UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

January 8, 1954.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - Docket No. 3184 (Copper-Uranium), John A. Cooley, Copper Squaw Claim, Pima County, Arizona.

Enclosed are eleven copies of the engineering report of examination on the subject property.

The applicant requested $13,417.00 for the further exploration of a copper-uranium prospect. The engineer examiner concludes that while former exploratory work has disclosed a few narrow disconnected spots and small lenses of mineralization, there is no reason to expect that further exploration would be likely to disclose larger or higher grade deposits. He recommends that the application be denied and we concur in this recommendation.

W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
1-22-54
(date)

MINING DIVISION
REGION IV

December 7, 1953

Memorandum

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

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

Subject : Report on Docket DMEA-3184, John A. Cooley's Copper Squaw Copper-Uranium Claims, Papago Indian Reservation, Pima County, Ariz.

Enclosed are original and 10 copies of the section on Summary, Conclusions and Recommendations by A. F. Shride of the Geological Survey and L. L. Parnham of the Bureau of Mines, and the section on Engineering by Parnham for the above report. A separate section on Geology will be submitted by the Geological Survey.

Oxidized copper material occurs with a very small amount of uranium in a narrow vein in volcanics. The cost of mining the copper probably would exceed the returns from its sale, and the uranium mineralization seems too low-grade to be ore at the present time, therefore the examiners recommended denial of an exploration loan. I concur with their recommendation.

Brochure is enclosed.

Walter R. Storms

CC W. M. King (10)
A. F. Shride
DMEA-3184
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE
1-22-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

December 22, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3184, Copper Squaw Claims (copper-uranium), Examination report, J. A. Cooley, Pima County, Arizona

Enclosed are 11 copies of the examination report by A. F. Shride of the U. S. Geological Survey covering the above docket.

Although the A.E.C. believes that some exploration is warranted, it has been recommended that this application be denied.

E. M. Hauchman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

Reviewed by
DMEA OPERATING COMMITTEE
1-22-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 4126, University Station
Tucson 5, Arizona

December 18, 1953

Memorandum

To: A. H. Koschmann

From: A. F. Shride

Subject: Examination report, DMTA-3184, Copper Squaw claims (Copper-Uranium), J. A. Cooley, Pima County, Arizona.

Enclosed are the original and 10 copies of the above report by A. F. Shride of the Geological Survey.

Because of the small tonnage potential for copper and the probable low content of uranium, denial of this application is recommended. This recommendation is not in concurrence with an appraisal by Mr. T. W. Oster, Chief of the Phoenix Sub-Office of the AEC's Salt Lake Exploration Branch as expressed in a letter dated October 2 to me. Mr. Oster states:

> "A certain amount of exploratory drifting is warranted from the shaft at the elevation of the "hot spot" to ascertain the continuity of the zone of high radioactivity. Other zones containing uranium mineralization are possible and these possibilities should be explored."
>
> "We do not have the necessary assay values to give proper evaluation to the potentialities of the copper mineralization. However, it is suggested that the copper and uranium together could make a profitable small operation."

From data collected by AEC personnel, Mr. Oster estimated that a zone approximately 3 feet thick and extending 10 feet down the dip of the vein at the position of the present stope contained approximately 0.25 percent U_3O_8. The examiners did not observe such material in place or on the stockpile except for small bodies a few inches in diameter. It should be noted that additional mining was done after the data available to Mr. Oster was collected.

A sketch map that accompanied the brochure is enclosed.

A. F. Shride

A. F. Shride
Acting District Supervisor
Arizona - New Mexico

Reviewed by
DMTA OPERATING COMMITTEE
1-22-54
(date)

Enclosures
Copies to Koschmann (1)
Storms
Shride

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3184, John A. Cooley's Copper Squaw Copper-Uranium Claims

Pima County, Arizona

A. F. Shride, Geologist
U. S. Geological Survey

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

December 1953

Reviewed by
DMEA OPERATING COMMITTEE
1-22-54
(date)

SUMMARY, CONCLUSIONS AND RECOMMENDATION

By A. F. Shride[1] and L. L. Farnham[2]

In September 1953, John A. Cooley applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $13,417. The application was docketed as DMEA-3184. The funds requested were to be used for the further exploration of a copper-uranium prospect situated in the Papago Indian Reservation of Pima County, Ariz.

Over the years the property has probably produced about 100 tons of selected copper ore resulting from intermittent chloriding operations. Available records show that 70 tons of this production averaged about 5 percent copper and 1.5 ounces of silver per ton. Recently the presence of radioactive minerals was detected in small, scattered spots along the principal vein. About 6 tons of the highest-grade radioactive material had been sorted from 37 tons of stoped ore. A grab sample of this selected material contained 0.12 percent U_3O_8 and 5.77 percent copper. The balance of the 37 tons stoped was shipped to a smelter and found to contain 3.60 percent copper and 1.5 ounces of silver per ton. The uranium content of this shipment was not determined. However, as the better grade uranium-bearing material sorted out of the shipment contained only 0.12 percent U_3O_8, it appears safe to presume that all the material mined failed to contain sufficient U_3O_8 to meet the minimum grade requirements for uranium ore.

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

Oxide copper minerals occurred on the subject claims in scattered disconnected spots and as small lenticular pods along narrow fractures in volcanic rocks. The mineralization in the principal vein averaged about 1.5 feet in width and was confined largely to a strike length of about 150 feet. Little if any mineralization was present in the lower portion of a 116-foot incline that followed the fracture down dip. The uranium possibilities of the property were investigated by the Atomic Energy Commission in October 1953. No appreciable amount of uranium-bearing material was indicated by this work.

The previous exploration of the property had shown that the deposits were too small to be of any importance as a source of copper. Although further work might disclose other mineralized lenses, the evidence indicates that, if found, they probably would be similar to the small uneconomic pods formerly mined. It is concluded that further exploration is not warranted and therefore the application for the lean should be denied.

JOHN A. COGLEY

COPPER SQUAW CLAIMS

(COPPER-URANIUM)

PIMA COUNTY, ARIZONA

DMEA-3184

EXAMINATION REPORT

by

A. F. Shride
Geologist

U. S. Geological Survey

INTRODUCTION

The Copper Squaw copper-uranium deposit, approximately 2 miles east of Quijotoa (Covered Wells), Arizona, is exposed by a 116-foot inclined shaft, and 4 small pits. Data were made available by the AEC, and a field examination made October 22, 1953, to appraise the property. Because the potential tonnage will be insignificant and probably low in copper and uranium content, it is recommended that an exploration loan not be granted.

GEOLOGY

The most prominent belt of mineralization on the Copper Squaw properties is along a narrow copper-stained fault zone that crops out on the northeast side of a small hill. The hill is entirely underlain by Tertiary (?) andesite. The fault zone, which dips 30° N. 40° W. is exposed by the inclined shaft which includes a small stope (figure 2, engineering report), a quarry face approximately 40 feet long at the portal of the incline and 3 small pits that expose the fault through a length of 75 feet southwest of the portal. A fourth pit exposes a parallel or sub-parallel fault approximately 20 feet below the fault exposed by the incline. Numerous fractures, stained by copper carbonate minerals, can be observed within 100 yards of the shaft on the top and sides of the hill, which is mostly free of overburden.

The main fault as exposed at the surface, and up- and down-dip from the stope in the incline, is essentially planar. In the vicinity of the stope there are irregularities in the fault surface. Along the

first 40 feet of the incline the breccia and gouge material of the fault zone is 6 to 12 inches thick. Immediately below this interval the fault zone increases to 3 feet in thickness. At the bottom of the stope the breccia zone is 18 inches thick; locally within the stope the zone is as much as 4 feet in thickness. In the incline below the stope the zone is 18 to 30 inches thick but brecciation was less intense than that observed up-dip along the zone. Hanging and footwall boundaries of the fault zone are sharp rather than gradational.

Above the bottom of the stope the visible copper minerals were more abundant in the parts of the fault breccia that are thickest. The fault zone apparently is thickest where there are irregularities in the bounding fault planes. Below the stope little copper mineralization was observed.

Ore minerals are sparsely disseminated along fractures in a gangue of altered andesite. This gangue consists principally of quartz, clay minerals, calcite, and hematite with lesser amounts of muscovite, limonite and partly altered feldspars. The copper is principally as malachite; small amounts of chalcocite were observed. The radioactive materials which can be observed megascopically are of two types, a fine-grained yellow-green micaceous mineral and a dull, hard massive olive-gray material which is particularly radioactive. LaMar Evans, mineralogist of the U. S. Bureau of Mines, in studying a selected specimen (assaying 10.0 percent eU_3O_8) furnished by the AEC from Copper Squaw deposit identified uranophane and uraninite. Uranophane was the dominate uranium mineral in the specimen

and was intimately mixed with malachite along fractures throughout the specimen. Uraninite occurred as sporadic grains as much as $\frac{1}{4}$ inch in diameter and as hairlike veinlets associated with veinlets of quartz in the siliceous portion of the specimen.

Observed Geiger counter readings (with NICC Geiger Model 2610A-No. 1338-background 0.05 mr./hr.) of the mineralized zone in the incline up-dip from the stope were 0.05 to 0.10 mr./hr. (maximum reading 0.25 mr./hr. with Precision Instruments Company Scintillator Model 111, No. 1069 - background 0.10-0.15 mr./hr.). Geiger counter readings for the stoped area in general were 0.07 to 0.11 mr/hr. The lower half of the southwest stope wall included material for which readings of 0.08 to 0.17 mr./hr. were observed; at the upper corner of the northwest stope wall readings of 0.5 to 0.7 mr./hr. were observed. The above data are for the $1\frac{1}{2}$- to 4-foot thick mineralized zone represented by the stope area in general. A thin "skin" of mineralized rock on the hanging-wall fault plane was observed to be much more radioactive than the remainder of the fault material; maximum Geiger readings of 1.0 mr./hr. were observed for this "skin" throughout the stope area. Because finely broken material from the stope partly fills the incline below the stope Geiger readings were not considered reliable. However, none of the readings differed significantly from background. Spot checks of the ore zone with the scintillation counter showed variations in radioactivity of the order observed using the Geiger counter. The range of the radioactivity observations by the examiners were of the same order as those observed by AEC personnel at a slightly earlier stage of development of

the prospect. On the basis of the observed Geiger and scintillation counter readings very little of the radioactive material observed underground is estimated to contain 0.1 percent U_3O_8. Samples taken by AEC personnel (for location of samples see figure 2, engineering report) confirm this appraisal.

Narrow fractures, coated with insignificant amounts of oxide copper minerals were observed over much of the hill in which the Copper Squaw prospect is located. Light-colored outcrops believed to represent bleached altered andesite were also observed. Copper and limonite stained outcrops and "bleached" andesite were checked for radioactivity with the scintillation counter. Abnormal radioactivity was noted for several outcrops, but at no place was the observed radioactivity twice the background count.

Radioactivity observed with the scintillation counter in the three pits along the vein to the southwest of the incline is not significant. Maximum radioactivity in the pit approximately 75 feet from the portal is twice background count. A second pit 50 feet from the portal is not deep enough to expose the vein and no abnormal radioactivity was observed. In the pit 30 feet from the incline, radioactivity on the order of twice background was noted; three times background was noted for one exposure less than 1 foot across.

SIZE AND GRADE OF DEPOSIT

No minable ore is exposed on the property. Approximately 70 tons of copper-bearing material have been mined in the past. This material was taken in part from a few shallow open cuts on the surface, but mostly from the stope on the incline. The lense was of minable thickness over an area about 25 feet in diameter, and although the mineralized fracture zone was as much as 4 feet thick the part of the lense that was sorted as ore probably was 1½ to 2 feet thick. Settlement sheets show the following ore shipments:

Date	Dry Tons	Au-oz/T	Ag-oz/T	Cu %
March 1948	32.65	.003	1.98	6.61
October 1953	30.95	.010	1.14	3.60

Approximately 37 tons were mined during 1953, but before the October 1953 shipment was made approximately 6 tons were carefully sorted aside as uranium-copper ore. The most radioactive of this material was sampled by Mr. Farnham of the Bureau of Mines, with the following results:

Sample No.	% equiv. U_3O_8	Au-oz/T	Ag-oz/T	Cu%
No. 14682	0.12	0.01	2.3	5.77

Although individual specimens would undoubtedly assay higher, the uranium content of this material is believed to be representative of the best of carefully selected uranium-bearing material from the stope.

Individual specimens from this property have contained as much as 10.0 percent equivalent U_3O_8. However, Geiger counter traverses indicate that the AEC samples shown on figure 2 of the engineering report are representative. Of these samples, six regularly spaced channel samples ½- to 1-foot in length contained less than 0.01 percent equivalent U_3O_8; four like samples ranged from 0.02 to 0.04 equivalent uranium, and two selected chip samples from the most radioactive exposures of the lense stoped contained 0.76 and 1.40 percent U_3O_8 by chemical analyses. The material from the lense stoped undoubtedly contained an average uranium content considerably less than 0.1 percent.

CONCLUSIONS

Material containing uranium and copper in quantities comparable to that already stoped may occur in geologically similar environments as small lenses elsewhere in the Copper Squaw property. All exposures of minable width have been mined. Such lenses (50-100 tons) are insignificant as copper ores. The uranium content of the developed lense undoubtedly averages much less than 0.1 percent U_3O_8. It is unlikely that substantial amounts of copper and/or uranium ore could be found on the property; therefore, denial of exploration is recommended.

DMEA-3184, JOHN A. CODLEY'S COPPER SQUAW COPPER-URANIUM CLAIMS

PIMA COUNTY, ARIZONA

Engineering Report

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

December 1953

Reviewed by
DMEA OPERATING COMMITTEE
1-22-54
(date)

BMEA-3184, JOHN A. COOLEY'S COPPER SQUAW COPPER-URANIUM CLAIMS
PIMA COUNTY, ARIZONA

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INTRODUCTION

Late in September 1953, John A. Cooley applied to the Defense Minerals Exploration Administration, under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $13,417. The application was docketed as DMEA-3184. The funds requested were to be used for the further exploration of a copper-uranium prospect in the Papago Indian Reservation, some 80 miles west of Tucson, Ariz. The property was visited by the DMEA examiners on October 22, 1953.

ACKNOWLEDGMENTS

Special acknowledgments are made to the members of the Phoenix office of the Atomic Energy Commission who had previously examined the property and provided the writers with the sampling data resulting from that investigation.

LOCATION AND PHYSICAL FEATURES

The claims are about 2 miles east of the small Indian village of Quijotoa (Covered Wells) in the central unsurveyed portion of the Papago Indian Reservation, Pima County, Ariz. The property can be reached from Tucson by traveling west on paved State Highway 86 for 22 miles beyond Sells to a graveled side road branching northeastward. Proceed on this branch road for 0.6 mile to a faint dirt road running east. Continue eastward, keeping to the right, on this latter branch for 0.5 mile to the inclined shaft on the Copper Squaw claim.

The property lies along the northeastward slope of a group of rolling hills that rise a few hundred feet above the desert valley floor.

HISTORY AND PRODUCTION

Little is known of the early history of the claims. They no doubt have been abandoned and relocated several times since the original location.

The available records show that in March 1948 about 32 tons containing 6.61 percent copper and 1.98 ounces of silver per ton was shipped to the Hayden smelter. This ore was mined by a lessee from a small stope in the Copper Squaw shaft. In 1952, interest in the property was renewed by the discovery of radioactive minerals in the principal vein. Soon thereafter the applicant acquired the claims. Since that time he has mined about 37 tons of ore from the best exposures. Approximately 6 tons of the highest grade radioactive material was sorted from this 37 tons and the remaining 31 tons was shipped to the copper smelter at Ajo, Ariz. This shipment contained 0.01 ounces of gold, 1.14 ounces of silver per ton, 3.60 percent copper, and an undetermined amount of uranium. The few tons of sorted uranium-bearing material had not been marketed at the time of the visit.

Thus the known production from the property has amounted to about 70 tons of selected ore averaging 5.1 percent copper and minor amounts of gold and silver.

OWNERSHIP AND EXTENT

The property consists of a contiguous group of 5 unpatented lode claims known as the Copper Squaw, and the UO Nos. 2, 3, 4 and 5. The applicant owns a half interest in the group and holds a 5-year lease on the remaining half.

DESCRIPTION OF THE DEPOSIT

Oxide copper minerals were exposed on the subject property in scattered disconnected spots and in small lenticular pods along narrow fractures in andesite porphyry. In the principal deposit the copper mineralization occurred in a northeasterly trending fracture dipping about 30° southwesterly. Shallow surface openings had exposed the limits of the mineralization along the outcrop and an inclined shaft had followed the fracture to a depth of 116 feet (figure 2). Material containing appreciable copper was limited to a strike length of about 150 feet. The short mineralized lenses exposed along the surface and in the shaft ranged from a few inches in thickness to a maximum of 3 feet. The larger and better grade lenses had been mined by shallow open cuts along the outcrop.

The largest lens encountered in the shaft had been stoped. This underground opening was about 25 feet long and 25 feet high. The vein material removed probably averaged between 1.5 and 2.0 feet in thickness. In the back and at each end of the stope the vein had narrowed to a foot or less. In the shaft almost immediately below the bottom of the stope the mineralization diminished to a width of a few inches, and little if any copper or radioactivity was evident in the lower portion of the incline.

The copper minerals were essentially chrysocolla, malachite, and small amounts of chalcocite, occurring in a gangue of silicified wall rock.

Spots showing abnormally high radioactivity were noted recently in the Copper Squaw vein particularly in the vicinity of the stope in the inclined shaft. Early in October 1953, the Atomic Energy Commission's geologists examined the property and sampled all of the radioactive areas. The locations of these samples are shown on figure 2 and the results are as follows:

Serial No.	Description	U_3O_8 a/	U_3O_8 c/
100501	Cut sample	Nil	
100501A	Cut sample	less than 0.01	
100501B	Cut sample	less than 0.01	
100502	Cut sample	less than 0.01	
100502A	Cut sample	less than 0.01	
100502B	Cut Sample	0.03	
F8451	Select chip		0.76
100503	Cut sample	less than 0.01	
100503A	Cut sample	less than 0.01	
100503B	Cut sample	less than 0.01	
100504	Cut sample	less than 0.01	
100504A	Cut sample	0.04	
100504B	Cut sample	0.03	
100505	Cut sample	0.02	
F-8450	Select chip		1.40

a/ Radiometric equivalent

c/ Chemical Analysis.

ORE RESERVES

There was no minable ore exposed on the property. All the exposures of minable width had been stoped. The 37 tons recently mined by the applicant was scanned with a Geiger counter and all that showed appreciable radioactivity was carefully sorted and placed in a separate pile. This material, estimated to amount to about 6 tons, was grab-sampled by the examiners with the following results:

NO.	Ounces per ton Gold	Silver	Percent Copper	U_3O_8 e/
14682	0.01	2.3	5.77	0.12

e/ Radiometric equivalent

As this material, representing the highest grade portion of the lot, contained but 0.12 percent U_3O_8 it is quite obvious that the bulk of the 37 tons contained less than 0.10 percent U_3O_8. That is the minimum acceptable grade for uranium ore. Consequently the potential of the property as a source of uranium appears insignificant and the bulk of any ore found must be sold to copper smelters where no payment is made for uranium.

The metal content of the ore formerly produced averaged 5.1 percent copper, less than .01 ounces gold and 1.5 ounces of silver per ton. Ore of this grade with copper priced at 30 cents a pound would have the following outcome if shipped to the Ajo copper smelter.

		Per ton
Gold - .01 ounces @ $33		$0.33
Silver - 1.5 ounces @ $.90 less 10%		1.21
Copper - 102 lbs. less 10 lbs. @ (30¢ - 3¢)		24.84
		$26.38
Treatment -		
Base	$5.00	
Excess value charge over $15 @ 10¢	1.14	
	$6.14	6.14
		$20.24
Transportation - 50 miles @ 12¢/ton mile		6.00
Net smelter value		$14.24

The direct costs of mining such small disconnected lenses as might be found on the property would exceed $20 a ton. Hence it appears unlikely that any substantial amount of copper or uranium would be produced from the Copper Squaw claims.

PROPOSED EXPLORATION

The applicant proposed to further explore the Copper Squaw vein by 400 feet of core drilling from the surface and 200 feet of lateral work from the inclined shaft. The drilling involved 2 surface holes that would cut the vein at different depths below the outcrop. The other work proposed 100 feet of drifting southward and 40 feet northward on the vein at a depth of 60 feet in the inclined shaft. From this same depth 50 feet of crosscutting was proposed in order to intersect a small parallel lens of mineralization found on the surface east of the shaft (figure 2).

ESTIMATED COST OF THE PROJECT

The applicant's cost estimates are as follows:

Core drilling, 400 feet @ $6.00 ft.	$2,400
Drifting and crosscutting, 200 feet @ $25	5,000
Bulldozer operations (roadwork, drill sites, etc.) 12 hours @ $14.00	168
Labor, 960 hrs. @ $1.50	1,440
Supervision, 480 hrs. @ $1.75	840
Geological consultant, 3 days @ $75	225
Tools	50
Gasoline and oil	200
Rental on pickup truck	200
Water	350
Equipment repair	100
Tool shed, 12 by 15 feet	600
Payroll tax	62
Compensation insurance	82
Assaying	800
Accounting	400
Contingencies	500
Total	$13,417

CONCLUSIONS AND RECOMMENDATIONS

The former exploratory work on the Copper Squaw claims disclosed a few narrow disconnected spots and lenses of mineralization that were too small to be of importance. There is no reason to expect that further exploration would be likely to disclose larger or higher grade deposits. Therefore, it is recommended that the application for the loan be denied.

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

224 New Customhouse
Denver 2, Colorado

January 8, 1954.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - Docket 3184 (Copper-Uranium), John A. Cooley, Copper Squaw Claim, Pima County, Arizona.

Enclosed are four copies of the report of examination on the subject property, a copy of the letter of denial to the applicant and two copies of Form 3b.

for John F. Shaw
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

DENIED

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

224 New Customhouse
Denver 2, Colorado

January 8, 1954.

Mr. John A. Cooley
3412 South 16th Street
Phoenix, Arizona

Re: Docket DMEA-3184

Dear Mr. Cooley:

Reference is made to your application for Government aid on the Copper Squaw Claim.

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 Copper and Uranium 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,

John F. Shaw
for W. H. King
Field Team, Region IV

HMC:cwm

cc: Administrator
WRStorms
AFShride
EEThurlow
Docket
Chron.
AHKoschmann (2)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

January 8, 1954.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - Docket No. 3184 (Copper-Uranium), John A. Cooley, Copper Squaw Claim, Pima County, Arizona.

Enclosed are eleven copies of the engineering report of examination on the subject property.

The applicant requested $13,417.00 for the further exploration of a copper-uranium prospect. The engineer examiner concludes that while former exploratory work has disclosed a few narrow disconnected spots and small lenses of mineralization, there is no reason to expect that further exploration would be likely to disclose larger or higher grade deposits. He recommends that the application be denied and we concur in this recommendation.

W. H. King

Enclosures

MINING DIVISION
REGION IV

December 7, 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-3184, John A. Coeley's Copper Squaw Copper-Uranium Claims, Papago Indian Reservation, Pima County, Ariz.

Enclosed are original and 10 copies of the section on Summary, Conclusions and Recommendations by A. F. Shride of the Geological Survey and L. L. Farnham of the Bureau of Mines, and the section on Engineering by Farnham for the above report. A separate section on Geology will be submitted by the Geological Survey.

Oxidized copper material occurs with a very small amount of uranium in a narrow vein in volcanics. The cost of mining the copper probably would exceed the returns from its sale, and the uranium mineralization seems too low-grade to be ore at the present time, therefore the examiners recommended denial of an exploration loan. I concur with their recommendation.

Brochure is enclosed.

Walter R. Storms

CC W. H. King (10)
A. F. Shride
DMEA-3184
DF

WRStorms:frj

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

December 22, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3184, Copper Squaw Claims (copper-uranium), Examination report, J. A. Cooley, Pima County, Arizona

Enclosed are 11 copies of the examination report by A. F. Shride of the U. S. Geological Survey covering the above docket.

Although the A.E.C. believes that some exploration is warranted, it has been recommended that this application be denied.

E. M. Hawkman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box [illegible], University Station
Tucson 5, Arizona

December 18, 1953

Memorandum

To: A. E. Kaufmann

From: A. F. Shride

Subject: Examination report, [illegible], Copper Queen claims (Copper-Uranium), J. A. Conley, Pima County, Arizona.

Enclosed are the original and 10 copies of the above report by A. F. Shride of the Geological Survey.

Because of the small tonnage potential for copper and the probable low content of uranium, denial of this application is recommended. This recommendation is not in consonance with an agreement by Mr. F. W. Geber, Chief of the Phoenix Sub-Office of the AEC's Salt Lake Exploration Branch on agreement in a letter dated October 2 to me. Mr. Geber states

> "A certain amount of exploratory drifting is warranted from the shaft at the elevation of the "hot spot" to ascertain the continuity of the zone of high radioactivity. Other zones containing uranium mineralization are possible and these possibilities should be explored."
>
> "We do not have the necessary assay values to give proper evaluation to the potentialities of the copper mineralization. However, it is suggested that the copper and uranium together could make a profitable small operation."

From data collected by AEC personnel, Mr. Geber estimated that a zone approximately 3 feet thick and extending 10 feet down the dip of the vein at the position of the present stope contained approximately 0.25 percent U_3O_8. The examiners did not observe such material in place or on the stockpile except for small bodies a few inches in diameter. It should be noted that additional mining was done after the data available to Mr. Geber was collected.

A sketch map that accompanied the brochure is enclosed.

A. F. Shride

A. F. Shride
Acting District Supervisor
Arizona - New Mexico

Enclosures:
Copies to Kaufmann (2)
Shride

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3184, John A. Cooley's Copper Squaw Copper-Uranium Claims

Pima County, Arizona

A. F. Shride, Geologist
U. S. Geological Survey

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

December 1953

SUMMARY, CONCLUSIONS AND RECOMMENDATION

By A. F. Shride[1] and L. L. Farnham[2]

In September 1953, John A. Cooley applied to the Defense Minerals Exploration Administration under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $13,417. The application was docketed as DMEA-3184. The funds requested were to be used for the further exploration of a copper-uranium prospect situated in the Papago Indian Reservation of Pima County, Ariz.

Over the years the property has probably produced about 100 tons of selected copper ore resulting from intermittent chloriding operations. Available records show that 70 tons of this production averaged about 5 percent copper and 1.5 ounces of silver per ton. Recently the presence of radioactive minerals was detected in small, scattered spots along the principal vein. About 6 tons of the highest-grade radioactive material had been sorted from 37 tons of stoped ore. A grab sample of this selected material contained 0.12 percent U_3O_8 and 5.77 percent copper. The balance of the 37 tons stoped was shipped to a smelter and found to contain 3.60 percent copper and 1.5 ounces of silver per ton. The uranium content of this shipment was not determined. However, as the better grade uranium-bearing material sorted out of the shipment contained only 0.12 percent U_3O_8, it appears safe to presume that all the material mined failed to contain sufficient U_3O_8 to meet the minimum grade requirements for uranium ore.

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

Oxide copper minerals occurred on the subject claims in scattered disconnected spots and as small lenticular pods along narrow fractures in volcanic rocks. The mineralization in the principal vein averaged about 1.5 feet in width and was confined largely to a strike length of about 150 feet. Little if any mineralization was present in the lower portion of a 116-foot incline that followed the fracture down dip. The uranium possibilities of the property were investigated by the Atomic Energy Commission in October 1953. No appreciable amount of uranium-bearing material was indicated by this work.

The previous exploration of the property had shown that the deposits were too small to be of any importance as a source of copper. Although further work might disclose other mineralized lenses, the evidence indicates that, if found, they probably would be similar to the small uneconomic pods formerly mined. It is concluded that further exploration is not warranted and therefore the application for the loan should be denied.

JOHN A. COOLEY

COPPER SQUAW CLAIMS

(COPPER-URANIUM)

PIMA COUNTY, ARIZONA

DMEA-3184

EXAMINATION REPORT

by

A. F. Shride
Geologist

U. S. Geological Survey

INTRODUCTION

The Copper Squaw copper-uranium deposit, approximately 2 miles east of Quijotoa (Covered Wells), Arizona, is exposed by a 116-foot inclined shaft, and 4 small pits. Data were made available by the AEC, and a field examination made October 22, 1953, to appraise the property. Because the potential tonnage will be insignificant and probably low in copper and uranium content, it is recommended that an exploration loan not be granted.

GEOLOGY

The most prominent belt of mineralization on the Copper Squaw properties is along a narrow copper-stained fault zone that crops out on the northeast side of a small hill. The hill is entirely underlain by Tertiary (?) andesite. The fault zone, which dips 30° N. 40° W. is exposed by the inclined shaft which includes a small stope (figure 2, engineering report), a quarry face approximately 40 feet long at the portal of the incline and 3 small pits that expose the fault through a length of 75 feet southwest of the portal. A fourth pit exposes a parallel or sub-parallel fault approximately 20 feet below the fault exposed by the incline. Numerous fractures, stained by copper carbonate minerals, can be observed within 100 yards of the shaft on the top and sides of the hill, which is mostly free of overburden.

The main fault as exposed at the surface, and up- and down-dip from the stope in the incline, is essentially planar. In the vicinity of the stope there are irregularities in the fault surface. Along the

first 40 feet of the incline the breccia and gouge material of the fault zone is 6 to 12 inches thick. Immediately below this interval the fault zone increases to 3 feet in thickness. At the bottom of the stope the breccia zone is 18 inches thick; locally within the stope the zone is as much as 4 feet in thickness. In the incline below the stope the zone is 18 to 30 inches thick but brecciation was less intense than that observed up-dip along the zone. Hanging and footwall boundaries of the fault zone are sharp rather than gradational.

Above the bottom of the stope the visible copper minerals were more abundant in the parts of the fault breccia that are thickest. The fault zone apparently is thickest where there are irregularities in the bounding fault planes. Below the stope little copper mineralization was observed.

Ore minerals are sparsely disseminated along fractures in a gangue of altered andesite. This gangue consists principally of quartz, clay minerals, calcite, and hematite with lesser amounts of muscovite, limonite and partly altered feldspars. The copper is principally as malachite; small amounts of chalcocite were observed. The radioactive materials which can be observed megascopically are of two types, a fine-grained yellow-green micaceous mineral and a dull, hard massive olive-gray material which is particularly radioactive. LaMar Evans, mineralogist of the U. S. Bureau of Mines, in studying a selected specimen (assaying 10.0 percent eU_3O_8) furnished by the AEC from Copper Squaw deposit identified uranophane and uraninite. Uranophane was the dominate uranium mineral in the specimen

and was intimately mixed with malachite along fractures throughout the specimen. Uraninite occurred as sporadic grains as much as $\frac{1}{4}$ inch in diameter and as hairlike veinlets associated with veinlets of quartz in the siliceous portion of the specimen.

Observed Geiger counter readings (with NICC Geiger Model 2610A-No. 1338-background 0.05 mr./hr.) of the mineralized zone in the incline up-dip from the stope were 0.05 to 0.10 mr./hr. (maximum reading 0.25 mr./hr. with Precision Instruments Company Scintillator Model 111, No. 1069 - background 0.10-0.15 mr./hr.). Geiger counter readings for the stoped area in general were 0.07 to 0.11 mr/hr. The lower half of the southwest stope wall included material for which readings of 0.08 to 0.17 mr./hr. were observed; at the upper corner of the northwest stope wall readings of 0.5 to 0.7 mr./hr. were observed. The above data are for the $1\frac{1}{2}$- to 4-foot thick mineralized zone represented by the stope area in general. A thin "skin" of mineralized rock on the hanging-wall fault plane was observed to be much more radioactive than the remainder of the fault material; maximum Geiger readings of 1.0 mr./hr. were observed for this "skin" throughout the stope area. Because finely broken material from the stope partly fills the incline below the stope Geiger readings were not considered reliable. However, none of the readings differed significantly from background. Spot checks of the ore zone with the scintillation counter showed variations in radioactivity of the order observed using the Geiger counter. The range of the radioactivity observations by the examiners were of the same order as those observed by AEC personnel at a slightly earlier stage of development of

the prospect. On the basis of the observed Geiger and scintillation counter readings very little of the radioactive material observed underground is estimated to contain 0.1 percent U_3O_8. Samples taken by AEC personnel (for location of samples see figure 2, engineering report) confirm this appraisal.

Narrow fractures, coated with insignificant amounts of oxide copper minerals were observed over much of the hill in which the Copper Squaw prospect is located. Light-colored outcrops believed to represent bleached altered andesite were also observed. Copper and limonite stained outcrops and "bleached" andesite were checked for radioactivity with the scintillation counter. Abnormal radioactivity was noted for several outcrops, but at no place was the observed radioactivity twice the background count.

Radioactivity observed with the scintillation counter in the three pits along the vein to the southwest of the incline is not significant. Maximum radioactivity in the pit approximately 75 feet from the portal is twice background count. A second pit 50 feet from the portal is not deep enough to expose the vein and no abnormal radioactivity was observed. In the pit 30 feet from the incline, radioactivity on the order of twice background was noted; three times background was noted for one exposure less than 1 foot across.

SIZE AND GRADE OF DEPOSIT

No minable ore is exposed on the property. Approximately 70 tons of copper-bearing material have been mined in the past. This material was taken in part from a few shallow open cuts on the surface, but mostly from the stope on the incline. The lense was of minable thickness over an area about 25 feet in diameter, and although the mineralized fracture zone was as much as 4 feet thick the part of the lense that was sorted as ore probably was $1\frac{1}{2}$ to 2 feet thick. Settlement sheets show the following ore shipments:

Date	Dry Tons	Au-oz/T	Ag-oz/T	Cu %
March 1948	32.65	.003	1.98	6.61
October 1953	30.95	.010	1.14	3.60

Approximately 37 tons were mined during 1953, but before the October 1953 shipment was made approximately 6 tons were carefully sorted aside as uranium-copper ore. The most radioactive of this material was sampled by Mr. Farnham of the Bureau of Mines, with the following results:

Sample No.	% equiv. U_3O_8	Au-oz/T	Ag-oz/T	Cu%
No. 14682	0.12	0.01	2.3	5.77

Although individual specimens would undoubtedly assay higher, the uranium content of this material is believed to be representative of the best of carefully selected uranium-bearing material from the stope.

Individual specimens from this property have contained as much as 10.0 percent equivalent U_3O_8. However, Geiger counter traverses indicate that the AEC samples shown on figure 2 of the engineering report are representative. Of these samples, six regularly spaced channel samples ½- to 1-foot in length contained less than 0.01 percent equivalent U_3O_8; four like samples ranged from 0.02 to 0.04 equivalent uranium, and two selected chip samples from the most radioactive exposures of the lense stoped contained 0.76 and 1.40 percent U_3O_8 by chemical analyses. The material from the lense stoped undoubtedly contained an average uranium content considerably less than 0.1 percent.

CONCLUSIONS

Material containing uranium and copper in quantities comparable to that already stoped may occur in geologically similar environments as small lenses elsewhere in the Copper Squaw property. All exposures of minable width have been mined. Such lenses (50-100 tons) are insignificant as copper ores. The uranium content of the developed lense undoubtedly averages much less than 0.1 percent U_3O_8. It is unlikely that substantial amounts of copper and/or uranium ore could be found on the property; therefore, denial of exploration is recommended.

DMEA-3184, JOHN A. CODLEY'S COPPER SQUAW COPPER-URANIUM CLAIMS

PIMA COUNTY, ARIZONA

Engineering Report

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

December 1953

DMEA-3184, JOHN A. COOLEY'S COPPER SQUAW COPPER-URANIUM CLAIMS
PIMA COUNTY, ARIZONA

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INTRODUCTION

Late in September 1953, John A. Cooley applied to the Defense Minerals Exploration Administration, under the Defense Production Act of 1950, as amended, for an exploration loan amounting to $13,417. The application was docketed as DMEA-3184. The funds requested were to be used for the further exploration of a copper-uranium prospect in the Papago Indian Reservation, some 80 miles west of Tucson, Ariz. The property was visited by the DMEA examiners on October 22, 1953.

ACKNOWLEDGMENTS

Special acknowledgments are made to the members of the Phoenix office of the Atomic Energy Commission who had previously examined the property and provided the writers with the sampling data resulting from that investigation.

LOCATION AND PHYSICAL FEATURES

The claims are about 2 miles east of the small Indian village of Quijotoa (Covered Wells) in the central unsurveyed portion of the Papago Indian Reservation, Pima County, Ariz. The property can be reached from Tucson by traveling west on paved State Highway 86 for 22 miles beyond Sells to a graveled side road branching northeastward. Proceed on this branch road for 0.6 mile to a faint dirt road running east. Continue eastward, keeping to the right, on this latter branch for 0.5 mile to the inclined shaft on the Copper Squaw claim.

The property lies along the northeastward slope of a group of rolling hills that rise a few hundred feet above the desert valley floor.

HISTORY AND PRODUCTION

Little is known of the early history of the claims. They no doubt have been abandoned and relocated several times since the original location.

The available records show that in March 1948 about 32 tons containing 6.61 percent copper and 1.98 ounces of silver per ton was shipped to the Hayden smelter. This ore was mined by a lessee from a small stope in the Copper Squaw shaft. In 1952, interest in the property was renewed by the discovery of radioactive minerals in the principal vein. Soon thereafter the applicant acquired the claims. Since that time he has mined about 37 tons of ore from the best exposures. Approximately 6 tons of the highest grade radioactive material was sorted from this 37 tons and the remaining 31 tons was shipped to the copper smelter at Ajo, Ariz. This shipment contained 0.01 ounces of gold, 1.14 ounces of silver per ton, 3.60 percent copper, and an undetermined amount of uranium. The few tons of sorted uranium-bearing material had not been marketed at the time of the visit.

Thus the known production from the property has amounted to about 70 tons of selected ore averaging 5.1 percent copper and minor amounts of gold and silver.

OWNERSHIP AND EXTENT

The property consists of a contiguous group of 5 unpatented lode claims known as the Copper Squaw, and the UO Nos. 2, 3, 4 and 5. The applicant owns a half interest in the group and holds a 5-year lease on the remaining half.

DESCRIPTION OF THE DEPOSIT

Oxide copper minerals were exposed on the subject property in scattered disconnected spots and in small lenticular pods along narrow fractures in andesite porphyry. In the principal deposit the copper mineralization occurred in a northeasterly trending fracture dipping about 30° southwesterly. Shallow surface openings had exposed the limits of the mineralization along the outcrop and an inclined shaft had followed the fracture to a depth of 116 feet (figure 2). Material containing appreciable copper was limited to a strike length of about 150 feet. The short mineralized lenses exposed along the surface and in the shaft ranged from a few inches in thickness to a maximum of 3 feet. The larger and better grade lenses had been mined by shallow open cuts along the outcrop.

The largest lens encountered in the shaft had been stoped. This underground opening was about 25 feet long and 25 feet high. The vein material removed probably averaged between 1.5 and 2.0 feet in thickness. In the back and at each end of the stope the vein had narrowed to a foot or less. In the shaft almost immediately below the bottom of the stope the mineralization diminished to a width of a few inches, and little if any copper or radioactivity was evident in the lower portion of the incline.

The copper minerals were essentially chrysocolla, malachite, and small amounts of chalcocite, occurring in a gangue of silicified wall rock.

Spots showing abnormally high radioactivity were noted recently in the Copper Squaw vein particularly in the vicinity of the stope in the inclined shaft. Early in October 1953, the Atomic Energy Commission's geologists examined the property and sampled all of the radioactive areas. The locations of these samples are shown on figure 2 and the results are as follows:

Serial No.	Description	U_3O_8 e/	U_3O_8 c/
100501	Cut sample	Nil	
100501A	Cut sample	less than 0.01	
100501B	Cut sample	less than 0.01	
100502	Cut sample	less than 0.01	
100502A	Cut sample	less than 0.01	
100502B	Cut Sample	0.03	
F8451	Select chip		0.76
100503	Cut sample	less than 0.01	
100503A	Cut sample	less than 0.01	
100503B	Cut sample	less than 0.01	
100504	Cut sample	less than 0.01	
100504A	Cut sample	0.04	
100504B	Cut sample	0.03	
100505	Cut sample	0.02	
F-8450	Select chip		1.40

e/ Radiometric equivalent

c/ Chemical Analysis.

ORE RESERVES

There was no minable ore exposed on the property. All the exposures of minable width had been stoped. The 37 tons recently mined by the applicant was scanned with a Geiger counter and all that showed appreciable radioactivity was carefully sorted and placed in a separate pile. This material, estimated to amount to about 6 tons, was grab-sampled by the examiners with the following results:

NO.	Ounces per ton Gold	Silver	Percent Copper	U_3O_8 e/
14682	0.01	2.3	5.77	0.12

e/ Radiometric equivalent

As this material, representing the highest grade portion of the lot, contained but 0.12 percent U_2O_8 it is quite obvious that the bulk of the 37 tons contained less than 0.10 percent U_3O_8. That is the minimum acceptable grade for uranium ore. Consequently the potential of the property as a source of uranium appears insignificant and the bulk of any ore found must be sold to copper smelters where no payment is made for uranium.

The metal content of the ore formerly produced averaged 5.1 percent copper, less than .01 ounces gold and 1.5 ounces of silver per ton. Ore of this grade with copper priced at 30 cents a pound would have the following outcome if shipped to the Ajo copper smelter.

		Per ton
Gold - .01 ounces @ $33		$0.33
Silver - 1.5 ounces @ $.90 less 10%		1.21
Copper - 102 lbs. less 10 lbs. @ (30¢ - 3¢)		24.84
		$26.38
Treatment -		
Base	$5.00	
Excess value charge over $15 @ 10¢	1.14	
	$6.14	6.14
		$20.24
Transportation - 50 miles @ 12¢/ton mile		6.00
Net smelter value		$14.24

The direct costs of mining such small disconnected leases as might be found on the property would exceed $20 a ton. Hence it appears unlikely that any substantial amount of copper or uranium would be produced from the Copper Squaw claims.

PROPOSED EXPLORATION

The applicant proposed to further explore the Copper Squaw vein by 400 feet of core drilling from the surface and 200 feet of lateral work from the inclined shaft. The drilling involved 2 surface holes that would cut the vein at different depths below the outcrop. The other work proposed 100 feet of drifting southward and 40 feet northward on the vein at a depth of 60 feet in the inclined shaft. From this same depth 50 feet of crosscutting was proposed in order to intersect a small parallel lens of mineralization found on the surface east of the shaft (figure 2).

ESTIMATED COST OF THE PROJECT

The applicant's cost estimates are as follows:

Core drilling, 400 feet @ $6.00 ft.	$2,400
Drifting and crosscutting, 200 feet @ $25	5,000
Bulldozer operations (roadwork, drill sites, etc.) 12 hours @ $14.00	168
Labor, 960 hrs. @ $1.50	1,440
Supervision, 480 hrs. @ $1.75	840
Geological consultant, 3 days @ $75	225
Tools	50
Gasoline and oil	200
Rental on pickup truck	200
Water	350
Equipment repair	100
Tool shed, 12 by 15 feet	600
Payroll tax	62
Compensation insurance	82
Assaying	800
Accounting	400
Contingencies	500
Total	$13,417

CONCLUSIONS AND RECOMMENDATIONS

The former exploratory work on the Copper Squaw claims disclosed a few narrow disconnected spots and lenses of mineralization that were too small to be of importance. There is no reason to expect that further exploration would be likely to disclose larger or higher grade deposits. Therefore, it is recommended that the application for the loan be denied.

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

224 New Customhouse
Denver 2, Colorado

October 2, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance

Enclosed herewith in duplicate is DMA Form 3a and MF-103 and supporting data pertaining to the following applications for Government assistance in exploration work:

John A. Cooley 3412 South 16th Street Phoenix, Arizona	Copper and Uranium
Daniel Mayhew Stranahan El Presidio Hotel Tucson, Arizona	Cobalt
Lloyd P. Mock 1440 St. Paul Street Denver 6, Colorado	Tungsten

W. H. King
W. H. King

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

Not to be filled in by applicant

Docket No. DMEA-3184
Metal or Mineral
Date Received 11-5-53
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: John A. Cooley, 3412 S. 16th Street, Phoenix, Arizona

(*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 Copper Square (Claim)

(*b*) State any mine name by which the property is known. Copper Square

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Applicant is half owner and holds a five year lease on the remaining half.

(*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. Copy of lease. Recorded, Pima County, Book 613 Docket, p 127, 128, 129

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

(*f*) If the land consists of unpatented claims, add to the description above the book and page numbers for each recorded location notice. Book 577, Page 129, Tucson, Pima County, Arizona

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.

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

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

(*c*) The work will start within 10 days and be completed within 3 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)? Yes.

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

[X] Money [X] 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 September 25, 1953, 195 3

John A Coates
(Applicant)

By

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

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

RF-103

John A. Cooley
3412 S. 16th Street
Phoenix, Arizona

(Copper Squaw Claim)

4. (a) A 30 degree inclined shaft exposes the vein for 116 feet down dip. The vein is one to four feet in thickness and averages two feet or greater. The applicant is, at the present, mining a small amount of copper and uranium from the shaft. There are also several shallow pits on the claim. All workings are accessible.

(b) The past production, about 6 years ago, amounted to approximately 40 tons of ore averaging about 6½% copper. The present production is being stockpiled with approximately 35 tons on the copper stockpile and 12 tons of the uranium ore stockpiled. The ore reserves are unknown and the grades are 6% copper and an estimated average of 0.10% uranium. Assay values for the uranium have varied from 0.25% to 2.43%.

(c) The vein on the Copper Squaw occurs in Tertiary (?) flow rocks, (andesite). Rhyolite is exposed on nearby hills. The mineralization consists of azurite and malachite, uranium minerals (?) and a minor amount of quartz. The exploration project is necessary to ascertain the continuity of the mineralization laterally along the vein.

(d) The mine is within 1/4 miles of the paved road that joins Arizona State Highway 86 (Tucson to Ajo) one mile to the south. From the mine to the smelter at Ajo, it is approximately 50 miles. The uranium ore would have to be hauled to the railroad at Tucson, about 80 miles distant.

(e) Manpower and materials would have to be obtained in Casa Grande, Ajo or Tucson. Some Indian labor may be available in the vicinity. Water will have to be hauled 3/4 of a mile and power is available at the property. The owner has the following equipment available for use at the property: 105 cfm compressor, 4 jack hammers with steel, ore car, truck, pipe, hoist and a 5 ton truck.

5. (b) The proposed exploration work should consist of a minimum of two (2) core drill holes. These holes would prospect the vein at 200 and 400 feet horizontally from the shaft and should intersect the vein at a minimum of 50 feet down dip from the outcrop of the vein. The surface of the property has not been mapped topographically, so the exact depth of the holes is uncertain. It is estimated that the depth of the holes would not exceed 200 feet. The U. S. Atomic Energy Commission has indicated that field men from the Phoenix Sub-office plan to map the property in the near future.

A maximum of 200 feet of drifting and crosscutting is also proposed. This would allow for 100 feet of drift southward and 50 feet northward on the main vein and 50 feet for a crosscut to intersect a footwall vein. These distances are flexible and depend upon the information gathered while the underground work is being done.

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John A. Cooley
3412 S. 16th Street
Phoenix, Arizona

(Copper Squaw Claim)

5. (d) 5 years experience in mining and prospecting. Applicant will supervise operations.

6. (a) Core drilling, 400' @ $6.00/ft - - - - - - - - - - - - $ 2400.00
Drifting, 200' @ $25.00/ft - - - - - - - - - - - - - - 5000.00
Bulldozer operations (roadwork, drill sites, etc.) 12 hours @ $14.00/hr - - - - - - - - - - - - 168.00

(b) Laborers - 2, 480 hrs. @ $1.50/hr - - - - - - - - - - 1440.00
Supervision - 1, 480 hrs. @ 1.75/hr - - - - - - - - - 840.00
Geological Consultant, 3 days @ $75.00/day - - - - - 225.00

(c) Hand tools (picks, shovels, double jack, etc.) - - - 50.00
Gasoline & oil - - - - - - - - - - - - - - - - - - - 200.00
Water (approx.) - - - - - - - - - - - - - - - - - - - 350.00

(d) Rental on pickup truck - - - - - - - - - - - - - - - - 200.00

(e) Allowance for equipment repair - - - - - - - - - - - - 100.00

(f) Tool shed - Galvanized iron 12' x 15' - - - - - - - - - 600.00

(g) Payroll Tax - 62.00
Workman's Compensation - - - - - - - - - - - - - - - - 82.00
Analytical work and assays - - - - - - - - - - - - - - 800.00
Accounting - 400.00

(h) Contingencies - 500.00

TOTAL - - - - - - - - - 13,117.00

7. (b) Cash available for use on property - $1,000.00

Use of equipment on rental basis, rental to be paid by applicant.

Dated September 25, 1953

John A. Cooley
John A. Cooley, Applicant

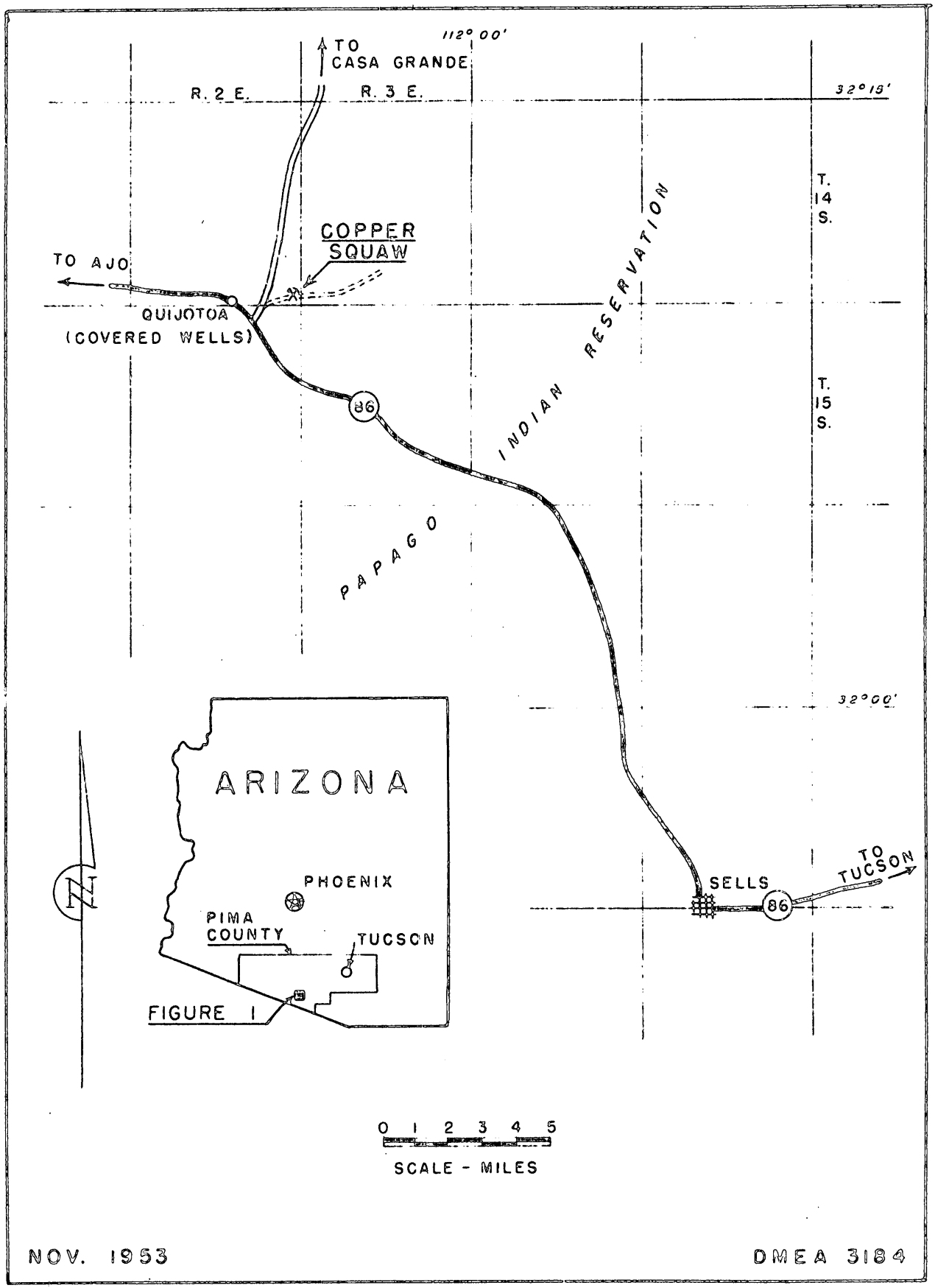
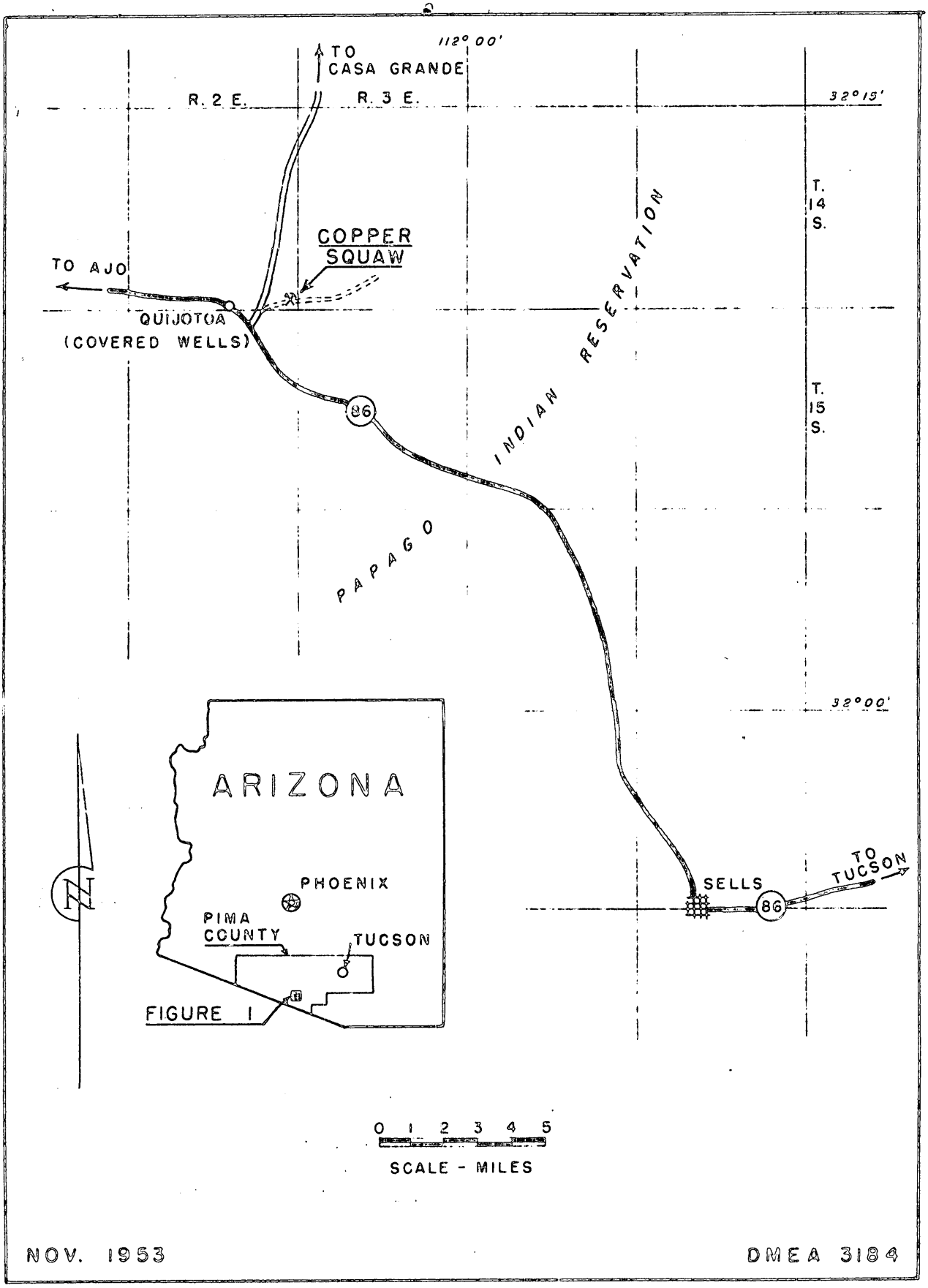


FIGURE 1. - LOCATION MAP - COPPER SQUAW CLAIM
PIMA COUNTY, ARIZONA



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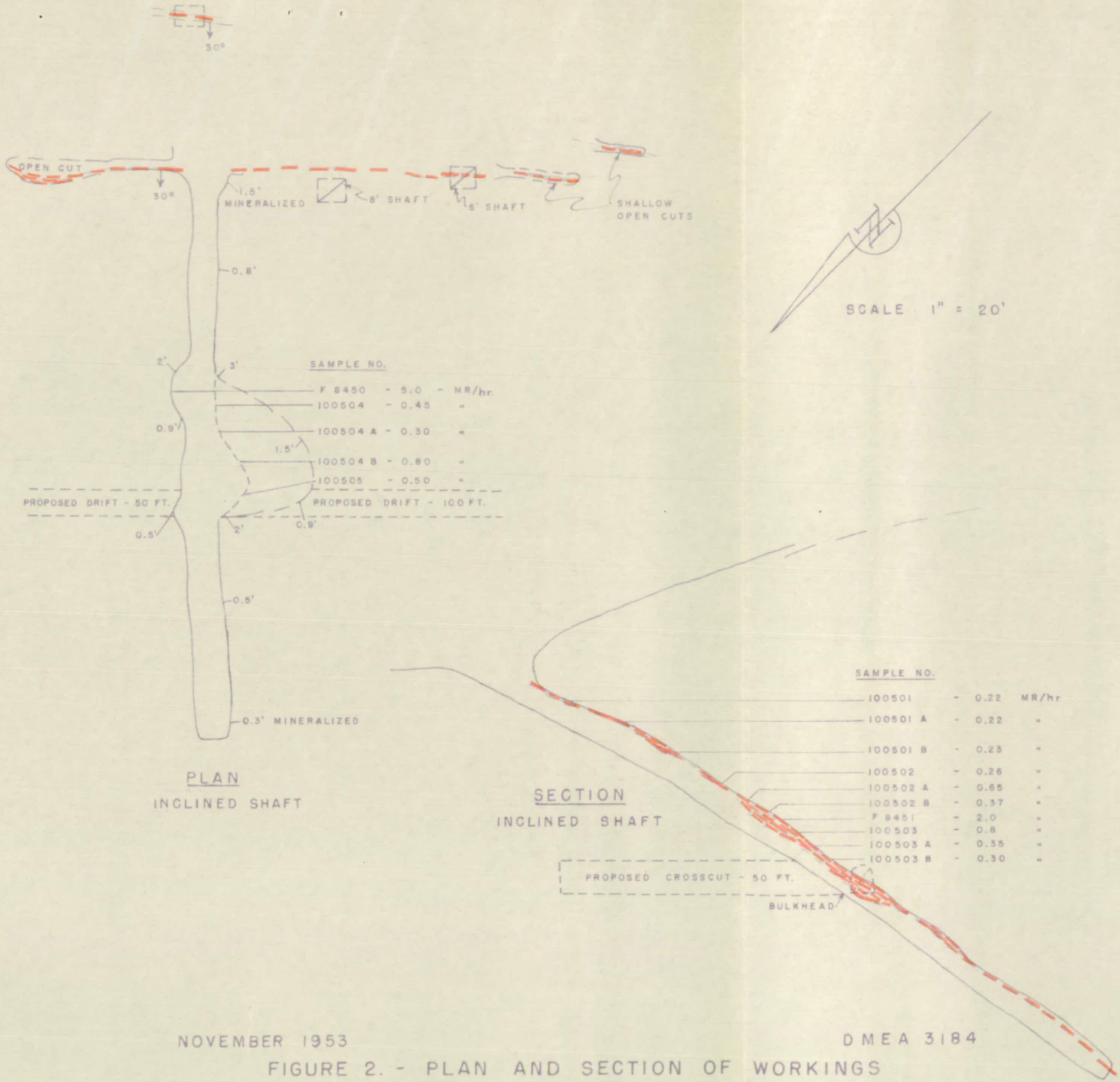

NOVEMBER 1953

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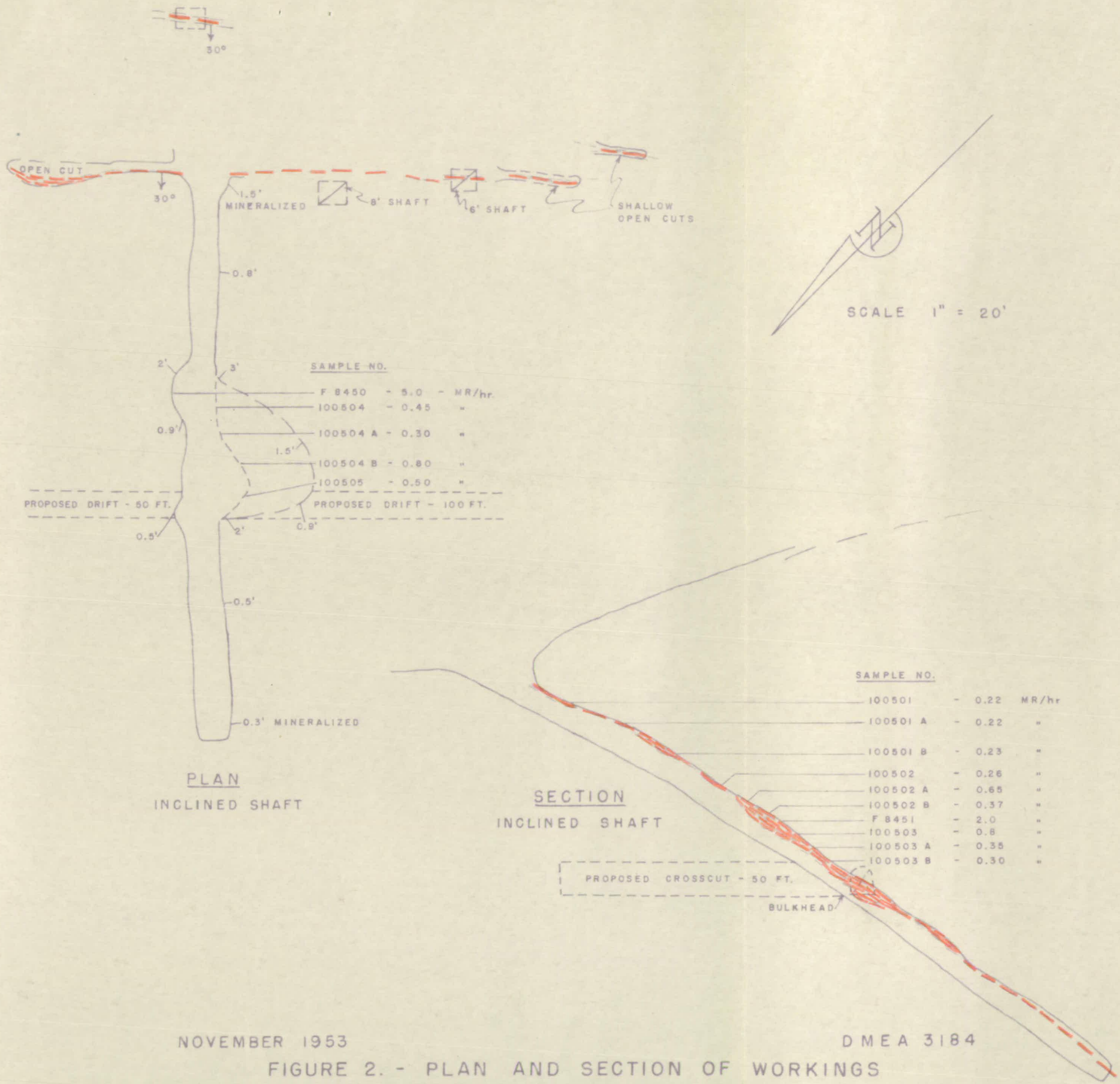
FIGURE 2. - PLAN AND SECTION OF WORKINGS
SHOWING THE SAMPLING BY A. E. C.
JOHN A. COOLEY - COPPER SQUAW CLAIM - PIMA COUNTY, ARIZONA



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