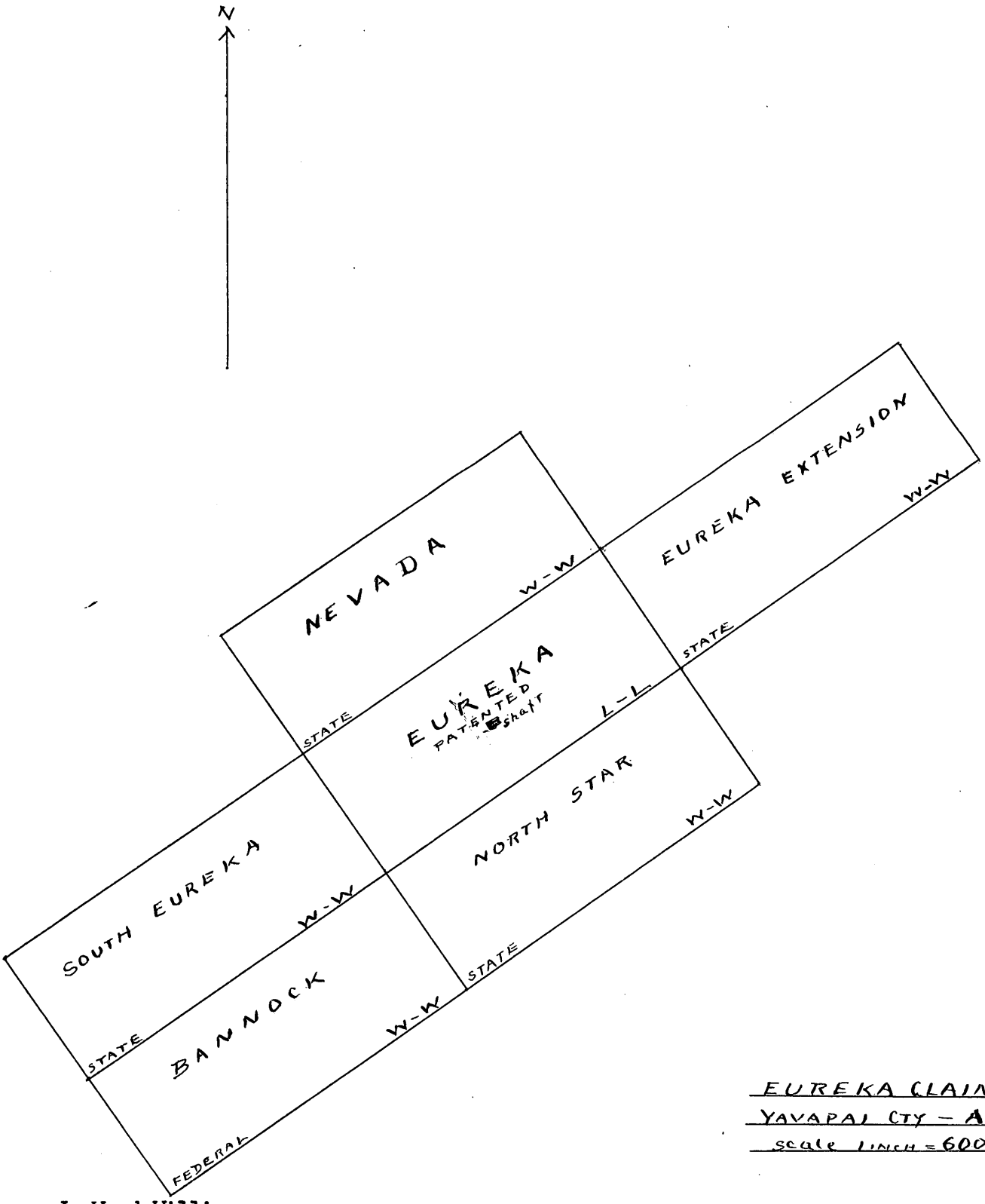
The ore occurs as lenticular bodies in the schist. At the Eureka Mine there is an intrusion of Pegmatite rock, causing a local folding of the mineralized section of the schist. To the southwest occurs a granitic rock contact. The Eureka pegmatite under Geiger counter give radio active reactions.
A copy of report by C. R. King, Consulting Engineer is submitted.
(attached mine work sketch and a sketch of claims by JWW)

(d) The Eureka mine is situated 40 mile north from Congress Junction and 10 miles southwest from Bagdad.
The Short cut Kingman highway from Congress to Kingman passed the Eureka mine within 3½ miles. A connected graded road from the highway to the mine is in good condition.
Shipping point for ore and concentrates is Congress Jctn. a distance of 40 miles from the Eureka mine. Bagdad the nearest resident point.

(e) Miners are available in Bagdad, Prescott, Wickenburg and other localities.

Power will be deisel and later electric.
Equipment from Phoenix, Prescott and Wickenburg.
Water supply for development work from wells near mine.

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California



EUREKA CLAIMS N55°E
YAVAPAI CTY – ARIZONA
scale 1 INCH = 600 FEET

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

#5 (a) (b) (d)

(a) In the Eureka Mine, earlier development proved the oxide zone to be slightly over 100 feet in depth from the surface. The ore chiefly copper oxide, carbonate, also contained zinc carbonate and sulphate. The sulphide zone as exposed in the winze consists of, principally zinc and copper sulphides, with small showing of lead. The contact zone on northwest side of mineralization gives radio-active reactions, probably chiefly Thorium, but A. E. C. assay shows slight uranium content.

(b) Development program is to sink the present winze an additional 200 feet, taking off levels at each one hundred feet. To raise from present bottom of winze level, in the copper ore section of the mineralization, for a connection to the existing tunnel level northeast drift on copper vein. This primarily for aid to ventilation. To explore the radio-active zone for rare earths.

(d) The development and operating work will be directly under supervision of an experienced mining engineer. This man has developed and operated large mining operations for various active mining companies over a period of many years. General Manager for 14 years with American Smelting & Refining Company. Vice Pres. and General Manager of Panaminas Inc. of New York. General Manager for Ventures Ltd of Canada for subsidiary Guayana Mines Ltd . General Manager, Masara Consolidated in the Philippines. etc etc.

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

#6 (a) (b) (c) (d) (e) (f) (g) (f)

Basis 6 months

(a)	Contract work; Sinking winze $60 per ft x 200 ft		$ 12,000.00
	" " Raises, drifts Xcuts at $30 x 250 "		7,500.00
(b)	Hoistmen, trammers, laborers $96 per day		13,624.00
	Supervisor & engineering $800.00 per month)		
	General Mine foreman 450.00 " ")		7,500.00
(c)	Explosives furnished by contractor		
(d)	Deisel fuel, gasoline, shovels picks etc	$ 600.00	
	Used rails	300.00	
	Cables, buckets	300.00	
	Rental 315 CFM compressor @ $415. per mo	2490.00	
	Used pickup truck	800.00	
	Used hoist	350.00	
	3 used jackhammers	1050.00	
	drill steel & jackbits	500.00	
	small blower and ventilating pipe	300.00	6,690.00
(e)	Lumber @ $80 per 1000bf		1,000.00
	Repairs to Winze timber		500.00
(f)	2 small shacks and tent		350.00
(g)	Workmens compensation, Ins etc approx		300.00
(h)	Contingencies		536.00
Six months development work			$50,000.00

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California

FIRST CALIFORNIA COMPANY
INVESTMENT SECURITIES
647 SOUTH SPRING STREET
LOS ANGELES

DWIGHT C. BAUM
VICE PRESIDENT

April 24, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 27 1953

Administrator
Defense Minerals Exploration Administration
United States Department of the Interior
Washington 25, D. C.

Dear Sir:

I enclose herewith an application for aid in an exploration project pursuant to DMEA Order No. 1 covering the Eureka Prospect in Yavapai County, Arizona. The application is made by Mr. J. Ward Williams of 745 Holmby Avenue, Los Angeles 24, California. First California Company expects to be associated in the financing of the development work through the organization of a small syndicate. However the operator will be Mr. Williams and his associates.

Along with the application and supplemental forms there are included a copy of an Engineering Report on the Prospect and a copy of the lease on the patented claim. An "Assent to Lien" covering the patented claim is being prepared and will be forwarded next week. Dispatch of the application was not delayed until the Assent was received as it is certain that the Assent will be given and it was desired to submit the application as soon as possible.

The application is being sent directly to Washington at the suggestion of the Bureau of Mines office in San Francisco.

Very truly yours,

Dwight C. Baum

DCB:A
Enclosures

C
O
P
Y

April 11th, 1953

J. Ward Williams
745 Holmby Avenue
W. Los Angeles 24
California

Dear Sir:

In compliance with your request reference paragraph five of the Lease and Option dated September 18th, 1952 and covering the Patented Claim "Eureka" lot 1683A, recorded in Book of Deeds 76, page 413-417 and located in the Eureka mining district of Yavapai County, Arizona, we the undersigned agree as follows:

On January 13th, 1953 we extended the time limit for start of development work as expressed in paragraph 5, from four months to a six months period to terminate on the 18th of March, 1953.

We then agreed to a further extension of the interim period between date of lease signing and time for start of development work for an additional month that would terminate on April 18th, 1953.

In view of the written evidence of intent to actually start work at the Eureka mine, we hereby agree to your request for a further extension of the interim period as from April 18, 1953, to May 31, 1953.

Failure on your part to commence active development work on or prior to this date of May 31st, 1953 will automatically cancel the aforesaid Lease and Option.

/s/ JOHN W. LAWLER

/s/ M. L. LYNCH

/s/ KATHLEEN LYNCH

Acknowledged:

/s/ J. WARD WILLIAMS

/s/ WILLIAM WHITE

LEASE AND OPTION

THIS LEASE AND OPTION made this 18 of September, 1952 by JOHN W. LAWLER, unmarried, and M. L. LYNCH AND KATHLEEN LYNCH his wife, all of Prescott, Arizona (hereinafter referred to as "First PARTIES"); and J. WARD WILLIAMS of HEMPSTEAD L. I. NEW YORK and WILLIAM WHITE AND FLORENCE O. WHITE his wife, of Wickenburg, Arizona (hereinafter known as parties of second part);

W I T N E S S E T H:

WHEREAS, First Parties are owners of the patented Eureka lode mining claim in the Eureka Mining District, Yavapai County, Arizona, more particularly described as follows:

Eureka, patented Lot 1683 A, recorded in Book of Deeds 76 page 413-417.

References are to the records of the County Recorder of Yavapai County. Said claim is hereinafter referred to as the Mine Property"; and

WHEREAS, Parties of First part and Second Parties desire to enter into a Lease and Option agreement;

NOW, THEREFORE,

1. The First Parties, for and in consideration of the sum of One Dollar to them in hand paid by the Second Parties, the receipt of which is hereby acknowledged, and in consideration of the covenants and agreements of the Second Parties, hereinafter contained, do hereby lease unto said Second Parties, and grant unto said Second Parties, the exclusive right and privilege and option to purchase the Mine Property hereinabove described.

2. The term "Mine Property" shall mean and include the lode mining claim described in the preamble to this Lease and Option together with all singular the mines, minerals, lodes and veins within the lines of said claims and the dips, spurs and angles, and all rights, privileges and appurtenances thereto in anywise belonging, including extra-lateral rights, easements, rights of way, water and water rights pertaining to the area within the Eureka Claim, and within one mile radius of said claim.

3. The term of this Lease and Option shall begin on the date hereof and shall end on the 18 day of September, 1957, unless extended or sooner terminated as hereinafter provided.

4. Immediately upon the signing of this Lease and Option the second Parties shall be entitled to take possession of all the above described property, and may continue in possession of said property during the life of this Lease and Option, and may work, operate, develop and improve said property, mine, mill and extract any and all ores, disposing of same in any manner that may be deemed advisable.

5. Second Parties shall start active development work either diamond drilling or underground work by tunnel, shaft or winze, not later than (4) months from date of signing this agreement, and thereafter shall continue active development or operating work continuously except as hereinafter provided for.

6. Second Parties shall pay First Parties a royalty of ten per cent of the net smelter returns or sale of concentrates to a third party, said returns being considered as net after all haulage and milling charges have been deducted. All royalties shall become due and payable as soon as smelter or buyer settlement has been received. A copy of the returns shall be furnished to the First Parties on all lots sold or treated.

7. Second Parties shall keep adequate books and records relating to the working and operation of the Mine Property, which said books and records shall be open to the inspection by First Parties at all reasonable times. The First Parties shall have the right to inspect the Mine Property at his own risk throughout the life of this Lease and Option.

8. The Second Parties shall maintain, throughout the life of this Lease and Option, such Workmen's Compensation Insurance, in such amount, and upon such terms as may be required by Laws of the State of Arizona. The Second Parties shall keep the Mine Property free from all mechanic's or materialmen's liens, shall pay all federal, state and county taxes legally assessed upon the Mine Property or improvements thereon during the life of this Lease and Option, and shall keep posted on the said Mine Property such notices of non-liability of First Parties as may be supplied by First Parties. In this connection Second Parties shall defend at their own cost any expense and action or actions that may be brought to enforce any claims or lien because of materials or labor furnished to Second Parties, and shall pay any judgement that may be entered in such action or actions.

9. The Second Parties agree to carry on the work to be done under this Lease and Option in a good and miner-like fashion with due regard to the safety, development and preservation of the premises as a workable mine and to carry on development work in a workmanlike manner, and to sufficiently timber the mine at all points where proper, and keep all workings open.

10. Should this Lease and Option be forfeited or terminated for any reason, all royalties theretofore paid by Second Parties to First Parties shall remain the property of the First Parties. Machinery and buildings installed by Second Parties shall remain property of Second Parties, if removed during the life of this Lease and Option or within 90 days after its termination.

11. It is agreed that upon forfeiture or termination of this Lease and Option, the Second Parties will furnish the First Parties with prints of maps of working and any assay plans showing location and value of samples taken.

12. Second Parties agree after start of active development work four months or less from date of signing this Lease and Option, that work will be continuous except as hereinafter provided for.

13. Second Parties shall perform, at their expense, such annual assessment work as may be required and not excused by any applicable moratorium law, now or subsequently enacted, on the Mine Property, commencing with the assessment work for the mining assessment year which begins July 1, 1952 and continuing thereafter during each succeeding mining assessment year during the life of this Lease and Option, provided, that if notice of withdrawal (see Paragraph 17 below) be given by Second Parties prior to May 1st of any year, then Second Parties shall not be obligated to perform the annual assessment work for the then current mining assessment year ending on the next June 30th. It is intended that after giving notice of withdrawal, Second Party shall be obligated to perform the annual assessment work for the then current mining assessment year only if notice of withdrawal is given between May 1st and June 30th of any year.

14. The option price for which the Mine Property may be purchased by Second Parties shall be an amount equal to $40,000.00, reduced by all royalties paid prior to the time such option is exercised during the term of this Lease and Option. First Parties agree that at any time upon written demand an escrow will be established with some bank in Prescott, Arizona, as escrow agent for both parties, and that all payments thereafter becoming due under the terms hereof shall be paid to such escrow agent for the account of First Parties. At the time of creation of such escrow a good and sufficient mining deed, executed by First Parties, conveying all his right, title and interest in the Mine Property to Second Parties, together with a copy of this Lease and Option and Escrow instructions directing said escrow agent upon payment of the option price to deliver to Second Parties such Mining deed, shall be delivered to such escrow agent.

15. If Second Parties are delayed or interrupted in or prevented from performing their obligations, as herein provided, by acts of God, wars, fires, floods, strikes or labor troubles, insurrection or mob violence, inability to obtain labor or supplies, injunction, regulations, orders or requirements of Government or other disabling cause beyond its reasonable control, or if the prevailing levels of costs and prices make operation of the Mine Property economically impracticable, then and in all such cases Second Parties shall be excused, without liability, from performance of his obligations hereunder during the period of each such delay, prevention, disability or condition, but all of the provisions hereof shall again come into full force and effect upon the termination of the period of such delay, prevention, disability or condition resulting from any of the causes aforesaid, and the term of this Lease and Option shall be extended for a period equal to the aggregate number of days during which performance shall have been excused.

16. Should Second Parties fail in any respect to comply fully with the terms and provisions of this instrument, and should First Parties notify Second Parties in writing of the matters in regard to which default is asserted, and if Second Parties do not either (i) cure such default within 30 days after the giving of such notice, or (ii) commence within said 30-day period to rectify such default and continue thereafter to use due diligence to rectify such default until it is fully rectified or cured, then First Parties may terminate this Lease and Option at any time thereafter during the continuance of such default by giving written notice to Second Parties and to all other parties of such election to terminate.

17. It is expressly understood and agreed, anything hereinabove to the contrary notwithstanding, that the continuance of this Lease and Option is optional to Second Party. At any time Second Party may withdraw by written notice given not less than 15 days prior to the date of withdrawal to be specified in said written notice. Upon the giving of such written notice of withdrawal, this Lease and Option shall terminate at the effective date of termination as specified in said written notice, without liability attaching to either party hereto, except with respect to payments, if any, due First Parties and unpaid at said effective date of termination. Within 90 days after said effective date of termination, Second Parties shall, upon request, execute and deliver to First Parties a quitclaim deed to the Mine Property.

18. Any notice of communication required or permitted hereunder shall be effective when personally delivered, or shall be effective when addressed:

If to First Parties: M. L. Lynch
Box 1068
Prescott, Arizona

If to Second Parties: J. Ward Williams
35 Perry Street
Hempstead, L. I. New York

and deposited postage prepaid and registered, in the United States mail. Either party may, by notice to the other given as aforesaid, change its mailing address for future notices hereunder.

19. First Parties warrant that they own the Mine Property free and clear of any and all claims, interests, liens and encumbrances, subject only to this Lease and Option. It is understood that the patented claim is properly protected with monuments as required by law.

20. Second Parties are hereby given the right to sell, assign, or transfer this Lease and Option.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands the day and year above written.

/s/ JOHN W. LAWLER	/s/ J. WARD WILLIAMS
/s/ M. L. LYNCH	/s/ WILLIAM WHITE
/s/ KATHLEEN LYNCH	/s/ FLORENCE O. WHITE
First Parties	Second Parties

STATE OF ARIZONA)
) ss.
COUNTY OF YAVAPAI)

This instrument was acknowledged before me this 18th day of September, 1952, by JOHN W. LAWLER, M. L. LYNCH and KATHLEEN LYNCH his wife.

/s/ G. H. GROCK
Notary Public

My commission expires May 2, 1956

STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

This instrument was acknowledged before me this 22 day of September, 1952, by J. WARD WILLIAMS.

/s/ G. W. THOMPSON
Notary Public

My Commission expires July 28, 1954

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

This instrument was acknowledged before me this 20th day of September, 1952, by WILLIAM WHITE And FLORENCE O. WHITE.

/s/ BERNARD J. POLLMAN
Notary Public

My Commission expires October 5, 1955

Clarence R. King
CONSULTING ENGINEER
[redacted] • • • [redacted]
PHONE: ANAHEIM, WESTMINISTER 8272
7648 Bolsa, Midway City, Calif.

April 5, 1953.

Mr. Dwight C. Baum,
Vice-President,
First California Co.,
647 Spring St., S.,
Los Angeles 14, Calif.

Dear Sir:

Acting upon your instructions, I have examined the Eureka copper-zinc prospect near Bagdad, Arizona; and enclose my report upon this property.

The object of this examination, as stated by you, was to quickly determine: (a) if the showings at the prospect were, in my opinion, worth expending approximately $30,000 in cleaning out old workings and doing a little new development with the object of finding ore or indications thereof that might return a profit upon the total investment required; after further development and extraction; and, (b) whether Mr. Williams' estimates of ore values; possible net return thereon; and future possibilities of the property were, in my opinion, reasonably accurate.

Accordingly, I spent one day, Thursday, April 2nd, upon the property and upon the nearby Copper Queen property; and part of Friday, April 3rd, obtaining data on mining, ore tenor, and other matters pertinent to a valuation of the Eureka prospect, from others operating in the district. My report herewith details the opinions and facts gathered during this visit to the property.

Briefly, my findings are:

(1) The proposed venture is not attractive except as a high-risk gamble that, (a) orebodies aggregating approximately 100,000 tons or more will be developed; of an average grade of about 25% zinc and 4% copper; or, (b) if a smaller tonnage of ore is found, either that zinc and copper prices will average approximately 12¢ and 30¢ respectively for at least three years, or the Mudd interests now developing the Copper Queen will buy the Eureka or the ore therefrom for treatment in their own plant in the district (which, of course, will not be built unless the Copper Queen makes a mine in their opinion).

(2) The proposed operating schedule, showing probable net returns estimated when shipping ore from the Eureka to an outside market, as summarized by Mr. Williams in his proposal (Appendix D herewith), does not agree with my findings based on returns and settlement schedule now received by a shipper of similar ore from the same district, (Appendix C herewith). Mr. Williams' summary shows a final net return per ton of $25.52, after deducting a 25% safety factor (or fixed charge). Upon the same grade ore and using the same type of calculation, my estimate of final net return per ton of ore is $1.77.

Yours very truly,

C. R. King

Clarence R. King,
Consulting Engineer.

CRK/vr

Clarence R. King
CONSULTING ENGINEER

April 5, 1953

REPORT UPON THE EUREKA PROSPECT
BAGDAD, ARIZONA

Location and Accessibility

The Eureka prospect is situated approximately six miles south-west of Bagdad, Arizona. The nearest railroad shipping points are Hillside station or Congress; both on the A. T. & S. F. railroad, (see index map herewith). The most practical shipping point is Congress, approximately 40 miles from the property over fair graded dirt road. This distance might be shortened about 18 miles; and many curves eliminated, by the construction of about four miles of road from near the property to the nearest point on the Wickenberg-Kingman highway.

Titles and Acreage of Claims

The scope of this report did not include investigation of titles. The holdings consist of one full-sized patented lode claim, (Eureka), and four full-sized unpatented lode claims; a total of approximately 100 acres. I did not check the corners and legal markings on the ground; (see claim map herewith). Mr. J. Ward Williams informed me that one more claim, (the North Eureka), is being located to protect the northern probable extension of the ore zone, (April 1st, 1953). This claim, shown dotted on the claim map, is necessary to cover possible mineralization to the north of the present workings. I believe that a parallel claim to the north of the North Star claim should also be located to cover possible parallel and/or faulted sulphide lenses down-dip from present showings.

History of Property

The Eureka claim was patented sometime after 1880 and before 1900. It was owned and the first work done, by men named Lynch and Lawler. Various lessees have mined oxidized ore on and above the adit level at various times. From old stope volumes, the tonnage may have been on the order of one or two thousand tons of ore averaging perhaps 7 to 10% copper in the form of cuprite, azurite, secondary chalcocite, etc. Gold and silver values probably were very low; this is characteristic of similar ores in the district; notably from the Old Dick, Copper Queen, and Copper King mines some two and a half to three miles northeast of the Eureka. I did not obtain accurate shipping records upon the prospect; these might be obtained by consulting data compiled by Chas.A. Anderson, of the U. S. G. S.; which data may be included in an unpublished report upon the Eureka Mining District. Former operators could not ship the complex zinc-copper sulphide ore at a profit, and hence suspended operations upon encountering sulphide ore at about the adit level, (150 feet below the outcrop).

General Information.

The property lies at an elevation of 3,000 feet, (adit portal), in the foothills bordering the high mountains and plateau region to the north and east.

Clarence R. King
CONSULTING ENGINEER

The topography near the property is quite rugged; narrow arroyos and valleys dissecting steep-sided to rolling hills reaching elevations up to a thousand feet above the canyon bottoms.

The climate is arid; very hot in summer, and quite cold in the winter. Vegetation is scanty: a few pinion pines at a higher elevation; some juniper; and a fairly heavy growth of brush are found on the hill slopes.

Labor supply would be ample for a small to medium-sized operation. Bagdad, Prescott, Congress and other nearby towns and mining camps could supply skilled miners. Wage scale at the property would be within the Arizona union scale as paid at Bagdad; about $2.00 per hour for machine miners, other categories in proportion.

Water supply sufficient for limited domestic use only is found on the property at a small spring about a thousand feet south of the mine workings and about 250 feet lower than the adit level. Water sufficient for milling purposes could probably not be found close to the property, although this subject was not investigated by me. There is a mill nearby upon a tungsten property which is at present shut down because of the fact that the water supply is involved in litigation between Bagdad Copper Co., and the owners of the tungsten mill.

Power for a small operation would probably be generated on the property, using diesel or diesel-electric prime movers. For a medium-sized operation, electric power could be brought in from Bagdad or other points on nearby transmission lines.

Fuel and timber, as well as all other supplies, would be hauled to the property by truck from outside points. Congress is the most practical railway contact on account of road conditions, but Hillside station is closer in airline distance.

There is no equipment at present on the property.

Economic Geology of the Property

The Eureka prospect is near the south end of a belt of metamorphic rocks striking roughly north 35° east; and extending from the Congress-Kingman highway to Hillside mine (about 3½ miles north of Bagdad; see index map). The metamorphics are principally amphibolite and mica schist, metarhyolite, and metatuffs which have been folded, faulted, and intruded by a series of granitic rocks ranging from gabbro to pegmatite. This whole series, including the granitic rocks, is of precambrian age; and is cut by two major faults, (Hillside and Mountain Spring faults) of large vertical displacement; most of which movement took place prior to Tertiary time. In late Cretaceous or early Tertiary time, the above described series of rocks and faults was intruded by quartz-monzonite stocks and bosses; one of which constitutes the Bagdad "prophyry" copper mine. (For a detailed discussion of the regional geology of the district, see Series No. 18, Bull. No. 156, Arizona Bureau of Mines).

Clarence R. King
CONSULTING ENGINEER

Mineralization in the area near the prospect is found along strike faults cutting the trend of the metasediments at a low angle; usually on or close to contacts between the schist and the metarhyolite, or close to contacts between the metasediments and the old plutonic rocks, (consisting principally of coarse-grained pegmatite on the Eureka property). Mineralization is found in the form of disseminated to massive sulphides, principally sphalerite, marmatite, and chalcopyrite; with minor pyrite, arsenopyrite, and galena. In the oxide zone, the ore mined was largely a gossan carrying oxide copper minerals with minor oxide zinc minerals. Outcrops are usually inconspicuous, and consist of slightly iron-stained to heavy gossan areas in the schist, with minor copper staining and bleaching, (hydro-thermal alteration of the schist resulting in light-colored sericitic schist). These inconspicuous outcrops usually are from a few to fifty feet above oxidized copper orebodies from three or four to twenty or thirty feet wide, and from twenty-five to several hundred feet long. These bodies of oxide ore are in turn part of or close to discontinuous thick lenses of massive sulphide ore of the type described in the foregoing. The zone of oxidation shades into the sulphide zone at depths varying from fifty to two hundred feet below the outcrop; at which point the local water table is usually encountered. The water table generally varies in elevation roughly according to the contour of the region. For example: the water table at the Copper Queen prospect is at 3400 feet; at the Eureka prospect, 2800 feet, (approx.); at both places about 200 feet below the highest outcrop.

The Old Dick mine, (actively shipping ore at present) and the Copper Queen prospect, (under development by the Mudd interests at present), are situated about 3½ miles north-east of the Eureka prospect, in the same schist belt; and upon the same structural control as the Eureka. The sulphide ore is of the same type in all three properties. By analogy, the Eureka should upon development demonstrate the same general type and size of orebodies of the same general grade as the Copper Queen and Old Dick. These two properties, while not fully developed, have been developed sufficiently to show orebodies from fifty to several hundred feet long, five to fifty feet wide, and extending to present development limits in depth with indications of increasing, rather than decreasing size. Since the ore is primary mineralization of the high temperature replacement type in favorable metasediments; it may be expected to persist in depth until the granitic basement is encountered. While this point is not known; the thickness of the metasediment zone and other considerations would lead to the belief that favorable host-rocks for ore will persist to depths of several hundred or possibly thousands of feet.

The Eureka prospect is nearly at the south end of the belt of metasediments. The granitic basement rocks may, therefore, be encountered at shallower depths than at the location of the Old Dick and Copper Queen properties, which are more nearly at the center of the schist belt.

The orebodies encountered in the district, and that will probably be found upon development in the Eureka are en echelon and in file lenses, usually rather thick compared to their length and depth. Such bodies are, however, found within reasonably close proximity to each other; and are of appreciable size.

Ore and wall-rock are compact and usually stand well, necessitating little timbering. Mining methods used would depend upon the width of the ore: in the narrower orebodies, shrinkage stoping, stulled open stopes, or rill stoping would probably be used. In the wider areas, cut and fill or similar methods might be adapted to the particular type of ore and wall-rock. In any case, mining should not be expensive compared to many districts.

Ore treatment and marketing.

The Eureka ore is a fairly fine-grained, massive sulphide that will probably average 25% zinc and 4% copper as stoped; if present ore showing, and similarity with the Copper Queen and Old Dick mines holds upon development. This type ore must be beneficiated by differential froth flotation. I am informed that ore from the Copper Queen and Old Dick has been mill-tested at the Coronado Copper Co. mill with about the following results: 75% of the zinc was recovered in a concentrate assaying 50% zinc and 1.5% copper; 80% of the copper was recovered in a concentrate assaying 20% copper and 4% plus, zinc. The concentration problem, therefore, is not serious: the ore definitely is amenable to flotation, and marketable copper and zinc concentrates may be produced with a reasonable overall recovery of values contained in the ore; by standard beneficiation processes.

Profit and Loss Estimate; if Eureka ore is shipped

At the present time, the Old Dick mine is shipping their run-of-mine ore to the American Smelting & Refining Co. custom mill at Deming, New Mexico. The superintendent kindly furnished me with the purchase schedule applying to present shipments; a condensed copy of which is appended to this report. He also stated that the present schedule is the best that the Dick management has so far been able to obtain, in the search for a better market for their ore. If shipment of ore from the Eureka is contemplated; a calculation of saleable value based on this schedule is a fairly accurate estimate of the true value of the ore if shipped to an outside custom mill. The assay average grade of ore that may reasonably be expected upon development of the Eureka is about 25% zinc and 4% copper; this figure is roughly an average between the present ore reserve and shipping average of the Old Dick mine; and the assay of the bulk sample of sulphide ore taken from the Eureka dump by Mr. Williams. Based upon this average assay value; and using the metal prices assumed by Mr. Williams in his estimated operating schedule dated March, 1953; the sale of Eureka ore at the Deming custom mill would result in the following values and settlements under the present ore buying schedule:

Copper payment:

4.0% - 0.2% = 3.8% = 76 lb./ton x 0.6 = 45.6 lbs./ton paid for.
settlement price = 26¢ - 6.58¢ = 19.42¢ per lb.
Total payment of copper content of ore = 19.42¢ x 45.6 lbs. = $8.85

Zinc payment:

25.0% - 0.5% = 24.5% = 490 lbs./ton x 0.73 = 357.7 lbs./ton paid for.
Settlement price= 11.00¢ - ((7.18-(0.12x4))= 11.00¢ - 6.70¢= 4.30¢ per lb.
Total payment for zinc content of ore = 4.30¢ x 357.7 lbs.= $15.38
Base milling charge = $4.00 per ton of ore.

Clarence R. King
CONSULTING ENGINEER

(1) Net settlement value of ore f.o.b. Deming, N.M. = $15.38 + $8.85 - $4.00 = $20.23 per ton.
(2) Net value of ore f.o.b. Congress = $20.23 - $7.00 (rry. frt.) = $13.23 per ton
(3) Net value of ore on truck at mine = $13.23 - $3.00 (truck haul.)= $10.23 per ton
(4) Net value of ore at mine, after paying 10% royalty= $10.23-$1.02= $9.21 per ton.

Summarizing; ore from the Eureka property assaying 25% zinc and 4% copper, if shipped to the best market apparently available at present; and if the price of zinc is 11¢ (Prime Western slab at E. St. Louis), and copper is 26¢ (Domestic cathodes at New York); then the net value of the ore at the mine before deducting taxes, mining cost, and other operating expenses is $9.21 per ton.

If the price of copper is assumed to be 30¢ and zinc 11¢ per pound respectively, (prices as of April 1st, 1953,) then this value of the same grade ore on truck at the mine is raised to $10.86, calculated on the same basis; after deducting royalty.

From experience with mines stoping massive sulphide ore in bodies comparable to those expected in the Eureka and existing at the Old Dick mine; checked by information on costs attained in the same district; the following estimate of extraction costs is believed to be conservative; (assuming an efficient small operation).

Scale of mining; 50 tons per day or 15,000 tons per year, for five years.

Direct mining cost, per ton of ore shipped	$5.00
Development allowance (after initial prospecting development)	1.00
Direct overhead	1.50
Fixed charges,(amortization of equipment, taxes, insur., etc.	1.00
Total estimated cost of ore in trucks at mine	$ 8.50 ton

It is apparent, therefore, that if ore from the Eureka is shipped to a custom mill under a purchase schedule similar to that attached to this report (Appendix A), that profit vanishes when zinc and copper prices are slightly below 11¢ and 26¢ per pound, respectively. On the other hand, a net profit of about $2.35 per ton should be expected when zinc is 11¢ and copper 30¢ per pound; which prices are more nearly in line with present and immediate future market.

Ore reserves and Development possibilities

There are no blocked out ore reserves on the property. Known oxidized ore has been stoped; and while the possibility exists that a small tonnage of high-grade, (8 to 10%) copper ore may be found and extracted in the oxide zone during the development of the property; any real hope of making a profitable mine rests upon the discovery of sulphide orebodies. Prior workings have exposed the top of the sulphide ore; and the property has been submitted by Mr. Williams as a promising prospect with a good chance of developing orebodies comparable to those found in the Old Dick and Copper Queen. I believe that this view is correct; and that some one hundred feet of vertical and 500 feet of lateral development in addition to the present workings has about a 50-50 chance of proving between 10,000 and 20,000 tons of ore averaging about 25% zinc and 4% copper.

The cost of this initial development would be on the order of $30,000; (after deducting salvage value of equipment purchased, if the results of the development were disappointing). This sum would be "high risk" money; not so much becuase of the risk of not finding ore; but the chance that major orebodies, or substantial indications thereof, will not be found.

It will be apparent from the profit and loss estimate on ore shipped that, to make a profit on the venture: (a) orebodies with aggregate tonnage to justify installation of a mill will have to be proved, or, (b) Copper and zinc prices upon which custom mill settlements are based will have to average about 30¢ and 12¢ per pound respectively, for several years; or, (c) the interests now developing the Copper Queen will install a mill in the district and will buy either the property or the ore therefrom.

Summarizing; the real gamble is threefold: how large will the orebodies be; what will be the zinc and copper price average over the time necessary to develop and mine out the property; and what is the chance for nearby properties to develop sufficient ore to install a mill at which Eureka ore may be sold in the event that the property does not develop sufficient ore to justify its own mill.

I would estimate these risks to be of this order: (a) the chance for finding orebodies aggregating, say, 30,000 tons is about 50-50; (b) the chance that ore proved will be on the order of 100,000 tons, (thereby enabling the installation of a mill at or near the property by the operators thereof) is about one in three; (c) the chance that zinc and copper prices will average 12 and 30 cents respectively over a period of time sufficient to extract, say, 50,000 tons of ore are about 50-50 and, (d) the chance that the Mudd interests will develop sufficient ore to warrant building a mill in the district or continue to operate therein is of the same order: about 50-50.

Proposed Terms

The terms proposed by Mr. Williams upon the Eureka property, I assume to be as outlined in his letter dated March 14th, 1953, (Appendix E). Briefly, the terms are:

(a) For the sum of $30,000, to be used in the initial development of the property, Mr. Williams will assign 50% of the stock in a corporation to be organized (I assume a corporation will be formed); to the interests putting up the $30,000; 10% of such stock to the agent obtaining the money; and will keep 40% of such stock as payment for contributing the following asset to the Corporation:

(b) The sole asset owned by the corporation will be a lease and option upon the Eureka patented mining claim, plus contingent title to four (or more) unpatented mining claims now held in the name of Mr. Williams and/or his associates; or that may be located in the future by them or him.

(c) The liabilities assumed by the corporation upon its formation are: (1) an obligation to pay the owners of the patented claim 10% of net shipping liquidations less freight to market, on all ore removed from the property; (2) The sum of $40,000 within five years of the date of Mr. Williams' lease, (not stated in his letter). Any royalties paid under (1) will be construed as payments on the $40,000 purchase price if the option is exercised within five years of the date of the lease.

Clarence R. King
CONSULTING ENGINEER

These proposed terms are equitable, in my opinion, if the following points not detailed in Mr. Williams' letter are incorporated therein; and are understood by all parties:

(1) No minimum royalties or partial payments upon the $40,000 principal other than the royalty specified upon ore shipped or sold should apply before expiration date of the option, in view of the high risk incident to undertaking the venture.

(2) Provision should be made in the corporate entity for the raising of additional capital: $30,000 will barely perform the initial work necessary to determine whether the property is worth developing at all. While it may be argued that receipts from ore shipped will help carry the expense of additional development; the realistic view is that no base-metal prospect, no matter favorable, can be expected to pay for its own development by receipts from ore shipped, and still block out sufficient ore ahead of extraction to justify installation of a treatment plant, (which is essential if maximum profit is to be made upon a complex base-metal ore). In this case, it is quite conceivable that in addition to the initial $30,000; additional funds on the order of $150,000 or more might be required if initial development results favorably; before any real return on capital invested is reached.

(3) The term of the lease and option should be extended to ten years; with the proviso that, say, half of the purchase price must be paid on or before five years from the date final agreement is signed. This provision should be included to give those undertaking the venture time to "wait out" the inevitable delays in development programs; and more important, in view of the risk involved, to hold the property at minimum cost while awaiting the outcome of the development of the Copper Queen and Old Dick mines by other interests.

C. R. King

Clarence R. King

April 5, 1953.

This report consists of:
1 - covering letter.
7 - typewritten pages.
8 - typewritten pages of data as appendices.
3 - maps.

Clarence R. King
CONSULTING ENGINEER

APPENDIX "A"

CUSTOM MILL SETTLEMENT SCHEDULE

(A. S. & R. Custom mill at Deming, N.M.; only present practical shipping point for Bagdad district copper-zinc ores. This schedule was copied from that furnished the Old Dick mine; and under which this company is presently shipping).

Payment Schedule:

(1) Gold: if present over 0.02 oz. per ton; deduct 0.02 oz. from assay and pay for 50% of the remainder at $31.00 per oz.

(2) Silver: If present over 0.5 oz. per ton, deduct 0.5 oz. from assay and pay for 80% of the remainder at Handy & Harmon silver quotation nearest date of receipt of shipment; less 1.5¢ per ounce.

(3) Lead: If present over 1.0%; deduct 0.5% from assay and pay for 56% of the remainder at E. & M. J. quotation on nearest day to receipt of shipment, less 2.8¢ per lb.

(4) Copper: If present over 0.2%, sulphide copper, deduct 0.2% and pay for 60% of of the remainder at E. & M. J. price on date nearest receipt of shipment, for domestic elect. cathodes, less 6.58¢ per lb.

(5) Zinc: If present over 4%, deduct 0.5% from assay; and pay for 73% of the remaining sulphide zinc at E. & M. J. quotation for prime Western, East St. Louis, on date nearest receipt of shipment, less 7.18¢ per lb.; increasing or decreasing this deduction by 0.12¢ per cent as the E. & M. J. price increases or decreases above or below 15¢ per lb.

The above schedule applies to sulphide ores only; and no payments for oxide copper, lead or zinc will be made under this schedule.

A base charge of $4.00 per short ton applies to all ore shipped under this schedule.

This schedule is limited to 250 tons shipped in any one month unless specific arrangements are made to ship more.

All prices and charges apply to ore f.o.b. mill at Deming, N. M.

APPENDIX "B"

Clarence R. King
CONSULTING ENGINEER

ESTIMATE OF COST AND TIME REQUIRED FOR INITIAL DEVELOPMENT OF EUREKA PROSPECT

Assumptions:

(1) Work to be done: rehabilitate present shaft to bottom (250 ft.). install rail in present adit, install hoist on surface but remove muck thru adit, (Arizona law prohibits installation of gas engine driven hoists underground); sink shaft 100 feet (to 350-foot level); drive 500 total feet of lateral drifts and crosscuts from the 350 and/or 250-foot levels.

(2) Use base wage plus footage bonus system of payment to a crew of four men, and install minimum equipment for most rapid advance.

Estimate of total time required for above work: based on recent previous experience by King & King in southern Arizona; time required for this job will be approximately 5 months; or, say, 120 shifts with 4 men on shift.

Breakdown of cost estimate: Item:	Cost, outright purchase	Cost monthly, (rental or payroll)
1 - compressor, 315 ft. capacity.....	$ 8,000.00*	$ 350.00
400' - 7" galv. vent pipe.....	300.00	
500' - 2" airpipe.....	250.00	
1 - underground air receiver.....	150.00	
500' - 1" water pipe.....	150.00	
2 - jackhammers, air legs, hose & access...	1,400.00	
1 - 12B Eimco mucking machine.....	6,500.00*	350.00
1 - car assorted timber, 25M ft.....	2,000.00	
Misc. tools (inc. 2 mine cars).....	2,000.00	
6 - tons 18# rail, spikes, fishplates.	900.00	
Hoist, hoist rope, bucket, sheave.....	1,700.00	
Minimum buildings (hoist shack, change	1,000.00	
Super. housing (office-living).....	1,000.00	
** Payroll		1,728.00
Supervision & engineering.....	3,750.00	
Total Direct Cost.....	$14,600.00	$2,428.00
Add. for tot. job, $2,428 x 5.....	12,140.00	
Total Direct Cost of Job.....	$26,740.00	
Add. fixed charges, 10%.....	2,674.00	
Total estimated cost of job.....	$29,414.00	
Add for contingencies, 10%.....	2,941.00	
NECESSARY BUDGET FOR JOB.....	$32,355.00	

In round numbers, $30,000 should complete the job if water in volume necessitating a sinking pump is not encountered in the shaft. If appreciable water is encountered, a budget of $35,000 would be necessary to complete the job.

Notes: Items marked * should be rented on option to purchase, and are not included in the total of equipment bought on outright purchase, even though the cost of such equipment is noted in that column.
** Payroll assumes 4 men at an average shift pay of $18 each; working a 24-day month. The $18 includes base rate plus bonus for footage.

Estimator: D. M. King Checked: C. R. King Date: 4/1/53.

Clarence R. King
CONSULTING ENGINEER

APPENDIX "C"

Using the format of Mr. Williams' operating schedule dated March, 1953, (Appendix D), but substituting metal prices as of April 1st, 1953; and realistic treatment and marketing costs, as per the settlement schedule, (Appendix A herewith) the following profit and loss picture appears, if ore is shipped to present market:

ESTIMATED OPERATING SCHEDULE - EUREKA MINES

Mr. Williams' bulk sample (not run for Au or Ag)----------Zinc, 30.8%; Copper, 4.4%

Shipping ore, allowance for dilution ----------Zn, 25.0%; Cu, 4.0%

Using prices: Zn - 11¢ Cu - 30¢ ----------Gross value - $79.00 per ton

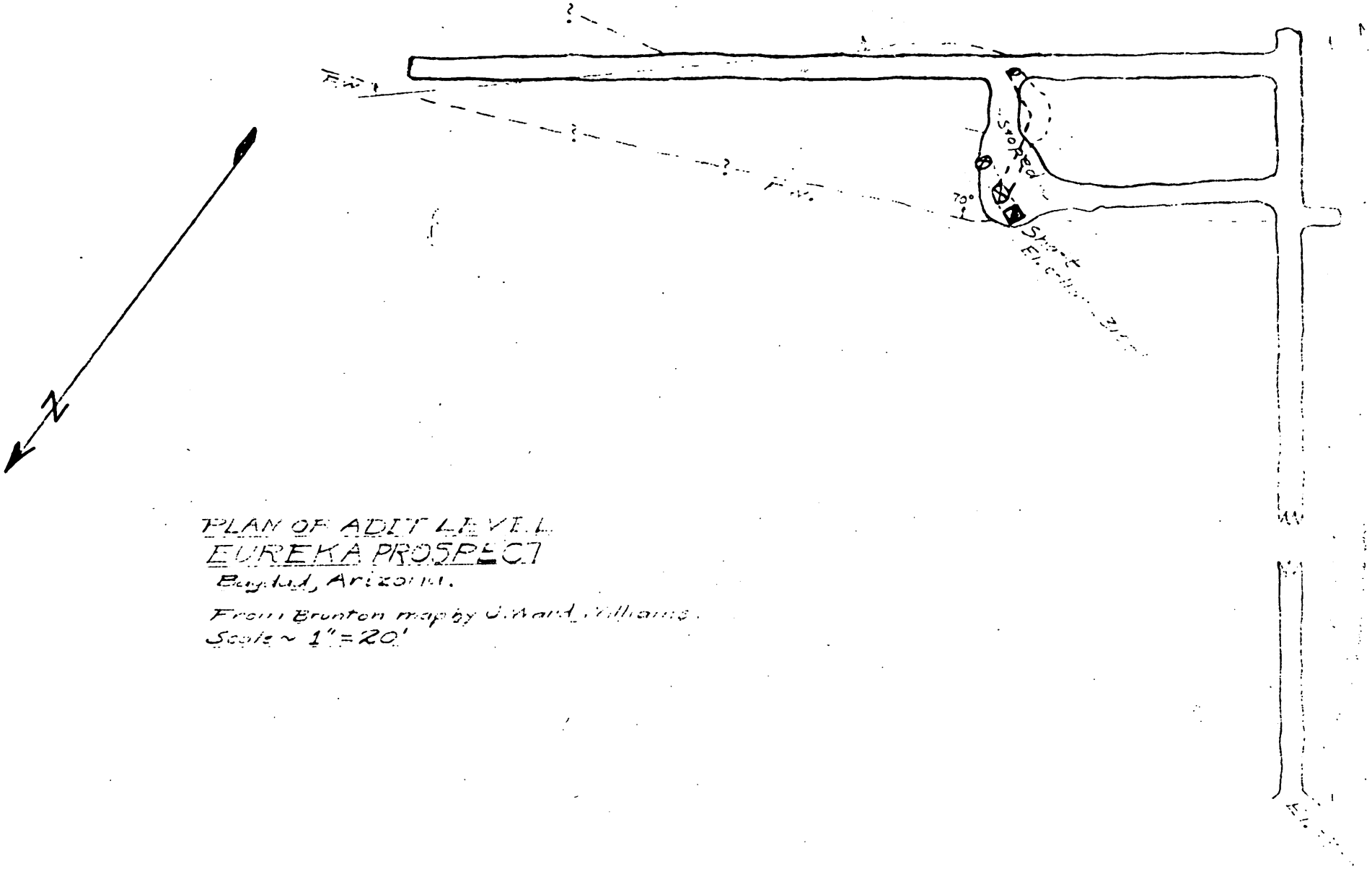
Estimated	Per Ton
Mining costs	$ 8.50
Transport, truck & rry.	10.00
*Marketing costs	56.94

	$75.44
Total net return, as sold.....	$ 3.56
Royalty to L & L.....	1.20
Net return.....	$ 2.36 per ton
Safety factor, 25% (taxes, etc.).....	0.59
Final net.....	$ 1.77 per ton

Outcome, (est)	Net return	Backer 50%	Mid-man 10%	W & W 40%
Per day - 10 tons	$ 17.70	$ 8.85	$ 1.77	$ 7.08
Per day - 20 tons	35.40	17.70	3.54	14.16
Per mo. - 260 tons	$ 460.20	$ 230.10	$ 46.02	$ 184.08
(26 da) - 520 tons	920.40	460.20	92.04	368.16
Per year - 3,120 tons	$ 5,522.40	$2,761.20	$ 552.24	$2,108.96
(312 days) 6,240 tons	11,044.80	5,522.40	1,104.48	4,217.92

* Note: Marketing costs as given here were calculated by taking the net settlement value at the custom mill at Deming, N.M. (as obtained from the schedule, Appendix A); and deducting this figure from the gross value of the ore.

It will be noted that the mining cost I have used is much lower than the $16 per ton figure used by Mr. Williams. My estimate of mining cost is based on costs now actually attained by a similar property operating in the district; plus experience with cost at small properties of this type. The real difference between Mr. Williams' estimate and mine is the marketing cost plus "loss in recovery". Since the schedule used in figuring these charges and costs is in effect at present in the district on similar ore; and is in line with custom mill and smelter schedules in effect both in the U.S. and Mexico, not only at A.S. & R. plants but other companies such as American Metals, International, etc.; I feel that the net values for ore shipped which I have used are the only realistic values possible at this time.



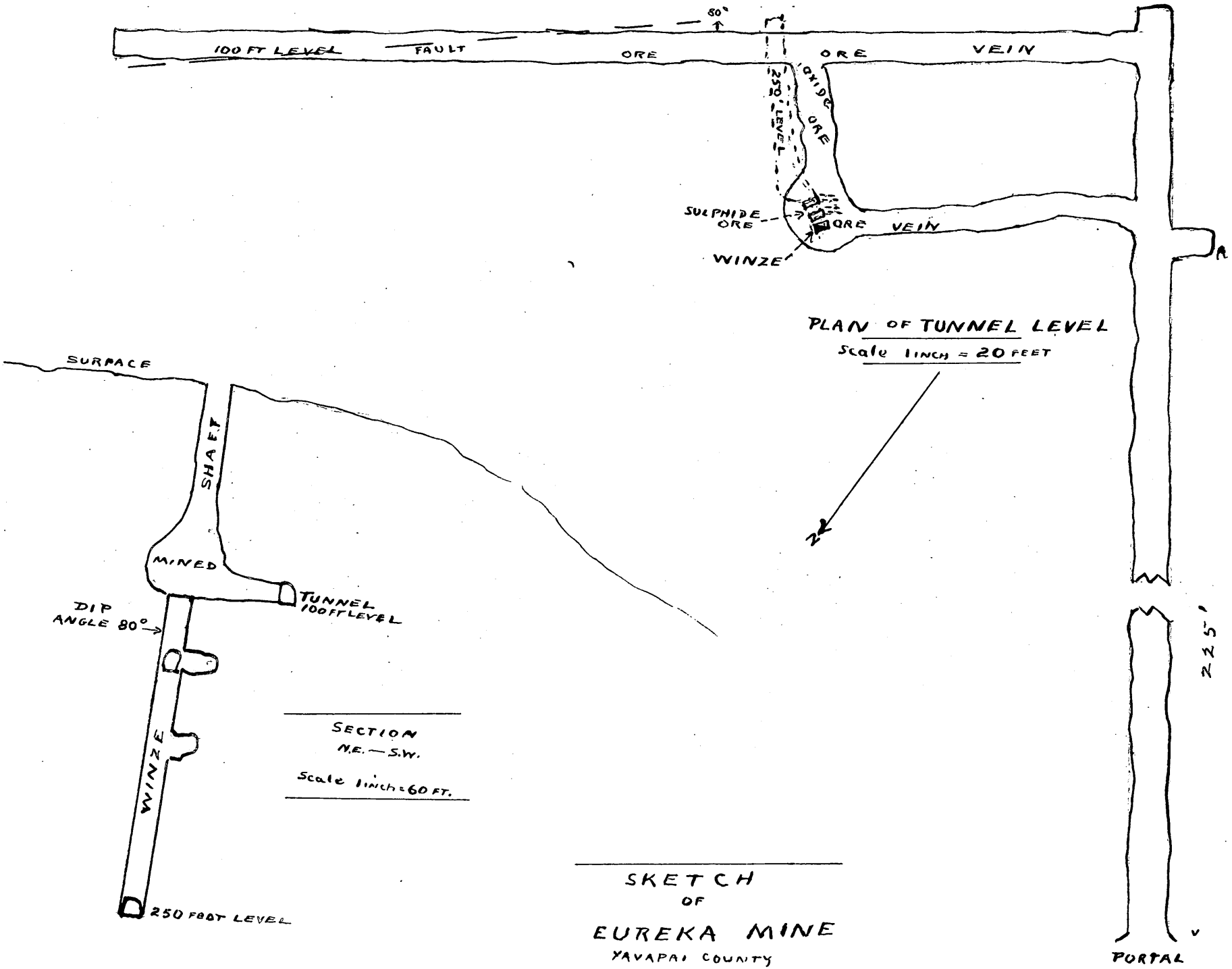
PLAN OF ADIT LEVEL
EUREKA PROSPECT
Bagdad, Arizona.

From Brunton map by J. Ward Williams.
Scale ~ 1" = 20'

To accompany Report

DMEA- 3006

J. Ward Williams
745 Holmby Avenue
Los Angeles 24, California



SKETCH
OF
EUREKA MINE
YAVAPAI COUNTY
ARIZONA.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Joplin, Missouri

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300

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Defense Minerals Exploration Administration
U. S. Department of Interior
Interior Building
Washington 25, D. C.

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