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05/09/96

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: SNOWBALL

ALTERNATE NAMES:
SNOWBALL-MONOLITH

MARICOPA COUNTY MILS NUMBER: 183

LOCATION: TOWNSHIP 5 N RANGE 10 W SECTION 29 QUARTER SE
LATITUDE: N 33DEG 44MIN 34SEC LONGITUDE: W 113DEG 19MIN 02SEC
TOPO MAP NAME: LONE MOUNTAIN - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
FLUORINE FLUORSPAR
CALCIUM LIMESTONE
CALCIUM CALCITE
IRON HEMATITE
BARIUM
MANGANESE
STONE LIMESTONE

BIBLIOGRAPHY:
USGS LONE MTN QUAD
ELEVATORSKI E A ADMMR AZ FLUOR. REPT 1971 P 2
ADMMR SNOWBALL MINE FILE
ADMMR INDUSTRIAL MINERALS REPORT P 37
ADMMR "U" FILE MARICOPA FL-1
US BUR MINES WAR MINERALS REPORT 366
VAN ALSTING R AZBM BULL 180 P 352
DENTON T & KUNKE C USBM RI 4540

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

January 29, 1957

Mr. Robert E. Reno, Jr., Deputy Director
General Services Administration
49 Fourth Street
San Francisco, California

Dear Mr. Reno:

With reference to Cooper Shapley Jr., and his fluorspar property our Mr. Gemmill visited the property January 24th, and states:

> The property is located on the southern approach of the Harquahala Mts. about 25 miles by road from either Aguila or Salome. It consists of 5 unpatented mining claims and is being operated by Cooper Shapley Jr., who recently acquired it.
>
> The property was investigated by USBM in 1944, see Bulletin RI 4540. There has been no additional exploration work done since then.

Mr. Gemmill further stated that Mr. Shapley has installed a small mill and is waiting for a certificate before starting production. Mr. S. appears to have had considerable experience in the production of fluorspar and his approach to this proposition seems to be practical and well advised.

We sincerely hope the above information will be of some value to you, and if we can be of further service in the matter do not hesitate to call on us.

Very truly yours,

SECRETARY.

LP

REFERENCES:

DMR - Fluorspar p. 25

ABM Bull. 180, p. 352

Snowball Mine (aka Snowball - Monolith)
Lone Mtn 15' sec 29, T. 5N., R. 1 0W.
Maricopa County

Reference: Arizona Dept. of Mineral Resources
Snowball Maricopa County (file)

present owner: Southern Minerals and Mining Co.

history of the mine:
In 1944 the mine was owned by Dempsey B. Powell of Aguila and it was explored by the U.S. Bureau of Mines. By 1957 the mine was owned by Cooper Shapley, Jr. of Phoenix, Az. Until this time, no work other than by USBM had been done. Mr. Shapley installed a small mill. In 1958 the mine was active — mining and shipping — and operated by Monolith Portland Cement Co. of Los Angeles, Cal. In 1972 lessor Walter Rogers looked at developing the property. Southern Minerals and Mining Company of Scottsdale had an agreement in 1974 for the Snowball but the company was going out of business in 1975. No activity at present.

minerals: fluorite, calcite, manganese, calcite, limonite, siderite
fluorspar mine

five unpatented mining claims

Snowball Mine (cont.)

Geology: country rock covered by alluvium; some schist; the vein is a breccia consisting of altered andesite cemented with fluorite and calcite

ore: ore is reported to run 40-70% CaF_2; some shafts and crosscuts in area; the dip of the breccia is 45° N; high grade streak in vein is about 2½-3 feet wide.

SNOWBALL MARICOPA

Went to Aguila and met Bill Hirt and Vic Kral and accompanied them to the Snowball mine in Sec. 29, T5N, R10W, Maricopa County. The surface trenches were examined with the idea of establishing their order and orientation. GW WR 4/23/75

Ivan Knopf called to discuss the possibility of selling their fluorspar claims. He is president of the Southern Minerals & Mining Co. who are going out of business. GW WR 7/25/75

Visited the Snowball fluorspar property but there was no activity, as indicated by Mr. Hanes, secretary of Southwest Minerals & Mining Company. GW WR 11/4/75

References: DMR Fluorspar, p. 25
AIME Bull. 180, p. 352

Dept. of Interior, Bureau of Mines, War Minerals Report, #366, (Nov. 1942) 18 pages, 5/3/77 ap

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Snowball-Monolith Date February 11, 1958

District Bighorn Engineer Lee Hammons

Subject: Brief Examination

Location: 23 miles SW of Aguila on roads that are excellent for the most part with some rough sections.

Owner:

Operator: Monolith Portland Cement Co.
3326 San Fernando Drive
Los Angeles 65, California

Manager: Mr. Bruce, Aguila, Arizona.

Engineer: C. W. Hoffman % Lloyd Rentsch, Consulting Geologist
649 So. Olive St., Los Angeles, Calif.

Status: Active, mining and shipping; about 14 men employed.

Development: Inclined shaft 100 feet down; crosscut 35 feet to east at 50 foot level; crosscut at 100 foot level just started (shot 2 rounds)

Geology: Country rock covered by alluvium, some schist in evidence. The vein is a breccia consisting of altered andesite cemented with fluorite and calcite. The dip is about 45°N. The high grade streak in the vein which the workings are following is 2½ to 3 feet wide. This is 4 feet wide in a prospect pit about 50 feet west of the shaft collar.

Mineralization: Fluorite, colorless to medium blue green; calcite; manganese calcite; limonite; siderite. Apparently no sulfides are present.

Utilization: The ore is reported to run 40-70% CaF_2 for the full face. It is shipped without treatment and used to mix with other raw materials in the manufacture of Portland cement. It helps to volatilize the alkalies in the cement formula also lowers the melting point of the formula. For this purpose the silica and calcite are not impurities but actually contribute to the formula.

Pay Dirt
5/29/72

SNOWBALL MARICOPA

Visited the Snowball fluorspar mine 19 miles southwest of Aguila with Walter Rogers, lessor. The vein is in or along a diabase dike which intrudes schist. It strikes about N 75° W for more than half a mile and dips from 20° to 70° N. The spar occurs in lenticular veins associated with considerable black calcite and siderite in widths of 2-4 feet. The vein or fault structure is up to 14 feet wide. There are numerous surface excavations; the majority of which are trenches dug by the U.S.B.M. in 1944. Since then, a 100 foot shaft inclined along the vein at about 40° has been put down. At 60 feet from the collar, a drift extends S 75° E for 106'. At 10 feet from the face of this drift, a riase in the vein runs up about 30'. In the face of the drift, the solid portion of the spar is approximately 1 foot thick; having pinched from 4 feet at the shaft. In the bottom of the shaft, only 2"-4" streaks of spar are contained in a breccia fault which is thicker than the width of the shaft. There is a small seepage of water in the shaft bottom. Mr. Rogers and his partner Carl Dotson, Socorro, New Mexico, intend to build a small jig-type mill on the property after drilling a well. Then they expect to strip the hanging wall as deeply as practical and mine the exposed ore during which time they will erect another head-frame and drift westerly on the 60' level. GW WR 5/10/72

Walter Rogers, Wenden, came in to discuss the Snowball, Princess Ann and Gunsight fluorspar deposits. He and his partner, Carl Dotson, Socorro, New Mexico, have leased these deposits from Gene Kruger, Dan Williams and Andy Johannsen of Yuma. While here, John Lemons came in and was made acquainted with Mr. Rogers. Lemons inquired about the possibility of building a mill in the area. Rogers said they fully intended to do that and are now investigating the water supply GW WR 5/2/72

Accompanied Max Brown to the Snowball Fluorspar mine 20 miles SW of Aguila. He didn't appear overly interested in it but after seeing John Lemon's spar, he thought it could be developed. GW WR 9/26/72

Gene Krueger, Yuma, came in to get advice as to financing the Snowball fluorite prospect Sw of Aguila. He said an insurance company was interested but wanted a complete technical report including an estimate of the initial capital investment. It was suggested he apply for an OME loan the, if prospects were favorable, to ask the Small Business Bureau for the capital. However, he was inclined to go along with the insurance company. He was, therefore, given a list of consultants. GW WR 12/19/72

Dave Woods, Southern Minerals and Mining Co., Scottsdale camein to discuss a mining agreement between his company and Vance Thornberg on the Snowball fluorspar deposit. GW WR 3-6-74

Ivan Knopf, president of Southwest Minerals and Mining Company, came in to discuss the Snowball fluorspar prospect 20 miles SW of Aguila saying he has a tentative deal with a Canadian company. GW WR 12/12/74

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Snowball-Monolith

Date February 11, 1958

District Bighorn

Engineer Lee Hammons

Subject: Brief Examination

Location: 23 miles SW of Aguila on roads that are excellent for the most part with some rough sections.

Owner:

Operator: Monolith Portland Cement Co.
3326 San Fernando Drive
Los Angeles 65, California

Manager: Mr. Bruce, Aguila, Arizona.

Engineer: C. W. Hoffman & Lloyd Rentsch, Consulting Geologist
649 So. Olive St., Los Angeles, Calif.

Status: Active, mining and shipping; about 14 men employed.

Development: Inclined shaft 100 feet down; crosscut 35 feet to east at 50 foot level; crosscut at 100 foot level just started (shot 2 rounds)

Geology: Country rock covered by alluvium, some schist in evidence. The vein is a breccia consisting of altered andesite cemented with fluorite and calcite. The dip is about 45°N. The high grade streak in the vein which the workings are following is 2⅓ to 3 feet wide. This is 4 feet wide in a prospect pit about 50 feet west of the shaft collar.

Mineralization: Fluorite, colorless to medium blue green; calcite; manganese calcite; limonite; siderite. Apparently no sulfides are present.

Utilization: The ore is reported to run 40-70% CaF_2 for the full face. It is shipped without treatment and used to mix with other raw materials in the manufacture of Portland cement. It helps to volatilize the alkalies in the cement formula also lowers the melting point of the formula. For this purpose the silica and calcite are not impurities but actually contribute to the formula.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine ✓ Snowball Flourite Deposit Date Jan. 24, 1957

District Ellsworth Engineer Mark Gemmill

Subject: Present Operation.

The property is located on the southern approach of the Harquahala Mts. and about 25 miles by road from either Aguila or Salome. It consists of 5 unpatented mining claims and is being operated by Cooper Shapley Jr. who recently acquired it.

14 K-8 E. Town & Country Phoenix

The property was investigated by the U. S. Bureau of Mines in 1944, a report of which is found in Bulliten R. I. 4540. There has been no additional exploration work done since then.

Mr. Shapley states that he has checked the findings of the Bureau investigation and has made mill tests on the ore so that he feels assured that the property has economic value under present conditions. He has just completed the installation of a small mill which he states will serve as a pilot to develop the process and produce some product at the same time. He states that he is starting in a small way as there are many factors to be determined, such as methods of mining, water supply, extent of orebody, etc.

Comment

Mr. Shapley appears to have had considerable experience in the production of Flourspar. His approach to this proposition seems to be practical and well advised.

✓

SNOWBALL

MARICOPA COUNTY
Big Horn Dist.

See: MINING WORLD, March, 1958, p 71

War Minerals Report 366 (1945) (C.F. ed. library)

Gale Hutchinson reported that he and a group had optioned the Snowball Fluorite Mine, 15 miles south of Aguila.

L.A.SMITH
Weekly Report
11-18-58 → Shapley

1960- mine returned to Cooper (~~Shapley~~)
1448, Town & Country Lane, Phoenix.

STATUS OF DORMANT MINES

MINE NAME: Snowball

LOCATION: Salome, Arizona.

OWNER AND/OR LEASEE: Cooper Shapley Jr.

ADDRESS: 1448 E. Town & Country Lane, Phoenix, Arizona.

APPROXIMATE PRODUCTION (Year of 1945): None.

COPPER _____ Lbs. LEAD _____ Lbs.

ZINC _____ Lbs. (OTHER) _____

CHECK THE CHIEF CAUSE OF YOUR DISCONTINUED PRODUCTION: New Mine.

(A) Easily available ore worked out.
(B) Increased costs, but have quantity similar to past grade of ore.
(C) Too close a margin to develop more ore.
(D) _____

If you have ore ready to mine please give your estimate of the amount of metal (name each metal) that you could produce in one year (after allowing 60 days to get started) if there were premiums above present market prices. Name amount with a low premium, and amount at a high premium; such as:

Copper at 22½¢ plus 5¢ premium..... 1,000,000 Lbs.
Copper at 22½¢ plus 10¢ premium..... 1,500,000 Lbs.

Product is Fluorspar, with good tonnage blocked out but freight rates too high, and pricetoo low.

If you do not have ore ready to mine please discuss the following:

(A) Do you think a reasonable development program would produce a justified tonnage of commercial ore at above mine?

(B) With a premium price (guaranteed for one year) could you carry out such a development program yourself? What premium?

(C) If you could not do this yourself, would a quick drilling program by some government agency (at government expense) be sufficient?

Bureau of Mines has diamond drilled property and found very good tonnage of commercial quantity available.

(D) Or would you prefer a loan plan similar to the arrangements during World War II?

A loan would be desired to install equipment that would lower productive costs by tonnage mining on large scale.

How about a combination plan in two stages such as follows?

Stage 1: Government engineers review project and, if a little drilling appears to be justified and a preliminary key to the situation, such drilling program to be agreed upon by owner and government engineer, paid for by the government, but let by contract. This plan already done and reported.

Stage 2: If results of drilling (or without drilling) justify underground development and/or production equipment, same to be obtainable via a mortgage loan on property. and material could be stockpiled.

Please discuss the above:

SUGGESTIONS:

Would like to see the price of Fluorspar at Western Mine the same as the Kentucky-Illinois district.

DATE Aug 9 '50.

SIGNATURE Cooper Shapley Jr.
President
1448 E. Town & Country Lane
Phoenix - Ariz.

NAME OF MINE: SNOWBALL

COUNTY: Maricopa
DISTRICT:
METALS: Fl.

OPERATOR AND ADDRESS: DATE:		MINE STATUS DATE:	
8/44	Dempsey B. Powell, Aguila	8/44	U.S.Bur.Mines doing exploratory work.

SNOWBALL

Fluorite

Maricopa 7-3 S28,29, T5N, R10W '49

D. B. Powell
Aguila, Arizona

SHAPLEY, JR., COOPER
1448 E. Town & Country Lane
Phoenix, Arizona

1-24-57

SNOWBALL FLUORITE DEPOSIT, Maricopa County

R. I. 4540

SEPTEMBER 1949

UNITED STATES
DEPARTMENT OF THE INTERIOR
J. A. KRUG, SECRETARY

BUREAU OF MINES
JAMES BOYD, DIRECTOR

REPORT OF INVESTIGATIONS

INVESTIGATION OF SNOWBALL FLUORITE DEPOSIT, MARICOPA COUNTY, ARIZ.

BY

THOMAS C. DENTON AND CHAS. A. KUMKE

R. I. 4540,
September 1949.

REPORT OF INVESTIGATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

INVESTIGATION OF SNOWBALL FLUORITE DEPOSIT MARICOPA COUNTY, ARIZ.[1]

By Thomas C. Denton and Chas. A. Kumke[2]

CONTENTS

TABLES

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from Bureau of Mines Report of Investigations 4540."

2/ Mining engineer, Bureau of Mines, Tucson, Ariz.

TABLES (Cont'd.)

ILLUSTRATIONS

INTRODUCTION AND SUMMARY

The fluorite deposit discussed herein occurs on a property known as the Snowball and comprises five contiguous mining claims in Maricopa County, Ariz.

Attention of the Bureau was first directed to this property early in 1944 through a request by D. B. Powell, original locator, to investigate his property as a possible source of fluorite and one that might warrant exploration by the Bureau. The property was examined by two Bureau engineers, Thomas C. Denton and Geo. W. Huseman.

It was decided to investigate the occurrence further by trenching, sampling, and diamond drilling. Work began on May 15, 1944. Preparatory work, trenching and surface sampling, was supervised by Geo. W. Huseman. Drilling was in charge of R. M. Grantham. The project was completed August 8, 1944.

ACKNOWLEDGMENTS

Special acknowledgment is due J. H. Hedges, Chief, Tucson Branch, Mining Division. The metallurgical staff analyzed the samples under the direction of A. C. Rice, acting supervising engineer, Rare and Precious Metals Experiment Station, Reno, Nev.

LOCATION AND ACCESSIBILITY

The Snowball fluorite claims are in the Ellsworth mining district in secs. 28 and 29, T. 5 N., R. 10 W., Maricopa County, Ariz., near the Yuma County line (fig. 1).

Access is by road from either Salome in Yuma County or Aguila in Maricopa County. Both are small towns on the Wickenburg-Parker cutoff of the Atchison-Topeka & Santa Fe Railway and on highway U. S. 60. Aguila is 27 miles west of Wickenburg, and Salome is 27 miles west of Aguila. To reach the property from Salome it is necessary to drive southeasterly 13 miles on a graded, dirt,

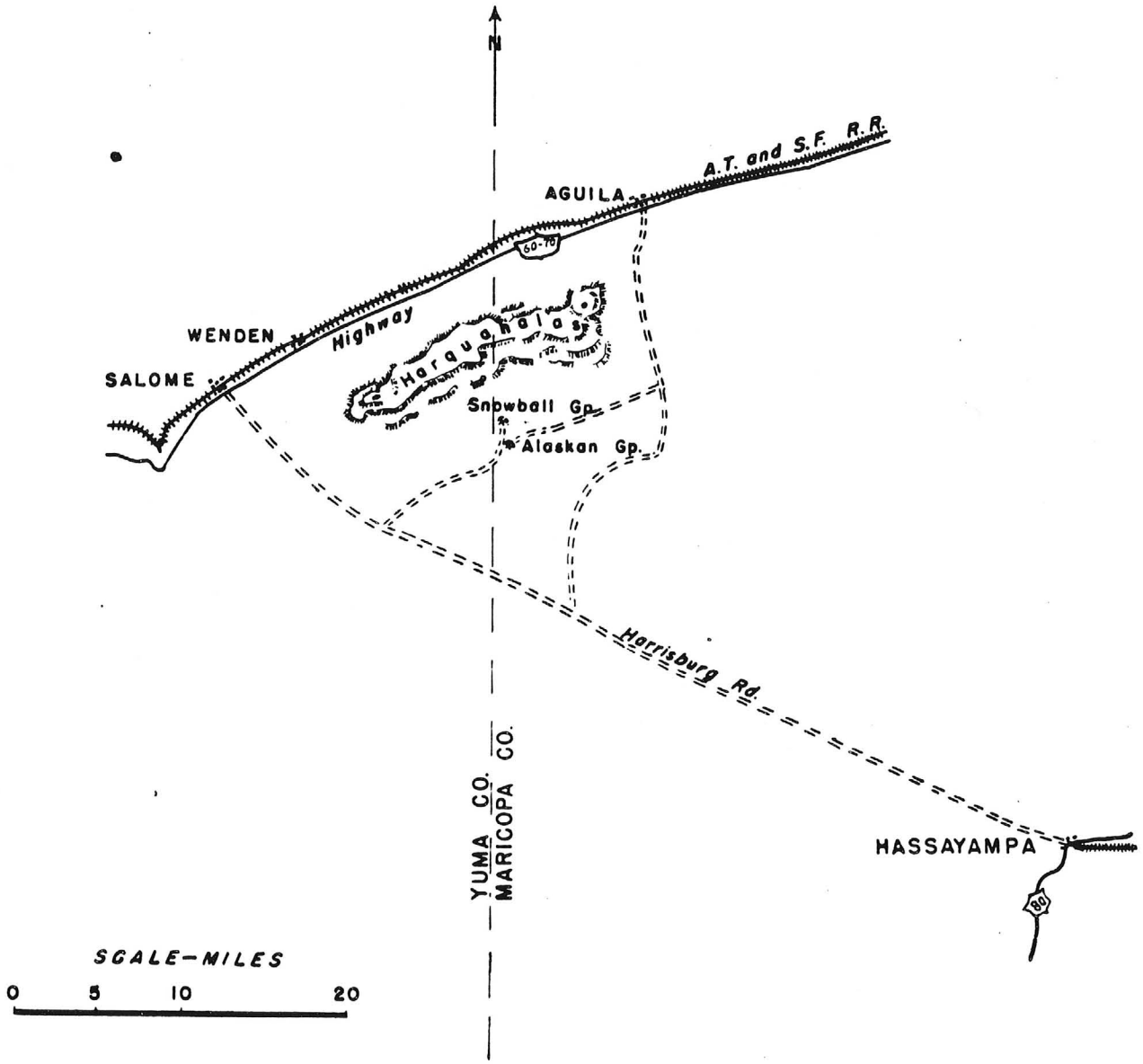

Figure 1. - Location map, Snowball group.

county road to Hassayampa, thence 10 miles northeasterly on an improved desert road that ends at the property. The alternative route is via 12 miles of county road in a southerly direction from Aguila, thence 10.5 miles westerly to the property over a very poor, unimproved, desert road (fig. 1).

OWNERSHIP

D. B. Powell and J. S. Boyer, both of Aguila, Ariz., are the owners of the property by right of discovery and location. There are five contiguous lode-mining claims - Snowball and Snowball 1 to 4, inclusive.

PHYSICAL FEATURES AND CLIMATE

The most prominent topographic feature in the vicinity of the property is the Harquahala Mountains, which lie a few miles to the north and extend northwesterly-southeasterly a total distance of some 15 miles (fig. 1). These mountains reach a maximum altitude of about 5,000 feet. The property itself is at an altitude of only about 1,600 feet and in gently rolling foothill country. Maximum relief in the area explored is only about 60 feet. Broad ridges trending southeasterly are separated by gullies or "dry washes" having uniform and gentle slopes. There also are some gently sloping shelf-like areas of considerable extent.

HISTORY AND PRODUCTION

Powell appears to have first found fluorite on the Snowball claims in 1943 while hunting deer. Although some of the workings obviously antedate his find, they are in copper showings, and Powell may be the original discoverer of the fluorite. The property is in what is known as the Ellsworth Mining District. This area has many small precious- and base-metal mines, few if any of which are operating.

In round numbers, recorded production from the Ellsworth District as a whole for the period 1908-33 is as follows: Gold, $211,000; silver, 15,000 ounces; copper, 1,600,000 pounds; and lead, 98,000 pounds. Some of the gold was placer, but most of it was produced from veins. There is no recorded fluorite production from the district. There has been no production of any kind from the Snowball property.

GEOLOGY AND ORE OCCURRENCE

Rocks

On the geologic map of Arizona, the Harquahalas are shown as consisting principally of schists of various kinds and granite gneiss, all of probable Archean age. On the property, bedrock is largely concealed by a thin mantle of soil, caliche, and detritus. There are, however, some rock outcrops, these being principally in the bottoms of gullies. These exposures indicate the claims to be underlain by rocks of the Harquahalas, which, on the property, are cut by felsite and other dikes and in places are rich in lime. Both schistosity and banding tend to dip steeply and to strike northwesterly.

Structure

The only structure recognized on the property in the course of the Bureau's work is a major fault, along which the fluorite occurs. The fault is characterized by brecciation across widths up to 25 feet, parallel and branching subsidiary fracturing, and slickensides. At the outset of the project, the fault was traced on the surface (principally by float) a distance of 2,500 feet, of which 2,250 feet was later cross-trenched. The strike of the fault ranges between N. 60° W. and N. 75° W., averaging N. 69° W. in the length explored. It dips northeast between 38° and 78°.

Ore

Trenching demonstrated the occurrence of four appreciable and distinct concentrations of fluorite along the fault at the surface. Trenching indicates that the fluorite occurs very erratically, as described below.

The fluorite occurs as interlaced stringers or veinlets, cementing a zone of brecciated and altered country rock. These range in width from a fraction of an inch to perhaps 6 inches. They range in purity from perhaps 90 percent fluorite down to very lean material. The lenses also contain very irregularly shaped masses of relatively pure fluorite, some of which are of the order of 10 tons. White and black calcite and quartz are the principal gangue. The black of the calcite appears to be due to both manganese and graphite. The calcite and quartz are in the fluorite-bearing stringers, but the former also occur as masses. Minor gangue minerals are limonite, hematite, and barite. The character of some of the limonite indicates that the ore carries pyrite in the primary zone.

WORK BY THE BUREAU OF MINES

Improving and Building Roads and Clearing Land

The 10-mile branch road leading to the property from the Salome-Hassayampa road had not been used for years and was in poor condition. Six and a half miles of it was improved. On the property itself, 2,400 feet of road was built, and an area along the fault measuring 2,150 feet by 100 feet was cleared of brush. Except for some grading of the branch road, which was done by Yuma County and without charge to the Bureau, all of this work was done with a bulldozer having a 9-foot blade.

Trenching

With the bulldozer, 39 trenches were excavated across the fault (fig. 2). They are on 50-foot centers, as near as depth of overburden and topography would permit. The trenches were 30 to 100 feet long and 1-1/2 to 10 feet deep and involved the removal of about 1,100 cubic yards of material. Blasting of some caliche and boulders was necessary. Four additional excavations were bulldozed across exposures situated between 350 and 600 feet beyond the most westerly trench across the fault and in mineralization different from that along the fault. No fluorite was uncovered in these latter trenches, and no further work was done in them.

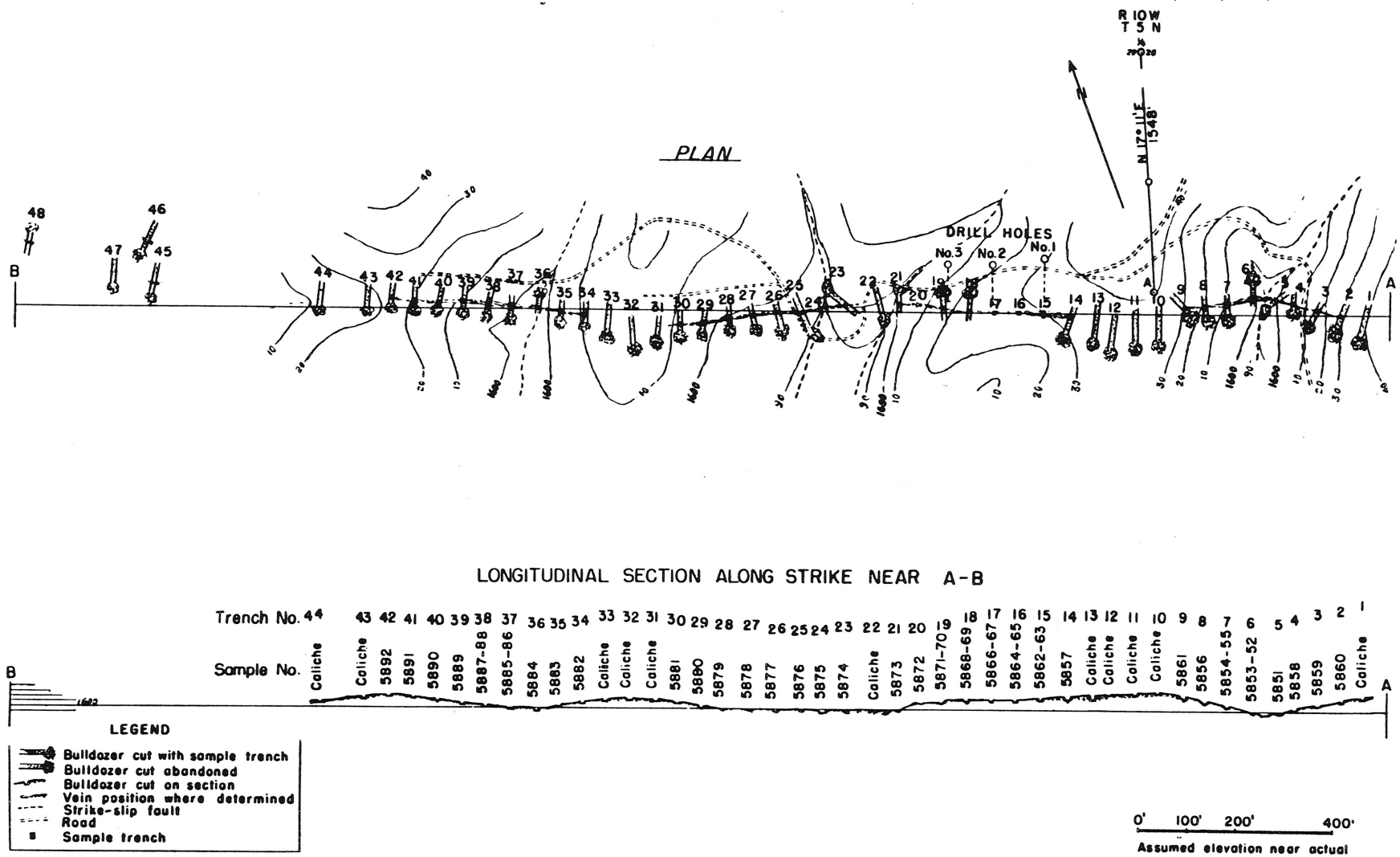

Figure 2. - Sample plan and section, Snowball group.

In the bottoms of 33 of the bulldozer trenches, smaller ones were dug by hand. These were 3 to 4 feet wide, 5 to 6 feet long, and 3 to 6 feet deep and involved excavation of about 2,000 cubic feet of material. They were necessary to get into vein matter solid enough for sampling and also required a good deal of blasting.

Sampling

Some of the trenches did not reach bedrock. In those that did, 42 channel samples aggregating 244.4 lineal feet were cut, about 1-1/2 pounds of material having been taken per lineal foot. Sampling was done in the sides of the trenches but as near the bottom as possible. In trenches showing a marked difference in grade from side to side, both sides were sampled.

Nineteen core samples and 17 sludge samples were taken from the diamond-drill holes.

All samples were assayed for silica, lime, barium, and R_2O_3 as well as for fluorite. In addition, six composite samples made up from drill-hole samples were assayed for gold and silver, and five for copper as well. The returns on these composites were all negative as far as these metals are concerned.

The location and analyses of samples taken in the trenches are shown in figure 2 and table 1, respectively.

TABLE 1. - Analyses of surface samples

Sample	True width, feet	Trench No.	CaF_2, %	$CaCO_3$, %	SiO_2, %	$BaSO_4$, %	R_2O_3, %
5851 ...	3.7	5	3.85	53.98	28.36	0.10	6.80
5852 ...	8.0	6	34.28	23.46	27.54	0.10	8.04
5853 ...	9.0	6	39.20	30.59	20.64	0.10	5.72
5854 ...	11.0	7	21.11	17.71	38.20	0.10	12.68
5855 ...	11.0	7	24.80	17.28	38.12	0.10	10.78
5856 ...	5.2	8	6.29	19.28	51.32	1.16	10.32
5857 ...	7.5	14	4.47	19.24	50.70	1.04	10.36
5858 ...	4.2	4	0.10	42.48	45.72	0.38	5.56
5859 ...	3.3	3	1.16	50.87	40.06	0.10	4.96
5960 ...	3.5	2	2.93	43.84	42.30	0.10	6.52
5861 ...	4.5	9	6.78	41.70	42.08	0.10	5.88
5862 ...	12.0	15	31.70	15.64	38.04	0.10	7.06
5863 ...	12.0	15	36.31	14.82	34.78	0.10	5.80
5864 ...	4.0	16	72.22	9.70	16.08	0.10	1.30
5865 ...	4.5	16	53.06	14.28	25.50	0.10	3.22
5866 ...	4.5	17	34.78	17.56	35.28	0.10	6.28
5867 ...	5.0	17	32.32	21.53	38.14	0.10	4.52
5868 ...	7.5	18	35.50	35.80	20.38	0.10	3.78
5869 ...	8.0	18	41.35	22.49	29.02	0.10	4.18
5870 ...	7.5 shaft	19	21.07	35.98	30.76	0.10	5.40
5871 ...	7.0	19	12.88	26.24	43.34	0.10	8.24
5872 ...	4.5	20	60.67	27.67	9.80	0.10	1.24
5873 ...	4.8	21	26.03	11.32	41.00	0.10	9.44
5874 ...	6.0	23	4.33	32.16	38.14	0.10	11.80
5875 ...	5.0	24	39.56	19.99	28.34	0.10	7.14
5876 ...	2.5	25	28.94	8.82	45.30	0.10	8.42
5877 ...	3.5	26	13.56	21.92	49.18	0.10	7.70
5878 ...	8.0	27	39.30	11.78	37.04	0.10	5.70
5879 ...	3.4	28	26.70	16.64	41.04	0.10	7.18
5880 ...	~~9.5~~	29	31.15	20.10	34.74	0.10	6.50
5881 ...	4.5	30	24.96	24.85	36.42	0.10	6.90
5882 ...	5.0	34	7.97	38.09	44.40	0.10	5.28
5883 ...	4.3	35	5.83	20.17	60.14	0.10	7.22
5884 ...	3.5	36	22.38	7.82	48.24	0.10	9.60
5885 ...	5.5	37	37.70	16.35	31.66	0.10	7.96
5886 ...	5.0	37	32.10	16.07	34.96	0.10	8.50
5887 ...	6.2	38	60.30	9.82	23.52	0.10	3.76
5888 ...	6.0	38	47.39	10.57	31.52	0.10	5.42
5889 ...	4.2	39	10.36	25.42	46.62	0.10	8.84
5890 ...	3.5	40	7.03	19.63	52.96	0.10	10.46
5891 ...	3.6	41	7.93	23.67	46.40	0.10	11.20
5892 ...	3.0	42	1.54	14.28	61.92	0.10	11.34
5893 1/..			89.61	7.57	2.14	0.10	0.60

1/ Selected fluorspar

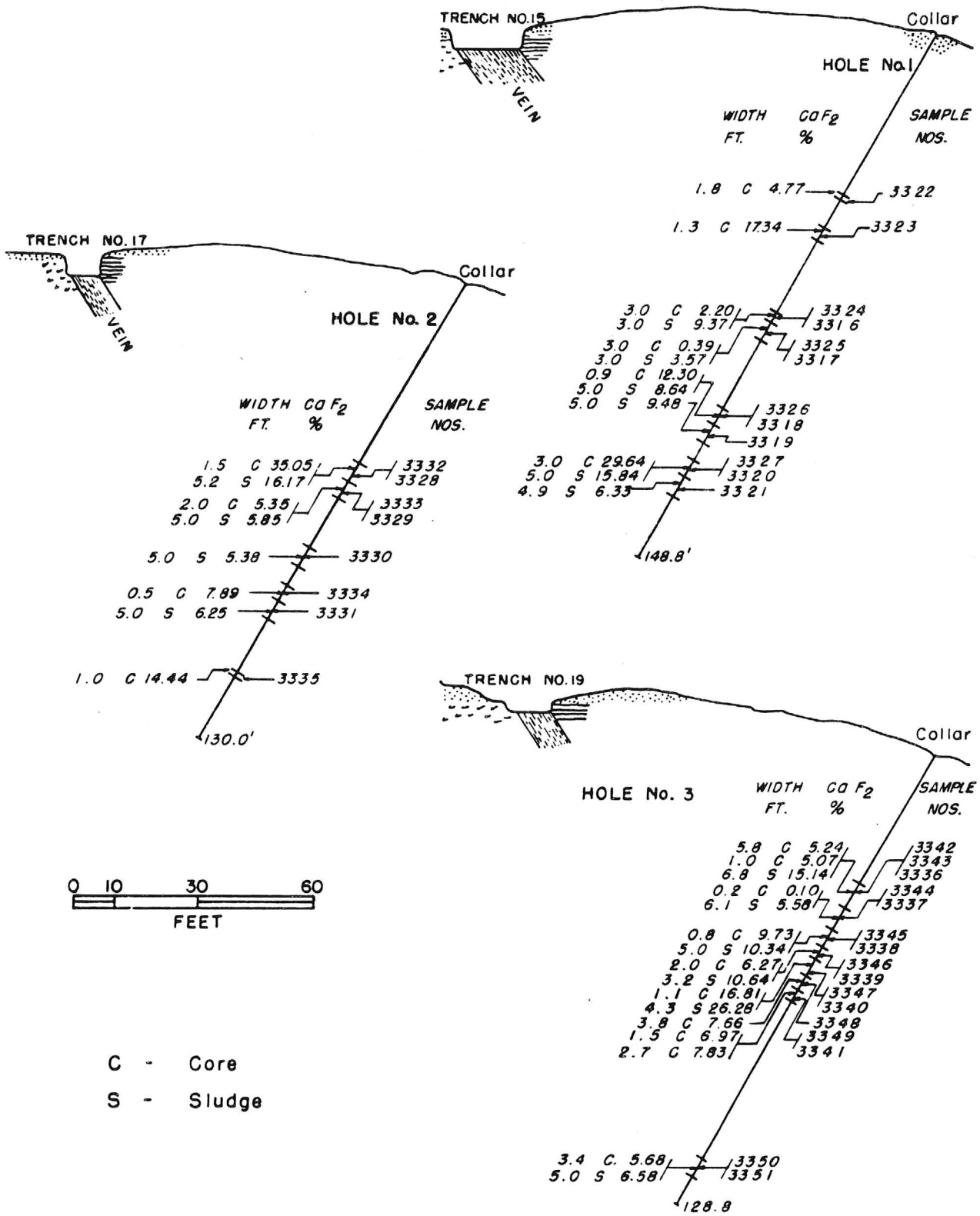

Figure 3. - Section through drill holes, Snowball group.

Diamond Drilling

Using the Bureau's prospect drill, 408.2 feet of diamond drilling was done in three holes, numbered 1 to 3.

The purpose of the diamond drilling was to explore lens 2 in depth. The three holes drilled are on parallel bearings perpendicular to the strike of the fault and are 100 feet apart. The collar of No. 2 hole being opposite the center of the lens, as indicated by the trenching, and Nos. 1 and 3 being to the left and right, respectively. All are inclined so as to intersect the downward projection of the lens 100 feet downdip from the surface. Logs of the holes are appended. From these, it will be seen that core recovery from mineralized sections was very poor, and sludge recovery was only fair. Holes 1 and 2 were cased to 82 feet and 86 feet, respectively, these depths being somewhat above the more significant mineralized sections encountered, and hole 3 was not cased at all. In view of the foregoing, the reliability of the drilling results obtained in this instance is questionable, but they are believed to be accurate enough to indicate whether or not the grade of the material penetrated approaches that of the lens at the surface. Results of the drilling are shown in tables 2 to 7, inclusive, and in figure 3.

Surveying

Excavations and diamond-drill holes were surveyed with transit and stadia and tied to the General Land Office Marker at 1/4 sec. 29 x 28, T. 5 N., R. 10 W. Topography was taken for 2,300 feet along the fault and 300 feet in width.

OPERATING CONDITIONS AND MARKETS

Water Supply

On an idle property known as the Alaska, lying about a mile south of the Snowball, is a 480-foot well said to have furnished enough water for a 50-ton gold-mining and milling operation. On the idle Monterey property, lying about 3 miles northeast of the Snowball, is another well of unknown depth. This latter is said to have supplied a 10-ton gold mill. These two wells are the nearest known potential sources of water.

Power

During the development stage, as well as for a small operation, Diesel power would be the most economical. An electric power line passes through Salome.

Labor, Living Conditions, Climate

Labor was difficult to obtain, but in normal times it would not be a problem. There are no buildings on the property, and no town is near enough to permit employees to commute to work.

Summers are long and hot, but there are no climatic obstacles to year-round operation. This arid climate supports only desert vegetation, such as sagebrush, mesquite, and some pinion pine.

TABLE 2. - Condensed log of diamond drill hole No. 1 (cased EX to 81.8 feet)

Location: 109 ft. N. 20° E. from trench 15
Elevation of collar: 1,632 feet
Depth: 149.4
Dip: 60 degrees

Bearing: S. 20° W.
Date begun: June 28, 1944
Date finished: July 14, 1944

Footage			Recoveries: Core		Recoveries: Sludge	Recoveries: In percent			Core diam.,	Sample Nos.		
From-	To-	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	Description and remarks
0.0	11.5	11.5	0						BX			Soil, caliche, broken schist.
11.5	36.5	25.0	15.9						AX			Schist with 3.8 ft. of diorite. Quartx stringers at 22.5 and 31 ft. and from 33 to 34.7 ft.
36.5	45.2	8.7	4.8									Schist and gneiss
45.2	47.0	1.8	0.3	60						3322		Breccia - cement in lime.
47.0	53.7	6.7	0.0									Do.
53.7	57.8	4.1	2.3	285		56				3323		Aplite, calcite. Sample represents only 53.7 to 55.0 ft.
57.8	78.8	21.0	17.4									Schist and gneiss with some calcite and quartz stringers and some hematite.
78.8	81.8	3.0	1.1	475	2200	37	59	80		3324	3316	Chiefly quartz. Some calcite and schist.
81.8	83.8	2.0	1.8									Schist
83.8	86.8	3.0	0.9	150	1950	30	80	95		3325	3317	Aplite or silicified schist
86.8	106.1	19.3	18.0									Schist with calcite veinlets; brown, limy layers and hematite
106.1	111.1	5.0	1.4	310	3900	28	97	80		3326	3318	Calcite and spar to 108 ft. rest schist. Core sample represents 111 to 112 ft. only and weighed 60 gm. Balance of core weighed 250 gm.
111.1	116.1	5.0	1.0	215	2150	20	52	80		none	3319	Schist
116.1	121.0	4.9	3.2									Schist and red lime
121.0	126.0	5.0	1.9	400	2900	38	74	85	EX	none	3320	Schist. Calcite and spar at 123 and 125.5 to 126 ft.

TABLE 2. - Condensed log of diamond drill hole No. 1 (cased EX to 81.8 feet) (Cont'd.)

Footage			Recoveries						Core diam., in.	Sample Nos.		Description and remarks
			Core		Sludge	In percent						
From-	To-	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
126.0	130.9	4.9	2.0	495	3350	41	89	85		none	3321	Red lime. Calcite and spar from 126 to 126.5 ft..
125.5	126.5	1.0		115						3327		Specimens of better-grade material.
130.9	149.4	18.5	15.5									Silicified, gray, and amphibole schists.

TABLE 3. - Analyses of core and sludge samples from hole 1 (cased to 81.8 feet)

Footage			Samples		Analyses, percent Individual samples				
From-	To-	Feet	Kind	No.	CaF_2	$CaCO_3$	SiO_2	R_2O_3	$BaSO_4$
45.2	47.0	1.8	core	3322	4.77	63.51	16.60	8.16	*0.10
53.7	55.0	1.3	core	3323	17.34	68.04	12.58	1.60	*0.10
78.8	81.8	3.0	core	3324	2.20	18.10	75.28	2.82	*0.10
			sludge	3316	9.37	20.13	52.28	9.68	0.20
83.8	86.8	3.0	core	3325	0.39	3.64	80.30	7.46	*0.10
			sludge	3317	3.57	6.71	62.88	12.24	1.10
106.1	111.1	5.0	core	3326	12.30	74.57	10.60	1.68	*0.10
			sludge	3318	8.64	14.35	47.60	15.72	1.34
111.1	116.1	5.0	sludge	3319	9.48	9.78	46.84	17.20	1.80
121.0	126.0	5.0	sludge	3320	15.84	13.35	38.66	16.74	1.30
126.0	130.9	4.9	sludge	3321	6.33	12.85	52.02	15.60	1.38
125.5	126.5	1.0	core	3327	29.64	31.20	29.62	3.30	2.32

	Ounces/ton		Percent
	Gold	Silver	copper
Composite of all sludge samples (3316-3321)	Trace	None	
Composite of all core samples (3322-3327)	Trace	None	0.08

*Less than.

TABLE 4. - Condensed log of diamond-drill hole 2 (cased EX to 86.5 feet)

Location: 97 feet N. 20° E. from trench 17
Elevation of collar: 1,619 feet.
Depth: 130 feet
Dip: 60 degrees

Bearing: S. 20° W.
Date begun: July 17, 1944
Date finished: July 25, 1944

Footage			Recoveries						Core diam.,	Sample Nos.		Description and remarks
			Core		Sludge	In percent						
From-	To-	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0.0	5.0	5.0	0						BX			Soil, caliche, and brown schist.
5.0	41.2	36.2	17.6						AX			Fresh, gray, broken schist.
41.2	50.8	9.6	7.8									Oxidized schist. Calcite stringer at 42 ft.
50.8	56.0	5.2	1.1	475	7585	21	100	85		3332	3328	Schist and lime breccia. Core sample consisted of specimens weighing 125 gm.; rest of core appeared barren.
56.0	61.0	5.0	3.7	1860	6425	74	112	85		3333	3329	Oxidized schist. Only top 40 percent of the core weighing 755 gm. assayed. Rest looked barren
61.0	76.0	15.0	14.4									Oxidized schist.
76.0	81.0	5.0	2.2	1160	6300	44	98	80		none	3330	Oxidized schist.
81.0	86.5	5.5										Oxidized schist. Some calcite stringers
86.5	91.5	5.0	4.0	1250		80			EX	3334	none	Like above, only bottom 10 percent weighing 125 gm. was assayed.
91.5	96.5	5.0	1.4	315	3925					none	3331	Red lime and schist.
96.5	116.5	20.0	18.1							3335		Oxidized schist with calcite. Spar at 111 ft. and 112 ft. Only the foot from 111 to 112 ft. was sampled.
116.5	130.0	13.5	11.5									Fresh gray schist.

TABLE 5. - Analyses of core and sludge samples from hole 2 (cased EX to 86.5 feet)

Footage			Samples		Analyses, percent				
					Individual samples				
From-	To-	Feet	Kind	No.	CaF_2	$CaCO_3$	SiO_2	R_2O_3	$BaSO_4$
50.8	56.0	5.2	core	3332	35.05	19.74	38.16	4.28	*0.10
50.8	56.0	5.2	sludge	3328	16.17	9.28	44.60	16.08	*0.10
56.0	61.0	5.0	core	3333	5.35	16.46	55.52	12.10	*0.10
56.0	61.0	5.0	sludge	3329	5.85	9.03	45.88	18.90	*0.10
76.0	81.0	5.0	sludge	3330	5.38	7.07	43.70	20.40	*0.10
86.5	91.5	5.0	core	3334	7.89	21.42	58.02	8.06	*0.10
111.0	112.0	1.0	core	3335	14.44	10.75	52.36	13.96	*0.10

	Ounces/ton		Percent
	Gold	Silver	copper
Composite of all sludge samples (3328-3331)	Trace	None	0.10
Composite of all core samples (3332-3335)	Trace	None	0.08

*Less than.

TABLE 6. - Condensed log of diamond drill hole No. 3 (not cased)

Location: 112 ft. N. 20° E. of trench 19
Elevation of collar: 1,603 feet
Depth: 128.8 feet
Dip: 60 degrees

Bearing: S. 20° W.
Date begun: July 27, 1944
Date finished: August 8, 1944

Footage			Recoveries						Core diam., in.	Sample Nos.		Description and remarks
			Core		Sludge	In percent						
From-	To-	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
0	3.5	3.5	0									Sand and gravel.
3.5	5.0	1.5	0									Badly broken schist.
5.0	37.2	32.2	16.4			51						Fresh grey schist.
37.2	43.0	5.8		2060						3342		
43.0	44.0	1.0		200		62				3343		
37.2	44.0	6.8	4.2		7800		96	85			3336	Schist to 41.5, then oxidized schist with limonite, quartz, calcite, and fluorspar.
44.0	50.1	6.1	0.2	70	10750	3	114	85		3344	3337	Quartz, hematite, and siliceous breccia.
50.0	55.1	5.0	0.8	315	7225	16	99	85		3345	3338	Oxidized schist, some calcite, and spar.
55.1	58.3	3.2	2.0	890	4100	62	104	85		3346	3339	Oxidized, silicified schist with iron oxides and some calcite and fluorspar.
58.3	62.6	4.3	1.1	360	3075	26	49	50		3347	3340	Calcite, schist, and some fluorspar.
62.6	66.4	3.8	3.1	1585		82		50		3348		Oxidized schist with calcite veinlets.
66.4	69.1	2.7	1.5	575	1325	55	25	50		3349	3341	Oxidized, silicified schist with limonite and calcite-fluorite veinlets.
69.1	115.6	46.5	41.4			89		75				Chiefly fresh schist, locally oxidized and silicified - a few calcite stringers.
115.6	120.6	5.0	3.4	1660	5050	68	85	75		3350	3351	Fresh gray schist, red oxidized schist, white silicified schist - 1 calcite-fluorite stringer.
120.6	128.8	8.2	6.7									Green schist, white silicified schist, partly silicified schist.

TABLE 7. - Analyses of core and sludge samples from hole 3

Footage			Samples		Analyses, percent, Individual samples				
From-	To-	Feet	Kind	Nos.	CaF_2	$CaCO_3$	SiO_2	R_2O_3	$BaSO_4$
37.2	43.0	5.8	core	3342	5.24	4.07	57.24	17.06	2.20
43.0	44.0	1.0	core	3343	5.07	23.85	49.10	8.76	4.54
37.2	44.0	6.8	sludge	3336	15.14	6.07	51.88	15.10	*0.10
44.0	50.1	6.1	core	3334	*0.10	1.25	91.36	4.72	0.28
			sludge	3337	5.58	2.32	72.22	12.20	*0.10
50.1	55.1	5.0	core	3345	9.73	6.85	58.10	13.12	1.84
			sludge	3338	10.34	2.64	63.22	13.34	*0.10
55.1	58.3	3.2	core	3346	6.27	23.35	50.74	9.46	2.46
			sludge	3339	10.64	13.60	55.66	10.64	0.80
58.3	62.6	4.3	core	3347	16.81	36.34	35.96	6.08	*0.10
			sludge	3340	26.28	13.49	40.68	8.96	0.12
62.6	66.4	3.8	core	3348	7.66	13.24	42.96	19.82	*0.10
66.4	69.1	2.7	core	3349	6.97	11.99	60.20	12.00	*0.10
			sludge	3341	7.83	13.21	56.08	11.04	1.32
115.6	120.6	5.0	core	3350	5.68	6.00	57.48	17.54	*0.10
			sludge	3351	6.58	10.75	49.64	17.46	*0.10

	Ounces/ton Gold	Ounces/ton Silver	Percent copper
Composite of all sludge samples (3336-41 and 3351)	Trace	None	0.10
Composite of all core samples (3342-3350)	0.010	do.	0.10

*Less than.

Machinery and Equipment

The property is without machinery or equipment of any kind.

Topography

Relief in the vicinity of the outcrop is so slight that the deposit would have to be developed through shafts.

Character of the Ground

From the little that is known of this factor, it appears that shrinkage stoping would result in heavy dilution and stoping would have to be done by some form of cut-and-fill. The ground appears to be soft and should drill and blast readily with low consumption of explosives.

Markets

The nearest and steadiest market for fluorite ore and concentrate from the Ellsworth district probably is the Kaiser steel plant at Fontana, Calif., but there are numerous other users on the Pacific coast. Rail freight from Salome to the Kaiser plant and to Los Angeles on minimum 40-ton carload shipments was $5 per ton in 1944.