PE-117-9

STATE OF ALASKA
DIVISION OF MINES AND MINERALS

PROPERTY EXAMINATION REPORT

CASTLE ISLAND BARITE DEPOSIT, DUNCAN CANAL, ALASKA

PETERSBURG QUANDRANGLE

WILLIAM H. RACE
State Mining Engineer

December 12, 1963

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INTRODUCTION

The Castle Island Barite deposit is described in U.S. Geological Survey Bulletins 592 and 800. J. A. (Joe) Williams of the Alaska Juneau Gold Mining Co. reported on the deposit in 1922 and 1932. The Alaska Juneau Gold Mining Co. had the deposit drilled by Lynch Brothers of Seattle and the information obtained is to be found in Williams' report of 1932, a copy of which is available in the Juneau office files of the Division of Mines and Minerals.

Williams' report concludes from the drill program that the deposit of 89% $BaSO_4$ is 80 to 100 feet deep and 300 feet in length. The width is indefinite because the deposit dips easterly and thus under the water of Duncan Canal. He reports some inclusions of impure barite, but these are minor and not important to a depth of 40 feet. He states "The deposit contains about 60,000 tons of barite above the high tide line. Below the high tide line to a depth of 40 feet there is about 160,000 tons. The barite above the tide line could be mined quite cheaply, while the 160,000 tons below the tide line could be mined by deep hole drilling but probably not profitably. Underground mining, of course, is too costly to be considered."

Williams reports the following assay results.

Gold	$ 0.20 per ton (old price)
Silver	1.20 oz. per ton
Copper	.05 per cent
Lead	.60 " "
Zinc	1.80 " "
Barium Sulphate	89.60 " "
Silica	4.50 " "
Lime	.04 " "
Copper Sulphate	.08 " "
Lead Sulphide	.69 " "
Zinc Sulphide	2.68 " "
Iron Sulphide	.75 " "
Iron Oxide	.80 " "
Alumina, Magnesia, Strontium, Maganese, Oxide, each a trace.	

The Castle Island barite deposit was examined and sampled by William Race, State Mining Engineer, at the request of Mr. Ray R. Kelly of the Alaska Barite Company. This company has a lease on the property from the Alaska Juneau Industries, Inc., and intends to ship mine-run ore to Seward by barge for grinding and treatment. The ground material will then be sold to the oil industry for drilling mud. The stripping, blasting, and barge loading is under contract to Mr. Bob Day, Petersburg contractor. He is to receive $2.50 per ton plus compensation for unusual work performed. Mr. Kelly states that the price of the finished product in Seward will be $50 per ton in comparison with a present price of about $70 per ton. They intend to mine about 10,000 tons per year.

PURPOSE OF INVESTIGATION

Race was to sample the deposit and verify that the Alaska Barite Company had shot and broken at least 10,000 tons of ore. Kelly made the request to satisfy a requirement of the Alaska Development Corpora-

tion prior to granting a loan. He also said that the tunnel could be counted as part of the broken ore reserve.

THE EXAMINATION

Race and Kelly arrived at the Island about 11:30 A.M. the 12th of December via Lon's Air Service from Petersburg. Mr. Day and a crew of three had blasted the small knob, part of the southeast side of the large knob, and were ready to blast the southern end of the large knob. Drilling was being accomplished with a Gardner-Denver wagon drill. The longest steel used was 20 feet with two-inch throw-away bits. One-and-a-half-inch diameter, 40 per cent Dupont dynamite fired with electric caps was used for blasting.

Race sampled the tunnel, the small knob and the southern end of Island prior to the blast. After blasting, the tunnel was examined and found to be caved to a small degree, and the walls and end were fractured. The afternoon was spent mapping and sampling the large knob, while the drill crew drilled north and west of the tunnel. This last round, when fired, cracked ore for a distance of about 40 feet northwest of the tunnel.

The barite above high tide is well fractured and breaks easily with blasting. If the deposit was on a larger land mass, it could be ripped by a rooter and cat with the use of very little powder. It is probable that a large shovel would experience little difficulty in digging it in place. For these reasons the deposit above high tide could be considered as about 75 per cent broken ore.

The broken ore was mapped by compass with distances paced. The

attached map indicates the sample pattern. The size and location of samples are as follows:

1. A 20' chip sample along the northwest wall of the tunnel.

2. A 5' chip sample along the end of the tunnel

3. A 120' chip sample taken diagonally across the small knob on exposed bedrock.

4. A chip sample taken over an area of about 100 square feet on the southern end.

5. A chip sample taken over an area of about 100 square feet on the northern end of the small knob.

6. A 90' chip taken of broken ore on the southeast side of the large knob. This sample was divided into three sections so that any irregularities in grade might be determined and an average of the whole section be obtained.

7. A 60' chip of ore in place on the east side of the large knob.

8. A 60' chip of ore in place on the northeast end of the large knob.

9. A 144' chip of ore in place on the west side of the Inland from north to south.

Assay results of these samples are attached. The average grade of broken ore is 89.7 per cent $BaSO_4$ with a specific gravity of 4.32. The average grade of all samples is 89.0 per cent $BaSO_4$ with a specific gravity of 4.34.

Tonnage of broken ore was calculated by sketching the deposit as it was prior to blasting and using the length of steel as depth of fracturing. This, of course, yields a minimum tonnage. A weight of 250 pounds per cubic foot was used in calculating the weight to compensate for impurities and natural fractures.

It is estimated that the small knob contains 27,000 cubic feet of broken ore and the large knob contains 78,000 cubic feet of broken ore. On the two knobs there has been a total of 13,000 tons of ore broken.

Considering that lifter shots were drilled at -45° with 20 foot steel, an additional depth of 13 feet can be expected to be fractured. The cracking of the tunnel walls by shots fired on the opposite side of the island (a distance of about 40 feet) indicates that the ore fractured 20 feet beyond the end of the drill steel. Using these factors leads to an estimate of 20,000 tons of broken ore.

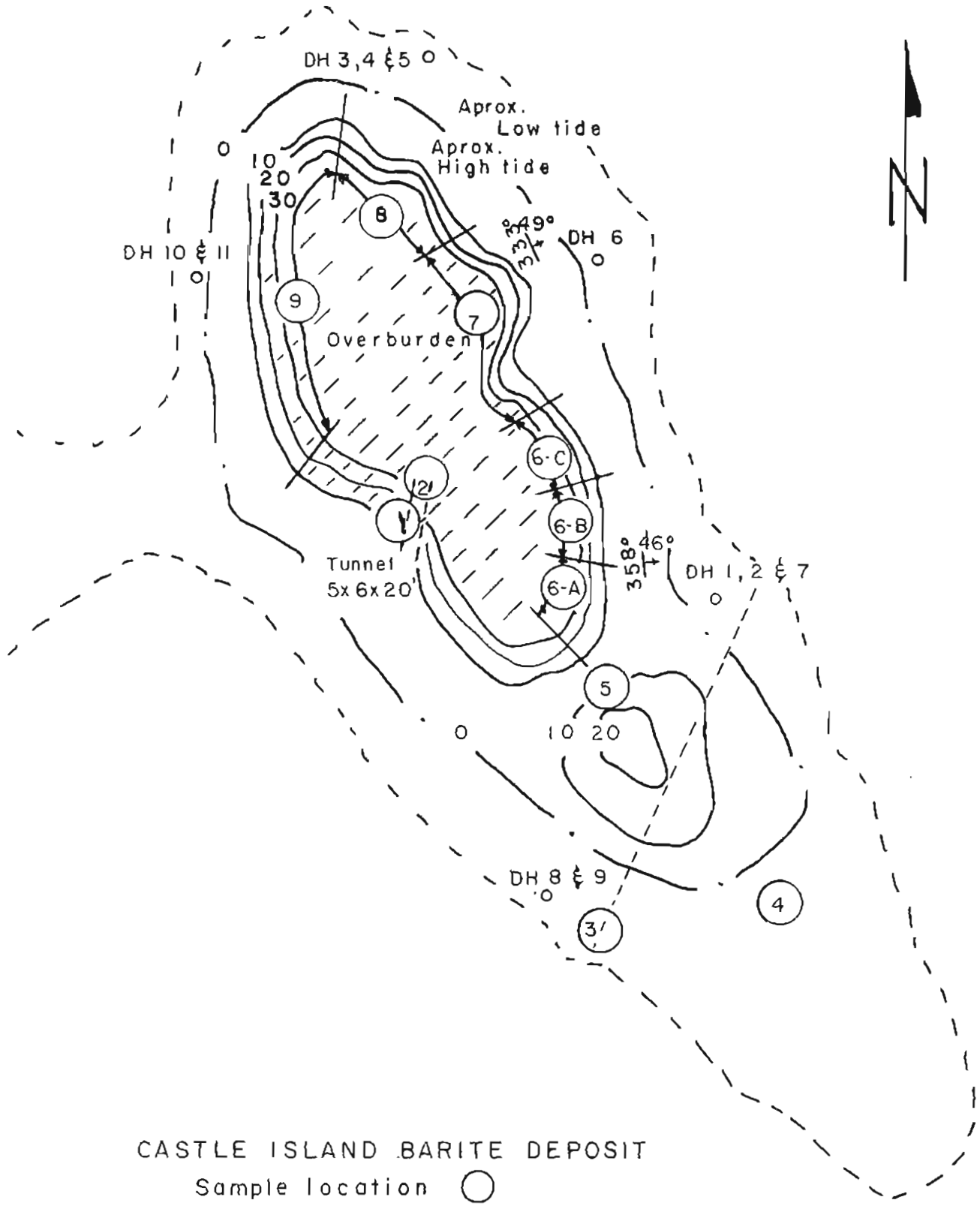
CONCLUSION

Between 13,000 and 20,000 tons of barite ore were broken by the Alaska Barite Company on the Castle Island Barite Deposit. The ore averages 89.7 per cent $BaSO_4$ and has a specific gravity of 4.32.

PLAN & PROFILE of CASTLE ISLAND BARITE

Dotted line indicates outline of broken ore

Scale 1" = 40'



CASTLE ISLAND BARITE DEPOSIT

Sample location ○

Scale 1" = 40'

Brunton – pace by W.H. RACE Dec. 12, 1963

State of Alaska
Department of Natural Resources

COPY

Division of Mines and Minerals

Form M-1-8-62—3M

Assay Office Ketchikan

Date 1/13/64

REPORT OF ASSAY

On samples received from Alaska Barite Co. c/o Bill Race, DM&M, Juneau

Address 1022 N. G St. Tacoma, Washington

Assay No.	Sample Marked	OUNCES PER TON		Value per Ton	Percentage of		
		GOLD	SILVER		Cu	Pb	Zn
17096	BA-1	Nil	0.6		Nil	1.46	1.53
17097	BA-2	Tr.	0.4		Nil	1.70	Nil
17098	BA-3	Tr.	1.2		Nil	1.07	Nil
17099	BA-4	Tr.	1.3		Nil	1.60	1.18
17100	BA-5	Tr.	0.7		Nil	0.94	1.25
17101	BA-6A	Tr.	0.7		Nil	1.40	1.40
17102	BA-6B	Tr.	0.9		0.07	0.57	1.45
17103	BA-6C	Tr.	0.8		Nil	0.51	1.41
17104	BA-7	Nil	Tr.		0.05	0.93	1.38
17105	BA-8	Nil	0.9		Nil	0.53	1.41
17106	BA-9	Nil	Tr.		0.10	0.88	1.23

/s/ Al Gooch

Assayer.

State of Alaska
Department of Natural Resources

Division of Mines and Minerals

Form M-1-8-62—3M

Assay Office Ketchikan

Date 12/31/63

REPORT OF ASSAY

On samples received from Alaska Barite Co. c/o Bill Race, DM&M, Juneau

Address 1022 N. G St. Tacoma, Washington

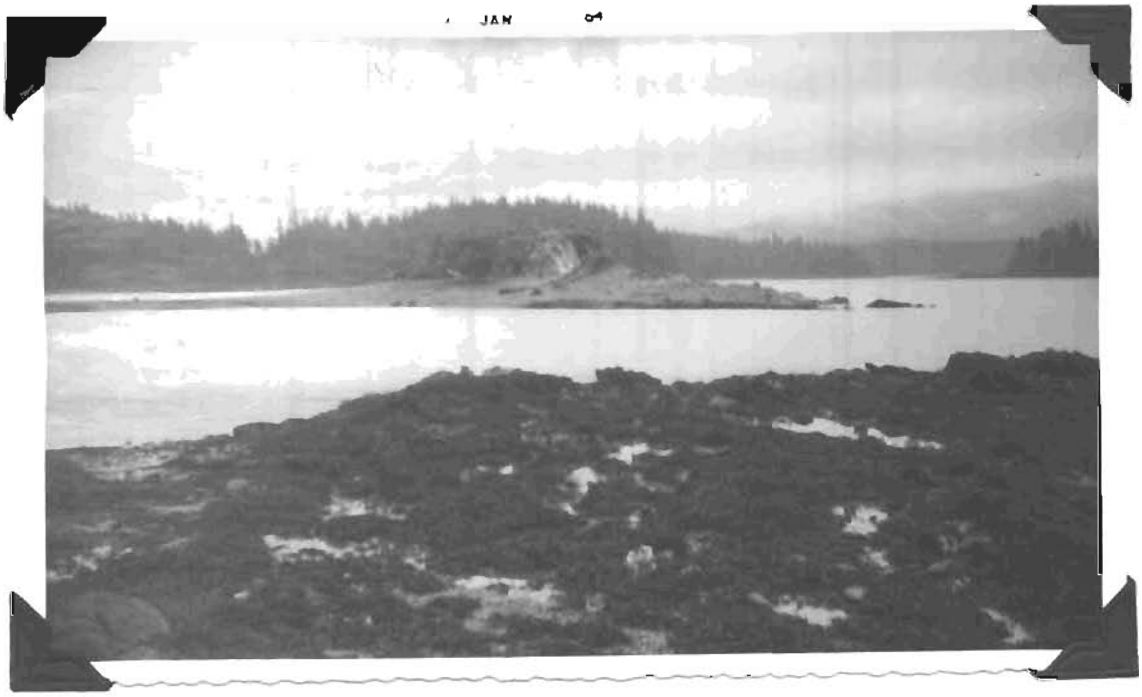
Assay No.	Sample Marked	Value per Ton	Percentage of			
		$BaSO_4$	SiO_2	Fe	CaO	Spec.Gv.
17096	BA-1	92.6	2.49	0.75	Nil	4.33
17097	BA-2	94.8	1.21	0.95	Nil	4.49
17098	BA-3	92.7	2.07	1.36	Nil	4.35
17099	BA-4	93.9	1.63	0.79	Nil	4.40
17100	BA-5	91.7	4.77	0.90	Nil	4.33
17101	BA-6A	88.1	6.65	1.31	Nil	4.38
17102	BA-6B	76.4	19.9	1.09	Nil	3.94
17103	BA-6C	91.5	5.27	1.21	Nil	4.41
	BA-6 (Average)	85.3	10.6	1.20	Nil	4.24
17104	BA-7	87.0	8.89	1.13	Nil	4.40
17105	BA-8	83.2	12.8	6.97	Nil	4.36
17106	BA-9	87.1	8.65	1.12	Nil	4.38
	Average	89.0	4.08	1.05		4.34

Total $BaSO_4 + SiO_2 + Fe = 94.13$

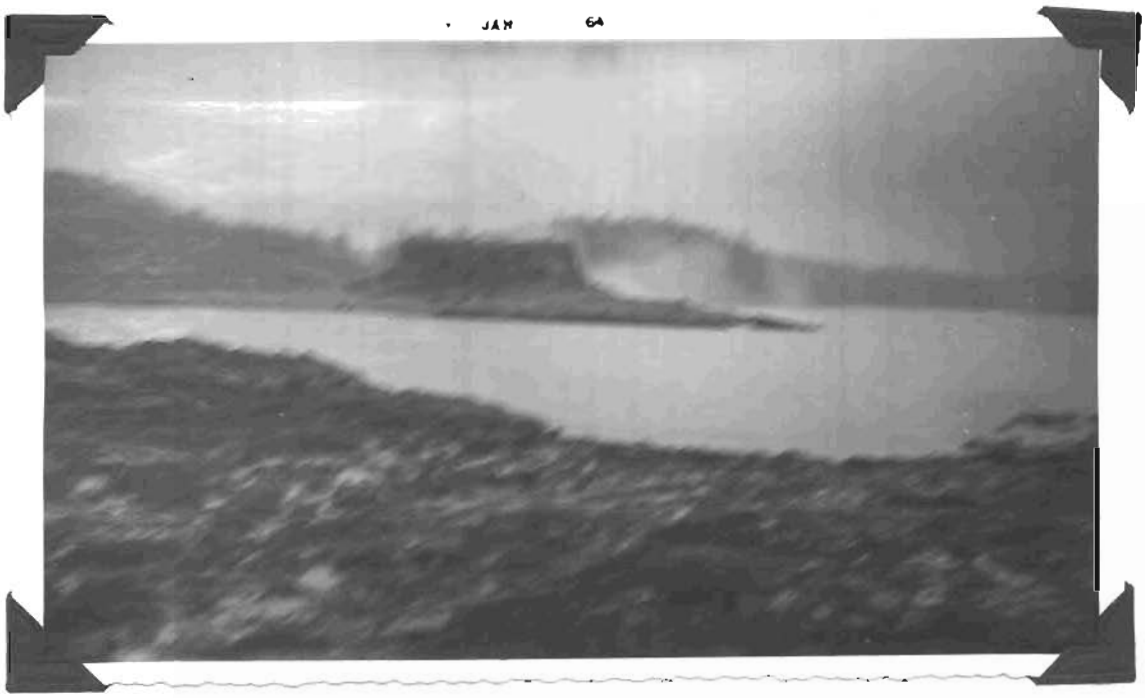
Average Broken Ore	89.7	4.32

A Isaacs/mm

Assayer.



Castle Island from the SE at about a 3' tide.



Blasting southern end of big knob.

Southern end of big knob prior to blasting. Adit in center and broken ore of small knob at lower right.

East side of island showing broken ore on both knobs.

Drilling SE side Castle Island Barite deposit.

State of Alaska
Department of Natural Resources

Division of Mines and Minerals

Form M-1-8-62—3M

Assay Office Anchorage, Alaska

Date January 22, 1964

REPORT OF ASSAY

On samples received from Bill Race - Div. of Mines & Minerals

Address Box 1391 - Juneau, Alaska

Assay No.	Mark	PERCENTAGE OF Pb	$BaSO_4$	SrO	Cu	Fe_2O_3	Zn	SiO_2
16194	Ba-1	0.78	94.5	1.04	Less than 0.1%	0.65	1.13	1-2%
16195	Ba-2	0.69	93.6	1.21	Less Than 0.1%	0.46	1.03	1-2%
16196	Ba-3	0.92	93.9	1.33	Less than 0.1%	0.64	1.30	1-2%
16197	Ba-4	1.03	91.0	1.38	Less than 0.1%	0.55	1.27	5-6%
16198	Ba-5	0.80	93.2	1.36	Less than 0.1%	0.68	0.92	3-4%
16199	Ba-6a	1.01	92.1	0.96	Less than 0.1%	0.64	1.04	6-7%
16200	Ba-6b	0.87	89.8	1.18	Less than 0.1%	0.74	1.38	5-6%
16201	Ba-6c	0.88	83.7	1.02	Less than 0.1%	1.01	1.11	9-10%
16202	Ba-7	0.82	90.1	1.04	Less than 0.1%	0.82	0.84	5-6%
16203	Ba-8	0.78	88.5	1.07	Less than 0.1%	0.85	0.90	7-8%
16204	Ba-9	0.66	91.8	1.03	Less than 0.1%	0.91	0.76	5-6%

1602.20
41.1%

REC'D. JUNEAU
JAN 23 1964
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I.W. Mitchell Assayer.