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Aurum Technology
Dog Town Road
Greeley Hill, Ca. 95311

Attn; Mr. Richard Walker

From: Robert D. Back, Metallurgical Consultant

Subject: Red Cloud Mine - 15 Ton Bulk Test Run

Aurum personnel along with myself conducted a 15 ton test run from the 110 foot level of the small shaft. The purpose of the test was to establish two objectives.

First was to establish a reliable mine run ore grade. Second was to establish a mill recovery rate on a larger scale than mormal laboratory testing.

The Red Cloud Mill is presently set to obtain 4 products. Sandtrap concentrates, flotation concentrates, number one cuts and midland cuts from the cleanup table. Four point nine eight (4.98) ounces of pure gold was accounted for.

The fifteen ton block of ore contained point three seven (.37) ounces Au per ton. Using assay chart two, we obtained an eighty nine point five percent (89.5%) recovery. Using assay chart one, the fifteen ton block averaged point four one (.41).

The gravity circut consisted of two sandtraps positioned between the ball mill discharge and drag classifier. Along with a Carter four foot by eight foot bumper table for cleanup of flotation tails. The cleanup table was utilized more for visual control than a producer of concentrates. Both the number one cuts and the midland cuts were mainly an iron oxide with occasional small amounts of pyrites. The gravity contributed forty three percent (43%) of our concentrate product.

The float cells are a double bank of Gardner-Denver 36 x 36 x 32 inch cells. The flotation concentrate contributed twenty nine percent (29%) or one point six two (1.62) ounces Au.

DISTRIBUTION CHART

PRODUCT	PERCENT	CONTRIBUTION OF Au
Sandtrap	40%	2.21 oz.
Flotation Concentrate	29%	1.62 oz.
Number One Cut Cleanup Table	.5%	.02 oz.
Midland Cut Cleanup Table	2.5%	.13 oz.
Tails	10%	.57 oz.
Au Retained by Ball Mill	18%	1.00 oz.
	100%	5.55 oz Au
		(calculated head .37 oz Au)

Five point five five ounces (5.55) minus point five seven (.57) ounces retained in tails yeilds four point nine eight (4.98) ounces giving an overall recovery of eighty nine point five percent (89.5%).

ASSAY TABLE A-1

LOCATION	PRODUCT	Au/oz per ton
Sm Bin	Head	.22
"	"	.46
"	"	.95
"	"	.82
"	"	.17
"	"	.27
"	"	.22
"	"	.24
		3.35 = .41

ASSAY TABLE A-2 (eliminating high & low)

LOCATION	PRODUCT	Au/oz per ton
Sm Bin	Head	.22
"	"	.46
"	"	.82
"	"	.27
"	"	.22
"	"	.24
		2.23 = .37

The eighteen percent or one ounce of Au retained in the ball mill is due to the type of liners used.

The tails assay averaged point zero three eight (.038) ounces Au per ton. Point five seven (.57) ounces Au [redacted] retained in tailings.

TABLE 2

FLOTATION REAGENTS BALANCE

TYPE	DESCRIPTION	FUNCTION	SUPPLIER
Aero 350	Potassium Amyl Xanthate	Non-selective sulfide promoter	American Cyanamid
AF 208	Sodium diethyl & sodium di-secondary butyl dithiophosphate	promoter of metallic gold/silver/copper	same
AF 25	Aryl Dithio phosphoric acid	Gold/silver promoter	same
AF 242	Salts of aryl dithio-phosphoric acid	promoter and frother aid	same
Fuel Oil	diesel fuel number two	frother	local fuel distributor
Copper Sulfate	Copper sulfate	modifier	American Cyanamid
Lye	Sodium hydroxide	Ph modifier	Local

TYPE	DROPS PER MINUTE	SOLUTION STRENGTH
Aero 350	15	10%
AF 208	15	10%
AF 25	4	Straight
AF 242	15	10%
Fuel oil	4	Straight
Copper sulfate	15	10%
Lye	45	20%

The ball mill density maintained sixty two to sixty five percent pulp density and thiry two to thirty five percent pulp density. Both the ball mill and conditioning tank densities were determined by a scale of two point six (2.6) specific gravity. The ph of the pulp density was maintained by sodium hydroxide to a ph of seven to eight.

With drag classifier wier at highest setting, plus 30 mesh particles were still present causing some sanding of the flotation cells.

With the addition of a Cyclone or a screw classifier, a more desireable mesh grind may be obtained thereby solving the sanding problem.

The addition of a jig at the ball mill discharge where the hydrocones or sandtraps are located may achieve a more desireable result.

In conclusion, the fifteen ton test run established a mine run ore grade (calculated head) of point three seven (.37) ounces per ton Au. The recovery rate being eighty nine point nine percent (89.9%). With the present gold price at $466 per ounce, the free gold recovered in this test averaged $93 per ton.

Robert D. Back
Metallurgical Technician