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

224 New Customhouse
Denver 2, Colorado

August 13, 1954.

Memorandum

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

From: DMEA Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3337 (Copper-Lead), Reymert Extension Silver Mines, Inc., Mineral Hill Mining District, Pinal 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.

W. H. King

W. H. King

E. N. Hawkinson
for A. H. Koschmann

Enclosures

closed file
8-23
to HB

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

224 New Customhouse
Denver 2, Colorado

August 12, 1954.

Mr. Norman De Vaux, President
Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

Re: Docket No. DMEA-3337

Dear Mr. De Vaux:

Reference is made to your application for Government aid on the Reymert Extension Silver Mines properties, Mineral Hill Mining District, Pinal County, Arizona.

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 or lead 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
DMEA Field Team
Region IV

E. N. Koschmann
for A. H. Koschmann
DMEA Field Team
Region IV

RDB:cwm

cc: Docket DMEA-3337
Administrator, DMEA
WRStorms
JNFaick
AHKoschmann
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

August 13, 1954.

Memorandum

To: DMEA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Engineering Report of Examination - DMEA Docket 3337 (Copper-Lead), Reymert Extension Silver Mines, Inc., Mineral Hill Mining District, Pinal County, Arizona.

Enclosed are the original and eight copies of the Summary, Conclusions and Recommendations by T. M. Romslo of the Bureau of Mines and John N. Faick and Larry Bryner of the Geological Survey, and also the original and eight copies of the Engineering Report of Examination on the subject docket.

The applicant requested $29,096.00 to explore the property for copper and lead occurrences at depth by means of 2090 feet of diamond drilling at a total cost of $14.31 per foot.

The examining team does not believe that the property has enough merit to justify Government participation in an exploration project and recommends denial of the application.

We concur in this recommendation.

W. H. King

W. H. King

Enclosures

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

August 9, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3337, (copper-lead), Reymert Extension Silver Mines, Pioneer District, Pinal County, Arizona

Enclosed are 9 copies of the geologic report by John N. Faick and Larry Bryner of the U. S. Geological Survey covering the above docket.

The Reymert Extension Mine in the past has been primarily a silver producer with very minor amounts of lead, zinc, and copper. Faick and Bryner conclude that there is no indication at a greater depth lead-zinc-copper values will increase. They therefore recommend denial of the application for exploration assistance.

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

Enclosures (9)

August 6, 1954

Memorandum

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

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

Subject : Report on Docket DMEA-3337, Raymert Extension Silver Mines, Inc., Raymert Copper-Lead Mine, Mineral Hill Mining District, Pinal County, Ariz.

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

As there seems little chance of making a significant discovery of copper, lead, zinc, or manganese ore by the proposed exploratory work, the DMEA examiners have recommended denial of Governmental assistance. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. H. King (8)
J. N. Faick
DMEA-3337
DF

WRStorms:frj

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Box 4426 University Station
Tucson, Arizona

August 6, 1954

To: A. H. Koschmann, Denver, Colorado

FROM: J. N. Faick

SUBJECT: (Copper-Lead) Reymert Extension Silver Mines, Pioneer District, Pinal County, Arizona
DMEA 3337

Enclosed are the original and 8 copies of a report on the above subject by John N. Faick and Larry Bryner.

This report recommends that the application for assistance in exploration be denied because geological conditions indicate that significant amounts of base metals or other critical materials will not be discovered at this old well-known silver mine.

One copy of the application is returned herewith.

John N. Faick

JNF:ms

cc: Koschmann (8)
Storms

Enclosures: Reports
Copy of Application

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3337, Reymert Extension Silver Mines, Inc.

Reymert Copper-Lead Mine

Mineral Hill Mining District

Pinal County, Arizona

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

John N. Faick and L. Bryner, Geologists
U. S. Geological Survey

August 1954

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

By T. M. Romslo[1] and J. N. Faick and L. Bryner[2]

The property of the Reymert Extension Silver Mines, Inc., Pinal County, Ariz., was examined for the Defense Minerals Exploration Administration in connection with an application for Governmental assistance by Norman De Vaux, president of the corporation. The examination was carried out on July 1, 2, and 9, 1954 under docket DMEA-3337. It was made to determine if the applicant's proposed exploration for copper and lead ores, costing an estimated $29,906.00, warranted Governmental financial participation.

The Reymert property first was located in 1886 by John Reymert and associates. Shortly thereafter the property was acquired by the Reymert Mining Co., controlled by a Mr. Van dyke of Milwaukee, Wis. The company operated the mine to 1891. From 1891 to 1946, the mine was extensively developed by lessees who produced a recorded 174,987 tons of ore containing 14.45 ounces of silver a ton. The ore was smelted at nearby Superior and Miami, Ariz. Since 1946, the property has been acquired by the Reymert Extension Silver Mines, Inc. Operations by the corporation have been confined mainly to explorations carried out on the 200 level of the Alaska mine during 1949 and 1950. Production for the period was reported as about 25 tons containing 8 percent lead and 26.2 ounces of silver a ton.

1/ Mining engineer, Bureau of Mines
2/ Geologist, Geological Survey

The Reymert deposit has been extensively developed by surface and underground workings. Rock outcrops in the vicinity of the deposit are Pinal schist of pre-Cambrian age. Diorite was observed in the underground workings. The deposit occurs in a fissure zone ranging in width from 20 to 100 feet for a length of about 6,000 feet. Mining has been confined largely to veins that follow relatively strong and persistent fractures at or near the hanging wall and the footwall of the zone. These fractures strike N. 5° E. to N. 20° W. and dip from vertical to 75° easterly. The veins range in width from about 3 to 15 feet, and average approximately 8 feet.

The dominant minerals of the fissure zone are manganiferous calcite, quartz, barite, and siderite. Silver occurs in an unknown form. Galena was found underground at widely scattered places as small pods and pockets. Copper oxides were observed in widely scattered small zones at the surface and at one underground location. Manganese oxides were present throughout the zone. Small amounts of hematite and limonite were observed.

The investigations indicate that the approximate average analysis of selectively mined higher-grade silver ore is:

	Ounces per ton
Silver	15.5
Gold	0.005
	Percent
Copper	0.1
Lead	0.2
Zinc	0.4
Manganese	2.0
Iron	5.85
CaO	35.00
SiO_2	40.00
$BaSO_4$	14.00

Formerly, the smelters purchased the ore for use as a flux. The only metal paid for was silver. The investigations also indicate: (1) The material between the veins is mineralogically similar to that mined with the exception that the silver content probably does not exceed an average of about 4 ounces per ton; (2) the extent of the mineralized zone decreases with depth; and (3) any ore encountered below present working cannot reasonably be expected to contain a higher percentage of either copper, lead, zinc, or manganese than ore already produced.

As attempts to beneficiate the ore have yielded unfavorable results, further production from the deposit appears to be dependent upon selective mining of the higher grade silver zones and a low smelting charge that could result from a renewed demand for the ore by nearby copper smelters.

Denial of the requested Governmental aid is recommended because any ore found by the proposed exploratory work cannot be expected to contain significant amounts of copper, lead, zinc, or manganese.

REYMERT EXTENSION SILVER MINES
PIONEER MINING DISTRICT
PINAL COUNTY, ARIZONA
(COPPER-LEAD)

DMEA 3337

GEOLOGY

by
John N. Faick and Leonid Bryner
Geologists, U.S. Geological Survey

REYMERT EXTENSION SILVER MINES
PIONEER MINING DISTRICT
PINAL COUNTY, ARIZONA
(COPPER-LEAD)

DMEA 3337

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INTRODUCTION

In an application to the Defense Minerals Exploration Administration, dated April 22, 1954, Mr. Norman de Vaux, president of the Reymert Extension Silver Mines, requested government participation in an exploration program estimated to cost $29,906, to be used in exploration for copper and lead ores at the Reymert mine.

The Reymert mine is located (fig. 1) in sections 15, 22, 23, 26, and 27, T.2 S., R.11 E., Pinal County, Arizona. It is reached from the town of Superior by traveling west 5.2 miles on U.S.Highway 70, turning left onto a graded dirt road, which is followed 0.4 miles to the old paved highway, turning right onto this old highway which is followed west 0.4 miles, turning left onto a graded dirt road, and following this graded dirt road 2.2 miles up a dry wash. The mine buildings are in the wash and the workings are immediately east of it, on the west-facing slopes of a low range of hills. The elevation of the collar of the Alaska shaft is about 3100 feet.

The applicant company, known as Reymert Extension Silver Mines, is the owner of 7 patented and 11 unpatented lode claims and 4 unpatented mill sites covering the Reymert workings (fig. 2).

The principal development work was done at the Alaska shaft and at the Australia shaft which is about 2100 feet south of the Alaska. Both shafts are about 400 feet deep and a few thousand feet of development and exploration work has been done from each shaft. Fig. 3 shows the extent of the principal workings on the Reymert veins.

The present report summarizes the results of a geologic examination made on July 1, 2, and 9 by J. N. Faick and Leonid Bryner, U.S.Geological Survey, and by T. M. Romslo and W. R. Hardwick, of the U.S.Bureau of Mines. Mr. Norman de Vaux assisted the examiners wherever possible.

The applicant's proposed exploration program is intended to explore the vein zone beneath the Alaska workings and the adjacent Asia claim. Therefore these workings were examined carefully, and many of the other workings were examined superficially. The Australia shaft was not entered.

The workings off the Alaska shaft are flooded below the 200-level, but the accessible parts of the 0-level, 55-level, 135-level and the 200-level were examined. The available diamond drill core from a hole drilled from 200-level was logged by the examiners and the interpretation of the log is shown on figure 4. Our interpretation of the part of the mine which is flooded below the 400-level is based on very meager data available in old reports and letters.

GEOLOGY

The Reymert mine, which was discovered about 1880, has produced nearly 200,000 tons of silver ore, most of which was marketed as smelter flux. The Reymert vein, or vein system, is several thousand feet long and its maximum width is about 100 feet but in places the vein splits into 2 or more narrow veins separated by wide zones of country rock.

The Reymert mine is in an area of early pre-Cambrian Pinal schist. This is mostly micaceous schist which varies from greenish to greyish, and which probably has a high chlorite content. Some parts of the schist are quartzitic and apparently are derived from sedimentary rocks. A rock tentatively identified as metadiorite, which may be a sill in the schist, was found underground (fig. 4) but was not recognized on the surface.

The foliation of the schist is not conformable to the primary bedding of the original sediments in the few places where the bedding was recognizable. The attitude of the foliation of the schist varies considerably. About 200 feet northwest of the Alaska shaft the foliation strikes N 40-50° E and apparently dips about 35° NW, but near the shaft on 200-level the strike is about N.14°E and the dip is about 20° SE. From a point about 100 feet south of the collar of the Alaska shaft and extending to the vicinity of the Australia shaft, the schistosity strikes N 70-90 E and dips from 30° to 75° SE.

The Reymert vein trends northerly and apparently occupies gash fractures which lie at a large angle to the axis of elongation or "stretching" of the enclosing schist. About 500 feet north of the Alaska shaft the vein strikes N 5° - 10° E, near this shaft it strikes about N 20° W, and near the Australia shaft the vein strikes N 5° W. The dip of the vein varies from vertical to about 75° easterly.

The width of the vein varies greatly. In the vicinity of the Alaska shaft, and for at least 200 feet south of it, the vein is 80 to 100 feet wide, but north of the shaft the vein pinches abruptly to a width of 20 to 30 feet, and this width of vein zone persists from about 100 to several hundred feet north of the Alaska shaft. Several hundred feet south of this shaft the vein splits into two branch veins, and these branches are about 150 feet apart at a point about 1000 feet south of the Alaska shaft. About 1700 feet south of this shaft, or 400 feet north of the Australia shaft, the veins are about 20 feet apart, and they apparently intersect about 200 feet north of the Australia shaft.

In addition to the large veins mentioned above, there are many smaller veins which range from a few inches to several feet wide, and which are of an unknown length in the directions of both the dip and the strike. These may be independent veins which may be approximately parallel to the large veins, but in most cases they appear to be branches of the larger veins.

The Reymert veins fill gash or tension fractures in the schist, and in places fill interstices in brecciated country rock. In many places random inclusions of schist are engulfed in the vein filling and large waste horses occur in a few places. Shearing of the schist apparently has not been an important factor in ground preparation. In most places the vein filling is frozen to the wall rocks and the contacts are usually sharp and clearly defined; however, the contacts are usually irregular. The schist wall rocks and schist fragments in the vein have been silicified but alteration of the host rock has not been intensive. Replacement, at most, has played a very

minor part in the emplacement of the Reymert veins.

The principal minerals in the Reymert vein are barite, manganiferous calcite, ferriginous carbonate (probably siderite) and quartz, and these were deposited in approximately this order. The manganiferous calcite and quartz are the most abundant minerals, but the vein filling is not uniform, and considerable variation is noted in the relative abundance of the different minerals in several places. The vein contains from 10 to 20 percent barite, 40 to 50 percent manganiferous calcite and about the same amount of quartz. Ferriginous carbonate probably does not exceed about 5 percent of the total vein material.

Barite is interspersed in the vein and its mode of occurrence indicates that it is probably the earliest vein mineral to form. It occurs as large bladed crystals, usually from 1/4 to 1-1/2 inches long, which are nearly always surrounded by massive, very coarse crystalline gray or black calcite. Fractured barite crystals with the fractures filled with calcite were observed in one place. Barite is not uniformly distributed throughout the vein, but occurs as a prominent constituent in bands or zones ranging from about 1 to 15 inches wide, and which are separated by other similar zones by bands of barite-free coarse crystalline calcite, or delicately interbanded calcite and quartz. Barite is an abundant constituent at the Australian shaft and on the 200-level of the Alaska shaft, but is not abundant in the vein at the outcrop near the Alaska shaft. It is possible that this distribution of the barite may be significant with respect to temperature-depth conditions of vein formation

but the meager data available does not permit utilization of the observation.

Calcite is an abundant and conspicuous mineral in the deposit. It occurs as a massive fissure filling, and is always coarse-grained as revealed by large cleavage faces. Apparently all of this calcite is manganiferous, and supergene alteration of it has brought about the release of manganese oxides which have deposited in the upper part of the vein and have imparted a conspicuous dark stain to the outcrop.

Quartz is a relatively abundant constituent throughout the vein, and occurs mostly as seams, veinlets and relatively large masses in fractured calcite, and is abundant as cementing material filling interstices in the shattered and brecciated country rock. The quartz is characterized by the presence of many vugs and cavities lined with drusy surfaces. Banding and comb structures are conspicuous features. Most of the quartz, except that forming crystals in the cavities, is in the form of dense, fine-grained masses or narrow veinlets.

The vein material contains remarkably few visible sulphide minerals. Only galena was recognized, and it was seen as small pods or pockets, in the vein. Also traces of copper oxides were observed at the south end of the 200-level, but no other copper minerals were recognized. Included in the list of minerals that have been reported from this mine are smithsonite, willemite, cerargyrite, argentite, bromyrite, and pyrite, but these probably occur in small quantities

as they were not recognized by the examiners. The mode of occurrence of the silver, which gave the deposit its commercial value, is not known. Manganese oxides are fairly common in weathered zones near the surface and impart a black color to the vein. Very small amounts of hematite and limonite were observed in the vein and these probably result from supergene alteration of siderite. Incipient alteration of siderite was noted in a few places.

Banded and vuggy structure, like that observed in the Reymert vein, is characteristic of deposits formed at shallow depths, and the fine texture of the quartz is indicative of deposits formed under conditions of relatively rapid heat loss. The deposit, therefore, is epithermal, a type of deposit that is often associated with Tertiary volcanic activity in Western United States. One of the noteworthy features of this type of deposit is the low ratio of metallic minerals to gangue minerals. Although epithermal deposits are frequently important sources of precious metals, only in exceptional cases do they yield significant amounts of base metals such as lead or copper. Epithermal deposits are characteristically shallow, and usually do not extend over a few hundred feet below the outcrop. Many epithermal veins change downward and grade into worthless gangue minerals, or brecciated country rock; but seldom grade into valuable base metal deposits.

The abundant gangue minerals in the Reymert vein, particularly the barite and manganiferous calcite, represent mineralization at temperatures higher than those at which sulfide minerals will deposit. That the sulfide stage of mineralization is almost entirely absent from the Reymert vein is shown by the almost complete

absence of pyrite and chalcopyrite, and the presence of only very sparse amounts of galena. As the vein represents deposition at shallow depths, under conditions of relatively high temperature and rapid heat loss, it is unlikely that it would grade downward into sulfide-rich vein material in a zone where temperatures are higher, at least theoretically. The vein appears to be thinning with increasing depth, but there is no indication that it is also changing to a mesothermal type that might contain significant copper values.

Fault gouge occurs in small amounts, in layers a few inches thick within the vein and parallel to the vein banding, and similar gouge occurs along the vein walls. The gouge commonly has a smooth even surface and displays horizontal or nearly horizontal striations. The delicate vein structures in contact with this gouge are undisturbed where they could be observed. However, on the 200-level, 90 feet south of the shaft, an easterly trending quartz veinlet is offset about 3 inches by horizontal movement. The horizontal fault is occupied by another quartz veinlet which cuts the first. There is some indication that the higher silver values occur in zones bounded by layers of gouge, or in other words in zones where late-ore or post-ore movements have taken place.

Old stopes along the Reymert vein indicate that it was not uniformly well metallized and that the commercially mineable ore is localized in comparatively narrow zones which are separated by wide zones of very low-grade or barren vein material. The "high-grade" ore occurs in vein-like tabular masses which have been mined

selectively along the strike for distances ranging from a few tens of feet to several hundred feet, and have been mined to depths of 300 or 400 feet below the outcrop, although stoping was not necessarily continuous throughout these distances.

All of the ore previously mined was found near or along the walls of the main vein. These "pay-streaks" range from 3 to 15 feet in width and average about 8 feet. The vein material between the high-grade zones according to Colvocoresses, "was not found to contain more than 3 or 4 ounces of silver." The ore mined from the vein-like high-grade streaks averaged about 15.5 ounces of silver, but contained no other valuable metals. This distribution of the metals in the veins is substantiated by DMEA samples given in Table I. The abnormally high lead content reported in Sample 11406 is due to the presence of a small pod-like mass of galena in the vein where the sample was taken.

The higher-grade silver ores apparently occur in zones bounded by layers or stringers of gouge, suggesting that localization of silver values may have been influenced by minor adjustments within the vein near the close of the vein-forming stage or after the vein had consolidated. At least one of these zones is bounded by a gouge layer in the west wall of the vein and by a gouge layer about 5 feet into the vein from the west wall. Old stopes indicate that commercial-grade ore has been selectively mined from between these two seams of gouge. On the other hand, this zonal distribution of the higher values probably is not consistent throughout the mine, because stopes at least 20 feet wide are observed in a few places.

TABLE I ANALYSIS OF ORE AND SAMPLES, REYNERT MINE, PINAL COUNTY, ARIZONA

Sample	Source of Data	Description	Width in feet	Oz/T Au.	Oz/T Ag.	Cu.	Pb.	Zn.	Mn.	Fe.	S.	CaO	Insol.	Silica	Alumina	Barite
A-B	L. Hersey Consultant	Alaska, 200-Level	31.	-	1.69	-	-	-	-	-	-	-	-	-	-	-
C-D	Do		42.	-	2.04	-	-	-	-	-	-	-	-	-	-	-
E	DMEA 11405		5.1	Tr.	14.3	0.032	0.40	0.1	1.62	-	-	33.4	-	21.6		
F-G	DMEA 11406		-	Tr.	2.5	0.025	1.35	0.3	1.32	-	-	35.0	-	27.3	-	-
H	DMEA 11407		-	Tr.	3.0	0.025	0.70	0.8	1.12	-	-	30.3	-	33.7	-	-
J	Browning, Re: Colvocoresses	400-Level XC	8.	Tr.	1.8	-	1.7	3.0	-	-	-	-	-	-	-	-
K	N. de Vaux's Records	Ave. of 9 samples 400-level	-	-	1.28	0.12	-	-	-	-	-	-	-	-	-	-
L	Do	D.D.H. 240-245 ft.	5.	0.01	0.10	0.10	00.1	-	-	-	-	-	-	-	-	-
M	Do	D.D.H. @ 435 ft.	5.	0.00	0.00	0.40	-	-	-	-	-	-	-	-	-	-
N	Statement by N.De Vaux	D.D.H. 440-450 ft.	10.	-	-	0.8	-	-	-	-	-	-	-	--	-	-
O	Magma Settlement Sheets	Numerical Average 161 shipments, 9971 tons	=	0.01	19.3	0.14	=	-	2.45	5.85	0.0	10.11	-	55.0	1.83	-
P	L.Hersey Re N.de Vaux	174,987 tons Recorded production	-	-	15.6	-	-	-	-	-	-	-	-	-	-	-
Q	USBM RI 4097	15 ton test sample	-	0.005	16.35	0.05	0.8	0.7	4.75	4.95	1.25	6.2	60.8	51.3	-	-
R	Denver Equipment Company	Metallurgical test sample	-	0.02	14.3	-	0.05	0.40	2.9	-	Nil	-	32.0	-	-	13.3
S	Denver Equipment Co.	Analysis by Magma Copper Co. Same sample as R?	-	0.01	13.6	0.10	0.10	3.5	3.6	-	-	-	-	-	-	14.0
T	Mawley & Mawley Certificate	25 tons shipped from South end of Australia Claim	-	0.005	26.4	0.04	8.05	-	-	-	-	-	-	-	-	-

Many individuals, including consultants to the applicant, have stressed the possibility of secondary enrichment, in the Reymert vein, with the consequent development of rich ore bodies at or near the water table. Secondary or supergene processes do not appear to have been important in formation of the commercial ores, although there is some evidence to indicate that a slight oxidation has taken place at least as deep as the 200-level.

At the Reymert mine there is very little gossan-like material at the surface and very little evidence of leaching and removal of vein materials. At the surface and at very shallow depths the vein has been stained black by manganese which undoubtedly has been released by decomposition of the manganiferous carbonate, and small amounts of iron oxides have likewise been released by weathering of siderite. If copper had been present in appreciable quantities in the primary ore it would now be present in the vein as carbonate. When copper is released by oxidation of sulfide minerals in the presence of a reactive gangue like that of the Reymert, the copper is almost immediately precipitated as the carbonate, hence does not migrate into zones of secondary enrichment. Similarly, lead and zinc do not migrate very far in the presence of a carbonate gangue like that at the Reymert. Thus, there is no reason to expect a zone of secondary enrichment below the presently explored part of the Reymert mine.

TENOR OF ORE

Considerable data relating to the tenor of ore in the Reymert mine is summarized below. The available data showing analysis of samples and the grade of ore shipped are given on Table I. The location of most of these samples is shown in figure 4.

The Reymert mine has a long history of silver production, but most of the silver ore was shipped between 1925 and 1946. The production up to and including 1946 is given by the applicant as 174,987 tons, with a total of 2,730,667 ounces of silver. This ore, therefore, has an indicated average of 15.5 ounces of silver per ton. In addition to this, considerable ore undoubtedly has been shipped by lessees, but the amount is unknown to these examiners. From January to December 1938, 9971 tons of this ore, containing 19.3 ounces of silver per ton, were shipped to the Magma Copper Company at Superior, Arizona. Most of this 9971 tons, representing 161 shipments (Sample "O" Table 1) must have come from above the 200-level in the two main workings. Some of it may have come from between the 200 and 300 levels in the Australia workings. In 1950 about 25 tons of ore was shipped from the south end of the Australia claim. This contained 26.4 oz. silver per ton and 8.05 percent lead. This is the only base metal ore shipped from the property as far as we can determine.

C. F. Smith, chief chemist and ore-buyer for Anaconda's Inspiration Smelter at Miami, Arizona described the character of the Reymert ore for the writers. He stated that two types of fluxing ore were shipped from the mine; one type was shipped to the Magma Copper Company, Superior Arizona, and the other to Inspiration. The grades Smith reported for the ore shipped to Magma averaged very close to the average given above for 9971 tons; a good check on the reliability of Smith's figures. Smith's estimates are as follows:

Shipped to	Approximate Analysis Percent Silica	Percent Lime	Oz/ton Ag.	Percent Barite
Inspiration Smelter, Miami, Arizona	40	20	13	10-20
Magma Copper Co., Superior, Arizona	50 plus	10	19	10-20

From data given in Table I the writers estimated the average composition of the ore previously mined. This is as follows:

Silver	15.5 oz/ton	Manganese	2.0 percent
Gold	0.005 oz/ton	Iron	5.85 "
Copper	0.1 percent	CaO	35.00 "
Lead	0.2 "	SiO_2	40.00 "
Zinc	0.4 "	$BaSO_4$	14.0 "

The above average composition of the vein material closely checks an estimate made by G. M. Colvocoresses [1/]. His estimated composition of the ore follows:

Silver	8-10 oz/ton	MnO_2	3.5 percent
Lead	0.80 percent	Fe_2O_3	8.0 "
Zinc	0.15 "	$CaCO_3$	37.00 "
Copper	0.40 "	Insoluble	50.00 "

These production records and samples show that this deposit contained very little metal other than silver and manganese. There is no evidence that copper or other base metals increase with depth; however, it must be admitted that information is scant on the tenor of ore below the 200-level. The 9971 tons averaging 0.14 percent

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1/ Colvocoresses, G.M., Consulting Engineer, 1102 Luhrs Tower, Phoenix, Arizona; Private Report, p.11, April 1945.

copper undoubtedly give a more accurate picture of the average copper content above the 200-level than the samples taken by the examiners on that level. Samples K and L (Table I) are the only available samples of the vein below the 200-level, and the copper content of these samples is very similar to the copper content of the above-mentioned 9971 tons. From these data it appears that copper is present only in trace amounts throughout most of the vein. The slight increase of copper shown in samples M and N occurs about 100 feet west of the downward projection of the principal vein. Even if these were reliable samples, however, their copper content would not be enough to justify a search for a significant copper deposit below the Reymert silver deposit.

The lead and zinc content of the ore is only slightly higher than the copper content, according to the analysis. Galena occurs as tiny pods, pockets or irregular veinlets in the vein, but nowhere was it found in mineable quantities, and individual masses seldom contained more than a few pounds of lead by estimate. Zinc minerals were not found by the examiners, but are revealed only by assay.

ORE RESERVES

In 1945 Colvocoresses reported that "In 1937 the engineers of the Eagle-Pitcher Company were able to measure and sample above the water level probable ore amounting to nearly 200,000 tons to which they gave an average content of over 8 oz. silver per ton." Mr.Lynn Hersey, Consulting Engineer, in the application to DMEA, states that

Eagle-Pitcher had also established the presence of an additional 100,000 tons of ore containing 11.5 ounces of silver per ton. Although some of this ore has been mined since 1937, the magnitude of the reserves probably has not greatly changed because additional reserves probably have been made available through development. Colvocoresses estimates that from 300,000 to 500,000 tons of ore containing more than 8 ounces of silver per ton exists in the entire mine above the water level. In 1947, Mr. Hersey, in conjunction with RFC engineers, estimated the existence of 40,000 tons of probable ore in the vicinity of the Alaska shaft.

Although large amounts of low-grade silver ore suitable for fluxing purposes undoubtedly remain in the Reymert deposit, none of the ore contains mineable quantities of copper, lead, or zinc. The copper in this deposit occurs in concentrations that average about 0.1 percent, and the content of lead and zinc does not exceed a few tenths of one percent.

The reserves of copper, lead and zinc in this deposit are not estimated by the examiners because these metals are present in such small amounts that it is not feasible to recover them. As already shown, there is no geological reason to expect mineable quantities of base metals in the mine.

CONTRAST BETWEEN REYMERT MINE, AND THE MAGMA AND OLD DOMINION MINES

The Magma mine at Superior and the Old Dominion mine at Globe have been cited in the application as prototypes of the Reymert and were described as silver producers near the surface but

copper producers at depth. It is true that the Magma mine was at first only a silver producer but this was because of the relatively low salability of the copper and not because copper did not occur with the silver. The silver was found in metallic form and associated with chalcocite. A further significant difference between this mine and the Reymert is that the Magma ore bodies are replacements of crushed wall rock.

The Old Dominion mine, to which the Reymert also is compared, apparently never was a silver producer. The fact that the earliest mines in the Globe vicinity were silver mines may have led to this idea. The Old Dominion was early recognized as a copper deposit and for this reason it was at first neglected in favor of the nearby silver deposits.

NOTES ON TREATMENT OF REYMERT ORE

Numerous tests have been made by various parties to determine if it would be possible to economically concentrate or recover the silver in the low-grade ore, but all methods gave unsatisfactory results. The Denver Equipment Company 1/ stated that the silver values are closely associated with the manganese and that successful recovery of the silver depends upon recovery of the manganese oxides. This may be true in zones where manganese has been released by weathering but probably is not applicable in the hypogene ore where the manganese is combined with carbonate in the form of manganiferous calcite. Shipping records available to the examiners and the statements by C. F. Smith indicate that

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1/ Private Report, p.1, April 13, 1950.

the higher silver values accompany the siliceous ore and the high-lime ore contains less silver. Tests made by the Denver Equipment Company indicated that about 20 percent of the silver and manganese in the ore could be recovered by concentration. Their tests prove that the silver values are not intimately associated with the barite.

Experimental work by the U.S.Bureau of Mines [1] has also shown that treatment of the Reymert ore is not feasible. The manganese can be recovered by the dithionate process; however, the recovery of silver by either cyanidation or flotation is poor. These experimental results indicate that because of the "low manganese content and the poor recovery of silver it is doubtful if treatment of these ores" is feasible.

It must be admitted that as far as we are able to determine the ores are of value only as smelter flux.

EXPLORATION

Reports by Colvocoresses [2] indicate that discouraging results were obtained when the Alaska shaft was sunk to a depth of 410 feet in 1913 and 1914. He states that "the vein which was reported to have been found in the crosscut on the 400-level at the Alaska shaft was filled with crushed and altered diabase and carried 1.8 oz. silver." Colvocoresses also reports that during 1919 and 1920 the Magma Copper Company (and associates) explored the property by drilling 7 holes on the Asia claim, reportedly to test extensions of the vein at greater depth, but these holes failed to find commercial ore, and only one hole penetrated vein material.

1/ U.S.Bureau of Mines, R.I.4097 p.12-13, 1947.
2/ Colvocoresses,G.M., Private reports 1941, 1945 and 1948.

The Reymert Extension Silver Mines proposed a diamond drilling program to test the Reymert vein zone below formerly productive ore shoots at depths greater than any previously mined. Fourteen holes, totaling about 2090 feet, were to be drilled from the 200 and 400 levels off the Alaska shaft. The purpose of this work was to explore for mineable quantities of copper and lead ore, which many individuals believe exist below the developed part of the mine.

The results of this DMEA examination show that the proposed exploration is not justified.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Alaska and Australia workings of the Reymert mine have developed an extensive vein deposit in which the principal value is silver, which is associated with a gangue of manganiferous and ferriginous carbonate, quartz, and barite. Only trace amounts of copper, zinc and lead have been found in the ore. Metal content of the vein has not increased with depth, and there is some evidence to indicate that values may have decreased. On the 400-level of the Alaska shaft the vein is reported to have pinched to about 8 feet of vein-like material containing 1.8 oz. silver per ton, a marked reduction from the 80 to 100 feet width at the surface, where narrow zones containing 15 to 20 ounces of silver per ton were selectively mined. Failure of several diamond drill holes to locate the vein below the 400 level may indicate that the vein passed into worthless country rock below this level.

The vein is a typical epithermal deposit. The delicate banding of the gangue minerals, the many cavities lined with drusy surfaces and the low ratio of metals to non-metals, and the mode of emplacement as a simple fissure filling with only minor replacement or alteration of the country rock are diagnostic features. The gangue minerals are those that characteristically form at temperatures above those at which sulfide minerals form. The deposit undoubtedly formed at relatively high temperatures, and under conditions of rapid heat loss, which indicate a geologically shallow or near-surface environment at the time of deposition. The deposit is of a type that frequently grades downward into worthless vein material or barren country rock but seldom grades into productive base metal veins.

As there is no geological reason to believe that significant quantities of base metal or other ores of strategic importance will be found in this deposit, it is recommended that the application for Government aid in exploration be denied.

DMEA-3337, REYMERT EXTENSION SILVER MINES, INC.
REYMERT COPPER-LEAD MINE
MINERAL HILL MINING DISTRICT
PINAL COUNTY, ARIZONA

Engineering Report

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

August 1954

DMEA-3337, REYMERT EXTENSION SILVER MINES, INC.
REYMERT COPPER-LEAD MINE
MINERAL HILL MINING DISTRICT
PINAL COUNTY, ARIZONA

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INTRODUCTION

The property of the Reymert Extension Silver Mines, Inc., Pinal County, Ariz. was examined for the Defense Minerals Exploration Administration in connection with an application for Governmental aid by Norman De Vaux, president of the Corporation. The examination, carried out under docket DMEA-3337, was made to determine if the applicant's proposed exploratory project for copper and lead ores warranted Government financial participation.

The proposed exploratory project, costing an estimated $29,906.00, consisted of diamond drilling 14 holes for a total of 2,090 feet from underground workings, portions of which would have to be dewatered and repaired.

The examination, confined mainly to the proposed project area, was made July 1, 2, and 9, 1954 by T. M. Romslo, U. S. Bureau of Mines, and J. N. Faick and L. Bryner, both of the U. S. Geological Survey. Norman De Vaux, president and a director of Reymert Extension Silver Mines, Inc., was present during the examination. C. F. Smith, another of the corporation's directors, was present the afternoon of July 9.

ACKNOWLEDGMENTS

The writer wishes to acknowledge Mr. De Vaux's cooperation with the field team. He furnished much pertinent data and attempted to facilitate examination of mine workings by dewatering the Alaska

mine. The dewatering operation, voluntarily undertaken by the corporation, was abandoned after 3 days of pumping had removed probably less than 10 percent of the accumulated water.

LOCATION AND ACCESSIBILITY

The Reymert property is about 7 airmiles southwest of the town of Superior (figure 1). It is situated in secs. 15, 22, 23, 26, and 27, T. 2 S., R. 11 E., Mineral Hill or Pioneer Mining District, Pinal County, Ariz. Superior, the home of the Magma Copper Co., is served by U. S. Highway 60-70 and the Magma Arizona Railroad.

The property may be reached from Superior by traveling 5.2 miles westerly on U. S. Highway 70, thence 0.4 mile south on a graded road to a paved section of the old highway, and thence 0.4 mile westerly on the paved road. From this point, the mine camp is about 2.2 miles to the south via a graded road that follows a dry wash.

PHYSICAL FEATURES AND CLIMATE

The Reymert property is situated in a fairly rugged area, which has a maximum relief of about 700 feet near the mine. The Alaska shaft, collared at an altitude of about 3,100 feet is situated on the west slope of a north-south trending ridge. The mining camp at an altitude of about 2,900 feet is situated near the foot of the slope, opposite the Alaska shaft. From a divide about 1,000 feet south of the Alaska shaft, drainage is north to Queen Creek and south to the Gila River.

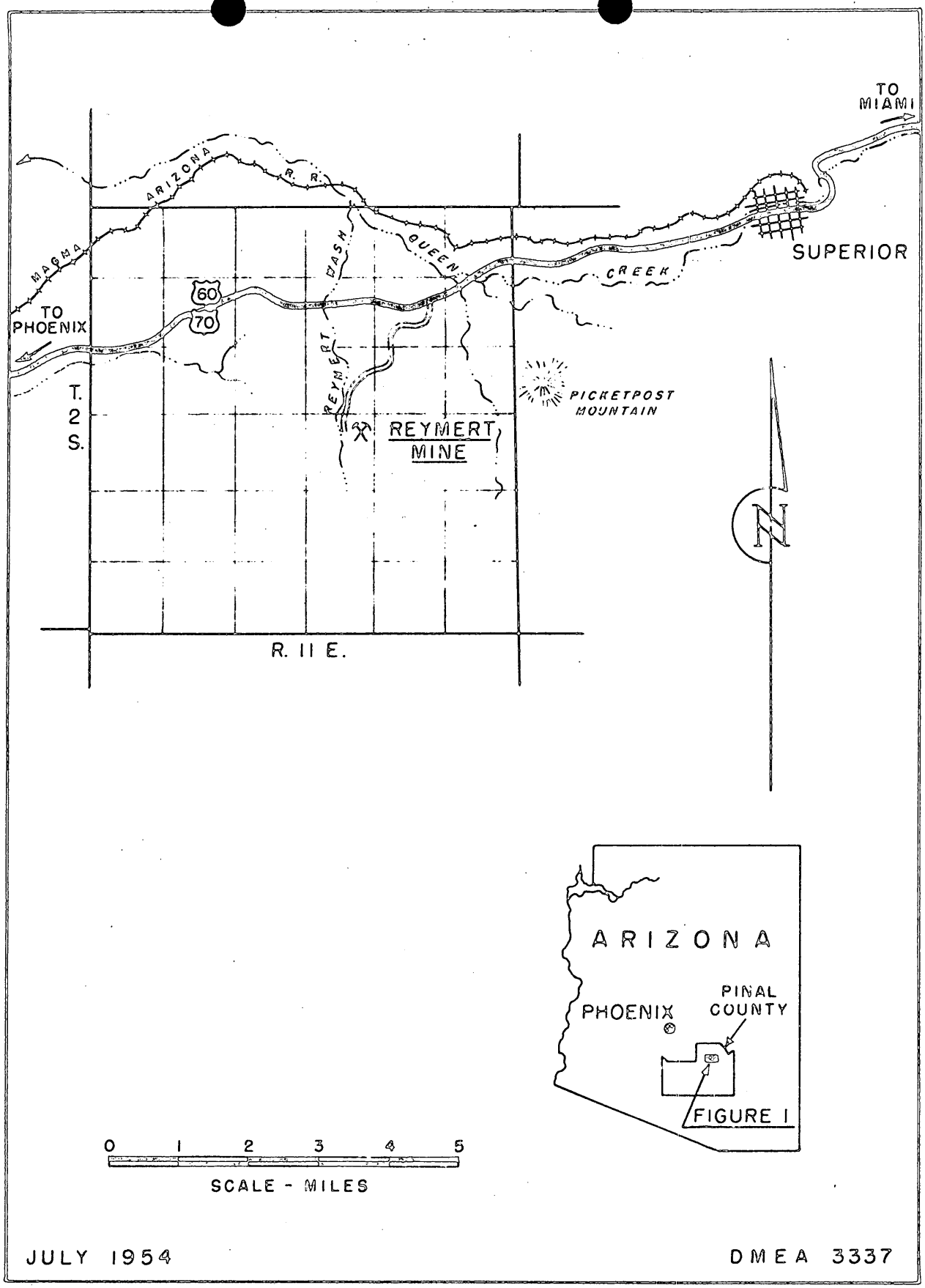

FIGURE 1.- LOCATION MAP - REYMERT EXTENSION SILVER MINES
PINAL COUNTY, ARIZONA

Vegetation is confined to forage grasses and a sparse growth of shrubs and cacti.

Summers are hot and winters are mild. Annual precipitation at Superior is about 18 inches of which about 2 inches occurs as light snowfalls.

HISTORY AND PRODUCTION

The Reymert property was located in 1886 by John Reymert and associates. Shortly thereafter it was sold to the Reymert Mining Co., controlled by a Mr. Van Dyke of Milwaukee, Wis. The company operated the mine to 1891 and for a portion of the period milled ore by chloridization and pan-amalgamation. In 1912, the Gunn-Thompson interests obtained an option to purchase the property and during 1913-14 sank the Alaska shaft to a depth of 386 feet, the present bottom. During 1919 and 1920, the Lincoln Issues Co., an affiliate of the Gunn-Thompson interests, and the Magma Copper Co. explored a portion of the property by putting down several diamond drill holes. In 1925, W. Forback and associates leased the property and operated the mine intermittently to 1941. James Todd then continued operations under a lease agreement to the middle of 1944 when Forback and associates again obtained a lease. Production continued to late in 1946.

During 1945 and 1946, the U. S. Bureau of Mines obtained a 15-ton sample of ore from the mine workings and tested the ore for recovery of manganese and silver by leaching, cyanidation, and flotation processes.

The recorded production to 1946 is 174,987 tons of ore containing 14.45 ounces of silver per ton. The ore was shipped to the Magma Copper Co. at Superior, and the International Mining & Smelting Co. at nearby Miami, Ariz.

After 1946, the property was acquired by the Reymert Extension Silver Mines, Inc. Operations by the corporation have been confined mainly to exploratory work carried out during 1949 and 1950 on the 200 level of the Alaska mine. The work consisted of drilling a diamond drill hole and the driving of 670 feet of drifts and crosscuts. Approximately 25 tons of ore, containing 8 percent lead and 26.2 ounces of silver a ton, were reportedly produced from workings near the southern end of the Australia claim.

PROPERTY AND OWNERSHIP

The property comprises a group of 18 mining claims of which 7 are patented, and a group of 4 unpatented mill sites (figure 2). It is reportedly owned by the applicant, the Reymert Extension Silver Mines, Inc., P. O. Box 521, Superior, Ariz.

DESCRIPTION OF DEPOSIT

Pinal schist of early pre-Cambrian age crops out extensively in the area of the Reymert mine workings. Most of the schist is micaceous and appears to contain a high percentage of chlorite. It is greenish to greyish in color. Portions of the schist are quartzitic. The foliation of the schist strikes from N. 14° E. to N. 90° E. and dips from about 20° to 75° to the southeast. Other rocks appear to be confined to meta-diorite that was found only in the underground workings.

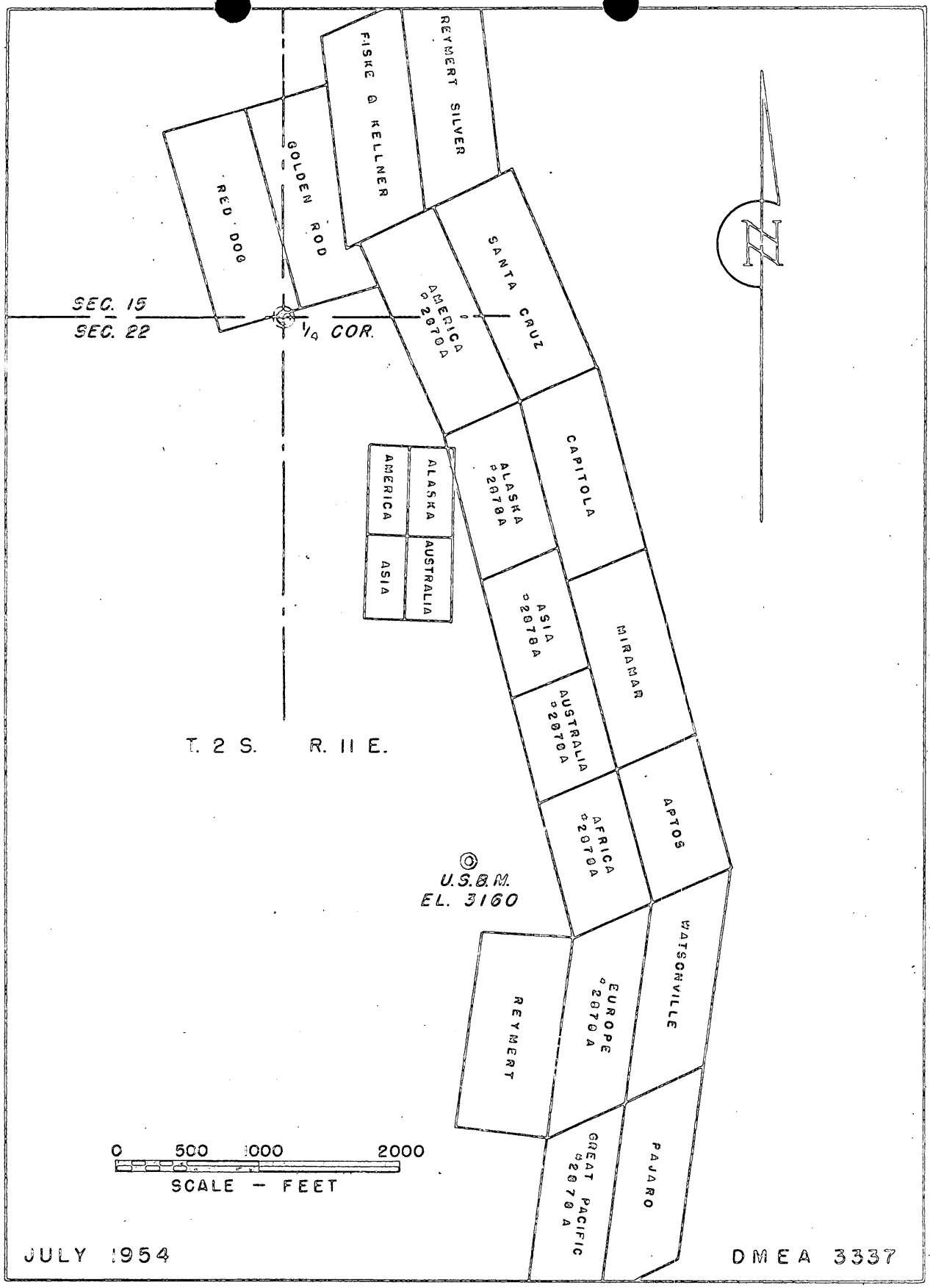

FIGURE 2. - CLAIM MAP - REYMERT EXTENSION SILVER MINES
PINAL COUNTY, ARIZONA

The Reymert deposit occurs in a northerly trending fissure zone ranging in width from 20 to 100 feet over a length of about 6,000 feet. Mining has been confined largely to veins that follow relatively strong and persistent fractures at or near both the hanging wall and footwall of the zone. The attitude of these fractures ranges from strikes of N. 5° E. to N. 20° W., and dips from vertical to 75° easterly. The width of the veins ranges from about 3 to 15 feet and averages approximately 8 feet.

The dominant minerals of the fissure zone are manganiferous calcite, quartz, barite, and ferruginous carbonate, probably siderite. Galena was recognized as small pods and pockets at widely scattered places on the 200 level of the Alaska mine. Copper oxides were found in a few widely scattered small zones at the surface and at the south end of the previously mentioned underground workings. Silver, concentrated mainly in the veins, occurred in an unknown form. Manganese oxides were present throughout the zone. Small amounts of hematite and limonite were observed.

GRADE OF ORE

Data presented in the Geologic report indicate the following:

1. Approximate average analysis of previously mined ore is;

	Ounces per ton
Silver	15.5
Gold	0.005
	Percent
Copper	0.1
Lead	0.2
Zinc	0.4
Manganese	2.0
Iron	5.85
CaO	35.00
SiO_2	40.00
$BaSO_4$	14.00

2. The grade of indicated and inferred reserves confined to zones of high silver values are essentially the same as ore previously mined.

3. The vein material between the high-grade zones is mineralogically similar to mined ore with the exception that the silver content probably does not exceed 3 or 4 ounces per ton.

TREATMENT OF ORES

Essentially all of the ore produced has been sold to copper smelters for its fluxing values. Payment was received only for silver.

Metallurgical testing of the ore has yielded discouraging results. The Denver Equipment Co. was able to recover only about 20 percent each of the silver and manganese as a concentrate containing 54 ounces of silver a ton and about 11 percent manganese.[1] Tests by the U. S. Bureau of Mines[2] resulted in the conclusion that

1/ Private Report, P. I., April 13, 1950
2/ U. S. Bureau of Mines, R. I. 4097, p. 13, 1947.

"In view of their (ores from Reymert and Sheep Tanks Mines) low manganese contents and poor recovery of silver, it is doubtful whether treatment of these ores by the dithionate process, followed by cyanidation or flotation of the leach residues, would be feasible".

ORE RESERVES

The Reymert deposit, based on reserve estimates cited in the Geologic report, may contain a few hundred thousand tons of vein material assaying about 8 ounces of silver a ton. However, these reserves cannot be considered as ore by the Defense Minerals Exploration Administration because minerals of the strategic metals, copper, lead, zinc, and manganese, are present in only meager amounts, and little or none of these metals is recoverable.

In the past, similar vein material containing higher silver values constituted direct shipping ore probably because its fluxing properties resulted in low smelting charges. At present, the potential value of the deposit appears to be dependent upon selective mining of higher grade silver zones, and low smelting charges that could result from a renewed demand for the product by local smelters.

PRESENT STATUS

Surface Plant and Equipment

The camp consists of 15 small wood buildings of which 11 are in a poor state of repair. The others, consisting of living quarters for Mr. DeVaux and a watchman, and the formerly used office and laboratory buildings, are in fair condition.

Structures at both the Alaska and Australia shafts consist of a headframe, a 100-ton ore bin, and small buildings and sheds housing a hoist, compressor and blacksmith shop. Major equipment at the Alaska shaft consists of a single-drum hoist powered by an automobile engine, a Fairbanks-Morse turbine pump powered by a 40-H.P. Allis Chalmers engine, a Byron Jackson electric pump, and an ancient Ingersoll-Rand 210-cfm air compressor. At the Australia shaft, major equipment is confined to a duplicate of the hoist and power unit of the Alaska shaft.

Mine Workings

Mine workings of the Reymert vein zone extend over a strike length of about 6,000 feet (figure 3). The most extensive workings are at the Australia and the Alaska mines. The zone of the proposed exploratory work at the Alaska mine has been explored and developed rather extensively by workings from the 386-foot deep Alaska shaft. The shaft is vertical and contains 3 timbered compartments. Water stands at about 40 feet below the 200-foot level. The 135-foot level and most of the 200-foot level have been driven in the vein zone. Stoping has been most extensive above the 135 level. Workings on the 200 level are shown on figure 4. The 400-foot level, according to data submitted by the applicant, is confined to a 40-foot crosscut driven to the east.

The walls of the stopes are firm. Very little sloughing has occurred.

PROPOSED EXPLORATIONS

The applicant proposed to diamond drill untested ground north and south of the Alaska shaft by drilling 14 holes, located and designed as follows:

Hole 1. Extension of previously drilled hole, 200 level, located about 250 feet southeast of Alaska shaft, 50 feet.

Hole 2. Same setup, hole +5° S. 30° W., 150 feet.

Hole 3. From end of crosscut, 200 level, 140 feet northeast of Alaska shaft, hole at -45°, bearing S. 75° W., 150 feet.

Hole 4. From same setup, 200 level, hole -60°, bearing S. 75° W., 150 feet.

Hole 5. From point in drift 90 feet due east of Alaska shaft, hole at -20°, bearing S. 75° W., 100 feet.

Hole 6. From same setup, hole -60°, bearing S. 75° W., 150 feet.

Hole 7. From end of drift, 160 feet north of shaft on 200 level, hole -20°, S. 75° W., 100 feet.

Hole 8. From same setup, hole -60° S. 75° W., 220 feet.

Hole 9. From end of crosscut, 400 level, Alaska shaft, hole +10° S., 75° W., 50 feet.

Hole 10. From same setup, hole -45° S. 75° W., 170 feet.

Hole 11. From position close to shaft, 400 level, hole +5° N. 45° E., 130 feet.

Hole 12. From same setup, hole +5° S. 45° E., 120 feet.

Hole 13. From same setup, hole -45° N. 45° E., 275 feet.

Hole 14. From same setup, hole -45° S. 45° E., 275 feet.

The proposal called for 2,090 feet of diamond drilling to be done by a private contractor at estimated per foot, and total costs of $5.85, and $12,226.00, respectively. Other estimated costs, comprising rental and maintenance of equipment, labor, supervision, cutting drill stations, repairs to workings, and extension of pipe lines brought the estimated total cost to $29,906.00, or $14.31 per foot of hole.

RECOMMENDATIONS

The Reymert Extension Silver Mines, Inc. request for Governmental participation in proposed explorations, costing an estimated $29,906.00, is recommended for denial because any ore that might be developed would not contain significant amounts of copper, lead, zinc, or manganese.

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

COPY

224 New Customhouse
Denver 2, Colorado

August 12, 1954.

Mr. Horman De Vaux, President
Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

Re: Docket No. DMEA-3337

Dear Mr. De Vaux:

Reference is made to your application for Government aid on the Reymert Extension Silver Mines properties, Mineral Hill Mining District, Pinal County, Arizona.

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 or lead 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
DMEA Field Team
Region IV

/s/ E. N. Harshman for
A. H. Koschmann
DMEA Field Team
Region IV

RDB:cwm

cc: Docket DMEA-3337
Administrator, DMEA
WRStorms
JNFaick
AHKoschmann
Chron.

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

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

224 New Customhouse
Denver 2, Colorado

August 13, 1954.

Memorandum

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

From: DMEA Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3337 (Copper-Lead), Reymert Extension Silver Mines, Inc., Mineral Hill Mining District, Pinal 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.

W. H. King
W. H. King

E. N. Hauchmann
for A. H. Koschmann

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

August 13, 1954.

Memorandum

To: DMEA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Engineering Report of Examination - DMEA Docket 3337 (Copper-Lead), Reymert Extension Silver Mines, Inc., Mineral Hill Mining District, Pinal County, Arizona.

Enclosed are the original and eight copies of the Summary, Conclusions and Recommendations by T. M. Romslo of the Bureau of Mines and John N. Faick and Larry Bryner of the Geological Survey, and also the original and eight copies of the Engineering Report of Examination on the subject docket.

The applicant requested $29,096.00 to explore the property for copper and lead occurrences at depth by means of 2090 feet of diamond drilling at a total cost of $14.31 per foot.

The examining team does not believe that the property has enough merit to justify Government participation in an exploration project and recommends denial of the application.

We concur in this recommendation.

W. H. King

W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

August 9, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3337, (copper-lead), Reymert Extension Silver Mines, Pioneer District, Pinal County, Arizona

Enclosed are 9 copies of the geologic report by John N. Falck and Larry Bryner of the U. S. Geological Survey covering the above docket.

The Reymert Extension Mine in the past has been primarily a silver producer with very minor amounts of lead, zinc, and copper. Falck and Bryner conclude that there is no indication at a greater depth lead-zinc-copper values will increase. They therefore recommend denial of the application for exploration assistance.

E. N. Hansbrough
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (9)

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

August 6, 1954

Memorandum

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

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

Subject : Report on Docket DMEA-3337, Raymart Extension Silver Mines, Inc., Raymart Copper-Lead Mine, Mineral Hill Mining District, Pinal County, Ariz.

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

As there seems little chance of making a significant discovery of copper, lead, zinc, or manganese ore by the proposed exploratory work, the DMEA examiners have recommended denial of Governmental assistance. I concur with this recommendation.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC W. H. King (8)
J. N. Faick
DMEA-3337
DF

WRStorms:frj

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Box 4125 University Station
Tucson, Arizona

August 6, 1954

To: A. H. Koschmann, Denver, Colorado

FROM: J. N. Faick

SUBJECT: (Copper-Lead) Reymert Extension Silver Mines, Pioneer District, Pima County, Arizona
DMEA 3337

Enclosed are the original and 8 copies of a report on the above subject by John N. Faick and Larry Bryner.

This report recommends that the application for assistance in exploration be denied because geological conditions indicate that significant amounts of base metals or other critical materials will not be discovered at this old well-known silver mine.

One copy of the application is returned herewith.

John N. Faick

JNF:ms

cc: Koschmann (C)
Storms

Enclosures: Reports
Copy of Application

Reviewed by
DMEA OPERATING COMMITTEE
9-27-54
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3337, Reynert Extension Silver Mines, Inc.

Reynert Copper-Lead Mine

Mineral Hill Mining District

Pinal County, Arizona

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

John N. Faick and L. Bryner, Geologists
U. S. Geological Survey

August 1954

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

By T. A. Romslo[1] and J. N. Faick[2] and L. Bryner[2]

The property of the Reymert Extension Silver Mines, Inc., Pinal County, Ariz., was examined for the Defense Minerals Exploration Administration in connection with an application for Governmental assistance by Norman De Vaux, president of the corporation. The examination was carried out on July 1, 2, and 9, 1954 under docket DMEA-3337. It was made to determine if the applicant's proposed exploration for copper and lead ores, costing an estimated $29,906.00, warranted Governmental financial participation.

The Reymert property first was located in 1886 by John Reymert and associates. Shortly thereafter the property was acquired by the Reymert Mining Co., controlled by a Mr. Van dyke of Milwaukee, Wis. The company operated the mine to 1891. From 1891 to 1946, the mine was extensively developed by lessees who produced a recorded 174,987 tons of ore containing 14.45 ounces of silver a ton. The ore was smelted at nearby Superior and Miami, Ariz. Since 1946, the property has been acquired by the Reymert Extension Silver Mines, Inc. Operations by the corporation have been confined mainly to explorations carried out on the 200 level of the Alaska mine during 1949 and 1950. Production for the period was reported as about 25 tons containing 8 percent lead and 26.2 ounces of silver a ton.

1/ Mining engineer, Bureau of Mines
2/ Geologist, Geological Survey

The Raymert deposit has been extensively developed by surface and underground workings. Rock outcrops in the vicinity of the deposit are Pinal schist of pre-Cambrian age. Diorite was observed in the underground workings. The deposit occurs in a fissure zone ranging in width from 20 to 100 feet for a length of about 6,000 feet. Mining has been confined largely to veins that follow relatively strong and persistent fractures at or near the hanging wall and the footwall of the zone. These fractures strike N. 5° E. to N. 20° W. and dip from vertical to 75° easterly. The veins range in width from about 3 to 15 feet, and average approximately 8 feet.

The dominant minerals of the fissure zone are manganiferous calcite, quartz, barite, and siderite. Silver occurs in an unknown form. Galena was found underground at widely scattered places as small pods and pockets. Copper oxides were observed in widely scattered small zones at the surface and at one underground location. Manganese oxides were present throughout the zone. Small amounts of hematite and limonite were observed.

The investigations indicate that the approximate average analysis of selectively mined higher-grade silver ore is:

	Ounces per ton
Silver	15.5
Gold	0.005

	Percent
Copper	0.1
Lead	0.2
Zinc	0.4
Manganese	2.0
Iron	5.85
CaO	35.00
SiO_2	40.00
$BaSO_4$	14.00

Formerly, the smelters purchased the ore for use as a flux. The only metal paid for was silver. The investigations also indicate: (1) The material between the veins is mineralogically similar to that mined with the exception that the silver content probably does not exceed an average of about 4 ounces per ton; (2) the extent of the mineralized zone decreases with depth; and (3) any ore encountered below present working cannot reasonably be expected to contain a higher percentage of either copper, lead, zinc, or manganese than ore already produced.

As attempts to beneficiate the ore have yielded unfavorable results, further production from the deposit appears to be dependent upon selective mining of the higher grade silver zones and a low smelting charge that could result from a renewed demand for the ore by nearby copper smelters.

Denial of the requested Governmental aid is recommended because any ore found by the proposed exploratory work cannot be expected to contain significant amounts of copper, lead, zinc, or manganese.

REYNERT EXTENSION SILVER MINES
PIONEER MINING DISTRICT
PINAL COUNTY, ARIZONA
(COPPER-LEAD)

DMEA 3337

GEOLOGY

by
John N. Faick and Leonid Bryner
Geologists, U.S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
8-27-54
(date)

REYMERT EXTENSION SILVER MINES
PIONEER MINING DISTRICT
PINAL COUNTY, ARIZONA
(COPPER-LEAD)

DMEA 3337

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INTRODUCTION

In an application to the Defense Minerals Exploration Administration, dated April 22, 1954, Mr. Norman de Vaux, president of the Reymert Extension Silver Mines, requested government participation in an exploration program estimated to cost $29,906, to be used in exploration for copper and lead ores at the Reymert mine.

The Reymert mine is located (fig. 1) in sections 15, 22, 23, 26, and 27, T.2 S., R.11 E., Pinal County, Arizona. It is reached from the town of Superior by traveling west 5.2 miles on U.S.Highway 70, turning left onto a graded dirt road, which is followed 0.4 miles to the old paved highway, turning right onto this old highway which is followed west 0.4 miles, turning left onto a graded dirt road, and following this graded dirt road 2.2 miles up a dry wash. The mine buildings are in the wash and the workings are immediately east of it, on the west-facing slopes of a low range of hills. The elevation of the collar of the Alaska shaft is about 3100 feet.

The applicant company, known as Reymert Extension Silver Mines, is the owner of 7 patented and 11 unpatented lode claims and 4 unpatented mill sites covering the Reymert workings (fig. 2).

The principal development work was done at the Alaska shaft and at the Australia shaft which is about 2100 feet south of the Alaska. Both shafts are about 400 feet deep and a few thousand feet of development and exploration work has been done from each shaft. Fig. 3 shows the extent of the principal workings on the Reymert veins.

The present report summarizes the results of a geologic examination made on July 1, 2, and 9 by J. N. Faick and Leonid Bryner, U.S.Geological Survey, and by T. M. Romslo and W. R. Hardwick, of the U.S.Bureau of Mines. Mr. Norman de Vaux assisted the examiners wherever possible.

The applicant's proposed exploration program is intended to explore the vein zone beneath the Alaska workings and the adjacent Asia claim. Therefore these workings were examined carefully, and many of the other workings were examined superficially. The Australia shaft was not entered.

The workings off the Alaska shaft are flooded below the 200-level, but the accessible parts of the 0-level, 55-level, 135-level and the 200-level were examined. The available diamond drill core from a hole drilled from 200-level was logged by the examiners and the interpretation of the log is shown on figure 4. Our interpretation of the part of the mine which is flooded below the 400-level is based on very meager data available in old reports and letters.

GEOLOGY

The Reymert mine, which was discovered about 1880, has produced nearly 200,000 tons of silver ore, most of which was marketed as smelter flux. The Reymert vein, or vein system, is several thousand feet long and its maximum width is about 100 feet but in places the vein splits into 2 or more narrow veins separated by wide zones of country rock.

The Reymert mine is in an area of early pre-Cambrian Final schist. This is mostly micaceous schist which varies from greenish to greyish, and which probably has a high chlorite content. Some parts of the schist are quartzitic and apparently are derived from sedimentary rocks. A rock tentatively identified as metudiorite, which may be a sill in the schist, was found underground (fig. 4) but was not recognized on the surface.

The foliation of the schist is not conformable to the primary bedding of the original sediments in the few places where the bedding was recognizable. The attitude of the foliation of the schist varies considerably. About 200 feet northwest of the Alaska shaft the foliation strikes N 40-50° E and apparently dips about 35° NW, but near the shaft on 200-level the strike is about N.14°E and the dip is about 20° SE. From a point about 100 feet south of the collar of the Alaska shaft and extending to the vicinity of the Australia shaft, the schistosity strikes N 70-90 E and dips from 30° to 75° SE.

The Reymert vein trends northerly and apparently occupies gash fractures which lie at a large angle to the axis of elongation or stretching of the enclosing schist. About 500 feet north of the Alaska shaft the vein strikes N 5° - 10° E, near this shaft it strikes about N 20° W, and near the Australia shaft the vein strikes N 5° W. The dip of the vein varies from vertical to about 75° easterly.

The width of the vein varies greatly. In the vicinity of the Alaska shaft, and for at least 200 feet south of it, the vein is 80 to 100 feet wide, but north of the shaft the vein pinches abruptly to a width of 20 to 30 feet, and this width of vein zone persists from about 100 to several hundred feet north of the Alaska shaft. Several hundred feet south of this shaft the vein splits into two branch veins, and these branches are about 150 feet apart at a point about 1000 feet south of the Alaska shaft. About 1700 feet south of this shaft, or 400 feet north of the Australia shaft, the veins are about 20 feet apart, and they apparently intersect about 200 feet north of the Australia shaft.

In addition to the large veins mentioned above, there are many smaller veins which range from a few inches to several feet wide, and which are of an unknown length in the directions of both the dip and the strike. These may be independent veins which may be approximately parallel to the large veins, but in most cases they appear to be branches of the larger veins.

The Reymert veins fill gash or tension fractures in the schist, and in places fill interstices in brecciated country rock. In many places random inclusions of schist are engulfed in the vein filling and large waste horses occur in a few places. Shearing of the schist apparently has not been an important factor in ground preparation. In most places the vein filling is frozen to the wall rocks and the contacts are usually sharp and clearly defined; however, the contacts are usually irregular. The schist wall rocks and schist fragments in the vein have been silicified but alteration of the host rock has not been intensive. Replacement, at most, has played a very

minor part in the emplacement of the Reymert veins.

The principal minerals in the Reymert vein are barite, manganiferous calcite, ferriginous carbonate (probably siderite) and quartz, and these were deposited in approximately this order. The manganiferous calcite and quartz are the most abundant minerals, but the vein filling is not uniform, and considerable variation is noted in the relative abundance of the different minerals in several places. The vein contains from 10 to 20 percent barite, 40 to 50 percent manganiferous calcite and about the same amount of quartz. Ferriginous carbonate probably does not exceed about 5 percent of the total vein material.

Barite is interspersed in the vein and its mode of occurrence indicates that it is probably the earliest vein mineral to form. It occurs as large bladed crystals, usually from 1/4 to 1-1/2 inches long, which are nearly always surrounded by massive, very coarse crystalline gray or black calcite. Fractured barite crystals with the fractures filled with calcite were observed in one place. Barite is not uniformly distributed throughout the vein, but occurs as a prominent constituent in bands or zones ranging from about 1 to 15 inches wide, and which are separated by other similar zones by bands of barite-free coarse crystalline calcite, or delicately interbanded calcite and quartz. Barite is an abundant constituent at the Australian shaft and on the 200-level of the Alaska shaft, but is not abundant in the vein at the outcrop near the Alaska shaft. It is possible that this distribution of the barite may be significant with respect to temperature-depth conditions of vein formation

but the meager data available does not permit utilization of the observation.

Calcite is an abundant and conspicuous mineral in the deposit. It occurs as a massive fissure filling, and is always coarse-grained as revealed by large cleavage faces. Apparently all of this calcite is manganiferous, and supergene alteration of it has brought about the release of manganese oxides which have deposited in the upper part of the vein and have imparted a conspicuous dark stain to the outcrop.

Quartz is a relatively abundant constituent throughout the vein, and occurs mostly as seams, veinlets and relatively large masses in fractured calcite, and is abundant as cementing material filling interstices in the shattered and brecciated country rock. The quartz is characterized by the presence of many vugs and cavities lined with drusy surfaces. Banding and comb structures are conspicuous features. Most of the quartz, except that forming crystals in the cavities, is in the form of dense, fine-grained masses or narrow veinlets.

The vein material contains remarkably few visible sulphide minerals. Only galena was recognized, and it was seen as small pods or pockets, in the vein. Also traces of copper oxides were observed at the south end of the 200-level, but no other copper minerals were recognized. Included in the list of minerals that have been reported from this mine are smithsonite, willemite, cerargyrite, argentite, bromyrite, and pyrite, but these probably occur in small quantities

as they were not recognized by the examiners. The mode of occurrence of the silver, which gave the deposit its commercial value, is not known. Manganese oxides are fairly common in weathered zones near the surface and impart a black color to the vein. Very small amounts of hematite and limonite were observed in the vein and these probably result from supergene alteration of siderite. Incipient alteration of siderite was noted in a few places.

Banded and vuggy structure, like that observed in the Reymert vein, is characteristic of deposits formed at shallow depths, and the fine texture of the quartz is indicative of deposits formed under conditions of relatively rapid heat loss. The deposit, therefore, is epithermal, a type of deposit that is often associated with Tertiary volcanic activity in Western United States. One of the noteworthy features of this type of deposit is the low ratio of metallic minerals to gangue minerals. Although epithermal deposits are frequently important sources of precious metals, only in exceptional cases do they yield significant amounts of base metals such as lead or copper. Epithermal deposits are characteristically shallow, and usually do not extend over a few hundred feet below the outcrop. Many epithermal veins change downward and grade into worthless gangue minerals, or brecciated country rock; but seldom grade into valuable base metal deposits.

The abundant gangue minerals in the Reymert vein, particularly the barite and manganiferous calcite, represent mineralization at temperatures higher than those at which sulfide minerals will deposit. That the sulfide stage of mineralization is almost entirely absent from the Reymert vein is shown by the almost complete

absence of pyrite and chalcopyrite, and the presence of only very sparse amounts of galena. As the vein represents deposition at shallow depths, under conditions of relatively high temperature and rapid heat loss, it is unlikely that it would grade downward into sulfide-rich vein material in a zone where temperatures are higher, at least theoretically. The vein appears to be thinning with increasing depth, but there is no indication that it is also changing to a mesothermal type that might contain significant copper values.

Fault gouge occurs in small amounts, in layers a few inches thick within the vein and parallel to the vein banding, and similar gouge occurs along the vein walls. The gouge commonly has a smooth even surface and displays horizontal or nearly horizontal striations. The delicate vein structures in contact with this gouge are undisturbed where they could be observed. However, on the 200-level, 90 feet south of the shaft, an easterly trending quartz veinlet is offset about 3 inches by horizontal movement. The horizontal fault is occupied by another quartz veinlet which cuts the first. There is some indication that the higher silver values occur in zones bounded by layers of gouge, or in other words in zones where late-ore or post-ore movements have taken place.

Old stopes along the Reymert vein indicate that it was not uniformly well metallized and that the commercially mineable ore is localized in comparatively narrow zones which are separated by wide zones of very low-grade or barren vein material. The high-grade ore occurs in vein-like tabular masses which have been mined

selectively along the strike for distances ranging from a few tens of feet to several hundred feet, and have been mined to depths of 300 or 400 feet below the outcrop, although stoping was not necessarily continuous throughout these distances.

All of the ore previously mined was found near or along the walls of the main vein. These pay-streaks range from 3 to 15 feet in width and average about 8 feet. The vein material between the high-grade zones according to Solvocoresses, was not found to contain more than 3 or 4 ounces of silver. The ore mined from the vein-like high-grade streaks averaged about 15.5 ounces of silver, but contained no other valuable metals. This distribution of the metals in the veins is substantiated by DMEA samples given in Table I. The abnormally high lead content reported in Sample 11406 is due to the presence of a small pod-like mass of galena in the vein where the sample was taken.

The higher-grade silver ores apparently occur in zones bounded by layers or stringers of gouge, suggesting that localization of silver values may have been influenced by minor adjustments within the vein near the close of the vein-forming stage or after the vein had consolidated. At least one of these zones is bounded by a gouge layer in the west wall of the vein and by a gouge layer about 5 feet into the vein from the west wall. Old stopes indicate that commercial-grade ore has been selectively mined from between these two seams of gouge. On the other hand, this zonal distribution of the higher values probably is not consistent throughout the mine, because stopes at least 20 feet wide are observed in a few places.

TABLE I ANALYSIS OF ORE AND SAMPLES, REYNOLDS MINE, PINAL COUNTY, ARIZONA

Sample	Source of Data	Description	Width in feet	Oz/T Au.	Oz/T Ag.	Cu.	Pb.	Zn.	Mn.	Fe.	S.	CaO	Insol.	Silica	Alumina	Barite
A-B	L. Hersey Consultant	Alaska, 200-Level	31.	-	1.69	-	-	-	-	-	-	-	-	-	-	-
C-D	Do		42.	-	2.04	-	-	-	-	-	-	-	-	-	-	-
E	DMEA 11405		5.1	Tr.	14.3	0.032	0.40	0.1	1.62	-	-	33.4	-	21.6		
F-G	DMEA 11406		-	Tr.	2.5	0.025	1.35	0.3	1.32	-	-	35.0	-	27.3	-	-
H-I	DMEA 11407		-	Tr.	3.0	0.025	0.70	0.8	1.12	-	-	30.3	-	33.7	-	-
J	Browning, Re: Colvocoresses	400-Level XC	8.	Tr.	1.8	-	1.7	3.0	-	-	-	-	-	-	-	-
K	N. de Vaux's Records	Ave. of 9 samples 400-level	-	-	1.28	0.12	-	-	-	-	-	-	-	-	-	-
L	Do	D.D.H. 240-245 ft.	5.	0.01	0.10	0.10	00.1	-	-	-	-	-	-	-	-	-
M	Do	D.D.H. @ 435 ft.	5.	0.00	0.00	0.40	-	-	-	-	-	-	-	-	-	-
N	Statement by N.De Vaux	D.D.H. 440-450 ft.	10.	-	-	0.8	-	-	-	-	-	-	-	--	-	-
O	Magma Settlement Sheets	Numerical Average 161 shipments, 9971 tons		0.01	19.3	0.14	-	-	2.45	5.85	0.0	10.11	-	55.0	1.83	-
P	L. Hersey Re N.de Vaux	174,987 tons Recorded production	-	-	15.6	-	-	-	-	-	-	-	-	-	-	-
Q	USBM RI 4097	15 ton test sample	-	0.005	16.35	0.05	0.8	0.7	4.75	4.95	1.25	6.2	60.8	51.3	-	-
R	Denver Equipment Company	Metallurgical test sample	-	0.02	14.3	-	0.05	0.40	2.5	-	Nil	-	32.0	-	-	13.3
S	Denver Equipment Co.	Analysis by Magma Copper Co. Same sample as R?		0.01	13.6	0.10	0.10	3.5	3.6	-	-	-	-	-	-	14.0
T	Hawley & Hawley Certificate	25 tons shipped from South end of Australia Claim	-	0.005	26.4	0.04	8.05	-	-	-	-	-	-	-	-	-

Many individuals, including consultants to the applicant, have stressed the possibility of secondary enrichment, in the Reymert vein, with the consequent development of rich ore bodies at or near the water table. Secondary or supergene processes do not appear to have been important in formation of the commercial ores, although there is some evidence to indicate that a slight oxidation has taken place at least as deep as the 200-level.

At the Reymert mine there is very little gossan-like material at the surface and very little evidence of leaching and removal of vein materials. At the surface and at very shallow depths the vein has been stained black by manganese which undoubtedly has been released by decomposition of the manganiferous carbonate, and small amounts of iron oxides have likewise been released by weathering of siderite. If copper had been present in appreciable quantities in the primary ore it would now be present in the vein as carbonate. When copper is released by oxidation of sulfide minerals in the presence of a reactive gangue like that of the Reymert, the copper is almost immediately precipitated as the carbonate, hence does not migrate into zones of secondary enrichment. Similarly, lead and zinc do not migrate very far in the presence of a carbonate gangue like that at the Reymert. Thus, there is no reason to expect a zone of secondary enrichment below the presently explored part of the Reymert mine.

TENOR OF ORE

Considerable data relating to the tenor of ore in the Reymert mine is summarized below. The available data showing analysis of samples and the grade of ore shipped are given on Table I. The location of most of these samples is shown in figure 4.

The Reymert mine has a long history of silver production, but most of the silver ore was shipped between 1925 and 1946. The production up to and including 1946 is given by the applicant as 174,987 tons, with a total of 2,730,667 ounces of silver. This ore, therefore, has an indicated average of 15.5 ounces of silver per ton. In addition to this, considerable ore undoubtedly has been shipped by lessees, but the amount is unknown to these examiners. From January to December 1938, 9971 tons of this ore, containing 19.3 ounces of silver per ton, were shipped to the Magma Copper Company at Superior, Arizona. Most of this 9971 tons, representing 161 shipments (Sample O' Table 1) must have come from above the 200-level in the two main workings. Some of it may have come from between the 200 and 300 levels in the Australia workings. In 1950 about 25 tons of ore was shipped from the south end of the Australia claim. This contained 26.4 oz. silver per ton and 8.05 percent lead. This is the only base metal ore shipped from the property as far as we can determine.

C. F. Smith, chief chemist and ore-buyer for Anaconda's Inspiration Smelter at Miami, Arizona described the character of the Reymert ore for the writers. He stated that two types of fluxing ore were shipped from the mine; one type was shipped to the Magma Copper Company, Superior Arizona, and the other to Inspiration. The grades Smith reported for the ore shipped to Magma averaged very close to the average given above for 9971 tons; a good check on the reliability of Smith's figures. Smith's estimates are as follows:

Shipped to	Approximate Analysis Percent Silica	Percent Lime	Oz/ton Ag.	Percent Barite
Inspiration Smelter, Miami, Arizona	40	20	13	10-20
Magma Copper Co., Superior, Arizona	50 plus	10	19	10-20

From data given in Table I the writers estimated the average composition of the ore previously mined. This is as follows:

Silver	15.5 oz/ton	Manganese	2.0 percent
Gold	0.005 oz/ton	Iron	5.85
Copper	0.1 percent	CaO	35.00
Lead	0.2	SiO_2	40.00
Zinc	0.4	$BaSO_4$	14.0

The above average composition of the vein material closely checks an estimate made by G. M. Colvocoresses [1/]. His estimated composition of the ore follows:

Silver	0.10 oz/ton	MnO_2	3.5 percent
Lead	0.80 percent	Fe_2O_3	8.0
Zinc	0.15	$CaCO_3$	37.00
Copper	0.40	Insoluble	50.00

These production records and samples show that this deposit contained very little metal other than silver and manganese. There is no evidence that copper or other base metals increase with depth; however, it must be admitted that information is scant on the tenor of ore below the 200-level. The 9971 tons averaging 0.14 percent

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1/ Colvocoresses, G.M., Consulting Engineer, 1102 Luhrs Tower, Phoenix, Arizona; Private Report, p.11, April 1945.

copper undoubtedly give a more accurate picture of the average copper content above the 200-level than the samples taken by the examiners on that level. Samples K and L (Table I) are the only available samples of the vein below the 200-level, and the copper content of these samples is very similar to the copper content of the above-mentioned 9971 tons. From these data it appears that copper is present only in trace amounts throughout most of the vein. The slight increase of copper shown in samples M and N occurs about 100 feet west of the downward projection of the principal vein. Even if these were reliable samples, however, their copper content would not be enough to justify a search for a significant copper deposit below the Reymert silver deposit.

The lead and zinc content of the ore is only slightly higher than the copper content, according to the analysis. Galena occurs as tiny pods, pockets or irregular veinlets in the vein, but nowhere was it found in mineable quantities, and individual masses seldom contained more than a few pounds of lead by estimate. Zinc minerals were not found by the examiners, but are revealed only by assay.

ORE RESERVES

In 1945 Colvocoresses reported that In 1937 the engineers of the Eagle-Pitcher Company were able to measure and sample above the water level probable ore amounting to nearly 200,000 tons to which they gave an average content of over 8 oz. silver per ton. Mr.Lynn Hersey, Consulting Engineer, in the application to DMEA, states that

Eagle-Pitcher had also established the presence of an additional 100,000 tons of ore containing 11.5 ounces of silver per ton. Although some of this ore has been mined since 1937, the magnitude of the reserves probably has not greatly changed because additional reserves probably have been made available through development. Colvocoresses estimates that from 300,000 to 500,000 tons of ore containing more than 8 ounces of silver per ton exists in the entire mine above the water level. In 1947, Mr. Hersey, in conjunction with RFC engineers, estimated the existence of 40,000 tons of probable ore in the vicinity of the Alaska shaft.

Although large amounts of low-grade silver ore suitable for fluxing purposes undoubtedly remain in the Reymert deposit, none of the ore contains mineable quantities of copper, lead, or zinc. The copper in this deposit occurs in concentrations that average about 0.1 percent, and the content of lead and zinc does not exceed a few tenths of one percent.

The reserves of copper, lead and zinc in this deposit are not estimated by the examiners because these metals are present in such small amounts that it is not feasible to recover them. As already shown, there is no geological reason to expect mineable quantities of base metals in the mine.

CONTRAST BETWEEN REYMERT MINE, AND THE MAGMA AND OLD DOMINION MINES

The Magma mine at Superior and the Old Dominion mine at Globe have been cited in the application as prototypes of the Reymert and were described as silver producers near the surface but

copper producers at depth. It is true that the Magma mine was at first only a silver producer but this was because of the relatively low salability of the copper and not because copper did not occur with the silver. The silver was found in metallic form and associated with chalcocite. A further significant difference between this mine and the Reymert is that the Magma ore bodies are replacements of crushed wall rock.

The Old Dominion mine, to which the Reymert also is compared, apparently never was a silver producer. The fact that the earliest mines in the Globe vicinity were silver mines may have led to this idea. The Old Dominion was early recognized as a copper deposit and for this reason it was at first neglected in favor of the nearby silver deposits.

NOTES ON TREATMENT OF REYMERT ORE

Numerous tests have been made by various parties to determine if it would be possible to economically concentrate or recover the silver in the low-grade ore, but all methods gave unsatisfactory results. The Denver Equipment Company 1/ stated that the silver values are closely associated with the manganese and that successful recovery of the silver depends upon recovery of the manganese oxides. This may be true in zones where manganese has been released by weathering but probably is not applicable in the hypogene ore where the manganese is combined with carbonate in the form of manganiferous calcite. Shipping records available to the examiners and the statements by C. F. Smith indicate that

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1/ Private Report, p.1, April 13, 1950.

the higher silver values accompany the siliceous ore and the high-lime ore contains less silver. Tests made by the Denver Equipment Company indicated that about 20 percent of the silver and manganese in the ore could be recovered by concentration. Their tests prove that the silver values are not intimately associated with the barite.

Experimental work by the U.S.Bureau of Mines [1] has also shown that treatment of the Reymert ore is not feasible. The manganese can be recovered by the dithionate process; however, the recovery of silver by either cyanidation or flotation is poor. These experimental results indicate that because of the low manganese content and the poor recovery of silver it is doubtful if treatment of these ores is feasible.

It must be admitted that as far as we are able to determine the ores are of value only as smelter flux.

EXPLORATION

Reports by Colvocoresses [2] indicate that discouraging results were obtained when the Alaska shaft was sunk to a depth of 410 feet in 1913 and 1914. He states that "the vein which was reported to have been found in the crosscut on the 400-level at the Alaska shaft was filled with crushed and altered diabase and carried 1.8 oz. silver. Colvocoresses also reports that during 1919 and 1920 the Magma Copper Company (and associates) explored the property by drilling 7 holes on the Asia claim, reportedly to test extensions of the vein at greater depth, but these holes failed to find commercial ore, and only one hole penetrated vein material.

1/ U.S.Bureau of Mines, R.I.4097 p.12-13, 1947.
2/ Colvocoresses,G.M., Private reports 1941, 1945 and 1948.

The Reymert Extension Silver Mines proposed a diamond drilling program to test the Reymert vein zone below formerly productive ore shoots at depths greater than any previously mined. Fourteen holes, totaling about 2090 feet, were to be drilled from the 200 and 400 levels off the Alaska shaft. The purpose of this work was to explore for mineable quantities of copper and lead ore, which many individuals believe exist below the developed part of the mine.

The results of this BMEA examination show that the proposed exploration is not justified.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Alaska and Australia workings of the Reymert mine have developed an extensive vein deposit in which the principal value is silver which is associated with a gangue of manganiferous and ferriginous carbonate, quartz, and barite. Only trace amounts of copper, zinc and lead have been found in the ore. Metal content of the vein has not increased with depth, and there is some evidence to indicate that values may have decreased. On the 400-level of the Alaska shaft the vein is reported to have pinched to about 8 feet of vein-like material containing 1.8 oz. silver per ton, a marked reduction from the 80 to 100 feet width at the surface, where narrow zones containing 15 to 20 ounces of silver per ton were selectively mined. Failure of several diamond drill holes to locate the vein below the 400 level may indicate that the vein passed into worthless country rock below this level.

The vein is a typical epithermal deposit. The delicate banding of the gangue minerals, the many cavities lined with drusy surfaces and the low ratio of metals to non-metals, and the mode of emplacement as a simple fissure filling with only minor replacement or alteration of the country rock are diagnostic features. The gangue minerals are those that characteristically form at temperatures above those at which sulfide minerals form. The deposit undoubtedly formed at relatively high temperatures, and under conditions of rapid heat loss, which indicate a geologically shallow or near-surface environment at the time of deposition. The deposit is of a type that frequently grades downward into worthless vein material or barren country rock but seldom grades into productive base metal veins.

As there is no geological reason to believe that significant quantities of base metal or other ores of strategic importance will be found in this deposit, it is recommended that the application for Government aid in exploration be denied.

DMEA-3337, REYNERT EXTENSION SILVER MINES, INC.
REYNERT COPPER-LEAD MINE
MINERAL HILL MINING DISTRICT
PINAL COUNTY, ARIZONA

Engineering Report

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

August 1954

Reviewed by
DMEA OPERATING COMMITTEE

8-27-54
(date)

DMA-3337, REMENT EXTENSION SILVER MINES, INC.
REMENT COPPER-LEAD MINE
MINERAL HILL MINING DISTRICT
PINAL COUNTY, ARIZONA

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INTRODUCTION

The property of the Reymert Extension Silver Mines, Inc., Pinal County, Ariz. was examined for the Defense Minerals Exploration Administration in connection with an application for Governmental aid by Norman De Vaux, president of the Corporation. The examination, carried out under docket DMEA-3337, was made to determine if the applicant's proposed exploratory project for copper and lead ores warranted Government financial participation.

The proposed exploratory project, costing an estimated $29,906.00, consisted of diamond drilling 14 holes for a total of 2,000 feet from underground workings, portions of which would have to be dewatered and repaired.

The examination, confined mainly to the proposed project area, was made July 1, 2, and 9, 1954 by T. M. Ramslo, U. S. Bureau of Mines, and J. N. Faick and L. Eryner, both of the U. S. Geological Survey. Norman De Vaux, president and a director of Reymert Extension Silver Mines, Inc., was present during the examination. C. F. Smith, another of the corporation's directors, was present the afternoon of July 9.

ACKNOWLEDGMENTS

The writer wishes to acknowledge Mr. De Vaux's cooperation with the field team. He furnished much pertinent data and attempted to facilitate examination of mine workings by dewatering the Alaska

mine. The dewatering operation, voluntarily undertaken by the corporation, was abandoned after 3 days of pumping had removed probably less than 10 percent of the accumulated water.

LOCATION AND ACCESSIBILITY

The Reynert property is about 7 airmiles southwest of the town of Superior (figure 1). It is situated in secs. 15, 22, 23, 26, and 27, T. 2 S., R. 11 E., Mineral Hill or Pioneer Mining District, Pinal County, Ariz. Superior, the home of the Magma Copper Co., is served by U. S. Highway 60-70 and the Magma Arizona Railroad.

The property may be reached from Superior by traveling 5.2 miles westerly on U. S. Highway 70, thence 0.4 mile south on a graded road to a paved section of the old highway, and thence 0.4 mile westerly on the paved road. From this point, the mine camp is about 2.2 miles to the south via a graded road that follows a dry wash.

PHYSICAL FEATURES AND CLIMATE

The Reynert property is situated in a fairly rugged area, which has a maximum relief of about 700 feet near the mine. The Alaska shaft, collared at an altitude of about 3,100 feet is situated on the west slope of a north-south trending ridge. The mining camp at an altitude of about 2,900 feet is situated near the foot of the slope, opposite the Alaska shaft. From a divide about 1,000 feet south of the Alaska shaft, drainage is north to Queen Creek and south to the Gila River.

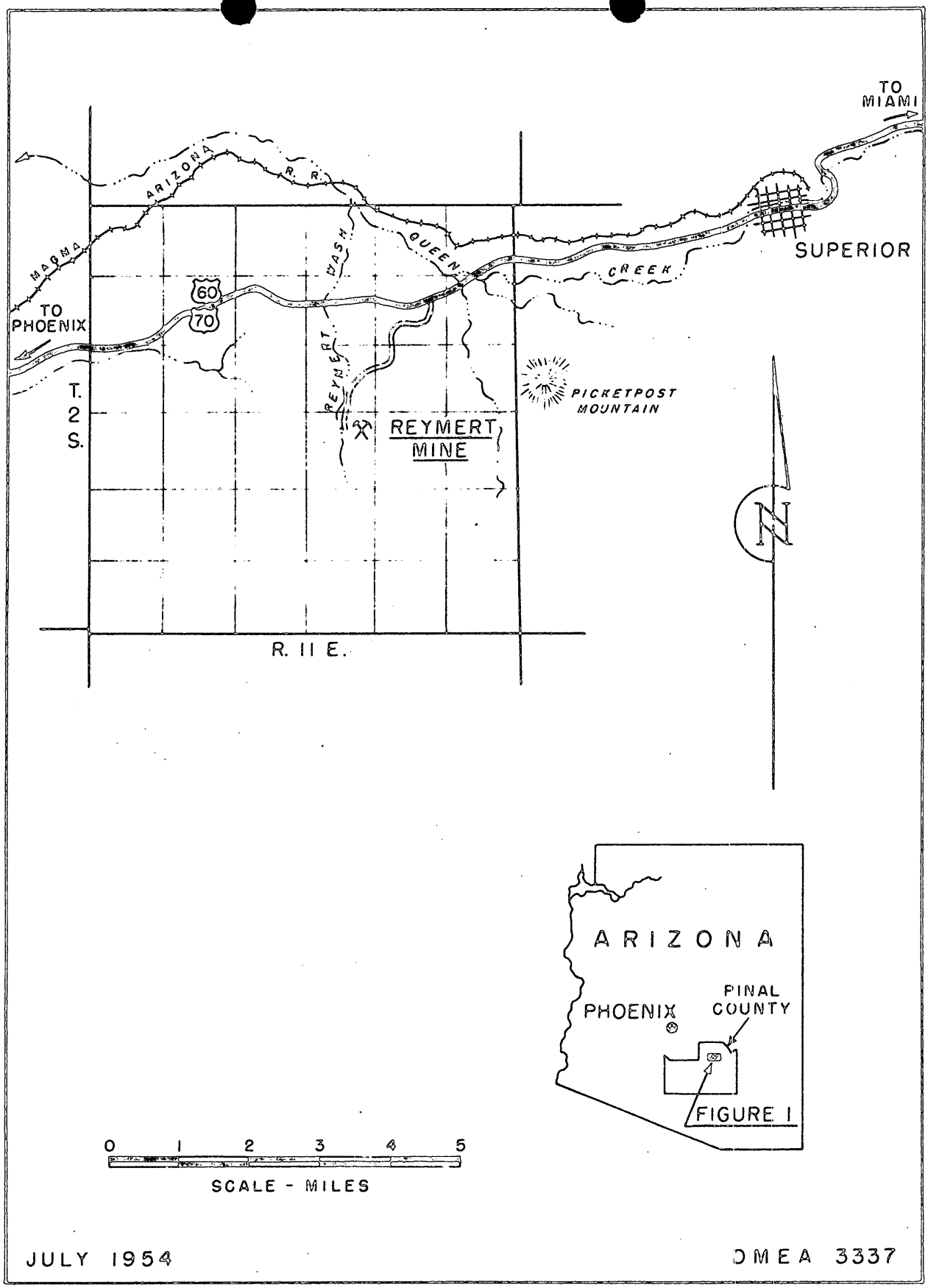

FIGURE 1.- LOCATION MAP - REYMERT EXTENSION SILVER MINES
PINAL COUNTY, ARIZONA

Vegetation is confined to forage grasses and a sparse growth of shrubs and cacti.

Summers are hot and winters are mild. Annual precipitation at Superior is about 18 inches of which about 2 inches occurs as light snowfalls.

HISTORY AND PRODUCTION

The Reymert property was located in 1886 by John Reymert and associates. Shortly thereafter it was sold to the Reymert Mining Co., controlled by a Mr. Van Dyke of Milwaukee, Wis. The company operated the mine to 1891 and for a portion of the period milled ore by chloridination and pan-amalgamation. In 1912, the Gunn-Thompson interests obtained an option to purchase the property and during 1913-14 sank the Alaska shaft to a depth of 386 feet, the present bottom. During 1919 and 1920, the Lincoln Issues Co., an affiliate of the Gunn-Thompson interests, and the Magma Copper Co. explored a portion of the property by putting down several diamond drill holes. In 1925, W. Forback and associates leased the property and operated the mine intermittently to 1941. James Todd then continued operations under a lease agreement to the middle of 1944 when Forback and associates again obtained a lease. Production continued to late in 1946.

During 1945 and 1946, the U. S. Bureau of Mines obtained a 15-ton sample of ore from the mine workings and tested the ore for recovery of manganese and silver by leaching, cyanidation, and flotation processes.

The recorded production to 1946 is 174,987 tons of ore containing 14.45 ounces of silver per ton. The ore was shipped to the Magma Copper Co. at Superior, and the International Mining & Smelting Co. at nearby Miami, Ariz.

After 1946, the property was acquired by the Reymert Extension Silver Mines, Inc. Operations by the corporation have been confined mainly to exploratory work carried out during 1949 and 1950 on the 200 level of the Alaska mine. The work consisted of drilling a diamond drill hole and the driving of 670 feet of drifts and crosscuts. Approximately 25 tons of ore, containing 8 percent lead and 26.2 ounces of silver a ton, were reportedly produced from workings near the southern end of the Australia claim.

PROPERTY AND OWNERSHIP

The property comprises a group of 18 mining claims of which 7 are patented, and a group of 4 unpatented mill sites (figure 2). It is reportedly owned by the applicant, the Reymert Extension Silver Mines, Inc., P. O. Box 521, Superior, Ariz.

DESCRIPTION OF DEPOSIT

Pinal schist of early pre-Cambrian age crops out extensively in the area of the Reymert mine workings. Most of the schist is micaceous and appears to contain a high percentage of chlorite. It is greenish to greyish in color. Portions of the schist are quartzitic. The foliation of the schist strikes from N. 14° E. to N. 90° E. and dips from about 20° to 75° to the southeast. Other rocks appear to be confined to meta-diorite that was found only in the underground workings.

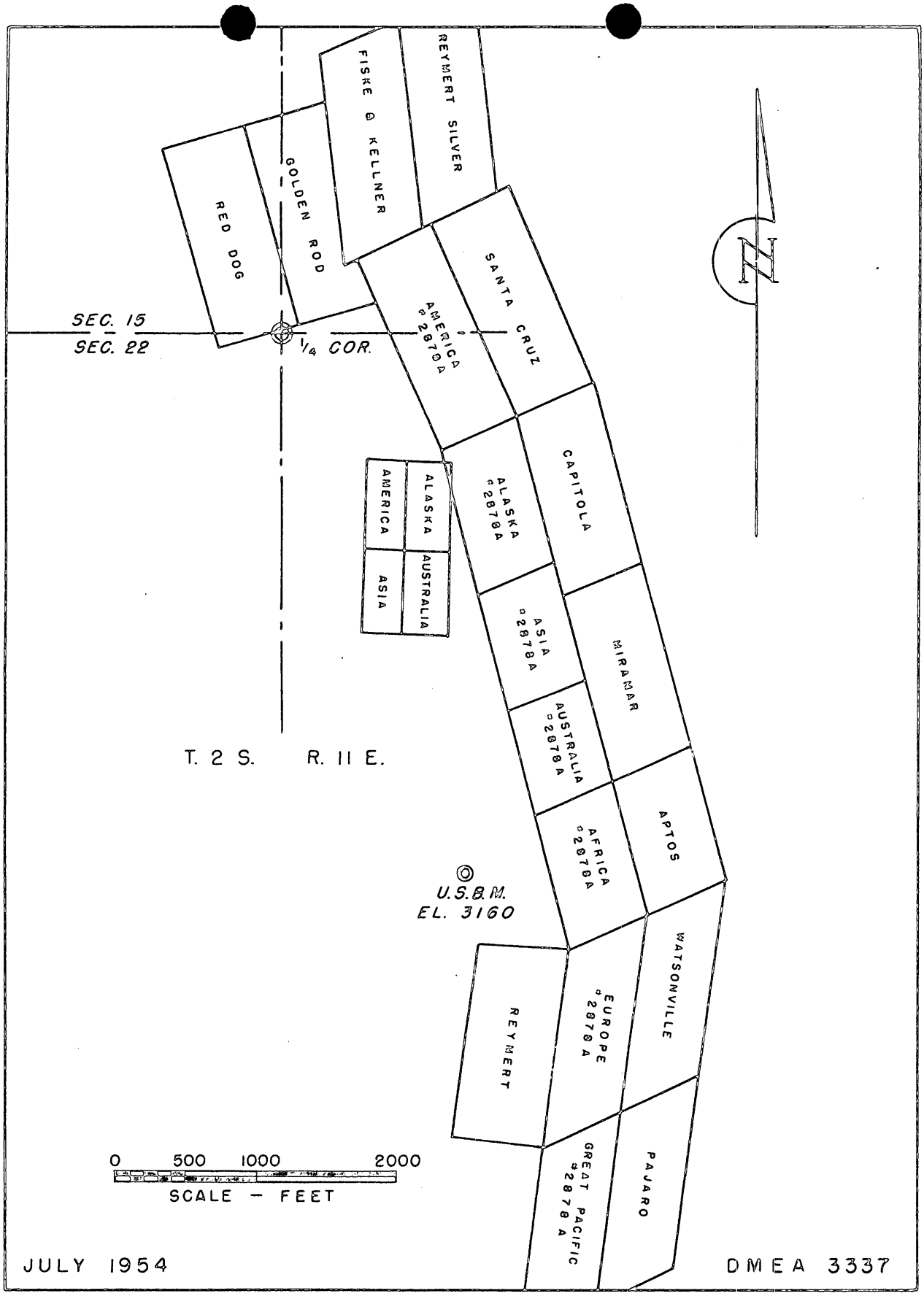

FIGURE 2. - CLAIM MAP - REYMERT EXTENSION SILVER MINES
PINAL COUNTY, ARIZONA

The Reynert deposit occurs in a northerly trending fissure zone ranging in width from 20 to 100 feet over a length of about 6,000 feet. Mining has been confined largely to veins that follow relatively strong and persistent fractures at or near both the hanging wall and footwall of the zone. The attitude of these fractures ranges from strikes of N. 5° E. to N. 20° W., and dips from vertical to 75° easterly. The width of the veins ranges from about 3 to 15 feet and averages approximately 8 feet.

The dominant minerals of the fissure zone are manganiferous calcite, quartz, barite, and ferruginous carbonate, probably siderite. Galena was recognized as small pods and pockets at widely scattered places on the 200 level of the Alaska mine. Copper oxides were found in a few widely scattered small zones at the surface and at the south end of the previously mentioned underground workings. Silver, concentrated mainly in the veins, occurred in an unknown form. Manganese oxides were present throughout the zone. Small amounts of hematite and limonite were observed.

GRADE OF ORE

Data presented in the Geologic report indicate the following:

1. Approximate average analysis of previously mined ore is;

	Ounces per ton
Silver	15.5
Gold	0.005

	Percent
Copper	0.1
Lead	0.2
Zinc	0.4
Manganese	2.0
Iron	5.85
CaO	35.00
SiO_2	40.00
$BaSO_4$	14.00

2. The grade of indicated and inferred reserves confined to zones of high silver values are essentially the same as ore previously mined.

3. The vein material between the high-grade zones is mineralogically similar to mined ore with the exception that the silver content probably does not exceed 3 or 4 ounces per ton.

TREATMENT OF ORES

Essentially all of the ore produced has been sold to copper smelters for its fluxing values. Payment was received only for silver.

Metallurgical testing of the ore has yielded discouraging results. The Denver Equipment Co. was able to recover only about 20 percent each of the silver and manganese as a concentrate containing 54 ounces of silver a ton and about 11 percent manganese.[1] Tests by the U. S. Bureau of Mines[2] resulted in the conclusion that

1/ Private Report, P. I., April 13, 1950
2/ U. S. Bureau of Mines, R. I. 4097, p. 13, 1947.

"In view of their (ores from Reymert and Sheep Tanks mines) low manganese contents and poor recovery of silver, it is doubtful whether treatment of these ores by the dithionate process, followed by cyanidation or flotation of the leach residues, would be feasible".

ORE RESERVES

The Reymert deposit, based on reserve estimates cited in the Geologic report, may contain a few hundred thousand tons of vein material assaying about 8 ounces of silver a ton. However, these reserves cannot be considered as ore by the Defense Minerals Exploration Administration because minerals of the strategic metals, copper, lead, zinc, and manganese, are present in only meager amounts, and little or none of these metals is recoverable.

In the past, similar vein material containing higher silver values constituted direct shipping ore probably because its fluxing properties resulted in low smelting charges. At present, the potential value of the deposit appears to be dependent upon selective mining of higher grade silver zones, and low smelting charges that could result from a renewed demand for the product by local smelters.

PRESENT STATUS

Surface Plant and Equipment

The camp consists of 15 small wood buildings of which 11 are in a poor state of repair. The others, consisting of living quarters for Mr. DeVaux and a watchman, and the formerly used office and laboratory buildings, are in fair condition.

Structures at both the Alaska and Australia shafts consist of a headframe, a 100-ton ore bin, and small buildings and sheds housing a hoist, compressor and blacksmith shop. Major equipment at the Alaska shaft consists of a single-drum hoist powered by an automobile engine, a Fairbanks-Morse turbine pump powered by a 40-H.P. Allis Chalmers engine, a Byron Jackson electric pump, and an ancient Ingersoll-Rand 210-cfm air compressor. At the Australia shaft, major equipment is confined to a duplicate of the hoist and power unit of the Alaska shaft.

Mine Workings

Mine workings of the Reymert vein zone extend over a strike length of about 6,000 feet (figure 3). The most extensive workings are at the Australia and the Alaska mines. The zone of the proposed exploratory work at the Alaska mine has been explored and developed rather extensively by workings from the 386-foot deep Alaska shaft. The shaft is vertical and contains 3 timbered compartments. Water stands at about 40 feet below the 200-foot level. The 135-foot level and most of the 200-foot level have been driven in the vein zone. Stoping has been most extensive above the 135 level. Workings on the 200 level are shown on figure 4. The 400-foot level, according to data submitted by the applicant, is confined to a 40-foot crosscut driven to the east.

The walls of the stopes are firm. Very little sloughing has occurred.

PROPOSED EXPLORATIONS

The applicant proposed to diamond drill untested ground north and south of the Alaska shaft by drilling 14 holes, located and designed as follows:

Hole 1. Extension of previously drilled hole, 200 level, located about 250 feet southeast of Alaska shaft, 50 feet.

Hole 2. Same setup, hole +5° S. 30° W., 150 feet.

Hole 3. From end of crosscut, 200 level, 140 feet northeast of Alaska shaft, hole at -45°, bearing S. 75° W., 150 feet.

Hole 4. From same setup, 200 level, hole -60°, bearing S. 75° W., 150 feet.

Hole 5. From point in drift 90 feet due east of Alaska shaft, hole at -20°, bearing S. 75° W., 100 feet.

Hole 6. From same setup, hole -60°, bearing S. 75° W., 150 feet.

Hole 7. From end of drift, 160 feet north of shaft on 200 level, hole -20°, S. 75° W., 100 feet.

Hole 8. From same setup, hole -60° S. 75° W., 220 feet.

Hole 9. From end of crosscut, 400 level, Alaska shaft, hole +10° S. 75° W., 50 feet.

Hole 10. From same setup, hole -45° S. 75° W., 170 feet.

Hole 11. From position close to shaft, 400 level, hole +5° N. 45° E., 130 feet.

Hole 12. From same setup, hole +5° S. 45° E., 120 feet.

Hole 13. From same setup, hole -45° N. 45° E., 275 feet.

Hole 14. From same setup, hole -45° S. 45° E., 275 feet.

The proposal called for 2,090 feet of diamond drilling to be done by a private contractor at estimated per foot, and total costs of $5.85, and $12,226.00, respectively. Other estimated costs, comprising rental and maintenance of equipment, labor, supervision, cutting drill stations, repairs to workings, and extension of pipe lines brought the estimated total cost to $29,906.00, or $14.31 per foot of hole.

RECOMMENDATIONS

The Reynert Extension Silver Mines, Inc. request for Governmental participation in proposed explorations, costing an estimated $29,906.00, is recommended for denial because any ore that might be developed would not contain significant amounts of copper, lead, zinc, or manganese.

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

224 New Customhouse
Denver 2, Colorado

June 3, 1954

Memorandum

To: C. O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: DMEA Docket 3337 (Copper-Lead), Reymert Extension Silver Mines, Pinal County, Arizona

Enclosed is a copy of a bid for diamond drilling obtained from Boyles Brothers Drilling Company of Salt Lake City, Utah, by the subject applicant.

This bid is to be made a part of the Reymert Extension Silver Mines application, DMEA Docket No. 3337.

W. H. King

Enclosure

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W H King
W. H. King

Enclosure

[illegible]

Boyles Bros.
DRILLING COMPANY

CONTRACTORS [illegible]
General Offices
1821 South Main Street [illegible] Phone [illegible]
SALT LAKE CITY 15, UTAH

[illegible]

May [illegible], 1956

[illegible]
[illegible]
Superior, Arizona

[illegible]

Gentlemen:

In response to a communication [illegible] our Mr. [illegible] Curtis, who recently examined your property near Superior [illegible] your contemplated drilling program, we submit the following [illegible] drilling program:

1. Rates, terms and conditions for drilling approximately 1,200 linear feet from underground drill stations:

a. Rates for drilling:

	EX or AX	BX	NX
0 - 250 feet	$3.50	$4.00	$4.50
250 - 500 "	$3.80	$4.30	
500 - 750 "	$4.20		
750 - 1000 "	$4.80		

b. Compressed air, water, and drill stations. You would be required to furnish an ample supply of compressed air and water for drilling purposes at your cost and expense. If and when necessary for us to install air lines, water lines, cut drill stations, or set-up on previously drilled holes, such work will be undertaken by our crews on the basis of our cost plus 10%.

c. Should reaming for casing be found necessary, such work will be performed on the following basis:

Reaming for and installing EX casing - $1.40 per foot.
Reaming for and installing AX casing - $1.60 per foot.

[illegible]

May 1, [illegible]

[illegible] such work will be [illegible] $0.[illegible] per hour, plus such cement [illegible]

[illegible] approximately [illegible]

[illegible]	[illegible]X	BX	NX
[illegible]	$[illegible]	$1.[illegible]	$[illegible]
[illegible]	$[illegible]	$1.50	[illegible]

[illegible] such [illegible] as follows:

Reaming for and installing EX casing $1.40 per foot.
Reaming for and installing AX casing $1.60 per foot.

Should reaming of [illegible] be required, such work will be performed [illegible] as of $[illegible].60 per hour, plus such cement or cement substitute used.

d. Water supply. It is understood that you will have available for our use, a truck and water tank for the purpose of supplying water to drill sites, and we will furnish [illegible] the fuel and labor for the operation of same.

Should the foregoing quotations meet with your approval, we [illegible] to commence work within ten days after receipt of notice to proceed.

Very truly yours

R. T. Goldsworthy
General Manager

RTG:bg

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 3 - 1954

224 New Customhouse
Denver 2, Colorado

April 30, 1954.

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 DMEA Form 3a and MF-103 and supporting data pertaining to the following applications for Government assistance in exploration work:

Reymert Extension Silver Mines (Copper and Lead)
P. O. Box 521
Superior, Arizona

John B. Grosso, Jr. (Beryl, Mica and Uranium)
982 South Tennyson Street
Denver, Colorado

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.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 3 - 1954

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. 3337
Metal or Mineral Copper-Lead
Date Received
Estimated Cost $29,906
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: Reymert Extension Silver Mines
P. O. Box 521
Superior, 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. See attached sheet.

(*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 sheet

(*b*) State any mine name by which the property is known. Reymert Mine

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise owner

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

(*e*) If you own the land, describe any liens or encumbrances on it None other than current taxes.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Included in item 3(a) above.

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

(*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 **Copper and lead.**

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

(*c*) The work will start within ..... days and be completed within ..... 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. **See attached sheets.**

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. **See attached sheet**

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 22, 1954

REYMERT EXTENSION SILVER MINES
(Applicant)

By Norman del Vecchio

Its President

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

Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

1. NAME OF APPLICANT.--(a) The name of applicant is REYMERT EXTENSION SILVER MINES, P. O. Box 521, Superior, Arizona.

(b) Reymert Extension Silver Mines is a corporation organized under the laws of the State of Arizona.

(c) The titles, names and addresses of the officers of Reymert Extension Silver Mines are as follows:

President and Director:	Norman de Vaux P. O. Box 521 Superior, Arizona
Vice President and Director:	Ray N. Matzinger c/o Chrysler Motors Los Angeles 54, California
Secretary-Treasurer and Director:	Neil B. McGinnis 500 South Central Avenue Phoenix, Arizona
Director:	Fred E. Wade Globe Arizona
Director:	Clifton F. Smith Inspiration Arizona
Director:	Don H. Rohe 12008 Goshen Avenue Los Angeles, California
Director:	Richard Brubaker 1201 West Monroe Phoenix, Arizona

3. APPLICANT'S PROPERTY RIGHTS.-- (a) The land upon which applicant wishes to explore, including all land which it possesses or controls that may be benefited by the exploration is particularly described as follows:

The AMERICA, ALASKA, ASIA, AUSTRALIA, AFRICA, EUROPE and GREAT PACIFIC patented lode mining claims, designated by the Surveyor General as Survey No. 2878-A, embracing a portion of Public

Domain, in the Pioneer Mining District, Pinal County, Arizona, according to patents recorded March 21, 1914 in Book 1-A of Mining Deeds, page 236, in the office of the County Recorder of Pinal County, Arizona.

Those certain unpatented lode mining claims situated in the Pioneer Mining District, Pinal County, State of Arizona, of which the names, together with the numbers of books and pages of Records of Mines in the office of the County Recorder of Pinal County, Arizona, are as follows:

Name	Book	Page
Reymert	52	56
Apros	54	311
Capitola	54	312
Fiske & Kellner	54	313
Golden Rod	54	314
Miramar	54	315
Pajaro	54	316
Red Dog	54	317
Reymert Silver	54	318
Santa Cruz	54	319
Watsonville	54	320

Those certain unpatented mill sites situated in the Pioneer Mining District, Pinal County, State of Arizona, of which the names, together with the numbers of books and pages of Records of "Mill Sites and Water Rights" in the office of the County Recorder of Pinal County, Arizona, where their location notices are recorded, are as follows:

Name	Book	Page
Alaska Mill Site	1	398
Asia Mill Site	1	398
America Mill Site	1	399
Australia Mill Site	1	399

(b) The property is known by the name REYMERT MINE.

(c) Applicant's interest in the land is that of owner.

(d)

(e) There are no liens or encumbrances upon the land other than current taxes.

(f) The unpatented mining claims are described hereinabove in Item 3(a).

4. PHYSICAL DESCRIPTION.- (a)

"Surface mining commenced at the Reymert Vein sometime along about 1885 but only some 18,000 tons had been produced up until mining became more active following World War 1. * * *

"In 1919 the Magma Copper Company obtained an option to lease the Reymert Mines. They put down seven diamond drill holes from the surface in an attempt to test the orebody in depth. These holes were all drilled in the area from 700 to 900 feet south of the north end of the Asia claim. Records indicate that this drilling was poorly done; that these holes were started at small angles to the strike of schist and were drilled at excessive speed. Subsequent surveying of these holes has shown that but one of these holes encountered what may have been the vein. * * *

"Shipments in past years have been made to both Magma Copper Company's smelter and the smelter of the International Smelting and Refining Company located at Miami, Arizona. The ore, being high in lime, has at various times been more desirable at first one and then the other of these smelters, depending upon the amounts of custom ore containing lime available for fluxing purposes at the smelters. * * *"

Existing mine workings appear on the maps attached hereto and made a part hereof.

"The existing machinery and equipment on the property are sufficient to carry on any exploration program of reasonable extent. Compressors are in good working condition and are capable of providing 780 cubic feet of compressed air per minute. The hoist in the Alaska shaft is operated by a new gasoline engine and the entire assembly is in excellent working condition. This shaft is equipped with an Ingersoll-Rand 220 compressor and air receiver capable of furnishing sufficient air to run a large diamond drilling outfit together with other miscellaneous compressed air machines. The Alaska shaft has recently been repaired in its entire length and is in very excellent condition.

"A new Fairbanks-Morse Pomona turbine pump has recently been installed at an approximate cost of $6,400. It is capable of unwatering the Alaska shaft in approximately two days and can pump out

the present inflowing water by operating about fifty percent of the time. Water being made at the Alaska shaft amounts to about 50,000 gallons per day.

"It is estimated there is $20,689 in equipment available at the Alaska shaft. The Australia shaft is also completely equipped for operation with an estimated value of its equipment at $13,579. The estimated value of the mine camp and miscellaneous tools and equipment is $17,765; making a total of $52,033 of equipment and buildings at this property.* * *"

The recent operations and development of the mine have been carried on by the present owner and include about 670 feet of drifting and cross-cutting on the 200 level as well as a diamond drill hole put down in 1950.

The mine workings are accessible for examination purposes.

(b) The following is a tabulation of the production by years from the Reymert property insofar as the same can be ascertained from local smelters:

Year	Tons	Average Silver oz. per ton	Approx. Total Silver Ounces
Before 1925	18,065	23.12	416,904
1925 & 1926	5,175	16.10	193,990
1927	6,743	18.00	121,374
1928	6,916	16.19	112,013
1929	4,536	17.25	78,253
1930	799	15.33	12,074
1931	217	16.00	3,427
1934	1,116	19.64	21,938
1935	7,588	14.36	198,941
1936	11,497	11.29	129,801
1937	10,051	11.35	114,609
1938	15,195	16.23	246,603
1939	20,908	11.60	242,499
1940	20,609	10.26	212,264
1941	9,147	10.02	91,662
1942	8,057	15.04	121,215
1943	2,980	12.50	37,251
1944	1,454	12.83	19,072
1945	11,366	15.00	170,490
1946	12,568	14.82	186,287
	174,987	14.45	2,730,667

In addition there have been considerable tonnages mined and shipped by "Leasers" not shown in above tonnages.

ORE RESERVES

"Since a large portion of the production from Reymert has been mined by leasers who mined out the ore as they developed it; it is difficult to calculate any large tonnages of 'Blocked out' ore. Eagle-Pitcher Mining Company sampled the deposit in 1937 when many of the now inaccessible orebodies could be entered. Their engineers estimated the existence of 100,000 tons of ore averaging 11.5 ounces of silver plus 200,000 tons of probable ore which they gave a grade of 8 ounces in silver. Some of this ore has since been mined. Since the leasers, to maintain shipping grade and to conduct profitable operations, shipped the higher grade material as discovered, a grade calculation based on sampling of the present unmined vein exposures is manifestly unfair to the property."

In 1947, Mr. Lynn Hersey, consulting engineer, in conjunction with RFC engineers, made a reconnaissance examination of the mine and estimated the existence in the country adjacent to the Alaska shaft of approximately 40,000 tons of probable ore.

(c) The applicant's principal reason for wishing to explore the property is that

"In many respects the Reymert orebody is similar to those of two famous mines in the immediate vicinity. These mines are the Dominion located at Globe and the Magma at Superior. Both of these properties started as silver producers similar to that of the Reymert vein; in fact neither of the old Dominion nor the Magma on the surface were as favorable as is the Reymert. The Dominion mine had a record of many years of copper production from its lower levels and was still capable of producing copper at the time it was closed in 1932 had not the price of copper fallen to an unprecedented low. Magma Copper has a long history of production and is still producing high grade ore from depths of almost a mile."

GENERAL GEOLOGY

"The entire area covered by these claims is made up of igneous rocks; the basic rocks being mica schist of igneous origin; a pre-Cambrian diorite, and an intrusive rhyolite which is confined to the south end of the mining area.

"The main vein varies in width from 10 to 80 feet and averages about 30 feet in width. It strikes

north 15° west and dips at about 80° to the east. The east vein splits off of the main vein in the Australia claim and is from 100 to 200 feet to the east of the main vein in the Asia claim. At its north and south ends, the main vein splits into several branches and horsetails to the north and to the south of the profitable portions of the vein.

"The mica schist forms the walls of the vein for most of its surface exposure. Cleavage planes of this schist strike northeasterly and have steep but variable dips. In the north end of the property there are irregular stocks and intrusions of diorite in the area where the vein is split and broken. Where the vein has occurred in diorite at the surface, it has been low grade. The rhyolite in the south end of the structure has the appearance of a stock or laccolith. It appears again as a duke between the two branches of the vein on the Europe claim.

"There has been some post mineral faulting along the strikes of the vein but it is of minor nature and it does not appear that these small faults interfere with ore exploration. It is evident that there have been several movements on the main vein structure and the vein material appears to have replaced the brecciated schist. Numerous horses of schist still exist within the vein. The vein itself is made up of black calcite; and quartz of secondary nature. It also contains varying amounts of barite and fluorite."

Enclosed with this application is a report dated September 25, 1953, made by Lynn Hersey, consulting mining engineer, whose present address is Globe, Arizona. It is requested that the report be returned to this Company. The quoted items set forth in this application are taken from said report. It will be noted that the consulting engineer making the report states

"Due to the strong and persistent nature of the Reymert vein over a total observed length of more than 6,000 feet on the surface; its uniform character and excellent history of past production, it is recommended that this orebody be further investigated in depth."

Attached hereto and made a part hereof are the following maps:

1. Claim map
2. Vertical longitudinal section
3. Surface workings
4. Intermediate levels
5. 135 level
6. 200 level

(d) The property is about 2.5 miles from paved U. S. Highway 60-70. The shafts and workings of the property are connected by good dirt trucking roads to the above described main highway and to each other. There are about 3 miles of roads on the property.

The property is approximately 7 miles from the Town of Superior, where the Magma Copper Company is located and where the Magma Smelter is in operation. The Magma railroad, running from the Town of Superior, connects with the Southern Pacific Railroad. Shipments have been made in the past to the smelter of the International Smelting and Refining Company, located at Miami, Arizona, approximately 20 miles easterly from the Town of Superior and connected therewith by an overall four-lane paved highway, and to the Magma Smelter at Superior.

There are located upon the property at present four houses and three bunk houses for miners. However, additional housing facilities are available in the Town of Superior approximately 7 miles from the property.

(e) Manpower is available from Superior, as are materials, supplies and equipment. Water is available from the Alaska

shaft. Power is easily available, if needed, from the Salt River Valley Water Users Association 120,000 volt transmission lines forming a circuit from Mesa by way of Roosevelt Lake to Miami, and returning by way of Superior.

5. **THE EXPLORATION PROJECT.**--(a) The mineral and minerals for which applicant wishes to explore are copper and lead. As above stated, the history of silver mines of the type of applicant's mine is that at depth they become copper producers. See Item 4(c) above.

(b) The proposed work is to consist of _____ drilling. Attached hereto and made a part hereof is a map showing a plan of the present mine workings and the location of the proposed drill holes, particularly as related to such features as contacts, veins, ore-bearing beds, etc.

(c) The work will start within 60 days and be completed within 8 months from the date of an exploration project contract.

(d) The drilling will be carried out under contract. It is proposed to give the work to the R. S. McClintock Company. A brief account of its experience is as follows:

See MINING WORLD, Mining Development and Directory Number, April 15, 1953.

The drill holes will be located and the work carried on under the general supervision of Mr. Lynn Hersey, consulting engineer of Globe, Arizona. A background of Mr. Hersey's experience is as follows:

Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

LYNN HERSEY
CONSULTING MINING ENGINEER

P. O. BOX 1115
MIAMI, ARIZONA

APRIL 14, 1954

PROFESSIONAL EXPERIENCE - LYNN HERSEY - MINING ENGINEER

GRADUATE UNIVERSITY OF IDAHO, JUNE, 1923 B.Sc. - E.M.

1923 - 1926	-	FROM JUNIOR ENGINEER TO GEOLOGIST TO CHIEF ENGINEER AND ASST. MINE SUPERINTENDENT - PHELPS DODGE CORPORATION, MOCTEZUMA BRANCH, NACOZARI, SONORA, MEXICO.
1927	-	CHIEF ENGINEER, THE MEXICAN CORP., FRESNILLO, ZAC., MEXICO 5,000 TONS PER DAY - OPEN PIT
1928 - 1932	-	FROM GEOLOGIST TO CHIEF MINING ENGINEER PHELPS DODGE CORPORATION, MORENCI BRANCH, MORENCI, ARIZONA. EXPLORATION, DESIGN AND LAYOUT; 25,000 TONS PER DAY OPEN PIT- NOW OPERATING.
1933 - 1941	-	CONSULTING MINING ENGINEER AND GEOLOGIST, MIAMI, ARIZONA
1942 - 1943	-	ASST. CHIEF, PRIMARY PRODUCTION BRANCH, COPPER DIVISION, WAR PRODUCTION BOARD, WASHINGTON, D.C.
1944 - 1945	-	GENERAL MANAGER, MINING DIVISION, COPPER RANGE CO., PAINESDALE, MICHIGAN
1946 - 1954	-	CONSULTING MINING ENGINEER, MIAMI, ARIZONA. REGISTERED MINING ENGINEER, STRUCTURAL ENGINEER, GEOLOGIST, STATE OF ARIZONA.
PRESENT	-	CONSULTING ENGINEER, PACIFIC COAST BORAX CO., 630 SHATTO PLACE, LOS ANGELES 5, CALIF. (PACIFIC COAST BORAX CO. IS A DIVISION OF BORAX CONSOLIDATED, LIMITED, LONDON, ENGLAND.

Lynn Hersey

LH:B

The President of the Company, Mr. Norman de Vaux, will oversee the operations (without pay). He has been in charge of the work heretofore carried on by the Company, and will take no part in the actual exploration work, but will remain on the property to see that the work is properly carried out.

6. **ESTIMATE OF COSTS.**-- The following is the estimated total cost of the project:

2,090 feet of diamond drilling @ $5.85 per foot	-	$12,226.00
Rental, air compressor - 8 months @ $400.00	-	3,200.00
Compressorman and Hoistman - 8 months @ $300.00	-	2,400.00
Sampling and assaying	-	1,280.00
Consultant fees - 8 months @ $300.00	-	2,400.00
Maintenance and operating compressor, hoist and pumps	-	900.00
Cutting underground stations, repairs to workings and extension of pipelines	-	2,500.00
Total Direct		$24,906.00

Rental equipment to be furnished by Reymert Mine:

Fairbanks-Morse pump - 8 months @ $400.00	-	3,200.00
Hoist and shop equipment - 8 months @ $200.00	-	1,600.00
Sample House - 8 months @ $25.00	-	200.00
Total		$29,906.00

EXPLORATORY DIAMOND DRILLING

Preliminary list and location of proposed drilling:

It is proposed to drill the untested ground north and south of the Alaska shaft by means of 14 holes located as follows:

Hole 1. Extension of previously drilled hole 200 level located about 250 feet southeast of Alaska shaft. 50 feet.

Hole 2. Same setup, hole +5° S 30° W 150'

Hole 3. From end of crosscut 200 level 140 feet northeast of Alaska shaft, hole at -45° bearing S 75° W 150'

Hole 4. From same setup 200 level, hole -60° bearing S 75° W 150'

Hole 5. From point in drift 90 feet due east of Alaska shaft, hole at -20° bearing S 75° W 100'

Hole 6. From same setup, hole -60° bearing S 75° W 150'

Hole 7. From end of drift 160 feet north of shaft on 200 level, hole -20° S 75° W 100'

Hole 8. From same setup, hole -60° S 75° W 220'

Hole 9. From end of crosscut 400 level Alaska shaft, hole +10° S 75° W 50'

Hole 10. From same setup, hole -45° S 75° W 170'

Hole 11. From position close to shaft 400 level, hole +5° N 45° E 130'

Hole 12. From same setup, hole +5° S 45° E 120'

Hole 13. From same setup, hole -45° N 45° E 275'

Hole 14. From same setup, hole -45° S 45° E 275'

All holes will be subject to adjustment in length as holes progress.

7. (b)

Capital to be furnished by DMEA	-	$14,953.00
Capital to be furnished by Reymert	-	9,953.00
Rental value of equipment to be furnished by Reymert	-	5,000.00
Total		$29,906.00

Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

C
O
P
Y

Telephone RI. 4197
W. 416-418 Second Ave.
Spokane 8, Washington

R. S. McCLINTOCK
Diamond Drill Contracting

Address reply to
Globe, Arizona
Jan. 11, 1954

Mr. Norman DeVaux, President
Reymert Silver Extension Company
P. O. Box 521
Superior, Arizona

Dear Mr. DeVaux:

We understand you wish to diamond drill one or more holes underground from the 200 foot level of the Alaskan Shaft at the Reymert Mines Property which we visited on Jan. 10, 1954. It is agreed that you will furnish us adequate air and water to the drill setups and provide enough room at the setups to allow us a 10 ft. pull as we discussed on the tenth. We further understand you have an EX hole in the East Crosscut South which you wish progressed another 50 or 75 feet and which at present is thought to be about 450 feet deep. The program calls for 1000 ft. of drilling.

We propose to furnish the drill, rods, casing, diamond bits and corebarrels, all diamond drill accessories and diamond drill labor consisting of one driller and one helper, at the following prices per foot:

NX size or collarpipe	0 ft. to 10 ft.	@ $4.90 per foot
BX (1 5/8" core)	0 ft. to 300 ft.	@ 4.60
AX (1 1/8" core)	0 ft. to 500 ft.	@ 4.35
EX (7/8" core)	300 ft. to 500 ft.	@ 4.15
AX	500 ft. to 750 ft.	@ 4.60
EX	500 ft. to 750 ft.	@ 4.30

When practical, the portions of the holes drilled in which plug or non-coring bits are used at your request, a reduction of $0.75 per foot will be made on the corresponding prices for core drilling.

We agree to move in, setup and clean out the unfinished hole in the East Crosscut South on a Cost plus 10% Profit basis, at which time, progressing the hole to completion will be done at the figures per foot shown above.

Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

Jan. 11, 1954

Letter: page 2
Mr. Norman DeVaux
Superior, Arizona

The above prices per foot includes our mobilization and demobilization costs from Globe to the collar of the shaft.

In the event loose or caving ground or water courses are encountered which, in the Contractor's opinion makes drilling impractical without the use of cement or casing, a charge of $6.50 per hour plus the cost of the cement used or the actual diamond loss in reaming will be made for placing and drilling cement in the holes or for reaming and seating casing in the holes.

We shall expect our costs on laying pipe line, cutting stations, drilling and mucking raise rounds or other services performed at your request. The term "Cost" as used herein shall include an Overhead charge in the amount of 12½%, with the exception of your Hoist Man whom we will carry on our payroll at labor cost only.

In case of delays not due to breakdown of Contractor's equipment and for the convenience of your Company, we shall also expect our costs, as we will if we should furnish sludge and core boxes which would normally be supplied by your Company.

Upon acceptance of this contract, an Escrow Agreement thru a Bank of your choice can be executed, and the drill program started without delay.

Our employees will be covered by Arizona State Industrial Insurance and the Contract will be covered by Liability Insurance in the amount of $100,000/$300,000. and Property Damage in the amount of $100,000.

Mr. Greenwood and I appreciate the courtesies shown us while visiting the job and thank you for the opportunity of furnishing our quotation.

Very truly yours,

R. S. MC CLINTOCK COMPANY

by M. B. WEAVER /s/
M. B. Weaver
Southwest Manager

cc: Mr. C. F. Smith
Inspiration, Ariz.
Mr. Philip Irwin
Spokane, Wash.

Reymert Extension Silver Mines
P. O. Box 521
Superior, Arizona

Jan. 11, 1954

Letter: page 2
Mr. Norman DeVaux
Superior, Arizona

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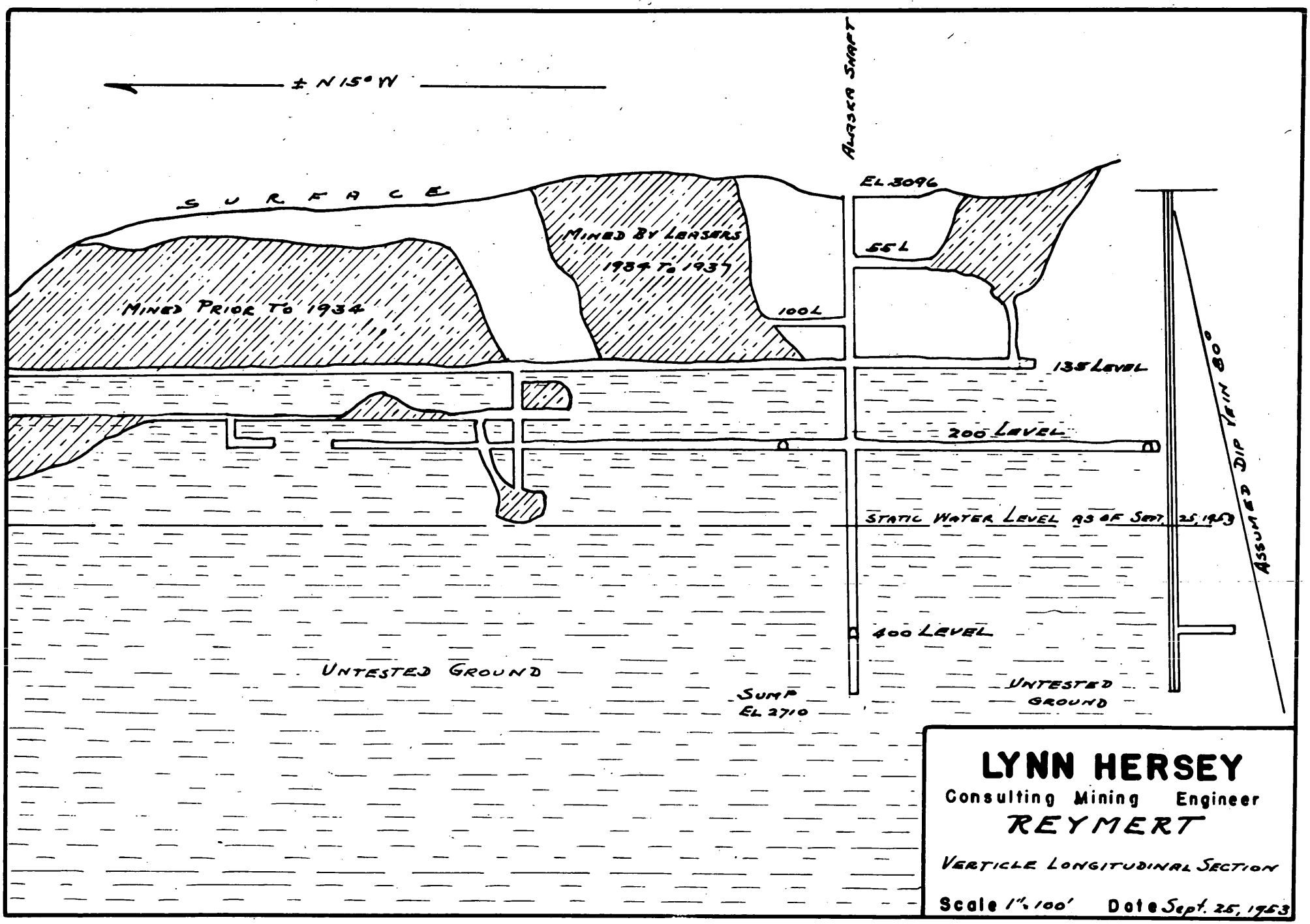
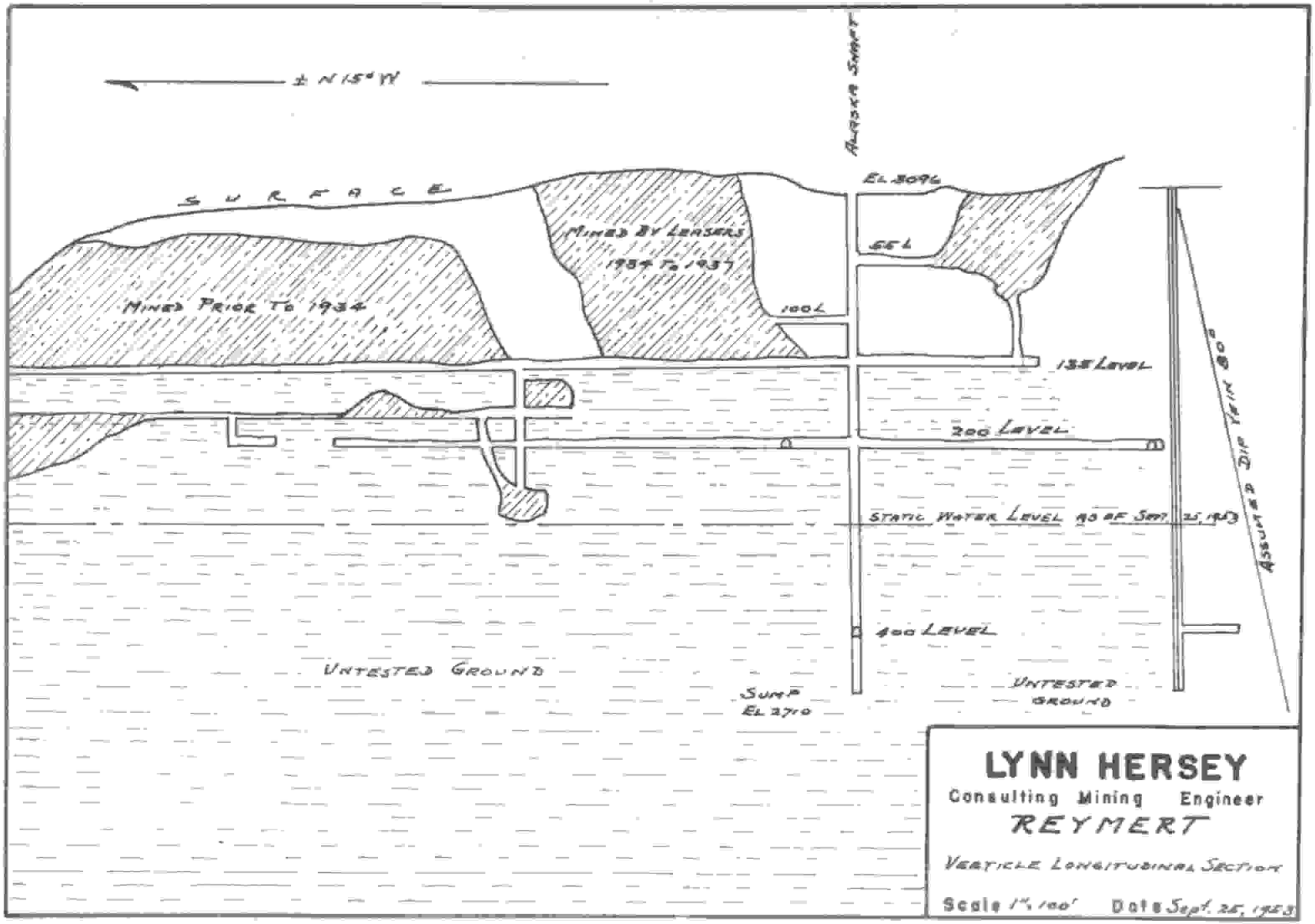
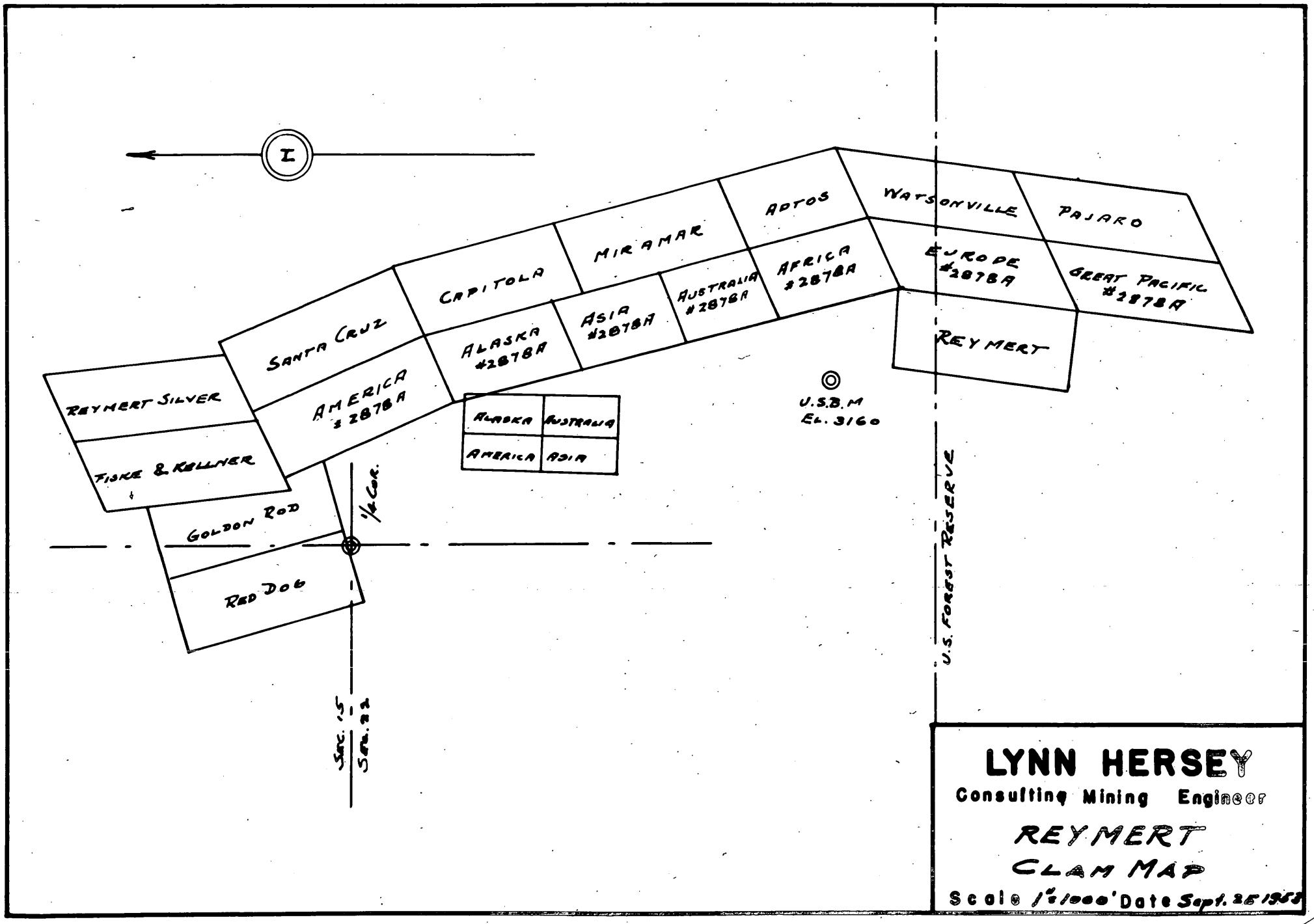
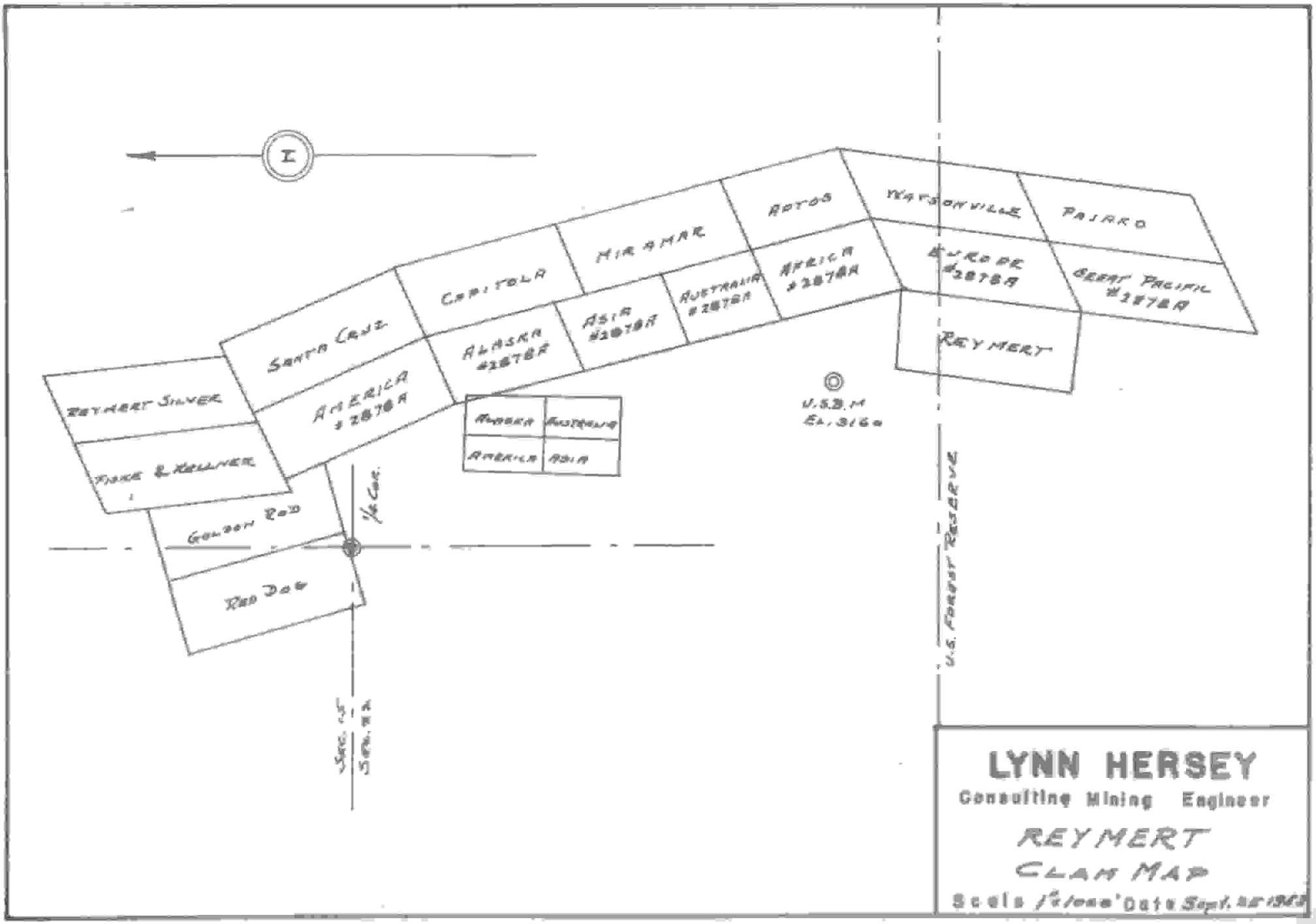
by M. B. WEAVER /s/
M. B. Weaver
Southwest Manager

cc: Mr. C. F. Smith
Inspiration, Ariz.
Mr. Philip Irwin
Spokane, Wash.


± N 15° W
ALASKA SHAFT
SURFACE
EL 3096
MINED BY LEASERS
1934 TO 1937
55 L
MINED PRIOR TO 1934
100 L
135 LEVEL
200 LEVEL
STATIC WATER LEVEL AS OF SEPT. 25, 1953
ASSUMED DIP 60°
400 LEVEL
UNTESTED GROUND
SUMP
EL 2710
UNTESTED GROUND
LYNN HERSEY
Consulting Mining Engineer
REYMERT
VERTICLE LONGITUDINAL SECTION
Scale 1" = 100'
Date Sept. 25, 1953


± N 15° W
ALASKA SHAFT
SURFACE
EL 3096
MINED BY LEASERS
1934 TO 1937
MINED PRIOR TO 1934
100 L
135 LEVEL
200 LEVEL
STATIC WATER LEVEL AS OF SEPT. 25, 1953
400 LEVEL
UNTESTED GROUND
SUMP
EL 2710
UNTESTED
GROUND
LYNN HERSEY
Consulting Mining Engineer
REYMERT
VERTICLE LONGITUDINAL SECTION
Scale 1" = 100'
Date Sept. 25, 1953


N
REYMERT SILVER
FISKE & KELLNER
GOLDEN ROD
RED DOG
SANTA CRUZ
AMERICA #2878A
CAPITOLA
ALASKA #2878A
MIRAMAR
ASIA #2878A
AUSTRALIA #2878A
ADTOS
AFRICA #2878A
WATSONVILLE
EUROPE #2878A
PAJARO
GREAT PACIFIC #2878A
REYMERT
ALASKA
AUSTRALIA
AMERICA
ASIA
U.S.B.M
EL. 3160
1/4 Cor.
SEC. 15
SEC. 22
U.S. FOREST RESERVE
LYNN HERSEY
Consulting Mining Engineer
REYMERT
CLAM MAP
Scale 1"=1000' Date Sept. 25 1953


N
Watsonville
Pajaro
Rotos
Hiramar
Capitola
Santa Cruz
Reymert Silver
Fiske & Kellner
Golden Rod
Red Dog
America #2878R
Alaska #2878R
Asia #2878R
Australia #2878R
Africa #2878R
Europe #2878R
Great Pacific #2878R
Reymert
Australia
America
Asia
1/4 Cor.
U.S.B.M El. 3160
U.S. Forest Reserve
Sec. 15
Sec. 22
LYNN HERSEY
Consulting Mining Engineer
REYMERT
CLAIM MAP
Scale 1" = 1000' Date Sept. 22 1963

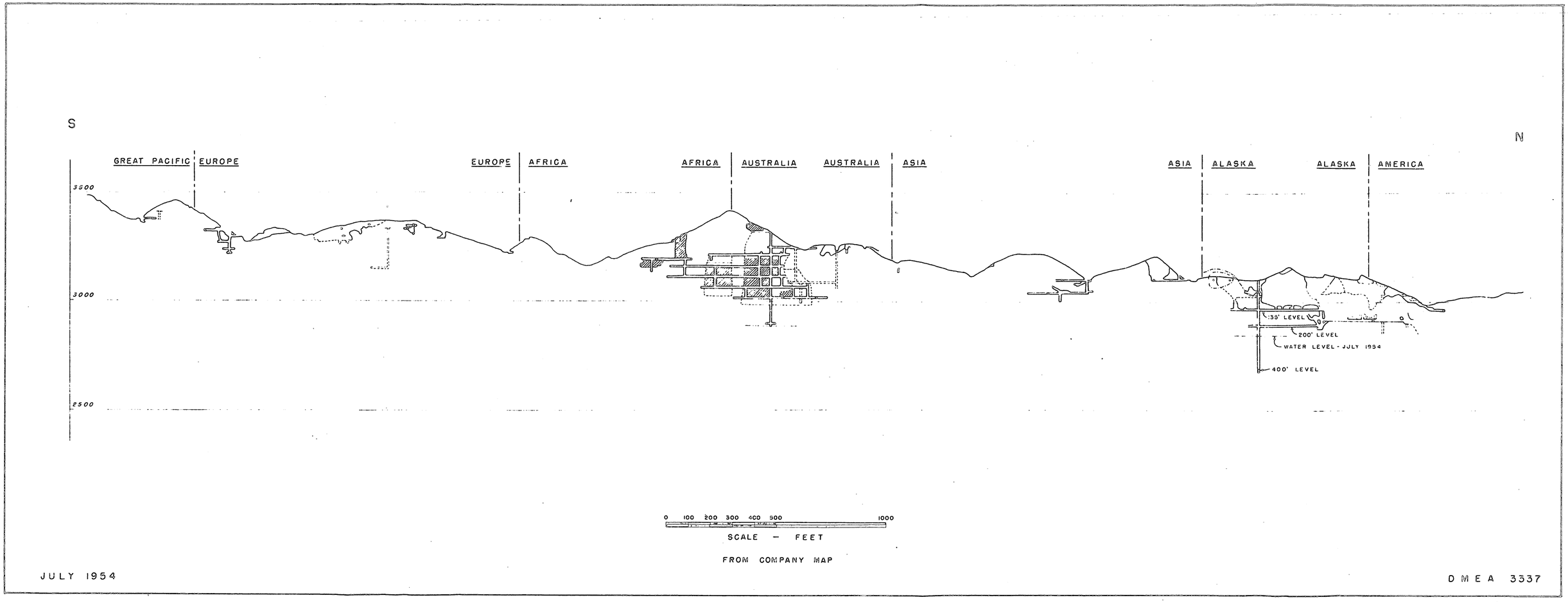
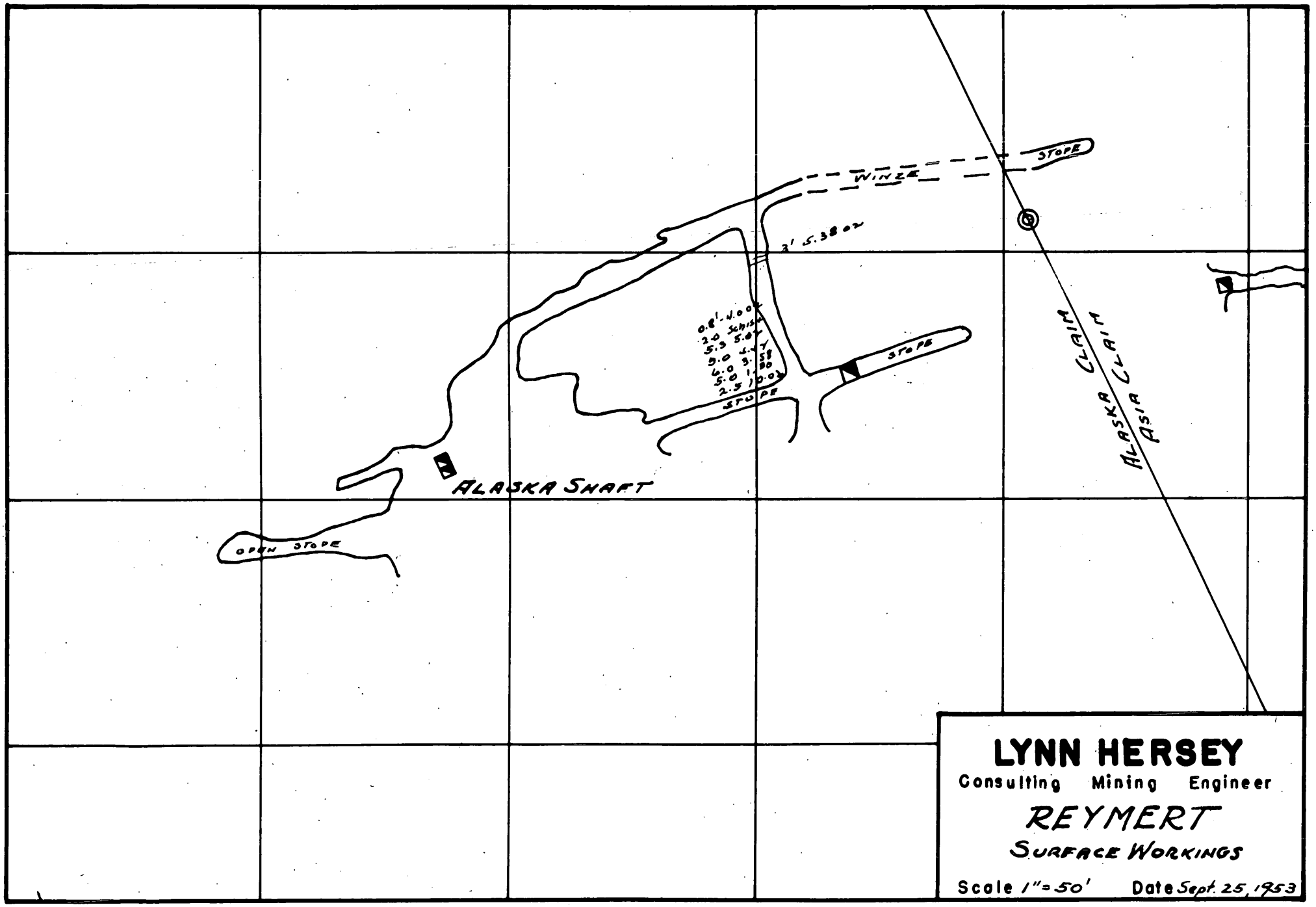
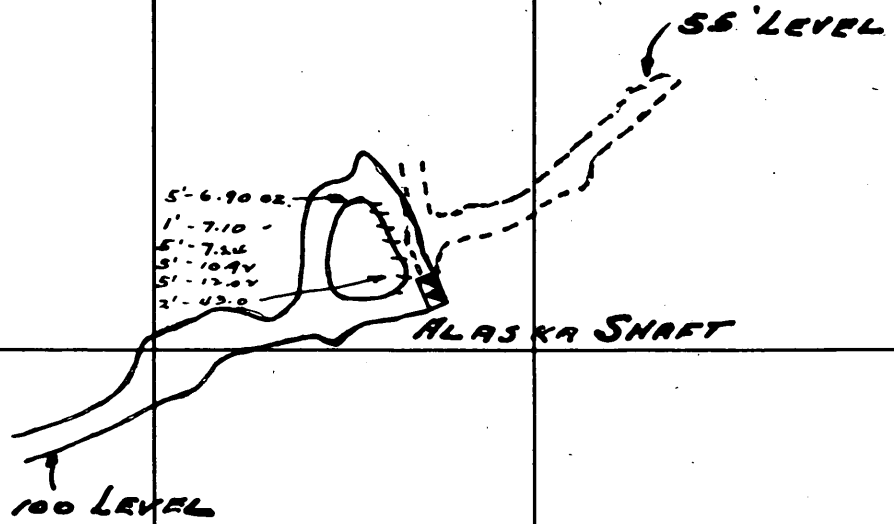


FIGURE 3. - LONGITUDINAL SECTION IN PLANE OF VEIN - REYMERT EXTENSION SILVER MINES - PINAL COUNTY, ARIZONA


STOPE
WINZE
3' S.38 oz
0.8' N.00 oz
2.0 Schist
5.5 5.07
3.0 5.47
6.0 3.58
5.0 1.80
2.5 10.02
STOPE
STOPE
ALASKA SHAFT
OPEN STOPE
ALASKA CLAIM
ASIA CLAIM
LYNN HERSEY
Consulting Mining Engineer
REYMERT
SURFACE WORKINGS
Scale 1" = 50'
Date Sept. 25, 1953

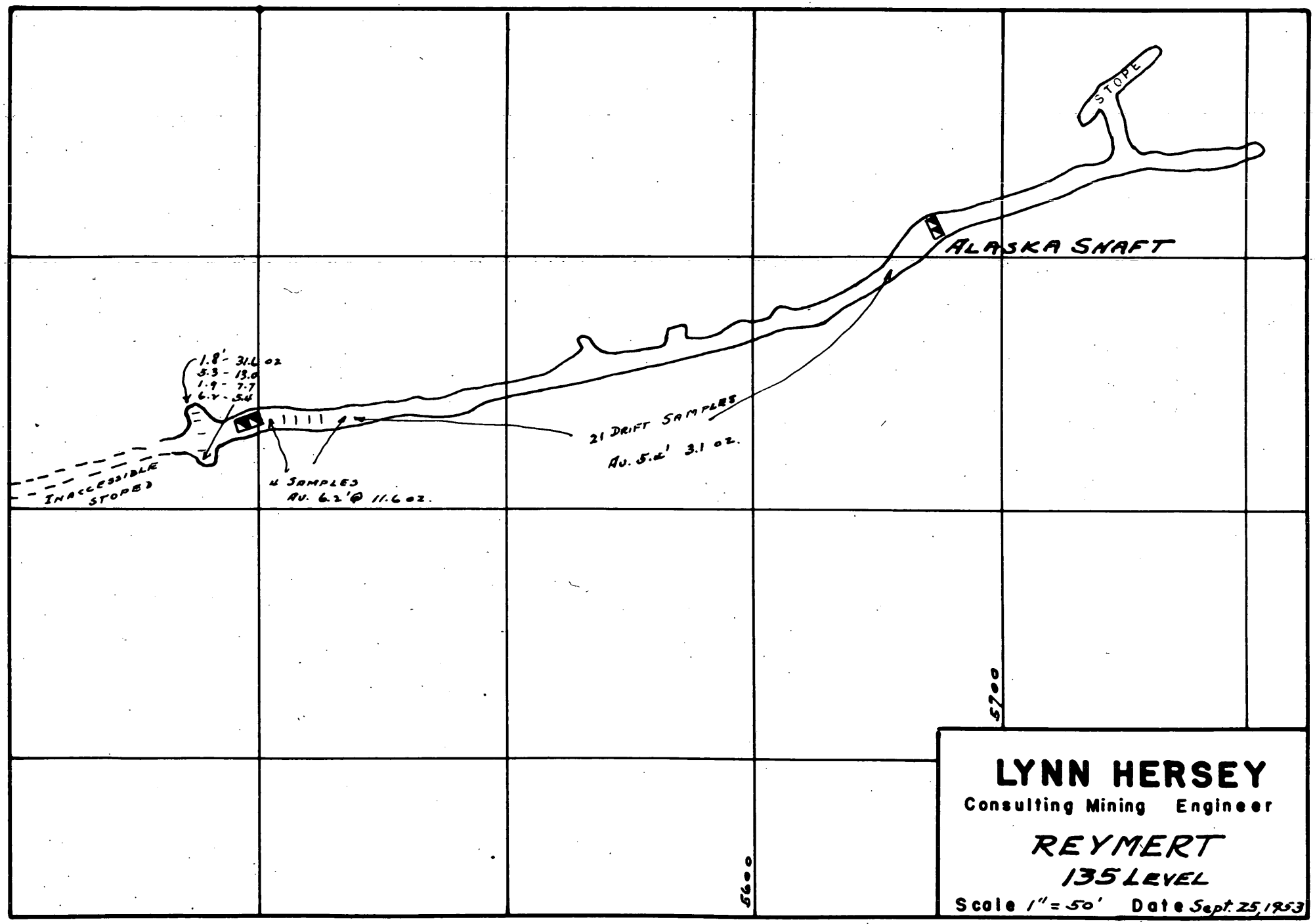


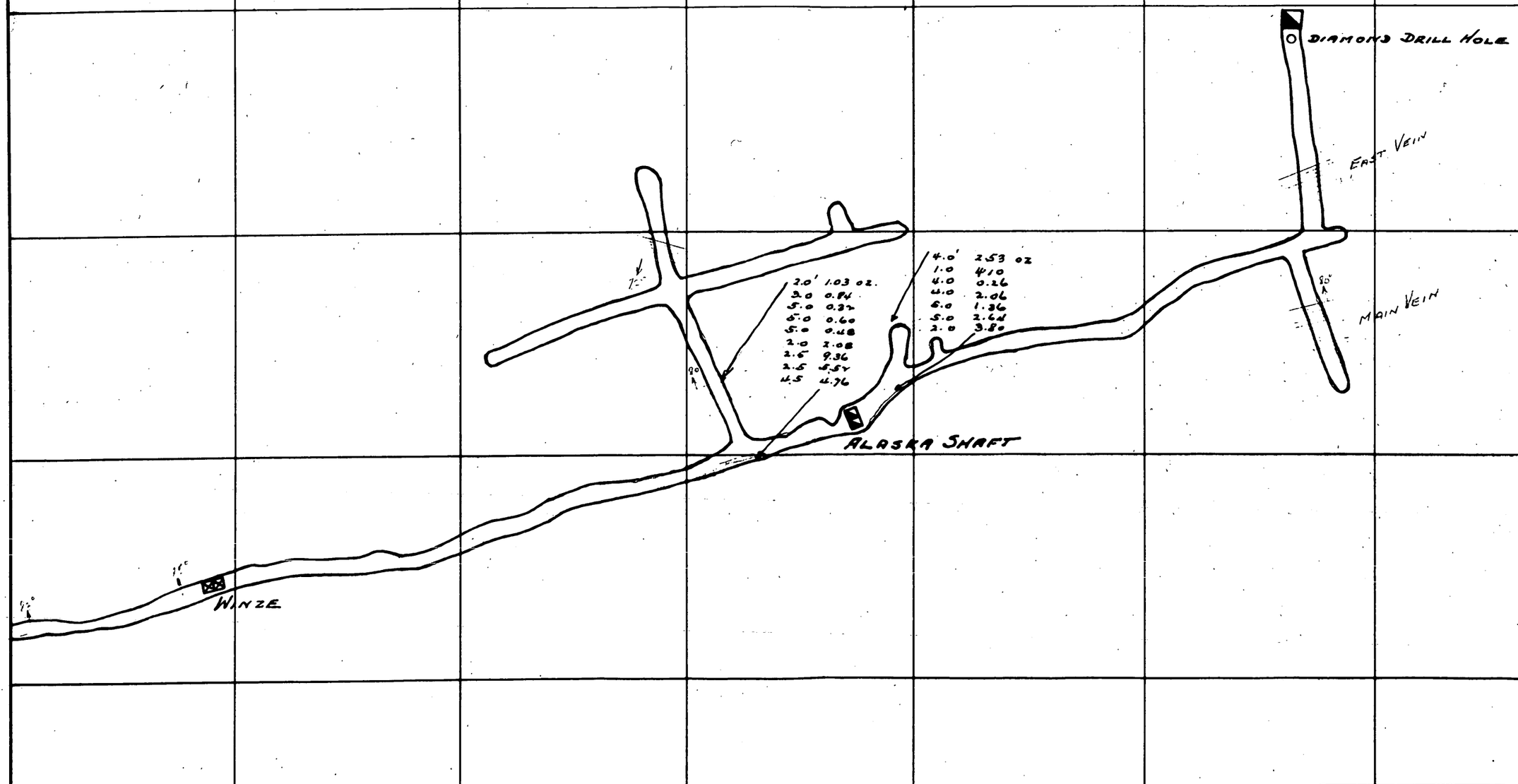
LYNN HERSEY
Consulting Mining Engineer

REYMERT

INTERMEDIATE LEVELS

Scale 1" = 50' Date Sept. 25, 1953


STOPE
ALASKA SHAFT
1.8' - 31.6 oz
5.3 - 13.0
1.9 - 7.7
6.7 - 5.4
21 DRIFT SAMPLES
AV. 5.2' 3.1 oz.
4 SAMPLES
AV. 6.2' @ 11.6 oz.
INACCESSIBLE STOPES
5700
5600
LYNN HERSEY
Consulting Mining Engineer
REYMERT
135 LEVEL
Scale 1" = 50'
Date Sept. 25, 1953



LYNN HERSEY
Consulting Mining Engineer

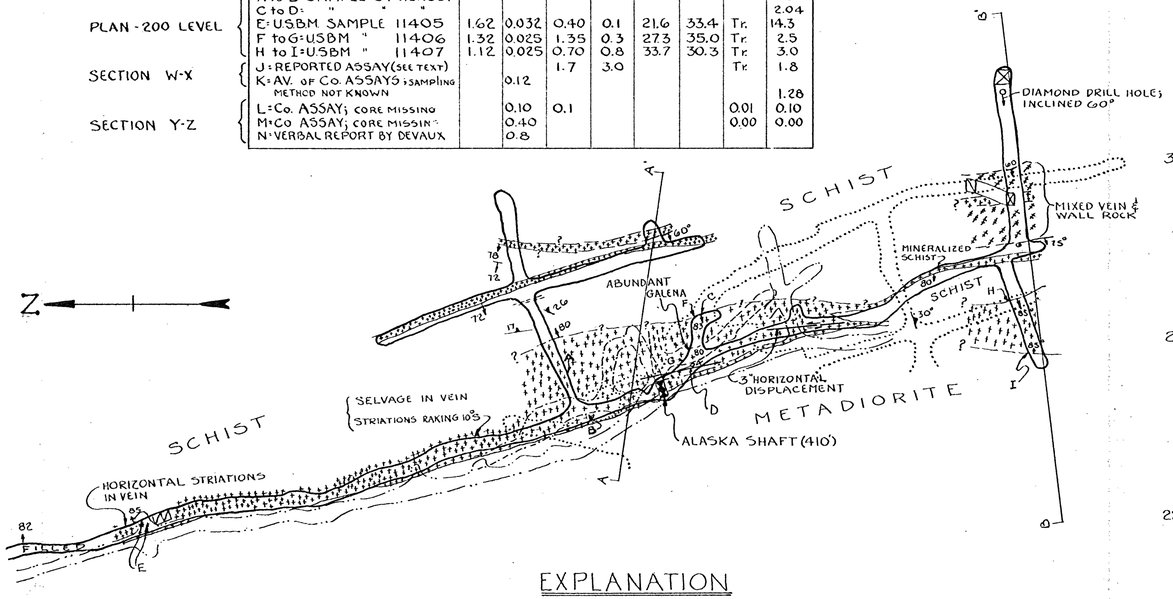
REYMERT
200 LEVEL

Scale 1" = 50' Date Sept. 25, 1953

LYNN HERSEY

SAMPLE ASSAY

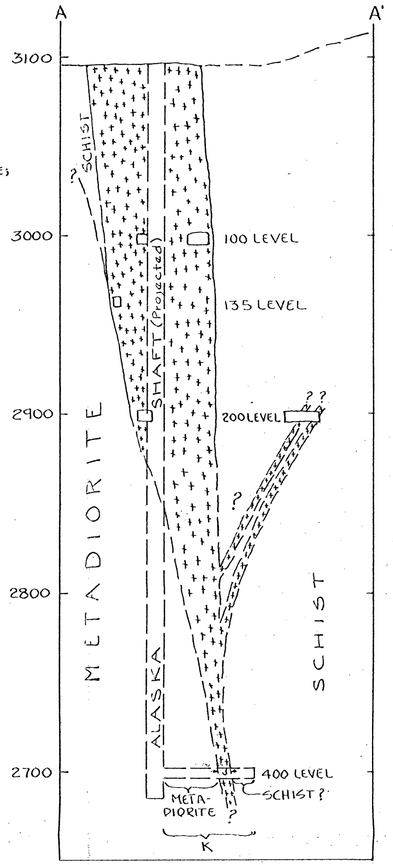
		% Mn.	% Cu.	% Pb	% Zn.	% SiO_2	% CaO	Oz/TON Au.	Oz/TON Ag
PLAN - 200 LEVEL	A to B: SAMPLE BY HERSEY								1.69
	C to D: " " "								2.04
	E: USBM SAMPLE 11405	1.62	0.032	0.40	0.1	21.6	33.4	Tr.	14.3
	F to G: USBM " 11406	1.32	0.025	1.35	0.3	27.3	35.0	Tr.	2.5
	H to I: USBM " 11407	1.12	0.025	0.70	0.8	33.7	30.3	Tr.	3.0
SECTION W-X	J: REPORTED ASSAY (SEE TEXT)			1.7	3.0			Tr.	1.8
	K: AV. OF CO. ASSAYS; SAMPLING METHOD NOT KNOWN		0.12						1.28
SECTION Y-Z	L: CO. ASSAY; CORE MISSING		0.10	0.1				0.01	0.10
	M: CO ASSAY; CORE MISSING		0.40					0.00	0.00
	N: VERBAL REPORT BY DEVAUX		0.8						



EXPLANATION

- VEIN MATERIAL & DIP OF CONTACT BETWEEN VEIN & WALL ROCK
- MIXED SCHIST AND VEIN MATERIAL
- FAULT, SHOWING DIRECTION & RAKE OF STRIATIONS & RELATIVE MOVEMENT
- STRIKE & DIP OF FOLIATION
- 200 LEVEL
- 135 LEVEL
- 100 LEVEL
- 55 LEVEL
- NEAR-SURFACE WORKINGS

GEOLOGY IN PLAN APPLIES ONLY TO 200 LEVEL
DATUM IS APPROXIMATE SEA LEVEL



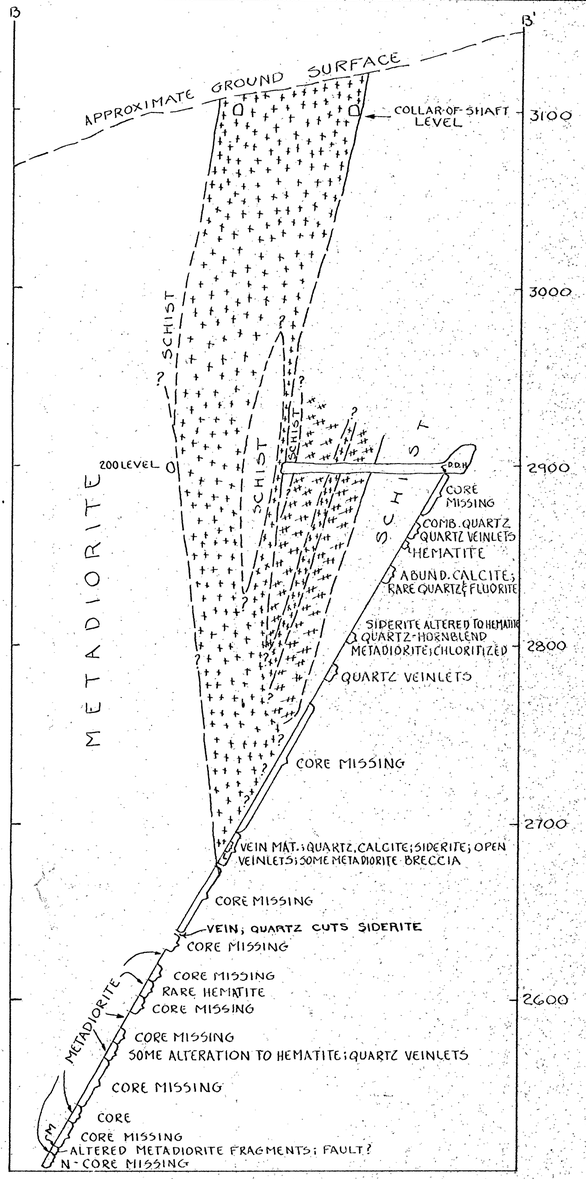


FIGURE 4

GEOLOGIC MAP AND SECTIONS OF THE ALASKA WORKINGS, REYMERT MINE, PINAL COUNTY, ARIZONA

DMEA 3337

Scale: 1" = 50'

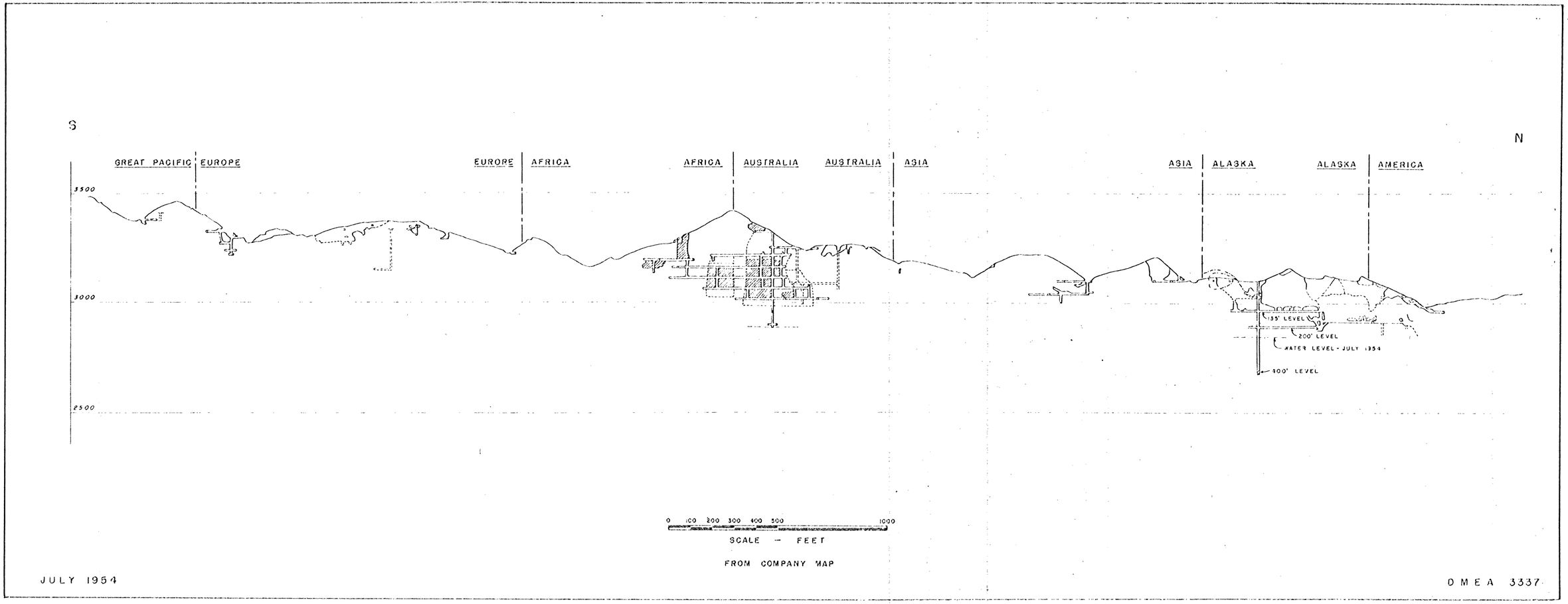


FIGURE 3. - LONGITUDINAL SECTION IN PLANE OF VEIN - REYMERT EXTENSION SILVER MINES - PINAL COUNTY, ARIZONA