

To T.R. Raponi

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Ref. METTEST

From M.E. Goodfellow

Subject CYANIDATION OF TRP STOCK TANK COMPOSITE SAMPLE AUGUST 1-5, 1987

Summary

A TRP stock tank composite sample was compiled from samples taken August 1-5. In this time period, the TRP tailings assay averaged 0.042 oz/ton Au. Calculated recoveries averaged 35.35 % Au. Cyanidation tests conducted on the composite sample verify the results obtained from the pilot plant. Recovery after 48 hours leaching was 32.34 % Au with a tailings residue assay of 0.043 oz/ton Au. These results also verify results of the C.I.L. testwork conducted by Lakefield Research.

Purpose

To verify results obtained from the TRP pilot plant.

Procedure

Stock tank samples from August 1-5, 1987 were combined to create one composite sample. A sample was submitted for assay. Two 200 g grab samples were taken for this leach test. The sample was placed in a Winchester acid bottle and pulped with tap water to 33 % solids. Lime (CaO) and sodium cyanide (NaCN) were added to raise the pH to 10.5 and give a free cyanide strength of 1.0 lb/ton. The samples were then placed on the rolls and rolled for 1 hour. Samples were then withdrawn to check the pH and NaCN levels. CaO and NaCN were added to restore pH and NaCN to desired levels. The sample was rolled for a further 23 hours. Samples were then withdrawn to check pH and NaCN levels and for Au assays. Reagents were added as after the first hour. The samples were rolled for a further 24 hours. Both samples were then filtered to separate the pregnant solutions. The filter cakes were washed with 500 mL tap water and a separate wash sample was obtained. Both solution samples and the solid residue for each sample were assayed for Au. The NaCN strength and pH were also determined for each pregnant solution. The Winchester acid bottles were rolled uncapped for the entire test.

Results

Test and assay results for each sample are attached. Recoveries after 48 hours leaching were calculated to 31.30 % Au and 33.38 % Au for an average of 32.34 % Au. The average residue assay was 0.043 oz/ton Au and the average calculated headgrade was 0.064 oz/ton Au. The assayed headgrade sample was 0.060 oz/ton Au. Calculated recoveries after 24 hours leaching were 34.71 % Au. The average reagent consumptions were 2.375 lb/ton NaCN and 4.554 lb/ton CaO.

Conclusions

1. Cyanidation recovery was calculated to be 32.34 % Au after 48 hours leaching with an average residue assay of 0.043 oz/ton Au.
2. The calculated reagent consumption was 2.375 lb/ton NaCN and 4.554 lb/ton CaO.
3. Cyanidation testwork verifies results obtained at the TRP pilot plant and also those obtained by Lakefield Research.

Discussion

Tailings Retreatment Pilot Plant results were verified by the cyanidation testwork conducted. The tailings grade achieved by the cyanidation testwork matched the results of the tailings grade for the composite sample from the TRP. The Tailings Retreatment Pilot Plant is operating as expected.

Cyanidation results compare favorably with initial C.I.L. cyanidation testwork conducted by Lakefield Research. At Lakefield, a gold recovery of 45.2 % was achieved after 24 hours leaching of a top tailings composite sample. For a bottom tailings composite sample a gold recovery of 43.8 % was achieved after 24 hours leaching. In our testwork, a gold recovery of 34.71 % was achieved after 24 hours leaching. Calculated head assays were slightly higher in the Lakefield testwork than in our cyanidation testwork. The slightly lower recovery in our testwork is most likely due to the variation in head grade.

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