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REPORT ON NYE-LINCOLN FLUORSPAR  
DEPOSIT IN NYE AND LINCOLN COUNTIES,  
STATE OF NEVADA.

BY:

H. Victor Burgard, Executive Eng.  
International Mineral Evaluation  
and Agronomy Research.  
Suite 306  
Crocker-Anglo National Bank Bldg.  
Sacramento, California.

## INTRODUCTION

This report covers a preliminary geologic and ore value determination of the Nye-Lincoln Fluorspar group of mining claims.

The claims, are possessed in several groups, located on the East side of the Quinn Canyon Range in Eastern Nye, and northwestern Lincoln Counties, Nevada. They are reached by following U.S. Highway No. 6, for about fifty miles to Warm Springs, from Tonopah; thence by good gravel road for about 40 miles to Nyely at the west base of the range, and thence across Cherry Creek summit to Adaven, Nevada, Post Office located at the base of the range. All the claim groups are within a few miles of Adaven, which is about 65 miles West of Pioche, the nearest Union Pacific Railhead, and are within the Nevada National Forest, and most of them are reached by Forest Service, or bulldozer roads.

The claim groups consist of the following:

1. Crystal Group - Crystal, Crystal No. 1; Snowball; Valley View; Bononza; Liberty Bell and Pay Day.
2. Mammoth Group - Mammoth and Mammoth No. 1.
3. Spar Group - Spar; Spar No. 1; Jack Pot; Jumbo and Horsehoe.
4. Cortez Group - Cortez and Cortez Extension.
5. Sunbeam Group - Sunbeam and Halfmoon.
6. Emerald Group - Emerald and Emerald No. 1.
7. The Shannon Queen Claim.

The scope of the examination did not permit detailed geologic mapping or systematic sampling, and specific grade or tonnage estimates are not made. The claim held general area shows wide spread fluorspar mineralization, however, the extensive faulting and zone-shearing are favorable geological factors for economic depositions. The Mammoth and Spar groups present fluorspar exposures of immense proportions and feasi- bly can be made an assured source for the initial ore production, and several other groups can furnish considerable tonnages of good grade mill ore.

The extensive fluorspar zone was, (a) faulted, (b) heavily impregnated with silica and vein-quartz in at least two phases, (c) shattered and crashed by further movements, and (d) recemented by quartz and fluorspar; the latter is purple, green, white and gray. Much of it coarsely crystalline, and occurs in irregular bands as fillings along shear-planes and in the lime-stone breccia. The breccia fragments are sharp and clear on the borders, and there does not appear to be much replacement



of limestone by fluorspar, but much of the limestone appears to be highly silicified. The weathered rock has a typical striped appearance.

The progressive and extensive sampling done during the owner's location work on the 22 claims are made a part hereof, as well as a rough sketch area map, showing roads, creeks and approximate location positions of the Claims.

No instrument surveys were made during these examinations.

The geologic finds and assays so far available, as herein reported reveal that the Mammoth Claim occurrence, and the Mammoth showings on the Spar Claims are of size and grade adequate to justify or support an assured and substantial mining and milling operation. Both deposits are easily accessible with existing roads that require only minimum or minor conditioning, and those two deposits may be readily opened extensively by open-pit mining methods.

The Mammoth and Spar deposits in particular, offer assured possibilities of large tonnage productions at a low cost and with minimum of stripping. The Cortez also can furnish substantial tonnages of good grade mine-run ore for millings. Minimal road work is required, but a bulldozer road can easily be constructed up the main canyon of the Cottonwood Creeks.

The Crystal Group, not extensively developed shows considerable favorable evidence of fluorspar mineralization in the limestone, and spectacular showings in the immediately overlying quartzite along a side breccia zone. The fluorspar occurrences are in narrow fracture zones in the limestone in the Spar and Crystal groups; most of the depositions in the eruptive igneous rocks may prove to be minor in volume but assure considerable mill-ore tonnages.

In their present state the major holdings are favorable prospects for an economic development, while the available exposed tonnages are being utilized. The major work probably can best be done by trenching, either by dozer or hand, together with some short adits in some selected localities. Since the ore bodies are more or less tabular, vertical or steeply dipping, diamond drilling could be a logical method for depth explorations; however, as the ore bodies are mainly of more or less silicious breccias, and quartz, in which fluorspar occurs in soft and friable fillings, it may prove somewhat difficult to obtain desired cores or removals for dependable samples. Also, a contending problem of water loss in core drilling can be expected.

As briefly indicated hereinabove, it appears that the economic establishments of production operations are essentially and primarily assured on the Mammoth and the Spar deposits. Although the latter shows high grade individual assays, the Mammoth deposit, in my opinion, offers the best assurance of large tonnage with minimum handling of waste. Much of the

Mammoth deposit cannot be sampled by dozer trenching, but it can be readily sampled by hand methods, and if desired, it can be explored by a short adit starting immediately at the edge of the wide mineralization. The deposit may also be favorable for core drilling. Much of the Spar mineralized zone can be exposed by dozer trenching, as can also the Cortez deposit and its extensions.

As a whole, the Claim-group deposits present vast tonnage potentials, rather exceptional in favorable occurrences.

The property and geological conditions of the herein designated Nye-Lincoln Fluorspar property, embracing 22 lode claims, as herein summarized, are the findings of E.L. Stephansen, Consulting Geophysicist-Geologist; and, all sample-assays herein reported were taken either by him, during his examinations, or by the property owners during their location and/or Annual Assessment work on the various claims enumerated herein. It is believed that the examination by any engineer will find the said property factors concordant with those herein reported and summarized; with the difference, that some additional work done subsequent to the time when the aforesaid findings were obtained.

Respectfully submitted,

H. Victor Burgard  
Executive Engineer  
International Mineral Evaluation  
and Agronomy Research.

Dated: July 31, 1956.



# ROUGH ORE RESERVE CALCULATION

by  
H. Victor Burgard  
July 1956.

(Copy from his field notes)

<u>Claim-s</u>	<u>Ore Contents</u>	<u>Average Grade</u>
Mammoth Group	1200'L x 125'W x 250'D* =37,500,000 ft <sup>3</sup> = 3,125,000 tons of ore-----	30-35% CaF <sub>2</sub>
Spar & Spar #1.	100'L x 20'W x 100'D* on both side of saddle; =400,000 ft. <sup>3</sup> = approx. 33,000 tons-----	X 80% CaF <sub>2</sub> approx.
Horseshoe (SE end of Pine Creek Group)	Outcrop: 150'L x 100'W x 100'D* =1,500,000 ft. <sup>3</sup> =approx. 125,000 tons ----- (actual length appears to be: 500'L x 100'W x 100'D =5,000,000 ft. <sup>3</sup> =approx. 410,000 tons of ore.	40% CaF <sub>2</sub> approx. X
El Cortez & Extension	1000'L x 8'W x 100'D* =800,000 ft. <sup>3</sup> =approx. 66,000 tons-----	X 42% CaF <sub>2</sub> approx.
Shannon Queen	Approx. 12,000 tons-----	51% CaF <sub>2</sub> approx.
Ceystal Group	Outcrop: 50'L x 30'W x 100'D* =150,000 ft. <sup>3</sup> =approx. 12,000 tons----- Might extend +1000'L	X ?
Liberty Bell	Outcrop: 5'W. 8'W. 10'W.	94.2% CaF <sub>2</sub> 65.5% " 71.7% "
Bonanza	Outcrops: 15' cut 5' cut 20' cut	43.3% CaF <sub>2</sub> 19.7% " 46% "

\* L = length  
W = Width  
D = Depth  
12 ft<sup>3</sup> = 1 ton.

COPY OF ASSAY CERTIFICATE

Kidde Process Corporation, Pasadena, Calif.

Dated: June 27, 1962.

Samples taken by Roberts & Associates.

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<u>Sample</u>	<u>Claims</u>	%CaF <sub>2</sub>	%SiO <sub>2</sub>	%CaCO <sub>3</sub>	%BaSO <sub>4</sub>	%R <sub>2</sub> O <sub>3</sub>
✓ 332V	Mammoth 18' chip sample	55.27	38.28	1.28	0.65	4.52
✓ 333V	Highgrade 15' chip sample	79.00	17.45	1.23	0.37	1.95
/ 334V	Highgrade 5' grab sample	83.02	13.76	1.01	0.30	1.91
✓ 335V	Spar No.1 20' channel sample	71.88	10.83	14.27	0.34	2.68
/ 336V	Spar No. 1 20' channel sample	78.86	12.94	4.77	0.36	3.07

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Mr. Gustave E. Kidde states in the same assay certificate:

"From the above analysis, I would hazard a guess that the ore can be beneficiated, but the extent of such work would have to be worked out. I noticed that some of the samples had the silica present as discreet quartz particles and that might be quite easy to separate."

Continuation of H.V. Burgard's field notes:

<u>Claim</u>	<u>Description</u>
✓ Sunbeam & Halfmoon:	From outcrops: 15' cut --- 27.9% $\text{CaF}_2$ 5' cut --- 50.1% "
Emerald	Only mineralized showings of considerable width.
Crystal	Outcrop 10' Wide & 50' Long. Not sampled. The mineralized zone can be traced for about 2000 ft., on outcrops.

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From notes by H.V. Burgard:

(quoting Cooper Shapley)

"Have done some flotation work on Mammoth ore and the results were good. I used some of the ore we picked up for this test. I wanted to determine if the silica could be freed from the fluorspar crystals and found that I could make a finished product going 0.55%. This is very good as the usual specifications on silica is 1.50%. I did not assay the  $\text{CaF}_2$  in the flotation concentrates, but it would probably go 98.75% or better."

# COPY OF ASSAY CERTIFICATE

Nevada Mining Analytical Laboratory, Reno, Nev.

Dated: February 27 & June 5, 1953.

Samples taken by Hubert Welch.

Sample	Claim	Description	% $\text{CaF}_2$	% $\text{CaCO}_3$	Insoluble
✓ 1.	Shannon Queen	N. half of vein	42.8		
✓ 2.	Shannon "	S. " " "	60.0		
✓ 1.	Cortez	"hole" area	47.2	6.8	46.0
✓ 2.	Sunbeam	- - - - -	20.0	5.6	74 .4
✓ 3.	Shannon Queen	N/E. Corner	73.1	4.9	22.0
4.	Pay Day	- - - - -	trace		
✓ 5.	Cortez Ext.	Calcite rock S.W. end of vein	24.2	8.4	67.4
✓ 6.	Mammoth	near location post	43.6	5.4	51.0

# COPY OF ASSAY CERTIFICATE

Nevada Mineral Laboratories, Reno, Nevada.

Dated: July 10, 1958.

Sample taken by Hubert Welch.

1 SAMPLE. . . . . 45.20%  $\text{CaF}_2$



COPY OF ASSAY CERTIFICATE

By C.V. Rooney

Dated: December 4, 1953

Sample submitted by H. Welch.

	<u>12-HW -1-1</u>	<u>12-HW -1-2</u>	<u>12-HW-1-3</u>
SiO <sub>2</sub>	23.92	5.53	5.93
MgO	.22	3.92	.29
S	.014	0.015	0.21
CaCO <sub>3</sub>	1.28	1.96	.89
CaF <sub>2</sub>	71.20	81.90	87.10
R <sub>2</sub> O <sub>3</sub>	2.02	2.10	2.00

COPY OF ASSAY CERTIFICATE

By: Curtis & Tompkins, Ltd.

Dated: July 29, 1953.

Sample taken by Standard Slag Co.

<u>Sample</u>	<u>Claim</u>	<u>%CaF<sub>2</sub></u>	<u>%CaCO<sub>3</sub></u>	<u>%SiO<sub>2</sub></u>
✓ 53h28	Spar contact zone	81.8	1.56	15.5
✓ 53h29	Mammoth S. end zone	45.2	1.47	47.4

*Staveley*

# COPY OF ASSAY CERTIFICATE

BY: Cooper Shapley

Dated: October 1953.

Samples taken by H. Welch.

Sample	Claim	Description	%CaF <sub>2</sub>
✓ 1.	Horseshoe	below average 25' x 100'	39.4
✓ 2.	Jumbo	Mostly quartz 12' x 100'	60.3
✓ 3.	Jumbo	Average of vein	78.2
✓ 4.	Rocket	Low grade samples	30.5
✓ 5.	Mammoth#1	Gray dolomite (below average)	37.5
✓ 6.	Mammoth	Campground, below average	44.6
✓ 7.	Mammoth	H.G. sample, in canyon	80.1
✓ 8.	Mammoth	25' campground area	56.7
✓ 9.	Mammoth#1	"hole" area 10' cut	23.5
✓ 10.	Mammoth	Blue quartz, below average	33.2
✓ 11.	Mammoth	Green spar, 20' cut	35.2
✓ 12.	Mammoth	75' cut, below average	23.1
✓ 13.	Mammoth#1	Shale spar, below average	23.1
✓ 14.	Mammoth	50' cut, above average	48.5 ✓
✓ 15.	Mammoth	12' cut, hard quartz	22.0
✓ 16.	Mammoth#1	15' cut, below average	16.1 <span style="margin-left: 20px;">28% -</span>
✓ 17.	Bonanza	15' cut, mostly quartz	43.3
✓ 18.	Bonanza	5' cut, spar & lime	19.7
✓ 19.	Bonanza	20' cut, mostly quartz	46.3
✓ 20.	Valley view	25' cut, $\frac{1}{2}$ of vein	73.6
✓ 21.	Valley view	25' cut, other $\frac{1}{2}$ of vein	63.8
✓ 22.	Sunbeam	15' cut, below average	27.9
✓ 23.	Emerald	10' cut, S. $\frac{1}{2}$ of vein	13.0
✓ 24.	Emerald	10' cut, N. $\frac{1}{2}$ of vein	7.6
✓ 25.	Sunbeam	5', brown spar	50.1
✓ 26.	Emerald	6' cut, green & purple	57.4
✓ 27.	Spar	Black spar at dozer hold, P. creek	90.4
✓ 28.	Spar	20' cut	78.0
✓ 29.	Spar	5' cut, about average	23.8
✓ 30.	Spar #1	6' cut, about average	38.4
✓ 31.	LibertyBell	5' (high grade)	94.2
✓ 32.	LibertyBell	8' cut, above average	56.5
✓ 33.	LibertyBell	10' cut, above average	71.7
✓ 34.	Mammoth	Black & White striped spar	53.8
✓ 35.	Cortez	25' vein, "hole" area	48.2
✓ 36.	Cortez	15' cut, below average	27.5
✓ 37.	Cortez Ext.	35' W., "hole" area	79.9
✓ 38.	Cortez Ext.	25' cut, below average	23.7
✓ 39.	Mammoth#1	Shale & Spar "HOLE" area	27.9

## THE NYE-LINCOLN FLUORSPAR PROPERTIES:

### TITLES:

The 22 lode claims are held by Possessory Rights of Location in 1953. They are possessed by a Nevada family as individuals, from whom Robert Welch holds Executed Powers of Attorney, dated October 30, 1953. All annual assessment work has been done as provided by law. THE CLAIMS ARE CLEAR AND UNENCUMBERED.

### LOCATION:

The 22 lode claims are located mainly in Nye County; some are in Lincoln County, in the Nevada National Forest, in sections and Townships hereafter noted.

### CLAIMS AND CLAIM GROUPS:

The Nye-Lincoln Fluorspar property comprises 22 unsurveyed lode claims, divided into six groups and one individual claim. The attached rough-sketch map show the approximate locations, as nearly as they could be oriented without instrument survey.

The groups lie in a narrow belt about 12 miles long extending northeasterly and southwesterly along the middle southeasterly slopes of the Quinn Canyon Range. The Mammoth and the Crystal groups are in the branches of Cherry Creek Canyon. The Spar Group is in the upper portion of Pine Creek Canyon; and, the Cortez, Sunbeam, Emerald Groups and the Shannon Queen Claim are in the drainage area of Cottonwood Creek.

The first 4 groups are in Nye County, and the others are in Lincoln County, State of Nevada. In the following descriptions the groups are mentioned order from Northeast to Southwest.

### GENERAL GEOLOGY:

*Copy from E.H. Stephenson  
revised  
in March 1954*

The chief rocks, in the area, are Paleozoic limestone and quartzite, Tertiary Andesite, Phyolite, and other eruptive rocks. In certain local there are also large dikes or quartz monzonite or similar rocks. The most widespread older rock is a massive gray limestone believed to be the Pogonip limestone of Ordovician Age and is overlain in the northeasterly claim areas by vitreous quartzite, presumably in the Eureka Quartzite, also of Ordovician Age. The Paleozoic rocks are overlain by, or are in fault-contact with the eruptive rocks, which make up a large part of the central mountain mass. In the 3 northeasterly claim groups, the fluorspar occurs in the limestone and quartzite, and in the 3 southwesterly groups the fluorspar in in the eruptive rocks.

All of the extensive rock masses are extensively faulted and sheared, dominately along the northeasterly trends parallel to the axis of the range. Most of the deposit are of vein type, the fluorspar occurring along well defined structural zones and masses that cement fault or sheer breccias. In the northeasterly claim groups some of the fluorspar apparently replaces the gray limestone, but the deposition control is primarily structural, and the deposits can be considered extensively faulted wide vein.



The fluorspar occurs in both the older and the younger rocks along zones of normal faulting and sheering. It may be assumed that the deposits are not older than Tertiary.

#### CRYSTAL GROUP:

FR 11-3  
The Crystal Group of 7 claims is located in the north central portion of T.3N., R.57K., about 2 miles northeasterly of Adaven, Post Office. The only section corner, found during the examination, is the common corner of Section 3, 4, 9 and 10, brass-capped in the north central part of the group. The area is reached over a dozer road that leaves the main road a short distance east of Adaven, and extends up a branch of Cherry Creek. The 4 northerly claims lie in the steep north wall of the canyon, and other 3 claims cover part of the canyon bottom and a low hill to the south.

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The chief rock-mass of the Crystal Group is massive gray limestone overlying massive, vitreous, white to red quartzite. At the crest of the north ridge these rocks are partly capped by light colored rhyolite, but the latter is not associated with the fluorspar deposits. On the lower north slope, on the Crystal Claim, purple crystalline fluorspar occurs in a narrow zone of highly altered, bleached and ironstained limestone, probably a fault zone, that strikes northeastward and dips 60 deg. to 70 deg. southeastward. The zone is partly exposed in the location hole of the claim, about 5 to 10 feet wide. The uphill or footwell side is in sharp contact with unaltered fresh gray limestone but the hanging wall edge is covered. Scattered exposure of altered limestone indicate a considerable strike-length from the mineralized zone, but for the most part it is covered by slope detritus.

h  
Higher up the steep slopes, approximately on the common sideline between the Snowball and Valley View claims and near the east sideline of the Bonanza Claim, and at the general horizon of the contact between limestone and quartzite, there is a broad complex breccia zone of northeasterly trend. Both the limestone and quartzite are highly brecciated, and the zone is marked by complex fault slices of both rocks. Apparently mineralization follows a major fault zone of northeasterly strike and steep southeasterly dip. In the limestone a few exposures show purple and gray fluorspar in the irregular bends and masses cementing the breccia and lining cavities. Fluorspar also occurs in sugary appearance irregular masses and small lenses in the unaltered limestone close to the breccia zone. Due to detrital cover it is virtually impossible to estimate the grade or amount of the fluorspar, but the showing evidence possible extensive mineralization in the limestone.

h  
A short distance uphill above the stratigraphic contact the quartzite also is extensively brecciated and shows abundant white vein quartz in irregular bends. Fluorspar occurs in medium coarse crystals lining and coating joint planes and breccia cavities, and in places fluorspar also occurs in large crystalline masses.

Some is highgrade ore. These strong showings near the base of the quartzite, however, might indicate good mineralization in the limestone.



To the northeast near the crest of the ridge, at the location post of the Valley View claim, there is another outcrop of quartzite breccia 40 or 50 feet long trending in a northwesterly direction 20 or 30 feet wide. It may be on the same main zone of faulting at an intersection with a cross-fault. Here clear crystalline fluorspar cements the breccia and fills cavities, and there is a considerable amount of finely crystalline massive spar. This outcrop appears to mark the northeast end of fluorspar showings in the area.

The Bonanza Claim, which adjoins the west end lines of the Crystal, Snowball, and Valley View has occurrences of fluorspar and geology similar to that of the other claims of the group. The north part of the claim contains a continuation of the limestone quartzite breccia zone, and the north down slope shows fluorspar in veins similar to the Crystal Claims.

The Liberty Bell, Pay Day and Crystal No.1, Claims in the canyon bottom and on the south ridge appear to be marked by narrow mineralized structural breaks in massive gray limestone, similar to the occurrence on the Crystal Claim except that at least some of the faults dip northwesterly.

#### MAMMOTH GROUP:

*From  
L.S.*  
This group consists of the Mammoth and Mammoth No.1 claims, located near the head of Sawmill Canyon, about 3 miles from Adaven, and it is reached by a narrow Forest Service road. The north end line is about 300 feet north of the canyon bottom, and, to the south the claims extend up the very steep canyon wall and along a shoulder of the ridge.

*sk*  
The rock mass in the immediate area is massive gray limestone overlying vitreous white quartzite. The chief structural feature is a broad zone of shearing and brecciation in the limestone, extending from 50 feet north of the canyon bottom northward up the steep slope and along the shoulder of the ridge. The average strike of the zone is about 13 deg. East. Individual shear planes are somewhat variable in dip, but the zone as a whole appears to be about vertical. The sheering cuts across the bedding, and the west side of the zone terminates sharply against beds of gray limestone that strike N. 15 deg. - 30 deg. East, and dips about 20 deg. West.

*sk*  
The East edge on the down slop side of the shoulder is mainly covered. In its central part over a distance of some hundreds of feet, the sheer zone is from 150 to 200 feet wide. It tapers northward and wedges out about 40 to 50 feet north of the canyon bottom, while to the south it either feathers out or is cut off near the location post of the Mammoth No. 1 Claim.

*sk*  
In the north part of the zone purple, green and white or gray fluorspar, much of it coarsely crystalline, occurs in irregular bands and fillings along sheer planes in the limestone breccia.

*sk*  
The breccia fragments are sharp and clear on the borders and not much replacement of limestone by fluorspar, but much of the limestone appears to be highly silicified.

In the south part of the zone fluorspar occurs in finely crystalline masses in the shattered limestone; and assayed samples indicate that the better grade material is composed of about equal parts of silica and calcium fluoride, viz:

- (1) CaRE - 45.20% CaCo3 - 1.70%, SiQ21 - 47.40%
- (2) Ca" - 43.20% " - 5.40% " - 51.00%

No systematic sampling was done, but the above samples and others on this property hereafter noted give a general idea of the grade of the Mammoth shear zone.

Since the zone is at least 700 to 800 feet long and averaging about 100 feet wide and, since the rock shoulder containing most of the zone, stands 100 feet or more above the canyon bottom, it appears that the Mammoth group contains above drainage, a large tonnage of material running roughly from 15% to 45% medium fluoride.

#### THE SPAR GROUP:

This group is located about 1½ miles southwest of the Mammoth group in the upper part of Pine Creek Canyon. The claims actually are in two groups of 3 claims each. The Rocker, Jumbo and Horseshoe claims on the south occupy the upper slopes and crest of a high narrow ridge at the head of a Pine Creek branch, and the Spar, Spar No. 1, and Jack Pot claims lie to the north mainly on a low spur ridge.

The crest of the high south ridge is composed of brecciated quartzite overlying massive gray limestone which makes up most of the body on the ridge. On this Rocket Claim a broad zone of brecciated quartzite and limestone extends down the slope in direction somewhat north of east. Paralleling the breccia zone, of perhaps within it is a wide dike of light igneous rock probably quartz monzonite porphyry one of a series of dikes that appear to follow this structural zone a long distance northeastward towards Cherry Creek.

On the Jumbo Claim, just below the east end of the hillcrest, there is a breccia zone in gray limestone a short distance strike about N. 25° E. Shearing in the overlying quartzite indicates a steep northwesterly dip. Fine white to clear fluorspar occurs in irregular bands mainly as a cement in the limestone breccia.

Some of the limestone fragments, however, appear to be altered and partly replace. Most of the fluorspar showings occur in float blocks 3 to 10 feet in diameter and have the appearance of impure vein material.



The strike length of the fluorspar showings is about 100 feet long along the slope, and the blocks indicate a vein about 10 feet wide. The local is difficult of access, lying high on a ridge marked by quartzite cliffs and which are very steep, rough limestone slopes and no development work has been done.

North of the Spar, Spar No.1 and Jack Pot Claims, located mainly on a low spur ridge, the chief geologic features are a northeasterly continuation of the complex structural zone on the Rocket claim; and the entire area is so complex that no detailed determinations were made. Apparently there is a broad zone of complexly faulted blocks of limestone, and quartzite containing a large monzonite porphyry dike or dikes, also complexly faulted. The general trend of the whole zone probably is northeast and southwest, although as indicated on the Rocket Claim, the trend of the mineralized zone as marked by the quartz and fluorspar, may be more nearly east and west.

On the Spar Claim scattered outcrops and a few shallow prospect holes indicate fluorspar mineralization along or near a contact between monzonite porphyry and gray limestone. The contact is well exposed in a dozer cut about 50 feet long at the upper edge of the steep slope leading northeastward into the next canyon. Here the bulk of fluorspar occurs as a fine, dark gray, crystalline mass in a zone 15 to 20 feet wide in altered limestone. The zone also contains bands and crystalline nodules of purple fluorspar 6 inches or more thick, including one well-marked narrow vein about 2 feet out in the porphyry parallel to the contact. An assayed sample of the gray sugary material revealed:  $\text{CaF}_2$ , 81.80%,  $\text{CaCO}_3$ , 1.56%,  $\text{Bi}_2\text{O}_3$ , 15.30%. Apparently along this part of the contact fluorspar and subordinate amounts of quartz have almost completely replaced the limestone. Immediately around the dozer cut the zone is mainly covered, but can be traced 200 to 300 feet down the slope to the northeast.

#### CORTEZ GROUP:

This group consists of The Cortez, and Cortez Extension Claims, located near the headwaters of Cottonwood Creek in Nye County, about one half mile north of the Lincoln County line. At present there is no road to this local. The 2 claims are end to end in a northeasterly direction along the top and northwest side of a sharp hogback ridge. The crest of the main hogback ridge, largely on the Cortez Claim, is a rib 30 to 50 feet thick of lightly silicified volcanics, vein quartz and Jasper. The rib as a whole, both in character and appearance, may be considered as a large vein occurring along a fault zone of northeasterly strike and northwesterly dip. In many places the outcrop is

marked by glassy slickened fault planes striking approximately parallel to the zone and dipping  $60^{\circ}$  to  $70^{\circ}$  northwest. The strike length of the vein zone is between 700 and 1,000 feet.

Fluorspar occurs mainly along the northwest or hanging wall side of the siliceous rib, as interlacing small veins and veinlets cementing siliceous breocia. Crystalline fluorspar also occurs in vugs, and as thick crystalline coating on quartz breocia fragments. In places the ore zone is as much as 20 feet wide and suggest that these occurrences may be spotty along the strike.

Briefly it appears that the zone was (1) faulted, (2) heavily impregnated with silica and vein quartz in at least two phases, (3) shattered and crushed by further movement, and (4) recemented by quartz and fluorspar.

On the Cortez Claim near the center of the main vein zone of white and clear fluorspar, and quartz fill fractures in the shattered hanging wall of a sharply marked fault. At the location post the ore is about 80 feet wide, and it may have a strike length of 100 feet. An assay of this ore revealed:  $\text{CaF}_2$ , 47.20%. It shows a good percentage of calcium fluoride and indicates that the vein contains about an equal amount of silica.

On the Cortez Extension Claim, fluorspar occurs a short distance northwest of the Cortez vein proper, either in the faulted and offset southwest and of this vein, or more likely, in a similar sub-parallel vein. The dip is uncertain but appears about vertical. At the location post at the northeast end this vein is over 30 feet wide, but it tapers out within a few hundred vein in the southwest. The wider part may have a strike length of about 100 feet.

In the location hole the vein appears to contain a larger proportion of fluorspar than does the Cortez vein, as a filling and cementing material in siliceous breocia. An assay of this material revealed 24.20% calcium fluoride, but the grade can be expected to improve the northeast in the wider part of the vein,

#### SUNBEAM GROUP

This group consists of The Sunbeam and The Half Moon claims, is located in a southwesterly branch of Cottonwood Canyon about  $1\frac{1}{2}$  miles southwest ward across the canyon and up the adjoining slopes. The country rock is gray andesite which blankets a large surrounding area. The chief structure is a highly sheared fault zone, marked by brown limonite, striking about N.  $40^{\circ}$ E., and dips about  $65^{\circ}$  northwest. Because of the dip the zone forms a curved appearing outcrop which extends across the canyon for a long distance on either side.



At the location post of The Sunbeam Claim the iron-stained and silicified shear zone is about 50 feet wide all of which may contain fluorspar. The major concentration, however, is in a center enrichment 6 to 8 feet wide, which roughly estimated may contain 25% to 30% fluoride. The fluorspar, which is a light violet, white, and clear in color, occurs in irregular veinlets and small masses cementing the andesite breccia.

At the location post of The Half Moon Claim, a prospect hole exposes about 5" of vein material consisting of light purple, white and clear fluorspar in the interlacing veinlets cementing sheared and brecciated andesite. There are also numerous small vugs, partly filled with fluorspar. Altered andesite fragments appear to make up well over 50% of the vein material.

#### SHANNON QUEEN AND EMERALD GROUP

This group is located within Lincoln County, about 1½ miles southeast of The Sunbeam Group. It lies on the crest and upper northwest slope of a high, steep rhyolite hill, and adjoins the south end line of the The Blue Bell Claim belonging to Joe and Milt Steele. It is reached from a dozer road extending part way up the hill. Fluorspar occurs with white vein quartz along fractures of easterly trend and northerly dip in the Rhyolite. Up the ridge to the southwest on The Shannon Queen Claim there are a number of similar but such smaller sub-parallel quartz veins containing in places masses of high-grade coarsely crystalline fluorspar. A grab sample from a rather small outcrop of green and purple fluorspar assayed P3.10 CaF<sub>2</sub>, but the high-grade appears to be erratic and occurs only in small masses.

The main ore showing on The Shannon Queen Claim lies about 100 to 150 feet south near the west crest of the hill. The major outcrop about 100 feet long, consists of 8 feet or more of a massive quartz vein striking N. 80°E., and dips 60°N. At the post end of the main outcrop it cuts off sharply, but the vein zone marked by outcrops, continues 300 feet or 400 feet down slope to the west. The location pole at the west end of the outcrop exposes about 8 feet of vein quartz and white crystalline fluorspar interstitially intermixed. The assays of two samples at that local revealed 4% to 80% and 60% CaF<sub>2</sub>; the footwall half of the vein shows the 60% CaF<sub>2</sub> and 40% SiO<sub>2</sub>, and the hanging wall half shows the 42.80% CaF<sub>2</sub> and 57.20 SiO<sub>2</sub>, respectively.

That appears to be the best part of the vein, because along the prominent outcrop to the east, quartz appears to predominate. The westerly extension of the zone down the slope is mainly covered but may contain a relatively larger content of fluorspar.



In general these veins in rhyolite appear to be relatively small and of short strike length.

#### THE EMERALD GROUP

This group consisting of the Emerald and the Emerald No. 1 claims, was not examined. It lies across the canyon about  $\frac{1}{2}$  mile east of The Shannon Queen.

#### CONCLUSIONS

\* Immediately hereafter are the assay results from numerous samples by the owner during his location and Annual Assessment work, are generally designated as to various locals, claims and enclosure rocks of the various claims. They may be expected to be concordant with other samples from the various claim exposures; in the aggregate, in my opinion, they present an available tonnage for economic mining and a 100 ton mill operation near the property tonnages.

The overall claims show extensive fluorspar mineralization, and The Mammoth and Spar deposits are easily accessible and are of immediate economic importance. The mine run ore should be milled on the property. Good mill sites and adequate water are available on either Cherry or Pine Creek.

Respectfully submitted

Executive Engineer

\* Having a report  
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