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325 Heard Building
Phoenix, Arizona
September 28,1943

TULLY - Ass't. Chief - Mining Division - Washington, D.C.

Re: J. H. Olsen, Docket ND-5766

Enclosed please find my report on the above captioned docket together with original application and supporting data.

A loan is not recommended for this project.

WM. B. MAITLAND
Supervising Engineer.

Enclosures:
1 c application and supporting data
2 c Supervising Engineer's Report

RECONSTRUCTION FINANCE CORPORATION
MINING DIVISION
REPORT OF SUPERVISING ENGINEER

Docket No. MD-5766
Date Authorization for Exam. Rec'd.Aug.31,1943
Date of Exam. Incl. Sept.11,12,1943
Date of Report...Sept. 28,1943.

1. NAME AND ADDRESS OF APPLICANT

Name.... ..... J. H. Olsen
Address..... General Delivery
City & State..... Yuma, Arizona

Correspondent.... Same

2. CHARACTER OF PROJECT

To develop and stope lead and fluorite ore exposed in two levels off a 300-foot inclined shaft. A mill is contemplated to treat this ore.

3. LOCATION OF MINE

Name of mine..... Sonora Claims (Haack Mine)
Township, range and section, Sec. 36, T14S, R-19W, G.& S.R.B. & M.
Mining district, county & state- Castle Dome District, Yuma County, Arizona.
Name and distance by road nearest railway station- Dome a siding on the Southern Pacific Railway is 30 miles south of the mine.
Condition and seasonal accessibility of road, mine to railway, most of this road is not paved but it is well graveled and graded so should be accessible at all times of the year.

4. APPLICANT

The applicant, Mr. Olsen, is about 45 years old and appears to be an energetic practical man who has had but little mining experience. Since he proposes to build and operate a small mill, I do not feel that he is competent to operate this project. At the time of my visit to the mine, I did not meet the applicant, but he later visited me in the Phoenix Office so I did not have a good opportunity to discuss the mine with him. He does not appear to have had any engineering training.

5. LOAN REQUESTED

Applicant requests a loan of $9,500.00. I do not believe this amount will be sufficient to build a mill and put the mine on production.

No loan is recommended for this project.

6. DESCRIPTION OF PROJECT

A. Legal Considerations

The property consists of six unpatented claims held under lease by applicant for a ten-year period.

The lease requires seventy-five man shifts per month, a 10% royalty on all ore mined with a minimum guaranteed monthly royalty of $100 per month. Purchase price of claims $200,000. Railroad freight charges shall be deducted from smelter payments before payment of royalty.

This project should comply with state mining loans as the mine now has two exits (shafts)

Applicant has done no development work on the claims and has shipped only one truck-load of fluorspar to date.

B. Existing Development

The mine is developed by a 300' incline shaft and two auxiliary raises from the 200-foot level to the surface. The shaft has drifts on the vein at the 100, 200 and 300-foot levels.

Most of the workings are accessible except the stopes which are in most cases filled with waste. Past method of mining consisted of carrying a stope just wide enough to work in (2-1/2') and since the vein of high-grade galena ore averages less than one foot wide, the waste was backfilled in the stopes. The mine has been operated for at least 40 years as a lead producer, but practically no fluorspar has been sold so it was used as stope backfilling.

C. Surface Improvements.

The camp consists of two living houses and a number of smaller buildings. No water supply is available in this region.

Mine equipment consists of a hoist, headframe and small ore bin.

A primative mill was used to dry-concentrate the ore in the past operations. This consisted of a jaw crusher, rolls, and a Stebbins dry concentrating table. Not more than six tons per eight hours could be handled in this mill.

D. General Geology of Area

In the Castle Dome District the basement rocks consist of pre-cambrian schist, gneiss, and granite with later cretaceous shales and limestones. All of the above were intruded by dikes of diorite-porphyry and overlain by a thick series of lavas. The galena - silver veins are found in the diorite porphyry dikes or along their contacts with the slate.

This area has produced over 12,000,000 pounds of lead and 400,000 ounces of silver. Two of the adjoining properties are now being worked for lead only and the ore is concentrated in a nearby wet concentrating mill.

E. Economic Geology of Deposit

Attached to this report is an excerpt from the Arizona Bureau of Mines (1933) and from the U.S.Bureau of Mines Report (1943). These adequately describe the geology of the mine.

It is my opinion that the ore will not extend to depths as this is characteristic of the district.

Also attached hereto are three maps of the underground workings and a list of assays taken,

F. Ore Reserves

The Bureau of Mines has estimated that the mine contains the following ore reserves:-

	% Lead	% CaF_2	Ounces Silver
2000 tons of backfill in old stopes (probable)	4	15	.....
2000 tons of ore in place (Between 300' level & surface and north of shaft - probable)	2.5	62.7	.....
400 tons of ore on dump	0.4	58	
4400 tons of estimated ore reserves (probable)	3.0	40.5	.....

I estimate that the mine contains the following ore reserves:-

	% Lead	% CaF_2	Ounces Silver
2000 tons of backfill in old stopes (probable)	4	15	.....
1000 tons of ore in place north of shaft and between 200 level & surface	8.7	47.23	4.7
500 tons of ore on dump	1.44	56.5	1.7
3500 tons of estimated ore	5.0	30.1	1.5

From the above data it is apparent that the mine could produce from all sources (dumps, backfill, and new ore) about 3500 tons of ore assaying 1.5 oz. silver, 4% lead and 35% CaF_2. With the present high wages, it would be impossible to continue the old method of mininghigh grade lead ore only and it is obvious that in order to make the mine pay, it will also be necessary to save the fluorite also. This means the ore must be milled. From the Bureau of Mines Report we learn that 80% of the fluorite and 90% of the lead-silver can be saved in a mill employing jigs, tables and flotation. Two concentrates assaying 15 ounces silver and 60% lead for one and 88% fluorite for the other can be made. Based upon the incomplete mill data available, we can assume that the ratio of concentration will be about 10 to 1. The present market price for 88% fluorspar is $22.50 per ton at the railroad. The lead-silver concentrate would be shipped to the El Paso Smelter.

Smelter Payments

Lead-60%-1.5-58.5-1170 lbs. x 90% = 1053 lbs.x 0.049..	$51.60
Silver - 15 oz - 1 = 14 oz. x $0.69125.....	9.68
Total smelter payment.....	$61.28

Premium on Lead	
1200 lbs. x 95% x 2.75¢.....	31.35
Total payment on lead and silver.....	92.63

Marketing Charges (Lead & Zinc)

Smelting charge.....	$3.50	
Freight Dome-El Paso (approx).....	6.00	
Royalty 10%.....	8.26	
Hauling conc.mill to Dome 5 mi....	.50	
Total charges.....		$ 18.26
Net mill value of concentrates (lead-silver).....		$ 74.37

Market Value of Fluorite

1 ton 88% Fluorite at R.R.....$22.50		
Less trucking mill to R.R..... .50		
Less 10% royalty..... 2.20		
Net mill value of ore (fluorite).....		$19.80
Total net mill value of concentrates.....		94.17
$94.17 / ton value of concentrates ÷ 10, value of ore..		9.42/ton

Estimated milling cost.....	$ 3.00/ton	
Hauling mine to mill 30 mi.(estd)	2.50	
Mining cost estimated.....	5.00/ton	
Total extraction cost.....		$10.50
Net loss per ton.....		1.08

From the above it is indicated that this property as a whole is sub-marginal although obviously a limited tonnage of higher grade ore could be produced although in that case a mill would not be justified for a small tonnage.

G. Economic Considerations

The Holmes Brothers are mining the adjoining property, and are operating a 150-ton mill. They are competent miners and without additional bonuses they were not able to make their operations pay. However they are not saving the fluorite in the ore.

A careful miner with two helpers could mine and ship a number of carloads of high-grade fluorite from this property by picking over the old stope fills but such an operation would be small and would not justify a loan as requested.

I understand that the Holmes Brothers have refused to mill the applicant's ore as they do not want to be bothered with a custom mill business.

7. PROPOSED EXPENDITURES

It is recommended that no expenditures be made on this project.

8. COMMENTS OF SUPERVISING ENGINEER

A loan is not recommended for this project for the following reasons:

1. The applicant does not appear capable of constructing and operating a mill.
2. The ore is too low grade to pay expenses.
3. I do not believe the program as outlined can be completed with the amount of funds requested.
4. There is a shortage of skilled labor in this area.
5. The project would consume a large amount of strategic materials
6. The district is not a large enough producer of lead and fluorspar to support two millls.
7. Aside from a limited tonnage of fluorite the ore is too low grade in lead to ship directly to a smelter.

WM. B. MAITLAND
Supervising Engineer.

FROM
ARIZONA BUREAU OF MINES
BULLETIN 134 - (1933)

SENORA CLAIM

The Senora claim, now held by Mr. Arthur Haak, is in the southwestern portion of the area mapped on Plate 9, about 1,500 feet south of the Flora Temple. It was located many years ago and has produced a large, but unknown, amount of ore. According to Mr. Haak, the galena from this claim averaged about 29 ounces in silver per ton.

Local geology: Here, narrow bands of steeply dipping dense gray shales alternate with dikes of diorite-porphyry and quartz porphyry. The diorite-porphyry predominates, and, southeast of the main shaft forms a mass more than 100 feet wide. Fully half of the Senora claim is covered by surface gravels. In the vicinity of the vein, they contain, at their base, abundant nuggets of placer lead minerals.

The mine workings seen above the 250-foot level do not show much of the shale, but are mainly in diorite-porphyry, cut in places by dikes of quartz porphyry. Below that level, the rock is quartz prophyry.

Main vein: The Senora vein strikes N. 20° to 40°W.and dips from 50° to 70°E. In the northern portion of the claim, it traverses dense gray slate that shows some cherty bands and effervesces only slightly in cold acid. Here, the vein has a gangue of gray blocky calcite crystals up to an inch in diameter, intermingled with smaller crystals of fluorite. This gangue contains masses of galena, up to two inches in diameter, and cubical pseudomorphs of black anglesite after galena. Both the galena and anglesite are coated with a film of rusty-red lead oxide.

As shown in the mine workings, the dip of the vein is approximately 70°E. for the first 140 feet of depth, below which it flattens to 50° for 100 feet, and, from there to the 300-foot level, it ranges between 55° and 65° E. Apparently, it follows a well-defined fault, the plane of which is wavy on a broad scale. As indicated by stopes, the width of the vein ranges between a few inches and fire or more feet. Below the 250-foot level in the shaft, in quartz porphyry, the vein becomes only a few inches thick.

The gangue of the vein consists mainly of pale green, purple, and rose-colored fluorite, in crystals from less than an inch up to several inches in diameter. Along with the fluorite, occur crystalline calcite, bladed to massive barite, and minor amounts of fine-grained quartz. This barite is clearly later than the fluorite.

The ore mineral, galena, occurs as irregular veins and masses in gangue, and is superficially altered to anglesidte, cerussite, and oxides. The northern face of the drift in the 200-foot level shows the following section of the vein from west to east: adjacent to the western wall, a six-inch strip with more than half galena and the remainder mostly crystalline fluorite, and, next, an eight-inch strip of fluorite with a little galena and oxidized lead and iron minerals. The fluorite is traversed by barite veinlets.

The northern face of the stope on this same level shows the following section from west to east: Six inches of fluorite, containing considerable galena; two to four inches of bladed and banded barite, apparently later than the fluorite and carrying no galena except on the edges; beyond a wavy fracture-surface, six inches of fluorite, barite crystalline calcite, and brecciated porphyry, together with a little galena.

In portions of the upper levels on all the veins, hydrozincite accompanied by minor gypsum, occurs, mainly in certain fissures that have become solution channels. These channels are also partly filled by various other secondary mineral, such as calcite, quartz, lead and zinc carbonates, and wulfenite.

Other veins: on the 100-foot level, three other veins have been found east of the main vein, as indicated by the drifts sketched in Figure 5. They strike about S-30°E and follow steeply eastward-dipping fault zones. Mineralogically, they are very similar to the main vein, and the easternmost one contains large lumps of galena, in places more than one foot thick.

Wall-rock alteration: The vein walls show marked silicification, carbonatization, and sericiti ation. Small pyrite metacrysts, more or less altered to limonite, are abundant in the wall rocks.

A sample of the diorite-porphyry from the northern drift on the 100-foot level is seen, in thin section under the microscope to consist of phenocrysts of plagioclase feldspar and quartz, together with flakes of chloritized biotite, set in a microcrystalline groundmass of quartz and feldspar. The feldspar phenocrysts, which are albite and up to 0.2 inch in diameter, show deep sericitization and carbonatization. The quartz phenocrysts show corrosion by the groundmass which is also sericitized. The whole rock is traversed by quartz and calcite veinlets.

Workings: Workings on the Senora claim include three shafts in the south-central portion. The southernmost two shafts, 250 and 300 feet deep on the dip of the vein, are some 200 feet apart and more or less connected by stopes. Figure 5 is

sketch of the principal workings. From the base of the gravels down to the 200-foot level, the vein has been largely stoped out over a length of 100 to 250 feet and an average width of about three feet. Below the 200-foot level, the stoping extends for a depth of fifty feet over a length of 125 to 150 feet, all south of the deeper shaft. Portions of these stopes, particularly in the vicinity of the southernmost shaft, are filled. Mr. Haak states that a test run on 1,000 pounds of screened material, under one inch in diameter, from this fill yielded ten percent lead.

The 300-foot level was run in 1914, but the upper workings are considerably older.

Surface quipment and concentrator: Surface equipment on the Senora claim consists of a headframe, hoist, and Stebbins dry concentrator.

After hand-sorting out the best fluorspar, the lead ore passes through a jaw-crusher onto a 1/16-inch stationary screen. The oversize passes through friction rolls, and back to the screen, while the fines are fed to a Stebbins dry table with a capacity of ten tons per shift. The tails are said by Mr. Haak to contain only one percent lead.

EXCERPTS FROM BUREAU OF MINES REPORT

FLUORSPAR AND LEAD-SILVER MINES
Castle Dome Mining District
Yuma County, Arizona

- Fluorspar -

Summary

The argentiferous lead-fluorspar mines of the Castle Dome mining district are located about 50 miles northeast of Yuma, Arizona, in the foothills and southwesterly peneplane of the Castle Dome Mountains.

The fluorspar or fluorite is considered the gangue material in the lead-silver mining, and very little effort has been made in the past to recover the fluorspar in the mining and milling operations of the district.

The Rialto, De Luce, Haack, and Modesti are the four principal mines in the district. These properties, extending for about 4 miles in a northwesterly and southeasterly direction and totaling 52 claims, were visited by a Bureau of Mines engineer and samples taken for metallurgical tests, to determine the feasibility of recovering the fluorspar in conjunction with lead mining.

The Castle Dome mining district is one of the oldest in the southwest. The early mining was carried on entirely for the high grade argentiferous lead ore which occurs in intrusive rocks. The high grade lead oxides, carbonates and sulfides were cobbed and sorted underground. The ore was sacked and packed to the Colorado River for shipment by water to the Selby smelter at San Francisco.

The district produced 11,692,404 pounds of lead from 1870 to 1929. No record was kept of fluorspar production during this period, but it was small, probably not over 2,000 tons. The low grade ore, with the fluorspar gangue, was used as "backfill" in the stopes.

Most of the old workings are inaccessible, but there is estimated to be not less than 32,000 tons of this low grade ore in the stopes of the four mines, with an average content of 3.6 percent lead and 6.2 percent fluorspar. The principal tailing dumps from mills which operated during the early activity of the district, measure 9,545 tons, with a fluorspar content varying from 11.3 to 58 percent, and 100 tons of hand-sorted fluorspar averaging about 73 percent CaF_2- a total of 9,645 tons averaging 2.7 percent lead and 27.8 percent calcium fluoride.

Indicated and inferred ore are in the four principal mines total 67,960 tons containing 3.8 percent lead and 7.6 percent fluorite. Thus there is a reasonably assured reserve in the district of approximately 110,000 tons of leadfluorspar are averaging 3.7 percent lead and 8.9 percent fluorspar.

The only property operating in the district at the time of the Bureau examination was the De Luce Mine, leased by the Arizona Lead Company. A 125-ton mill at the Gila River, 26 miles from the mine, was treating a mixture of backfill and old mill tailing from the DeLuce property. The heads were said to run about 4 percent lead and 9 percent fluorspar. The mill is not designed to save the fluorspar; only the lead is recovered.

Metallurgical tests by the Bureau of Mines of the tailings from the two largest dumps indicate that a satisfactory recovery of fluorspar can be made in a concentrate that would meet chemical specifications for "metallurgical" grade fluorspar, but would require nodalizing or briquetting to meet size specifications. The tests indicate a recovery of from 55.8 percent to 89 percent of the fluorite in concentrates assaying from 88.7 percent to 90.5 percent calcium fluoride.

It is believed there is sufficient recoverable fluorspar in the Castle Dome district to justify a 200-ton mill at the Gila River to treat the ore for the recovery of fluorspar and lead if and when the demand and price for fluorite offer sufficient inducement to work the mines now idle.

DEVELOPMENT AND ORE RESERVE (HAACK PROPERTY)

The principal shaft (see fig. 4) is an incline 285 feet deep, dipping 68° east for the first 150 feet and flattening out to about 45° east to the bottom, which is 85 feet below the 200-foot level. There are three small veins east of and more or less parallel to the main vein. These have been explored by crosscuts and short drifts on the 100-foot level. They have proportionately less fluorspar than the main vein and not much work has been done on them.

On the 100-foot level there are drifts about 150 feet each way from the shaft. On the 200-foot level drifts extend about 150 feet south and 275 feet north from the shaft. The ore has been stoped out to the north on the 100-foot level and to the south on both the 100 and 200-foot levels. The south stopes have been backfilled with ore said to run about 6 percent in lead and better than the average in fluorite, possibly 15 or 20 percent. On the 200-foot level, not much stoping has been done in the north drift. Assuming the vein to average 2-1/2 feet wide, there is not less than 2,000 tons of ore north of the shaft above the 200-foot level.

The backfill ore south of the shaft is not less than 2,000 tons.

There is virgin ground to the south on the 200-foot level and below the 200-foot level, which is estimated at 4,000 tons of inferred ore.

The mine and mill equipment will handle about 20 tons a day. The ore goes from the bin over a 1-inch screen where the coarse lead and fluorspar are sorted out by hand before crushing. The fines go to a Stebbins table, the oversize to rolls and back to the table.

Only the lead is recovered. The recovery is about 1/2 ton a day or 60-percent lead concentrate.

Measurement of the tailings dump from this mill indicated 200 tons of ore. A sample (No. 881), coned and quartered to about 45 pounds, assayed 0.4 percent lead, 1.95 percent calcium carbonate, and 58 percent fluorspar.

At another working, called the Little Dome, located about 400 feet east of the Senora, there is a caved shaft said to be 300 feet deep with a 2-1/2 to 3-foot vein. Four or five cars of lead ore were shipped from here which netted about $1,500 a car with lead at from 4 to 4.5 cents a pound.

There was a tailings dump similar to the one at the main shaft and about the same size and grade. These tailings were from a home-made dry table similar to the Stebbins table.

There are several other shafts and minor workings on other claims of this htoup, most of which are inaccessible.

Conclusion (Haack Property)

The mine is in good shape to operate on a small scale, with 2,000 tons of ore partly blocked out and ready to start stoping. Further development and exploration with the view of increasing the production would seem justified if milling facilities were made available.

No separate mill tests were made of this ore, but at it contains more fluorspar and less calcium carbonate than the Rialto or De Luce ores, the fluorspar recovery should be as good or better.

CLAUDE E. McLEAN
P. O. BOX 1888

TELEPHONE 3-6272

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS
823 EAST VAN BUREN STREET

ASSAY CERTIFICATE

PHOENIX, ARIZONA 9/24/43 194

Mr. W. B. Maitland, Supervising Engineer RFC.,
325 Heard Building,
Phoenix, Arizona

WE HAVE ASSAYED THE SAMPLES RECEIVED FROM YOU AND FIND THE RESULTS AS FOLLOWS:

GOLD FIGURED AT $_____ PER OUNCE.

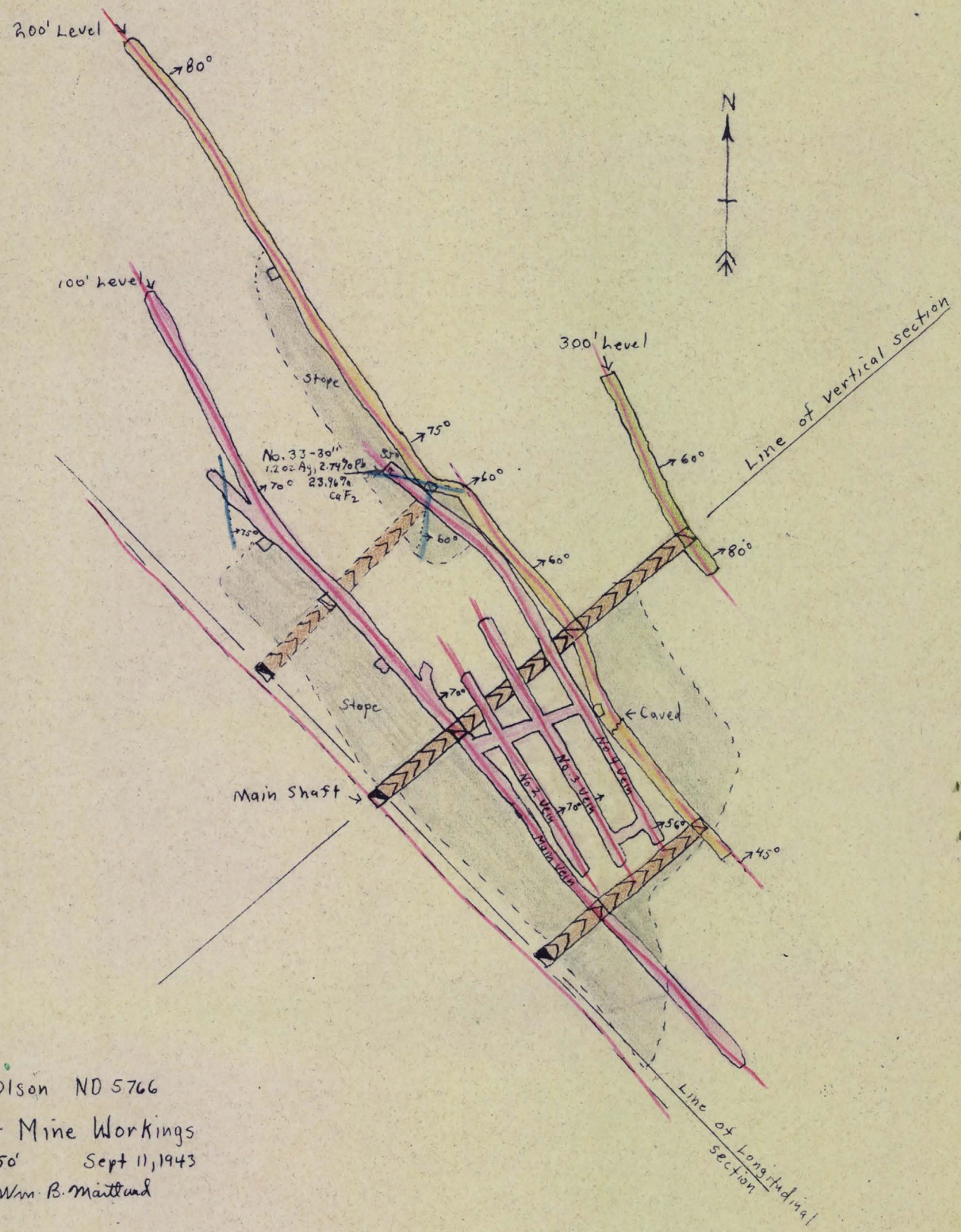
LAB. FORM 2 SILVER FIGURED AT $_____ PER OUNCE.

LAB. NO.	SAMPLE		GOLD		SILVER		PERCENTAGES				
			OZ. PER TON	VALUE	OZ. PER TON	VALUE	Barium Sulfate ~~COPPER~~	LEAD	Calcium Fluoride	Silica	
48833	#33	Olson	30"		1.20	$0.84		2.74%	23.96%		
48834	#34	"	30"		3.70	2.59		8.22%	47.38%		
48835	#35	"	48"		2.20	1.54		3.90%	55.31%		
48836	#36	"	26"		8.60	6.02		18.15%	32.17%		
48837	#37	"	Grab		1.70	1.19	9.93%	1.44%	56.48%	7.50%	
48838	#38	"	"		None	----		0.20%	87.88%	0.60%	
48839	#39	"	"		24.60	17.22		71.24%	7.58%		

REGISTERED ASSAYER
CERTIFICATE EXPIRES
CLAUDE E. McLEAN
DEC. 31, 19[illegible]3
ARIZONA, U.S.A.

RESPECTFULLY SUBMITTED,
ARIZONA TESTING LABORATORIES
BY Claude E. McLean ASSAYER

CHARGES $ 58.00

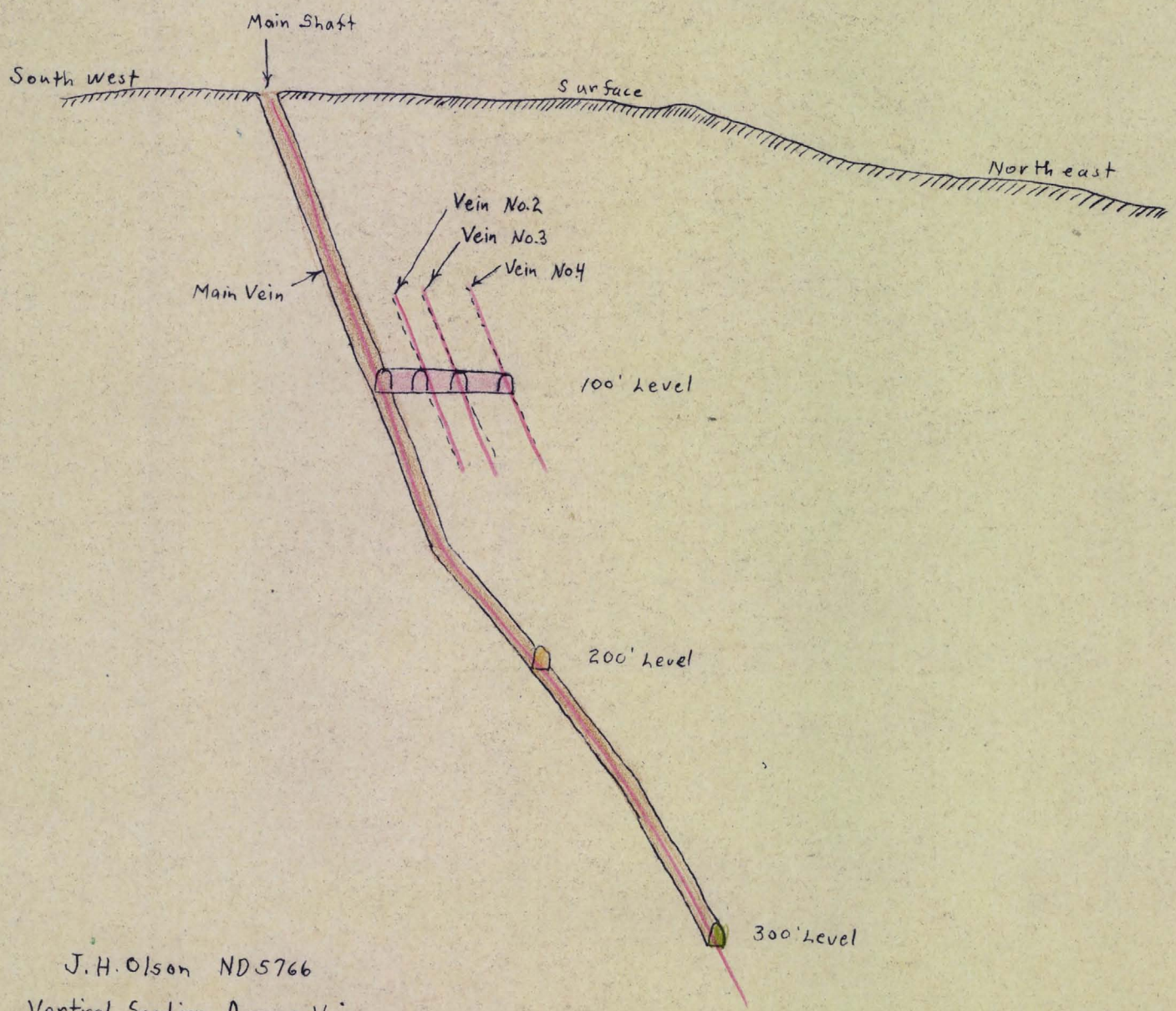


J. H. Olson ND 5766

Plan of Mine Workings

Scale 1"=50' Sept 11, 1943

Wm. B. Maitland

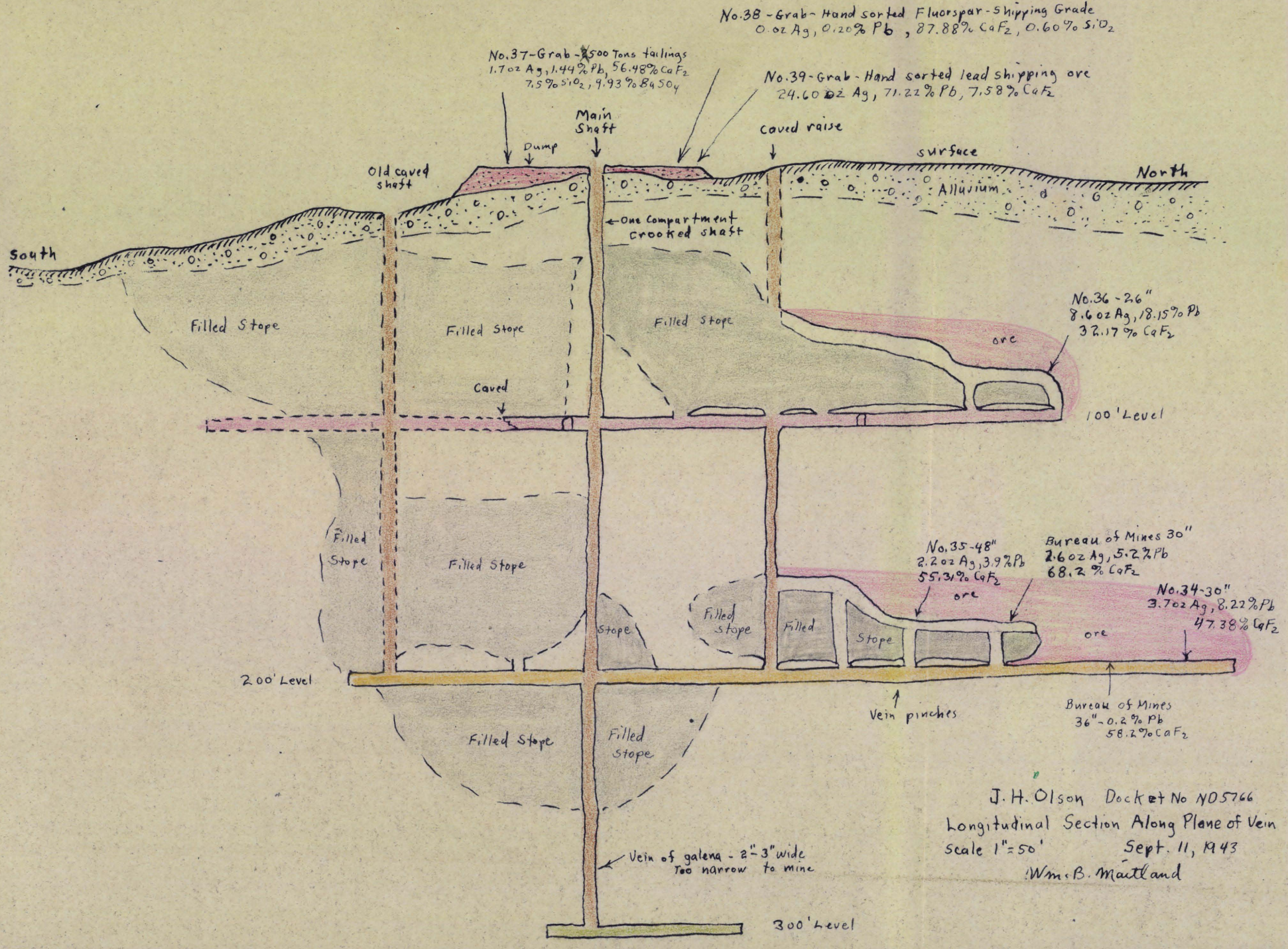


J. H. Olson ND 5766

Vertical Section Across Vein

Scale 1"=50' Sept. 11, 1943

Wm. B. Maitland



J. H. Olson Docket No ND5766
Longitudinal Section Along Plane of Vein
Scale 1"=50' Sept. 11, 1943
Wm. B. Maitland

22.5
24.5
100
185
175
460

2/640

Report of Supervising Engineer

Docket No. NO 5-766
Date authorization for Exam. Rec'd - Aug 31, 1943
Date of Exam. Acad. Sept 11, 12, 1943
Date of Report. Sept 28, 1943

1. Name and address of Applicant

Name - J. H. Olsen
Address - General Delivery
City and State - Yuma, Arizona
Correspondent - Same

2. Character of Project

To develop and stope lead and flourite ore exposed in two levels off a 300 foot inclined shaft. A mill is contemplated to treat this ore.

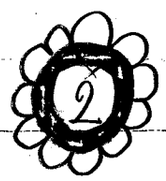
(1)

3. Location of Mine

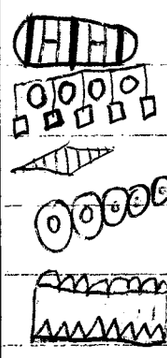
Name of mine - Sonora Claims (Haack Mine)
Township, range and section - Sec 36, T 14S, R 19W, G+SRB. M
Mining district, county + state - Castle Dome District, Yuma Co, Ariz.
Name and distance by road nearest railway station - Dome a siding on the Southern Pacific Railway is 30 miles south of the mine
Condition and seasonal accessibility of road, mine to railway - Most of this road is not paved but it is well graveled and graded so should be accessible at all times of the year.

4 Applicant

The applicant Mr Olsen is about 45 years old and appears to be an energetic practical man miner who has had but little mining experience Since he proposes to build and operate a small mill I do not feel that he is competent to operate this project. At the time of my visit to the mine I did not meet the applicant but he later visited me in the Rhoen office so I did not have a good opportunity to discuss the mine with him. He does not appear to have had any engineering training.



5 Loan Requested



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No loan is recommended for this project

6 Description of Project

A Legal Considerations

The property consists of six unpatented claims held under lease by applicant for a 10 year period.

The lease requires 75 man shifts per month, a 10% royalty on all ore mined with a minimum guaranteed monthly royalty of $100 per month. Purchase price of claims $200,000. ~~Freight~~ Railroad freight charges shall be deducted from smelter payments before payment of Royalty

This project should comply with state mining laws as the mine now has two exits (shafts)

Applicant has done no development ~~very little~~ work on the claims and has shipped only one truck load of ~~flaxxxspar~~ fluorspar to date.

B Existing Development

The mine is developed by a 300' inclined shaft and two ~~antalrain~~ raises from the 200 foot level to the surface. The shaft has drifts on the vein at the 100, 200, and 300 foot levels.

Most of the workings are accessible except the stopes which are in most cases filled with waste. Past method of mining consisted of carving a stope just wide enough to work in (2½') and mine the vein of high galena ore averages less than 1 foot wide the waste was backfilled in the stopes. The mine has been operated for at least 40 years as a lead producer but practically no fluorspar has been ~~sold~~ as it was used as stope backfilling.

(3)

grade

C. Surface Improvements.

The camp consists of two living ~~Houses~~ quarters and a number of smaller buildings. No water supply is available ~~so found~~ in this ~~region~~ region.

Mine equipment consists of a hoist, headframe and small ore bin.

a primitive mill was used to dry-concentrate the ore in the past operations.

This consisted of a ~~small~~ jaw crusher, rolls, and a Stebbins dry concentrating table. Not more than 6 tons per ~~twenty~~ eight hours could be handled in this mill.

5. General Geology of area

In the Castle Dome District the basement rocks consist of pre-Cambrian schist, gneiss, and granite with later Cretaceous shale and limestones. All of the above were intruded by dikes of diorite-porphyry and overlain by a thick series of lavas. The galena-silver veins are found in the diorite porphyry dikes or along their contacts with the slate.

This area has produced over 12,000,000 pounds of lead and 400,000 ounces of silver. Two of the adjoining properties are now being worked for lead only and the ore is concentrated in a nearby (4) mill.

E Economic Geology of Deposit

Attached to this report is an excerpt from the Arizona Bureau of Mines (1933) and from the U.S. Bureau of Mines Report (1943). These adequately describe the geology of the mine.

It is my opinion that the ore will not extend to depth as ~~and~~ this is characteristic of the district.

Also attached hereto are three maps of the underground workings and a list of assays taken.

$22.50/ton

(F) Ore Reserves.

The Bureau of Mines ~~that~~ has estimated that the mine contains the following ore reserves:-

	% Lead	% CaF_2	ounces silver
2000 tons of backfill in old stopes (probable)	4	15	—
2000 tons of ore in place (Between 300' Level + Surface and north of shaft - Probable)	2.5	62.7	~~2.0~~
400 tons of ore on dump	0.4	5.8	—
4400 tons of estimated ore reserves (probable)	3.0	40.5	—

80% CaF_2 assaying 85% CaF_2

90% Pb

60% cover

(5)

I estimate that the mine contains the following ore reserves:-

	% Lead	% CaF_2	ounces Silver
2000 tons of backfill in old stopes (probable)	4	15	—
1000 tons of ore in place north of shaft and between 300 Level + Surface	8.7	47.23	4.7
500 tons of ore on dump	1.44	56.5	1.7
3500 tons of estimated ore	5.0	30.1	1.5

2000 tons backfill 4% Pb 15% CaF_2

2000 tons possible ore in place North of shaft

2000 tons probable

400 tons dump tailings 0.4% Pb 5% CaF_2

From the above data it is apparent that the mine could produce from all sources (dumps, backfill, and new ore) about 3500 tons of ore assaying 1.5 oz silver, 4% lead and 35% CaF_2. With the present high wages it would be impossible to continue the old method of mining high grade lead ore only and it is obvious that in order to make the mine pay it will also be necessary to save the fluorite also. This means the ore must be milled. From the Bureau of Mines report we learn that 80% of the fluorite and

90% of the lead-silver can be saved in a ~~gravity~~ mill of jigging, tables and flotation. Two concentrates assaying 15 ounces silver and 60% lead for one and 88% fluorite for the other can be made. Based upon the incomplete mill data available we can assume that the ratio of concentration will be about 10 to 1. The present market price for 88% fluorspar is $22.50 per ton at the railroad. The lead-silver concentrate would be shipped to the El Paso Smelter.

(6)

Smelter Payments

Lead = 60% − 1.5 = 58.5 = 1170 lbs × 90% = 1053 lbs × $0.049 = $51.60

Silver = 15 oz − 1 = 14 oz × $0.69125 = 9.65

Total smelter payment $61.28

Premium on Lead

1200 lbs × 95% × 2.75¢ = 31.35

Total payment on lead + silver $92.63

Marketing charges (lead + zinc)

Smelting charge	$3.50
Freight Dome - El Paso (approx)	6.00
Royalty 10%	8.26
Hauling conc. mill to Dome 5 mi	.50
Total charges	$18.26

Net mill value of concentrate (lead-silver) $74.37

Market Value of Fluorite

1 ton 88% Fluorite at RR	$22.50
Less trucking mill to RR	.50
Less 10% royalty	2.20
Net mill value of ore (fluorite)	$19.80

Total net mill value of concentrates $94.17

$94.17/ton value of concentrate ÷ 10 = value of ore $ 9.42/ton

Estimated milling cost	$ 3.00/ton
Hauling ore to mill 30 miles (estimated)	2.50
Mining cost estimated	5.00/ton
Total extraction cost	$ 10.50
Net loss per ton	$ 1.05

(7)

From the above it is indicated that this property as a whole is sub-marginal altho obviously a limited tonnage of higher grade ore could be produced altho in that case a mill would not be justified for a small tonnage.

C. Economic Considerations

The Holmes Brothers are mining the adjoining property and are operating a 150 ton mill. They are competent miners and without additional bonuses ~~saved~~ they were not able to make their operations pay. However they are not saving the fluorite in the ore.

A careful miner with two helpers could mine and ship a number of carloads of high grade fluorite from this property ~~by~~ by picking over the old stope fills but such an operation would be small and would not justify a loan as requested.

I understand that the Holmes Brothers have refused to mill the applicants ore as they do not want to be bothered with a custom mill business.

7. Proposed Expenditures

It is recommended that no expenditures be made on this project.

8 - Comments of Supervising Engineer

(8)

A loan is not recommended for this project for the following reasons:—

1. The applicants does not ~~appear~~ appear capable of constructing and operating a mill.

2. The ore is too low grade to pay expenses.

3. I do not believe the program as outlined can be completed with the amount of funds requested

4. There is a shortage of skilled labor in this area.

5. The project would consume a large amount of strategic materials

6. The district is not a large enough producer of lead and fluorspar to support two mills

7. Aside from a limited tonnage of fluorite the ore is too low grade in lead to ship directly to a smelter.

Wm B Maitland
Sup Eng

Haack

Six unpatented claims

Sec 36 T 14 S, R 19 W, G+SRB+M

42 miles from Yuma

Dome Camp 30 miles - shipping point

Mine located in 1898

Haack shipped 3 cars/yr

for 20 yrs. 1,980,000 lbs total

60% lead shipped

Frame vein in rhyolite porphyry

Ore - Galena, pyrite, cerussite, anglesite.

Gangue - calcite, barite, rhyolite breccia

Vein few inches to 5'

Strike N 40 W

Incline shaft 285' {65° E for 1st 150' / 45° for balance

100' level drifts 150' each way

200' level " 150' south + 275' N.

100' level N ore stoped out backfilled

100' " S " " " " "

200' " S " " " " "

Prob ore > 200' level N - 2½' vein - 2000 tons between 100 + 200 levels

ore below 200' level S - 4000 tons prob.

Hoods Tailings 4000 tons 0.4 Pb
58% CaF_2

Hoods Backfill in Stopes 2000 tons
" Ore in place classified 2000 tons
" " " " classified 4000 tons

8.
~~4.0~~ 4.7% Pb 15% CaF_2

200' Level N Drift 3' wide 0.2 Pb
200' " N " Stope 2.4' 58.2% CaF_2
5.2 Pb 68.2 CaF_2

Selective Flotation
89% of Fluorite in a concentrate assaying 88.7% CaF_2
7.3% $CaCO_3$, 1.2% SiO_2
However the concentrates would have to be briquetted or nodulized to meet size specifications

330

2000) 660.0   2000

33000
60

33000
04

1,000,000

13200

3300.0

45) 1500.0
135
150