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

224 New Customhouse
Denver 2, Colorado

November 14, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: Final Report, DMA Docket 1209, Empire Mining and Engineering Co., applicant; Orion and Saddle No. 6 Fluorspar Mines, Boulder County, Colorado

Enclosed herewith are the original and two copies of the report on the subject docket.

We concur with the conclusions and recommendations of the examining team that the development loan of $100,000 be denied.

The brochure is enclosed.

J. H. East, Jr.

A. H. Koschmann

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

November 14, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 1209, Empire Mining and Engineering Co., applicant; Orion and Saddle No. 6 Fluorspar Mines, Boulder County, Colorado

The application of the subject docket was for a development loan of $100,000.

This loan was for the purpose of shaft sinking, drifting and the purchase and re-erecting of a 75 ton used mill now located at Blackhawk, Colorado.

The fluorspar ore occurs in narrow and short veins without any definite pattern in altered and sheared granodiorite. Inferred reserves at the Saddle No. 6 mine are estimated at 712 tons of ore averaging from 30 to 40 percent calcium fluoride.

These reserves are insufficient to repay the loan, and the examining team recommends denial with which we concur.

Paul T. Allsman

Region IV

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

DENVER, COLORADO

Mining Division
Date Rec'd.
NOV 14 1951
BUREAU OF MINES
Denver, Colorado

Building 20
Denver Federal Center
November 13, 1951

Memorandum

To: Chief, Mining Division, Region IV

From: Chief, Colorado Branch, Mining Division

Subject: DMA-1209, Empire Mining and Engineering Company, Saddle No. 6 Fluorspar Lode, Boulder County, Colorado

Please find enclosed the original and seven copies of the Summary, Conclusions, and Recommendations by C. S. Robinson and Floyd D. Everett and the same number of copies of Everett's Engineering Report on the above docket.

The applicant's cost estimates are low and the examining team are only able to infer 712 tons of reserve. These factors, combined with the lack of mining and milling experience of the manager, force the conclusion by Everett that the request for a direct loan of $100,000.00 should be denied. I concur.

Everett suggests that the property could sustain a small operation, and is entitled to some exploration. Perhaps a request by the applicant for an exploration loan would be in order.

The brochure and supporting data submitted by the Field Team are also returned herewith.

W. M. Traver, Jr.

W. M. Traver, Jr.

enclosures

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

200 New Customhouse
Denver 2, Colorado

November 5, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 1209, Empire Mining and Engineering Company, Boulder County, Colorado

Attached are 8 copies of the geologic report by C. S. Robinson covering subject application. The country rock consists of sheared and altered granodiorite, which is cut by numerous fluorspar veins. Most of the veins are 50 to 100 feet long, and average less than 1 foot wide and swell and pinch within short distances. On either side of the main veins are many small parallel veins from 1 to 4 inches wide. The veins consist chiefly of coarse grained fluorite and quartz, and average about 50% fluorite. Shipping grade ore could be obtained only by hand-cobbing. There are no significant measured or indicated ore reserves and only 712 tons of inferred ore with an average grade of 47% CaF_2. This is insufficient tonnage to justify the expenditure of $100,000 for a mill and development work, and Robinson recommends that the loan be denied.

I concur with this conclusion.

A. H. Koschmann

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Attachments (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-1209, Empire Mining and Engineering Co.
Saddle No. 6 Fluorspar Lode

Boulder County, Colo.

Fluorspar

C. S. Robinson, Geologist
U. S. Geological Survey.

F. D. Everett, Mining Engineer
Bureau of Mines

November 14, 1951

EMPIRE MINING AND ENGINEERING CO.
SADDLE NO. 6 FLUORSPAR LODE
BOULDER COUNTY, COLO.

Summary, Conclusions, and Recommendations

By C. S. Robinson
Geologist
U. S. Geological Survey

F. D. Everett
Mining Engineer
Bureau of Mines

EMPIRE MINING AND ENGINEERING CO.
SADDLE NO. 6 FLUORSPAR LODE
BOULDER COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By C. S. Robinson and F. D. Everett

The application by the Empire Mining and Leasing Company requests a $100,000.00 development and production loan to develop the ore bodies on the Saddle No. 6 Claim and to construct a mill for processing 75 tons of fluorspar ore a day. In the application the development work to be done consists of sinking a 100 foot shaft and drifting 180 feet. At the time of the investigation by the Defense Minerals Administration examining team, the proposal was for driving 650 feet of drift to make available 200 feet of vertical steping area below the shaft. A used mill at Blackhawk, Colorado, would be purchased and moved to a site near Boulder, Colo., for re-erection. The cost of the development work is given in the loan request as $45,465.00 and the cost to move and prepare the mill for operation as $47,854.00.

The ore occurs in narrow and short veins which follow no pattern in an altered and sheared granodiorite. The veins are composed primarily of fluorite and quartz with very minor amounts of galena, sphalerite, pyrite, and chalcopyrite.

The Saddle No. 6 Claim is estimated to have 712 tons of inferred fluorspar ore averaging between 30 and 40 percent CaF_2. Sorting could raise the grade of these reserves to over 50 percent CaF_2 but would materially decrease the total tonnage. These reserves appear inadequate to justify the requested loan.

The mining and mill costs given in the application are probably low, especially for purchasing and constructing the mill. The company management has had no previous mining or milling experience. The property might be developed on a small scale and the fluorspar mined and shipped to one of two fluorspar processing mills in the area. The ore reserves from the property, probably will never be adequate to justify the construction of a mill.

The request for a $100,000 development loan is not recommended.

EMPIRE MINING AND ENGINEERING COMPANY

BOULDER COUNTY, COLORADO

DMA DOCKET 1209

By C. S. Robinson
U. S. Geological Survey

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Figure 1:

Geologic map of the Orion and Saddler No. 6 claims

Figure 2:

Geologic and sample map of the Orion tunnel

TABLE

Table 1:

Assay of samples from the property of the Empire Mining and Engineering Company

EMPIRE MINING AND ENGINEERING COMPANY
BOULDER COUNTY, COLORADO

INTRODUCTION

The property of the Empire Mining and Engineering Company, near Jamestown, Boulder County, Colorado, was examined on September 13 and 17, 1951, in company with F. D. Everett of the U. S. Bureau of Mines. On September 17, 1951, C. E. Zahn, Jr., President of the Empire Mining and Engineering Company, accompanied the field team.

The Empire Mining and Engineering Company have requested a DMA development loan of $100,000 to construct a fluorite mill and for development work on their Orion and Saddler No. 6 claims. These claims are about 1 mile north of Jamestown and just west of Little James Creek on the east slope of Dueno Mountain at an altitude of about 7,000 feet. The working on these claims consist of several shallow shafts and prospect pits and one short tunnel, the Orion tunnel. The most northerly shaft, Figure 1, was sunk about 20 feet and the vein stoped to the surface for about 25 feet north of the shaft.

The geology of the Jamestown district is discussed in detail by E. N. Goddard in, "Fluorspar Deposits of the Jamestown District, Boulder County, Colorado": Colorado Sci. Soc. Proc., vol. 15, No. 1, 1946; and by T. S. Lovering and E. N. Goddard in, "Geology and Ore Deposits of the Front Range, Colorado": Geol. Survey Prof. Paper 223, pp. 255-278, 1951.

GEOLOGY

The country rock of the Orion and Saddler No. 6 claims is a much altered and partially sheared granodiorite, probably of Tertiary age. Throughout the area mapped the granodiorite is cut by innumerable small shears and locally, especially along the veins, it has been brecciated. Numerous veins cut the country rock. The veins average less than 1 foot wide and along their strike and dip may swell and pinch within short distances. As shown in Figure 1, most of the veins are short, averaging between 50 and 100 feet long. On either side of the main veins are many small veinlets of from 1 to 4 inches wide which more or less parallel the main veins. Most of the veins are about vertical.

The primary minerals of the veins are fluorite and quartz with minor amounts of galena, sphalerite, pyrite, and chalcopyrite. The fluorite and quartz are medium to coarse grained, the sulfides usually fine grained. The veins average about 50% CaF_2 and less than 1% combined sulfides.

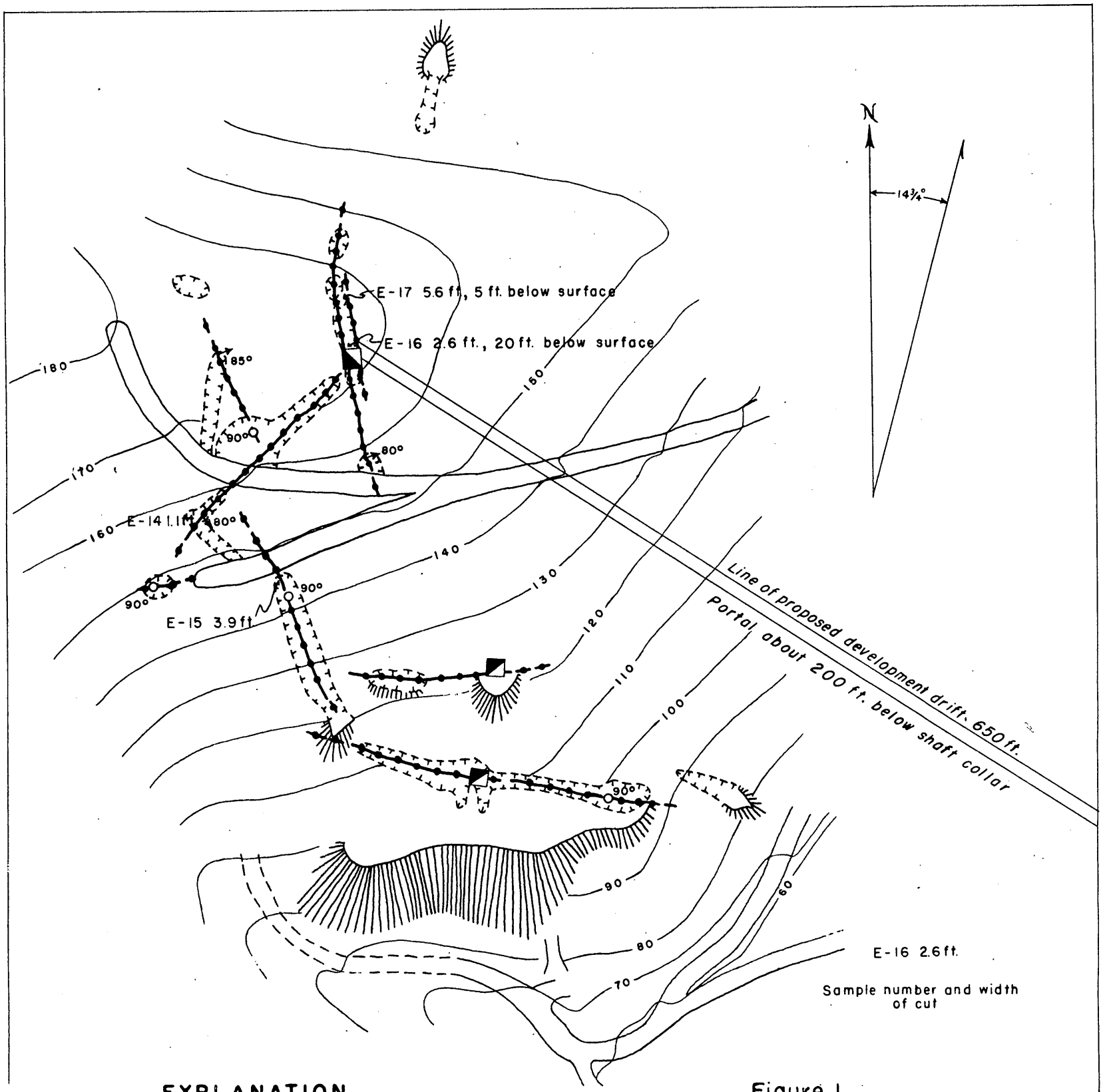
Approximately 500 feet north of the Orion claim is the Emmett mine which works a vein in a breccia zone in the Silver Plume granite. The breccia zone and its mineralization is believed by Goddard to be related to the intrusion of a quartz monzonite porphyry stock to the east. It is believed that the Orion and Saddler No. 6 claims are along the edge of the Emmett breccia zone and that the veins are related to the main mineralization in the Emmett breccia zone. The mineralizing solution probably spread from the Emmett zone along shears into the surrounding country. This might account for the numerous small veins on the Orion and Saddler No. 6 claims.

ORE RESERVES

The workings on the Orion and Saddler No. 6 claims are not extensive enough for the calculation of measured or indicated ore reserves. On the basis of the geologic maps, Figures 1 and 2, and the sampling by F. D. Everett, some inferred ore reserves can be assumed. For the veins on which samples E-14 and E-15 were cut, 50 tons each are inferred. For the veins from which samples E-10, E-11, and E-12, were cut, a total of 200 tons is inferred. Assuming that the vein from which sample E-16 was taken is 40 feet long, 10 feet deep, and 3 feet wide, 100 tons of inferred ore can be calculated. Calculation based on 12 cubic feet of rock to the ton. For sample E-17, assuming 25 feet of length, 30 feet of depth, and an average width of 5 feet, 312 tons of inferred ore are present. The total inferred ore reserves of Orion and Saddler No. 6 claims are 712 tons with an average grade of 47% CaF_2.

CONCLUSIONS

The fluorite veins of the Orion and Saddler No. 6 claims are narrow, short, and pinch and swell within short distances. If these veins were mined, shipping grade ore could only be obtained by hand-cobbing. There are no measured or indicated ore reserves and only 712 tons of inferred ore with an average grade of 47% CaF_2. This is not a sufficient tonnage to warrant the expenditure of $100,000 for a mill and development work. It is recommended that the application of the Empire Mining and Engineering Company for a DMA development loan be denied.



EXPLANATION

80°

Vein, showing dip (Dashed where projected)

Shaft at surface

Adit

Prospect pit or trench

Dump

Figure 1

Department of Interior
U.S. GEOLOGICAL SURVEY

EMPIRE MINING and ENGINEERING Co.

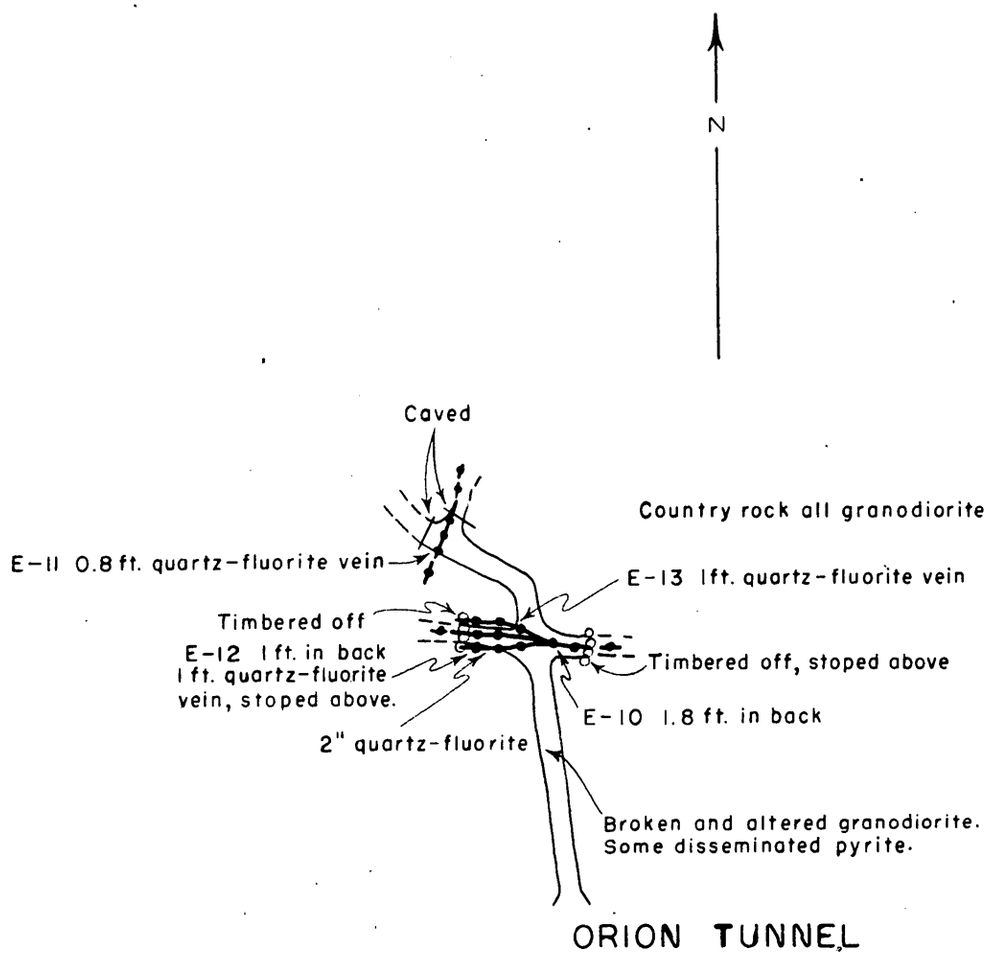
Boulder County, Colorado

DMA DOCKET 1209

Topography by M. R. Brock, U.S.G.S., Sept. 1951
Assumed base elevation. Geology by C.S. Robinson

Scale: 1" = 50'

10 ft. contour intervals



EXPLANATION

Vein
(Dashed where projected)

E-12 1 ft.

Sample number and width of cut

Figure 2

Department of Interior
U. S. GEOLOGICAL SURVEY

EMPIRE MINING and ENGINEERING Co.
Boulder County, Colorado
DMA Docket 1209

Geology by C. S. Robinson, U. S. G. S.
Samples by F. D. Everett, U. S. B. M.

Scale: 1" = 50'

September 1951

TABLE I

ASSAYS OF SAMPLES FROM THE PROPERTY OF THE

EMPIRE MINING AND ENGINEERING COMPANY

BOULDER COUNTY, COLORADO

Sample No.	Feet Sampled	Au oz.	Ag oz.	CaF_2 %	$CaCO_3$ %	SiO_2 %
E-10	1.8	0.005	1.6	54.9	0.5	15.0
11	0.8			68.1	1.05	
12	1.0			55.6	0.35	
13	1.0			70.6	1.05	
14	1.1			71.0	0.15	
15	3.9	0.005		50.7	0.15	
16	2.6			52.7	0.15	32.2
17	5.6	0.005		29.5	Tr	

Sampled by F. D. Everett, U. S. Bureau of Mines

Assayed by U. S. Bureau of Mines

EMPIRE MINING AND ENGINEERING CO.
SADDLE NO. 6 FLUORSPAR LODE
BOULDER COUNTY, COLO.

Engineering Report

By F. D. Everett
Mining Engineer
Bureau of Mines

EMPIRE MINING AND ENGINEERING CO.
SADDLE NO. 6 FLUORSPAR LODE
BOULDER COUNTY, COLORADO

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EMPIRE MINING AND ENGINEERING CO.
SADDLE NO. 6 FLUORSPAR LODE
BOULDER COUNTY, COLO.

ENGINEERING REPORT

By

F. D. Everett

INTRODUCTION

The Empire Mining and Engineering Company applied for a $100,000 development loan, Defense Mineral Administration Docket 1209, to develop fluorspar on the Saddle No. 6 Claim, near Jamestown, Boulder County, and to construct a metallurgical and acid grade beneficiating mill near Boulder, Boulder County, Colo. Fluorspar was to be processed 75 days after the loan was granted.

To approve a development loan for 100 percent participation by the Government the ore reserves should be proven and adequate to justify the cost of the project and to assure repayment of the loan. Neither the applicant's estimate of 2200 tons, nor the examining team's estimate of 712 tons of inferred ore are sufficient to qualify the property for a direct loan of $100,000.

ACKNOWLEDGMENTS

Acknowledgment is made of the helpful co-operation given by G. E. Zahn in showing the property. Mr. Hayes, mill foreman for the Ozark-Mahoning Co., gave freely information on fluorspar mining and milling in the area, with costs.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The fluorspar properties are near Jamestown, Boulder County, Colorado. The Saddle No. 6 Claim, the only one being considered, is in Sec. 24, T. 2 N.,

R. 72 W., 6th P.M., Central Mining District (fig. 1). A good graveled State secondary road passes through Jamestown and joins an access road to the property about a mile northwest of the town. The access road is three-quarters of a mile long from the road junction near Jamestown to the deposit. Boulder, the County seat (Boulder County), is connected to Jamestown by 7 miles of hard oiled road, State Highway 7, and 10 miles of graveled road. Roads to the area are maintained for hauling during winter months.

Boulder is 33 miles from Denver by U.S. Highway 287 and State Highway 7, and is served by two railroads, the Union Pacific and the the Colorado and Southern.

The fluorspar deposits near Jamestown, outcrop in the foothills of the Rocky Mountain Front Range, about 8 miles west of the Great Plains. The topography is rough with fairly high relief. The altitude ranges from 6,400 to 8,000 feet. Vegetation covers the slopes, and timber, consisting chiefly of juniper and pine, is abundant.

Climatic conditions are semi-arid but occasional snowfalls of 2 to 5 feet are not uncommon. Water flows all year round in James Creek which runs through Jamestown.

Jamestown has a population of about 100 persons and fluorspar mining and milling is the principal industrial activity.

HISTORY AND PRODUCTION

Fluorspar, although known, was not mined until 1903 when about 400 tons were shipped from Blue Jay Hill. During the following years the output was small and intermittent until World War I when 22,800 tons were produced. After 1920 there waslittle activity in the district until 1940 when the General Chemical Company purchased several of the mines and

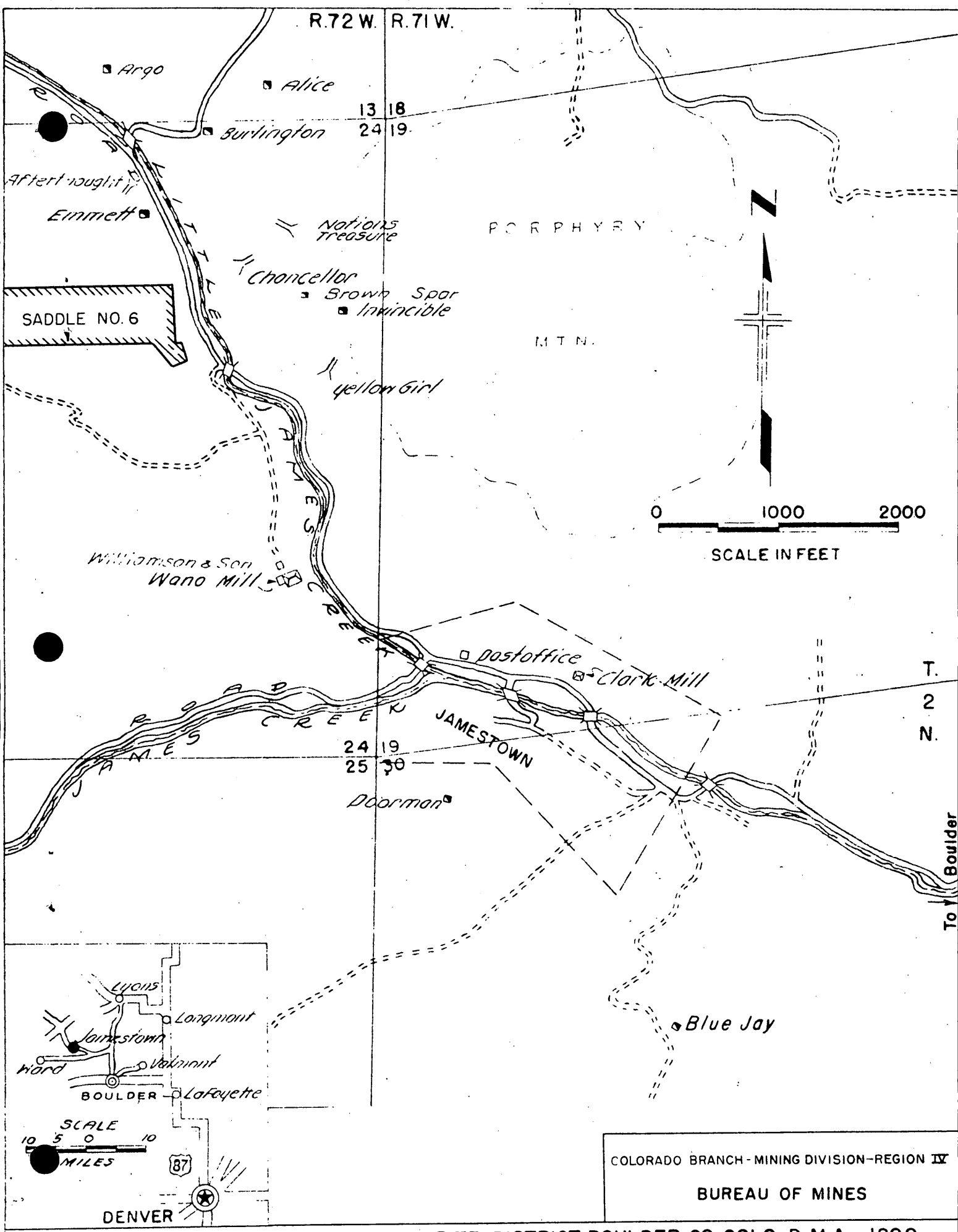

FIG. 1 - LOCATION MAP, JAMESTOWN FLUORITE DISTRICT, BOULDER CO., COLO. D.M.A.—1209

started to develop them. In 1941 they built a 200-ton concentrating mill at Valmont, 7 miles east of Boulder.

Later in 1941, H. M. Williamson & Son of Boulder and Denver, converted their 100-ton gold concentrating mill to a fluorspar beneficiation plant and began producing fluorspar from the Emmett mine. In 1946, the Ozark-Mahoning Company, producers of fluorspar in Rosiclare, Illinois, purchased the H. M. Williamson & Son, Wano mill. H. M. Williamson & Son do not contract mining for the company. The properties mined belong to the Boulder Fluorspar and Radium Company.

In the period 1903 - 1944, about 65,838 tons of metallurgical grade fluorspar and 33,826 tons of acid-grade fluorspar was shipped from the district.[1/] Since 1944 about 300,000 tons have been mined and milled.

During World War I the deposit on the Orion and Saddle No. 6 claims yielded a very small production. The Saddle group of claims was located in 1942 by Jess Vickery. C. E. Zahn purchased the claims in 1943. The Orion and Saddle No. 6 claims were leased by Vickery in 1944 and some development work done. Zahn and a group of associates organized the Empire Mining and Engineering Company in 1950 for the purpose of mining fluorspar from the Saddle Group of claims. No work, except mine rehabilitation and claim surveying has been done by the applicant up to the present time.

OWNERSHIP AND EXTENT

The company owns, by purchase agreements with C. E. Zahn, six located claims and one patented claim. The patented claim, the Orion, is entirely

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1/ Goddard, E. N., Fluorspar deposits of the Jamestown district, Boulder County, Colorado; Colo. Sci. Soc. Proc., Vol. 15, No. 1, 1946

enclosed by the Saddle No. 6 claim. These two claims, or as might be stated, the Saddle No. 6 claim, is the only one of concern in this investigation.

The claims held by the company are: Orion and Saddle No. 6, located about a mile northwest of Jamestown and south of the Emmett mine, in Sec. 24, T. 2 N., R. 72 W.; Saddle, Saddle No. 2, Saddle No. 5, and Saddle No. 8, located about one-half mile southwest of town in Sec. 30, T. 2 N., R. 71 W.; Saddle No. 7 joining the Townsite on the north; and Saddle No. 3, ½ mile below the town along James Creek.

DESCRIPTION OF THE DEPOSITS

The fluorspar deposits in the Jamestown district consist of breccia zones and veins in a belt in granite and granodiorite about 2 miles long and half a mile wide. The breccia zones range from 10 to 70 feet in width and from 50 to 350 feet in length. Purple fluorspar, both coarsely crystalline and granular, occurs as a filling in veins and around breccia fragments. Quartz, clay minerals, disseminated pyrite and small amounts of galena, sphalerite, and chalcopyrite are associated with the fluorspar.

The deposit on the Saddle No. 6 and Orion claims consists of several short veins, having an irregular surface pattern, in an inconsistent breccia zone. The veins appear to vary from a few inches to 6 feet in width and from 10 to 70 feet in length and dip vertically. Most of the fluorspar is in the form of one or more massive veinlets, averaging about a foot in width, in a wider vein type structure.

In the existing development stage the fluorspar occurrences appear too erratic and inconsistent to be mined economically by any pre-planned, systematized method. No estimate can be made as to how deep the deposit might extend, but the Emmett mine, on the adjoining claim to the north, is 1200 feet deep and still mining fluorspar. However, the Saddle No. 6

deposits may be on the edge of the main breccia zone and in the present state of development cannot be compared to the Emmett.

The remaining Saddle Claims, as shown to the examining team, consist of comparatively undeveloped narrow veinlets of fluorspar and cannot be given any consideration with respect to the granting of a development loan.

The fluorspar vein walls appear strong. In the breccia zone, the fragments have been cemented with fluorspar or silicious solutions. The vein walls in the Emmett mine are generally in the Silver Plume granite formation and the shrinkage mining method is applicable.

MINABLE ORE RESERVES

The examining team concurs with the applicant that the Saddle No. 6 and Orion claims offer the best possibilities. Inferred ore blocks, designated as A, B, C, and D, (fig. 2), are calculated from data shown on U.S. Geological Survey maps, using a tonnage factor of 12, as follows:

Block A $\frac{25 \times 30 \times 5 + 40 \times 10 \times 3}{12}$ = 412 tons

Block B (Based on 1, 1-foot sample, assaying 71% CaF_2) = 50 tons

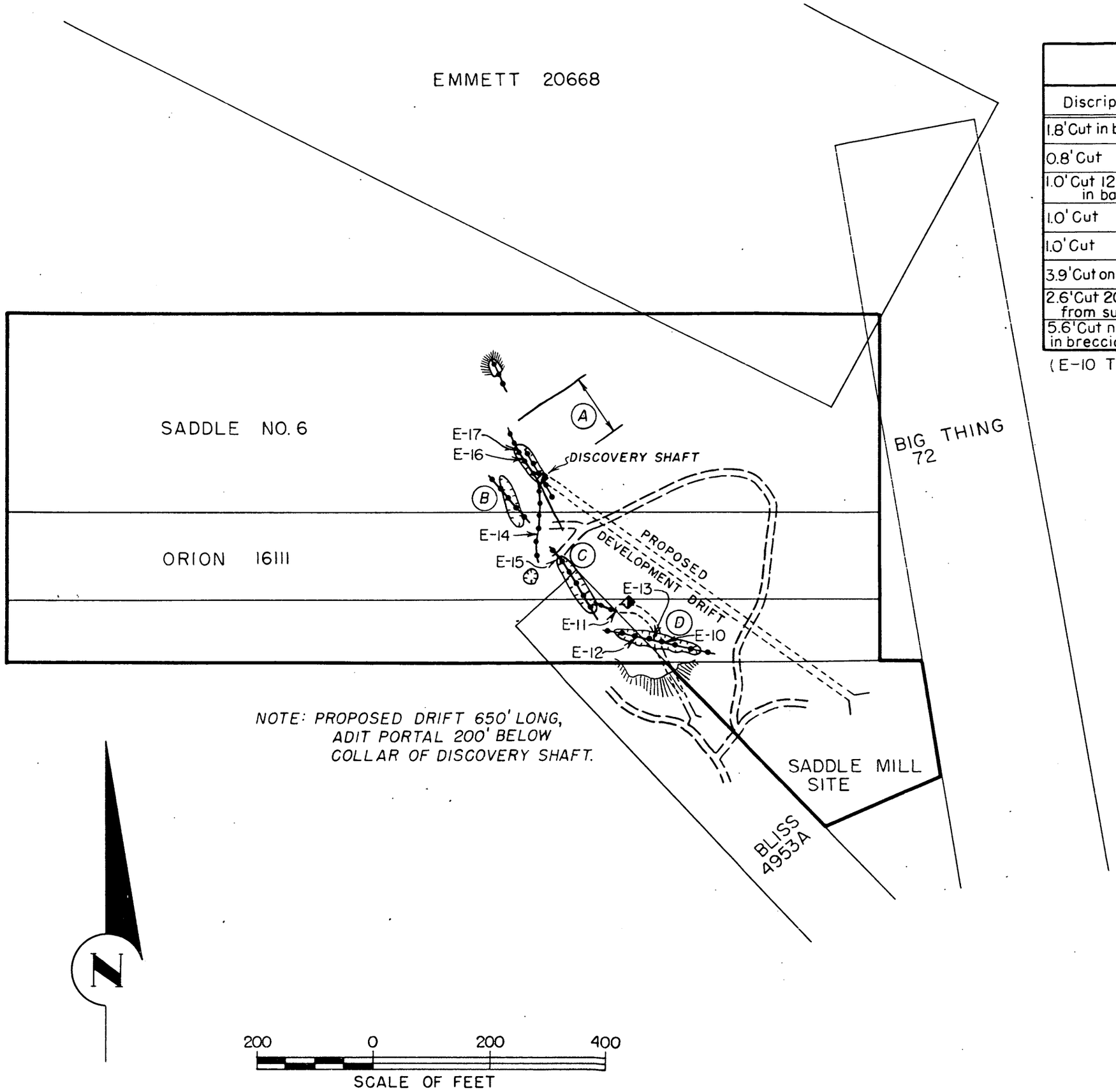
Block C (Based on 3, 9-foot samples assaying 50.7 CaF_2) = 50 tons

Block D $\left(\frac{3 \times 25 \times 10 + 3 \times 30 \times 20}{12} \right)$ = 200 tons

Thus total inferred ore is estimated at 712 tons.

The report by F. C. Bowman, Consulting Engineer, included with the application, credited this area with 2,200 tons. The main difference in the two calculations is that Bowman extended the exposures to 50 feet below the uppermost workings and more or less connected all vein zones.

The other claims do not appear to warrant consideration as they contain no apparent ore reserves.



ASSAY DATA

Discription	Lot No.	Au	Pb	CaF_2	$CaCO_3$	SiO_2
1.8' Cut in back	E-10	.005	1.6	64.9	0.5	15.0
0.8' Cut	-11			68.1	1.05	
1.0' Cut 12' high in back	-12			55.6	0.35	
1.0' Cut	-13			70.6	1.05	
1.0' Cut	-14			71.0	0.15	
3.9' Cut on surface	-15	.005		50.7	0.15	
2.6' Cut 20' down from surface	-16			52.7	0.15	32.2
5.6' Cut near surf. in breccia zone	-17	.005		29.5	tr.	

(E-10 THRU E-13 INCL. ARE UNDERGROUND SAMPLES)

LEGEND

- FLUORITE VEIN
- UNDERGROUND WORKINGS
- SURFACE PIT
- (A) ORE RESERVE BLOCK
- ROADS
- E-10 SAMPLE NO.
- SHAFT
- DUMP

COLORADO BRANCH - MINING DIVISION - REGION IV

BUREAU OF MINES

FIG. 2-ORION & SADDLE NO. 6 CLAIMS & WORKINGS OF THE EMPIRE MINING & ENGINEERING CO., JAMESTOWN, BOULDER COUNTY, COLO. D.M.A.-1209

The ore in the narrow zones encountered assayed in excess of 50 percent CaF_2, with some showing of lead and a trace of gold. In minable widths the ore would average between 30 and 40 percent CaF_2. By sorting the grade of ore could be raised to over 50 percent CaF_2, with a considerable sacrifice of tonnage.

PRESENT STATUS

Exploration and Development

The property is not currently being worked. Other than a little development work done during 1944, very little, if any, work has been done since World War I.

The development work consists of one 115-foot open-cut and 150 feet f underground drifting from the open-cut on the Orion claim; 50 feet of pen-cut which has a small underground excavation near the north end; our shallow pits near the upper terminus of the road; and a 25-foot t 5 feet wide and about 20 feet deep. All of the above work is cluded within the limits of the Saddle No. 6 claim which covers the ion claim.

A small amount of surface and underground work has been done on other Saddle claims but the fluorspar exposures appear to have tle or not merit.

Mining and Milling Equipment

The company has no mining or milling equipment. Power could be ined from nearby transmission lines. The present access road to the ings could easily be repaired and maintained. Water for mining would to be hauled or pumped from Little James Creek.

PROJECT PROPOSALS, WITH COSTS

Exploration and Development

The development part of the project proposal as given in the

application consisted of sinking 100 feet of single compartment shaft and 180 feet of drifting. At the time of the examination, C. E. Zahn, President and Manager, stated the proposal was for 650 feet of drifting toward the vein near the discovery shaft, which would allow 200 feet of vertical stoping area. Cost estimates for the 100 feet of sinking and 180 feet of drifting at $36.00 and $19.78 a foot respectively, are $3600.00 and $3560.00. The total cost of mine development is $45,465. This figure allows for ore bins, buildings, office equipment, surface equipment, sinking and drifting. The estimates of $36.00 a foot for sinking and $19.78 for drifting appear low.

The 1952 drifting cost will amount to about $30.00 a foot. The ore mining costs are between $10.00 and $12.00.

New Equipment and Facilities

The company requests funds to completely equip the property for mining and milling 75 tons of ore a day. In view of the geologic potentialities and small ore reserves, it is not considered necessary to itemize the equipment requirements.

Much of the equipment listed in the application can be considered unnecessary, at least until the area has been explored. The applicant's cost estimates are in general considered to be entirely too low. Milling equipment costs, especially, must be increased, probably doubled.

Transportation

A bulldozer would be required for two or three days to repair the access road and to level the portal site of the proposed drift.

No estimate was made for equipment to transport employees or supplies to the mine.

Manpower

Manpower is not plentiful in the area but could probably be recruited from the Boulder Tungsten district. Skilled miners are paid $1.36 to $1.50 per hour and unskilled labor $1.10 to $1.35 per hour. The lesser amounts are for non-union labor.

Drifting, sinking and hauling work is usually contracted.

Power

Power can be obtained for the operation. A power schedule is included in the application.

Water

Water for mining would have to be pumped or hauled from Little James Creek, a quarter of a mile away.

Milling

The company proposes to purchase a used mill including the equipment and building for $15,000. The cost as given in the application, to dismantle this mill, move to the new site, reconstruct it, and add jigging equipment for processing 75 tons a day is $19,500. The mill site with services would cost $13,354. Total mill costs, as given in the application, are $47,854.

The purchase cost of this mill as verified by the owner, The Barnett Company of Denver, is $15,000 and does not include a ball mill.

A letter from Warren H. Edwards, dated July 15, 1951 and addressed to the Defense Minerals Administration, attention James A. Barr, included the flowsheet of the proposed mill. In addition to items mentioned in the brochure to be obtained by purchasing the designated mill, the following are unaccounted for: Ball mill, rolls, sampler, vibrating screens, filters, rake classifier, 10 additional flotation cells, thickener and rotary dryer. The cost of these additional items might well double the

applicant's estimated cost.

The examining team visited the fluorspar milling operation of the Ozark-Mahoning Company and found they use hot water as standard practice in milling. Provision for heating water has not been considered in the applicant's proposal. Mr. Hayes, foreman at the mill of the Ozark-Mahoning Company stated that it cost $32.50 to produce a ton of acid-grade fluorspar. This amount includes $6.50 for contract mining a ton of crude ore. As the Ozark-Mahoning Company leases the mines and probably has to pay a royalty, the crude ore charge is about $7.00 a ton.

The mining costs of the General Chemical Company are estimated at $8.00 a ton forlabor or a total of about $10.00 for labor and supplies. This company uses union labor and the cut-and-fill mining method, making the costs somewhat above the average.

The Ozark-Mahoning Company will purchase any fluorspar ore available in the area. At present they are mining ore near Walden, Colorado and shipping to the Jamestown mill for processing. The General Chemical Company has purchased ore from independent producers in the past.

The applicant indicated that metallurgical and acid grade fluorspar would be produced. Both of the operating mills in the area produce only acid-grade spar and evidently believe that the production of a metallurgical grade product would only add to the equipment required in their mills; the market for metallurgical grade spar in this area is apparently satisfied.

CONCLUSIONS

The examination of the properties of the Empire Mining and Engineering Company revealed the following:

1. The fluorspar ore reserves are inadequate on the Orion, Saddle No. 6 and other claims to justify a direct development loan of $100,000.

2. The applicant's estimated costs of mining, milling, and for construction of a mill are believed to be low.

3. C. E. Zahn, manager, has had no mining or milling experience except that obtained by owning the inactive subject property since 1943.

4. Fluorspar might be produced profitably from the property in a small operation and the ore sold to one of two beneficiating mills in the area.

5. Exploration by sinking shallow shafts and drifting to the ends of the vein, or exploration by diamond drilling is warranted but the ore reserves developed will probably never justify the construction of a processing mill.

RECOMMENDATIONS

The request for a $100,000 development loan by the Empire Mining and Engineering Company is not recommended.