

1934

ALASKA TIN PROPERTY:

Kt 43-25

MEMORANDUM OF ESSENTIAL DATA OF THE MINING PROPERTY OWNED AND CONTROLLED BY THE NATIONAL TIN MINING CORPORATION, OF SEATTLE, WASHINGTON, TAKEN FROM THEIR BOOKS AND RECORDS AND ALSO ESSENTIAL FEATURES OF THE ORIGINAL COPY OF A REPORT MADE BY MR. FREDERICK C. FEARING, CONSULTING MINING ENGINEER, REGISTERED AS A PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK, LICENSE # 2375.

Located in the York District of Seward Peninsula, Alaska.

24 mineral claims or about 480 acres. Patented and free from encumbrance  
Exploratory development plant and other buildings are on the property.

Several veins and lodes are proven on the property, the main ones being the Cassiterite Lode, which has a general average dip east of the creek of South 72 degrees. West of the creek it dips 75 degrees. In Prospect Pit it has straightened considerably, and the mean dip inside the Randt Tunnel is about 74 degrees to the north. It is well defined igneous body having firm hard walls from which the ore breaks sharply and easily and shows large quantities of gouge and polishing action due to the movement of the dyke walls in time past.

The Ida Bell Lode from observation made in the Ida Bell Tunnel dips vertically.

Looking across the Creek from the Ida Bell dump, one sees a series of veinlets on the farther bank, most of which are parallel. The great majority are merely metamorphosed argillaceous bands of the Port Clarence limestone but carry quartz and minute Cassiterite crystals. A short distance further north another series of veins outcrop \* \* \* they are exceedingly rich in Cassiterite. Still further north along the Creek is another series. All three of the above mentioned vein series have approximately parallel strikes. The latter series, Point 31, also occupies a fault plane as previously mentioned. It is extraordinarily rich in Cassiterite and some of the specimens obtained would do honor to any mineralogical collection. \* \* \* \* The three vein series, 29, 30 and 31, if produced, would join the Cassiterite lode about 270 ft. below Cassiterite Creek. The Ida Bell veins would join it some 650 ft. below the Creek. It should be noted that the apparent locus of the dykes and the Ida Bell veins is at a point almost twice as far below the Creek as is the locus of the three Vein Series and the projection of vein at 60. We doubt, however, whether the Vein Series will ever be found to reach the Cassiterite Lode. We expect instead that it will join an irregularly shaped mass at an elevation too high to make juncture with the lodes possible.

Summing up the known facts regarding the intensity of mineralization and mode of occurrence, we may definitely say that mineralization agents

have been active in this vicinity in quantities and under pressure and conditions far more than sufficient to account for the metallic content of the dykes. There has been no lack of materials essential for the formation of the ore bodies.

The attitude of the dykes and veins with reference to each other, the actual discovery of an intrusive body in the nature of small laccolith, and the mineralogy involved, all point to the fact that the lodes represent ores which have come from an over-abundance of Tin, Tungsten, boron and fluorine elements and probably represent only a small portion of the mineralizing power of an underlying igneous source. We infer that this source lies somewhere between 300 and 700 ft. below the Creek. From the intensity of the surface effects we feel that the depth is certainly not very great. We believe that, as mining operations approach these lower levels, ore bodies will be discovered with a tendency to greater concentration of the metallic values to a point in depth where the intrusive mass itself is encountered.

We believe that the geological structure and mode of occurrence of the dykes, and their minerals, when taken together with the facts to be described hereafter from a study of the samples and specimens, warrant our advising the adoption of plans to sink a winze on the Cassiterite lode from the No. 3 Adit, and, in addition to the sinking, to drift east and west on the Lode several hundred feet below the level of the Creek. We look for the discovery of further ore bodies in the course of this work and the proving up of sufficient tonnage in the existing lodes to fully warrant the erection of a mill of large capacity.

(Note):

Subsequent to the above recommendations, a winze was sunk from the then existing #3 Level to a depth of 425 ft. on the dyke. At the bottom of this winze a north-south crosscut 108 ft. long (33 ft. south and 75 ft. north of the winze) was driven. This showed mineralization throughout its length. It is considered that this crosscut lies in the apex of the parent mass previously described herein. A drift also from the winze at a point 300 ft below the #3 Level for a distance of 245 ft. west along the Lode. These workings have borne out the previous deductions.

A natural normal underground flow sufficient to eliminate the possible hazard of shortage of operating water supply was encountered when the winze was sunk to depth from the #3 Level.

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#### ORE BODIES:

The assured net mineable ore, mainly located above the 3# Level in the Cassiterite Lode, is estimated to be 54,353 tons. The indicated ore in that portion about which information is fairly complete, but not sufficiently so to enable its being classified as assured ore. There are 95,000 tons.

Probable ore embraces a portion of the ores estimated as in place but

which has not been completely exposed to view by development work. Its tonnage and content, although classed as probable, are considered very likely to be realized. We have estimated 592,000 tons in this class.

(Note)

Subsequent to the foregoing classification and pursuant to recommendations made, a winze was sunk from the then existing #3 Level to a depth of 425 ft. on the Lode. At the bottom of this winze a north-south cross-cut was driven 108' long, which showed mineralization throughout its length. Also a drift was driven from the winze at a point 300 ft. below the #3 Level for a distance of 245 ft. west along the Lode. Results disclosed from these further workings warrant the inclusion of the Indicated ore class in the ASSURED ORE class, and the inclusion of the Probable Ore in the INDICATED ORE. Tabulated now, therefore, the classification would read as follows:

ASSURED ORE	149,353 tons.
INDICATED ORE	592,000 "

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Before discussing Possible Ore, it becomes necessary to state that the evidence gained from (a) the mode of occurrence of the dykes, (b) the nature of the mineralization of the ore bodies, (c) the great intensity of the mineralization, and (d) the local structure, is of such unequivocal nature as to carry the conviction that at no great depth (probably 400 to 700 ft. below Cassiterite Creek) there will be found an ore body of far greater extent horizontally than any single ore-body visible at the surface now, and probably running higher in Tin content. In short, there is no doubt in our minds but that the main ore-bodies have yet to be tapped lower down.

POSSIBLE ORE (Estimated)	4,000,000 tons.
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FROM MR. FEARING'S STATEMENT ACCOMPANYING ORE  
RESERVES APPRAISAL UNDER DATE OF SEPTEMBER 1934.

Comparing the figures with those in my original report, the following should be noted:

Assured and Indicated ore of the old report are now designated "Assured" and "Probable" Ore in order to conform to (Government) requirements. Original report contained four classifications, Assured, Indicated, Probable and Possible.

There is now considerably more Assured ore than the old report showed, by reason of subsequent development extending into Indicated ore blocks, now termed Probable Ore. No allowance has been made in the new appraisal for any ore below the elevation of Cassiterite Creek. The appraisal is

for Government purposes and it therefore must be made on a most conservative basis and be capable of withstanding severe critical inspection. Therefore, although the stated expectation, expressed in the old report, that a great deal more ore would be found below creek level has been confirmed by your development below #3 Level, to a point approximately 340' below Creek elevation, I do not include it because the block involved, some 1724' long and 340' high and containing some 500,000 tons is as yet insufficiently developed. It is however to be classed as strongly "Possible" Ore. (Termed "Probable" in the original report).

(Note)

In the original report covering the general analysis of the formation and the derived ore body figures, the Possible Ore was placed at approximately Four Million tons. This is the operating expectancy of this project.

In all 243 cut samples were taken from the properties, excluding dump samples of the several workings taken from the milling tests. All of these samples were cut in nearly every instance in the sight of the writer personally, and always under his immediate direction and supervision.

Samples were taken at 5' intervals, wherever possible. The grooves were cut 4" wide and 1" deep at right angle to the strike of the vein, mainly across the roof of the drifts. While samples were being taken, complete notes were made in duplicate in specially prepared sample notebooks. The duplicate copy of notes was placed in the middle of the sack. No sack was allowed to remain open but was immediately closed, tied and sealed with an impression of the engineer's seal-ring. The samples were all taken under the writer's supervision by steamer to the U. S. and sent to Messrs. Ledoux & Company, 99 John Street, New York, N. Y. Assays were made by this firm, under direction of Mr. A. M. Smoot, Technical Director, who is looked upon as an authority on the assay and metallurgy of Tin and Tungsten ores.

The tabulation which follows shows from what working each sample came, its identification number, location and its position on walls or roof. The contents are shown as percentages of metallic TIN and TUNGSTEN-trioxide. In figuring up the true average assays for the various unit blocks, each result reported by Ledoux & Co. was first examined in the light of values of samples taken on either side of it. If the sample was thought to be too rich, a cut of from 25% to 50% was made before allowing its use in any calculations.

#### ASSAYS:

##### CASSITERITE LODE: #1 Level:

Result of 31 samples. From portal of tunnel for 170.5 ft. average:

TIN: 1.4% TUNGSTEN: Trace

Lowest sample was 0.18% Highest was 5.48% in TIN Another sample went 4.00%. These were deduced 25% in the calculations.

CASSITERITE LODE: #2 Level:

Result of 27 samples. From 51' from portal of tunnel to 141'.

TIN: 1.36%                      TUNGSTEN Trace  
Lowest sample .48%              Highest 4.67%  
A section beginning 71' from portal and extending 47' ran 1% in TIN.  
Next 23' went 2.11% in TIN.

CASSITERITE LODE: #3 Level.

Result of 101 samples taken from 83' in from portal to 640.4 ft.

TIN 1.41%                      TUNGSTEN 0.55%  
Lowest Tin sample. 2 went .22%  
Highest 4.09%                      Highest 1.45%

This tunnel is average elevation of 89'. It is the highest elevation that Tungsten has been found in any quantity. An ore shoot of excellent TIN has been developed on this level from 349' in to the face at 640.4'. From 242' from portal to 532', or 285' the TIN content went average of 1.79% and TUNGSTEN 0.574%. The Tungsten values appear to lie towards the portal than the tin. Beyond the portal in the Prospect pits, Tin is found to be very low on the east side of Creek, with TUNGSTEN from 1.29% to 1.46%. Immediately across the Creek however, Tungsten has dropped to 0.03% in the Randt Pit and TIN has risen to 1.8%.

The presence of Talc coming into prominence near portal of #3 was notable and is of importance since this mineral has been particularly observed in the samples from the Randt tunnel on the opposite side of Cassiterite Creek as well as the intervening prospect pits along the outcrop, and tends to support our conclusions that both developments are on the same dyke.

Samples (13) in raise from #3 to #2 Levels, averaged 1.56 TIN and 0.32% TUNGSTEN.

CASSITERITE LODE: RANDT LEVEL.

Average 27 samples from 48' from portal in to 180' shows 1.00% TIN and .39% Tungsten.

The general history of the Randt tunnel ores and conclusions are the same as Nos. 1, 2 and 3 Levels. It is believed that the values will extend westward to a point where the Ida Bell Dyke cuts this lode.

Mineral begins to break free from gangue at 30 mesh. At 50 but little Cassiterite is left.

ESTIMATED GRADE OF CONCENTRATION:		From 20.80 lbs. from mill test.					
Cassiterite	Mill test: 12.10	Tin	11.98	Tungsten	0.12	Gangue	None
Wolframite	2.17		.04		2.13		None
Sulphides	2.48		.62		.01		1.85
Gangue	4.05		1.22		0.04		2.79
	<u>Totals</u>		<u>20.80</u>		<u>13.86</u>		<u>4.64</u>

Estimated Results.

Grade of Tin Concentrates	68%		
" " Tungsten "	71%		
Impurities in concentrates	Sulphur	1.4%	Arsenic 0.9%

APPRAISAL OF ORE RESERVES.

September 1934.

NOTE:

These figures were computed before the later development was done, that was recommended by Mr. Fearing in his report. Therefore these figures will have to be revised by the larger figures.

ASSURED ORE	Tonnage (short tons)	ASSAYS:		WEIGHT:	
		Tin %	Tungsten %	TIN lbs.	TUNGSTEN lbs.
East of Cassiterite Ck.	105,600	1.40	0.477	28.00	9.50
West of " "	<u>3,700</u>	1.06	0.530	21.20	10.60
	109,300				
Assured Ore on the dumps	<u>3,253</u>				
Total	112,553				

INDICATED ORE:

East of Cassiterite Ck.	49,000	1.40	0.662	28.00	13.24
West of " "	<u>32,000</u>	1.06	0.530	21.20	10.60
Total	193,553				

NOTES: The above tonnage is based on 1266 ft. of underground development and proven outcrop for a horizontal distance of 1724 ft.

The ore in place was samples by channel samples at 182 different locations. A preponderance of these were at 5 ft. intervals, with a considerable number 4 ft. apart. The assays were made by Ledoux & Co. New York

No ore below elevation of Cassiterate Creek is included in the above. Prices: Tin at 50 cts. per pound. Tungsten at \$14.00 per unit of WO<sub>3</sub> (70 cts. lb). Averages calculated by assay areas.

(Signed) Frederick C. Fearing Sept. 10, 1934.

Consulting Mining Engineer  
Registered as a Professional Engineer in  
New York State. (License #2375)