TERRITORY OF ALASKA

DEPARTMENT OF MINES

PE-058-09

PE 58-9

MOHAWK MINE TAILING TREATMENT, 1956 KK 58-69

by

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The Mohawk Mine is on St Patrick Creek on the east side of Ester Dome about 13 miles by road from Fairbanks. It is described in U.S.G.S. Bulletin 849-B, LODE DEPOSITS OF THE FAIRBANKS DISTRICT, ALASKA by James M. Hill, 1933. The mine is reported to have produced over $200,000 in gold, most of which was produced during the period between 1925 and 1937. The ore was milled in an 8-ft Lane mill, and the mill-feed is reported to have averaged more than $20 per ton. The gold was recovered by amalgamation. Tailing from the mill was impounded during the later years that the mine and mill were in operation. Although some custom milling was done during that time, tailing from the custom milling was not impounded.

During the summer of 1956, Jack Cousins and Jim Nordby leased the mine from the owners, built a washing plant on the property, and attempted to recover the gold in the impounded tailing. After the plant had been in operation for a few days, they found that they were not getting the recovery that they had anticipated, so they sought the assistance of the Department of Mines in determining why the recovery was so low. An examination of the treatment plant and tailing was made on August 3, 1956 by Robert H. Saunders, Associate Mining Engineer.

Plate I is a diagram of the treatment plant. A fire hose was being used to wash the tailing to a grizzly. The material that did not go through the grizzly (mostly bits of brush and moss) was removed with a rake from time to time. The material that went through the grizzly went into a box that led to the suction

of a gasoline-powered WEMCO pump. The pump discharged into the top of a home-made classifier; overflow from the classifier was discarded, and the discharge from the bottom of the classifier went over the corduroy tables. The concentrate from the corduroy tables was put through an amalgamation drum. A second gasoline-powered pump was being used to provide water for the fire hose and the classifier.

From conversation with the two operators, it was learned that they had obtained their estimate of the gold remaining in the tailing from hearsay and had not done any systematic sampling. No tests had been made to find how much of the gold would be recovered by the method of treatment to be used.

During the examination four samples were taken by cutting channels from top to bottom on the side of the cut being worked at that time. The samples were assayed at the Department of Mines assay office at College, and the results were as follows:

Sample No.	Length of Channel	Ounces per Ton Gold	Ounces per Ton Silver	Dollars per Ton
29	2.0 feet	0.08	0.06	$2.86
30	2.8	0.08	0.32	3.09
31	3.3	0.08	0.08	2.87
32	4.0	0.08	0.12	2.91.

If the above samples are weighted according to the length of channel, they have an average value of $2.93 per ton. The floor of the cut had not been worked down to the original ground surface, so there was probably 1 to 3 feet of tailing below the cut that was

not represented by the samples.

During the examination several pans of material were caught from the lower end of the tables; neither gold nor sulfides could be found in any of the pans. A sample of the concentrate after it had been treated in the amalgamation drum assayed 25 ounces of gold per ton. It might have been feasible to ship to the smelter the concentrate from the tables, but the low value of the tailing being fed to the treatment plant discouraged the operators, and they dismantled the plant shortly after the examination.

In the library at the University of Alaska there is a thesis entitled TREATMENT OF THE MOHAWK TAILINGS by Robert Bowman and Bruce I. Thomas, 1935. The writers came to the following conclusions: (1) there are about 5000 tons of impounded tailing averaging 0.12 ounces of gold per ton; (2) little, if any, of the contained gold can be recovered by amalgamation without grinding; (3) cyanidation is the best method of treating the tailing; and (4) the total amount of gold recoverable by cyanidation would be $18,830; the total cost of treatment would be $15,716; the net profit would be $3,104; and the work would require two years. According to these figures, the venture would have yielded a return of about eight per cent on the investment at 1935 prices. At 1956 prices the cost of treatment would exceed by far the value of the recoverable gold.

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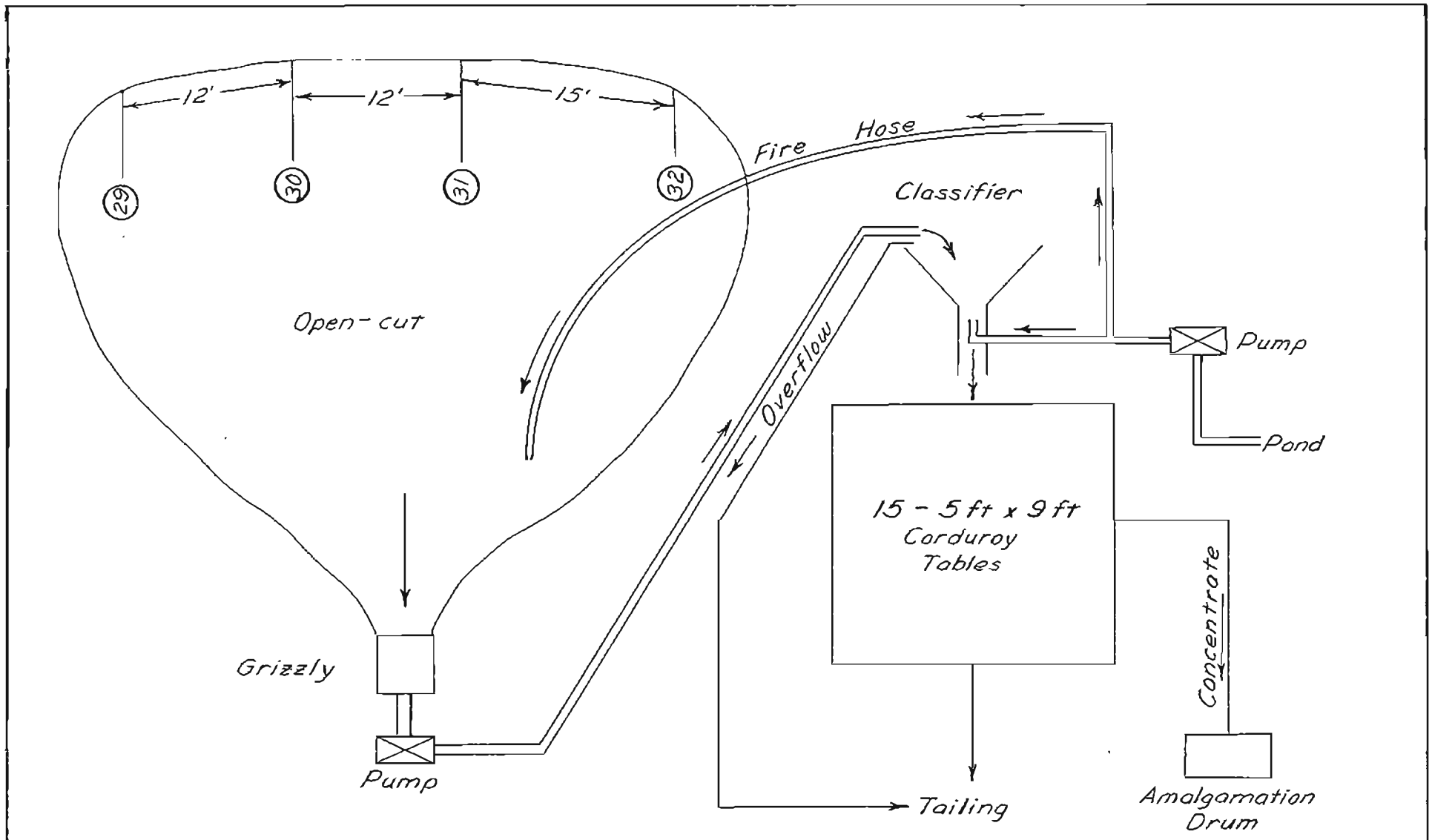

(30) - Number of Sample.

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Diagram of Plant for Washing Mohawk Tailing

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