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AWATTO

 August 19th, 1941.

REPORT

or the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1072.

Concentration of Scheelite from the Ores of the Petosa and Manley Mines, in Northwestern Quebec.



CANADA DEPARTMENT OF MINES AND RESOURCES MINES AND GEOLOGY BRANCH

OTTAWA

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Shipment:

BUREAU OF MINES DIVISION OF METALLIC MINERALS

ORE DRESSING AND

METALLURGICAL LABORATORIES

The shipment, received on June 30th, 1941, consisted of the following three samples of ore:

For concentration of the scheelite -

Sample No. 1, Petosa, 12 pounds, and Sample No. 2, Manley, 54 pounds.

For assay only -

Sample No. 2-A, weight 45 pounds.

The shipment was submitted by Mr. E. Wood,

177 Marlborough Avenue, Ottawa, Ontario.

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Locations of Properties:

The property of the Manley Gold Mines Limited is located 6 miles from the C. N. R. station of Dupuy, in the township of La Reine, Abitibi district, Quebec.

The Petosa property is located about 30 miles due east of Ville Marie, in the Timiskaming district, Quebec.

Purpose of the Investigation:

The samples were submitted to determine their scheelite content and its amenability to concentration.

Characteristics of the Ore:

No microscopic examination of the ore was made but from examination of hand specimens the following characteristics were noted:

Sample No. 1. - Petosa.

This sample consisted mainly of white quartz and medium-textured pink-to-brown rock, carrying disseminated pyrite. The pink material appears to be felspathic in nature, while the brown colouration is due to the presence of "limonite" probably arising from weathering of iron minerals.

Examination under the ultra-violet light shows the presence of bands of scheelite some of which are buff-coloured. The bands of scheelite do not appear wider than 1/8 inch and are often present as several layers separated by gangue minerals.

Sample No. 2. - Manley.

This ore consists largely of white quartz, with some sericite, and sparsely disseminated chalcopyrite, pyrite and galena.

(Continued on next page)

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(Characteristics of the Ore, cont'd) -

Under the ultra-violet light the scheelite showed as occasional bands and patches. Much of the quartz showed no indication of scheelite. This sample appeared to contain less scheelite than the first sample.

> 65.JTS .

Investigative Test Work:

The samples were crushed to pass a 14-mesh screen and were then sampled. Analysis showed them to contain:

	bestelen D D	PETOSA	: MANL	EX
	13 D	Sampl.0	: Samplo ;	Sample
and interview of the state of the	e A BUILADENIN	No. 1	: No. 2. ;	No. 2-A.
Gold (Au), oz./ton	0 0 0	0.005	0,99	1.06
Tungsten trioxide (WO.).	3			
per cent	š	5,16	3,58	0.27
Sulphur (S), per cent	10 . 10 .	0,19	0°09	
Iron (Fe), "	9 2 2	1.67	1.62	
Copper (Cu), "	00 00	s0.0	0.05	
Arsenic (As), "	0000	None	None	
The second s	0	detected	detected	112222-1214-121742271/02/24952/17322544/1732254/174222/

Samples Nos, 1 and 2 were screened on 35-mesh and 65-mesh screens, with the following results:

	Sample	No.	1	FETOSA.	
		4 4		Weight,	
40.91 (True Travel)	Mesh		pound	s ; poi	r cent
Manager Processo	, 12 - 1623° - "NACTOLISSING ARTICLES" - 122 (1993) - 222 (1992) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1992) - 222 (1993) - 222 (1992) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222 (1993) - 222	0 0 0	*****************	n kalandi nikon ta Anzarta ya King	mannentaria
-14	+35	a 0	5,73	52	5.3
-35	+65	5	2.53	23	5.6
-65			2.48	23	3,]
		0000	10.74	1.00	0.0
FUNCERSA			BALINA MANA		

(Results of Sample No. 2 follow on next page) (Investigative Test Work, cont'd) -

	Sample	NO o	2, -	MANLE	Γ.	
	Carle and the state of the stat	5 0		Welg	at,	
<u>I</u>	lesh	0	poux	iga i	por con	ţ,
		0 9 9		benefit det brankern	, <u>154</u>	
-14 -	-35	6	29,1	25	54.2	
-35 +	-65	ŝ	12,	25	22 .7	
-65		\$	12.	50	83,1	and contractor 43
		0 0				
		ê	54.(00	100.0	
		o d		19-27-5	- 8 94 % 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Each size was then concentrated separately. The table tailings from all sizes coarser than minus 65 mesh were reground to pass 65 mesh and concentrated with the original minus 65 mesh portion.

The resulting concentrates from the Manley sample were then ground and floated to remove sulphides.

Results:

Table Concentration.

Sample No. 1. - PETOSA.

	(-14+38	5 mesh)		u
	s Wed	lght,	ŝ	Assay,
Product	: 87.9108	; per cent	0 0 0 0 0 0	WO3, per cent
Feed (Cal.) Concentrate Tailing	: 2,585.3 : 173.0 : 8,412.3	100.0 6.7 93.3	-1:0//2423123	57.85 0.75
	(=35+68	i mesh)	V1027/40823	ಾಗಾರು ಹಾಗಾಂಧನಾ-ಕಾರ್ಯಭೂಗ್ರ್ಯಾಂಗ್ರಾಮ್ಮಾನ್ಯಾಂಗ್ರಾಮ್ಮಾನ್ಯಾರ್ಯವರ್ ಭತತಾ
Feed (Cel.) Concentrate Tailing	: 1,135.8 : 81.0 : 1,054.8	100,0 7,1 92,9		63,32 0,47
	(~65 n	nesh)	1242729-84	
Feed (Cal.) Concentrate Middling Tailing	: 4,086,5 105,3 : 667,3 : 3,313,9 :	100.0 2,6 16.3 81.1		56,76 1,69 0,44

The results of table concentration after regrinding the coarser table tailing are as follows:

		PETOSA	- Test	No. 1.	
			: Assay,	; Pounds	:Distribution
Product	s W	eight,	: WO ₃ ,	: of WOz	: of WO3,
	: grams	:per cent	per cen	t: contained	: per cont
NUT WATER AND DESCRIPTION OF THE OWNER OF THE	a internet and a second s Second second s Second second		0 U		o O O
Feed	: 4,367.1	100.00	: 5.54	0,5335	; 100.00
-14+35 cone.	: 173.0	3.96	: 57.85	0.8206	: 41.35
-35+65 "	: 81.0	1.85	; 63,32	0,11.31	: 21.20
∞6 5 "	105.3	2.41	: 56,76	0.1318	; 24.70
-65 middling	667.3	15,28	: 1.69	0.0249	: 4.67
-65 tailing	ະ 2ູ680ູ5	61.38	: 0.32	0.0189	: 3,54
Slime	660,0	15,12	: 1,66	0.0242	: 4,54
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Total conc.	: 359,3	8.22	: 58,76	0.4655	: 87.25
A CONTRACTOR OF A DESCRIPTION OF A DESCR		ל מינים, בינת יציא האו ביני איז איז איז איז איז איז איז איז איז אי	n In the second	and the second of the second	

(Investigative Test Work, cont'd) -

The table concentrates were not floated in this test. 87.25 per cent of the tungsten trioxide in the sample was recovered in a combined concentrate assaying 58.76 per cent WO₃. This concentrate contained considerable sulphides and would require cleaning by flotation.

Microscopic Examination of the Concentrates under Ultra-violet Light:

<u>-14+35 mesh concentrate</u>. - This examination shows the concentrate to contain particles of scheelite, free gangue and a mixture of gangue and scheelite. The metallic minerals are present as sulphides and magnetite.

-35+65 mesh concentrate. - This concentrate appeared similar to the coarser concentrate.

<u>-65 mesh concentrate</u>. - This concentrate contains free particles of scheelite, gangue minerals, and particles with scheelite attached to gangue. The results indicate that part of the scheelite is very finely divided.

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(Investigative Test Work, cont'd) -

Results of Table Concentration.

(-14+35 mesh)									
Weight, Assay,									
Product	grams	; per cent ;	W03, por cent						
Feed (Cal.) Concentrate Tailing	13,157.2 573.7 12,583.5	100.0 4.4 95.6	63.50 0.30						
(35+65 mesh)									
Feed (Cal.) Concentrate Tailing	5,515.1 319.7 5,195.4	100°0 5°8 94°5	63.16 0.11						
(-65 mesh)									
Feed (Cal.) Concentrate Middling Tailing	20,660,4 273,7 400,0 19,986,7	100.0 1.3 1.9 96.8	51,41 15,58 0,18						

Sample No. 2. - MANLEY.

The results of table concentration after regrinding the coarse table tailing are as follows:

		MANLEY -	Te	st No.	2.		
	, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ar leid de lie gennen de leide de leise de leis	بوید. مورد زری	Assay	: Pounds	0 2	Distribution
Product	11	eight,	;	WO ₃₉	: of WOz	ŝ	of WO3,
	grams	per cen	ដ រ	per cent	:contained	ę	per cent
LELD MULTING TO ALL AND THE SECOND AND A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DE	13 m in the george (17 m in the line of th	annan kala a la karal kara ng panaka karang ang panakarang pangang pang pang pang pang pang pan	9 9 9			0	
Feed	: 21,690.6	100,00	2	3,73	1.7843	â	100.0
-14+35 conc.	573.7	ຂ.65	ç	63,50	0,8031	\$	45.0
-35+65 "	319,7	1.47	ŝ	63,16	0.4452	ŝ	24.9
-65 " :	273 7	1,26	ŝ	51.41	0,3102	Q B	17.4
-65 middling	400.0	1,84	00	15,58	0,1374	ŝ	7.7
-65 tailing :	12,218.8	56,34	6	0,05	0.0135	8	0.8
Slime	7,904.7	36,44	ŝ	0,43	0,0749	ŝ	4.2
			4	THE REAL PROPERTY OF THE PARTY		0 P	
Total conc.	1,167.1	5,38	20	60,57	1,5585	ŝ	87.3
ין אין אין אין אין אין אין אין אין אין אין			0 8			0 0 0	NHERONALITY THE PARTY AND A SUMMER

Flotation of Table Concentrates.

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All the table concentrates were ground to about 65 mesh and floated with 8.8 pounds sulphuric acid, 0.2 pound amyl xanthate, 0.1 pound aerofloat No. 25, and 0.1 pound of pine oil per ton. This removed the major amount of the (Investigative Test Work, cont'd)

sulphides.

Results:

Product	:Weight, : per : cent	? A v Av	ssays, : per : WOz	000t	:Distribution : of WO3, : per cent
Feed (Cal.,)	;100,00	3,21	59,53	1,56	100,00
Rough sulphide conc,	° 8 8 35	37.89	38,19		5,36
Cleaner sulphide conc.	: 3,68	80.86	1,72		0.11
Cleaner tailing	4.67	4.51	66,94		5 ° 82
WO ₃ conc. flotation tailing	; 91,65 ;	0.05	61,47	0,15	94.64

94.6 per cent of the tungsten trioxide in the table concentrates was recovered. This represents a recovery of 82.6 per cent of the tungsten in a concentrate assaying 61.47 per cent WO_{TS} .

It is to be noted that continuous tests with full-size tables give better results than can be expected with a small sample.

The results indicate that a commercial grade of concentrate can be expected in large-scale tests.

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