

2160 0010

C O P Y

(Letter head of)

MINERALS SEPARATION NORTH AMERICAN CORPORATION  
220 Battery Street, San Francisco, Cal.

December 28, 1934

EHNm

H. B. Chessher, Esq.,  
Room 1302,  
1411 Fourth Avenue,  
Seattle, Wash.

Dear Mr. Chessher:

In accordance with my letter of the 24th I enclose herewith report to me by Mr. Williams giving the results of a number of tests we made on the sample of ore from near Goldfield, Nevada, which you submitted to us.

It would appear from these tests, as Mr. Williams points out, that the procedure outlined in Test No. 3 offers the most promise, as a reasonably high grade concentrate was made with a fair recovery, and then a middling made which would cyanide, giving additional substantial recovery.

Although depending on the freight and treatment charges, it would be as well to make an economic comparison of the results of Tests No. 3 and Test No. 1.

While Mr. Williams indicates that further extended tests would probably improve these results, it would seem that they would be in the range indicated by our tests.

If there is any further information you would like about these tests, please let us know.

As you doubtless know, the use of our processes is let under license on royalty, and if you decide to go ahead and install a flotation plant we would be pleased to cooperate with you and license you to operate under our patents. The royalty is One Cent per ton of ore treated.

I enclose our check for the balance of your deposit.

Very truly yours,

EDWARD H. NUTTER

Chief Engineer.

(91) Item 10  
Item 10

C O P Y

MINERALS SEPARATION NORTH AMERICAN CORPORATION

220 Battery Street, San Francisco, Cal.

December 28, 1934

CFW-S

Edward H. Nutter, Esq.,  
Chief Engineer, Minerals Separation N.A.C.,  
San Francisco, California.

Re: GREAT BEND MINE.  
(Mr. H. B. Chessher)

Dear Sir:

Herewith are the tabulated results of three laboratory tests on a sample of gold ore from the above mine.

The gold occurs largely intimately associated with pyrite, a part of which is very finely disseminated in the gangue. A small part of the gold, about 7% of the total, occurs as native metal amalgamable at 65 mesh grinding.

As shown in test 1, flotation treatment of pulp ground to about 100 mesh results in good gold recovery, but, due principally to the presence of many mechanically combined pyrite-alumina gangue particles, the flotation concentrate is of relatively low grade.

In test 2, cyanidation of flotation concentrate (which was made from pulp ground to 100 mesh) shows that method to be of little promise, since extraction of gold was poor.

In test 3, flotation rougher concentrate resulting from treatment of pulp ground to 48 mesh, was refloatated, making a clean pyrite concentrate of good gold content, and a middling which consisted mainly of pyrite-alumina gangue particles. The middling product was then reground and cyanided. While extraction of gold from the middlings was relatively low, overall recovery of gold (by flotation and cyanidation) was 83%.

Probably an extended series of tests by the method used in test 3 would result in improved overall recovery.

Very truly yours,

CARL F. WILLIAMS

(Great Bend Mine - Mr. H. B. Chessher, Goldfield, Nevada)

REAGENT CODE

Z 5 Potassium amyl xanthate  
20 S Hercules Yarmor pine oil  
4 I Barrett No. 4 flotation oil  
NaCN Sodium cyanide  
CaO Lime  
Z 3 Potassium ethyl xanthate  
4 AA Scotch blast furnace oil  
2 B Cresylic acid  
Soda ash  
CuSO<sub>4</sub> Commercial copper sulphate

C O P Y

MINERALS SEPARATION NORTH AMERICAN CORPORATION

220 Battery Street, San Francisco, Calif.

Sample of Gold Ore from GREAT BEND MINE, sent by Mr. H. B. Chesser, Gold-field, Nevada.

Date: December 26, 1934

TEST No. 1  
Sample No. 57192

Weight 1000 Grams

		Reference 28-372-1		
		ASSAYS	DISTRIBUTION %	
	Produce	% Wt.	Au Oz/Ton	Au
57200	Head	100.0	0.279	100.00
	Amalgam		0.02 Oz/Ton	7.2
57201	Conc.	12.94	1.84	64.6
57202	Tail	87.06	0.026	8.2

PROCEDURE: 10 mesh ore was reground 10 minutes in ball mill. The reground pulp was then screened on a 65 mesh screen. The +65 mesh material was again reground 3 minutes in ball and then screened on 65 mesh. A few grams of oversize that still remained on a 65 mesh screen were reground in the mortar. All reground material was combined and subjected to amalgamation treatment. The amalgamation tail was treated by flotation. The rougher concentrates contained many chats (sulphide-gangue particles).

Rougher treatment

25            .2 + .1 + .1 lb/ton  
20 S          .15 + .1 lb/ton  
4 I            .2 lb/ton

Frothing time 12 minutes.

SIZING TEST - Tail 57202

<u>Mesh</u>	<u>% Wt.</u>	<u>Cum. % Wt.</u>
On 100	2.4	2.4
150	8.6	9.0
200	15.4	24.4
Thru 200	75.6	

CARL F. WILLIAMS

Engineer in charge of testing

C O P Y

MINERALS SEPARATION NORTH AMERICAN CORPORATION  
220 Battery Street, San Francisco, Cal.

Sample of Gold Ore from GREAT BEND MINE, sent by Mr. H. B. Chessher.  
Date: December 26, 1934.

TEST NO. 3  
Sample No. 57192

Weight tested 2000 Grams.

Reference 28-378-2.

	Product	% Wt.	ASSAYS	DISTRIBUTION %
			Au Oz/Ton	Au
57265	Head	100.0	0.286	100.0
	Conc.	3.58	5.80	72.6
		14.11	1.81	89.5
57266	Midd.	10.53	0.458 calc.	16.9
57267	Tail	85.89	0.035	10.5

PROCEDURE: Two lots of 10 mesh ore were each reground 7 minutes in the ball mill. Respective reground pulps were screened at 48 mesh. Each lot of reground pulp was then subjected to flotation treatment, making a rough concentrate and a final tail. The rough concentrate was then refloated, making a clean sulphide finished concentrate and a middling consisting of finely disseminated iron sulphides in alumina gangue. This product was thickened, reground 2 hours in pebble mill and cyanided.

<u>ROUGHER TREATMENT</u>		<u>ROUGHER CONC. RETREATMENT</u>	
2 3	0.06 lb/ton	CuSO <sub>4</sub>	0.5 lb/ton
20 S	0.1 "	2 3	0.08 "
4 AA	0.05 "	Soda Ash	1.0 "
Soda Ash	2.0 "	Frothing time 7 minutes.	
2 B	0.2 "		
Frothing time 15 minutes.		N.B. CuSO <sub>4</sub> had a very marked effect in dropping out the chatty alumina.	

SIZING TEST TAIL 57267

Mesh	% Wt.	Cum. % Wt.
+ 48	0.2	0.2
+ 65	3.0	3.2
+ 100	10.6	13.8
+ 150	8.0	21.8
+ 200	11.4	33.2
- 200	66.8	

C O P Y

MINERALS SEPARATION NORTH AMERICAN CORPORATION  
220 Battery Street, San Francisco, Cal.

\*\*\*\*\*

Sample of Gold Ore from GREAT BEND MINE, sent by Mr. H. B. Chessher.  
Date: December 26, 1934.

TEST No. 2  
Sample No. 57192

Weight Tested 1967 Grams

Reference 28-375-1

		ASSAYS		DISTRIBUTION %
	Product	% Wt.	Au Oz/Ton	Au
	Head	100.0	0.281	100.0
57222	Conc.	13.07	1.819 calc.	84.5
57223	Tail	86.93	0.05	15.5

PROCEDURE: This test was made on 2 charges (1000 grams each) of 10 mesh ore. Material was stage ground in ball mill with intermediate screening until all the ore passed through a 100 mesh screen. Grinding time 5 + 5 + 5 minutes. A rougher concentrate and a tailing were made from each charge. Like products were combined. The combined rougher concentrates were reground 2 hours in pebble mill with CaO 10.0 lbs/ton, and then subjected to cyanidation treatment.

ROUGHER TREATMENT			SIZING TEST - Tail 57223		
			Mesh	% Wt.	Cum. % Wt.
2 5	.2 + .2 lb/ton		On 65	0.3	0.3
4 1	.2 + .1 "		100	0.8	1.1
20 8	.15 + .1 "		150	7.6	8.7
Frothing time 12 minutes.			200	15.2	23.9
			Thru 200	76.1	

CYANIDATION TEST "A" ON FLOTATION CONCENTRATE 57222.

METHOD OF TREATMENT: The reground flotation concentrate was mechanically agitated for 24 hours in a 4.33 to 1 pulp, using a 3.62 lb. NaCN sol. Added CaO 15.6 lbs/ton concentrate.  
Effluent titrations--NaCN 2.0 lbs., CaO 0.8 lb/ton solution.  
Cyanide consumption--7.0 lbs/ton concentrate.

57234	Recovered by solution Assay Au	0.969 Oz/Ton Flotation conc.
57235	Cyanide tail " "	0.850 "
	Calculated cyanide Head " "	1.819 "

Indicated extraction Au 53.3%. Extraction in terms of orig. heads Au 45.0%.

CARL F. WILLIAMS

Engineer in charge of testing.

C O P Y

TEST No. 3 (Continued)

CYANIDING THE MIDDLING

CYANIDATION TEST "B" ON THE REGROUND MIDDLING 57286.

METHOD OF TREATMENT: The middling product was mechanically agitated for 24 hours in a 3.81 to 1 pulp, using a 3.82 lbs. NaCN solution. Added CaO 19.4 lbs./ton Middling.

Effluent titrations--NaCN 2.2 lbs/ton solution, CaO 0.5 lb/ton solution. Cyanide consumption 6.17 lbs/ton middling.

57283	Recovered by solution Assay Au	0.283 Oz/Ton Middling.
57284	Cyanide Tail	<u>0.175</u>
	Calculated cyanide Head	0.458

Indicated extraction Au 61.8%

Extraction in terms of original Heads Au 10.4%.

Recovery in the flotation concentrate plus extraction by cyanidation of the flotation middling Au 83.0%.

CARL F. WILLIAMS

Engineer in charge of testing.