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OTTAWA January 16th, 1942.

REPORT

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1149.

Concentration and Amalgamation of a Gold Ore from the Orelia Property of the Goldorel Mining Company Limited, Mine Centre, Ontario.

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Shipment:

BUREAU OF MINES DIVISION OF METALLIC MINERALS

ORE DRESSING AND METALLURGICAL LABORATORIES

Six bags of ore, total weight 388 pounds, were received on October 24th, 1941, from Mr. W. McG. Brown, President, Goldorel Mining Company Limited, 21 King Street East, Toronto, Ontario.

Previous shipments of mill tailing and ore from this property had been received on June 7th, 1937, March 8th, 1938, and June 27th, 1938, and were reported on in those years.

~ Page 2 ~

Location of the Property:

The Orelia property of the Goldorel Mining Company Limited, from which the present shipment was received, is located on the south shore of Vermillion Lake, Rainy River district, Fort Frances mining division, northwestern Ontario, and is 2½ miles from Mine Centre station.

Sampling and Anelysis:

After crushing, cutting and grinding by standard methods, a representative sample of the shipment was obtained which assayed as follows:

Gold	**	2.50 oz./ton.
Silver		1.53 "
Sulphur	e >	0.59 per cent.
Iron	422	3,02 ⁿ
Copper	633	0.43 "
<u>L</u> ead	a	0,50 "
Arsenic	10	Trace.
Acid insoluble		88.8 per cent.

Characteristics of the Ore;

Six polished sections were prepared and examined microscopically for the purpose of determining the character of the ore.

Gengue -

The gangue consists of milky-white vein quartz with small, sparse patches of fine-grained carbonate. It is transected by narrow sinuous fractures and bears numerous, local, brown, green and blue stains of iron and copper, evidence that the sample has undergone rather severe weathering.

Metallic Minerals -

Metallic minerals are only moderately abundant and many of them appear to be of supergene origin. <u>Chalcocite</u> predominates, largely as small, fine-textured masses containing numerous inclusions of gangue and most of the other metallics. <u>Chalcopyrite</u>, the next most abundant metallic mineral, occurs as small masses and coarse to fine grains, usually in - Page 3 -

(Characteristics of the Ore, cont'd) -

chalcocite but also in gangue. <u>Pyrite</u> is locally common as modium to small scattered grains in gangue, some of which show signs of replacement by chalcocite and "<u>limonite</u>" around edges and along fractures. The latter mineral is also prevalent as small grains and irregular veinlets in the other sulphides and as stains in gangue. <u>Covellite</u> is common in one section as small grains in chalcocite, and a negligible amount of <u>bornite</u> is present in the same manner. As already suggested under "Gangue", <u>malachite</u> and <u>azurite</u> are visible as deep green and blue stains in gangue.

Despite careful inspection of the six polished surfaces under both low and high powers of magnificiation, only two small particles of native gold were observed in the sections. Each is 16 microns (-800+1100 Tyler mesh) in size and occurs alone in quartz.

Characteristics of the Mill Products:

The flotation and table concentrates from Test No. 2 were submitted to determine, if possible, the association of the gold. For this purpose two polished sections were prepared and examined under the reflecting microscope.

General Description -

The sections consist of irregular particles of pyrite, chalcocite, chalcopyrite, covellite, "limonite", gangue, galena, bornite, pyrrhotite, and native gold embedded in the mounting medium (bakelite). These particles range from about 200 microns (~65+100 Tyler mesh) down to a few microns (~2300 Tyler mesh) in size and most of them are free and unattached. Some grains, however, are combined - Page 4 -

(Characteristics of the Hill Products, cont'd) -

with each other, as for example chalcocite and covellite, and some are attached to or enclosed in particles of gangue. As named above the minerals are arranged in their approximate order of abundance.

It is to be noted in passing that galena and pyrrhotite, two minerals not observed in the sections made from the ore, are both visible in the concentrate. The total quantity of pyrrhotite is practically negligible but particles of galena are fairly common and the mineral is present in appreciable amount.

Eleven grains of native gold, ranging from 108 microns (-100+150 Tyler mesh) down to 6 microns (2300 Tyler mesh) in size, were observed and measured. Seven grains are free and four are associated with particles of gangue. In the latter case, however, none is entirely enclosed within gangue.

Investigative Work:

Mr. W. McG. Brown advised in his letter of December 3rd, 1941, that the sample was not representative of the general run of the ore at the mine but was representative of some 300 to 500 tons of ore which had been overlooked in the mining operations of 40-odd years ago.

The engineer for the Goldorel Mining Company Limited, forwarded the following Flow-Sheets Nos. 1 and 2 to be followed in the test work on the ore sample: - Page 5 -

(Investigative Work, contid) -



- Page 6 -

(Investigative Work, contid) -



Flow-Sheet No. 2.

Batch Cyanidation

- Page 7 -

(Investigative Work, cont'd) -

Flow-Sheet No. 3.

This flow-sheet was designed in the Bureau of Mines laboratories.



If it is found necessary, the flotation tailing can be passed over an additional blanket table prior to final disposal.

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(Investigative Work, cont'd) -

An additional test was made, as shown in Flow-Sheet No. 3, in which the ore was ground in a ball mill, concentrated by means of a jig and blanket; the combined concentrates barrelamalgamated, and the amalgam residue added to the blanket tailing. A flotation concentrate was then obtained from this product.

The results of the test work showed that by using Flow-Sheet No. 1 a recovery of 90.7 per cent of the gold was obtained by amalgamation at 66.2 per cent minus 200 mesh grind. 88.5 per cent of the gold was recovered using a 71.5 per cent minus 200 mesh grind, and 89.4 per cent using the finer grind of 82.0 per cent minus 200.

In Flow-Sheet No. 2, where the use of batch cyanidation is included, it was not found possible to follow this method owing to the amount of copper in the flotation concentrate precluding the use of cyanide.

In the additional test on the ore, following the Flow-Sheet No. 3, designed in these Laboratories, 82.8 per cent of the gold was recovered by amalgamation and a shipping flotation concentrate was obtained assaying 20.5 ounces gold per ton, 9.90 ounces silver per ton, 11.85 per cent copper, and 9.82 per cent lead. The overall recovery of the gold was 98.1 per cent.

Details of Tests:

Test No. 1 (A. B. and C).

This test follows the procedure of Flow-Sheet No. 1 as given under "Investigative Work."

Test No. 1-A.

The ore was ground in a ball mill to pass 66.2 per cent minus 200 mesh and the pulp passed over an amalgamation plate, with the following results:

	Plat	e Amalgan	nat.	lon.		
Assays	, Au	oz./ton	? 	Recover	y of	gold,
Feed	4 0	Teiling	3	per	cent	ለ የመድድረ እን የሆኖው የግም የውጭ የድርጉ ይታለማቀይ እ. ይሆኖር በላይ እን ማግኘ የርጉ እን
	D C					
2.50	å	0,96		6	1.6	
171101172172 3 025-00700	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		aziring netari	ang	epar emisedente	uwererse of Parties

The plate tailing was passed through a Denver gold jig, with results as follows:

		JIE COL	166	entratior	3 °					
	0 0	Weight,	e e	Assay,	ŝŢ)istribu	tiox	3:	Ratio of	
Product	е 0	per	ę	Au	0 0	of gold	1,	0	concent	
	3 0	cent	6 0	oz./ton	C	per cer	<u>1</u> t	9 3	tration	
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Feed	" 0	100.00		0.96		100.0				
Jig concentrate	3	2.49		32,00		72.6			40:1.	
Jig tailing	0	97.51		0,27		27.4				
	ş									

The jig tailings were passed over a Wilfley table.

		Table Co	m(entratic	n	0		an ain a mu a mara a na an a' a' muar a' a bha a mar a chua amh a' 18 d an a bhan an thar an thar an tha
	6 0	Weight,	õ	Assay,	2]	Distributio	n;	Ratio of
Product	2	ber	8	Au	ŝ	of gold,	0	concen-
	0	cent	0	oz./ton		per cent	3	tration
and a first first and the statement of the	0 0	******		98 199 Augentug Leis interactionalistic	40-40a	Y A MUTUL PART IN A SUBTINE AND AND AND AND A MUTUL AND AND	2012 Yo MANNY	að fræ en værander sverge av sjónenskýr stjóning sjóniski fræ stjóniski fræ stjóniski fræ stjóniski stjóniski s
Feed	n 7	100.00		0.27		100.0		
Table concentrate	a 0	2,40		2.72		24,2		41.7:1.
" middling	n 2	4.22		0.76		11.9		
" tailing	0	93,38		0.185		63,9		
	0							

The foregoing table concentrate was reasted at a temperature of 500° C. and the calcine added to the jig concentrate. This combined product was then barrel-amalgamated,

o De la constante La constante de (Test No. 1-A, contid) -

with the following results:

	Barı	rel Amalg	ama tion 。	
Assays,	Au	oz,/ton	:Recovery of Gold,	- Linda
Feed	÷ 0	Tailing	; per cent	
NATURATIN I AND AN ADDA AND A AND A AND A AND AND	P P F			
18,22	•	8,99	50.7	
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The amalgam residue, assaying 8,99 ounces gold per ton, was then passed over a %11fley table:

Table ()on	centrati	on of Ame	1] {	<u> zam Residue</u>	0	
	ŝ	Weight,	; Assay,	:]	Distribution	n:	Ratio of
Product	ç	per	: Au	9	of gold,	0 8	concen-
B 400 Cratery web cheefty centering	2	cent	:oz./ton	0	percent	0	tration
landingalandan in ing ang ang a sa langang ang ang ang ang ang ang ang ang a	ູ່ ທີ່ສາງແລະ	a an	ղ է լերգերծող, չնու ներքները, ներքի հանցի է, որ նաև լեք բորջեններ։ 3. ման առմ՝ է երգ քներ՝ են՝ որ են՝ հայ մեն են՝ նվորդեն հետ առե β- Μάλξ	THE HY	and the second	100 C	
Feed	20	1.00,00	8.99		1.00.00		
Table concentrate	0	23,30	35,28		92.5		4.3:1.
Table tailing	* 0	76,70	0.878	5	7.5		
successives and density of the providence of the second of		nzinterinininini	MICHAELE CITATION DEPRESA	ana ar		urrau	umuna iyu dedinikumumetin

The table concentrate, assaying 35.28 ounces gold per ton, was roasted at 500° C. and the calcine was barrelamalgamated.

	2nd Barrel	Amalgamation.	2
Assays, A	u oz./ton	: Recovery of	gold,
Feed ;	Tailing	; per cent	
the Rowshill of the state of the second states	- Janie M.A. La Antonio (1974) (1974) (1976) (1977) (1977) (1977) 1979) 1979 - Alfred Antonio (1977) (1977) (1977) (1977) (1977) (1977) (1977) (1977) (1977) (1977) (1977) (1977)	an a	alan serihar ing karang pang pang pang pang pang pang pang p
35,28 ;	2,32	93,5	
4 6			MUSIC SERVICE STREET

Summary of Test No. 1-A:

Per cent

Gold	recovered	by plets amalgamation	का	61.6
n	n	by 1st barrel amalgamation	सं	15.6
n	u	by 2nd "	स्रो	13.5
Overall	recovery c	f gold by amalgamation	1 24	90.7 per cent

- Page 11 -

(Details of Tests, cont'd) -

Test No. 1-B.

This test follows the procedure of Flow-Sheet No. 1 and was similar to Test No. 1-A with the exception that the grind was 71.3 per cent minus 200 mesh.

Results:

	Ple	te Amal	gamation.	
Assays,	Au o	z./ton	:Extracti	on of gold,
Foed	: 10	iling	; per	cent
100 100 EPER 0 2 2 112 2 100 C 20 1 C	а а а	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	ni (hanana minakan nyangin ang kang kang mang kang kang kang kang kang kang kang k	under eiten volgender die Viewen einer die Steren die Stere b
2.50	0 6	0.88	64.	8
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Jig Concontration of Amalgam Tailing.

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	0	Weight,	: Assay,	:Distributio	on: Ratio of
Product	0 0	per	: Au	: of gold,	: concen-
		cent	: oz /ton	; per cent	: tration
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	° o				
Feed	с Э	100.00	0,88	100.0	
Jig concentrate	0	1.44	30,65	50.2	69.4:1.
Jig tailing	0	98,56	0.445	49,8	
an in a subscription of the second	e e e	an an ann an the state ann an	9135 V.Co.La Co.e 1919 77 567 1264 127 785	ang na managy mangalanana n	a se ser a se

	Table	Co	acentration	of Jig T	ailing.	
tabrada epithida :	an an a bharair a na thairtean 1970. Ta	8	an frantisky state for the state of the stat			
Food	All w	0	100.00	0.445	100.0	
Table	concentrate	2	0,89	21.11	42.2	112:1,
Table	middling	0	1.53	2.42	7.2	
Table	tailing	ĉ	97,78	0.23	50,6	

Conce	ntrai	te + Jig (Joncentrate.
Assays	, A'12	oz./ton	:Extraction of gold,
Feed	0 3	Tailing	; per cent
Contraction of the second s	9 9	10 HI STOLEN I THE STOLEN AND	
27,2	80	15.87	55,11
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Table Concentration of Amalgem Mesidue.

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		0 #	Weight,	: Assay, :I)istributio	n:	Ratio of
Pre	duct	ð	per	: Au :	of gold,	80	concen-
CHIEF Salar Substransard	14 A AL AND EXCEPTION AND REAL AND A STREET AND A STREET AND AND A STREET AND AND A STREET AND AND A STREET	0 9 7	cent	:oz./ton:	per cent	8 0	tration
		9					
Feed		3 0 E	100.00	12.21	100.0		
Table	concentrate	ŝ	16.0	65.76	86.2		6,25;1,
Table	tailing	e e	84.0	2.0l	13.8		
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- Page 12 -

(Test No. 1-B, cont'd) -

Barrel Amalgamation of Roasted Table Concentrate. <u>Assays, Au oz./ton :Extraction of gold,</u> Feed : Tailing : per cent 65.76 : 1.69 97.4

Summary of Test No. 1-B:

Per cent

Gold	l recovered	v n n	plato 1st 2nd	e amal.(carrel "	gamation amalgamu "	ation	រ ខ្ម	64.8 14.1 9.6
Overall 1	recovery of	gol	d by.	sm el ga	amation		6.24	88,5 per cent

Test No. 1-C.

This test followed the procedure of Flow-Sheet No. 1 and was similar to Tests Nos. 1-A and 1-B, with the exception of the grind which was 82.0 per cent minus 200 mesh. <u>Results</u>:

P1	ate Amalgan	ation.	
Assays,	Au oz./ton	Extraction of	gold,
Feed	Tailing	; per cent	generation - practice and file file rates
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	999994 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	9,4 49,5 , 1,1 doi:10.444 49,6 1,5 4,6 7,7 2,0 1,2 1,2 1,2 1,4 1,4 1,4 1,2 1,2 1,4 1,4 1,2 1,4 1,4 1,4 1,4 1,4	ويبدي ويتر رسين ويترجه مردور ويرو محمول ويرو
2,50 ;	0.72	71.1	
0 Californi I. C. C. Trisland de Tarte I. C. (1997)		والمحافظ والمركز وسوار والمحافظ والمحافظ والمحافظ المحافظ والمحافظ والمحافظ والمحاف والمحافظ والمحافظ والمحافظ	17204,241 ************************************

Jig Concentration of Amalgam Tailing.

	0	Weight,	; Assays,	;Distributio	11 :	Ratio of
Product	2	per	: Au	; of gold,	0	concen-
Q	0	cent	;oz./ton	: per cent	ĉ	tration
and an applying provide statement of the state of the statement of the sta	0 0	and a later of the state of the				
	0		A 1111111111111			
Feed	5	100.00	0.72	100°0		
Jig concentrate	5	1,59	16.81	37.1		63:1.
Jig Tailing	e O	98,41	0.46	62,9		
	2					

(Test No. 1-C, contid) -

Table	C	oncentra	tion of J	1g Tailing.		
Product	0 0 0 0 0 0	Weight, per cent	: Assay,: : Au : :oz./ton:	Distributio of gold, per cent	23.: ;	Ratio of concen- tration
Feed Table concentrate Table middling Table tailing	0 0 0 0 0 0 0 0 0 0 0 0 0	100.00 1.12 1.16 97.72	0.46 19.70 1.26 0.23	100.0 48.0 3.2 48.8	fin, argumentado	89:1.

Barrel Amalgamation of Roasted Table

Concentrate + Jig Concentrate. Assays, Au oz,/ton :Extraction of gold,

Contraction to be contracted in the second	2. The second se	Commentation of the second s	/2 L # FV7		
Feed		failing	; p	er cent	
NET CALOUR COMPANY OF THE POINT OF	0			To a stand and a stand of a second stand of the	******
17.94	â	1.84		89,8	
በረድ አር ቀቀ አራላች 68 የሚመታሪ ይኖ ገለዚያን ይኖርስዎ ቅርር የርድ አር ማሳ አራላች 68 የሚመታሪ ይኖርስዎ ቅርር	iy D Miteteritanate	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	ለት የማሽራ ለማድረጉ የመረጉ በርጅም የሚቀት የሚኖሩ የ የታይ የሚሰሩ የማድረጉ የሚያት የሚያት የሚያት የሚያት የሚያት የሚያት የሚያት የሚያት	ቂ ተሆር ምራላም ጭሳዲሽ ያሳቂ እርጊ ይደርጋቱ ያ ለተሻጥ የሚቀን የሚፈናም። የሚያ ገኝ የማቀረ የመደር የመደር መድር እንደ የሆኑ የማግረት ማስተኛ ማሪያ የሚያ	12 k T 1 27 J k 291-err 2 x 25 27 73

Table Concentration of Amalgam Residue.

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Pro	duct	60	per	:	Au :	0.ľ	gold,	d D	concen-
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Feed		0	100.00		1.84	10	0.0		
Table	concentrate	0	12,52		6.47	4 .	4.4		8:1.
Table	tailing	00	87,48		1.17	5	5.6		
		00							
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Barrel Amalgamation of Roasted Table Concentrate.

	<u> </u>	0140012.04.05	0 (
Assays,	Au	oz./ton	Extraction of gold,
Feed	è	Tailing	; per cent
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6,47	0 0	2.00	69.17
	0		
CONTRACTORIZATION AND A DEPARTMENT OF STREET		A. THING & CARTON MAN & M.M. 1.261 & THE PTL. THE	the second of the second state of the second state and the second state of the second state of the second state

Summary of Test No. 1-C:

Per cent

Gold recovered	by plate amalgamation	- 71.1
n n	" lst barrel amalgamatio	- 17.7
n n	" 2nd " "	- 0.6
Overall recovery of	gold by amalgamation	- 89.4 per cent

120112

(Details of Tests, cont'd) -

Test No. 2. - Concentration, Amalgamation and Cyanidation.

In this test the procedure followed Flow-Sheet No. 2. The ore was ground in a ball mill to pass 60.2 per cent minus 200 mesh and the pulp passed through a Denver gold jig. The jig overflow was classified and the sands reground and passed through the jig. The combined jig overflows were concentrated on a blanket table and the blanket tailings conditioned and concentrated by flotation. The combined jig and blanket concentrates were barrel-amalgamated. The amalgam residue was concentrated on a Wilfley table and the resulting table concentrate combined with the flotation concentrate and agitated in cyanide solution for 24 hours. Results:

	Jig Cond	centration.		
Product	:Weight : per : cent	,: Assays,: : Au :oz./ton :	Distribution: of gold : per cent :	Ratio of concen- tration
Feed Jig concentrate Jig tailing	100.00 3.37 96.63	2,50 50,38 0,83	100.0 67.9 32.1	29.7:1.
Blanket Co	oncentra	tion of Jig	Overflow.	
Feed Blanket concentrate Blanket tailing	:100.00 : 1.09 : 98,91	0.83 39.45 0.405	51.8 48.2	92:1.

era Lateral d'Altri character desagente va prej des	Flota	tion of	Blanket Tai	lling.	en
Feed Flotation Flotation Flotation	concentrate middling tailing	1.00,00 1.74 1.14 97.12	0.405 16.48 2.70 0.09	100.0 70.8 7.6 21.6	57.5:1.
		:			

In the flotation of the blanket tailing the pulp was conditioned for 10 minutes with 3 pounds of soda ash per ton and a concentrate obtained by the addition of 0.07 pound Z-8, 0.09 pound Barrett No. 4 011 and 0.10 pound of pine oil per (Test No. 2, contid) -

ton. This concentrate was cleaned in a smaller machine.

The jig and blanket concentrates were barrelamalgamated with the following results:

Assays,	Au oz./ton	:Recovery of	gold,		
Feed.	: Tailing	: per cent			
100 00					
47.90	0.40	99.2			

The amalgam residue was concentrated on a Wilfley table with results as follows:

Product	: Weight, : per : cent	,: Assay,:] : Au : :oz./ton:	of gold, per cent	n: Ratio of : concen- : tration
Feed	100.00	0.40	100.0	5:1.
Table concentrate	20.17	0.64	32.3	
Table middling	25.94	0.42	27.3	
Table tailing	53.89	0.30	40.4	

The table concentrate and the flotation concentrates were combined and assayed 10.51 ounces gold per ton, 8.90 per cent copper, and 10.30 per cent lead.

This product was agitated in cyanide solution of per ton 1 pound/strength for 24 hours.

No appreciable extraction of the gold was indicated in the assay of the resulting cyanide residue. The consumption of cyanide was extremely high (60 lb./ton) and it was not found possible to maintain the strength of solution, this result, of course, being due to the large percentage of copper (8.9 per cent) in the concentrate.

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(Test No. 2, cont'd) -

Summary of Results, Test No. 2:

Gold	recovered by barrel amalgamation	of		Per cent
	jig + blanket concentrates			83,8
Gold	recovered by flotation		Ban	4.0
	Overall recovery of gold			87.8 per cent

Test No. 3. - Concentration and Amalgamation.

In this test Flow-Sheet No. 3 was followed. The ore at minus 14 mesh was ground in a ball mill to pass 60.2 per cent minus 200 mesh, the pulp was then passed through a Denver gold jig. The jig overflow was classified and the sands reground and again passed through the jig. The jig overflows were passed over a blanket table. The combined jig and blanket concentrates were barrel-amalgamated and the amalgam residue added to the blanket tailing. This product was thickened and transferred to a Denver flotation machine. It was then conditioned and a flotation concentrate obtained. The concentrate was cleaned in a smaller flotation machine and a shipping grade of concentrate secured.

Results:

	Jig Co	oncentrati	on.	
Product	:Weight,	: Assay,:	Distribution:	Ratio of
	: per	: Au :	of gold, :	concen-
	: cent	:oz./ton:	per cent :	tration
Feed	100.00	2.50	100.0	14.3:1.
Jig concentrate	7.00	28.14	78.8	
Jig tailing	93.00	0.57	21.2	

(Test No. 3, cont'd) -

B.L. anko u	Concenti	ration of	Jig Tailing.	
	: Weight	, : ASSEJ, :	Distribution	: Ratio of
Product	per	: Au ;	of gold,	: concen-
ም ማይት መሆኑ የሚያስት ላይት የአካሪት ምርብ አንድር በአማ የሆኑ የ አስተዋሪ የሆኑ	cent Sent	302./ton:	per cent	tration
	>	A CONTRACTOR OF CONTRACT OF CONTRACT	an ang ang ang ang ang ang ang ang ang a	and a star of the second star and the second second second star star and the second second second second second
Feed	00.00L	0.37	100.0	
Blanket concentrate	1.43	26.07	65.4	70:1.
Blanket tailing	98,57	0.20	34,6	
LLARINTERS A REALTING AND A REALTING A REALTING AND A REAL A REALTING AND A REAL	ar ar ar and the state of the second state of the second state of the second state of the second state of the s	arean dharachan an an	an wal Province Calendary and an and an and an	and all hand to she training that is

The jig and blanket concentrates were combined and barrel-amalgamated. The amalgam residue was added to the blanket tailings and assayed 0.43 ounce gold per ton, giving a recovery of 82.8 per cent of the gold in the ore by amalgamation.

Flotation of Amalgam Residue + Manket Tailing.

The pulp was transferred to a Denver flotation cell and conditioned for 10 minutes with 2 pound of soda ash and 0.07 pound of Aerofloat No. 25 per ton; 0.075 pound of pine oil, 0.05 pound of No. 208 and 0.05 pound of No. 301 promotors per ton were then added, and a rougher flotation concentrate was obtained. This concentrate was cleaned in a smaller flotation cell.

Results:

EC/13/2016 (2012) (2012) (2016) (2016) (2016) (2016) (2016) (2017		WORKSTONE IN THE LINE AND A COMPANY			
Product	00 00	Weight, per	: Asey,: : Au :	Distribution of gold.	: Ratio of : concen-
n an shekara shekara shekara taran karan ku a sa s	0	cent	:02./von:	per cent	: tration
Feed Flotation concentrate Flotation middling Flotation tailing	57 50 50 50 70 8	100.00 1.77 2.30 95.95	0.45 20.58 0.98 0.045	100.0 84.7 5.2 10.1	.56 ;l .
n to discussion of the second s	C	A Read Low Product of the second s			

The flotation concentrate assayed 20,58 ounces gold and 9.90 ounces sliver per ton, 11.85 per cent copper, and 9,82 per cent lead.

- Page 18 -

(Test No. 3, contid) -

Summary of Test No. 3:

(a.a.1.4)	nacorrorad bre unal annatilan of		Per cent
aoy.a.	jig + blanket concentrates	6 77)	82,8
Gold	recovered by flotation of amalgem residue + blanket tailing	ç	15.3
	Overall recovery of gold	eo.	98.1
			per cent

Barrel Amalgamation.

In the different barrel amalgamations it was found that the addition of about 2 pounds of lime and 0.5 pound of potassium bichromate per ton had a beneficial effect. The shipment was considerably weathered and rather badly oxidized and unless the foregoing reagents were added the mercury fouled considerably during the amalgamation process.

SUMMARY AND CONCLUSIONS:

The different tests show that a recovery of 89 per cent of the gold in the ore by plate and barrel amalgamation resulted from the application of Flow-Sheet No. 1, as laid out by the engineer for the company, and given in detail on Page 5.

Flow-Sheet No. 2, which was also supplied by the company and included cyanidation of the flotation concentrates, was not found to be feasible, owing to the large amount of copper included in the concentrate.

In addition to the above a test was made, using Flow-Sheet No. 3, in which the pulp was passed through a gold jig and over a blanket table. The ensuing concentrates were barrel-amalgamated and the amalgam residue added to the - Page 19 -

(Summary and Conclusions, contid) -

blanket tailing. A flotation concentrate was then made of this product. By this method 82.8 per cent of the gold was recovered by amalgamation and 15.3 per cent recovered in a flotation concentrate. The ratio of concentration was 56:1. This concentrate assayed 20.5 ounces gold per ton and would constitute a high-grade shipping product.

It is indicated, by the results obtained from the different flow-sheets, that the simplest method would involve the procedure as given in Flow-Sheet No. 3, in which only one amalgamation is necessary and only some 2 per cent of the gold is lost in the tailing after a shipping concentrate is obtained.

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