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THE FEASIBILITY OF MINING THE TIGER DEPOSIT BY OPEN PIT HEAP LEACH METHODS

VOLUME II

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MAGMA COPPER COMPANY

NOVEMBER 1991

APPENDIX V

McCLELLAND LABORATORIES, INC.

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Report
on
Preliminary Metallurgical Evaluation
Tiger Cuttings Composites and Bulk Ore Samples
MLI Job Nos. 1530 and 1552
May 10, 1991

for

Mr. Al Liguori
Magma Copper Company
P.O. Box M
San Manuel, AZ 85631

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EXECUTIVE SUMMARY

Gravity concentration tests were conducted on 6 Tiger bulk ore samples at an 80 percent minus 35 mesh feed size to determine concentrate grade, concentration ratio, and overall gold recovery.

Bulk ore samples responded poorly to concentration by conventional gravity methods at that feed size. Cleaner concentrates averaged 0.2 percent of the feed weight, assayed from 0.730 to 4.468 ounce gold per ton, and represented gold recoveries ranging from 2.4 to 13.2 percent. Gold concentration ratios averaged 49.6 to 1. Total gold recovery (combined cleaner concentrate and middling) ranged from 8.5 to 41.7 percent. Rougher tailing gold grades ranged from 0.015 to 0.123 ounce per ton.

Direct agitated cyanidation (bottle roll) tests were conducted on 31 Tiger cuttings composites at the as received feed size to determine precious metal recovery, recovery rate, and reagent requirements.

Metallurgical results show, in general, that the 31 cuttings composites were amenable to direct cyanidation treatment at the cuttings feed size. Gold recoveries ranged from 44.8 to 79.6 percent, and averaged 61.5 percent in 96 hours of leaching. Silver recoveries ranged from 9.5 to 32.0 percent, and averaged 19.7 percent. Gold recovery rates were fairly rapid and extraction was substantially complete in 24 hours. Additional gold values were extracted between 24 and 96 hours, but at a slow rate. Reagent requirements were low to moderate.

Direct agitated cyanidation (bottle roll) tests were conducted on 4 surface (Cloudburst, Granite, Quartz Vein, and Rhyolite) and 2 underground (Rhyolite and Rhyolite Breccia) bulk ore samples, at two feed sizes (80 percent minus 1/4 inch and 200 mesh), to determine precious metal recovery, recovery rate, reagent requirements, and sensitivity to feed size. Tests were conducted on the underground bulk ore samples, at 4 additional feed sizes (80 percent minus 10, 65, 100, and 150 mesh), to obtain more detailed feed size sensitivity data.

Overall metallurgical results show that the Granite surface bulk ore sample was amenable to direct cyanidation treatment at an 80 percent minus 1/4 inch feed size. The other three surface ore samples, and the Rhyolite Breccia underground ore sample were marginally amenable at that feed size. The Rhyolite underground ore sample was not amenable. Gold recoveries ranged from 30.2 to 68.9 percent, and averaged 52.1 percent in 96 hours of leaching. Silver recoveries ranged from 6.3 to 19.0 percent. Gold recovery rates were fairly rapid and extraction was substantially complete in 24 hours. Reagent requirements were low to moderate.

Tail screen analysis results for the 1/4 inch leached residues show that crushing the feeds to minus 10 mesh in size would be required to improve overall gold recovery with subsequent cyanidation treatment. Fine grinding would be required to achieve maximum liberation of gold values for dissolution by cyanide.

Metallurgical results show that the six bulk ore samples were readily amenable to direct cyanidation treatment at an 80 percent minus 200 mesh feed size. Gold recoveries ranged from 85.0 to 98.1 percent, and averaged 92.9 percent in 96 hours of leaching. Silver recoveries ranged from 25.5 to 37.7 percent. Gold recovery rates were fairly rapid and extraction was substantially complete in from 6 to 24 hours. Cyanide consumptions and lime requirements were low to moderate.

The underground bulk ore samples were not readily amenable to direct cyanidation treatment at an 80 percent minus 10 mesh feed size. Gold recoveries of 47.4 and 60.3 percent were achieved from the Rhyolite and Rhyolite Breccia ore samples, respectively, in 96 hours of leaching. Respective silver recoveries were 9.3 and 9.4 percent. Underground ore samples were readily amenable at the 80 percent minus 65, 100, and 150 mesh feed sizes. Average gold recoveries achieved from the ground feeds were 88.1, 91.2, and 93.2 percent, respectively. Respective average silver recoveries were 27.3, 29.7, and 36.7 percent. Gold recovery rates were similar to those of the 200 mesh feeds. Gold recovery and recovery rate increased with decreasing feed size. Cyanide consumptions were low. Lime requirements were moderate.

Column percolation leach tests were conducted on the bulk ore samples at two feed sizes (Nominal 2, and 3/8 inch) to determine precious metal recovery, recovery rate, reagent requirements, and sensitivity to feed size under simulated heap leaching conditions. The 2 inch feeds were evaluated without agglomeration pretreatment (5 pounds lime added for alkalinity control). The 3/8 inch feeds were pretreated by agglomerating with 10 pounds portland cement per ton of ore.

Metallurgical results show that the bulk ore samples were not amenable to heap leaching treatment at a nominal 2 inch feed size. Bulk ore samples were marginally amenable at a nominal 3/8 inch feed size. Gold recoveries achieved from the 2 inch feeds ranged from 17.3 to 45.1 percent, and averaged 32.3 percent in from 77 to 129 days of leaching and washing. Gold recoveries achieved from the 3/8 inch feeds ranged from 41.0 to 60.0 percent, and averaged 51.8 percent in from 77 to 132 days of cyanide solution contact. Silver recoveries were poor (less than 11 percent) for both feed sizes. Gold recovery rates were fairly rapid for Cloudburst and Rhyolite (surface and U/G) feeds and extraction was substantially complete in 20 days of cyanide solution application. Gold recovery rates were slow for Granite, Quartz Vein, and Rhyolite Breccia feeds and extraction was progressing at a slower rate when cyanide solution application was terminated. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate.

Cyanide consumptions were low to high and ranged from 0.95 to 2.90 pounds per ton of ore. The 5 pounds lime per ton of ore added to the 2 inch feeds before leaching, and the 10 pounds portland cement added to the 3/8 inch feeds during agglomeration pretreatment was sufficient to maintain protective alkalinity at above pH 10.6 and 10.9, respectively, throughout the leaching cycles.

Tail screen analysis results for the column leached residues show, in general, that crushing the Tiger ore samples to 100 percent minus 1/4 inch in size would improve overall heap leach gold recovery, but only slightly.

Vat leach tests were conducted on the underground bulk ore samples at a ROM feed size to determine leachability without crushing. Underground bulk ore samples were not amenable to vat leaching treatment. Gold recoveries of 29.2 and 26.2 percent were achieved from the Rhyolite and Rhyolite Breccia feeds, respectively, in 133 days of leaching and washing. Initial gold recovery rates were fairly rapid to 10 days. Gold recovery rate was slow, and extraction was progressing at a fairly constant rate when leaching was terminated at 127 days.

Cyanide consumptions were low at 0.99 (Rhyolite) and 0.72 (Rhyolite Breccia) pounds per ton of ore. The 5 pounds lime per ton of ore added before leaching was sufficient to maintain protective alkalinity at above pH 10.8 throughout the leaching cycles.

Tail screen analysis results for the vat leached residues show that crushing the underground bulk ore samples to 100 percent minus 1/2 inch in size would improve overall vat leach gold recovery, but not markedly.

COMPOSITE PREPARATION AND HEAD ASSAYS

A total of 262 five-foot cuttings intervals were received for the compositing and subsequent direct agitated cyanidation treatment. Thirty one cuttings composites were prepared on a weighted basis, when possible, according to instructions provided by Magma Copper personnel. Composites represented 21 RVC drill holes, and 5 ore types (cloudburst, quartz monzonite, quartz vein, rhyolite, and rhyolite breccia). Each composite was thoroughly blended and split to obtain 1 kilogram for a bottle roll test, and samples for triplicate direct head assay. Composite make-up and predicted head grade information for the 31 cuttings composites are provided in Tables 1 through 31. Head assays results and head grade comparisons are provided in Tables 32 through 40.

A total of 4 surface (about 1800 pounds each) and 2 underground (about 3000 pounds each) bulk ore samples at a ROM feed size were received for the testing program. Surface ore samples were designated Cloudburst, Granite, Quartz Vein, and Rhyolite. Underground ore samples were designated Rhyolite and Rhyolite Breccia. Bulk ore samples were air dried, and were thoroughly blended and split to obtain 700 pounds for a vat leach test (underground ore samples only), and 500 pounds (200 pounds for surface ore samples) for a head screen analysis. ROM Rejects were stage crushed to a minus 2 inch feed size. Crushed feeds were thoroughly blended and split to obtain 700 pounds for a column leach test, and 200 pounds for a head screen analysis. The 2 inch rejects were stage crushed to a nominal 3/8 inch feed size, were thoroughly blended and split to obtain 120 pounds for a column leach test, 50 pounds for a head

screen analysis, and 50 pounds for additional crushing. The 50 pound splits were stage crushed to 80 percent minus 1/4 inch in size, and were thoroughly blended and split to obtain samples for various metallurgical tests, and samples for triplicate direct head assay. A total of 6 head assay samples were split from the surface bulk ore samples.

Head samples were assayed directly using conventional fire assay fusion procedures to determine precious metal content. Head screen analyses were conducted to determine precious metal content and distribution. Head assay results and head grade comparisons for the bulk ore samples are provided in Tables 41 through 43. Head screen analysis results are shown in Tables 44 through 61.

Table 1. - Composite Make-Up and Predicted Head Grade, Composite 1 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-10	185 - 190	9.4	0.037
MM-10	190 - 195	9.4	0.017
MM-10	195 - 200	9.4	0.016
MM-10	200 - 205	9.5	0.028
MM-10	205 - 210	5.7	0.028
MM-10	210 - 215	9.4	0.031
MM-10	215 - 220	9.4	0.014
MM-10	220 - 225	9.4	0.064
MM-10	225 - 230	9.4	0.213
MM-10	230 - 235	9.5	0.150
MM-10	235 - 240	9.5	0.075
11	55	100.0	0.060

Table 2. - Composite Make-Up and Predicted Head Grade, Composite 2 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-14	330 - 335	20.0	0.065
MM-14	335 - 340	20.0	0.160
MM-14	340 - 345	20.0	0.180
MM-14	345 - 350	20.0	0.150
MM-14	*355 - 360	20.0	0.080
5	25	100.0	0.127

* Break in interval.

Table 3. - Composite Make-Up and Predicted Head Grade, Composite 3 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-16	300 - 305	14.3	0.010
MM-16	305 - 310	14.3	0.010
MM-16	310 - 315	14.3	0.010
MM-16	315 - 320	14.3	0.020
MM-16	320 - 325	14.2	0.020
MM-16	325 - 330	14.3	0.020
MM-16	330 - 335	14.3	0.020
7	35	100.0	0.016

Table 4. - Composite Make-Up and Predicted Head Grade, Composite 4 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-27	50 - 55	25.0	0.020
MM-27	55 - 60	25.0	0.058
MM-27	60 - 65	25.0	0.150
MM-27	*75 - 80	25.0	0.548
4	20	100.0	0.194

* Break in interval.

Table 5. - Composite Make-Up and Predicted Head Grade, Composite 5 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-27	80 - 85	33.3	0.122
MM-27	85 - 90	33.3	0.036
MM-27	90 - 95	33.3	0.021
3	15	100.0	0.060

Table 6. - Composite Make-Up and Predicted Head Grade, Composite 6 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-30	125 - 130	10.0	0.031
MM-30	130 - 135	10.0	0.039
MM-30	135 - 140	10.0	0.045
MM-30	140 - 145	10.0	0.150
MM-30	*150 - 155	10.0	0.492
MM-30	155 - 160	10.0	0.156
MM-30	160 - 165	10.0	0.078
MM-30	165 - 170	10.0	0.090
MM-30	170 - 175	10.0	0.036
MM-30	175 - 180	10.0	0.015
10	50	100.0	0.113

* Break in interval.

Table 7. - Composite Make-Up and Predicted Head Grade, Composite 7 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-39	80 - 85	10.0	0.050
MM-39	85 - 90	10.0	0.035
MM-39	*95 - 100	10.0	0.055
MM-39	*110 - 115	10.0	0.040
MM-39	115 - 120	10.0	0.015
MM-39	120 - 125	10.0	0.040
MM-39	125 - 130	10.0	0.050
MM-39	130 - 135	10.0	0.070
MM-39	135 - 140	10.0	0.045
MM-39	140 - 145	10.0	0.045
10	50	100.0	0.045

* Break in interval.

Table 8. - Composite Make-Up and Predicted Head Grade, Composite 8 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-41	0 - 5	25.0	0.025
MM-41	5 - 10	25.0	0.025
MM-41	10 - 15	25.0	0.010
MM-41	15 - 20	25.0	0.030
4	20	100.0	0.023

Table 9. - Composite Make-Up and Predicted Head Grade, Composite 9 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-41	20 - 25	7.7	0.060
MM-41	25 - 30	7.7	0.095
MM-41	30 - 35	7.7	0.100
MM-41	35 - 40	7.7	0.055
MM-41	40 - 45	7.7	0.170
MM-41	45 - 50	7.7	0.120
MM-41	50 - 55	7.7	0.095
MM-41	55 - 60	7.7	0.030
MM-41	60 - 65	7.7	0.035
MM-41	65 - 70	7.7	0.010
MM-41	70 - 75	7.7	0.015
MM-41	75 - 80	7.6	0.030
MM-41	80 - 85	7.7	0.035
13	65	100.0	0.065

Table 10. - Composite Make-Up and Predicted Head Grade, Composite 10 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-41	90 - 95	33.4	0.010
MM-41	95 - 105	66.6	0.015
2	15	100.0	0.013

Table 11. - Composite Make-Up and Predicted Head Grade, Composite 11 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-41	110 - 115	11.1	0.035
MM-41	*120 - 125	11.2	0.070
MM-41	125 - 130	11.1	0.080
MM-41	130 - 135	11.1	0.080
MM-41	135 - 140	11.1	0.035
MM-41	*145 - 150	11.1	0.025
MM-41	150 - 155	11.1	0.010
MM-41	155 - 160	11.1	0.010
MM-41	160 - 165	11.1	0.015
9	45	100.0	0.040

* Break in interval.

Table 12. - Composite Make-Up and Predicted Head Grade, Composite 12 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-42	0 - 10	50.0	0.040
MM-42	10 - 15	25.0	0.035
MM-42	15 - 20	25.0	0.055
3	20	100.0	0.043

Table 13. - Composite Make-Up and Predicted Head Grade, Composite 13 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-50	320 - 325	15.3	0.025
MM-50	325 - 330	15.2	0.025
MM-50	330 - 335	15.2	0.015
MM-50	335 - 340	15.2	0.035
MM-50	*355 - 360	15.3	0.030
MM-50	*375 - 380	8.6	0.095
MM-50	380 - 385	15.2	0.200
7	35	100.0	0.058

* Break in interval.

Table 14. - Composite Make-Up and Predicted Head Grade, Composite 14 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-50	385 - 390	33.4	0.150
MM-50	390 - 395	33.2	0.140
MM-50	395 - 400	33.4	0.080
3	15	100.0	0.123

Table 15. - Composite Make-Up and Predicted Head Grade, Composite 15 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-53	245 - 250	5.7	0.010
MM-53	250 - 255	5.2	0.040
MM-53	255 - 260	5.3	0.020
MM-53	260 - 265	5.3	0.030
MM-53	*345 - 350	2.8	0.015
MM-53	*355 - 360	4.3	0.020
MM-53	360 - 365	5.5	0.010
MM-53	365 - 370	5.4	0.015
MM-53	370 - 375	5.1	0.030
MM-53	375 - 380	3.6	0.015
MM-53	*395 - 400	5.2	0.010
MM-53	*405 - 410	4.0	0.015
MM-53	410 - 415	5.1	0.025
MM-53	415 - 420	5.3	0.025
MM-53	*430 - 435	5.2	0.020
MM-53	435 - 440	5.3	0.030
MM-53	440 - 445	5.3	0.035
MM-53	445 - 450	5.3	0.020
MM-53	450 - 455	3.8	0.025
MM-53	*470 - 475	5.1	0.040
MM-53	*515 - 520	2.2	0.225
21	105	100.0	0.027

* Break in interval.

Table 16. - Composite Make-Up and Predicted Head Grade, Composite 16 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-56	100 - 105	20.0	0.050
MM-56	105 - 110	20.0	0.020
MM-56	*115 - 120	20.0	0.090
MM-56	120 - 125	20.0	0.020
MM-56	125 - 130	20.0	0.015
5	25	100.0	0.039

* Break in interval.

Table 17. - Composite Make-Up and Predicted Head Grade, Composite 17 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-58	40 - 45	42.1	0.035
MM-58	45 - 50	32.3	0.015
MM-58	50 - 55	25.6	0.050
3	15	100.0	0.032

Table 18. - Composite Make-Up and Predicted Head Grade, Composite 18 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-60	315 - 320	14.3	0.010
MM-60	320 - 325	14.2	0.020
MM-60	325 - 330	14.3	0.010
MM-60	330 - 335	14.3	0.015
MM-60	335 - 340	14.3	0.010
MM-60	340 - 345	14.3	0.050
MM-60	345 - 350	14.3	0.095
7	35	100.0	0.030

Table 19. - Composite Make-Up and Predicted Head Grade, Composite 1 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-61	40 - 45	5.3	0.120
MM-61	45 - 50	5.2	0.180
MM-61	50 - 55	5.2	0.060
MM-61	55 - 60	5.3	0.030
MM-61	60 - 65	5.3	0.015
MM-61	65 - 70	5.3	0.015
MM-61	70 - 75	5.3	0.050
MM-61	75 - 80	5.3	0.020
MM-61	*100 - 105	5.3	0.030
MM-61	105 - 110	5.2	0.065
MM-61	110 - 115	5.3	0.015
MM-61	115 - 120	5.2	0.010
MM-61	120 - 125	5.3	0.020
MM-61	125 - 130	5.3	0.015
MM-61	130 - 135	5.3	0.010
MM-61	135 - 140	5.2	0.075
MM-61	140 - 145	5.2	0.085
MM-61	145 - 150	5.3	0.105
MM-61	150 - 155	5.2	0.015
19	95	100.0	0.049

* Break in interval.

Table 20. - Composite Make-Up and Predicted Head Grade, Composite 20 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-67	110 - 115	20.0	0.030
MM-67	115 - 120	20.0	0.045
MM-67	120 - 125	20.0	0.035
MM-67	125 - 130	20.0	0.040
MM-67	130 - 135	20.0	0.085
5	25	100.0	0.047

Table 21. - Composite Make-Up and Predicted Head Grade, Composite 21 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-67	145 - 150	3.6	0.015
MM-67	150 - 155	3.6	0.015
MM-67	155 - 160	3.6	0.010
MM-67	160 - 165	3.6	0.010
MM-67	165 - 170	3.5	0.150
MM-67	170 - 175	3.5	0.020
MM-67	175 - 180	3.5	0.015
MM-67	180 - 185	3.6	0.015
MM-67	185 - 190	3.6	0.025
MM-67	190 - 195	3.6	0.010
MM-67	195 - 200	3.6	0.020
MM-67	200 - 205	3.6	0.030
MM-67	205 - 210	3.6	0.040
MM-67	210 - 215	3.5	0.060
MM-67	215 - 220	3.6	0.010
MM-67	220 - 225	3.5	0.020
MM-67	225 - 230	3.6	0.060
MM-67	230 - 235	3.5	0.030
MM-67	235 - 240	3.5	0.010
MM-67	240 - 245	3.6	0.010
MM-67	245 - 250	3.6	0.020
MM-67	250 - 255	3.5	0.010
MM-67	255 - 260	3.6	0.150
MM-67	260 - 265	3.6	0.010
MM-67	265 - 270	3.6	0.015
MM-67	270 - 275	3.6	0.025
MM-67	275 - 280	3.6	0.010
MM-67	280 - 285	3.6	0.020
28	140	100.0	0.030

Table 22. - Composite Make-Up and Predicted Head Grade, Composite 22 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-70	145 - 150	9.1	0.535
MM-70	*155 - 160	9.1	0.320
MM-70	160 - 165	9.0	0.470
MM-70	165 - 170	9.1	0.710
MM-70	170 - 175	9.1	0.255
MM-70	175 - 180	9.1	0.140
MM-70	180 - 185	9.1	0.120
MM-70	185 - 190	9.1	0.055
MM-70	190 - 195	9.1	0.045
MM-70	*200 - 205	9.1	0.080
MM-70	205 - 210	9.1	0.015
11	55	100.0	0.250

* Break in interval.

Table 23. - Composite Make-Up and Predicted Head Grade, Composite 23 (Rhyolite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-76	95 - 100	10.0	0.240
MM-76	100 - 105	10.0	0.020
MM-76	105 - 110	10.0	0.020
MM-76	110 - 115	10.0	0.020
MM-76	115 - 120	10.0	0.010
MM-76	120 - 125	10.0	0.040
MM-76	125 - 130	10.0	0.035
MM-76	130 - 135	10.0	0.040
MM-76	135 - 140	10.0	0.085
MM-76	140 - 145	10.0	0.230
10	50	100.0	0.074

Table 24. - Composite Make-Up and Predicted Head Grade, Composite 24 (Quartz Vein)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-76	145 - 150	11.5	0.370
MM-76	150 - 155	11.5	0.250
MM-76	155 - 160	11.5	0.275
MM-76	160 - 165	11.5	0.080
MM-76	165 - 170	11.5	0.040
MM-76	170 - 175	11.5	0.030
MM-76	175 - 180	11.5	0.025
MM-76	180 - 185	11.5	0.030
MM-76	185 - 190	8.0	0.025
9	45	100.0	0.129

Table 25. - Composite Make-Up and Predicted Head Grade, Composite 25 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-77	5 - 10	17.9	0.130
MM-77	10 - 15	17.9	1.105
MM-77	15 - 20	17.9	0.620
MM-77	20 - 25	17.9	0.220
MM-77	25 - 30	10.5	0.075
MM-77	30 - 35	17.9	0.020
6	30	100.0	0.383

Table 26. - Composite Make-Up and Predicted Head Grade, Composite 26 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-77	145 - 150	10.0	0.045
MM-77	150 - 155	10.0	0.015
MM-77	155 - 160	10.0	0.045
MM-77	160 - 165	10.0	0.030
MM-77	165 - 170	10.0	0.040
MM-77	170 - 175	10.0	0.080
MM-77	175 - 180	10.0	0.140
MM-77	180 - 185	10.0	0.210
MM-77	185 - 190	10.0	0.120
MM-77	190 - 195	10.0	0.065
10	50	100.0	0.079

Table 27. - Composite Make-Up and Predicted Head Grade, Composite 27 (Cloudburst)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-81	55 - 60	16.6	0.110
MM-81	60 - 65	16.6	0.015
MM-81	65 - 70	16.7	0.025
MM-81	70 - 75	16.7	0.035
MM-81	75 - 80	16.7	0.010
MM-81	80 - 85	16.7	0.030
6	30	100.0	0.038

Table 28. - Composite Make-Up and Predicted Head Grade, Composite 28 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-81	120 - 125	10.0	0.020
MM-81	125 - 130	10.0	0.100
MM-81	130 - 135	10.0	0.050
MM-81	135 - 140	10.0	0.015
MM-81	*185 - 190	10.0	0.010
MM-81	*195 - 200	10.0	0.020
MM-81	200 - 205	10.0	0.010
MM-81	*255 - 260	10.0	0.115
MM-81	260 - 265	10.0	0.105
MM-81	265 - 270	10.0	0.035
10	50	100.0	0.048

* Break in interval.

Table 29. - Composite Make-Up and Predicted Head Grade, Composite 29 (Rhyolite Breccia)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-92	150 - 155	8.3	0.105
MM-92	155 - 160	8.3	0.040
MM-92	*165 - 170	8.3	0.010
MM-92	170 - 175	8.3	0.035
MM-92	175 - 180	8.3	0.080
MM-92	180 - 185	8.3	0.075
MM-92	*190 - 195	8.3	0.025
MM-92	*200 - 205	8.3	0.015
MM-92	205 - 210	8.3	0.010
MM-92	210 - 215	8.3	0.015
MM-92	*220 - 225	8.3	0.020
MM-92	225 - 230	8.3	0.015
12	60	99.6	0.037

* Break in interval.

Table 30. - Composite Make-Up and Predicted Head Grade, Composite 30 (Quartz Monzonite)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-99	75 - 80	20.0	0.080
MM-99	80 - 85	20.0	0.125
MM-99	85 - 90	20.0	0.105
MM-99	90 - 95	20.0	0.165
MM-99	95 - 100	20.0	0.080
5	25	100.0	0.111

Table 31. - Composite Make-Up and Predicted Head Grade, Composite 31 (Rhyolite Breccia)

Drill Hole	Interval, ft	Weight to Comp., pct.	Assays, ozAu/ton
MM-99	100 - 105	25.0	0.080
MM-99	105 - 110	25.0	0.060
MM-99	110 - 115	25.0	0.010
MM-99	115 - 120	25.0	0.025
4	20	100.0	0.044

Table 32. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, ozAu/ton		
	1	2	3
Determination Method	MM-10 (Qtz. Mon.)	MM-14 (Qtz. Mon.)	MM-16 (Qtz. Mon.)
Direct Assay: Initial	0.083	0.126	0.017
Duplicate	0.065	0.124	0.019
Triplicate	0.060	0.142	0.021
Calculated, Bottle Test	0.072	0.140	0.022
Arithmetic Average	0.070	0.133	0.020
Max. Devation from Average	0.013	0.009	0.003
Precision, percent	84.3	93.2	85.0

Table 33. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, oz/ton							
	4		5		6		7	
	MM-27 (Qtz. Mon.)		MM-27 (Rhyolite)		MM-30 (Rhyolite)		MM-39 (Qtz. Mon.)	
Determination Method	Au	Ag	Au	Ag	Au	Ag	Au	Ag
Direct Assay: Initial	0.192	0.59	0.061	0.13	0.117	0.46	0.046	0.18
Duplicate	0.196	0.58	0.055	0.17	0.117	0.45	0.045	0.19
Triplicate	0.194	0.74	0.064	0.16	0.093	0.40	0.049	0.19
Calculated, Bottle Test	0.239	0.76	0.057	0.20	0.103	0.52	0.055	0.20
Arithmetic Average	0.205	0.67	0.059	0.17	0.108	0.46	0.049	0.19
Maximum Deviation from Average	0.034	0.09	0.005	0.04	0.015	0.06	0.006	0.01
Precision, percent	85.8	86.8	92.2	76.5	86.1	87.0	89.1	94.7

Table 34. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, oz/ton						
	8	9		10		11	
	MM-41 (CB*)	MM-41 (Rhyolite)		MM-41 (CB*)		MM-41 (Qtz. Mon.)	
Determination Method	Au	Au	Ag	Au	Ag	Au	Ag
Direct Assay: Initial	0.037	0.053	0.19	0.015	0.16	0.052	<0.10
Duplicate	0.023	0.060	0.15	0.020	0.20	0.043	0.14
Triplicate	0.020	0.101	0.17	0.013	0.18	0.052	<0.10
Calc'd, Bottle Test	0.023	0.068	0.20	0.019	0.28	0.046	0.21
Arithmetic Average	0.026	0.071	0.18	0.017	0.21	0.048	0.18
Max. Deviation from Avg.	0.011	0.030	0.03	0.004	0.07	0.005	N/A
Precision, percent	70.3	70.3	83.3	76.5	75.0	89.6	N/A

* CB = Cloudburst.

Table 35. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composite

	Head Grade, oz/ton					
	12		13		14	
	MM-42 (Rhyolite)		MM-50 (Qtz. Mon.)		MM-50 (Rhyolite)	
Determination Method	Au	Ag	Au	Ag	Au	Ag
Direct Assay: Initial	0.043	0.39	0.046	0.36	0.137	0.26
Duplicate	0.042	0.43	0.048	0.35	0.113	0.31
Triplicate	0.043	0.49	0.049	0.27	0.103	0.25
Calculated, Bottle Test	0.047	0.55	0.049	0.23	0.111	0.22
Arithmetic Average	0.044	0.47	0.048	0.30	0.116	0.26
Max. Deviation from Average	0.003	0.08	0.002	0.07	0.021	0.05
Precision, percent	93.6	83.0	95.8	76.7	84.7	83.9

Table 36. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, oz/ton				
	15	16		17	18
	MM-53 (Qtz Mon)	MM-56 (Rhyolite)		MM-58 (Cloudburst)	MM-60 (Qtz Mon)
Determination Method	Au	Au	Ag	Au	Au
Direct Assay: Initial	0.028	0.034	0.40	0.034	0.041
Duplicate	0.030	0.032	0.44	0.030	0.039
Triplicate	0.028	0.037	0.34	0.029	0.041
Calc'd, Bottle Test	0.025	0.038	0.36	0.032	0.039
Arithmetic Average	0.028	0.035	0.39	0.031	0.040
Max. Deviation from Average	0.003	0.003	0.05	0.003	0.001
Precision, percent	89.3	91.4	87.2	91.2	97.5

Table 37. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composite

	Head Grade, oz/ton					
	19		20		21	
	MM-61 (Qtz. Mon.)		MM-67 (Cloudburst)		MM-67 (Qtz. Mon.)	
Determination Method	Au	Ag	Au	Ag	Au	Ag
Direct Assay: Initial	0.054	0.26	0.060	0.34	0.020	0.18
Duplicate	0.048	0.22	0.042	0.33	0.019	0.17
Triplicate	0.055	0.26	0.039	0.30	0.023	0.16
Calculated, Bottle Test	0.057	0.28	0.044	0.29	0.019	N/A
Arithmetic Average	0.054	0.26	0.046	0.32	0.020	0.17
Max. Deviation from Average	0.006	0.04	0.014	0.03	0.003	N/A
Precision, percent	88.9	84.6	76.7	90.6	87.0	N/A

Table 38. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composite

	Head Grade, oz/ton					
	22		23		24	
	MM-70 (Rhyolite)		MM-76 (Rhyolite)		MM-76 (Qtz. Vein)	
Determination Method	Au	Ag	Au	Ag	Au	Ag
Direct Assay: Initial	0.227	0.14	0.109	1.60	0.124	1.11
Duplicate	0.203	0.16	0.092	1.92	0.127	1.33
Triplicate	0.203	0.15	0.089	1.81	0.139	1.40
Calculated, Bottle Test	0.199	N/A	0.105	1.64	0.137	1.27
Arithmetic Average	0.208	0.15	0.099	1.74	0.132	1.28
Max. Deviation from Average	0.019	N/A	0.010	0.18	0.008	0.17
Precision, percent	91.6	N/A	89.9	90.6	93.9	86.7

Table 39. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, oz/ton						
	25		26		27		28
	MM-77 (Cloudburst)		MM-77 (Qtz. Mon.)		MM-81 (Cloudburst)		MM-81 (Qtz Mon)
Determination Method	Au	Ag	Au	Ag	Au	Ag	Au
Direct Assay: Initial	0.352	0.45	0.067	0.24	0.018	0.19	0.038
Duplicate	0.527	0.51	0.064	0.38	0.043	0.17	0.046
Triplicate	0.375	0.53	0.063	0.25	0.030	0.18	0.051
Calc'd, Bottle Test	0.419	0.50	0.068	0.31	0.034	0.17	0.045
Arithmetic Average	0.418	0.50	0.066	0.30	0.031	0.18	0.045
Max. Deviation from Avg.	0.109	0.05	0.003	0.08	0.013	0.01	0.007
Precision, percent	79.3	90.0	95.5	78.9	58.1	94.4	84.4

Table 40. - Head Assay Results and Head Grade Comparisons, Tiger Cuttings Composites

	Head Grade, oz/ton				
	29		30		31
	MM-92 (Rhy Brec)		MM-99 (Qtz Mon)		MM-99 (Rhy Brec)
Determination Method	Au	Au	Au	Ag	Au
Direct Assay: Initial	0.026	0.33	0.121	0.29	0.011
Duplicate	0.020	0.29	0.121	0.27	0.020
Triplicate	0.034	0.40	0.121	0.28	0.020
Calculated, Bottle Test	0.029	0.21	0.110	0.25	0.014
Arithmetic Average	0.027	0.31	0.118	0.27	0.016
Maximum Deviation from Average	0.007	0.10	0.008	0.02	0.005
Precision, percent	74.1	67.7	93.2	92.6	68.8

Gold and silver head grades determined by the various methods, in general, agreed fairly closely. However, gold head assays for several cuttings composites were "spotty". This "spottiness" could be caused by free-milling visible gold particles contained in the feeds. Some cuttings composites contained silver values below analytical detection limits (0.10 ounce per ton of ore). Consequently, silver recoveries for those composites are not discussed in this report.

Table 41. - Gold Head Assay Results and Head Grade Comparisons, Tiger Surface Bulk Ore Samples

	Head Grade, ozAu/ton			
Determination Method	Cloudburst	Granite	Qtz. Vein	Rhyolite
Direct Assay: A	0.034	0.064	0.133	0.021
B	0.028	0.052	0.133	0.018
C	0.037	0.065	0.134	0.032
D	0.043	0.063	0.150*	0.029
E	0.050*	0.085	0.139	0.023
F	0.031	0.064	0.146	0.035
Head Screen, As Received	0.039	0.074	0.122	0.024
Head Screen, 2"	0.043	0.091*	0.131	0.031
Head Screen, 3/8"	0.036	0.070	0.129	0.031
Calculated, Gravity Test, 35M	0.030	0.067	0.126	0.016*
Calculated, Bottle Test, 1/4"	0.032	0.061	0.130	0.020
Calculated, Bottle Test, 200M	0.041	0.052	0.124	0.020
Calculated, Column Test, 2"	0.035	0.091	0.133	0.030
Calculated, Column Test, 3/8"	0.040	0.070	0.130	0.030
Arithmetic Average	0.037	0.069	0.133	0.026
Maximum Deviation from Average	0.013	0.022	0.017	0.010
Precision, percent	74.0	75.8	88.7	61.5

* Maximum deviation occurred with this head grade determination.

Table 42. - Silver Head Assay Results and Head Grade Comparisons, Tiger Surface Bulk Ore Samples

	Head Grade, ozAg/ton			
Determination Method	Cloudburst	Granite	Qtz. Vein	Rhyolite
Direct Assay: A	0.22	0.39	0.22	0.19
B	0.17	0.37	0.30	0.17
C	0.24	0.37	0.27	0.15
D	0.24	0.48	0.29	0.22
E	0.17	0.44	0.33	0.15
F	0.18	0.41	0.35	0.20
Head Screen, As Received	0.22	0.39	0.27	0.17
Head Screen, 2"	0.17	0.40	0.25	0.14
Head Screen, 3/8"	0.20	0.41	0.31	0.18
Calculated, Gravity Test, 35M	0.12*	0.30*	0.31	0.14
Calculated, Bottle Test, 1/4"	0.14	0.32	0.21*	0.13
Calculated, Bottle Test, 200M	0.21	0.42	0.37	0.24*
Calculated, Column Test, 2"	0.19	0.42	0.29	0.18
Calculated, Column Test, 3/8"	0.20	0.46	0.29	0.21
Arithmetic Average	0.19	0.40	0.29	0.18
Maximum Deviation from Average	0.07	0.10	0.08	0.06
Precision, percent	63.2	75.0	72.4	75.0

* Maximum deviation occurred with this head grade determination.

Table 43. - Head Assay Results and Head Grade Comparisons, Tiger Underground Bulk Ore Samples

	Head Grade, oz/ton			
	Rhyolite		Rhyolite Breccia	
Determination Method	Au	Ag	Au	Ag
Direct Assay: Initial	0.069*	0.49	0.065	0.42
Duplicate	0.044	0.43	0.077	0.43
Triplicate	0.051	0.41	0.069	0.52
Head Screen, As Received	0.042	0.41	0.082	0.40
Head Screen, 2"	0.054	0.49	0.084	0.33*
Head Screen, 3/8"	0.042	0.42	0.075	0.43
Calculated, Gravity Test, 35M	0.043	0.35*	0.069	0.39
Calculated, Bottle Test, 1/4"	0.043	0.44	0.067	0.42
Calculated, Bottle Test, 10M	0.038	0.43	0.068	0.53
Calculated, Bottle Test, 65M	0.042	0.47	0.075	0.45
Calculated, Bottle Test, 100M	0.039	0.49	0.070	0.46
Calculated, Bottle Test, 150M	0.040	0.53	0.070	0.43
Calculated, Bottle Test, 200M	0.046	0.55	0.079	0.53
Calculated, Column Test, 2"	0.052	0.45	0.087*	0.54
Calculated, Column Test, 3/8"	0.039	0.43	0.073	0.49
Calculated, Vat Test, As Received	0.048	0.39	0.084	0.33*
Arithmetic Average	0.046	0.45	0.075	0.44
Maximum Deviation from Average	0.023	0.10	0.012	0.11
Precision, percent	66.7	77.8	86.2	75.0

* Maximum deviation occurred with this head grade determination.

Head grades determined by the various methods did not agree closely for the bulk ore samples. Gold occurrence was rather "spotty", especially for the Rhyolite ore samples. Calculated head grades from metallurgical tests are considered more reliable than those from direct head assays because of the quantity of ore evaluated.

Table 44. - Head Screen Analysis Results, Cloudburst Surface Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	39.0	39.0	0.030	0.14	30.3	25.1	30.3	25.1
-2 +1"	16.8	55.8	0.054	0.26	23.6	20.1	53.9	45.2
-1 + 3/4"	6.4	62.2	0.053	0.35	8.8	10.1	62.7	55.3
-3/4 +1/2"	7.0	69.2	0.064	0.38	11.6	12.3	74.3	67.6
-1/2 +1/4"	9.7	78.9	0.054	0.26	13.5	11.4	87.8	79.0
-1/4 +10M	9.6	88.5	0.021	0.23	5.2	10.0	93.0	89.0
-10 +20M	2.8	91.3	0.008	0.34	0.5	4.6	93.5	93.6
-20 +35M	1.6	92.9	0.005	0.27	0.2	1.8	93.7	95.4
-35 +65M	1.2	94.1	0.006	0.31	0.2	1.8	93.9	97.2
-65 +100M	0.5	94.6	0.009	0.28	0.1	0.5	94.0	97.7
-100M	5.4	100.0	0.042	0.10	6.0	2.3	100.0	100.0
Composite	100.0		0.039	0.22	100.0	100.0		

Table 45. - Head Screen Analysis Results, Cloudburst Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	3.4	3.4	0.012	0.10	0.9	1.8	0.9	1.8
-2 +1"	37.8	41.2	0.047	0.17	41.2	38.8	42.1	40.6
-1 + 3/4"	10.4	51.6	0.049	0.16	11.8	10.3	53.9	50.9
-3/4 +1/2"	10.5	62.1	0.069	0.20	16.7	12.7	70.6	63.6
-1/2 +1/4"	12.2	74.3	0.055	0.20	15.5	14.6	86.1	78.2
-1/4 +10M	12.3	86.6	0.018	0.13	5.1	9.7	91.2	87.9
-10 +20M	3.4	90.0	0.008	0.20	0.7	4.3	91.9	92.2
-20 +35M	2.4	92.4	0.008	0.19	0.5	3.0	92.4	95.2
-35 +65M	1.6	94.0	0.011	0.15	0.4	1.2	92.8	96.4
-65M	6.0	100.0	0.052	0.10	7.2	3.6	100.0	100.0
Composite	100.0		0.043	0.17	100.0	100.0		

Table 46. - Head Screen Analysis Results, Cloudburst Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+3/8"	9.1	9.1	0.064	0.22	16.3	10.1	16.3	10.1
-3/8 +1/4"	20.1	29.2	0.046	0.22	25.8	22.3	42.1	32.4
-1/4 +10M	35.6	64.8	0.030	0.23	30.1	41.6	72.2	74.0
-10 +20M	10.6	75.4	0.018	0.12	5.3	6.6	77.5	80.6
-20 +35M	7.1	82.5	0.016	0.13	3.1	4.6	80.6	85.2
-35 +65M	4.4	86.9	0.014	0.18	1.7	4.1	82.3	89.3
-65M	13.1	100.0	0.048	0.16	17.7	10.7	100.0	100.0
Composite	100.0		0.036	0.20	100.0	100.0		

Table 47. - Head Screen Analysis Results, Granite Surface Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	52.8	52.8	0.011	0.26	7.9	34.8	7.9	34.8
-2 +1"	11.9	64.7	0.034	0.46	5.4	14.0	13.3	48.8
-1 + 3/4"	3.5	68.2	0.140	0.57	6.6	5.1	19.9	53.9
-3/4 +1/2"	4.6	72.8	0.217	0.70	13.6	8.1	33.5	62.0
-1/2 +1/4"	6.5	79.3	0.282	0.70	24.8	11.7	58.3	73.7
-1/4 +10M	8.3	87.6	0.139	0.62	15.6	12.9	73.9	86.6
-10 +20M	3.1	90.7	0.116	0.54	4.9	4.3	78.8	90.9
-20 +35M	2.1	92.8	0.095	0.53	2.7	2.8	81.5	93.7
-35 +65M	1.6	94.4	0.096	0.50	2.0	2.0	83.5	95.7
-65 +100M	0.6	95.0	0.120	0.45	0.9	0.8	84.4	96.5
-100M	5.0	100.0	0.220	0.28	15.6	3.5	100.0	100.0
Composite	100.0		0.074	0.39	100.0	100.0		

Table 48. - Head Screen Analysis Results, Granite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+1"	51.2	51.2	0.073	0.31	40.9	39.6	40.9	39.6
-1 + 3/4"	10.4	61.6	0.037	0.67	4.2	17.4	45.1	57.0
-3/4 +1/2"	7.5	69.1	0.184	0.60	15.1	11.2	60.2	68.2
-1/2 +1/4"	8.4	77.5	0.147	0.53	13.4	11.2	73.6	79.4
-1/4 +10M	9.9	87.4	0.105	0.48	11.4	11.9	85.0	91.3
-10 +20M	3.0	90.4	0.055	0.44	1.9	3.2	86.9	94.5
-20 +35M	2.5	92.9	0.056	0.31	1.5	2.0	88.4	96.5
-35 +65M	1.5	94.4	0.058	0.38	1.0	1.5	89.4	98.0
-65M	5.6	100.0	0.174	0.14	10.6	2.0	100.0	100.0
Composite	100.0		0.091	0.40	100.0	100.0		

Table 49. - Head Screen Analysis Results, Granite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+3/8"	13.1	13.1	0.073	0.71	13.7	22.7	13.7	22.7
-3/8 +1/4"	24.4	37.5	0.069	0.37	23.9	22.0	37.6	44.7
-1/4 +10M	35.1	72.6	0.057	0.38	28.4	32.5	66.0	77.2
-10 +20M	8.4	81.0	0.064	0.41	7.7	8.3	73.7	85.5
-20 +35M	5.5	86.5	0.053	0.34	4.1	4.7	77.8	90.2
-35 +65M	4.5	91.0	0.086	0.34	5.6	3.7	83.4	93.9
-65M	9.0	100.0	0.130	0.28	16.6	6.1	100.0	100.0
Composite	100.0		0.070	0.41	100.0	100.0		

Table 50. - Head Screen Analysis Results, Quartz Vein Surface Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	52.5	52.5	0.095	0.22	40.9	43.5	40.9	43.5
-2 +1"	19.0	71.5	0.126	0.23	19.6	16.5	60.5	60.0
-1 + 3/4"	5.4	76.9	0.223	0.26	9.8	5.2	70.3	65.2
-3/4 +1/2"	5.9	82.8	0.208	0.33	10.1	7.1	80.4	72.3
-1/2 +1/4"	6.5	89.3	0.196	0.39	10.4	9.4	90.8	81.7
-1/4 +10M	5.0	94.3	0.147	0.47	6.1	9.0	96.9	90.7
-10 +20M	1.3	95.6	0.098	0.56	1.1	2.6	98.0	93.3
-20 +35M	0.9	96.5	0.075	0.49	0.6	1.5	98.6	94.8
-35 +65M	0.6	97.1	0.057	0.46	0.2	1.1	98.8	95.9
-65 +100M	0.8	97.9	0.048	0.44	0.3	1.5	99.1	97.4
-100M	2.1	100.0	0.051	0.31	0.9	2.6	100.0	100.0
Composite	100.0		0.122	0.27	100.0	100.0		

Table 51. - Head Screen Analysis Results, Quartz Vein Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	0.5	0.5	0.060	0.33	0.2	0.8	0.2	0.8
-2 +1"	40.7	41.2	0.123	0.16	38.4	26.2	38.6	27.0
-1 + 3/4"	13.4	54.6	0.136	0.25	13.9	13.7	52.5	40.7
-3/4 +1/2"	10.9	65.5	0.171	0.25	14.2	10.9	66.7	51.6
-1/2 +1/4"	12.2	77.7	0.164	0.40	15.3	19.8	82.0	71.4
-1/4 +10M	11.0	88.7	0.129	0.33	10.9	14.5	92.9	85.9
-10 +20M	2.9	91.6	0.094	0.43	2.1	4.9	95.0	90.8
-20 +35M	2.3	93.9	0.081	0.38	1.5	3.6	96.5	94.4
-35 +65M	1.4	95.3	0.057	0.37	0.6	2.0	97.1	96.4
-65M	4.7	100.0	0.080	0.20	2.9	3.6	100.0	100.0
Composite	100.0		0.131	0.25	100.0	100.0		

Table 52. - Head Screen Analysis Results, Quartz Vein Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+3/8"	6.7	6.7	0.149	0.24	7.7	5.1	7.7	5.1
-3/8 +1/4"	21.6	28.3	0.142	0.21	23.7	14.4	31.4	19.5
-1/4 +10M	37.9	66.2	0.126	0.36	36.9	43.6	68.3	63.1
-10 +20M	9.7	75.9	0.111	0.34	8.4	10.6	76.7	73.7
-20 +35M	7.3	83.2	0.091	0.37	5.1	8.7	81.8	82.4
-35 +65M	4.5	87.7	0.071	0.36	2.5	5.1	84.3	87.5
-65M	12.3	100.0	0.165	0.32	15.7	12.5	100.0	100.0
Composite	100.0		0.129	0.31	100.0	100.0		

Table 53. - Head Screen Analysis Results, Rhyolite Surface Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	42.4	42.4	0.026	0.20	46.6	50.6	46.6	50.6
-2 +1"	14.1	56.5	0.030	0.22	17.8	18.5	64.4	69.1
-1 + 3/4"	5.8	62.3	0.029	0.18	7.2	5.9	71.6	75.0
-3/4 +1/2"	7.3	69.6	0.037	0.12	11.5	5.4	83.1	80.4
-1/2 +1/4"	10.5	80.1	0.017	0.10	7.6	6.5	90.7	86.9
-1/4 +10M	9.8	89.9	0.006	0.10	2.5	5.9	93.2	92.8
-10 +20M	2.5	92.4	0.007	0.11	0.9	1.8	94.1	94.6
-20 +35M	1.6	94.0	0.006	0.10	0.4	1.2	94.5	95.8
-35 +65M	1.0	95.0	0.005	0.10	0.4	0.6	94.9	96.4
-65 +100M	0.4	95.4	0.006	0.11	0.0	0.0	94.9	96.4
-100M	4.6	100.0	0.027	0.12	5.1	3.6	100.0	100.0
Composite	100.0		0.024	0.17	100.0	100.0		

Table 54. - Head Screen Analysis Results, Rhyolite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	0.9	0.9	0.040	0.10	1.3	0.7	1.3	0.7
-2 +1"	40.7	41.6	0.049	0.17	63.6	50.4	64.9	51.1
-1 + 3/4"	11.5	53.1	0.022	0.14	8.0	11.7	72.9	62.8
-3/4 +1/2"	10.2	63.3	0.031	0.12	10.2	8.7	83.1	71.5
-1/2 +1/4"	12.6	75.9	0.014	0.11	5.8	10.2	88.9	81.7
-1/4 +10M	12.8	88.7	0.013	0.10	5.4	9.5	94.3	91.2
-10 +20M	3.2	91.9	0.008	0.10	1.0	2.2	95.3	93.4
-20 +35M	2.3	94.2	0.008	0.10	0.6	1.5	95.9	94.9
-35 +65M	1.3	95.5	0.010	0.15	0.3	1.5	96.2	96.4
-65M	4.5	100.0	0.027	0.10	3.8	3.6	100.0	100.0
Composite	100.0		0.031	0.14	100.0	100.0		

Table 55. - Head Screen Analysis Results, Rhyolite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	8.2	8.2	0.032	0.20	8.5	8.9	8.5	8.9
-3/8 +1/4"	19.0	27.2	0.041	0.17	25.5	17.9	34.0	26.8
-1/4 +10M	38.3	65.5	0.030	0.19	37.6	40.8	71.6	67.6
-10 +20M	11.5	77.0	0.013	0.15	4.9	9.5	76.5	77.1
-20 +35M	7.2	84.2	0.013	0.19	2.9	7.8	79.4	84.9
-35 +65M	4.2	88.4	0.012	0.26	1.6	6.2	81.0	91.1
-65M	11.6	100.0	0.050	0.14	19.0	8.9	100.0	100.0
Composite	100.0		0.031	0.18	100.0	100.0		

Table 56. - Head Screen Analysis Results, Rhyolite Underground Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	8.4	8.4	0.065	0.56	13.3	11.6	13.3	11.6
-2 +1"	13.8	22.2	0.077	0.53	25.5	18.0	38.8	29.6
-1 + 3/4"	8.0	30.2	0.049	0.48	9.4	9.4	48.2	39.0
-3/4 +1/2"	14.0	44.2	0.053	0.53	17.8	18.3	66.0	57.3
-1/2 +1/4"	13.4	57.6	0.041	0.27	13.3	8.9	79.3	66.2
-1/4 +10M	19.9	77.5	0.025	0.32	12.0	15.8	91.3	82.0
-10 +20M	7.2	84.7	0.015	0.30	2.6	5.4	93.9	87.4
-20 +35M	4.9	89.6	0.010	0.33	1.2	3.9	95.1	91.3
-35 +65M	3.0	92.6	0.014	0.33	1.0	2.5	96.1	93.8
-65M	7.4	100.0	0.021	0.34	3.9	6.2	100.0	100.0
Composite	100.0		0.042	0.41	100.0	100.0		

Table 57. - Head Screen Analysis Results, Rhyolite Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	2.4	2.4	0.093	0.74	4.1	3.7	4.1	3.7
-2 +1"	21.1	23.5	0.081	0.50	32.0	21.5	36.1	25.2
-1 + 3/4"	9.9	33.4	0.075	0.93	13.8	18.7	49.9	43.9
-3/4 +1/2"	11.7	45.1	0.071	0.60	15.5	14.2	65.4	58.1
-1/2 +1/4"	18.4	63.5	0.055	0.36	18.9	13.4	84.3	71.5
-1/4 +10M	20.4	83.9	0.028	0.38	10.6	15.9	94.9	87.4
-10 +20M	5.3	89.2	0.020	0.36	2.1	3.9	97.0	91.3
-20 +35M	2.9	92.1	0.009	0.43	0.6	2.4	97.6	93.7
-35 +65M	1.8	93.9	0.008	0.45	0.2	1.6	97.8	95.3
-65M	6.1	100.0	0.019	0.37	2.2	4.7	100.0	100.0
Composite	100.0		0.054	0.49	100.0	100.0		

Table 58. - Head Screen Analysis Results, Rhyolite Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+3/8"	16.6	16.6	0.065	0.62	25.7	24.4	25.7	24.4
-3/8 +1/4"	18.5	35.1	0.054	0.44	23.8	19.2	49.5	43.6
-1/4 +10M	38.4	73.5	0.039	0.38	35.6	34.6	85.1	78.2
-10 +20M	8.3	81.8	0.017	0.38	3.3	7.6	88.4	85.8
-20 +35M	5.3	87.1	0.016	0.40	1.9	5.0	90.3	90.8
-35 +65M	3.1	90.2	0.036	0.36	2.6	2.6	92.9	93.4
-65M	9.8	100.0	0.031	0.29	7.1	6.6	100.0	100.0
Composite	100.0		0.042	0.42	100.0	100.0		

Table 59. - Head Screen Analysis Results, Rhyolite Breccia Underground Bulk Ore, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+6"	7.4	7.4	0.136	0.31	12.3	5.7	12.3	5.7
-6 +4"	6.0	13.4	0.049	0.54	3.5	7.9	15.8	13.6
-4 +2"	17.5	30.9	0.082	0.38	17.5	16.6	33.3	30.2
-2 +1"	15.6	46.5	0.107	0.34	20.3	13.1	53.6	43.3
-1 + 3/4"	6.9	53.4	0.110	0.38	9.3	6.4	62.9	49.7
-3/4 +1/2"	7.7	61.1	0.063	0.29	6.0	5.5	68.9	55.2
-1/2 +1/4"	11.2	72.3	0.074	0.45	10.1	12.4	79.0	67.6
-1/4 +10M	12.4	84.7	0.057	0.50	8.6	15.4	87.6	83.0
-10 +20M	3.9	88.6	0.063	0.52	3.0	5.0	90.6	88.0
-20 +35M	2.8	91.4	0.045	0.65	1.6	4.5	92.2	92.5
-35 +65M	1.8	93.2	0.044	0.69	1.0	3.0	93.2	95.5
-65M	6.8	100.0	0.083	0.27	6.8	4.5	100.0	100.0
Composite	100.0		0.082	0.40	100.0	100.0		

Table 60. - Head Screen Analysis Results, Rhyolite Breccia Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	10.3	10.3	0.090	0.12	11.0	3.6	11.0	3.6
-2 +1"	42.1	52.4	0.097	0.27	48.5	34.5	59.5	38.1
-1 + 3/4"	9.4	61.8	0.051	0.31	5.7	8.8	65.2	46.9
-3/4 +1/2"	8.6	70.4	0.097	0.47	9.9	12.1	75.1	59.0
-1/2 +1/4"	10.2	80.6	0.077	0.39	9.4	12.1	84.5	71.1
-1/4 +10M	9.0	89.6	0.066	0.55	7.0	15.1	91.5	86.2
-10 +20M	2.5	92.1	0.051	0.54	1.5	4.2	93.0	90.4
-20 +35M	1.9	94.0	0.051	0.57	1.2	3.3	94.2	93.7
-35 +65M	1.4	95.4	0.047	0.57	0.8	2.4	95.0	96.1
-65M	4.6	100.0	0.092	0.29	5.0	3.9	100.0	100.0
Composite	100.0		0.084	0.33	100.0	100.0		

Table 61. - Head Screen Analysis Results, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	22.7	22.7	0.074	0.29	22.4	15.4	22.4	15.4
-3/8 +1/4"	14.7	37.4	0.080	0.37	15.7	12.6	38.1	28.0
-1/4 +10M	29.1	66.5	0.077	0.48	29.9	32.7	68.0	60.7
-10 +20M	9.6	76.1	0.049	0.52	6.3	11.7	74.3	72.4
-20 +35M	6.3	82.4	0.052	0.61	4.4	8.9	78.7	81.3
-35 +65M	4.7	87.1	0.048	0.59	3.1	6.6	81.8	87.9
-65M	12.9	100.0	0.106	0.40	18.2	12.1	100.0	100.0
Composite	100.0		0.075	0.43	100.0	100.0		

Head screen analysis results, in general, show that contained gold and silver values were not evenly distributed throughout the various size fractions. Contained gold values were somewhat enriched in the coarser size fractions. However, this trend was not consistent for each sample at each feed size. Gold occurrence was somewhat "spotty".

GRAVITY CONCENTRATION TEST PROCEDURES AND RESULTS

Gravity concentration tests were conducted on 6 Tiger bulk ore samples at an 80 percent minus 35 mesh feed size to determine concentrate grade, concentration ratio, and overall precious metal recovery. Gravity tests were conducted using a laboratory gold wheel to produce a rougher concentrate and a rougher tailing. Rougher concentrates were cleaned once, by hand panning, to produce a cleaner concentrate and a middling. The two gravity products were examined under a microscope to determine the presence, size, and shape of visible gold particles. Concentrate products were then assayed in entirety using conventional fire assay fusion procedures to determine precious metal content. Rougher tailings were dried, weighed, and assayed to determine residual precious metal content. Silver recoveries were poor and are not discussed in the results section of this report.

Overall gravity concentration test results are provided in Tables 62 through 67.

Table 62. - Gravity Concentration Test Results,
Cloudburst Surface Bulk Ore, 80 Percent Minus 35 Mesh Feed

Product	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
Conc.	0.3	0.3	0.730	0.42	7.5	0.8	7.5	0.8
Middling	3.2	3.5	0.099	0.20	10.8	4.9	18.3	5.7
Tail	96.5	100.0	0.025	0.12	81.7	94.3	100.0	100.0
Composite	100.0		0.030	0.12	100.0	100.0		

Overall gravity concentration test results show that the Cloudburst bulk ore sample responded poorly to concentration by conventional gravity methods at an 80 percent minus 35 mesh feed size. The cleaner concentrate was 0.3 percent of the feed weight, assayed 0.730 ounce gold per ton, and represented a gold recovery of 7.5 percent. Gold concentration ratio was 24.3 to 1. The combined cleaner concentrate and middling would be 3.5 percent of the feed weight, would assay 0.150 ounce gold per ton, and represent a gold recovery of 18.3. Gold concentration ratio would be 5.0 to 1.

Table 63. - Gravity Concentration Test Results,
Granite Surface Bulk Ore, 80 Percent Minus 35 Mesh Feed

Product	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
Conc.	0.2	0.2	4.468	0.59	13.2	0.4	13.2	0.4
Middling	11.6	11.8	0.107	0.38	18.5	14.6	31.7	15.0
Tail	88.2	100.0	0.052	0.29	68.3	85.0	100.0	100.0
Composite	100.0		0.067	0.30	100.0	100.0		

Table 64. - Gravity Concentration Test Results,
Quartz Vein Surface Bulk Ore, 80 Percent Minus 35 Mesh Feed

Product	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
Conc.	0.4	0.4	0.743	0.41	2.4	0.6	2.4	0.6
Middling	6.0	6.4	0.128	0.36	6.1	7.0	8.5	7.6
Tail	93.6	100.0	0.123	0.31	91.5	92.4	100.0	100.0
Composite	100.0		0.126	0.31	100.0	100.0		

The Granite and Quartz Vein surface ore samples also responded poorly to concentration by conventional gravity methods at that feed size. Cleaner concentrates were 0.2 and 0.4 percent of the feed weight, assayed 4.468 and 0.743 ounce gold per ton, and represented gold recoveries of 13.2 and 2.4 percent, respectively. Respective gold concentration ratios were 66.7 to 1 and 5.9 to 1. Combined cleaner concentrate and middling products would be 11.8 and 6.4 percent of the feed weight, would assay 0.186 and 0.162 ounce gold per ton, and represent overall gold recoveries of 31.7 and 8.5 percent, respectively. Respective gold concentration ratios would be 2.8 to 1 and 1.3 to 1.

Table 65. - Gravity Concentration Test Results,
Rhyolite Surface Bulk Ore, 80 Percent Minus 35 Mesh Feed

		Cum.	Assays,		Distribution,			
	Weight,	Wt.,	oz/ton		percent		cum. percent	
Product	percent	pct.	Au	Ag	Au	Ag	Au	Ag
Conc.	0.1	0.1	1.275	0.39	8.0	0.0	8.0	0.0
Middling	36.6	36.7	0.015	0.13	33.7	33.6	41.7	33.6
Tail	63.3	100.0	0.015	0.15	58.3	66.4	100.0	100.0
Composite	100.0		0.016	0.14	100.0	100.0		

The Rhyolite surface bulk ore sample was not amenable to concentration by conventional gravity methods. The cleaner concentrate was 0.1 percent of the feed weight, assayed 1.275 ounce gold per ton, and represented a gold recovery of 8.0 percent. Gold concentration ratio was 79.7 to 1. The middling and rougher tailing both assayed 0.015 ounce gold per ton.

Table 66. - Gravity Concentration Test Results,
Rhyolite Underground Bulk Ore, 80 Percent Minus 35 Mesh Feed

		Cum.	Assays,		Distribution,			
	Weight,	Wt.,	oz/ton		percent		cum. percent	
Product	percent	pct.	Au	Ag	Au	Ag	Au	Ag
Conc.	0.1	0.1	3.947	2.73	9.0	0.8	9.0	0.8
Middling	4.6	4.7	0.049	0.36	5.3	4.8	14.3	5.6
Tail	95.3	100.0	0.039	0.35	85.7	94.4	100.0	100.0
Composite	100.0		0.043	0.35	100.0	100.0		

**Table 67. - Gravity Concentration Test Results,
Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 35 Mesh Feed**

Product	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
Conc.	0.2	0.2	2.017	2.97	5.8	1.5	5.8	1.5
Middling	4.8	5.0	0.056	0.24	3.9	3.1	9.7	4.6
Tail	95.0	100.0	0.066	0.39	90.3	95.4	100.0	100.0
Composite	100.0		0.069	0.39	100.0	100.0		

Gravity concentration test results show that the Rhyolite and Rhyolite Breccia U/G bulk ore samples responded poorly to concentration by conventional gravity methods. Cleaner concentrates were 0.1 and 0.2 percent of the feed weight, assayed 3.947 and 2.017 ounce gold per ton, and represented gold recoveries of 9.0 and 5.8 percent, respectively. Respective gold concentration ratios were 91.8 to 1 and 29.2 to 1. Rougher concentrates (combined cleaner concentrate and middling) would be 4.7 and 5.0 percent of the feed weight, would assay 0.131 and 0.142 ounce gold per ton, and represent overall gold recoveries of 14.3 and 9.7 percent, respectively. Respective gold concentration ratios would be 3.1 to 1 and 1.9 to 1.

Microscopic examination of the cleaner concentrates produced from Cloudburst, Granite, and Quartz Vein surface bulk ore samples showed that contained coarse gold particles ranged in size from less than 150 mesh to about 65 mesh. Contained gold particles varied in shape. Some were of low surface area to weight ratio and were rounded and/or elongated. Many visible gold particles were "flattened" in appearance (high surface area to weight ratio). "Flattening" of gold particles may have occurred during milling of the feeds. Surface coating was observed on some gold particles. Visible gold particles were not observed in cleaner concentrates produced from the Rhyolite and Rhyolite Breccia bulk ore samples. Cleaner concentrates produced from those samples contained primarily sulfide and iron mineral grains. Visible gold particles were not observed in middling products.

DIRECT AGITATED CYANIDATION TEST PROCEDURES AND RESULTS

Direct agitated cyanidation (bottle roll) tests were conducted on 31 Tiger cuttings composites at the as received feed size to determine precious metal recovery, recovery rate, and reagent requirements. Tests were conducted also on 4 surface bulk ore samples at 80 percent minus 1/4 inch and 200 mesh feed sizes, and two underground bulk ore samples at 80 percent minus 1/4 inch, and 10, 65, 100, 150, and 200 mesh feed sizes, to determine precious metal recovery, recovery rate, reagent requirements, and sensitivity to feed size. Ore charges were mixed with water to achieve 40 weight percent solids. Natural pulp pHs were measured. Lime was added to adjust the pH of the pulps to 11.0 before adding the cyanide. Sodium cyanide, equivalent to 2.0 pounds per ton of solution, was added to the alkaline pulps.

Leaching was conducted by rolling the pulps in bottles on the laboratory rolls for 96 hours. Rolling was suspended briefly after 2, 6, 24, 48, and 72 hours to allow the pulps to settle so samples of pregnant solution could be taken for analysis by A.A. methods. Pregnant solution volumes were measured and sampled. Cyanide concentration and pH were determined for each pregnant solution. Make-up water, equivalent to that withdrawn, was added to the pulps. Cyanide concentrations were restored to initial levels. Lime was added when necessary to maintain the leaching pH at between 10.8 and 11.2. Rolling was then resumed.

After 96 hours, pulps were filtered to separate liquids and solids. Final pregnant solution volumes were measured and sampled for analysis. Final pH and cyanide concentrations were determined. Leached residues were washed, dried, weighed, and assayed in triplicate to determine residual precious metal content. The 1/4 inch leached residues were screen assayed in entirety to determine residual precious metal content and distribution.

Overall metallurgical results from bottle roll tests conducted on the cuttings composites are provided in Tables 68 through 76. Gold leach rate profiles are shown graphically in Figures 1 through 9. Triplicate tail assay results are provided in Table 77. A summary of bottle roll test results is provided in Table 78.

Table 68. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite		
	1	2	3
Metallurgical Results	MM-10	MM-14	MM-16
Extraction: pct total Au	(Qtz. Mon.)	(Qtz. Mon.)	(Qtz. Mon.)
in 2 hours	24.9	16.6	25.9
in 6 hours	39.6	30.9	35.0
in 24 hours	56.1	45.0	48.6
in 48 hours	62.6	49.8	52.7
in 72 hours	65.6	52.5	55.5
in 96 hours	68.1	54.3	59.1
Extracted, oz Au/ton ore	0.049	0.076	0.013
Tail Assay, oz Au/ton[1)]	0.023	0.064	0.009
Calc'd. head, oz Au/ton ore	0.072	0.140	0.022
Head Grade, oz Au/ton ore[2)]	0.070	0.133	0.020
Pred. Head Grade, oz Au/ton ore[3)]	0.060	0.127	0.016
Cyanide Consumed, lb/ton ore	0.74	0.46	0.31
Lime Added, lb/ton ore	6.3	3.5	5.1
Final Solution pH	10.9	10.8	10.9
Natural pH (40% Solids)	7.3	7.8	7.8
Ag Extracted, oz/ton ore	0.02	0.02	0.01

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 1. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

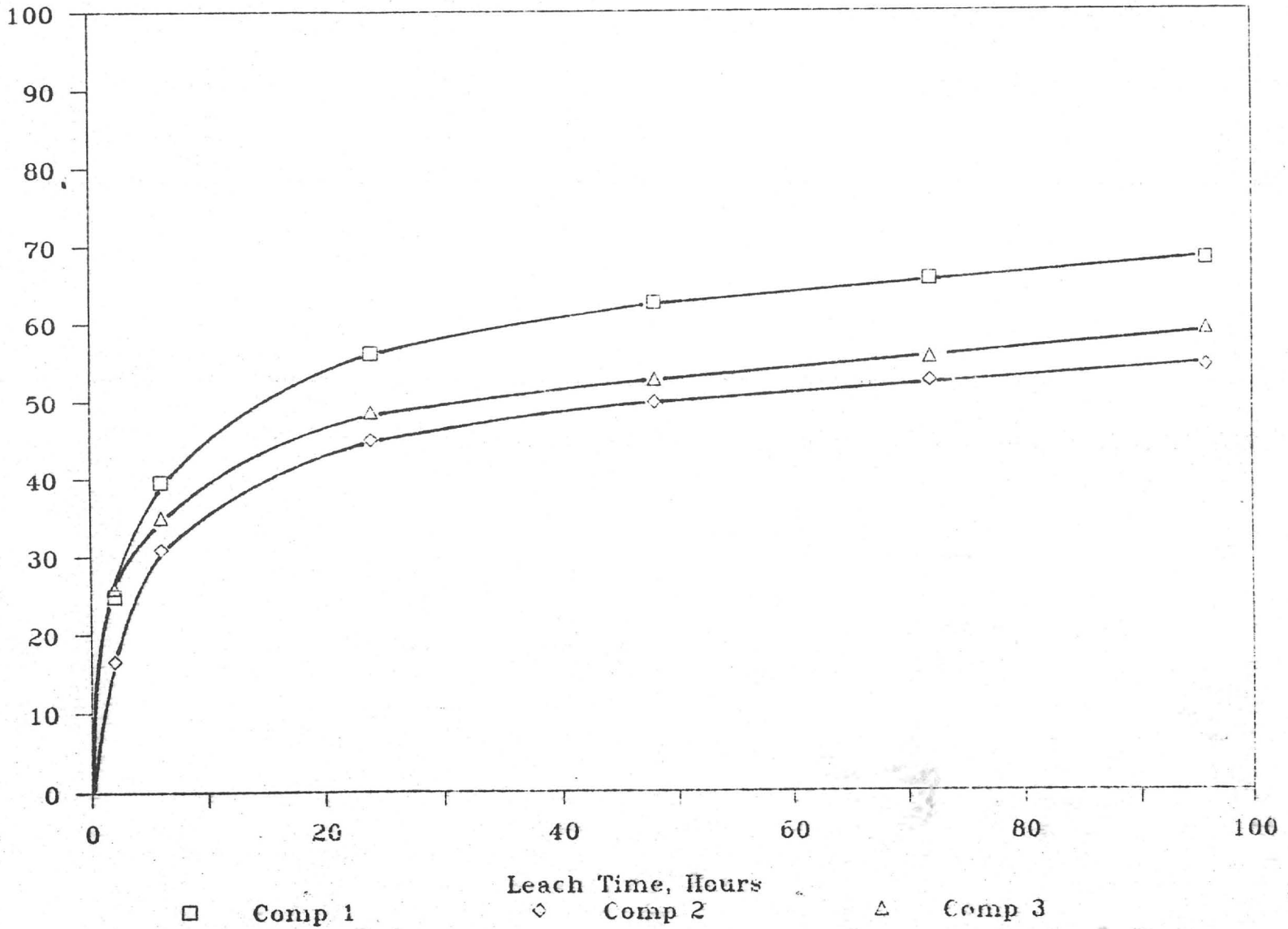


Table 69. - Overal Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite			
	4	5	6	7
Metallurgical Results	MM-27	MM-27	MM-30	MM-39
Extraction: pct total Au	(Qtz. Mon.)	(Rhyolite)	(Rhyolite)	(Qtz. Mon.)
in 2 hours	31.3	36.1	20.0	32.5
in 6 hours	44.8	52.6	44.5	45.1
in 24 hours	54.6	65.6	65.2	54.9
in 48 hours	57.0	69.6	70.9	58.0
in 72 hours	58.6	71.6	73.6	60.4
in 96 hours	59.8	73.7	75.7	61.8
Extracted, oz Au/ton ore	0.143	0.042	0.078	0.034
Tail Assay, oz Au/ton[1)]	0.096	0.015	0.025	0.021
Calc'd. Head, oz Au/ton ore	0.239	0.057	0.103	0.055
Head Grade, oz Au/ton ore[2)]	0.205	0.059	0.108	0.049
Predicted Head , oz Au/ton ore[3)]	0.194	0.060	0.113	0.045
Cyanide Consumed, lb/ton ore	0.49	0.45	0.14	0.58
Lime Added, lb/ton ore	4.9	3.0	3.7	6.4
Final Solution pH	10.9	11.1	10.9	10.7
Natural pH (40% Solids)	8.0	8.2	8.1	8.3
Ag Extracted, oz/ton ore	0.12	0.04	0.11	0.06
Ag Calc'd. Head, oz/ton ore	0.76	0.20	0.52	0.20
Ag Recovery, percent	15.8	20.0	21.2	30.0

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 2. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

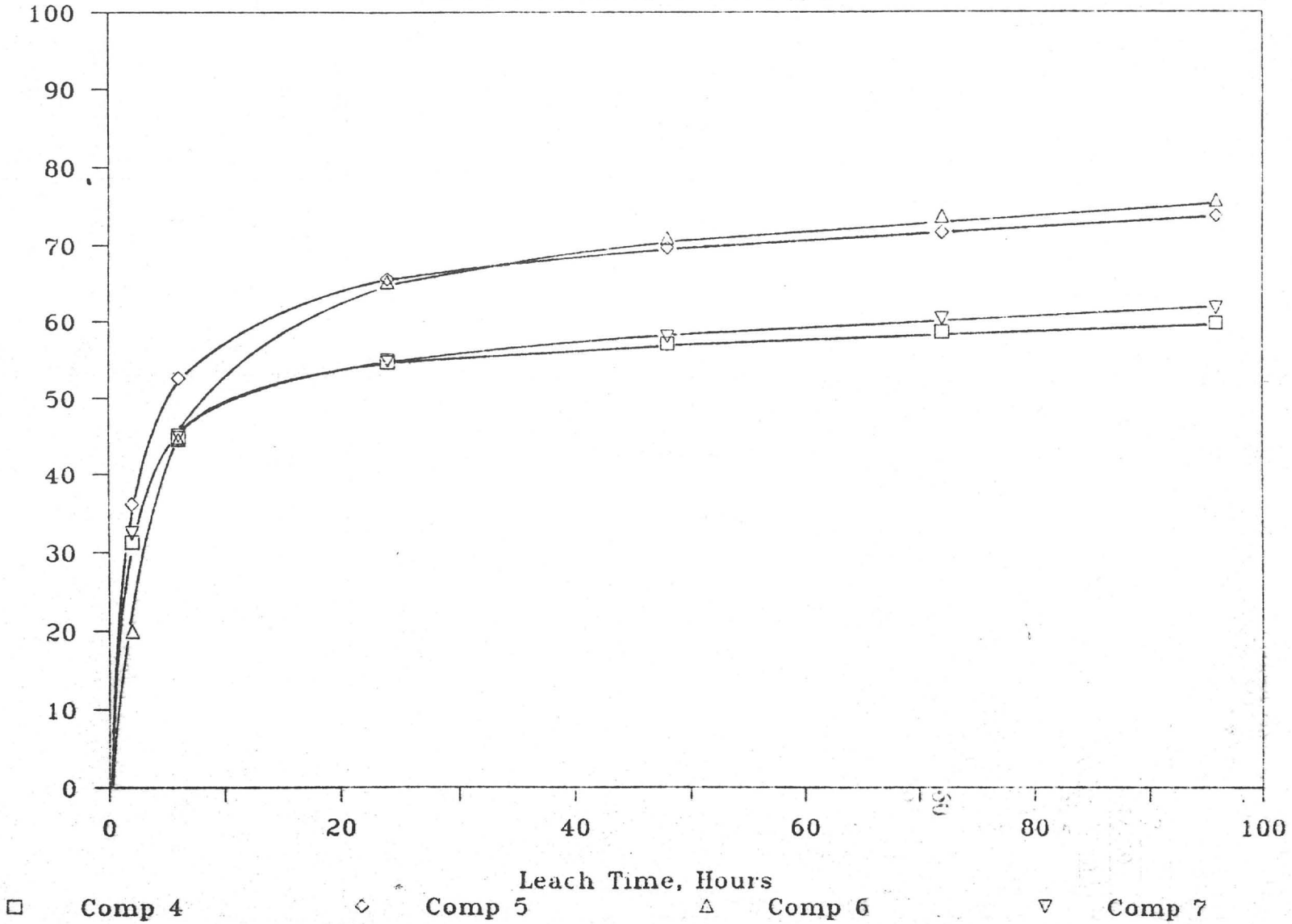


Table 70. - Overal Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite			
	8	9	10	11
Metallurgical Results	MM-41	MM-41	MM-41	MM-41
Extraction: pct total Au	(Cloudbrst)	(Rhyolite)	(Cloudbrst)	(Qtz. Mon.)
in 2 hours	19.1	19.3	25.3	22.0
in 6 hours	35.7	37.8	38.4	33.7
in 24 hours	49.1	62.5	47.9	47.2
in 48 hours	52.2	71.8	52.6	52.8
in 72 hours	53.5	77.5	53.7	55.0
in 96 hours	56.5	79.4	57.9	58.7
Extracted, oz Au/ton ore	0.013	0.054	0.011	0.027
Tail Assay, oz Au/ton[1)]	0.010	0.014	0.008	0.019
Calc'd. Head, oz Au/ton ore	0.023	0.068	0.019	0.046
Head Grade, oz Au/ton ore[2)]	0.026	0.071	0.017	0.048
Predicted Head, oz Au/ton ore[3)]	0.023	0.065	0.013	0.040
Cyanide Consumed, lb/ton ore	0.35	0.26	0.42	0.29
Lime Added, lb/ton ore	5.9	3.3	6.9	3.9
Final Solution pH	10.9	10.9	10.9	10.9
Natural pH (40% Solids)	8.0	8.1	7.8	8.0
Ag Extracted, oz/ton ore	0.01	0.03	0.04	0.02
Ag Calc'd. Head, oz/ton ore	N/A	0.20	0.28	0.21
Ag Recovery, percent	N/A	15.0	14.3	9.5

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 3. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

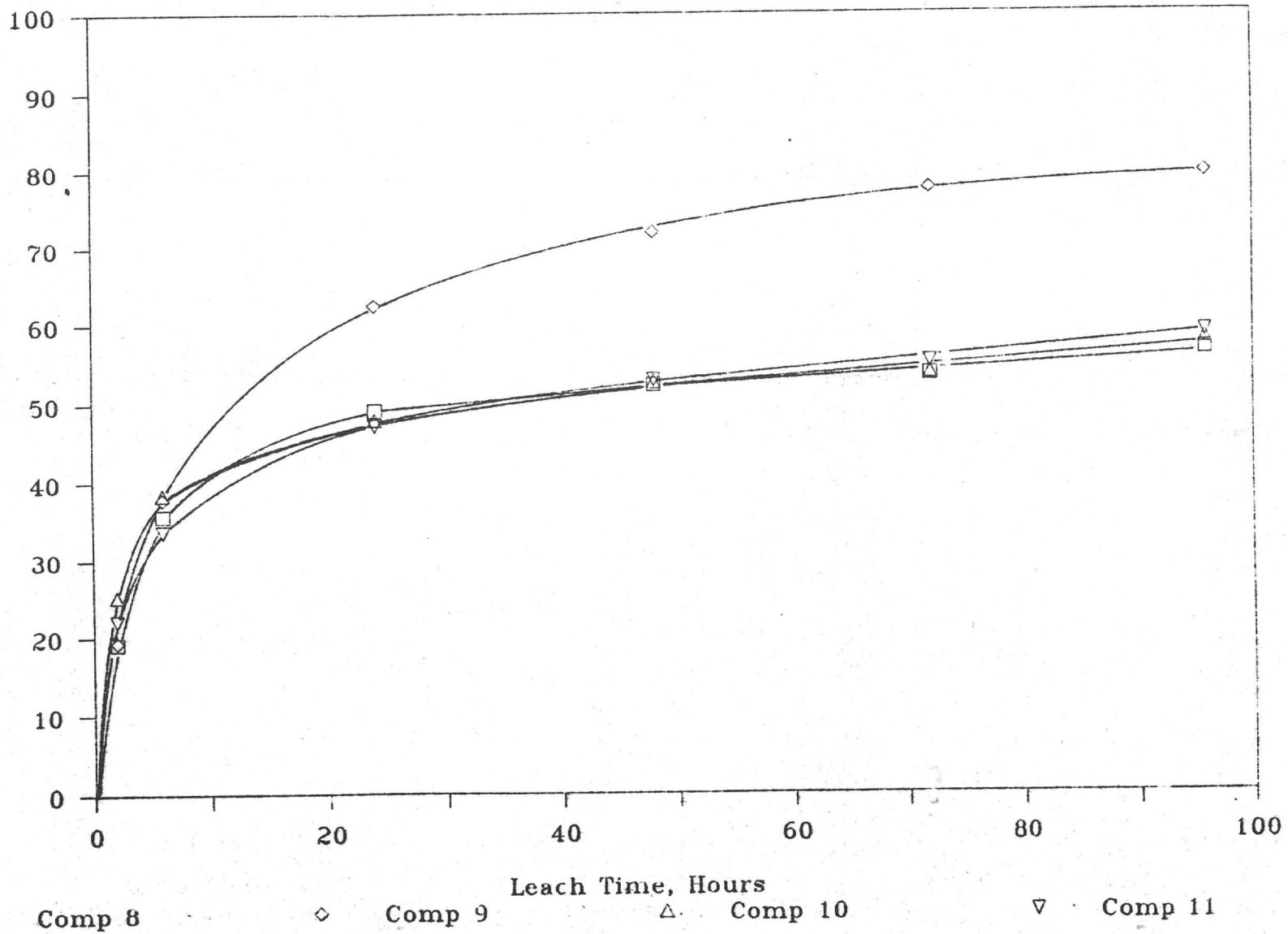


Table 71. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite		
	12	13	14
Metallurgical Results	MM-42	MM-50	MM-50
Extraction: pct total Au	(Rhyolite)	(Qtz. Mon.)	(Rhyolite)
in 2 hours	23.2	30.4	22.9
in 6 hours	37.9	43.3	41.4
in 24 hours	51.3	52.4	57.2
in 48 hours	54.5	57.3	59.5
in 72 hours	56.6	61.2	62.6
in 96 hours	57.4	61.2	64.0
Extracted, oz Au/ton ore	0.027	0.030	0.071
Tail Assay, oz Au/ton[1)]	0.020	0.019	0.040
Calc'd. Head, oz Au/ton ore	0.047	0.049	0.111
Head Grade, oz Au/ton ore[2)]	0.044	0.048	0.116
Predicted Head, oz Au/ton ore[3)]	0.043	0.058	0.123
Cyanide Consumed, lb/ton ore	0.45	0.59	0.48
Lime Added, lb/ton ore	3.0	6.1	4.7
Final Solution pH	10.9	10.9	10.9
Natural pH (40% Solids)	7.7	7.8	7.7
Ag Extracted, oz/ton ore	0.07	0.04	0.04
Ag Calc'd. Head, oz/ton ore	0.55	0.23	0.22
Ag Recovery, percent	12.7	17.4	18.2

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 4. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

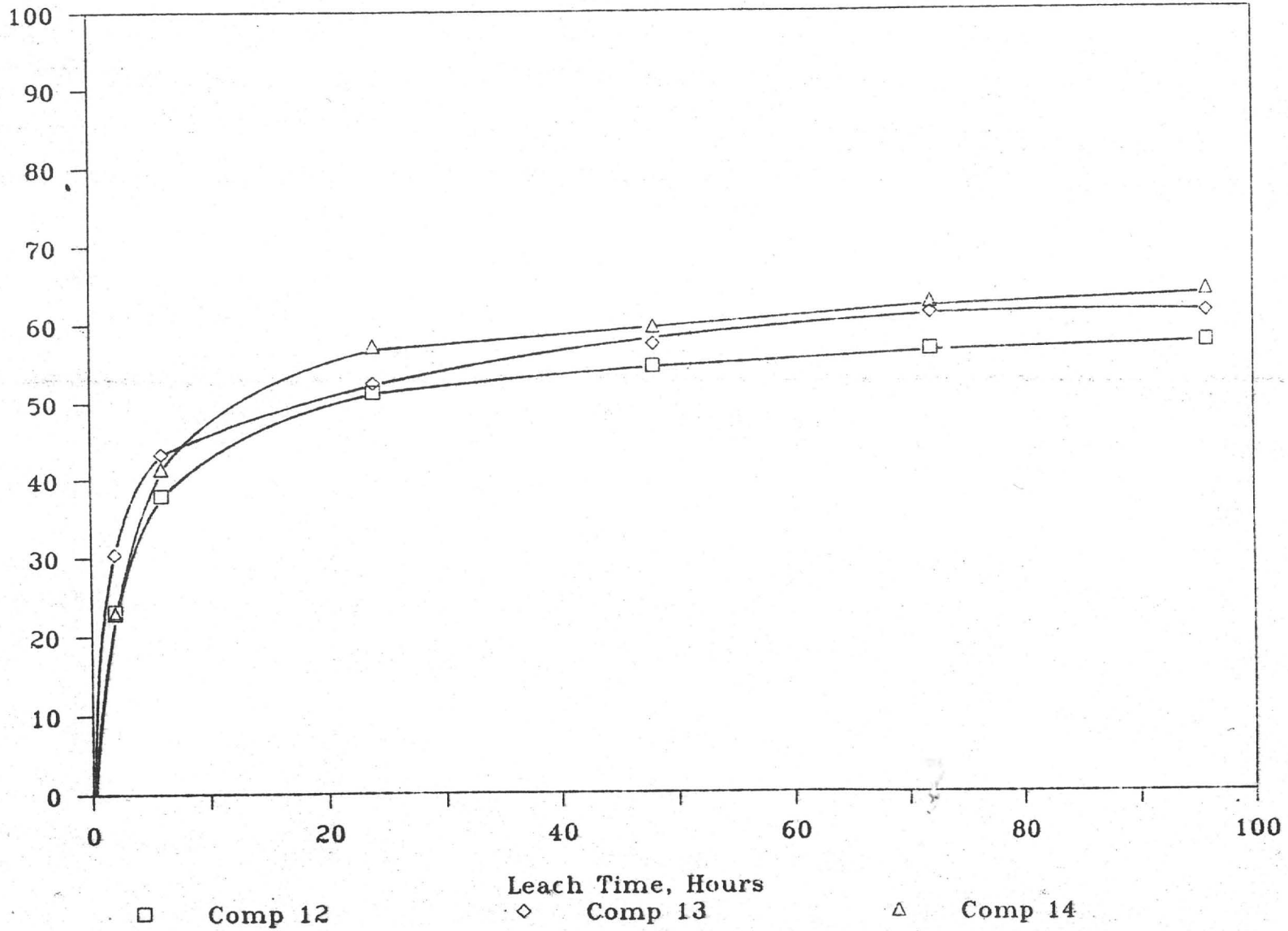


Table 72. - Overal Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite			
	15	16	17	18
Metallurgical Results	MM-53	MM-56	MM-58	MM-60
Extraction: pct total Au	(Qtz. Mon.)	(Rhyolite)	(Cloudbrst)	(Qtz. Mon.)
in 2 hours	21.2	31.1	21.9	20.3
in 6 hours	29.6	45.8	31.6	31.5
in 24 hours	42.0	57.6	41.9	44.9
in 48 hours	48.0	60.8	45.6	50.0
in 72 hours	50.8	63.9	48.1	52.8
in 96 hours	56.0	65.8	50.0	53.8
Extracted, oz Au/ton ore	0.014	0.025	0.016	0.021
Tail Assay, oz Au/ton[1)]	0.011	0.013	0.016	0.018
Calc'd. Head, oz Au/ton ore	0.025	0.038	0.032	0.039
Head Grade, oz Au/ton ore[2)]	0.028	0.035	0.031	0.040
Predicted Head, oz Au/ton ore[3)]	0.027	0.039	0.032	0.030
Cyanide Consumed, lb/ton ore	0.23	0.61	0.31	0.76
Lime Added, lb/ton ore	5.2	3.0	5.9	5.4
Final Solution pH	11.0	10.8	11.0	11.1
Natural pH (40% Solids)	7.9	7.8	8.8	7.9
Ag Extracted, oz/ton ore	0.01	0.11	0.01	0.02
Ag Calc'd. Head, oz/ton ore	N/A	0.36	N/A	N/A
Ag Recovery, percent	N/A	30.6	N/A	N/A

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 5. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

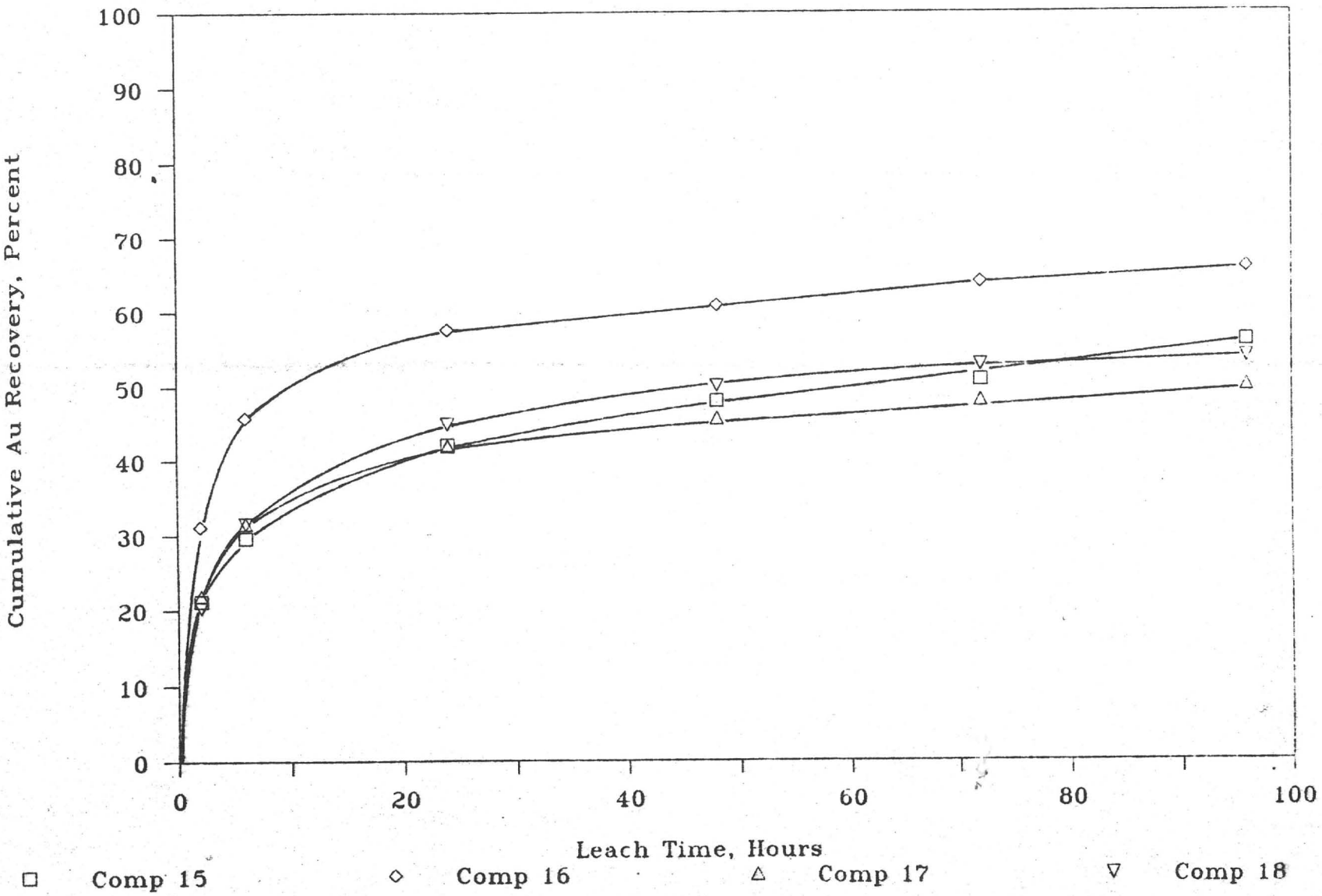


Table 73. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite		
	19	20	21
Metallurgical Results	MM-61 (Qtz. Mon.)	MM-67 (Cloudbrst)	MM-67 (Qtz. Mon.)
Extraction: pct total Au			
in 2 hours	26.1	25.9	36.8
in 6 hours	39.6	39.5	45.8
in 24 hours	50.9	52.0	57.9
in 48 hours	54.9	55.5	63.2
in 72 hours	56.7	57.7	66.3
in 96 hours	57.9	61.4	68.4
Extracted, oz Au/ton ore	0.033	0.027	0.013
Tail Assay, oz Au/ton[1)]	0.024	0.017	0.006
Calc'd Head, oz Au/ton ore	0.057	0.044	0.019
Head Grade, oz Au/ton ore[2)]	0.054	0.046	0.020
Predicted Head, oz Au/ton ore[3)]	0.049	0.047	0.030
Cyanide Consumed, lb/ton ore	0.59	0.46	0.43
Lime Added, lb/ton ore	5.2	4.9	5.3
Final Solution pH	11.0	11.0	11.0
Natural pH (40% Solids)	8.0	7.6	7.7
Ag Extracted, oz/ton ore	0.06	0.06	0.03
Ag Calc'd. Head, oz/ton ore	0.28	0.29	N/A
Ag Recovery, percent	21.4	20.7	N/A

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 6. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

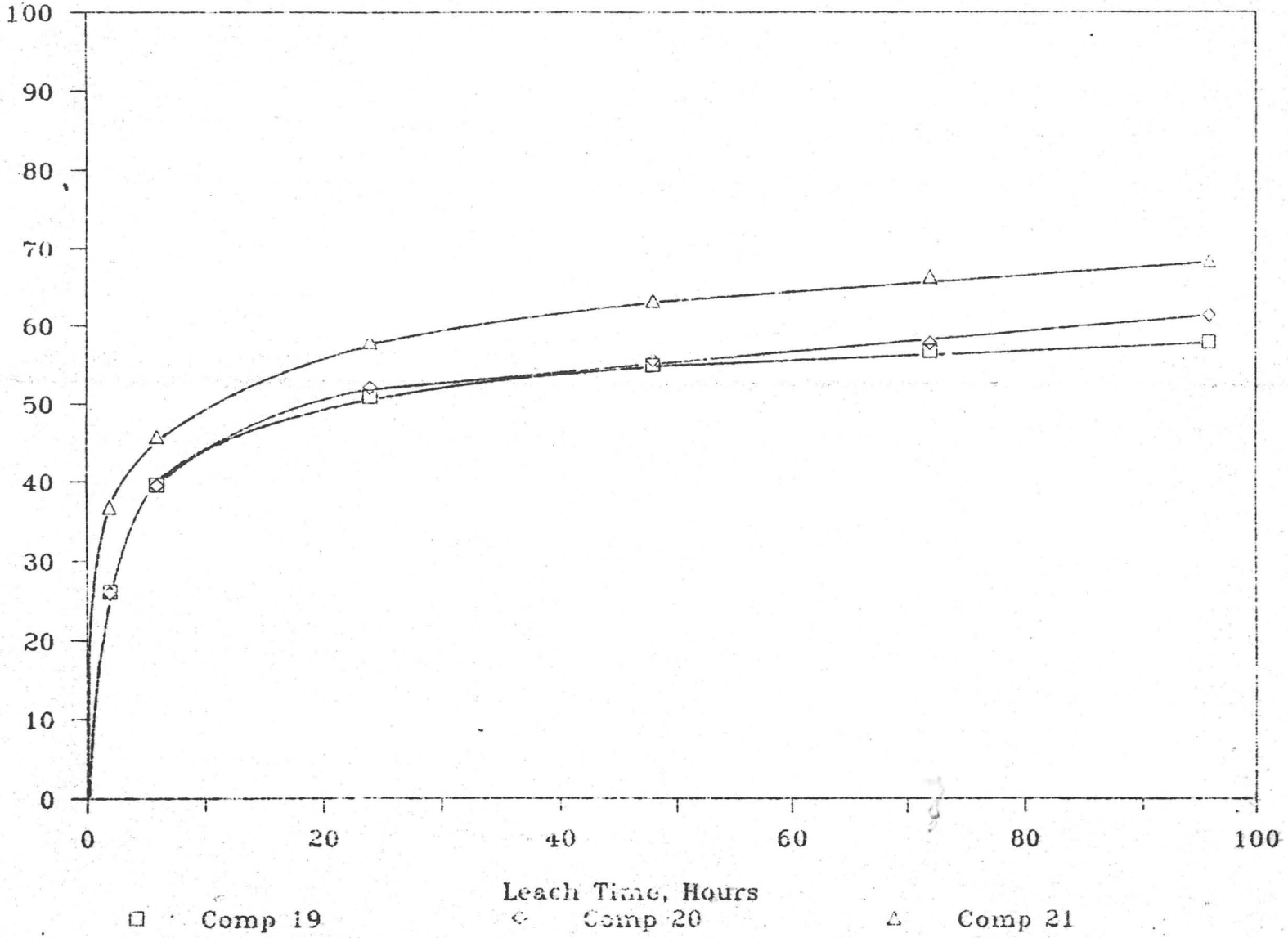


Table 74. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite		
	22	23	24
Metallurgical Results	MM-70 (Rhyolite)	MM-76 (Rhyolite)	MM-76 (Qtz. Vein)
Extraction: pct total Au			
in 2 hours	15.2	16.3	48.5
in 6 hours	30.0	35.3	65.7
in 24 hours	55.0	58.6	72.4
in 48 hours	63.5	65.0	75.5
in 72 hours	68.3	67.3	78.3
in 96 hours	71.4	71.4	79.6
Extracted, oz Au/ton ore	0.142	0.075	0.109
Tail Assay, oz Au/ton[1)]	0.057	0.030	0.028
Calc'd. Head, oz Au/ton ore	0.199	0.105	0.137
Head Grade, oz Au/ton ore[2)]	0.208	0.099	0.132
Predicted Head, oz Au/ton ore[3)]	0.250	0.074	0.129
Cyanide Consumed, lb/ton ore	0.29	0.79	1.21
Lime Added, lb/ton ore	3.4	3.2	6.6
Final Solution pH	10.9	10.9	10.9
Natural pH (40% Solids)	8.2	8.0	8.2
Ag Extracted, oz/ton ore	0.03	0.40	0.37
Ag Calc'd. Head, oz/ton ore	N/A	1.64	1.27
Ag Recovery, percent	N/A	24.4	29.1

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 7. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

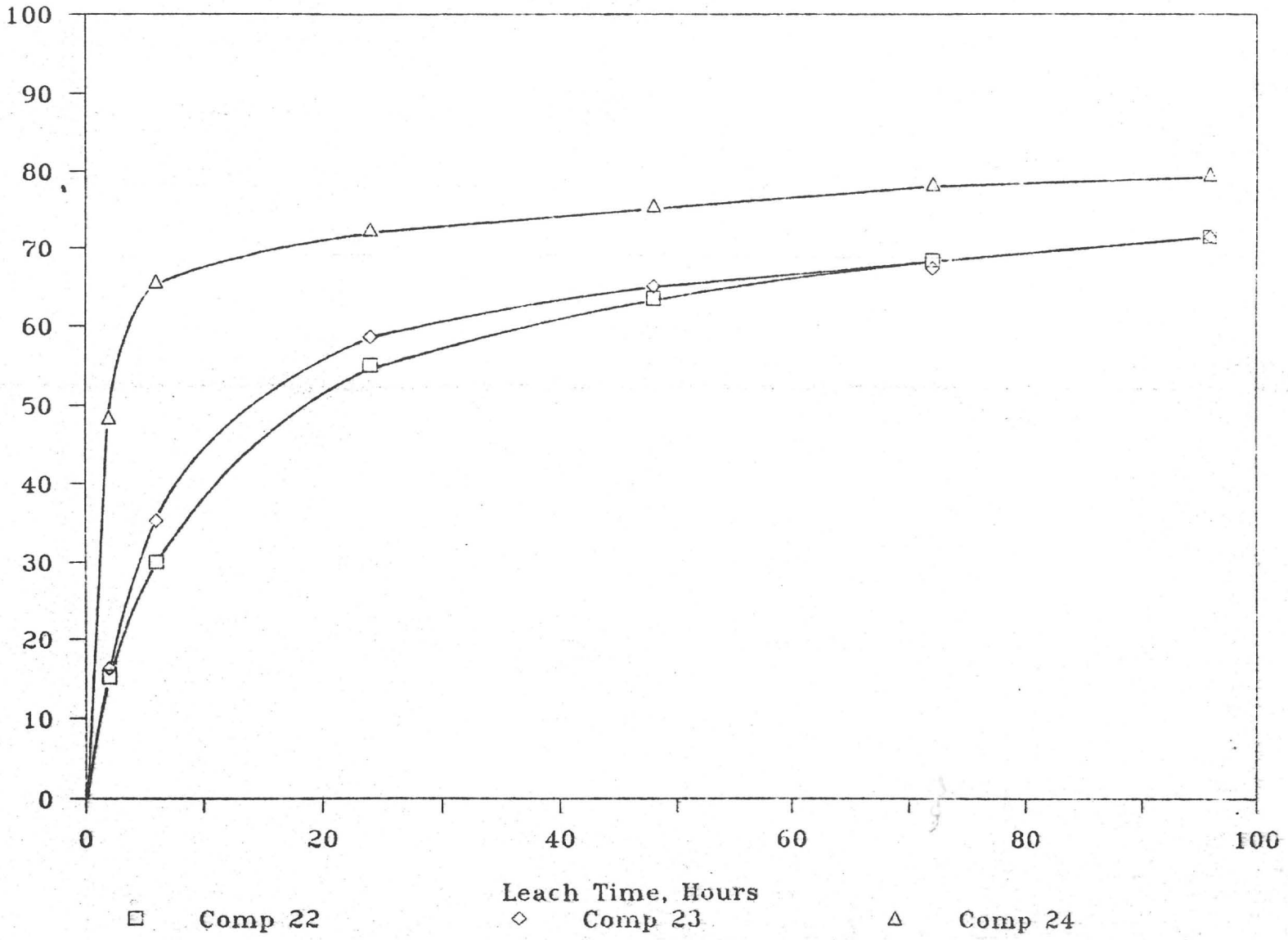


Table 75. - Overal Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite			
	25	26	27	28
Metallurgical Results	MM-77	MM-77	MM-81	MM-81
Extraction: pct total Au	(Cloudbrst)	(Qtz. Mon.)	(Cloudbrst)	(Qtz. Mon.)
in 2 hours	13.1	26.3	21.8	20.4
in 6 hours	29.8	35.7	36.2	31.6
in 24 hours	55.9	44.4	48.5	44.2
in 48 hours	63.3	49.6	54.1	48.9
in 72 hours	64.8	51.0	55.6	50.7
in 96 hours	66.1	52.9	55.9	51.1
Extracted, oz Au/ton ore	0.277	0.036	0.019	0.023
Tail Assay, oz Au/ton[1)]	0.142	0.032	0.015	0.022
Calc'd. Head, oz Au/ton ore	0.419	0.068	0.034	0.045
Head Grade, oz Au/ton ore[2)]	0.418	0.066	0.031	0.045
Predicted Head, oz Au/ton ore[3)]	0.383	0.079	0.038	0.048
Cyanide Consumed, lb/ton ore	0.41	0.39	0.14	0.15
Lime Added, lb/ton ore	7.4	8.6	7.3	5.2
Final Solution pH	10.8	11.0	10.9	10.8
Natural pH (40% Solids)	7.1	7.4	7.6	7.7
Ag Extracted, oz/ton ore	0.09	0.04	0.02	0.02
Ag Calc'd. Head, oz/ton ore	0.50	0.31	0.17	N/A
Ag Recovery, percent	18.0	12.9	11.8	N/A

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 8. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

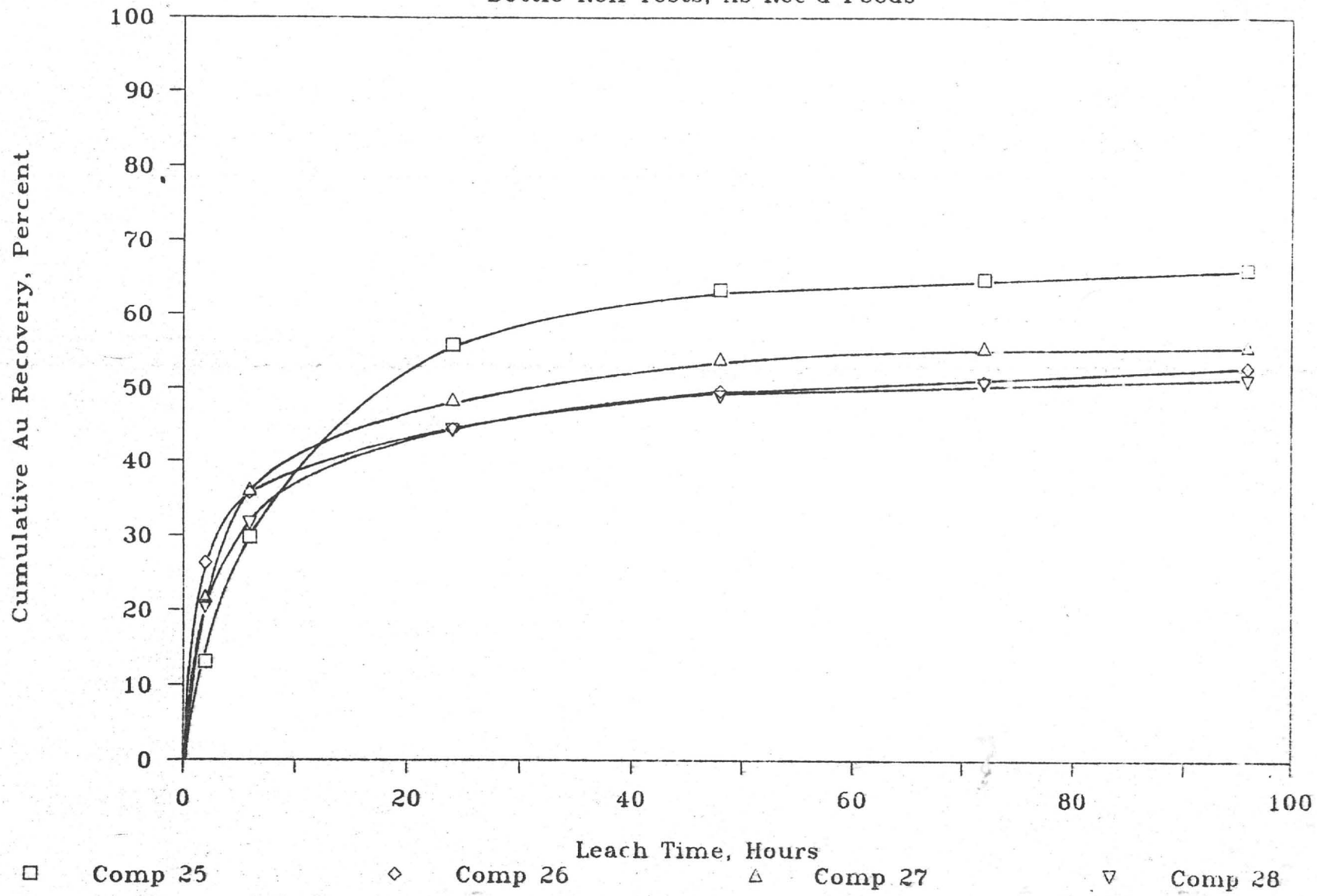


Table 76. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Cuttings Composites, As Received Feeds

	Composite		
	29	30	31
Metallurgical Results	MM-92	MM-99	MM-99
Extraction: pct total Au	(Rhy Brec)	(Qtz. Mon.)	(Rhy Brec)
in 2 hours	15.2	12.7	18.6
in 6 hours	28.3	27.1	32.1
in 24 hours	39.0	41.5	53.6
in 48 hours	44.1	45.5	62.9
in 72 hours	44.8	47.6	63.6
in 96 hours	44.8	49.1	64.3
Extracted, oz Au/ton ore	0.013	0.054	0.009
Tail Assay, oz Au/ton[1)]	0.016	0.056	0.005
Calc'd. Head, oz Au/ton ore	0.029	0.110	0.014
Head Grade, oz Au/ton ore[2)]	0.027	0.118	0.016
Predicted Head, oz Au/ton ore[3)]	0.037	0.111	0.044
Cyanide Consumed, lb/ton ore	0.32	0.16	0.32
Lime Added, lb/ton ore	3.4	5.8	4.4
Final Solution pH	10.7	10.8	10.8
Natural pH (40% Solids)	7.9	7.6	7.8
Ag Extracted, oz/ton ore	0.04	0.08	0.01
Ag Calc'd. Head, oz/ton ore	0.21	0.25	N/A
Ag Recovery, percent	19.0	32.0	N/A

1) Average of three.
2) Average of all head grade determinations.
3) Provided by Magma Copper personnel.

Figure 9. – Gold Leach Rate Profiles,

Bottle Roll Tests, As Rec'd Feeds

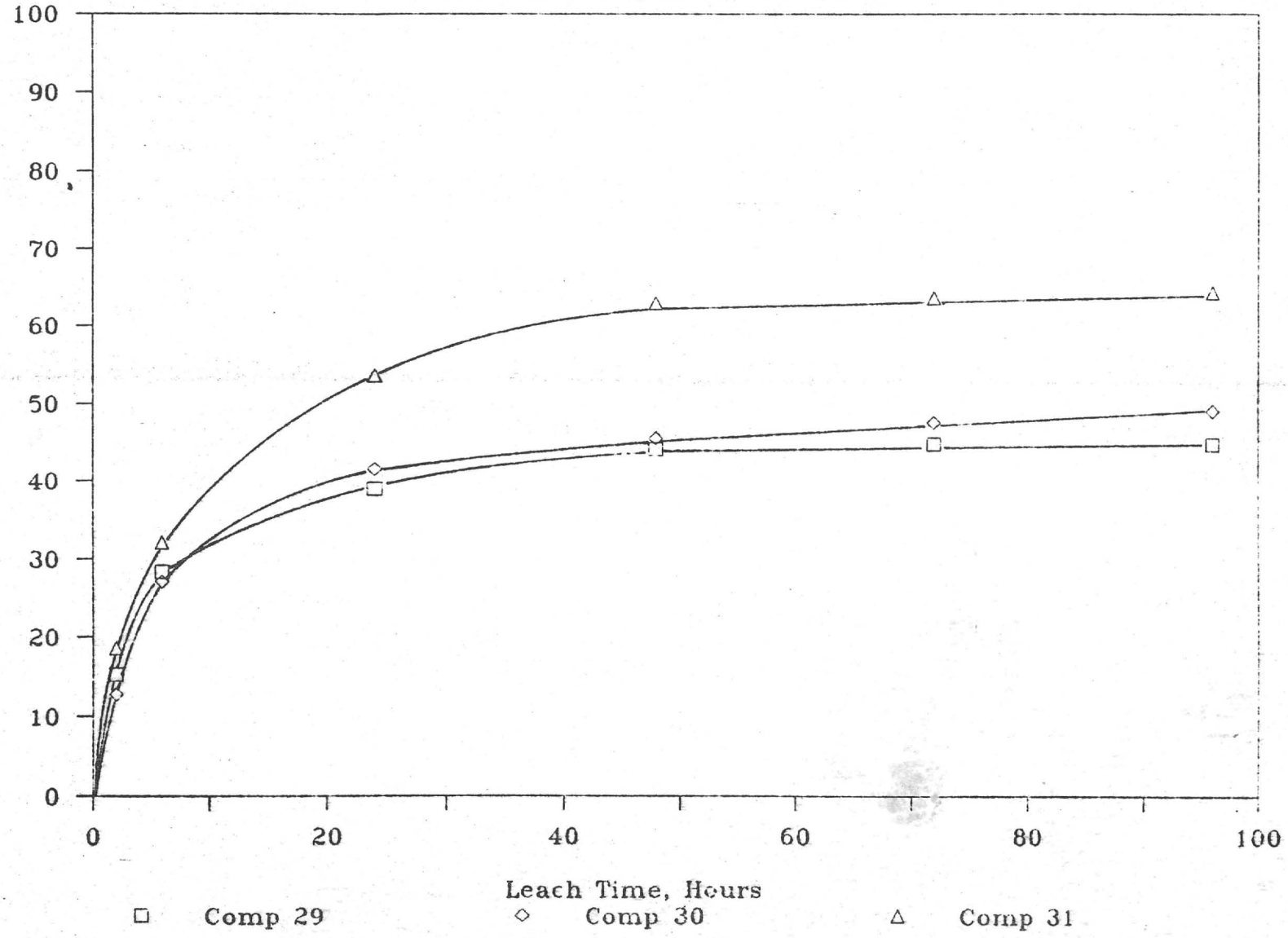


Table 77. - Tail Assay Results, Bottle Leached Residues, Tiger Cuttings Composites, As Received Feeds

			Tail Assays, oz/ton							
	Hole	Ore	Initial		Duplicate		Triplicate		Average	
Comp.	No.	Type	Au	Ag	Au	Ag	Au	Ag	Au	Ag
1	MM-10	QM	0.025	<0.10	0.048*	<0.10	0.021	<0.10	0.023	<0.10
2	MM-14	QM	0.065	<0.10	0.027*	<0.10	0.063	<0.10	0.064	<0.10
3	MM-16	QM	0.010	<0.10	0.009	<0.10	0.007	<0.10	0.009	<0.10
4	MM-27	QM	0.099	0.65	0.088	0.60	0.100	0.66	0.096	0.64
5	MM-27	RHY	0.032*	0.14	0.016	0.16	0.014	0.18	0.015	0.16
6	MM-30	RHY	0.023	0.44	0.040*	0.40	0.026	0.39	0.025	0.41
7	MM-39	QM	0.022	0.15	0.017	0.13	0.023	0.13	0.021	0.14
8	MM-41	CB	0.014	<0.10	0.008	0.14	0.007	<0.10	0.010	<0.10
9	MM-41	RHY	0.011	0.20	0.012	0.18	0.018	0.13	0.014	0.17
10	MM-41	CB	0.011	0.20	0.008	0.26	0.006	0.25	0.008	0.24
11	MM-41	QM	0.018	0.21	0.057*	0.19	0.020	0.16	0.019	0.19
12	MM-42	RHY	0.017	0.61	0.019	0.38	0.023	0.45	0.020	0.48
13	MM-50	QM	0.021	0.18	0.017	0.17	0.020	0.21	0.019	0.19
14	MM-50	RHY	0.038	0.20	0.037	0.13	0.044	0.21	0.040	0.18
15	MM-53	QM	0.009	<0.10	0.011	<0.10	0.014	<0.10	0.011	<0.10
16	MM-56	RHY	0.011	0.20	0.014	0.29	0.014	0.27	0.013	0.25
17	MM-58	CB	0.015	<0.10	0.017	<0.10	0.015	<0.10	0.016	<0.10
18	MM-60	QM	0.018	<0.10	0.017	<0.10	0.028*	<0.10	0.018	<0.10
19	MM-61	QM	0.026	0.23	0.024	0.22	0.021	0.22	0.024	0.22
20	MM-67	CB	0.017	0.25	0.018	0.23	0.017	0.20	0.017	0.23
21	MM-67	QM	0.005	<0.10	0.006	<0.10	0.006	<0.10	0.006	<0.10
22	MM-70	RHY	0.018*	<0.10	0.060	<0.10	0.054	<0.10	0.057	<0.10
23	MM-76	RHY	0.549*	1.51	0.025	0.95	0.034	1.25	0.030	1.24
24	MM-76	QV	0.026	0.98	0.024	0.79	0.034	0.93	0.028	0.90
25	MM-77	CB	0.158	0.36	0.125	0.38	0.232*	0.48	0.142	0.41
26	MM-77	QM	0.027	0.24	0.036	0.24	0.033	0.34	0.032	0.27
27	MM-81	CB	0.022	0.17	0.012	0.18	0.010	0.10	0.015	0.15
28	MM-81	QM	0.020	<0.10	0.024	<0.10	0.022	<0.10	0.022	<0.10
29	MM-92	RB	0.021	0.10	0.014	0.27	0.014	0.13	0.016	0.17
30	MM-99	QM	0.052	0.22	0.067	0.11	0.049	0.19	0.056	0.17
31	MM-99	RB	0.005	<0.10	0.006	<0.10	0.004	<0.10	0.005	<0.10

* Not Included in average.

Table 78. - Summary of Bottle Test Results, Tiger Cuttings Composites, As Received Feeds

Composite	Hole No.	Ore Type	Extracted, oz/ton Au	Extracted, oz/ton Ag	Calc'd Head, oz/ton Au	Calc'd Head, oz/ton Ag	Recovery percent, Au	Recovery percent, Ag	Cyanide Cons., lb/ton	Lime Added, lb/ton
1	MM-10	QM	0.049	0.02	0.072		68.1		0.74	6.3
2	MM-14	QM	0.076	0.02	0.140		54.3		0.46	3.5
3	MM-16	QM	0.013	0.01	0.022		59.1		0.31	5.1
4	MM-27	QM	0.143	0.12	0.239	0.76	59.8	15.8	0.49	4.9
5	MM-27	Rhy	0.042	0.04	0.057	0.20	73.7	20.0	0.45	3.0
6	MM-30	Rhy	0.078	0.11	0.103	0.52	75.7	21.2	0.14	3.7
7	MM-39	QM	0.034	0.06	0.055	0.20	61.8	30.0	0.58	6.4
8	MM-41	CB	0.013	0.01	0.023		56.5		0.35	5.9
9	MM-41	Rhy	0.054	0.03	0.068	0.20	79.4	15.0	0.26	3.3
10	MM-41	CB	0.011	0.04	0.019	0.28	57.9	14.3	0.42	6.9
11	MM-41	QM	0.027	0.02	0.046	0.21	58.7	9.5	0.29	3.9
12	MM-42	Rhy	0.027	0.07	0.047	0.55	57.4	12.7	0.45	3.0
13	MM-50	QM	0.030	0.04	0.049	0.23	61.2	17.4	0.59	6.1
14	MM-50	Rhy	0.071	0.04	0.111	0.22	64.0	18.2	0.48	4.7
15	MM-53	QM	0.014	0.01	0.025		56.0		0.23	5.2
16	MM-56	Rhy	0.025	0.11	0.038	0.36	65.8	30.6	0.61	3.0
17	MM-58	CB	0.016	0.01	0.032		50.0		0.31	5.9
18	MM-60	QM	0.021	0.02	0.039		53.8		0.76	5.4
19	MM-61	QM	0.033	0.06	0.057	0.28	57.9	21.4	0.59	5.2
20	MM-67	CB	0.027	0.06	0.044	0.29	61.4	20.7	0.46	4.9
21	MM-67	QM	0.013	0.03	0.019		68.4		0.43	5.3
22	MM-70	Rhy	0.142	0.03	0.199		71.4		0.29	3.4
23	MM-76	Rhy	0.075	0.40	0.105	1.64	71.4	24.4	0.79	3.2
24	MM-76	QV	0.109	0.37	0.137	1.27	79.6	29.1	1.21	6.6
25	MM-77	CB	0.277	0.09	0.419	0.50	66.1	18.0	0.41	7.4
26	MM-77	QM	0.036	0.04	0.068	0.31	52.9	12.9	0.39	8.6
27	MM-81	CB	0.019	0.02	0.034	0.17	55.9	11.8	0.14	7.3
28	MM-81	QM	0.023	0.02	0.045		51.1		0.15	5.2
29	MM-92	Rhy Br	0.013	0.04	0.029	0.21	44.8	19.0	0.32	3.4
30	MM-99	QM	0.054	0.08	0.110	0.25	49.1	32.0	0.16	5.8
31	MM-99	Rhy Br	0.009	0.01	0.014		64.3		0.32	4.4

Metallurgical results show, in general, that the 31 cuttings composites were amenable to direct cyanidation treatment at the cuttings feed size. Gold recoveries ranged from 44.8 to 79.6 percent, and averaged 61.5 percent in 96 hours of leaching. Silver recoveries ranged from 9.5 to 32.0 percent, and averaged 19.7 percent. Average gold recoveries by ore type were 58.0 (cloudburst), 58.0 (quartz monzonite), 79.6 (quartz vein), 69.9 (rhyolite), and 54.6 (rhyolite breccia) percent. Gold recovery rates were fairly rapid and extraction was substantially complete in 24 hours. Additional gold values were extracted between 24 and 96 hours, but at a slow rate.

Cyanide consumptions were low to moderate and ranged from 0.14 (comp 6) to 1.21 (comp 24) pounds per ton of ore. Consumption rates were more rapid in the early stages of leaching. Lime requirements were low to moderate and ranged from 3.0 (comps 5, 12, and 16) to 8.6 (comp 26) pounds per ton of ore. Controlling pH was not difficult even though lime addition was required at various sampling intervals to maintain the leaching pH at between 10.8 and 11.2.

Overall metallurgical results for 1/4 inch bottle roll tests conducted on the bulk ore samples are provided in Tables 79 and 80. Gold leach rate profiles are shown graphically in Figures 10 and 11. Tail screen analysis results for the 1/4 inch leached residues are provided in Tables 81 through 86.

Table 79. - Overall Metallurgical Results, Bottle Roll Tests, Surface Bulk Ore Samples, 80 Percent Minus 1/4 Inch Feeds

Metallurgical Results	Sample			
Extraction: pct total Au	Cldbrst	Granite	Qtz Vein	Rhyolite
in 2 hours	20.6	29.3	22.9	19.5
in 6 hours	35.9	43.8	35.5	35.5
in 24 hours	42.2	56.9	46.1	49.5
in 48 hours	48.8	64.6	49.8	50.5
in 72 hours	50.0	65.9	53.5	53.5
in 96 hours	50.0	68.9	56.2	55.0
Extracted, oz Au/ton ore	0.016	0.042	0.073	0.011
Tail Screen, oz Au/ton	0.016	0.019	0.057	0.009
Calc'd. Head, oz Au/ton ore	0.032	0.061	0.130	0.020
Head Grade, oz Au/ton ore*	0.037	0.069	0.133	0.026
Cyanide Consumed, lb/ton ore	0.43	0.24	0.60	0.76
Lime Added, lb/ton ore	5.0	3.2	2.3	5.9
Final Solution pH	11.0	11.0	11.3	11.0
Natural pH (40% Solids)	7.8	8.0	8.1	8.0
Ag Extracted, oz/ton ore	0.01	0.02	0.04	0.01
Ag Calc'd. Head, oz/ton ore	0.14	0.32	0.21	0.13
Ag Recovery, percent	7.1	6.3	19.0	7.7

*Average of all head grade determinations.

Metallurgical results show that the Granite surface bulk ore sample was amenable to direct cyanidation treatment at an 80 percent minus 1/4 inch feed size. A gold recovery of 68.9 percent was achieved in 96 hours of leaching. The Cloudburst, Quartz Vein, and Rhyolite surface bulk ore samples were marginally amenable at that feed size. Respective gold recoveries were 50.0, 56.2, and 55.0 percent.

Figure 10. – Gold Leach Rate Profiles,

B. Tests, Surface Samples, -1/4" Feeds

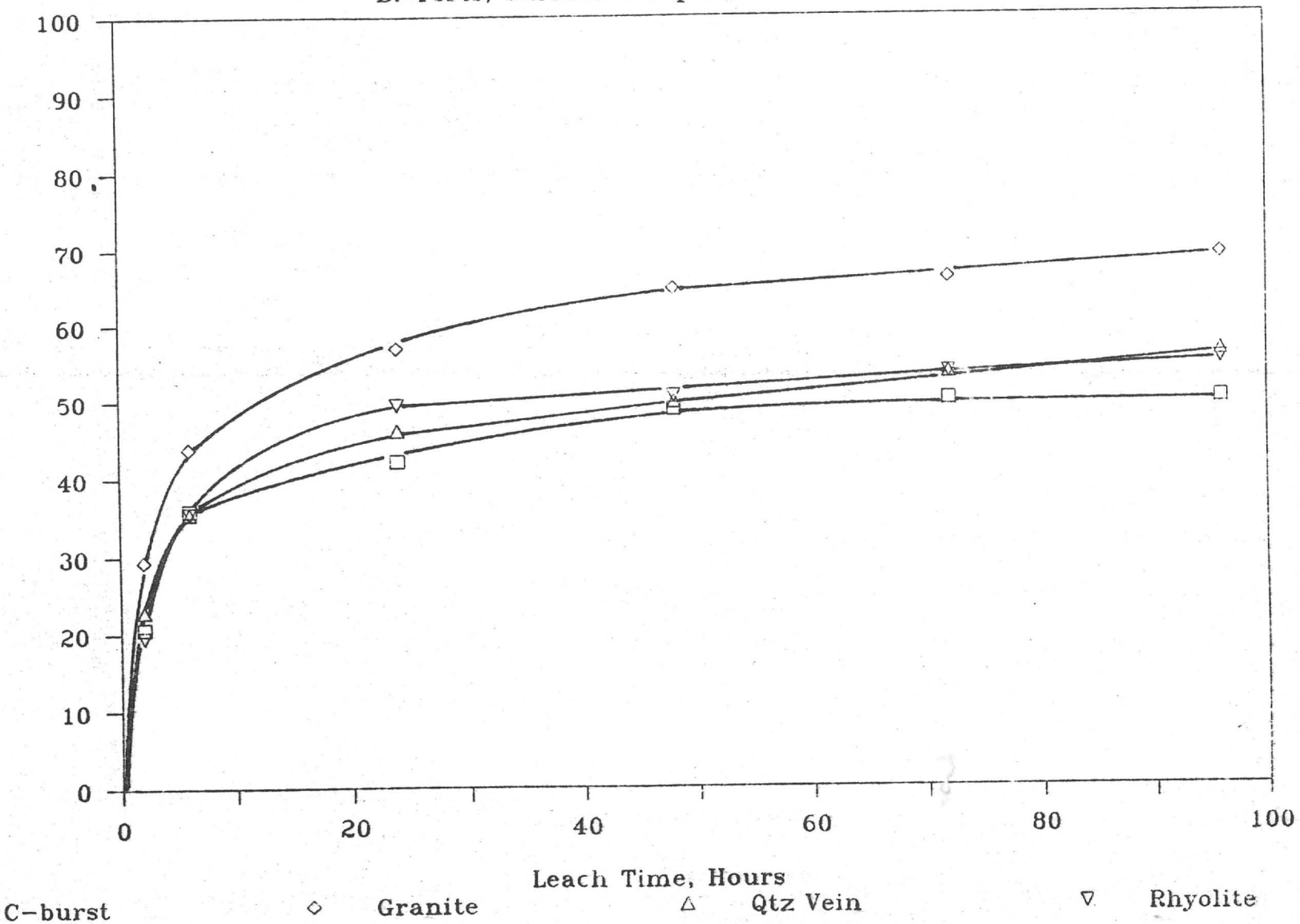


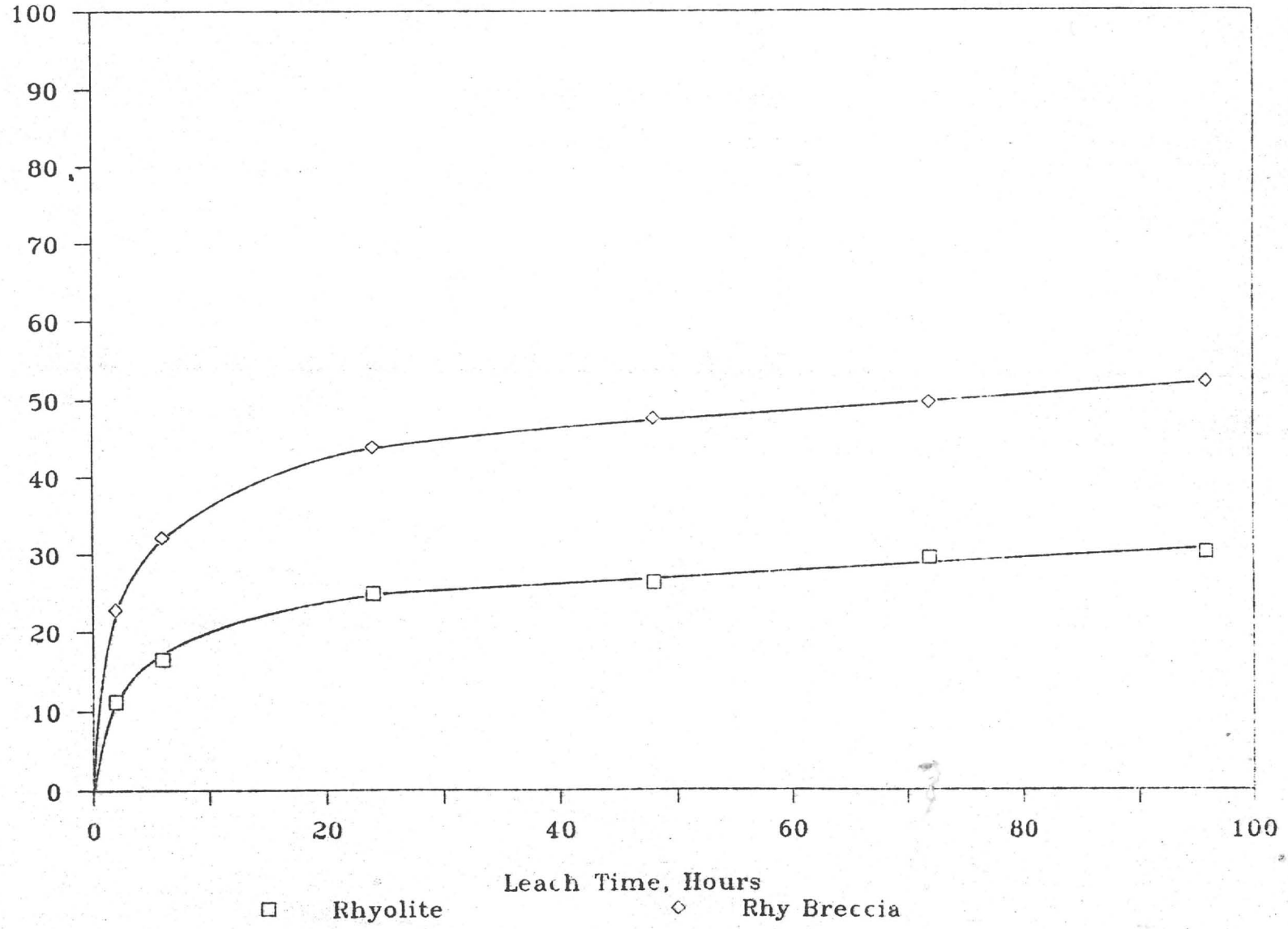
Table 80. - Overall Metallurgical Results, Bottle Roll Tests, Underground Bulk Ore Samples, 80 Percent Minus 1/4 Inch Feeds

Metallurgical Results	Sample	
Extraction: pct total Au	Rhyolite	Rhyolite Breccia
in 2 hours	11.2	22.8
in 6 hours	16.5	32.2
in 24 hours	24.9	43.9
in 48 hours	26.3	47.6
in 72 hours	29.5	49.6
in 96 hours	30.2	52.2
Extracted, oz Au/ton ore	0.013	0.035
Tail Screen, oz Au/ton	0.030	0.032
Calc'd. Head, oz Au/ton ore	0.043	0.067
Head Grade, oz Au/ton ore*	0.046	0.075
Cyanide Consumed, lb/ton ore	0.21	0.15
Lime Added, lb/ton ore	8.2	4.4
Final Solution pH	11.0	10.9
Natural pH (40% Solids)	7.3	7.5
Ag Extracted, oz/ton ore	0.04	0.05
Ag Calc'd. Head, oz/ton ore	0.44	0.42
Ag Recovery, percent	9.1	11.9

*Average of all head grade determinations.

Figure 11. – Gold Leach Rate Profiles,

B. Tests, U/G Samples, −1/4" Feeds



Overall metallurgical results show that the Rhyolite Breccia underground bulk ore sample was marginally amenable to direct cyanidation treatment at an 80 percent minus 1/4 inch feed size. The Rhyolite underground bulk ore sample was not amenable at that feed size. Gold recoveries of 52.2 and 30.2 percent, respectively, were achieved in 96 hours of leaching.

Gold recovery rates were fairly rapid and extraction was substantially complete in 24 hours of leaching. Additional gold values were extracted between 24 and 96 hours, but at a slow rate. Silver recoveries were low for all 6 bulk ore samples and ranged from 6.3 to 19.0 percent.

Cyanide consumptions were low and ranged from 0.15 to 0.76 pounds per ton of ore. Consumption rates were fairly constant throughout the leaching cycles. Lime requirements were low to moderate and ranged from 2.3 to 8.2 pounds per ton of ore. Controlling pH was not a problem even though lime addition was required at various sampling intervals to maintain leaching pH at between 10.8 and 11.2. An average of 52.6 percent of the total lime required was added during initial pH adjustment procedures. The remaining 47.4 percent was added during leaching.

Table 81. - Tail Screen Analysis Results, Bottle Leached Residue, Cloudburst Surface Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	15.4	15.4	0.039	0.15	37.7	18.0	37.7	18.0
-1/4 +10M	42.9	58.3	0.019	0.14	51.6	46.9	89.3	64.9
-10 +20M	10.0	68.3	0.009	0.13	5.7	10.1	95.0	75.0
-20 +35M	6.5	74.8	0.004	0.15	1.9	7.8	96.9	82.8
-35 +65M	3.3	78.1	0.004	0.12	0.6	3.1	97.5	85.9
-65 +100M	1.4	79.5	0.002	0.17	0.0	1.6	97.5	87.5
-100M	20.5	100.0	0.002	0.08	2.5	12.5	100.0	100.0
Composite	100.0		0.016	0.13	100.0	100.0		

Table 82. - Tail Screen Analysis Results, Bottle Leached Residue, Granite Surface Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	24.1	24.1	0.019	0.25	23.8	20.4	23.8	20.4
-1/4 +10M	38.3	62.4	0.030	0.33	59.6	42.7	83.4	63.1
-10 +20M	8.9	71.3	0.016	0.31	7.3	9.5	90.7	72.6
-20 +35M	6.2	77.5	0.012	0.39	3.6	8.1	94.3	80.7
-35 +65M	3.4	80.9	0.009	0.28	1.6	3.4	95.9	84.1
-65 +100M	2.2	83.1	0.006	0.27	0.5	2.0	96.4	86.1
-100M	16.9	100.0	0.004	0.24	3.6	13.9	100.0	100.0
Composite	100.0		0.019	0.30	100.0	100.0		

Table 83. - Tail Screen Analysis Results, Bottle Leached Residue, Quartz Vein Surface Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	21.4	21.4	0.059	0.13	22.0	16.5	22.0	16.5
-1/4 +10M	45.5	66.9	0.081	0.21	64.3	56.5	86.3	73.0
-10 +20M	9.1	76.0	0.039	0.13	6.1	7.0	92.4	80.0
-20 +35M	5.8	81.8	0.036	0.19	3.7	6.5	96.1	86.5
-35 +65M	3.2	85.0	0.030	0.18	1.7	3.5	97.8	90.0
-65 +100M	1.2	86.2	0.026	0.21	0.5	1.8	98.3	91.8
-100M	13.8	100.0	0.007	0.10	1.7	8.2	100.0	100.0
Composite	100.0		0.057	0.17	100.0	100.0		

Table 84. - Tail Screen Analysis Results, Bottle Leached Residue, Rhyolite Surface Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	19.5	19.5	0.019	0.15	41.6	25.0	41.6	25.0
-1/4 +10M	41.8	61.3	0.010	0.12	47.2	43.1	88.8	68.1
-10 +20M	9.5	70.8	0.003	0.12	3.4	9.5	92.2	77.6
-20 +35M	6.3	77.1	0.003	0.11	2.2	6.0	94.4	83.6
-35 +65M	3.5	80.6	0.002	0.13	1.1	4.3	95.5	87.9
-65 +100M	1.6	82.2	0.002	0.12	0.0	1.7	95.5	89.6
-100M	17.8	100.0	0.002	0.07	4.5	10.4	100.0	100.0
Composite	100.0		0.009	0.12	100.0	100.0		

Table 85. - Tail Screen Analysis Results, Bottle Leached Residue, Rhyolite Underground Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	23.0	23.0	0.055	0.47	42.9	27.1	42.9	27.1
-1/4 +10M	39.7	62.7	0.034	0.43	45.6	43.0	88.5	70.1
-10 +20M	10.1	72.8	0.018	0.45	6.1	11.3	94.6	81.4
-20 +35M	4.9	77.7	0.008	0.37	1.4	4.5	96.0	85.9
-35 +65M	2.9	80.6	0.007	0.51	0.7	3.8	96.7	89.7
-65 +100M	1.4	82.0	0.006	0.48	0.3	1.8	97.0	91.5
-100M	18.0	100.0	0.005	0.19	3.0	8.5	100.0	100.0
Composite	100.0		0.030	0.40	100.0	100.0		

Table 86. - Tail Screen Analysis Results, Bottle Leached Residue, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	18.1	18.1	0.044	0.34	24.9	16.6	24.9	16.6
-1/4 +10M	40.4	58.5	0.042	0.42	53.0	45.6	77.9	62.2
-10 +20M	9.9	68.4	0.031	0.48	9.7	12.9	87.6	75.1
-20 +35M	5.1	73.5	0.026	0.52	4.0	7.2	91.6	82.3
-35 +65M	2.7	76.2	0.022	0.64	1.9	4.6	93.5	86.9
-65 +100M	2.0	78.2	0.020	0.59	1.2	3.2	94.7	90.1
-100M	21.8	100.0	0.008	0.17	5.3	9.9	100.0	100.0
Composite	100.0		0.032	0.37	100.0	100.0		

Tail screen analysis results for the 1/4 inch leached residues show that residual gold values were not evenly distributed throughout the various size fraction, but were enriched in the plus 10 mesh fractions. Plus 10 mesh fractions averaged 61.7 percent of the tail weight, but contained 87.6 percent of the residual gold. These data show that crushing the feeds to 100 percent minus 10 mesh in size would be required to improve overall direct agitated cyanidation gold recovery. Residual silver values were fairly evenly distributed throughout the various size fractions.

Overall metallurgical results for bottle roll tests conducted on the 200 mesh surface bulk ore samples are provided in Table 87. Gold leach rate profiles are shown in Figure 12. Triplicate tail assay results are provided in Table 88. Overall metallurgical results for 10, 65, 100, 150, and 200 mesh underground bulk ore samples are provided in Tables 89 and 90. Gold leach rate profiles are shown graphically in Figures 13 and 14. Triplicate tail assay results are provided in Table 91. A summary of bottle test results conducted on the bulk ore samples is provided in Table 92.

Table 87. - Overall Metallurgical Results, Bottle Roll Tests, Surface Bulk Ore Samples, 80 Percent Minus 200 Mesh Feeds

Metallurgical Results	Sample			
Extraction: pct total Au	Cloudburst	Granite	Qtz Vein	Rhyolite
in 2 hours	69.3	64.0	64.6	50.5
in 6 hours	89.0	81.5	82.3	60.0
in 24 hours	97.6	95.6	93.9	68.0
in 48 hours	97.6	97.9	94.4	76.0
in 72 hours	97.6	98.1	94.4	82.0
in 96 hours	97.6	98.1	94.4	85.0
Extracted, az Au/ton ore	0.040	0.051	0.117	0.017
Tail Assay, oz Au/ton[1)]	0.001	0.001	0.007	0.003
Calc'd. Head, oz Au/ton ore	0.041	0.052	0.124	0.020
Head Grade, oz Au/ton ore[2)]	0.037	0.069	0.133	0.026
Cyanide Consumed, lb/ton ore	0.97	0.44	0.86	0.58
Lime Added, lb/ton ore	9.2	11.5	11.1	9.7
Final Solution pH	10.7	11.1	11.5	10.7
Natural pH (40% Solids)	7.3	7.7	7.4	7.6
Ag Extracted, oz/ton ore	0.06	0.12	0.12	0.07
Ag Calc'd. Head, oz/ton ore	0.21	0.42	0.37	0.24
Ag Recovery, percent	28.6	28.6	32.4	29.2

1) Average of three.
2) Average of all head grade determinations.

Figure 12. – Gold Leach Rate Profiles,

B. Tests, Surface Samples, –200M Feeds

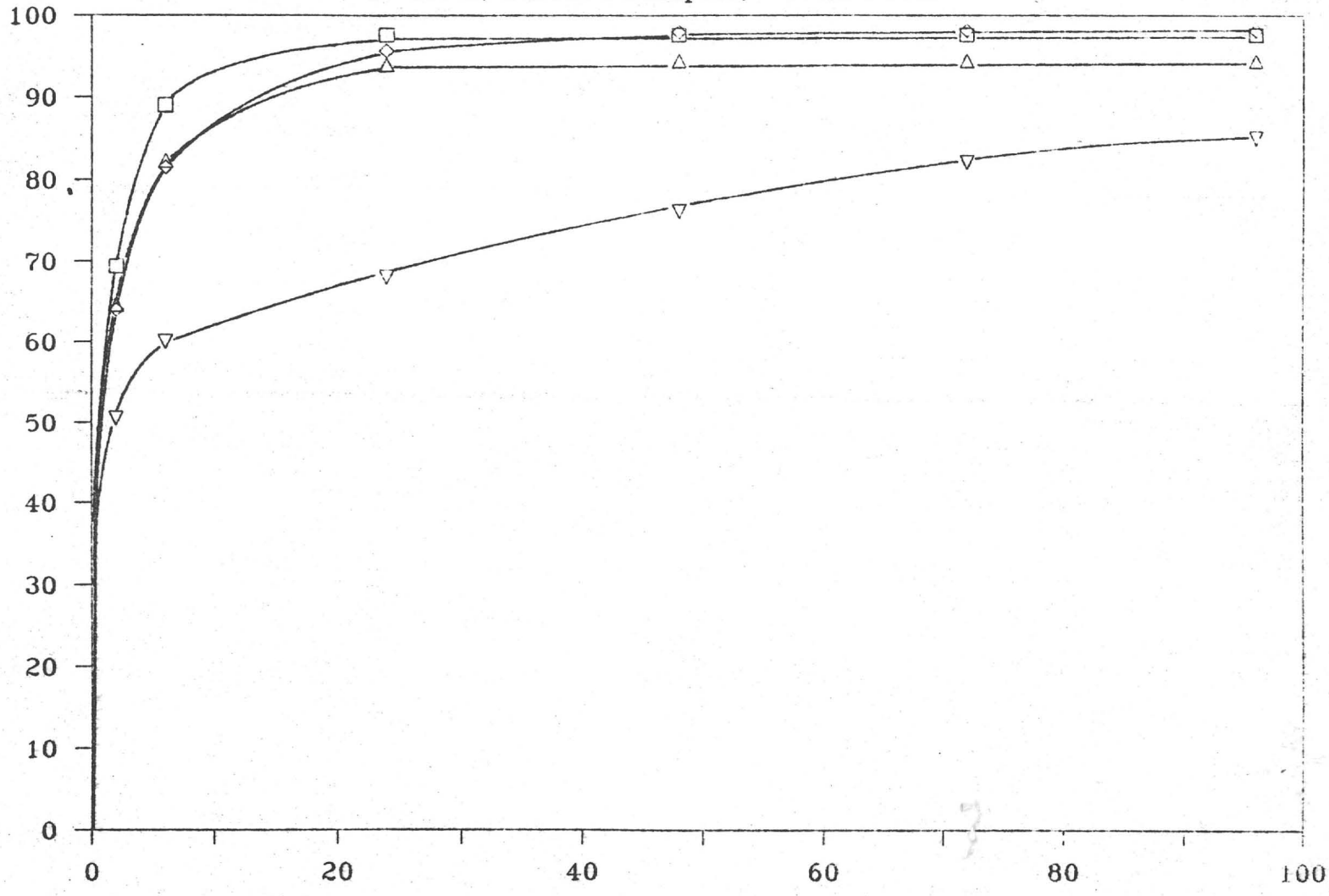


Table 88. - Tail Assay Results, Bottle Leached Residues, Surface Bulk Ore Samples, 80 Percent Minus 200 Mesh Feeds

	Tail Assays, oz/ton							
	Cloudburst		Granite		Qtz Vein		Rhyolite	
	Au	Ag	Au	Ag	Au	Ag	Au	Ag
Initial	0.001	0.14	0.001	0.22	0.007	0.31	0.004	0.17
Duplicate	0.001	0.16	0.001	0.38	0.007	0.20	0.003	0.19
Triplicate	0.001	0.36*	0.001	0.29	0.008	0.25	0.002	0.14
Average	0.001	0.15	0.001	0.30	0.007	0.25	0.003	0.17

*Not used in average.

Overall metallurgical results show that the surface bulk ore samples were readily amenable to direct cyanidation treatment at an 80 percent minus 200 mesh feed size. Gold recoveries of 97.6, 98.1, 94.4, and 85.0 percent were achieved from the Cloudburst, Granite, Quartz Vein, and Rhyolite samples, respectively, in 96 hours of leaching. Silver recoveries ranged from 28.6 to 32.4 percent. Gold recovery rates were fairly rapid and extraction was substantially complete in from 6 to 24 hours.

Cyanide consumptions were low and ranged from 0.44 to 0.97 pounds per to of ore. Consumption rates were more rapid the first 6 hours of leaching. Lime requirements were moderate and ranged from 9.2 to 11.5 pounds per ton of ore. Controlling pH was not difficult.

Table 89.- Overall Metallurgical Results, Bottle Roll Tests, Rhyolite Underground Bulk Ore Sample

Metallurgical Results	Feed Size				
Extraction: pct total Au	10M	65M	100M	150M	200M
in 2 hours	19.5	46.9	62.8	67.8	67.6
in 6 hours	28.9	67.9	88.7	82.3	80.9
in 24 hours	43.4	82.9	89.5	94.2	91.1
in 48 hours	44.7	85.2	90.8	95.0	91.3
in 72 hours	46.1	86.9	91.8	95.0	91.3
in 96 hours	47.4	88.1	92.3	95.0	91.3
Extracted, oz Au/ton ore	0.018	0.037	0.036	0.038	0.042
Tail Assay, oz Au/ton[1)]	0.020	0.005	0.003	0.002	0.004
Calc'd. Head, oz Au/ton ore	0.038	0.042	0.039	0.040	0.046
Head Grade, oz Au/ton ore[2)]	0.046	0.046	0.046	0.046	0.046
Cyanide Consumed, lb/ton ore	0.28	0.33	0.28	0.29	0.15
Lime Added, lb/ton ore	7.2	7.7	7.9	7.6	10.0
Final Solution pH	10.9	11.0	11.0	11.0	10.9
Natural pH (40% Solids)	8.0	8.5	8.7	8.6	7.8
Ag Extracted, oz/ton ore	0.04	0.10	0.11	0.13	0.14
Ag Calc'd. Head, oz/ton ore	0.43	0.47	0.49	0.53	0.55
Ag Recovery, percent	9.3	21.3	22.4	24.5	25.5

1) Average of three.
2) Average of all head grade determinations.

Figure 13. – Gold Leach Rate Profiles,

Bottle Tests, Rhyolite U/G Sample

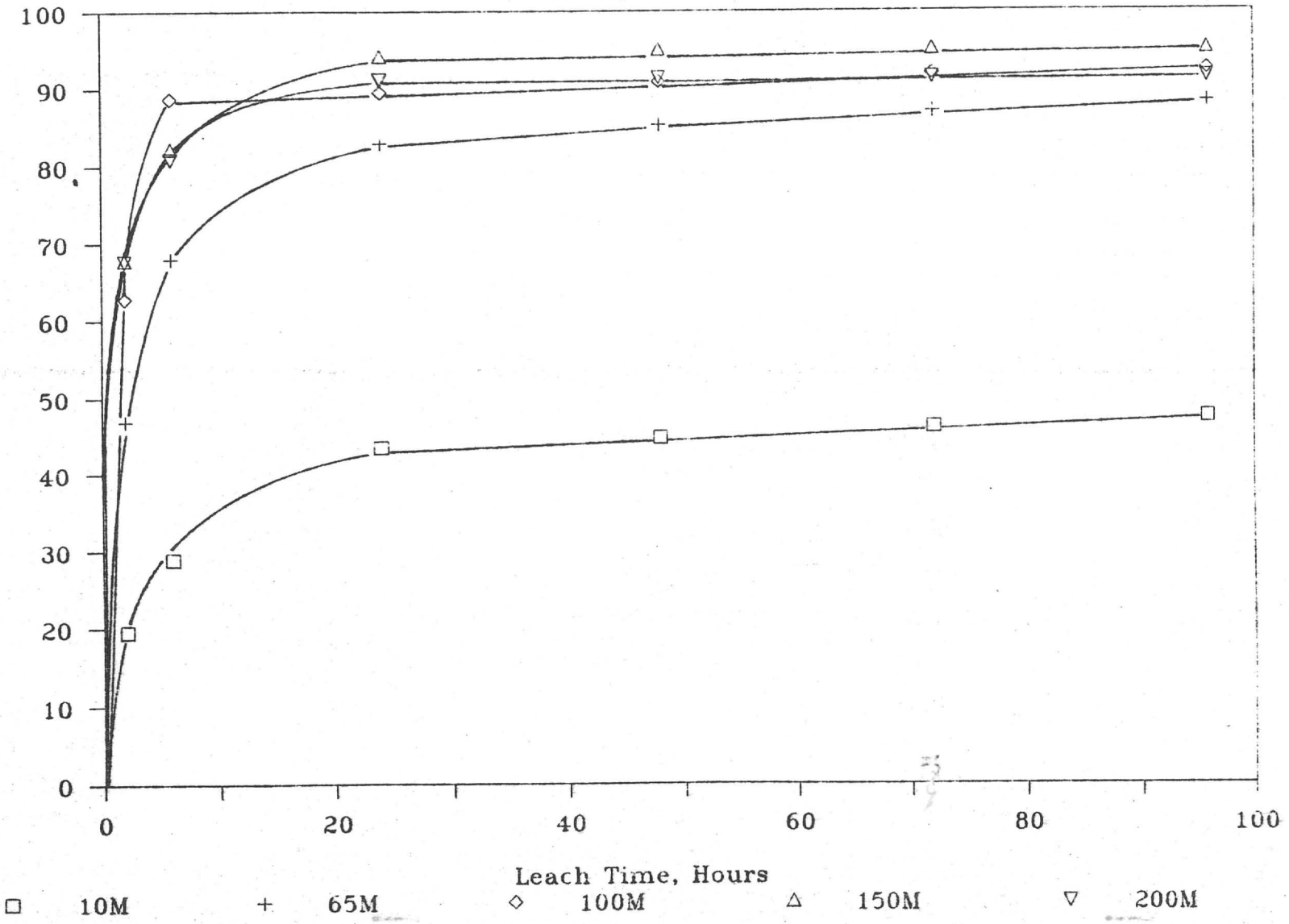


Table 90.- Overall Metallurgical Results, Bottle Roll Tests, Rhyolite Breccia Underground Bulk Ore Sample

Metallurgical Results	Feed Size				
Extraction: pct total Au	10M	65M	100M	150M	200M
in 2 hours	26.3	66.5	67.6	71.3	68.7
in 6 hours	38.5	79.2	82.9	85.9	82.2
in 24 hours	52.6	87.2	89.0	91.4	90.6
in 48 hours	56.8	87.9	89.6	91.4	91.0
in 72 hours	57.6	88.0	90.0	91.4	91.1
in 96 hours	60.3	88.0	90.0	91.4	91.1
Extracted, oz Au/ton ore	0.041	0.066	0.063	0.064	0.072
Tail Assay, oz Au/ton[1)]	0.027	0.009	0.007	0.006	0.007
Calc'd. Head, oz Au/ton ore	0.068	0.075	0.070	0.070	0.079
Head Grade, oz Au/ton ore[2)]	0.075	0.075	0.075	0.075	0.075
Cyanide Consumed, lb/ton ore	0.10	0.30	0.27	0.29	0.45
Lime Added, lb/ton ore	5.2	5.0	5.0	5.4	6.2
Final Solution pH	11.0	11.1	11.0	11.0	11.0
Natural pH (40% Solids)	8.3	8.5	8.4	8.6	7.7
Ag Extracted, oz/ton ore	0.05	0.15	0.17	0.21	0.20
Ag Calc'd. Head, oz/ton ore	0.53	0.45	0.46	0.43	0.53
Ag Recovery, percent	9.4	33.3	37.0	48.8	37.7

1) Average of three.
2) Average of all head grade determinations.

Figure 14. – Gold Leach Rate Profiles,

Bottle Tests, Rhy. Breccia U/G Sample

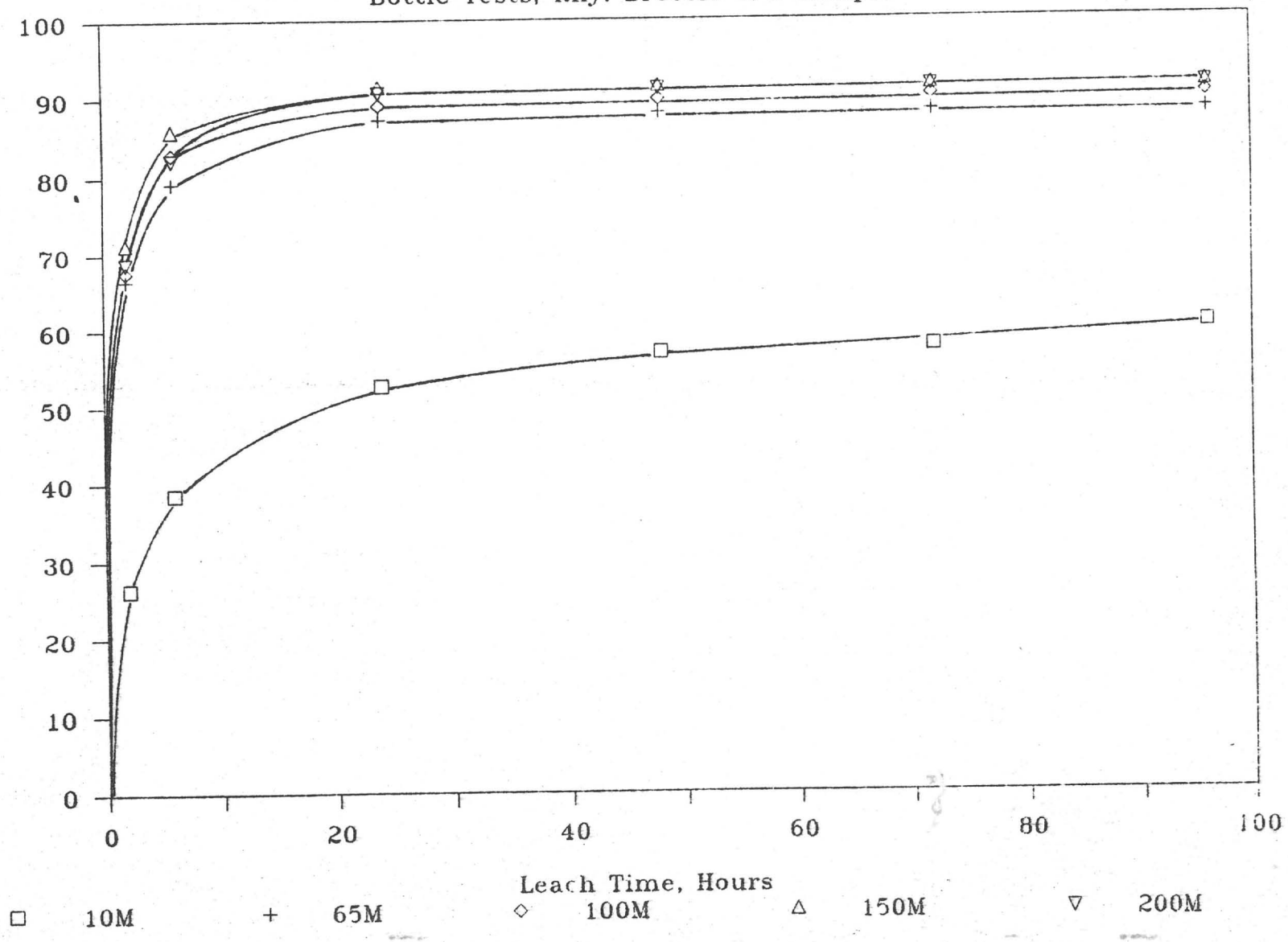


Table 91. - Tail Assay Results, Bottle Leached Residues, Underground Bulk Ore Samples

		Tail Assays, oz/ton							
	Feed	Initial		Duplicate		Triplicate		Average	
Sample	Size	Au	Ag	Au	Ag	Au	Ag	Au	Ag
Rhyolite	10M	0.020	0.37	0.021	0.40	0.020	0.40	0.020	0.39
Rhyolite	65M	0.004	0.34	0.005	0.37	0.006	0.39	0.005	0.37
Rhyolite	100M	0.003	0.40	0.003	0.38	0.002	0.37	0.003	0.38
Rhyolite	150M	0.003	0.36	0.002	0.43	0.001	0.42	0.002	0.40
Rhyolite	200M	0.004	0.39	0.004	0.43	0.005	0.40	0.004	0.41
Rhy. Brec.	10M	0.030	0.51	0.027	0.38	0.025	0.55	0.027	0.48
Rhy. Brec.	65M	0.011	0.34	0.007	0.30	0.010	0.27	0.009	0.30
Rhy. Brec.	100M	0.007	0.24	0.006	0.32	0.007	0.31	0.007	0.29
Rhy. Brec.	150M	0.006	0.14	0.007	0.32	0.004	0.19	0.006	0.22
Rhy. Brec.	200M	0.008	0.32	0.006	0.32	0.006	0.34	0.007	0.33

Metallurgical results show that the underground bulk ore samples were readily amenable to direct cyanidation treatment at 80 percent minus 65, 100, 150, and 200 mesh feed sizes. Underground bulk ore samples were not readily amenable at an 80 percent minus 10 mesh feed size. Gold recoveries achieved from the Rhyolite and Rhyolite Breccia ore samples ranged from 47.4 to 95.0 percent, and from 60.3 to 91.4 percent, respectively, in 96 hours of leaching. Respective silver recoveries ranged from 9.3 to 25.5 percent, and from 9.4 to 48.8 percent. The highest gold recoveries were achieved from the 150 mesh feeds. However, gold recoveries were nearly the same for both samples at the four finest feed sizes. Average gold recoveries achieved from the 65, 100, 150, and 200 mesh feeds were 88.1, 91.2, 93.2, and 91.2 percent, respectively. These data indicate that the optimum grind size for milling/cyanidation treatment is about 80 percent minus 100 mesh.

Gold recovery rates were fairly rapid for both underground bulk ore samples at all 5 feed sizes, and gold extraction was substantially complete in from 6 to 24 hours. Gold recovery rate, in general, increased with decreasing feed size.

Cyanide consumptions were low and ranged from 0.10 to 0.45 pounds per ton of ore. Consumption rates were fairly constant throughout the 96 hour leaching cycles. Lime requirements were low to moderate and ranged from 5.0 to 10.0 pounds per ton of ore. Controlling pH was not difficult.

Table 92. - Summary of Bottle Roll Test Results, Bulk Ore Samples

Sample	Type	Feed Size	Extracted, oz/ton Au	Extracted, oz/ton Ag	Calc'd Head, oz/ton Au	Calc'd Head, oz/ton Ag	Recovery, percent Au	Recovery, percent Ag	Cyanide Cons., lb/ton	Lime Added, lb/ton
Cloudburst	Surf	1/4"	0.016	0.01	0.032	0.14	50.0	7.1	0.43	5.0
Cloudburst	Surf	200M	0.040	0.06	0.041	0.21	97.6	28.6	0.97	9.2
Granite	Surf	1/4"	0.042	0.02	0.061	0.32	68.9	6.3	0.24	3.2
Granite	Surf	200M	0.051	0.12	0.052	0.42	98.1	28.6	0.44	11.5
Qtz. Vein	Surf	1/4"	0.073	0.04	0.130	0.21	56.2	19.0	0.60	2.3
Qtz. Vein	Surf	200M	0.117	0.12	0.124	0.37	94.4	32.4	0.86	11.1
Rhyolite	Surf	1/4"	0.011	0.01	0.020	0.13	55.0	7.7	0.76	5.9
Rhyolite	Surf	200M	0.017	0.07	0.020	0.24	85.0	29.2	0.58	9.7
Rhyolite	U/G	1/4"	0.013	0.04	0.043	0.44	30.2	9.1	0.21	8.2
Rhyolite	U/G	10M	0.018	0.04	0.038	0.43	47.4	9.3	0.28	7.2
Rhyolite	U/G	65M	0.037	0.10	0.042	0.47	88.1	21.3	0.33	7.7
Rhyolite	U/G	100M	0.036	0.11	0.039	0.49	92.3	22.4	0.28	7.9
Rhyolite	U/G	150M	0.038	0.13	0.040	0.53	95.0	24.5	0.29	7.6
Rhyolite	U/G	200M	0.042	0.14	0.046	0.55	91.3	25.5	0.15	10.0
Rhy. Brec.	U/G	1/4"	0.035	0.05	0.067	0.42	52.2	11.9	0.15	4.4
Rhy. Brec.	U/G	10M	0.041	0.05	0.068	0.53	60.3	9.4	0.10	5.2
Rhy. Brec.	U/G	65M	0.066	0.15	0.075	0.45	88.0	33.3	0.30	5.0
Rhy. Brec.	U/G	100M	0.063	0.17	0.070	0.46	90.0	37.0	0.27	5.0
Rhy. Brec.	U/G	150M	0.064	0.21	0.070	0.43	91.4	48.8	0.29	5.4
Rhy. Brec.	U/G	200M	0.072	0.20	0.079	0.53	91.1	37.7	0.45	6.2

Fine grinding was effective in increasing overall gold recovery for all 6 bulk ore samples. Gold recoveries achieved from the Cloudburst, Granite, Quartz Vein, and Rhyolite surface bulk ore samples at the 200 mesh feed size were 47.6, 29.2, 38.2, and 30.0 percent higher, respectively, than those achieved from the 1/4 inch feeds. Gold recoveries achieved from the 100 mesh underground bulk ore sample feeds were 62.3 (Rhyolite) and 37.8 (Rhyolite Breccia) percent higher than those achieved from the 1/4 inch feeds.

COLUMN PERCOLATION LEACH TEST PROCEDURES AND RESULTS

Column percolation leach tests were conducted on the six Tiger bulk ore samples at two feed sizes (nominal 2, and 3/8 inch) to determine precious metal recovery, recovery rate, reagent requirements, and sensitivity to feed size under simulated heap leaching conditions. The 2 inch feeds were mixed dry with 5 pounds lime per ton of ore before being placed into the 15" I.D. x 8' high leaching columns. The 3/8 inch feeds were agglomerated by adding 10 pounds portland cement per ton of dry ore, wetting with water to a final moisture content of about 6.5 weight percent, mechanically tumbling to affect agglomeration, and curing in 6" I.D. x 8' high leaching columns for 72 hours before leaching. Columns were loaded in a manner to minimize compaction and particle segregation.

Leaching was conducted by applying cyanide solution, equivalent to 2.0 pounds NaCN per ton of solution, over the ore charges at a rate of 0.005 gpm/ft^2 of column cross-sectional area. Pregnant solutions were collected each 24 hour period and volumes were measured by weighing. Each pregnant solution was sampled and analyzed for gold and silver using conventional A.A. methods. A.A. analyses were checked using the "lead boat" assay method the first 10 days of leaching. Cyanide concentration and pH were determined for each pregnant solution. Pregnant solutions were passed through three stage carbon circuits for adsorption of dissolved values. Barren solutions were sampled, make-up reagents were added, and were recycled to the ore charges daily. Rest cycles were allowed when pregnant solution grades approached A.A. detection limits to determine if subsequent pregnant solution grades could be improved. Ore charges were allowed to soak in residual cyanide solution (columns drained) during rest cycles. Ore charges were washed with water when leaching was completed to recover dissolved values and to remove residual free cyanide (county requirement). Wash water was applied at the same rate used for leaching. Moistures required to saturate ore charges (in process solution inventory), for agglomeration, and retained moistures were determined. Drain down volumes and drain down rates were established. Ore apparent bulk densities were measured before and after leaching.

After leaching and washing, ore charges were removed from the columns and moisture samples were taken immediately. Remaining leached residues were air dried, and were blended and split to obtain sufficient sample for screen analysis to determine residual precious metal content and distribution. Tail screening procedures and size fractions were the same as for corresponding head screens to obtain recovery by size fraction data.

Overall metallurgical results from the column leach tests are provided in Tables 93 through 98. Gold leach rate profiles are shown graphically in Figures 15 through 20. A summary of column leach test results is provided in Table 99. Tail screen analysis results and recovery by size fraction data are shown in Tables 100 through 123. Gold metallurgical balances are provided in Tables 124 through 135. Physical ore characteristic data are provided in Table 136. Drain down rate test results are provided in Tables 137 through 146. Drain down rate profiles are shown in Figures 21 through 30. Pertinent daily column leaching data for the column leach tests are provided in the Appendix to this report.

Table 93. - Overall Metallurgical Results, Column Leach Tests, Cloudburst Surface Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	2.6	4.0
in 5 days	11.4	22.5
in 10 days	15.4	34.0
in 15 days	18.3	39.5
in 20 days	20.3	42.0
in 30 days	23.1	45.3
in 43 days[1)]	25.1	47.3
in 50 days	27.4	49.0
in 61 days	27.4	50.5[2)]
in 72 days	-	52.5[4)]
in 75 days	29.1[3)]	52.5
in 77 days	30.6	52.5
in 84 days	31.4[4)]	-
in 90 days	31.4	-
Extracted, ozAu/ton ore	0.011	0.021
Tail Screen, ozAu/ton	0.024	0.019
Calculated Head, ozAu/ton ore	0.035	0.040
Head Grade, ozAu/ton ore[5)]	0.037	0.037
Cyanide Consumed, lb/ton ore	0.95	1.35
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.7	11.2
pH After Water Wash	10.3	11.1
Ag Extracted, oz/ton ore	0.00	0.01
Ag Calculated Head, oz/ton ore	0.19	0.20
Ag Recovery, percent	0.0	5.0

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 days rest cycle.
3) 1st effluent after 14 day rest cycle.
4) Begin water wash.
5) Average of all head grade determinations.

Figure 15. – Gold Leach Rate Profiles,

Column Tests, Cloudburst Surface Sample

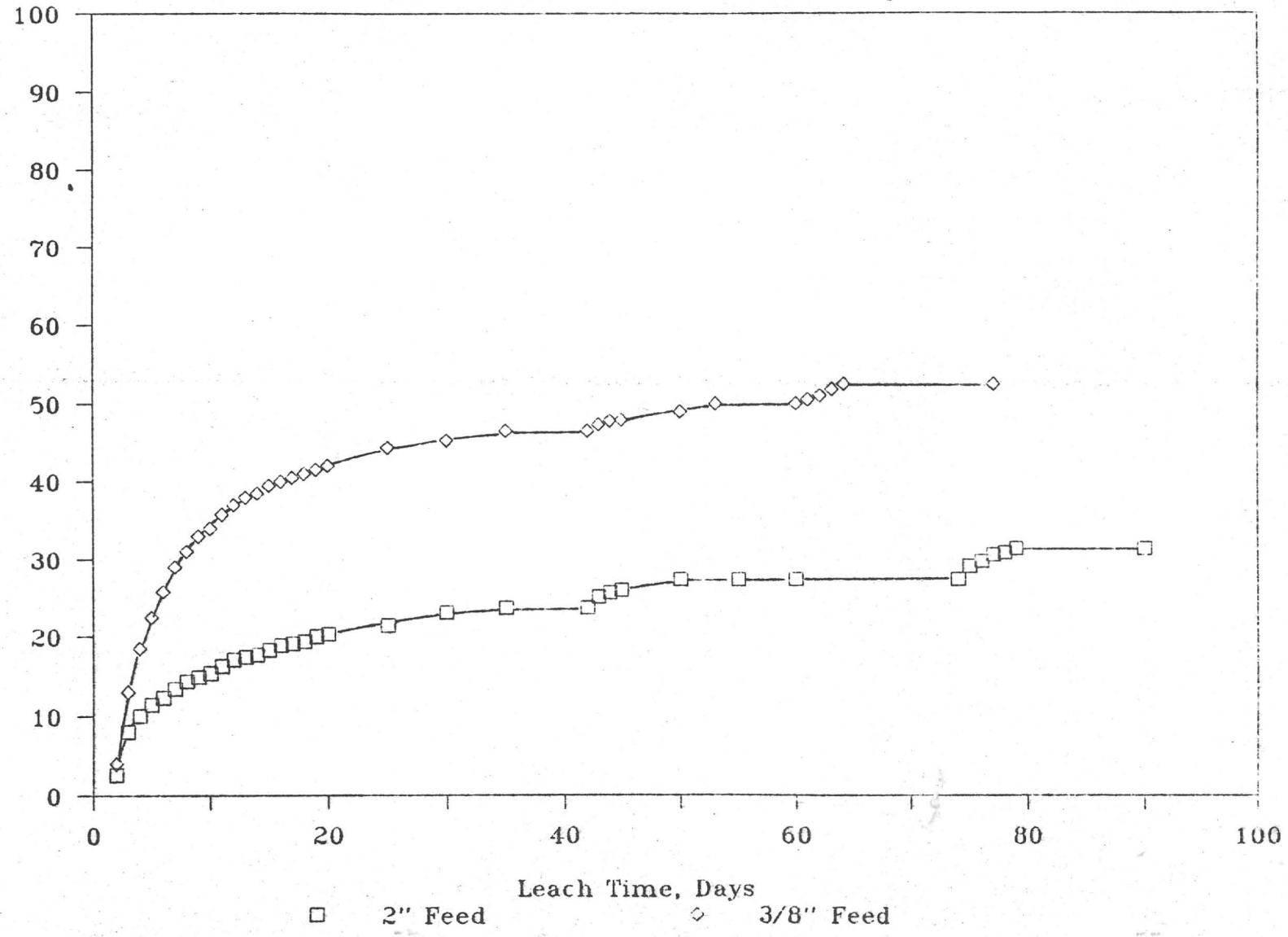


Table 94. - Overall Metallurgical Results, Column Leach Tests, Granite Surface Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	4.6	4.6
in 5 days	19.5	15.7
in 10 days	25.9	25.9
in 15 days	30.5	33.0
in 20 days	33.0	37.7
in 30 days	36.2	43.7
in 50 days	40.4	51.0
in 70 days	43.4	56.3
in 90 days[1)]	45.1	59.6
in 92 days	45.1	60.0
in 96 days	-	60.0
Extracted, ozAu/ton ore	0.041	0.042
Tail Screen, ozAu/ton	0.050	0.028
Calculated Head, ozAu/ton ore	0.091	0.070
Head Grade, ozAu/ton ore[2)]	0.069	0.069
Cyanide Consumed, lb/ton ore	1.63	1.80
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.6	10.9
pH After Water Wash	10.4	10.8
Ag Extracted, oz/ton ore	0.01	0.03
Ag Calculated Head, oz/ton ore	0.42	0.46
Ag Recovery, percent	2.4	6.5

1) Begin water wash.
2) Average of all head grade determinations

Figure 16. – Gold Leach Rate Profiles,

Column Tests, Granite Surface Sample

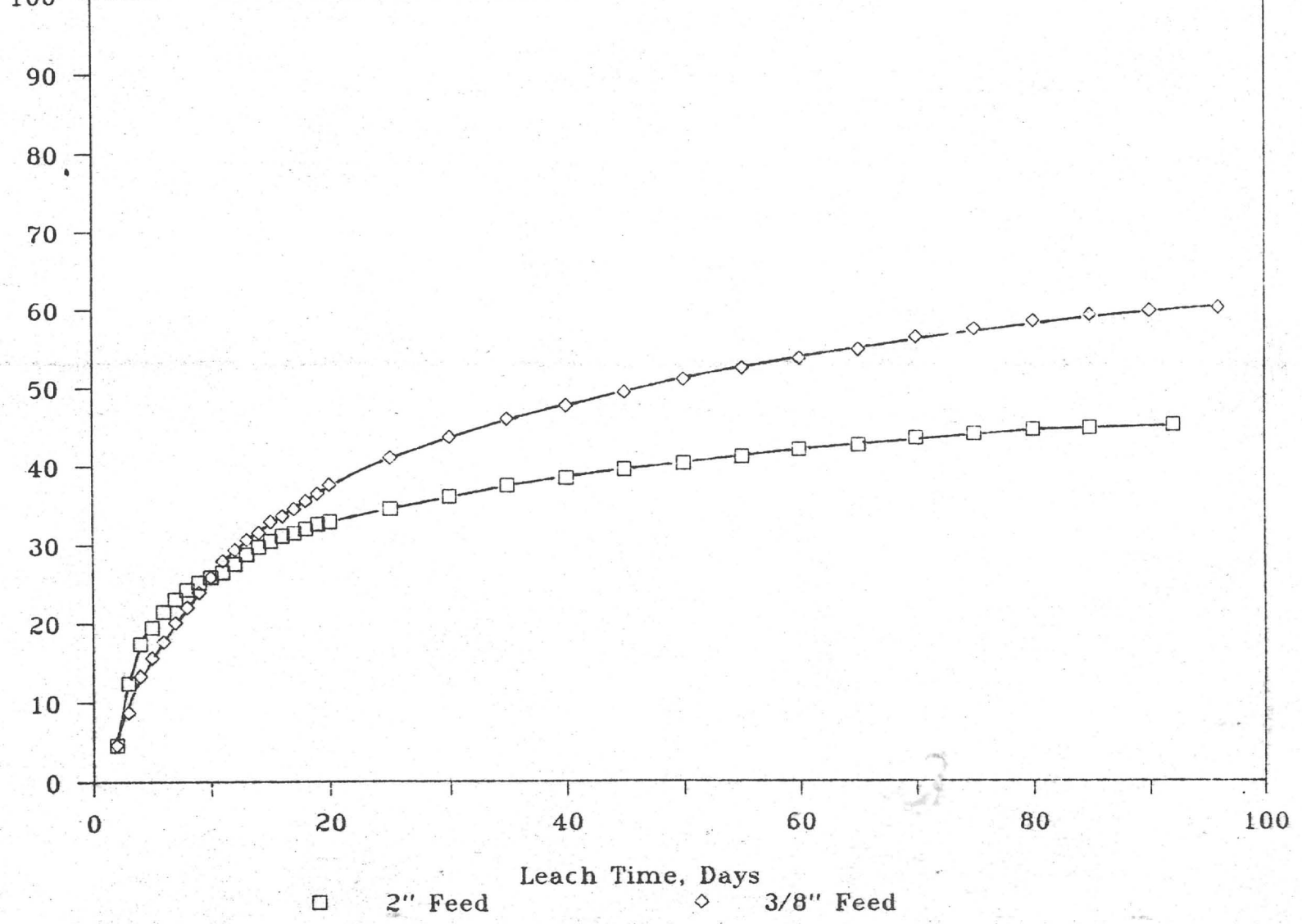


Table 95. - Overall Metallurgical Results, Column Leach Tests, Quartz Vein Surface Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	0.8	2.9
in 5 days	9.3	13.4
in 10 days	14.3	24.0
in 15 days	17.0	29.3
in 20 days	18.7	32.8
in 30 days	21.4	37.5
in 50 days	26.4	44.5
in 70 days	29.9	49.1
in 90 days[1)]	32.6	52.6
in 93 days	33.1	52.8
in 96 days	-	53.1
Extracted, ozAu/ton ore	0.044	0.069
Tail Screen, ozAu/ton	0.089	0.061
Calculated Head, ozAu/ton ore	0.133	0.130
Head Grade, ozAu/ton ore[2)]	0.133	0.133
Cyanide Consumed, lb/ton ore	1.34	1.70
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.6	11.1
pH After Water Wash	10.0	10.6
Ag Extracted, oz/ton ore	0.00	0.03
Ag Calculated Head, oz/ton ore	0.29	0.29
Ag Recovery, percent	0.0	10.3

1) Begin water wash.
2) Average of all head grade determinations

Figure 17. – Gold Leach Rate Profiles,

Column Tests, Qtz. Vein Surface Sample

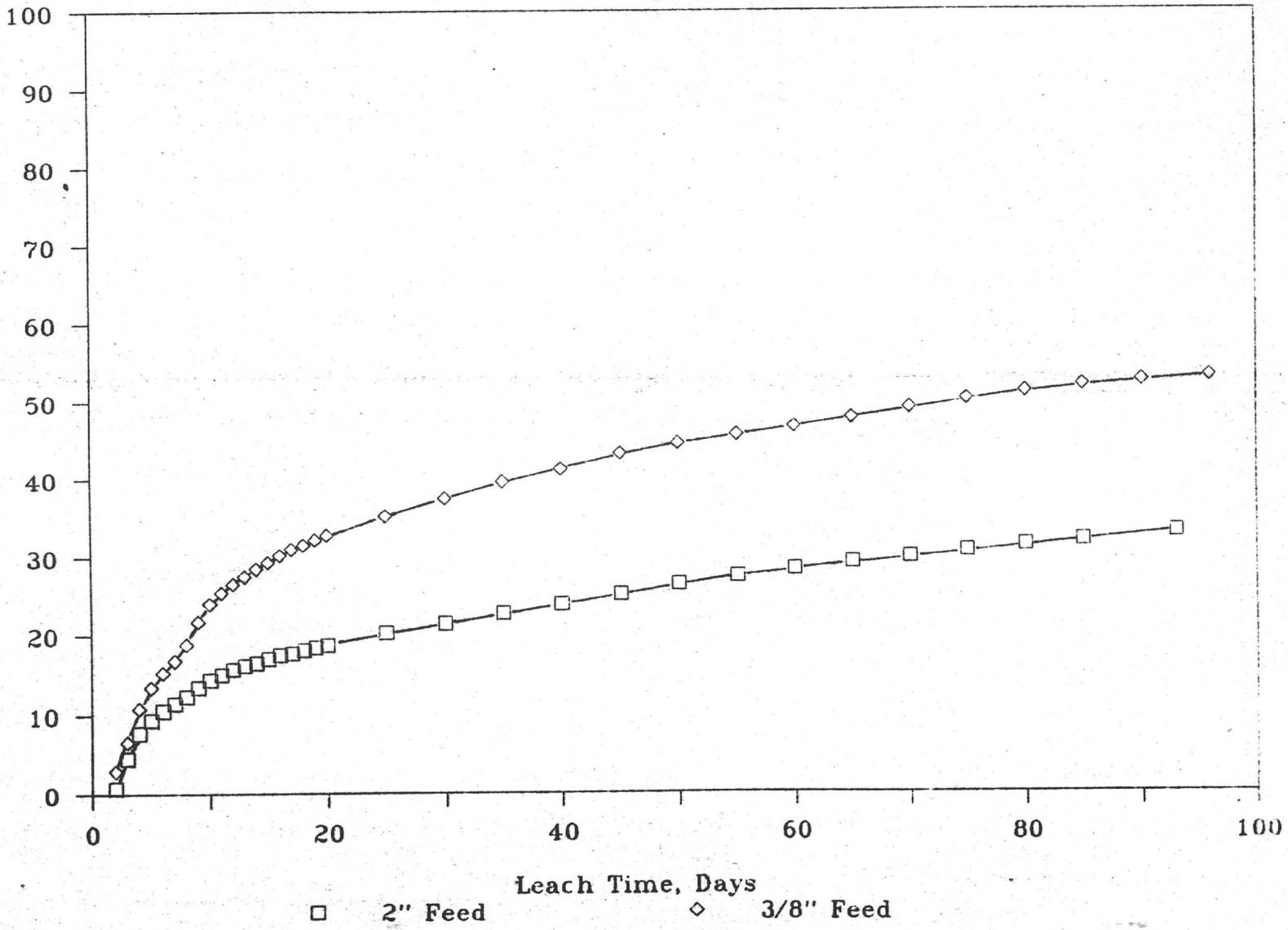


Table 96. - Overall Metallurgical Results, Column Leach Tests, Rhyolite Surface Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	1.3	2.7
in 5 days	9.3	24.7
in 10 days	16.3	38.0
in 15 days	20.0	44.0
in 20 days	22.7	47.0
in 30 days	25.3	51.3
in 43 days[1)]	27.0	52.7
in 50 days	28.3	53.3
in 61 days[2)]	29.0	53.3
in 72 days	30.0[3)]	53.3
in 73 days	30.0	53.3[3)]
in 76 days	30.0	53.3
in 77 days	-	53.3
Extracted, ozAu/ton ore	0.009	0.016
Tail Screen, ozAu/ton	0.021	0.014
Calculated Head, ozAu/ton ore	0.030	0.030
Head Grade, ozAu/ton ore[4)]	0.026	0.026
Cyanide Consumed, lb/ton ore	1.59	1.86
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.6	11.1
pH After Water Wash	10.6	11.0
Ag Extracted, oz/ton ore	0.00	0.01
Ag Calculated Head, oz/ton ore	0.18	0.21
Ag Recovery, percent	0.0	4.8

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 days rest cycle.
3) Begin water wash.
4) Average of all head grade determinations.

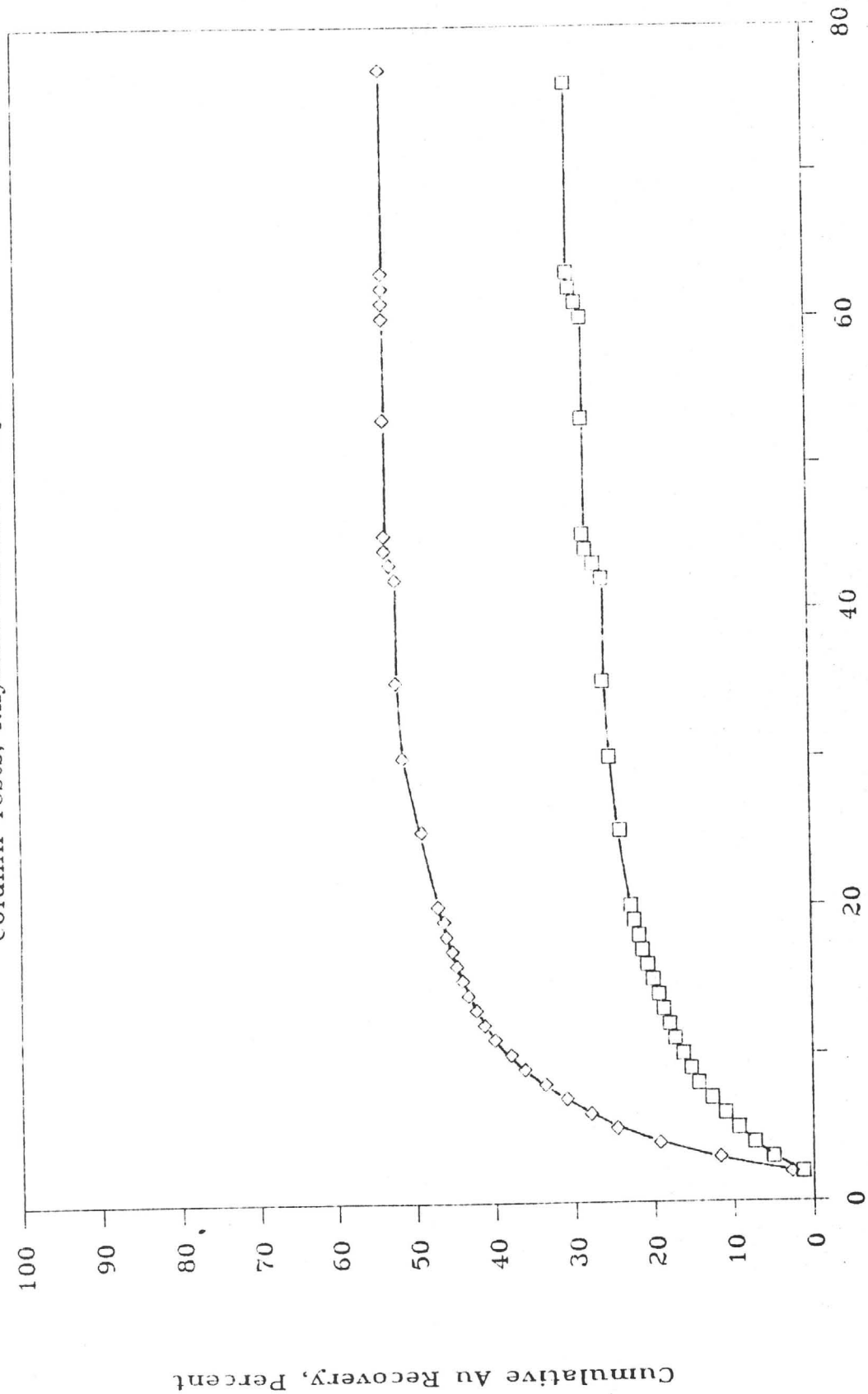


Figure 18. – Gold Leach Rate Profiles,
Column Tests, Rhyolite Surface Sample

Table 97. - Overall Metallurgical Results, Column Leach Tests, Rhyolite Underground Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	1.9	3.8
in 5 days	6.0	17.4
in 10 days	8.8	25.6
in 15 days	10.8	30.0
in 20 days	12.1	32.3
in 30 days	14.0	36.2
in 40 days	15.0	39.5
in 52 days	15.6[1)]	39.7
in 58 days	16.3	40.0[1)]
in 65 days	16.3	40.5
in 79 days[2)]	16.7	41.0
in 91 days[3)]	17.3	41.0
in 94 days	17.3	41.0
Extracted, ozAu/ton ore	0.009	0.016
Tail Screen, ozAu/ton	0.043	0.023
Calculated Head, ozAu/ton ore	0.052	0.039
Head Grade, ozAu/ton ore[4)]	0.046	0.046
Cyanide Consumed, lb/ton ore	1.56	1.83
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.6	10.9
pH After Water Wash	10.5	10.9
Ag Extracted, oz/ton ore	0.01	0.03
Ag Calculated Head, oz/ton ore	0.45	0.43
Ag Recovery, percent	2.2	7.0

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 days rest cycle.
3) Begin water wash.
4) Average of all head grade determinations.

Figure 19. – Gold Leach Rate Profiles,

Column Tests, Rhyolite U/G Sample

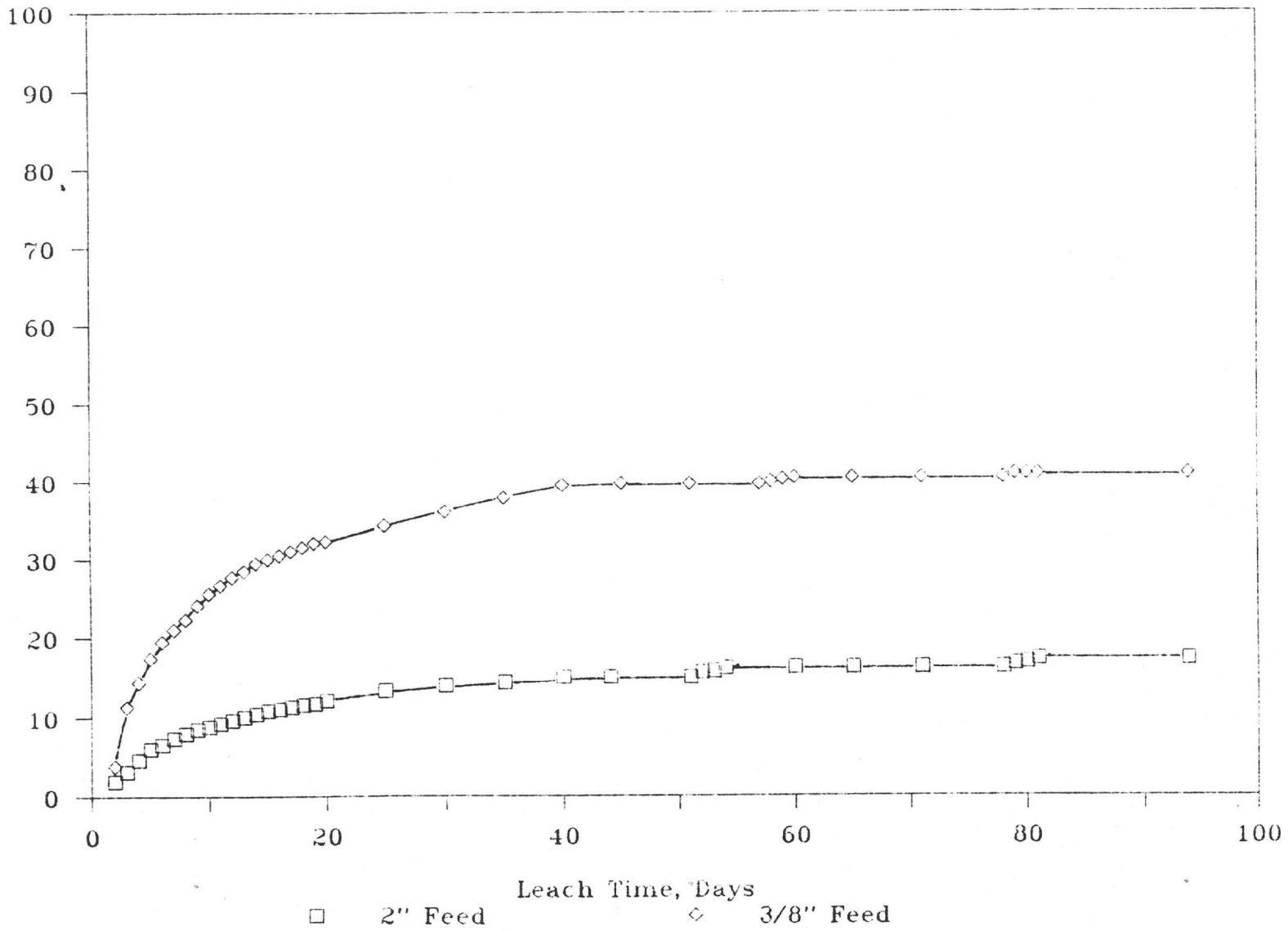


Table 98. - Overall Metallurgical Results, Column Leach Tests, Rhyolite Breccia Underground Bulk Ore

Metallurgical Results	Feed Size	
Extraction: pct total Au	2"	3/8"
1st Effluent	1.6	4.4
in 5 days	11.0	16.4
in 10 days	15.5	23.0
in 15 days	17.9	26.2
in 20 days	19.4	28.5
in 30 days	23.1	32.2
in 40 days	25.5	35.1
in 52 days	26.8[1)]	38.2
in 58 days	28.6	38.8[1)]
in 79 days[2)]	31.8	42.2
in 90 days	33.8	44.4
in 110 days	35.2	48.1
in 126 days[3)]	36.8	50.7
in 129 days	36.8	50.7
in 132 days	-	50.7
Extracted, ozAu/ton ore	0.032	0.037
Tail Screen, ozAu/ton	0.055	0.036
Calculated Head, ozAu/ton ore	0.087	0.073
Head Grade, ozAu/ton ore[4)]	0.075	0.075
Cyanide Consumed, lb/ton ore	1.37	2.90
Cement Added, lb/ton ore	-	10.0
Lime Added, lb/ton ore	5.0	-
Final Solution pH	10.7	11.0
pH After Water Wash	10.1	10.4
Ag Extracted, oz/ton ore	0.01	0.04
Ag Calculated Head, oz/ton ore	0.54	0.49
Ag Recovery, percent	1.9	8.2

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 days rest cycle.
3) Begin water wash.
4) Average of all head grade determinations.

Figure 20. – Gold Leach Rate Profiles,

Column Tests, Rhy. Breccia U/G Sample

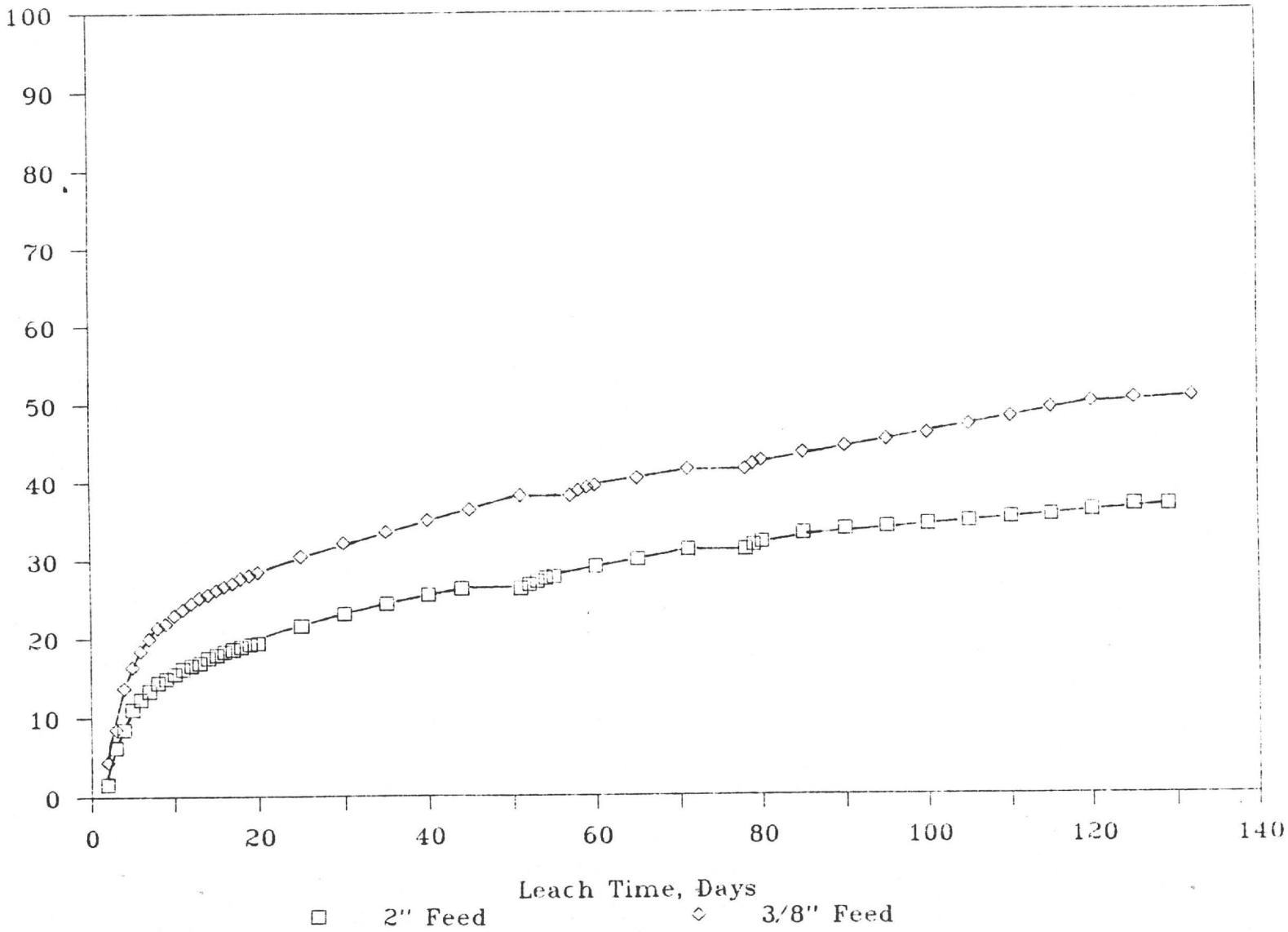


Table 99. - Summary of Column Leach Test Results, Tiger Bulk Ore Samples

Sample	Type	Feed Size	Extracted, oz/ton Au	Extracted, oz/ton Ag	Calc'd Head, oz/ton Au	Calc'd Head, oz/ton Ag	Recovery percent, Au	Recovery percent, Ag	CN^- Con., lb/ton	Leach Time, days
Cloudburst	Surf	2"	0.011	0.00	0.035	0.19	31.4	0.0	0.95	90
Cloudburst	Surf	3/8"	0.021	0.01	0.040	0.20	52.5	5.0	1.35	77
Granite	Surf	2"	0.041	0.01	0.091	0.42	45.1	2.4	1.63	92
Granite	Surf	3/8"	0.042	0.03	0.070	0.46	60.0	6.5	1.80	96
Qtz Vein	Surf	2"	0.044	0.00	0.133	0.29	33.1	0.0	1.34	93
Qtz Vein	Surf	3/8"	0.069	0.03	0.130	0.29	53.1	10.3	1.70	96
Rhyolite	Surf	2"	0.009	0.00	0.030	0.18	30.0	0.0	1.59	77
Rhyolite	Surf	3/8"	0.016	0.01	0.030	0.21	53.3	4.8	1.86	77
Rhyolite	U/G	2"	0.009	0.01	0.052	0.45	17.3	2.2	1.56	94
Rhyolite	U/G	3/8"	0.016	0.03	0.039	0.43	41.0	7.0	1.83	94
Rhy Brec	U/G	2"	0.032	0.01	0.087	0.54	36.8	1.9	1.37	129
Rhy Brec	U/G	3/8"	0.037	0.04	0.073	0.49	50.7	8.2	2.90	132

Metallurgical results show that the Tiger bulk ore samples were not amenable to heap leaching treatment at a nominal 2 inch feed size. Gold recoveries ranged from 17.3 to 45.1 percent, and averaged 32.3 percent in from 77 to 129 days of leaching and washing. Silver recoveries were poor at 2.4 percent or less.

Bulk ore samples, in general, were marginally amenable at a nominal 3/8 inch feed size. Gold recoveries ranged from 41.0 to 60.0 percent, and averaged 51.8 percent in from 77 to 132 days of cyanide solution contact. Silver recoveries were low and ranged from 4.8 to 10.3 percent.

Highest gold recoveries, at both feed sizes, were achieved from the Granite surface ore sample, and the lowest recoveries were achieved from the Rhyolite underground ore sample. Gold recovery rates were fairly rapid for Cloudburst and Rhyolite (surface and underground) feeds and extraction was substantially complete in 20 days of cyanide solution application. Gold recovery rates were slow for Granite, Quartz Vein, and Rhyolite Breccia feeds and extraction was progressing at a slower rate when cyanide solution application was terminated. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate. Rest cycles were somewhat effective in improving subsequent effluent grades, but had little effect on ultimate recovery or recovery rate.

Cyanide consumptions were low to high and ranged from 0.95 to 2.90 pounds per ton of ore. Cyanide consumptions were higher for the finer feeds. Cyanide consumptions for column leach tests are usually higher than those obtained in commercial production. It is expected that commercial consumption for 3/8 inch feeds would not exceed 0.8 pounds per ton of ore, respectively. The 5.0 pounds lime per ton of ore added to the 2 inch feeds before leaching, and the 10 pounds portland cement added to the 3/8 inch feeds during agglomeration pretreatment was sufficient to maintain protective alkalinity at above pH 10.6 and 10.9, respectively, throughout the leaching cycles.

Water washing was effective in decreasing subsequent effluent free cyanide concentrations from about 1.8 to <0.1 pounds per ton of solution in from 3 to 6 days. Water washing of the 2 inch feeds was effective in decreasing effluent pHs from about 10.6 to 10.3. Water washing of the 3/8 inch feeds was effective in decreasing effluent pHs from about 11.0 to 10.7.

Table 100. - Tail Screen Analysis Results, Column Leached Residue, Cloudburst Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	2.0	2.0	0.010	0.17	0.8	1.6	0.8	1.6
-2 +1"	35.3	37.3	0.024	0.18	35.1	33.7	35.9	35.3
-1 +3/4"	10.7	48.0	0.033	0.13	14.5	7.4	50.4	42.7
-3/4 +1/2"	12.0	60.0	0.042	0.20	20.7	12.6	71.1	55.3
-1/2 +1/4"	14.1	74.1	0.034	0.20	19.8	14.7	90.9	70.0
-1/4 +10M	13.0	87.1	0.014	0.22	7.4	15.3	98.3	85.3
-10 +20M	3.3	90.4	0.002	0.26	0.4	4.7	98.7	90.0
-20 +35M	2.2	92.6	0.004	0.20	0.4	2.1	99.1	92.1
-35 +65M	1.4	94.0	0.002	0.17	0.1	1.1	99.2	93.2
-65M	6.0	100.0	0.003	0.21	0.8	6.8	100.0	100.0
Composite	100.0		0.024	0.19	100.0	100.0		

Table 101. - Recovery By Size Fraction Data, Column Leach Test, Cloudburst Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+2"	3.4	2.0	0.012	0.010	16.7
-2 +1"	37.8	35.3	0.047	0.024	48.9
-1 +3/4"	10.4	10.7	0.049	0.033	32.7
-3/4 +1/2"	10.5	12.0	0.069	0.042	39.1
-1/2 +1/4"	12.2	14.1	0.055	0.034	38.2
-1/4 +10M	12.3	13.0	0.018	0.014	22.2
-10 +20M	3.4	3.3	0.008	0.002	75.0
-20 +35M	2.4	2.2	0.008	0.004	50.0
-35 +65M	1.6	1.4	0.011	0.002	81.8
-65M	6.0	6.0	0.052	0.003	94.2
Composite	100.0	100.0	0.043	0.024	44.2

Table 102. - Tail Screen Analysis Results, Column Leached Residue, Cloudburst Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	8.0	8.0	0.043	0.21	18.0	8.8	18.0	8.8
-3/8 +1/4"	19.1	27.1	0.040	0.24	40.2	23.7	58.2	32.5
-1/4 +10M	38.4	65.5	0.018	0.21	36.5	41.7	94.7	74.2
-10 +20M	10.8	76.3	0.006	0.24	3.2	13.4	97.9	87.6
-20 +35M	5.2	81.5	0.001	0.10	0.5	2.6	98.4	90.2
-35 +65M	4.7	86.2	0.001	0.10	0.0	2.6	98.4	92.8
-65M	13.8	100.0	0.002	0.10	1.6	7.2	100.0	100.0
Composite	100.0		0.019	0.19	100.0	100.0		

Table 103. - Recovery By Size Fraction Data, Column Leach Test, Cloudburst Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+3/8"	9.1	8.0	0.064	0.043	32.8
-3/8 +1/4"	20.1	19.1	0.046	0.040	13.0
-1/4 +10M	35.6	38.4	0.030	0.018	40.0
-10 +20M	10.6	10.8	0.018	0.006	66.7
-20 +35M	7.1	5.2	0.016	0.001	93.8
-35 +65M	4.4	4.7	0.014	0.001	92.9
-65M	13.1	13.8	0.048	0.002	95.8
Composite	100.0	100.0	0.036	0.019	47.2

Table 104. - Tail Screen Analysis Results, Column Leached Residue, Granite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	2.9	2.9	0.006	0.32	0.4	2.2	0.4	2.2
-2 +1"	43.5	46.4	0.052	0.36	45.0	38.7	45.4	40.9
-1 +3/4"	10.0	56.4	0.071	0.47	14.1	11.6	59.5	52.5
-3/4 +1/2"	8.8	65.2	0.104	0.44	18.3	9.6	77.8	62.1
-1/2 +1/4"	10.5	75.7	0.063	0.44	13.2	11.3	91.0	73.4
-1/4 +10M	11.5	87.2	0.026	0.41	6.0	11.6	97.0	85.0
-10 +20M	3.2	90.4	0.028	0.44	1.8	3.5	98.8	88.5
-20 +35M	2.4	92.8	0.010	0.38	0.4	2.2	99.2	90.7
-35 +65M	1.6	94.4	0.014	0.32	0.4	1.2	99.6	91.9
-65M	5.6	100.0	0.004	0.59	0.4	8.1	100.0	100.0
Composite	100.0		0.050	0.41	100.0	100.0		

Table 105. - Recovery By Size Fraction Data, Column Leach Test, Granite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent Head	Weight, Percent Tail	Assays, ozAu/ton Head	Assays, ozAu/ton Tail	Au Recovery, Percent
+2"	0.0	2.9	0.000	0.006	N/A
-2 +1"	51.2	43.5	0.073	0.052	28.8
-1 +3/4"	10.4	10.0	0.037	0.071	0.0
-3/4 +1/2"	7.5	8.8	0.184	0.104	43.5
-1/2 +1/4"	8.4	10.5	0.147	0.063	57.1
-1/4 +10M	9.9	11.5	0.105	0.026	75.2
-10 +20M	3.0	3.2	0.055	0.028	49.1
-20 +35M	2.5	2.4	0.056	0.010	82.1
-35 +65M	1.5	1.6	0.058	0.014	75.9
-65M	5.6	5.6	0.174	0.004	97.7
Composite	100.0	100.0	0.091	0.050	45.1

Table 106. - Tail Screen Analysis Results, Column Leached Residue, Granite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	12.8	12.8	0.047	0.60	21.7	17.7	21.7	17.7
-3/8 +1/4"	23.3	36.1	0.036	0.42	30.3	22.6	52.0	40.3
-1/4 +10M	37.7	73.8	0.030	0.37	40.8	32.0	92.8	72.3
-10 +20M	8.2	82.0	0.009	0.40	2.5	7.6	95.3	79.9
-20 +35M	5.6	87.6	0.008	0.34	1.5	4.4	96.8	84.3
-35 +65M	3.7	91.3	0.005	0.36	0.7	3.0	97.5	87.3
-65M	8.7	100.0	0.008	0.63	2.5	12.7	100.0	100.0
Composite	100.0		0.028	0.43	100.0	100.0		

Table 107. - Recovery By Size Fraction Data, Column Leach Test, Granite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+3/8"	13.1	12.8	0.073	0.047	35.6
-3/8 +1/4"	24.4	23.3	0.069	0.036	47.8
-1/4 +10M	35.1	37.7	0.057	0.030	47.4
-10 +20M	8.4	8.2	0.064	0.009	85.9
-20 +35M	5.5	5.6	0.053	0.008	84.9
-35 +65M	4.5	3.7	0.086	0.005	94.2
-65M	9.0	8.7	0.130	0.008	93.8
Composite	100.0	100.0	0.070	0.028	60.0

Table 108. - Tail Screen Analysis Results, Column Leached Residue, Quartz Vein Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	4.5	4.5	0.040	0.15	2.0	2.4	2.0	2.4
-2 +1"	34.6	39.1	0.072	0.18	28.1	21.1	30.1	23.5
-1 +3/4"	13.9	53.0	0.109	0.29	17.1	13.6	47.2	37.1
-3/4 +1/2"	12.7	65.7	0.128	0.37	18.4	16.0	65.6	53.1
-1/2 +1/4"	13.5	79.2	0.120	0.36	18.3	16.7	83.9	69.8
-1/4 +10M	10.9	90.1	0.091	0.45	11.2	16.7	95.1	86.5
-10 +20M	2.7	92.8	0.074	0.49	2.3	4.4	97.4	90.9
-20 +35M	1.8	94.6	0.057	0.53	1.1	3.4	98.5	94.3
-35 +65M	1.3	95.9	0.041	0.44	0.6	2.0	99.1	96.3
-65M	4.1	100.0	0.019	0.27	0.9	3.7	100.0	100.0
Composite	100.0		0.089	0.29	100.0	100.0		

Table 109. - Recovery By Size Fraction Data, Column Leach Test, Quartz Vein Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+2"	0.5	4.5	0.060	0.040	33.3
-2 +1"	40.7	34.6	0.123	0.072	41.5
-1 +3/4"	13.4	13.9	0.136	0.109	19.9
-3/4 +1/2"	10.9	12.7	0.171	0.128	25.1
-1/2 +1/4"	12.2	13.5	0.164	0.120	26.8
-1/4 +10M	11.0	10.9	0.129	0.091	29.5
-10 +20M	2.9	2.7	0.094	0.074	21.3
-20 +35M	2.3	1.8	0.081	0.057	29.6
-35 +65M	1.4	1.3	0.057	0.041	28.1
-65M	4.7	4.1	0.080	0.019	76.3
Composite	100.0	100.0	0.131	0.089	32.1

Table 110. - Tail Screen Analysis Results, Column Leached Residue, Quartz Vein Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	6.3	6.3	0.074	0.37	7.7	8.9	7.7	8.9
-3/8 +1/4"	22.2	28.5	0.065	0.27	23.5	23.3	31.2	32.2
-1/4 +10M	41.0	69.5	0.075	0.23	50.2	36.6	81.4	68.8
-10 +20M	10.1	79.6	0.061	0.31	10.1	12.1	91.5	80.9
-20 +35M	6.0	85.6	0.041	0.34	4.1	7.8	95.6	88.7
-35 +65M	3.0	88.6	0.028	0.26	1.3	3.1	96.9	91.8
-65M	11.4	100.0	0.017	0.18	3.1	8.2	100.0	100.0
Composite	100.0		0.061	0.26	100.0	100.0		

Table 111. - Recovery By Size Fraction Data, Column Leach Test, Quartz Vein Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+3/8"	6.7	6.3	0.149	0.074	50.3
-3/8 +1/4"	21.6	22.2	0.142	0.065	54.2
-1/4 +10M	37.9	41.0	0.126	0.075	40.5
-10 +20M	9.7	10.1	0.111	0.061	45.0
-20 +35M	7.3	6.0	0.091	0.041	54.9
-35 +65M	4.5	3.0	0.071	0.028	60.6
-65M	12.3	11.4	0.165	0.017	89.7
Composite	100.0	100.0	0.129	0.061	52.7

Table 112. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+2"	5.5	5.5	0.037	0.20	9.6	6.3	9.6	6.3
-2 +1"	36.8	42.3	0.032	0.20	56.5	42.3	66.1	48.6
-1 +3/4"	8.5	50.8	0.020	0.28	8.1	13.7	74.2	62.3
-3/4 +1/2"	11.7	62.5	0.020	0.14	11.0	9.1	85.2	71.4
-1/2 +1/4"	13.5	76.0	0.010	0.17	6.7	13.1	91.9	84.5
-1/4 +10M	13.4	89.4	0.009	0.10	5.7	7.4	97.6	91.9
-10 +20M	3.1	92.5	0.007	0.10	0.9	1.7	98.5	93.6
-20 +35M	2.0	94.5	0.007	0.10	0.5	1.2	99.0	94.8
-35 +65M	1.3	95.8	0.005	0.12	0.5	1.2	99.5	96.0
-65M	4.2	100.0	0.002	0.17	0.5	4.0	100.0	100.0
Composite	100.0		0.021	0.18	100.0	100.0		

Table 113. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Surface Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent Head	Weight, Percent Tail	Assays, ozAu/ton Head	Assays, ozAu/ton Tail	Au Recovery, Percent
+2"	0.9	5.5	0.040	0.037	7.5
-2 +1"	40.7	36.8	0.049	0.032	34.7
-1 +3/4"	11.5	8.5	0.022	0.020	9.1
-3/4 +1/2"	10.2	11.7	0.031	0.020	35.5
-1/2 +1/4"	12.6	13.5	0.014	0.010	28.6
-1/4 +10M	12.8	13.4	0.013	0.009	30.8
-10 +20M	3.2	3.1	0.008	0.007	12.5
-20 +35M	2.3	2.0	0.008	0.007	12.5
-35 +65M	1.3	1.3	0.010	0.005	50.0
-65M	4.5	4.2	0.027	0.002	92.6
Composite	100.0	100.0	0.031	0.021	32.3

Table 114. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	7.8	7.8	0.021	0.17	11.9	6.7	11.9	6.7
-3/8 +1/4"	21.3	29.1	0.020	0.29	31.9	31.8	43.8	38.5
-1/4 +10M	36.0	65.1	0.018	0.15	48.1	27.7	91.9	66.2
-10 +20M	12.5	77.6	0.005	0.28	4.4	17.9	96.3	84.1
-20 +35M	5.9	83.5	0.004	0.20	1.5	6.1	97.8	90.2
-35 +65M	4.6	88.1	0.003	0.14	0.7	3.1	98.5	93.3
-65M	11.9	100.0	0.002	0.11	1.5	6.7	100.0	100.0
Composite	100.0		0.014	0.20	100.0	100.0		

Table 115. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+3/8"	8.2	7.8	0.032	0.021	34.4
-3/8 +1/4"	19.0	21.3	0.041	0.020	51.2
-1/4 +10M	38.3	36.0	0.030	0.018	40.0
-10 +20M	11.5	12.5	0.013	0.005	61.5
-20 +35M	7.2	5.9	0.013	0.004	69.2
-35 +65M	4.2	4.6	0.012	0.003	75.0
-65M	11.6	11.9	0.050	0.002	96.0
Composite	100.0	100.0	0.031	0.014	54.8

Table 116. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	4.3	4.3	0.089	0.66	8.9	6.4	8.9	6.4
-2 +1"	19.3	23.6	0.070	0.47	31.4	20.9	40.3	27.3
-1 +3/4"	7.6	31.2	0.073	0.44	12.8	7.6	53.1	34.9
-3/4 +1/2"	11.6	42.8	0.047	0.40	12.8	10.6	65.9	45.5
-1/2 +1/4"	17.4	60.2	0.048	0.48	19.5	19.3	85.4	64.8
-1/4 +10M	21.1	81.3	0.023	0.40	11.4	19.3	96.8	84.1
-10 +20M	5.7	87.0	0.013	0.45	1.6	6.0	98.4	90.1
-20 +35M	3.5	90.5	0.006	0.34	0.5	2.8	98.9	92.9
-35 +65M	1.9	92.4	0.006	0.34	0.2	1.4	99.1	94.3
-65M	7.6	100.0	0.005	0.33	0.9	5.7	100.0	100.0
Composite	100.0		0.043	0.44	100.0	100.0		

Table 117. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+2"	2.4	4.3	0.093	0.089	4.3
-2 +1"	21.1	19.3	0.081	0.070	13.6
-1 +3/4"	9.9	7.6	0.075	0.073	2.7
-3/4 +1/2"	11.7	11.6	0.071	0.047	33.8
-1/2 +1/4"	18.4	17.4	0.055	0.048	12.7
-1/4 +10M	20.4	21.1	0.028	0.023	17.9
-10 +20M	5.3	5.7	0.020	0.013	35.0
-20 +35M	2.9	3.5	0.009	0.006	33.3
-35 +65M	1.8	1.9	0.008	0.006	25.0
-65M	6.1	7.6	0.019	0.005	73.7
Composite	100.0	100.0	0.054	0.043	20.4

Table 118. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+3/8"	14.9	14.9	0.048	0.55	31.9	20.8	31.9	20.8
-3/8 +1/4"	15.9	30.8	0.039	0.47	27.4	19.0	59.3	39.8
-1/4 +10M	32.1	62.9	0.022	0.39	31.4	31.6	90.7	71.4
-10 +20M	11.0	73.9	0.010	0.31	4.9	8.6	95.6	80.0
-20 +35M	7.8	81.7	0.005	0.30	1.8	5.8	97.4	85.8
-35 +65M	4.0	85.7	0.007	0.39	1.3	4.1	98.7	89.9
-65M	14.3	100.0	0.002	0.28	1.3	10.1	100.0	100.0
Composite	100.0		0.023	0.40	100.0	100.0		

Table 119. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent Head	Weight, Percent Tail	Assays, ozAu/ton Head	Assays, ozAu/ton Tail	Au Recovery, Percent
+3/8"	16.6	14.9	0.065	0.048	26.2
-3/8 +1/4"	18.5	15.9	0.054	0.039	27.8
-1/4 +10M	38.4	32.1	0.039	0.022	43.6
-10 +20M	8.3	11.0	0.017	0.010	41.2
-20 +35M	5.3	7.8	0.016	0.005	68.8
-35 +65M	3.1	4.0	0.036	0.007	80.6
-65M	9.8	14.3	0.031	0.002	93.5
Composite	100.0	100.0	0.042	0.023	45.2

Table 120. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Breccia Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+2"	8.6	8.6	0.072	0.21	11.2	3.4	11.2	3.4
-2 +1"	33.7	42.3	0.075	0.33	45.9	21.1	57.1	24.5
-1 +3/4"	10.7	53.0	0.040	0.72	7.8	14.6	64.9	39.1
-3/4 +1/2"	10.9	63.9	0.047	0.75	9.3	15.5	74.2	54.6
-1/2 +1/4"	12.1	76.0	0.050	0.51	11.1	11.8	85.3	66.4
-1/4 +10M	10.8	86.8	0.042	0.67	8.2	13.7	93.5	80.1
-10 +20M	3.3	90.1	0.037	0.67	2.2	4.2	95.7	84.3
-20 +35M	2.2	92.3	0.037	0.70	1.4	2.8	97.1	87.1
-35 +65M	1.6	93.9	0.036	0.65	1.1	1.9	98.2	89.0
-65M	6.1	100.0	0.016	0.95	1.8	11.0	100.0	100.0
Composite	100.0		0.055	0.53	100.0	100.0		

Table 121. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Breccia Underground Bulk Ore, Minus 2 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+2"	10.3	8.6	0.090	0.072	20.0
-2 +1"	42.1	33.7	0.097	0.075	22.7
-1 +3/4"	9.4	10.7	0.051	0.040	21.6
-3/4 +1/2"	8.6	10.9	0.097	0.047	51.5
-1/2 +1/4"	10.2	12.1	0.077	0.050	35.1
-1/4 +10M	9.0	10.8	0.066	0.042	36.4
-10 +20M	2.5	3.3	0.051	0.037	27.5
-20 +35M	1.9	2.2	0.051	0.037	27.5
-35 +65M	1.4	1.6	0.047	0.036	23.4
-65M	4.6	6.1	0.092	0.016	82.6
Composite	100.0	100.0	0.084	0.055	34.5

Table 122. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+3/8"	24.7	24.7	0.048	0.37	33.0	20.2	33.0	20.2
-3/8 +1/4"	16.1	40.8	0.034	0.43	15.3	15.3	48.3	35.5
-1/4 +10M	29.5	70.3	0.037	0.52	30.3	34.0	78.6	69.5
-10 +20M	9.7	80.0	0.029	0.54	7.8	11.6	86.4	81.1
-20 +35M	4.0	84.0	0.028	0.62	3.1	5.6	89.5	86.7
-35 +65M	4.0	88.0	0.029	0.59	3.3	5.3	92.8	92.0
-65M	12.0	100.0	0.022	0.30	7.2	8.0	100.0	100.0
Composite	100.0		0.036	0.45	100.0	100.0		

Table 123. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+3/8"	22.7	24.7	0.074	0.048	35.1
-3/8 +1/4"	14.7	16.1	0.080	0.034	57.5
-1/4 +10M	29.1	29.5	0.077	0.037	51.9
-10 +20M	9.6	9.7	0.049	0.029	40.8
-20 +35M	6.3	4.0	0.052	0.028	46.2
-35 +65M	4.7	4.0	0.048	0.029	39.6
-65M	12.9	12.0	0.106	0.022	79.2
Composite	100.0	100.0	0.075	0.036	52.0

Tail screen analysis results for the 2 inch Granite surface ore leached residue show that residual gold values were fairly evenly distributed throughout the various size fractions. Tail screen analysis results for the remaining 2 inch leached residues show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 1/4 inch size fractions. Plus 1/4 inch fractions averaged 72.4 percent of the tail weight, but contained 88.9 percent of the residual gold.

Tail screen analysis results for the 3/8 inch Rhyolite Breccia U/G ore leached residue show that residual gold values were fairly evenly distributed throughout the various size fractions. However, slight enrichment of residual gold values was observed in the plus 3/8 inch size fraction. The plus 3/8 inch fraction was 24.7 percent of the tail weight, but contained 33.0 percent of the residual gold. Tail screen analysis results for the remaining 3/8 inch leached residues show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 10 mesh size fractions. Plus 10 mesh fractions averaged 67.4 percent of the tail weight, but contained 90.3 percent of the residual gold. Residual silver values were fairly evenly distributed throughout the various size fractions each composite, at both feed sizes. Tail screen analysis results show that crushing the Tiger bulk ore samples to minus 1/4 inch in size would improve overall gold recovery with subsequent heap leaching treatment, but only slightly. Recovery by size fraction data indicate that grinding the feeds to minus 65 mesh, or finer, is required for maximum liberation of gold values for dissolution by cyanide.

Table 124. - Gold Metallurgical Balances, Column Leach Test, Cloudburst Surface Bulk Ore, Nominal 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.011	0.011	0.013
Tail Screen, ozAu/ton	0.024	0.024	0.024
Calc'd Head, ozAu/ton ore	0.035	0.035	0.037
Au Recovery, percent	31.4	31.4	35.1
Deviation, ozAu/ton ore*	N/A	0.000	0.002
Precision, percent	100.0	100.0	94.6

* Deviation from solution versus tail balance.

Table 125. - Gold Metallurgical Balances, Column Leach Test, Cloudburst Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.021	0.020	0.018
Tail Screen, ozAu/ton	0.019	0.019	0.019
Calc'd Head, ozAu/ton ore	0.040	0.039	0.037
Au Recovery, percent	52.5	51.3	48.6
Deviation, ozAu/ton ore*	N/A	0.001	0.003
Precision, percent	100.0	97.5	92.5

* Deviation from solution versus tail balance.

Table 126. - Gold Metallurgical Balances, Column Leach Test, Granite Surface Bulk Ore, Minus 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.041	0.042	0.019
Tail Screen, ozAu/ton	0.050	0.050	0.050
Calc'd Head, ozAu/ton ore	0.091	0.092	0.069
Au Recovery, percent	45.1	45.7	27.5
Deviation, ozAu/ton ore*	N/A	0.001	0.022
Precision, percent	100.0	98.9	75.8

* Deviation from solution versus tail balance.

Table 127. - Gold Metallurgical Balances, Column Leach Test, Granite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.042	0.042	0.041
Tail Screen, ozAu/ton	0.028	0.028	0.028
Calc'd Head, ozAu/ton ore	0.070	0.070	0.069
Au Recovery, percent	60.0	60.0	59.4
Deviation, ozAu/ton ore*	N/A	0.000	0.001
Precision, percent	100.0	100.0	98.6

* Deviation from solution versus tail balance.

Table 128. - Gold Metallurgical Balances, Column Leach Test, Quartz Vein Surface Bulk Ore, Minus 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.044	0.043	0.044
Tail Screen, ozAu/ton	0.089	0.089	0.089
Calc'd Head, ozAu/ton ore	0.133	0.132	0.133
Au Recovery, percent	33.1	32.6	33.1
Deviation, ozAu/ton ore*	N/A	0.001	0.000
Precision, percent	100.0	99.2	100.0

* Deviation from solution versus tail balance.

Table 129. - Gold Metallurgical Balances, Column Leach Test, Quartz Vein Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.069	0.068	0.072
Tail Screen, ozAu/ton	0.061	0.061	0.061
Calc'd Head, ozAu/ton ore	0.130	0.129	0.133
Au Recovery, percent	53.1	52.7	54.1
Deviation, ozAu/ton ore*	N/A	0.001	0.003
Precision, percent	100.0	99.2	97.7

* Deviation from solution versus tail balance.

Table 130. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Surface Bulk Ore, Minus 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.009	0.010	0.005
Tail Screen, ozAu/ton	0.021	0.021	0.021
Calc'd Head, ozAu/ton ore	0.030	0.031	0.026
Au Recovery, percent	30.0	32.3	19.2
Deviation, ozAu/ton ore*	N/A	0.001	0.004
Precision, percent	100.0	96.8	86.7

* Deviation from solution versus tail balance.

Table 131. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.016	0.017	0.012
Tail Screen, ozAu/ton	0.014	0.014	0.014
Calc'd Head, ozAu/ton ore	0.030	0.031	0.026
Au Recovery, percent	53.3	54.8	46.2
Deviation, ozAu/ton ore*	N/A	0.001	0.004
Precision, percent	100.0	96.8	86.7

* Deviation from solution versus tail balance.

Table 132. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Underground Bulk Ore, Minus 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.009	0.010	0.003
Tail Screen, ozAu/ton	0.043	0.043	0.043
Calc'd Head, ozAu/ton ore	0.052	0.053	0.046
Au Recovery, percent	17.3	18.9	6.5
Deviation, ozAu/ton ore*	N/A	0.001	0.006
Precision, percent	100.0	98.1	88.5

* Deviation from solution versus tail balance.

Table 133. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.016	0.014	0.023
Tail Screen, ozAu/ton	0.023	0.023	0.023
Calc'd Head, ozAu/ton ore	0.039	0.037	0.046
Au Recovery, percent	41.0	37.8	50.0
Deviation, ozAu/ton ore*	N/A	0.002	0.007
Precision, percent	100.0	94.9	84.8

* Deviation from solution versus tail balance.

Table 134. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Breccia Underground Bulk Ore, Minus 2 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.032	0.025	0.020
Tail Screen, ozAu/ton	0.055	0.055	0.055
Calc'd Head, ozAu/ton ore	0.087	0.080	0.075
Au Recovery, percent	36.8	31.3	26.7
Deviation, ozAu/ton ore*	N/A	0.007	0.012
Precision, percent	100.0	92.0	86.2

* Deviation from solution versus tail balance.

Table 135. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.037	0.038	0.039
Tail Screen, ozAu/ton	0.036	0.036	0.036
Calc'd Head, ozAu/ton ore	0.073	0.074	0.075
Au Recovery, percent	50.7	51.4	52.0
Deviation, ozAu/ton ore*	N/A	0.001	0.002
Precision, percent	100.0	98.6	97.3

* Deviation from solution versus tail balance.

Head versus tail metallurgical balances were based on average head grades and tail screen results. Metallurgical balances agreed fairly closely. In general, metallurgical balances were within 10 percent experimental precision limits. However, head versus tail metallurgical balances did not agree generally within those precision limits that metallurgical balance is considered the least reliable.

Table 136. - Physical Ore Characteristic Data, Column Leach Tests, Tiger Bulk Ore Samples

Sample	Sample Type	Feed Size	Ore Wt. lbs.	Moisture, weight percent For Agglomeration	Moisture, weight percent To Saturate* Ore Charge	Moisture, weight percent Retained	Bulk Density, lb/ft^3 Before	Bulk Density, lb/ft^3 After
Cloudburst	Surf	2"	693.7	-	9.0	6.0	95.55	97.33
Cloudburst	Surf	3/8"	118.3	6.9	12.3	7.6	86.52	86.52
Granite	Surf	2"	697.9	-	7.1	5.7	96.50	98.42
Granite	Surf	3/8"	119.0	6.1	11.9	8.0	90.09	90.65
Qtz Vein	Surf	2"	682.0	-	7.5	4.2	92.08	94.13
Qtz Vein	Surf	3/8"	119.9	6.5	12.0	7.2	89.35	89.35
Rhyolite	Surf	2"	672.5	-	8.2	5.0	91.36	93.41
Rhyolite	Surf	3/8"	118.7	6.5	12.1	8.3	86.79	86.79
Rhyolite	U/G	2"	697.9	-	10.8	7.2	97.01	97.68
Rhyolite	U/G	3/8"	119.3	6.1	12.4	9.8	88.91	89.16
Rhy Breccia	U/G	2"	698.0	-	7.0	5.2	99.52	100.16
Rhy Breccia	U/G	3/8"	119.8	6.2	11.6	7.3	93.38	93.66

* Includes moisture used for agglomeration.

Physical ore characteristic data show that little "slumping" occurred during leaching. Bulk densities were nearly the same before and after leaching. Moistures required to saturate the ore charges, for agglomeration, and retained moistures were low. No percolation, fines migration, or solution channeling problems were encountered during leaching. Visual examination of the agglomerated leached residues confirmed that contained fines remained fixed to coarser ore particles throughout leaching and washing cycles.

Table 137. - Drain Down Rate Test, Column Leached Residue, Cloudburst Surface Bulk Ore, Minus 2 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.052	0.04
0.25	0.178	0.18
0.50	0.232	0.36
1.00	0.552	0.78
2.00	1.005	1.54
4.00	1.084	2.36
8.00	1.027	3.14
12.00	0.454	3.49
24.00	0.757	4.07
36.00	0.353	4.34
48.00	0.236	4.52
72.00	0.360	4.79
96.00	0.241	4.97
120.00	0.159	5.09

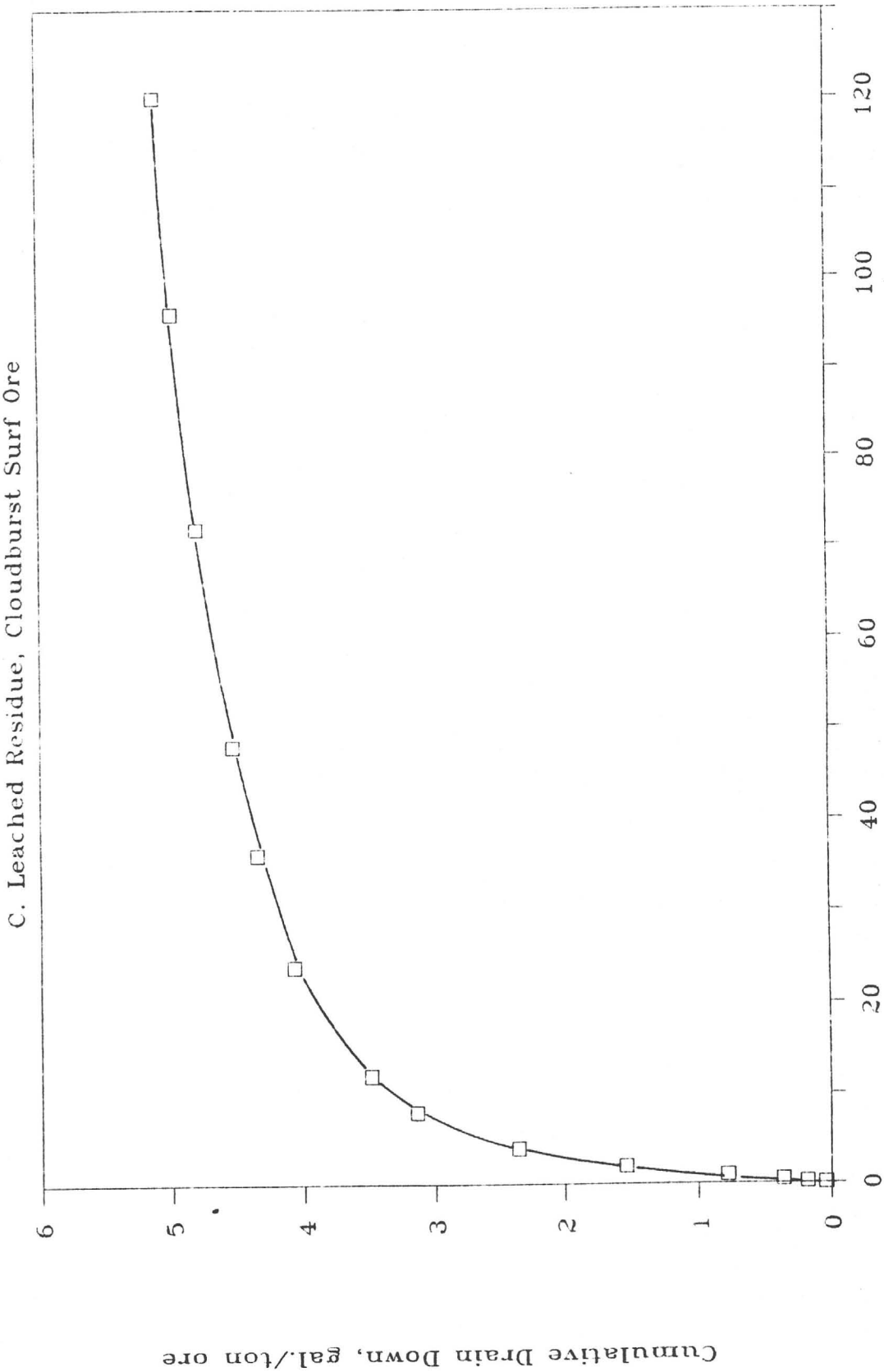


Figure 21. – Drain Down Rate Profile,

C. Leached Residue, Cloudburst Surf Ore

Table 138. - Drain Down Rate Test, Column Leached Residue, Cloudburst Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.031	0.14
0.25	0.048	0.35
0.50	0.079	0.70
1.00	0.082	1.07
2.00	0.099	1.51
4.00	0.121	2.05
8.00	0.114	2.56
12.00	0.056	2.81
24.00	0.097	3.24
36.00		
48.00	0.088	3.63
72.00	0.045	3.83
96.00	0.030	3.96
120.00	0.024	4.07

Figure 22. – Drain Down Rate Profile,

C. Leached Residue, Cloudburst Surf Ore

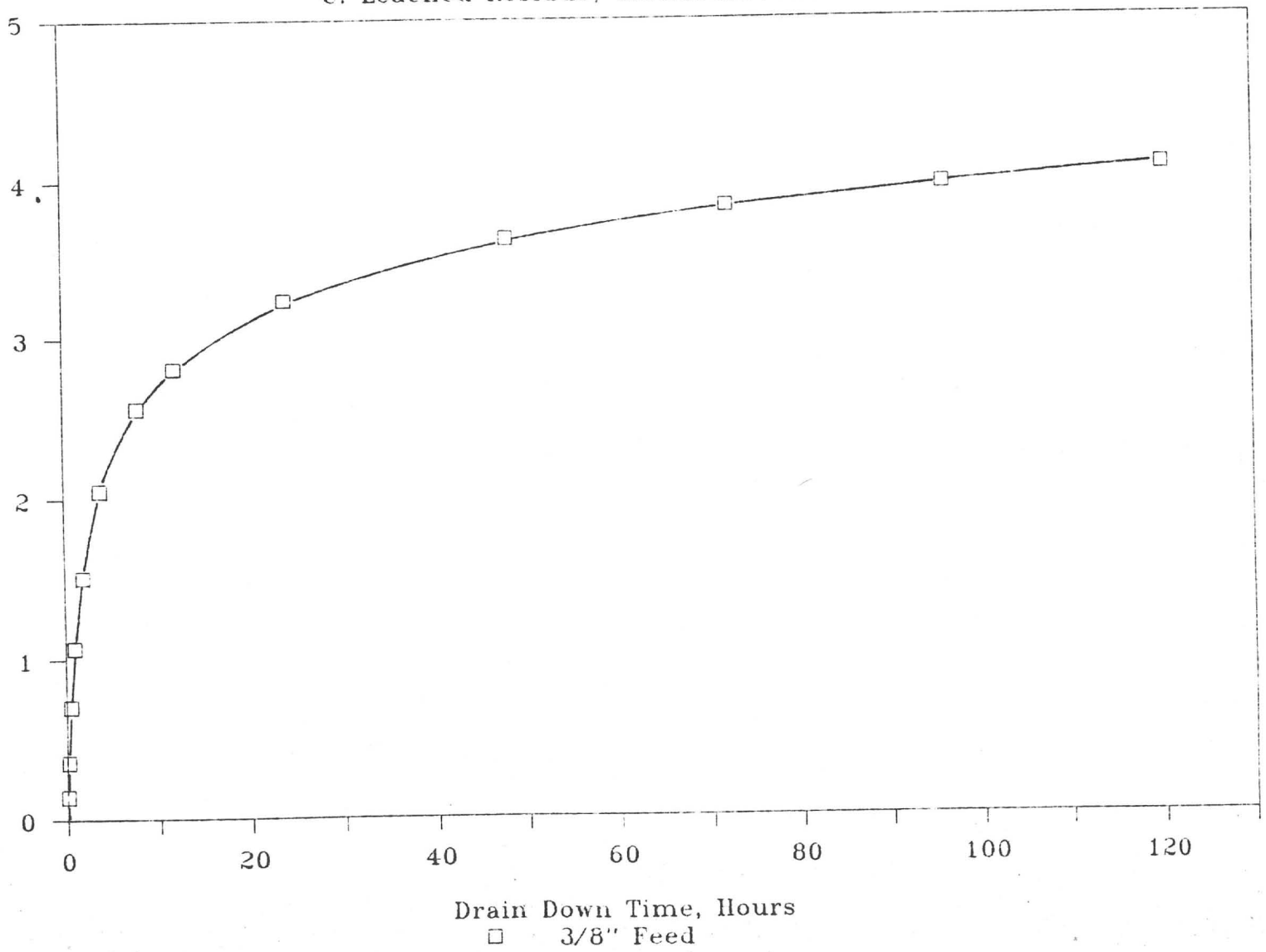


Table 139. - Drain Down Rate Test, Column Leached Residue, Granite Surface Bulk Ore, Minus 2 Inch Feed

	Drain Down	
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.181	0.14
0.25	0.292	0.36
0.50	0.422	0.68
1.00	0.831	1.31
2.00	1.041	2.10
4.00	0.904	2.78
8.00	0.704	3.31
12.00		
24.00	0.803	3.92
36.00		
48.00	0.696	4.45
72.00	0.384	4.74
96.00	0.223	4.91
120.00	0.124	5.00

Figure 23. – Drain Down Rate Profile,

C. Leached Residue, Granite Surf Ore

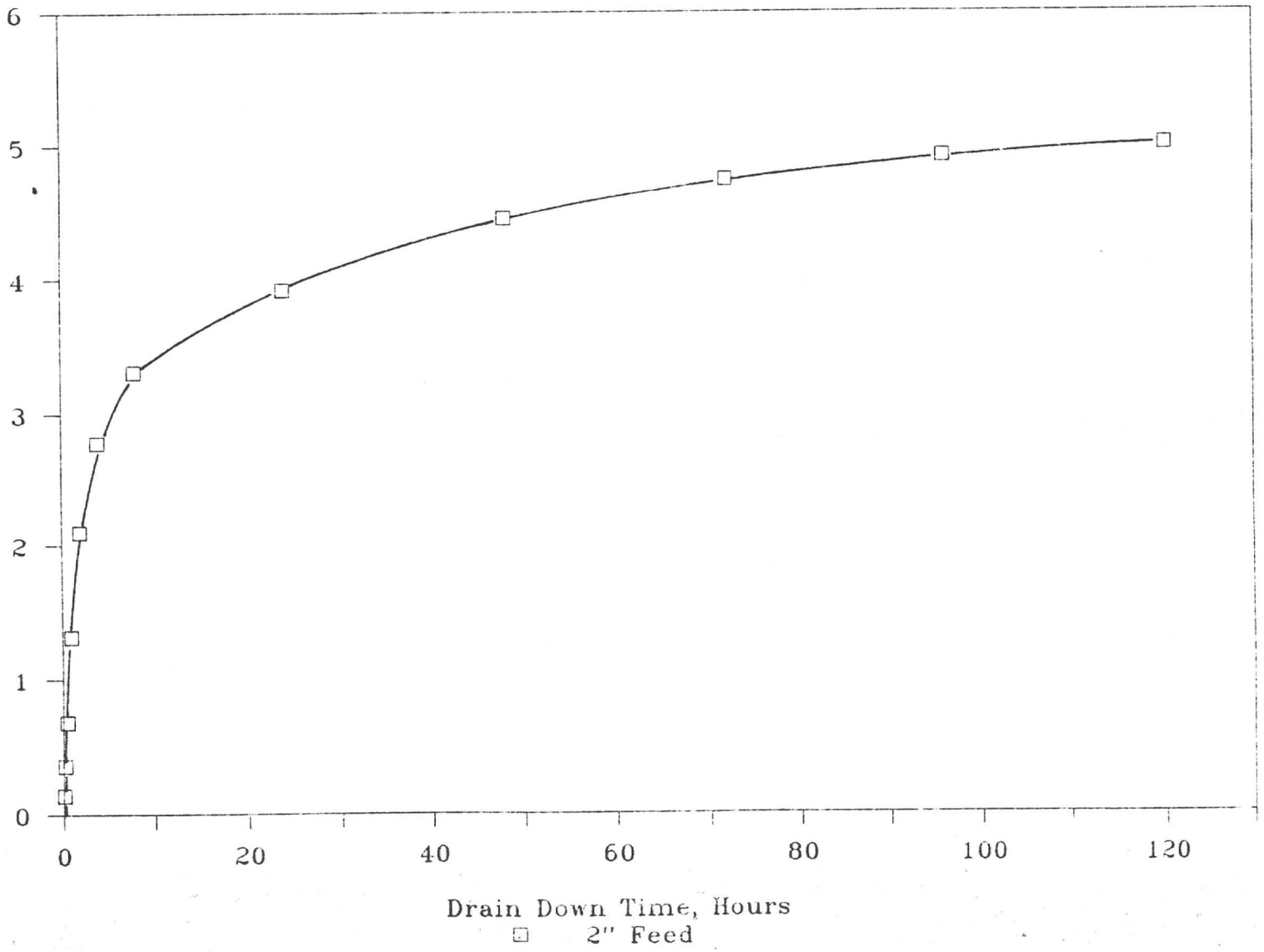


Table 140. - Drain Down Rate Test, Column Leached Residue, Granite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.016	0.07
0.25	0.033	0.21
0.50	0.049	0.42
1.00	0.097	0.85
2.00	0.262	2.00
4.00	0.295	3.30
8.00	0.431	5.20
12.00	0.291	6.48
24.00	0.261	7.63
36.00	0.140	8.25
48.00	0.062	8.52
72.00	0.000	8.52
96.00	0.000	8.52
120.00	0.000	8.52

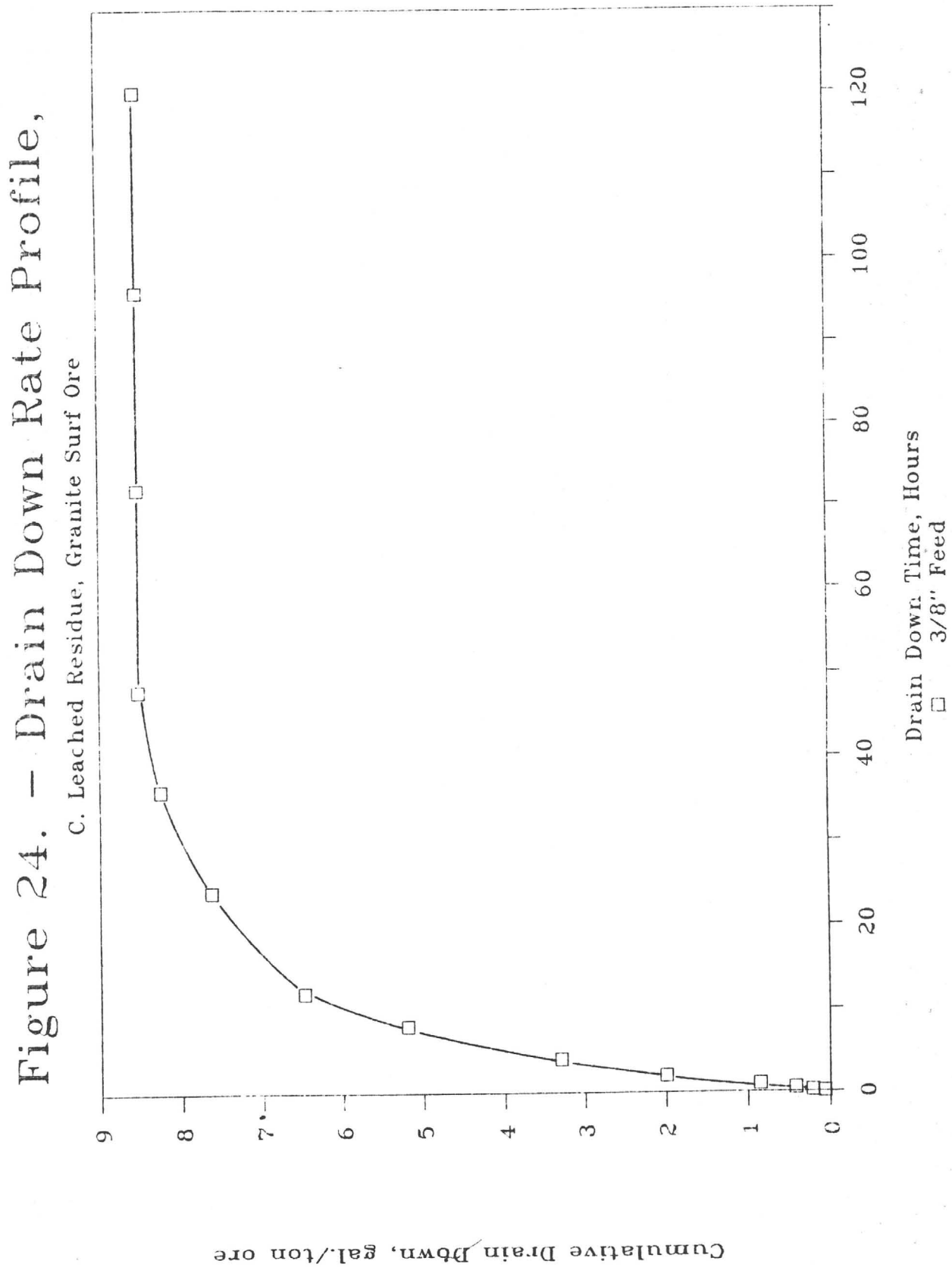


Figure 24. - Drain Down Rate Profile,
C. Leached Residue, Granite Surf Ore
Cumulative Drain Down, gal./ton ore
0
1
2
3
4
5
6
7
8
9
0
20
40
60
80
100
120
Drain Down Time, Hours
3/8" Feed

Table 141. - Drain Down Rate Test, Column Leached Residue, Quartz Vein Surface Bulk Ore, Minus 2 Inch Feed

	Drain Down	
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.172	0.13
0.25	0.308	0.37
0.50	0.349	0.64
1.00	0.597	1.10
2.00	1.081	1.94
4.00	1.937	3.44
8.00	1.742	4.79
12.00	1.380	5.86
24.00	2.217	7.58
36.00	1.302	8.59
48.00	0.836	9.24
72.00	0.817	9.87
96.00	0.438	10.21
120.00	0.261	10.41

Figure 25. – Drain Down Rate Profile,

C. Leached Residue, Qtz. Vein Surf Ore

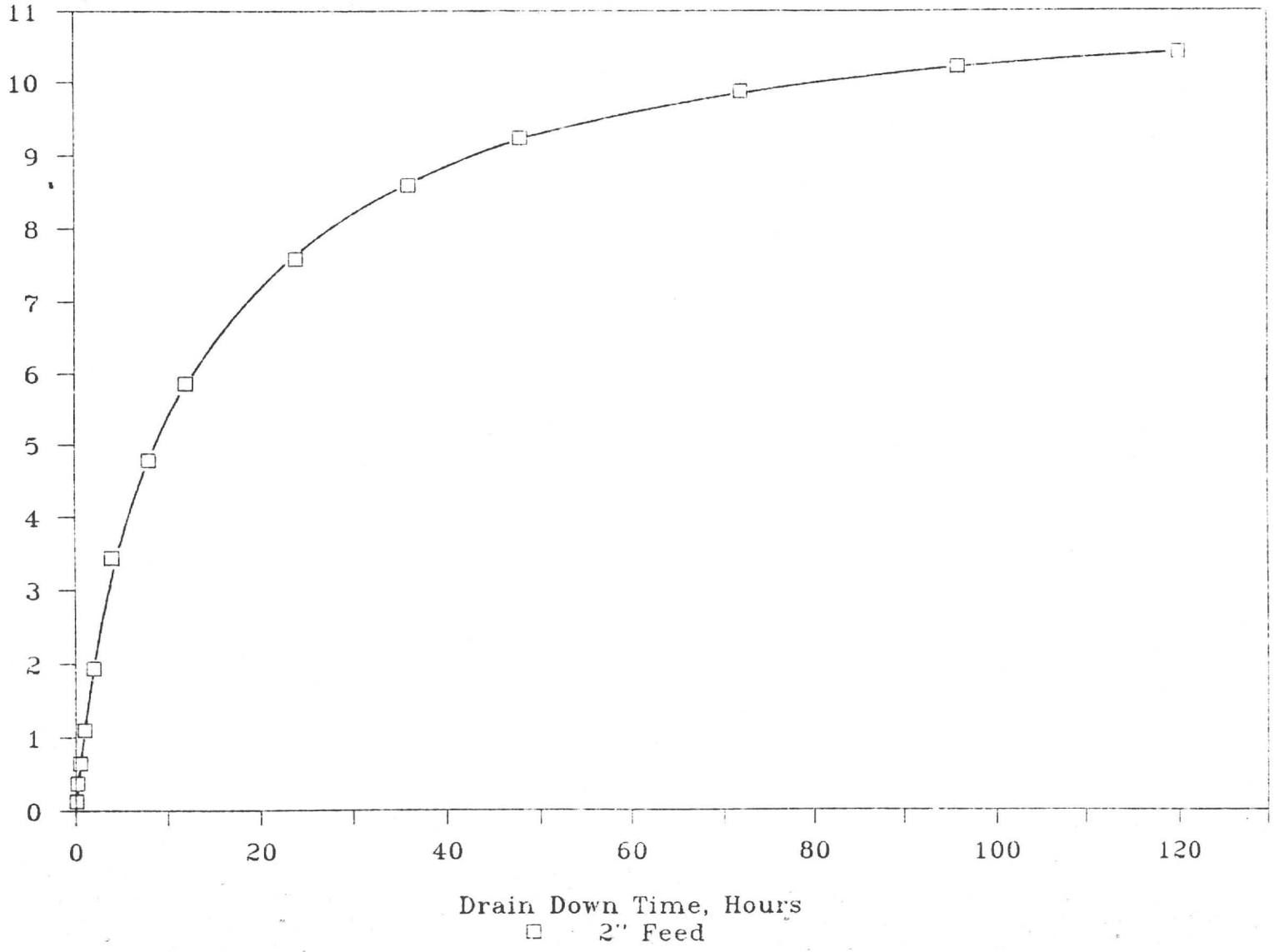


Table 142. - Drain Down Rate Test, Column Leached Residue, Quartz Vein Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.001	0.01
0.25	0.003	0.02
0.50	0.003	0.03
1.00	0.006	0.05
2.00	0.012	0.10
4.00	0.024	0.20
8.00	0.172	0.96
12.00	0.216	1.91
24.00	0.131	2.49
36.00	0.121	3.02
48.00	0.060	3.28
72.00	0.051	3.50
96.00	0.036	3.66
120.00	0.033	3.80

Figure 26. – Drain Down Rate Profile,

C. Leached Residue, Qtz. Vein Surf Ore

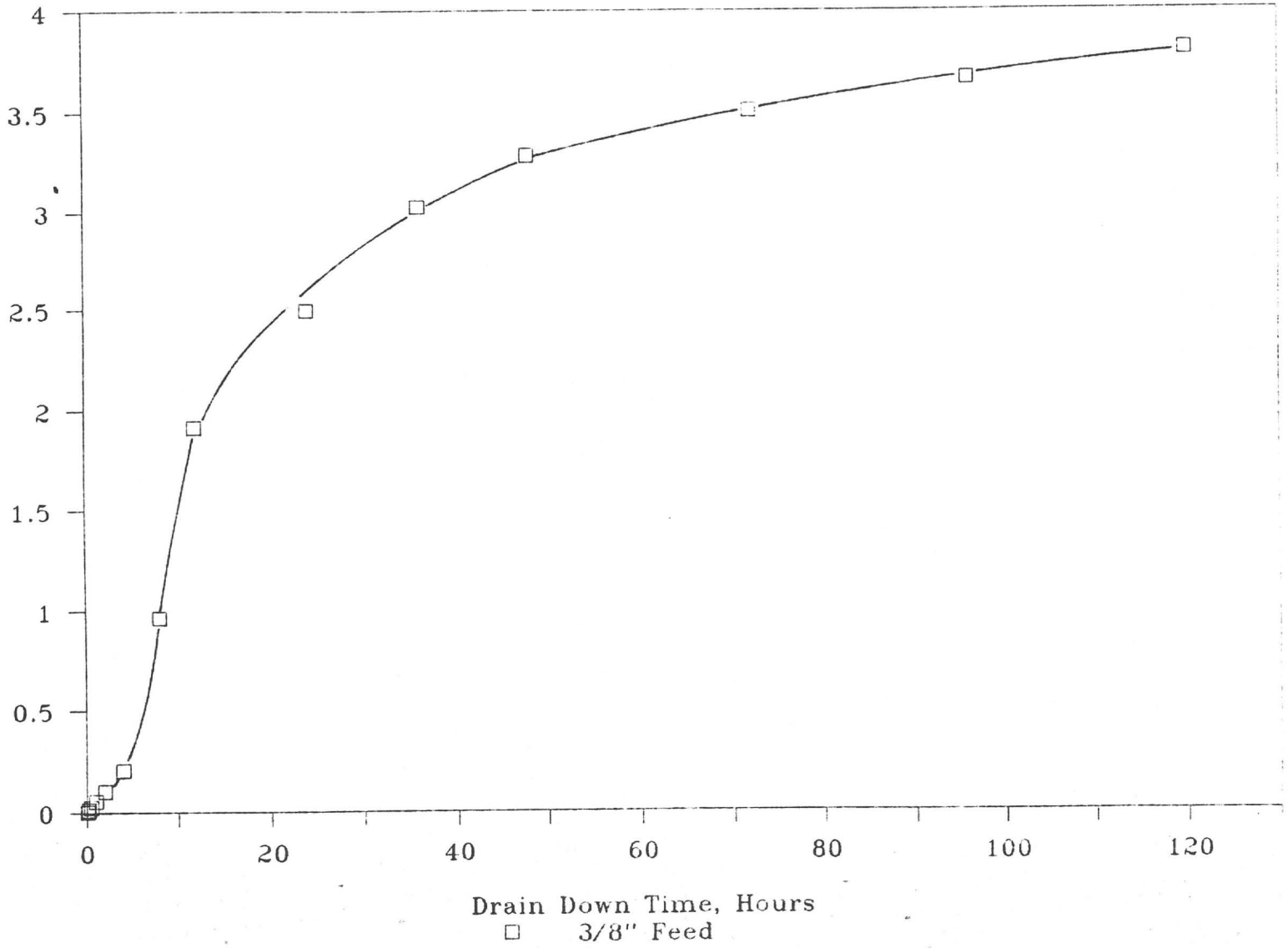


Table 143. - Drain Down Rate Test, Column Leached Residue, Rhyolite Surface Bulk Ore, Minus 2 Inch Feed

	Drain Down	
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.222	0.17
0.25	0.391	0.48
0.50	0.454	0.84
1.00	0.820	1.48
2.00	1.184	2.41
4.00	1.363	3.48
8.00	1.035	4.29
12.00	0.511	4.69
24.00	0.790	5.31
36.00	0.391	5.62
48.00	0.647	6.12
72.00	0.123	6.22
96.00	0.374	6.51
120.00	0.160	6.63

Figure 27. – Drain Down Rate Profile,

C. Leached Residue, Rhyolite Surf Ore

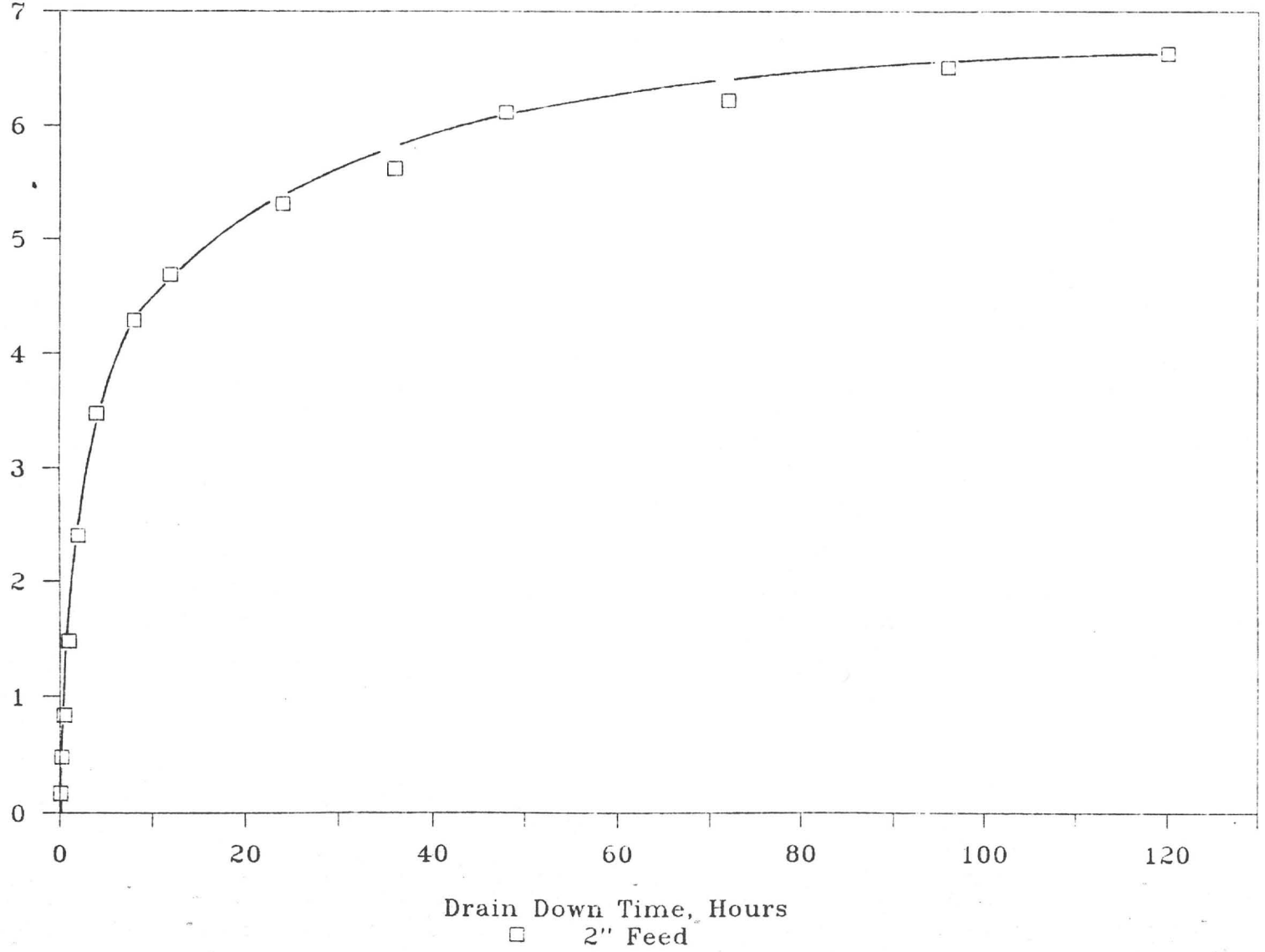


Table 144. - Drain Down Rate Test, Column Leached Residue, Rhyolite Surface Bulk Ore, 90 Percent Minus 3/8 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.007	0.03
0.25	0.008	0.07
0.50	0.083	0.44
1.00	0.123	0.99
2.00	0.147	1.65
4.00	0.177	2.44
8.00	0.190	3.29
12.00	0.065	3.58
24.00	0.120	4.12
36.00		
48.00	0.110	4.61
72.00	0.038	4.78
96.00	0.018	4.86
120.00	0.006	4.89

Figure 28. – Drain Down Rate Profile,

C. Leached Residue, Rhyolite Surf Ore

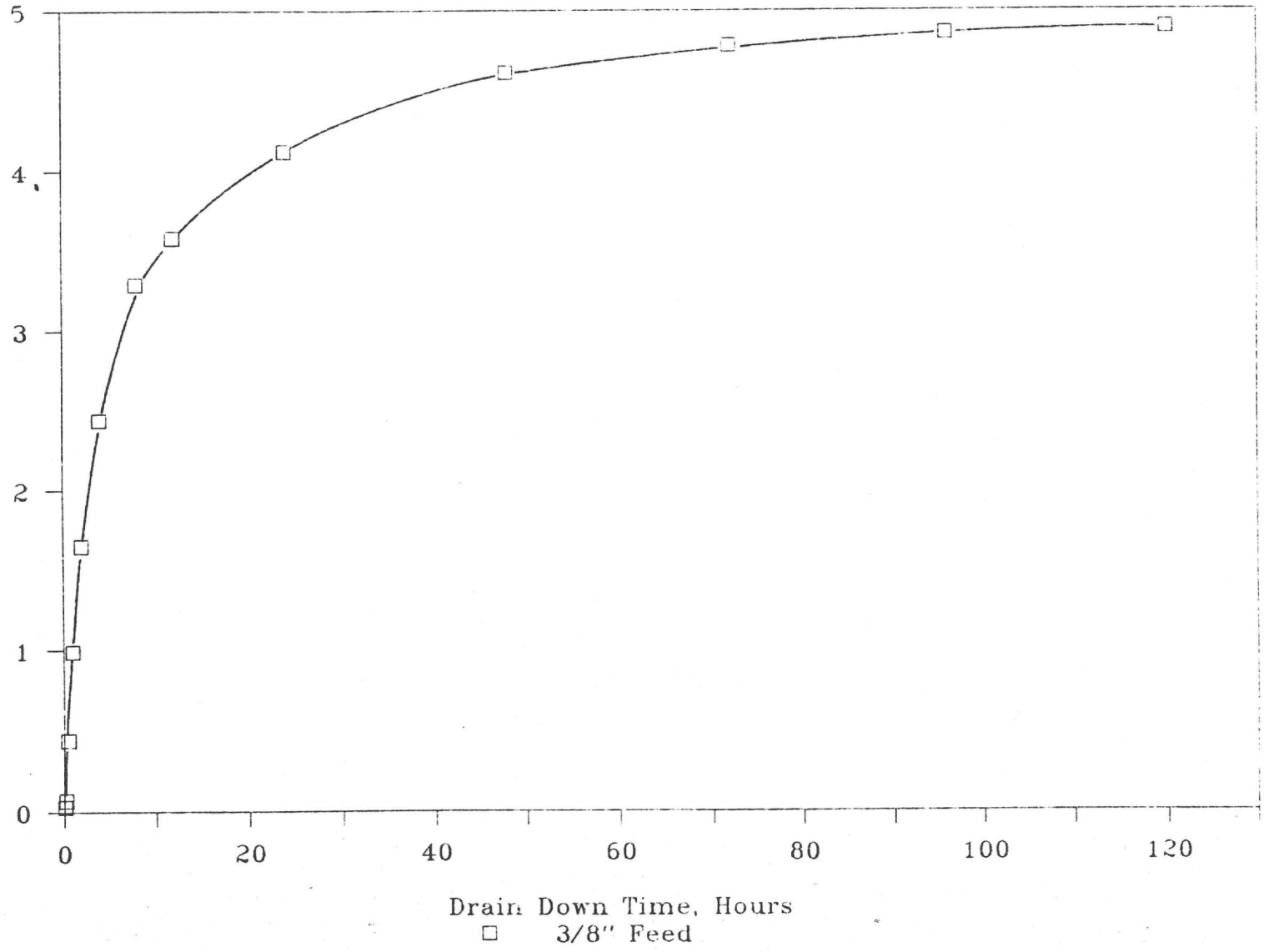


Table 145. - Drain Down Rate Test, Column Leached Residue, Rhyolite Breccia Underground Bulk Ore, Minus 2 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.022	0.02
0.25	0.071	0.07
0.50	0.100	0.14
1.00	0.121	0.23
2.00	0.248	0.42
4.00	0.368	0.70
8.00	0.370	0.98
12.00	0.251	1.17
24.00	0.512	1.56
36.00	0.236	1.74
48.00	0.170	1.87
72.00	0.254	2.06
96.00	0.164	2.18
120.00	0.107	2.26

Figure 29. – Drain Down Rate Profile,

C. Leached Residue, Rhy Breccia U/G Ore

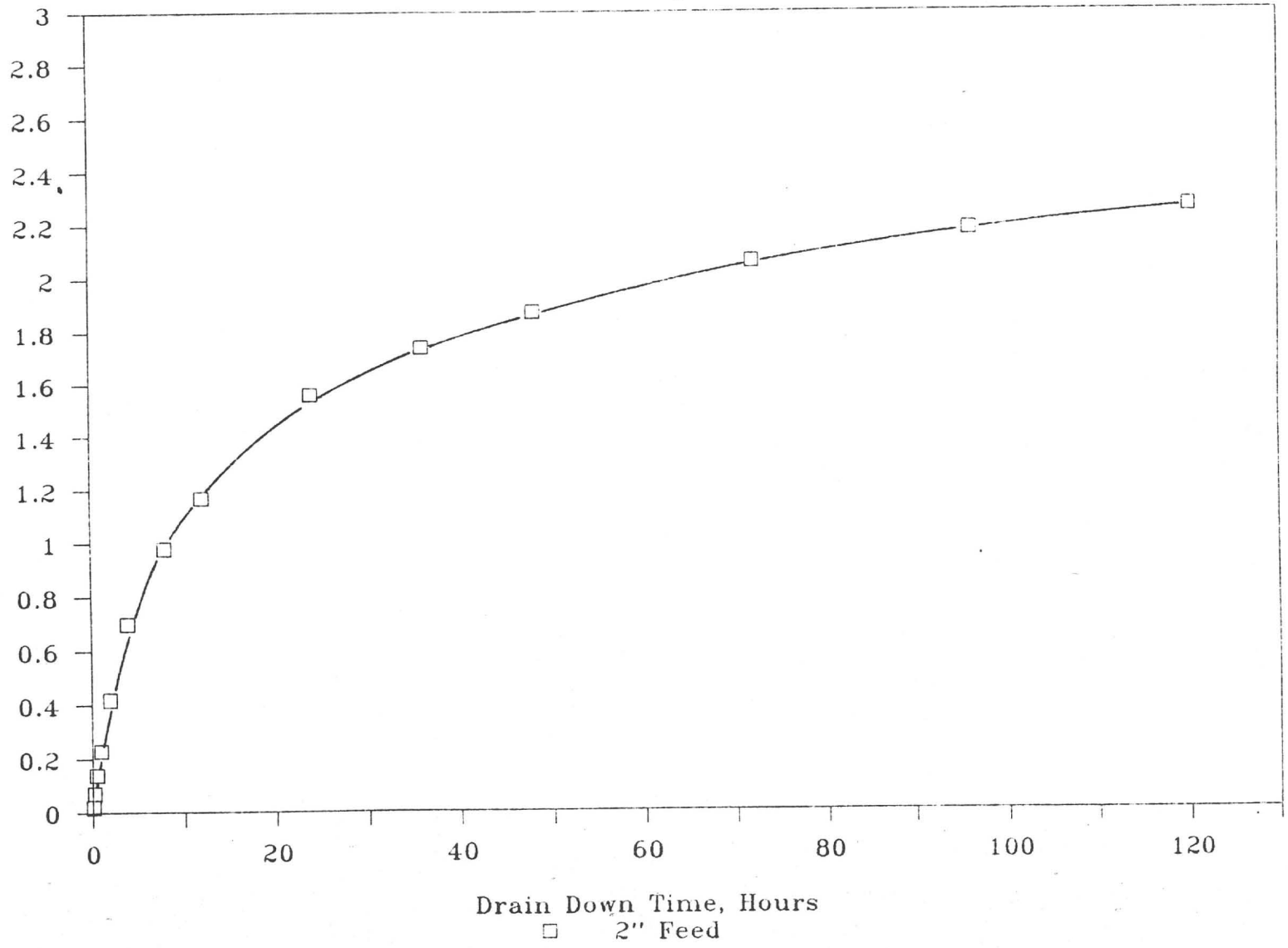


Table 146. - Drain Down Rate Test, Column Leached Residue, Rhyolite Breccia Underground Bulk Ore, 80 Percent Minus 3/8 Inch Feed

Drain Down		
	Effluent Solution	
Time, Hours	Liters	Cumulative gal/ton ore
0.08	0.015	0.07
0.25	0.051	0.29
0.50	0.017	0.36
1.00	0.103	0.81
2.00	0.144	1.44
4.00	0.258	2.58
8.00	0.290	3.86
12.00	0.133	4.44
24.00	0.167	5.17
36.00	0.050	5.39
48.00	0.021	5.48
72.00	0.012	5.53
96.00	0.004	5.55
120.00	0.005	5.57

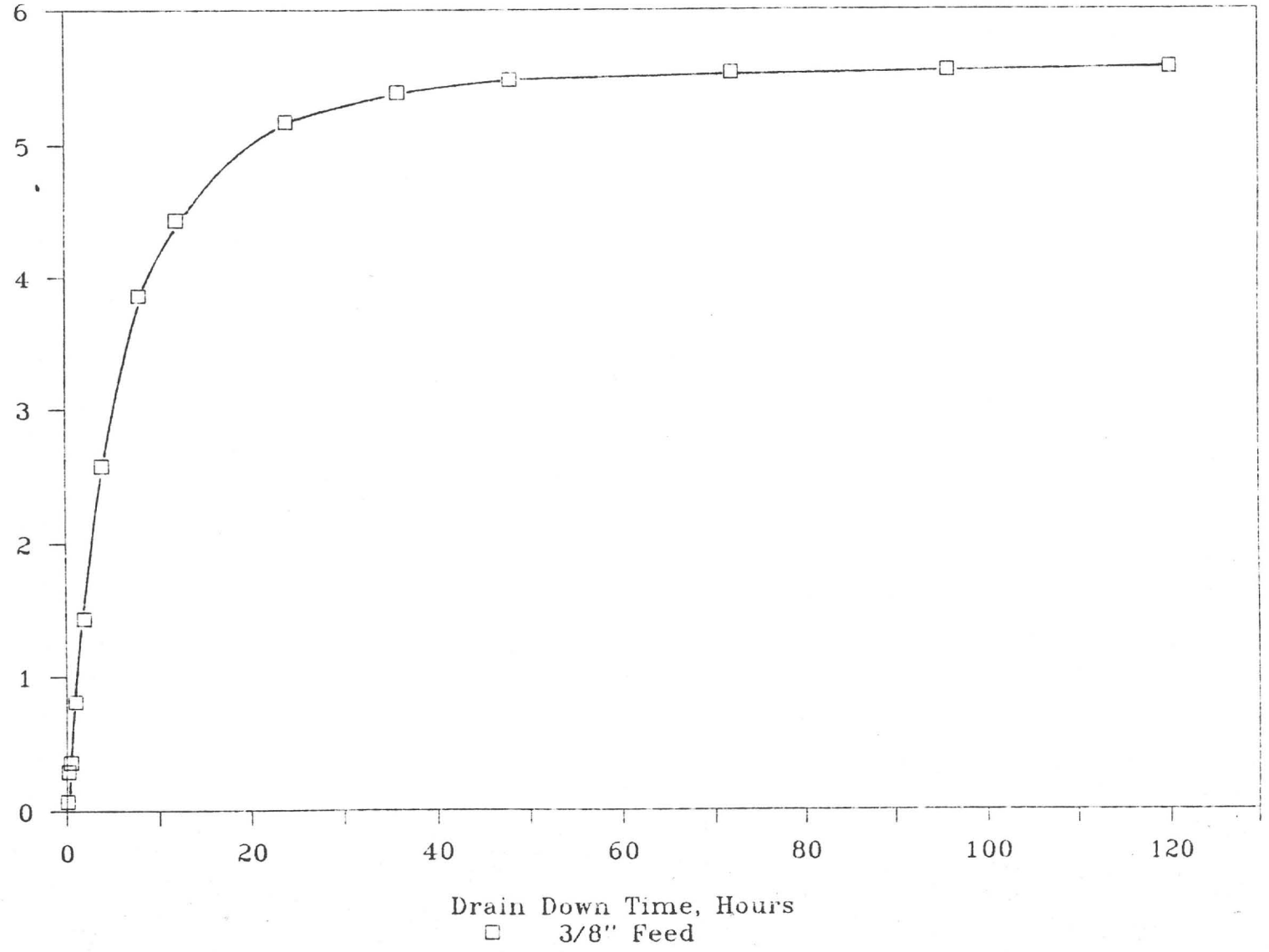
Drain down rate tests were conducted on all column leached residues, except for the Rhyolite U/G feeds. Tests were inadvertently omitted for this sample.

Drain down rate test results show that, after termination of solution application, effluents ranging from 2.26 to 10.41 gallons per ton of ore drained from the 2 inch leached residues in 120 hours, and averaged 5.88 gallons per ton of ore. Drain down rates were slow.

Drain down rate tests show that effluents ranging from 4.07 to 8.52 gallons per ton of ore drained from the 3/8 inch leached residues, and averaged 5.37 gallons per ton of ore in 120 hours. Drain down rates, in general, were fairly rapid and drain down was substantially complete in 48 hours.

Figure 30. – Drain Down Rate Profile,

C. Leached Residue, Rhy Breccia U/G Ore



VAT LEACH TEST PROCEDURES AND RESULTS

Vat leach tests were conducted on two underground bulk ore samples, at the ROM feed size, to determine leachability without crushing. Lime (5 pounds per ton of ore) was mixed with the dry ore charges and the mixture was placed into a 55 gallon plastic drum for leaching.

Leaching was conducted by flooding the ore charges with cyanide solution, equivalent to 2.0 pounds per ton of solution, and allowing them to soak for 22 hours. Ore charges were then drained (approximately 2 hours), effluent volumes were measured by weighing, and samples were taken for analysis using conventional A.A. methods. A.A. results were checked using the "lead boat" assay method the first 10 days of leaching. Cyanide concentration and pH were determined for each pregnant solution. Pregnant solutions were then passed through three stage carbon circuits for adsorption of precious metal values. Barren solution, with appropriate make-up reagent, was applied to the ore charges daily. When pregnant solution effluent grades approached analytical detection limits (0.04 ppm) at day 21, flooding was conducted in 7 day cycles to determine if subsequent pregnant solution grades could be improved. Leaching was terminated after 128 days of cyanide solution contact. Ore charges were washed with water between days 128 and 133 to recover dissolved values and to remove residual free cyanide (county requirement.

After leaching and washing, leached residues were removed from the plastic drums and moisture samples were taken immediately. Remaining leached residues were screen assayed to determine residual precious metal content and distribution.

Overall metallurgical results for vat leach tests are provided in Table 147. Gold leach rate profiles are shown in Figure 31. Tail screen analysis results and recovery by size fraction data are provided in Tables 148 through 151. Metallurgical balances are provided in Tables 152 and 153.

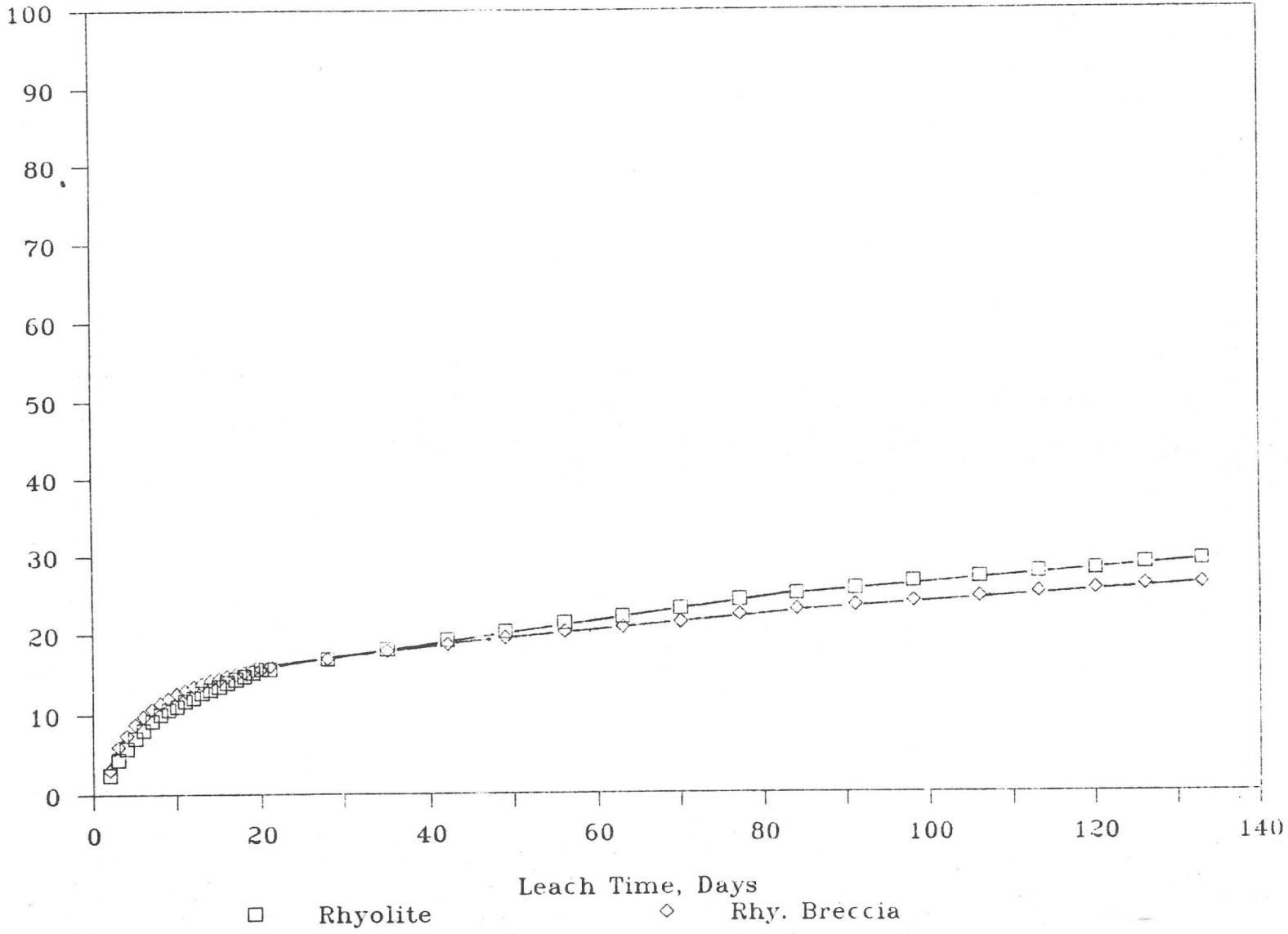
Table 147. - Overall Metallurgical Results, Vat Leach Tests, Underground Bulk Ore Samples, As Received Feeds

Metallurgical Results	Sample	
Extraction: pct total Au	Rhyolite	Rhy. Breccia
1st Effluent	2.5	3.1
in 5 days	7.1	8.8
in 10 days	11.0	12.6
in 15 days	13.5	14.4
in 21 days[1)]	15.6	16.0
in 28 days	16.9	16.9
in 42 days	19.2	18.7
in 56 days	21.3	20.2
in 70 days	23.1	21.4
in 84 days	25.0	23.0
in 98 days	26.5	24.0
in 113 days	27.7	25.1
in 128 days[2)]	29.2	26.2
in 133 days	29.2	26.2
Extracted, ozAu/ton ore	0.014	0.022
Tail Screen, ozAu/ton	0.034	0.062
Calculated Head, ozAu/ton ore	0.048	0.084
Head Grade, ozAu/ton ore[3)]	0.046	0.075
Cyanide Consumed, lb/ton ore	0.99	0.72
Lime Added, lb/ton ore	5.0	5.0
Final Solution pH	10.8	11.0
pH After Water Wash	10.2	9.5
Ag Extracted, oz/ton ore	0.01	0.00
Ag Calculated Head, oz/ton ore	0.39	0.33
Ag Recovery, percent	2.6	0.0
Retained Moisture, weight percent	6.7	6.0

1) Begin 7 day flood cycles.
2) Begin water wash.
3) Average of all head grade determinations.

Figure 31. – Gold Leach Rate Profiles,

Vat Tests, U/G Samples, As Rec'd Feeds



Overall metallurgical results show that the Tiger U/G bulk ore samples were not amenable to heap leaching treatment at the ROM feed size. Gold recoveries of 29.2 and 26.2 percent were achieved from the Rhyolite and Rhyolite Breccia ore samples, respectively, in 133 days of cyanide solution contact. Initial gold recovery rates (first 10 days) were fairly rapid. Gold recovery rates were slow after day 10 and were fairly constant until cyanide solution application was terminated on day 127. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate. The 7 day flood cycles instituted after day 21 of leaching were effective in improving subsequent solution grades, but had little effect on overall recovery.

Cyanide consumptions were low at 0.99 and 0.72 pounds per ton of ore, respectively. Consumption rates were fairly constant throughout the leaching cycles. The 5 pounds lime per ton of ore added before leaching was sufficient to maintain protective alkalinity at above pH 10.8 throughout the 128 day leaching cycles.

Water washing was effective in decreasing effluent cyanide concentration from about 1.8 to <0.1 pounds per ton of solution in 6 days and in decreasing effluent pH from about 10.9 to 10.0.

Table 148. - Tail Screen Analysis Results, Vat Leached Residue, Rhyolite Underground Bulk Ore, ROM Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+6"	2.5	2.5	0.033	0.42	2.3	2.9	2.3	2.9
-6 +4"	6.1	8.6	0.036	0.40	6.5	6.3	8.8	9.2
-4 +2"	11.1	19.7	0.053	0.42	17.3	12.3	26.1	21.5
-2 +1"	12.9	32.6	0.064	0.41	24.3	13.9	50.4	35.4
-1 +3/4"	6.2	38.8	0.040	0.39	7.3	6.3	57.7	41.7
-3/4 +1/2"	9.9	48.7	0.044	0.42	12.9	11.0	70.6	52.7
-1/2 +1/4"	15.3	64.0	0.033	0.41	14.7	16.5	85.3	69.2
-1/4 +10M	18.3	82.3	0.021	0.33	11.1	15.7	96.4	84.9
-10 +20M	5.5	87.8	0.011	0.30	1.8	4.4	98.2	89.3
-20 +35M	3.3	91.1	0.006	0.34	0.6	2.9	98.8	92.2
-35 +65M	2.1	93.2	0.005	0.34	0.3	1.8	99.1	94.0
-65M	6.8	100.0	0.005	0.34	0.9	6.0	100.0	100.0
Composite	100.0		0.034	0.38	100.0	100.0		

Table 149. - Recovery By Size Fraction Data, Vat Leach Test, Rhyolite Underground Bulk Ore, ROM Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+6"	0.0	2.5	N/A	0.033	N/A
-6 +4"	0.0	6.1	N/A	0.036	N/A
-4 +2"	8.4	11.1	0.065	0.053	18.5
-2 +1"	13.8	12.9	0.077	0.064	16.9
-1 +3/4"	8.0	6.2	0.049	0.040	18.4
-3/4 +1/2"	14.0	9.9	0.053	0.044	17.0
-1/2 +1/4"	13.4	15.3	0.041	0.033	19.5
-1/4 +10M	19.9	18.3	0.025	0.021	16.0
-10 +20M	7.2	5.5	0.015	0.011	26.7
-20 +35M	4.9	3.3	0.010	0.006	40.0
-35 +65M	3.0	2.1	0.014	0.005	64.3
-65M	7.4	6.8	0.021	0.005	76.2
Composite	100.0	100.0	0.042	0.034	19.0

Tail screen analysis results for the ROM Rhyolite underground leached residue show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 1/2 inch size fractions. Plus 1/2 inch fractions were 48.7 percent of the tail weight, but contained 70.6 percent of the residual gold.

Table 150. - Tail Screen Analysis Results, Vat Leached Residue, Rhyolite Breccia Underground Bulk Ore, ROM Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+6"	8.7	8.7	0.098	0.21	13.7	5.5	13.7	5.5
-6 +4"	8.3	17.0	0.040	0.41	5.3	10.4	19.0	15.9
-4 +2"	22.5	39.5	0.068	0.31	24.6	21.5	43.6	37.4
-2 +1"	20.4	59.9	0.081	0.30	26.5	18.7	70.1	56.1
-1 +3/4"	5.9	65.8	0.089	0.41	8.5	7.4	78.6	63.5
-3/4 +1/2"	5.8	71.6	0.056	0.25	5.1	4.6	83.7	68.1
-1/2 +1/4"	8.2	79.8	0.045	0.37	6.0	9.2	89.7	77.3
-1/4 +10M	9.1	88.9	0.040	0.42	5.8	11.6	95.5	88.9
-10 +20M	2.6	91.5	0.031	0.43	1.3	3.4	96.8	92.3
-20 +35M	2.0	93.5	0.029	0.50	1.0	3.1	97.8	95.4
-35 +65M	1.4	94.9	0.028	0.37	0.6	1.5	98.4	96.9
-65M	5.1	100.0	0.019	0.20	1.6	3.1	100.0	100.0
Composite	100.0		0.062	0.33	100.0	100.0		

Table 151. - Recovery By Size Fraction Data, Vat Leach Test, Rhyolite Breccia Underground Bulk Ore, ROM Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+6"	7.4	8.7	0.136	0.098	27.9
-6 +4"	6.0	8.3	0.049	0.040	18.4
-4 +2"	17.5	22.5	0.082	0.068	17.1
-2 +1"	15.6	20.4	0.107	0.081	24.3
-1 +3/4"	6.9	5.9	0.110	0.089	19.1
-3/4 +1/2"	7.7	5.8	0.063	0.056	11.1
-1/2 +1/4"	11.2	8.2	0.074	0.045	39.2
-1/4 +10M	12.4	9.1	0.057	0.040	29.8
-10 +20M	3.9	2.6	0.063	0.031	50.8
-20 +35M	2.8	2.0	0.045	0.029	35.6
-35 +65M	1.8	1.4	0.044	0.028	36.4
-65M	6.8	5.1	0.083	0.019	77.1
Composite	100.0	100.0	0.082	0.062	24.4

Tail screen analysis results for the ROM Rhyolite Breccia underground leached residue show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 3/4 inch size fractions. Plus 3/4 inch fractions were 65.8 percent of the tail weight, but contained 78.6 percent of the residual gold. Tail screen analysis results show that crushing the feeds to about minus 1/2 inch in size would improve overall gold recovery with subsequent heap leaching treatment, but only slightly. Tail screen analysis results and recovery by size fraction data show that fine grinding would be required to achieve maximum liberation of gold values for dissolution by cyanide.

Table 152. - Gold Metallurgical Balances, Vat Leach Test, Rhyolite Underground Bulk Ore, ROM Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.014	0.012	0.012
Tail Screen, ozAu/ton	0.034	0.034	0.034
Calc'd Head, ozAu/ton ore	0.048	0.046	0.046
Au Recovery, percent	29.2	26.1	26.1
Deviation, ozAu/ton ore*	N/A	0.002	0.002
Precision, percent	100.0	95.8	95.8

* Deviation from solution versus tail balance.

Table 153. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Breccia Underground Bulk Ore, ROM Feed

	Balance		
	Sol. vs Tail	Carbon vs Tail	Head vs Tail
Extracted, ozAu/ton ore	0.022	0.021	0.013
Tail Screen, ozAu/ton	0.062	0.062	0.062
Calc'd Head, ozAu/ton ore	0.084	0.083	0.075
Au Recovery, percent	26.2	25.3	17.3
Deviation, ozAu/ton ore*	N/A	0.001	0.009
Precision, percent	100.0	98.8	89.3

* Deviation from solution versus tail balance.

Metallurgical balances agreed fairly closely. Calculated heads from solution versus tail balances are considered more reliable than head versus tail balances because of the quantity of "check" analyses performed.

SUMMARY OF WORK IN PROGRESS

Agglomerated column percolation leach tests are in progress on the 6 Tiger bulk ore samples at an 80 percent minus 1/4 inch feed size to determine precious metal recovery, recovery rate, and reagent requirements under simulated heap leaching conditions. Column test procedures were the same as described earlier in this report.

A total of 0.020, 0.038, 0.059, and 0.015 ounce gold per ton of ore has been extracted from the Cloudburst, Granite, Quartz Vein, and Rhyolite surface ore samples, respectively, in 58 days of leaching. Average head grades for the respective ore samples from previous testwork are 0.037, 0.069, 0.133, and 0.026 ounce gold per ton. Based on these head grades, interim gold recoveries are 54.1, 55.1, 44.4, and 57.7 percent, respectively. Interim column leach data for the underground bulk ore samples is limited (only 10 days of leaching without "lead boat" check assays). Consequently, predicting interim gold recovery is not practical.

Final column leach data will be based on calculated heads from the respective column leach tests. This data will be available after A.A. solution analyses, "lead boat" assay checks, and final tail screen analyses are evaluated. Interim leaching data indicates that extraction is complete for the Cloudburst and Rhyolite surface bulk ore samples. Final data should be available in about three weeks.

Interim cyanide consumptions for the 4 surface bulk ore samples are about 1.72, 1.46, 0.94, and 2.38 pounds per ton of ore, respectively. The 10 pounds portland cement per ton of ore added during agglomeration pretreatment has been sufficient for maintaining leaching pH at above 10.9.

CONCLUSIONS

- The Tiger cuttings composites were generally amenable to direct agitated cyanidation treatment at the cuttings feed size.

- Bulk ore samples responded poorly to concentration by conventional gravity methods at an 80 percent minus 35 mesh feed size.

- The Granite surface bulk ore sample was amenable to direct agitated cyanidation treatment at an 80 percent minus 1/4 inch feed size. Remaining surface bulk ore samples were marginally amenable at that feed size. The Rhyolite Breccia U/G ore sample was marginally amenable at 80 percent minus 1/4 inch and 10 mesh feed sizes. The Rhyolite U/G ore sample was not amenable at either feed size.

- Surface bulk ore samples were readily amenable to agitated cyanidation treatment at an 80 percent minus 200 mesh feed size. Underground ore samples were readily amenable at 80 percent minus 65, 100, 150, and 200 mesh feed sizes.

- Optimum milling/cyanidation grind size for the Tiger U/G samples is about 80 percent minus 100 mesh.

- Gold recovery rates were fairly rapid and extraction was substantially complete in from 6 to 24 hours.

- Reagent requirements were low to moderate.

- Tiger bulk ore samples were not amenable to simulated heap leaching treatment at a nominal 2 inch feed size. Bulk ore samples were marginally amenable at a nominal 3/8 inch feed size.

- Gold recovery rates were fairly rapid for the Cloudburst and Rhyolite ore samples, but were slow for the remaining ore samples. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate.

- Cyanide consumptions were low to high, but should be substantially less in commercial production.

- The 5 pounds lime per ton added to the 2 inch feeds before leaching, and the 10 pounds cement added to the 3/8 inch feeds during agglomeration pretreatment was sufficient to maintain protective alkalinity throughout the leaching cycles.

- Tiger U/G bulk ore samples were not amenable to vat leaching treatment at the as received (ROM) feed size.

- Initial gold recovery rates (to 10 days) were fairly rapid. Gold extraction rates were slow but fairly constant from day 10 until cyanide solution application was terminated after day 127.

- Tail screen analysis results show that crushing the feeds to minus 1/4 inch in size would improve overall heap leach gold recovery, but only slightly. Grinding to minus 65 mesh, or finer, would be required to achieve maximum liberation of gold values for dissolution by cyanide.

RECOMMENDATIONS

We recommend that additional testwork be conducted on representative core composites to insure that data obtained from bulk ore samples applies to mineable ore. Detailed testwork should be conducted on high-grade ore types to optimize milling and cyanidation conditions.

Frank A. Macy
Project Manager

APPENDIX

DAILY COLUMN LEACH DATA, CLOUDBURST SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	12.34	0.4	12.2	0.75	0.17	0.00	0.00	0.0009	2.6	0.000	0.0
3	29.68	1.9	12.1	0.69	0.11	0.00	0.00	0.0028	8.0	0.001	0.0
4	31.50	1.4	11.7	0.26	0.08	0.00	0.00	0.0035	10.0	0.001	0.0
5	34.62	1.9	11.7	0.14	0.05	0.00	0.00	0.0040	11.4	0.001	0.0
6	31.52	1.6	11.9	0.12	0.04	0.00	0.00	0.0043	12.3	0.001	0.0
7	38.22	1.6	12.0	0.11	0.00	0.00	0.00	0.0047	13.4	0.001	0.0
8	32.04	2.0	12.0	0.09	0.00	0.00	0.00	0.0050	14.3	0.001	0.0
9	29.94	1.8	11.9	0.10	0.00	0.00	0.00	0.0052	14.9	0.001	0.0
10	35.34	2.0	11.5	0.06	0.00	0.00	0.00	0.0054	15.4	0.001	0.0
11	31.62	2.0	11.7	0.07	0.00	0.00	0.00	0.0057	16.3	0.001	0.0
12	31.22	1.9	11.6	0.12	0.00	0.00	0.00	0.0060	17.1	0.001	0.0
13	32.90	2.3	11.7	0.04	0.00	0.00	0.00	0.0061	17.4	0.001	0.0
14	32.30	2.2	11.4	0.04	0.00	0.00	0.00	0.0062	17.7	0.001	0.0
15	32.20	1.9	11.5	0.05	0.00	0.00	0.00	0.0064	18.3	0.001	0.0
16	28.18	2.0	11.3	0.07	0.00	0.00	0.00	0.0066	18.9	0.001	0.0
17	36.76	2.0	11.5	0.04	0.00	0.00	0.00	0.0067	19.1	0.001	0.0
18	31.54	1.8	11.4	0.04	0.00	0.00	0.00	0.0068	19.4	0.001	0.0
19	30.28	1.9	11.4	0.06	0.00	0.00	0.00	0.0070	20.0	0.001	0.0
20	34.64	1.8	11.4	0.04	0.00	0.00	0.00	0.0071	20.3	0.001	0.0
21	30.62	1.8	11.1	0.04	0.00	0.00	0.00	0.0072	20.6	0.001	0.0
22	35.16	2.2	11.2	0.00	0.00	0.00	0.00	0.0072	20.6	0.001	0.0
23	33.00	2.1	11.2	0.00	0.00	0.00	0.00	0.0072	20.6	0.001	0.0
24	31.02	1.8	11.0	0.05	0.04	0.00	0.00	0.0074	21.1	0.001	0.0
25	31.56	1.8	11.2	0.04	0.00	0.00	0.00	0.0075	21.4	0.001	0.0
26	34.00	2.0	11.3	0.04	0.00	0.00	0.00	0.0076	21.7	0.001	0.0
27	32.60	1.8	11.2	0.04	0.00	0.00	0.00	0.0077	22.0	0.001	0.0
28	32.50	1.8	11.0	0.04	0.00	0.00	0.00	0.0079	22.6	0.001	0.0
29	31.92	2.1	11.0	0.04	0.00	0.00	0.00	0.0080	22.9	0.001	0.0
30	32.52	1.9	11.0	0.04	0.00	0.00	0.00	0.0081	23.1	0.001	0.0
31	31.80	1.8	10.9	0.04	0.00	0.00	0.00	0.0082	23.4	0.001	0.0
32	32.24	1.8	10.8	0.00	0.00	0.00	0.00	0.0082	23.4	0.001	0.0
33	31.08	2.0	10.9	0.00	0.00	0.00	0.00	0.0082	23.4	0.001	0.0
34	33.78	1.9	10.8	0.00	0.00	0.00	0.00	0.0082	23.4	0.001	0.0
35	31.30	1.8	10.9	0.04	0.00	0.00	0.00	0.0083	23.7	0.001	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0083	23.7	0.001	0.0
43	31.86	1.7	11.0	0.14	0.00	0.00	0.00	0.0088	25.1	0.001	0.0
44	32.12	2.0	11.0	0.08	0.00	0.00	0.00	0.0090	25.7	0.001	0.0
45	31.62	1.6	10.8	0.05	0.00	0.00	0.00	0.0091	26.0	0.001	0.0
46	32.28	1.8	10.8	0.04	0.00	0.00	0.00	0.0093	26.6	0.001	0.0
47	32.34	2.0	10.8	0.05	0.00	0.00	0.00	0.0094	26.9	0.001	0.0
48	32.54	2.0	10.7	0.04	0.00	0.00	0.00	0.0095	27.1	0.001	0.0
49	30.78	1.7	10.9	0.04	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
50	28.60	2.1	10.9	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
51	37.20	1.9	10.6	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
52	32.82	1.7	10.7	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
53	31.72	1.7	10.8	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
54	32.82	1.9	11.1	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0

DAILY COLUMN LEACH DATA, CLOUDBURST SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
55	23.78	1.7	10.7	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
56	35.74	1.7	10.9	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
57	33.32	1.6	10.9	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
58	32.54	2.3	10.8	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
59	32.44	2.0	10.7	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
60	31.42	1.8	10.8	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0096	27.4	0.001	0.0
75	30.58	1.9	10.4	0.20	0.00	0.00	0.00	0.0102	29.1	0.001	0.0
76	32.66	1.8	10.7	0.08	0.00	0.00	0.00	0.0104	29.7	0.001	0.0
77	31.72	1.7	10.7	0.09	0.00	0.00	0.00	0.0107	30.6	0.001	0.0
78	33.96	2.0	10.6	0.04	0.00	0.00	0.00	0.0108	30.9	0.001	0.0
79	32.50	1.9	10.7	0.04	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
80	30.78	1.6	10.9	0.04	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
81	33.06	1.8	10.5	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
82	31.60	1.8	10.7	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
REST	2.30	1.4	10.5	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
WASH	28.34	1.9	10.8	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
85	33.72	0.9	10.9	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
86	30.56	0.2	10.8	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
87	33.02	0.1	10.5	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
88	32.82	<0.1	10.6	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
89	37.58	<0.1	10.6	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0
90	25.22	<0.1	10.3	0.00	0.00	0.00	0.00	0.0110	31.4	0.001	0.0

DAILY COLUMN LEACH DATA, CLOUDBURST SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.26	0.3	11.7	0.90	0.32	0.00	0.00	0.0016	4.0	0.001	0.3
3	5.08	0.6	11.7	1.30	0.35	0.25	0.09	0.0052	13.0	0.002	0.8
4	4.98	1.0	11.4	1.10	0.46	0.25	0.14	0.0074	18.5	0.003	1.3
5	4.70	1.9	11.6	0.91	0.50	0.18	0.14	0.0090	22.5	0.003	1.7
6	5.86	1.6	11.7	0.57	0.34	0.09	0.08	0.0103	25.8	0.004	2.1
7	4.88	1.7	11.8	0.57	0.40	0.04	0.05	0.0116	29.0	0.005	2.5
8	4.52	1.6	11.5	0.36	0.31	0.00	0.00	0.0124	31.0	0.006	2.8
9	4.84	1.6	11.8	0.31	0.23	0.07	0.07	0.0132	33.0	0.006	3.1
10	6.00	1.7	11.6	0.20	0.15	0.00	0.00	0.0136	34.0	0.006	3.2
11	4.86	1.9	11.5	0.24	0.21	0.00	0.00	0.0143	35.8	0.007	3.5
12	4.96	1.9	11.4	0.20	0.14	0.00	0.00	0.0148	37.0	0.007	3.7
13	5.26	1.7	11.6	0.13	0.09	0.04	0.04	0.0152	38.0	0.008	3.8
14	5.20	2.0	11.5	0.11	0.09	0.00	0.00	0.0154	38.5	0.008	3.9
15	5.02	2.0	11.4	0.14	0.10	0.00	0.00	0.0158	39.5	0.008	4.0
16	4.22	1.9	11.4	0.11	0.08	0.00	0.00	0.0160	40.0	0.008	4.1
17	5.92	2.0	11.5	0.07	0.05	0.00	0.00	0.0162	40.5	0.008	4.2
18	4.54	1.8	11.4	0.08	0.06	0.00	0.00	0.0164	41.0	0.009	4.3
19	5.12	1.8	11.5	0.07	0.05	0.00	0.00	0.0166	41.5	0.009	4.3
20	4.88	2.0	11.6	0.07	0.04	0.00	0.00	0.0168	42.0	0.009	4.4
21	5.64	2.0	11.5	0.05	0.04	0.00	0.00	0.0170	42.5	0.009	4.5
22	4.32	1.9	11.4	0.09	0.06	0.00	0.00	0.0172	43.0	0.009	4.5
23	5.76	1.9	11.4	0.05	0.00	0.00	0.00	0.0173	43.3	0.009	4.5
24	4.70	1.8	11.4	0.07	0.04	0.00	0.00	0.0175	43.8	0.009	4.6
25	5.46	1.8	11.3	0.06	0.00	0.00	0.00	0.0177	44.3	0.009	4.6
26	5.26	1.9	11.4	0.00	0.00	0.00	0.00	0.0177	44.3	0.009	4.6
27	5.08	2.1	11.4	0.05	0.00	0.00	0.00	0.0178	44.5	0.009	4.6
28	5.14	1.8	11.2	0.05	0.00	0.00	0.00	0.0180	45.0	0.009	4.6
29	5.16	2.0	11.2	0.00	0.00	0.00	0.00	0.0180	45.0	0.009	4.6
30	4.72	2.1	11.3	0.05	0.04	0.00	0.00	0.0181	45.3	0.009	4.6
31	5.46	1.7	11.2	0.00	0.04	0.00	0.00	0.0181	45.3	0.009	4.7
32	4.96	1.8	11.2	0.06	0.04	0.00	0.00	0.0183	45.8	0.009	4.7
33	4.60	2.0	11.3	0.06	0.00	0.00	0.00	0.0184	46.0	0.009	4.7
34	5.18	1.8	11.1	0.04	0.00	0.00	0.00	0.0185	46.3	0.009	4.7
35	4.92	2.0	11.3	0.04	0.00	0.00	0.00	0.0186	46.5	0.009	4.7
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0186	46.5	0.009	4.7
43	5.84	1.8	11.6	0.10	0.06	0.00	0.00	0.0189	47.3	0.010	4.8
44	5.76	2.0	11.4	0.05	0.00	0.00	0.00	0.0191	47.8	0.010	4.8
45	5.30	1.8	11.2	0.00	0.00	0.00	0.00	0.0191	47.8	0.010	4.8
46	4.92	1.7	11.3	0.04	0.00	0.00	0.00	0.0192	48.0	0.010	4.8
47	4.58	2.0	11.0	0.04	0.00	0.00	0.00	0.0193	48.3	0.010	4.8
48	5.34	2.0	11.1	0.04	0.00	0.00	0.00	0.0194	48.5	0.010	4.8
49	5.26	1.8	11.2	0.00	0.00	0.00	0.00	0.0194	48.5	0.010	4.8
50	5.18	2.0	11.4	0.06	0.00	0.00	0.00	0.0196	49.0	0.010	4.8
51	5.20	1.9	11.0	0.06	0.04	0.00	0.00	0.0198	49.5	0.010	4.9
52	5.20	1.6	11.2	0.05	0.04	0.00	0.00	0.0199	49.8	0.010	5.0
53	4.82	1.8	11.2	0.05	0.04	0.00	0.00	0.0200	50.0	0.010	5.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0200	50.0	0.010	5.0

DAILY COLUMN LEACH DATA, CLOUDBURST SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
61	4.52	1.9	11.1	0.08	0.05	0.00	0.00	0.0202	50.5	0.010	5.0
62	4.94	1.9	11.2	0.08	0.05	0.00	0.00	0.0204	51.0	0.010	5.0
63	5.06	1.8	11.3	0.08	0.04	0.00	0.00	0.0207	51.8	0.010	5.0
64	5.40	1.9	11.1	0.04	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
65	4.94	2.0	11.3	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
66	5.22	1.8	11.4	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
67	5.86	1.8	11.3	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
68	4.34	1.8	11.4	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
69	5.20	1.8	11.3	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
70	4.40	2.0	11.3	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
71	5.56	1.9	11.2	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
WASH	0.52	0.0	0.0	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
73	4.18	1.5	11.2	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
74	5.84	0.4	11.1	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
75	5.20	0.2	11.0	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
76	4.66	0.1	11.2	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0
77	5.10	<0.1	11.1	0.00	0.00	0.00	0.00	0.0210	52.5	0.010	5.0

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	16.24	0.5	12.0	2.81	0.34	0.00	0.00	0.0042	4.6	0.001	0.1
3	30.96	1.4	12.1	2.50	0.32	0.09	0.00	0.0113	12.4	0.001	0.3
4	33.96	2.0	11.8	1.50	0.34	0.13	0.06	0.0158	17.4	0.003	0.6
5	30.40	2.0	11.7	0.85	0.23	0.05	0.04	0.0177	19.5	0.003	0.7
6	32.76	1.8	11.9	0.65	0.19	0.06	0.04	0.0196	21.5	0.003	0.8
7	34.02	1.9	12.0	0.52	0.15	0.04	0.00	0.0210	23.1	0.004	0.9
8	33.32	2.0	12.0	0.41	0.13	0.06	0.05	0.0221	24.3	0.004	1.0
9	31.48	1.9	12.0	0.37	0.09	0.18	0.04	0.0230	25.3	0.004	1.0
10	34.12	2.0	12.0	0.36	0.11	0.07	0.04	0.0236	25.9	0.005	1.1
11	30.02	2.0	11.6	0.26	0.09	0.04	0.04	0.0241	26.5	0.005	1.1
12	32.46	1.9	11.7	0.36	0.09	0.06	0.00	0.0251	27.6	0.005	1.1
13	31.68	1.8	11.6	0.45	0.10	0.05	0.00	0.0262	28.8	0.005	1.2
14	34.58	1.7	11.6	0.34	0.11	0.06	0.00	0.0271	29.8	0.005	1.3
15	31.06	1.9	11.7	0.31	0.12	0.05	0.00	0.0278	30.5	0.006	1.4
16	31.70	2.0	11.5	0.23	0.09	0.07	0.00	0.0284	31.2	0.006	1.4
17	36.14	2.0	11.8	0.17	0.08	0.05	0.00	0.0287	31.5	0.006	1.5
18	32.02	2.0	11.6	0.23	0.09	0.04	0.00	0.0292	32.1	0.007	1.5
19	32.52	2.0	11.7	0.21	0.07	0.04	0.00	0.0298	32.7	0.007	1.6
20	32.24	2.3	11.7	0.13	0.06	0.00	0.00	0.0300	33.0	0.007	1.6
21	21.48	2.0	11.6	0.15	0.06	0.00	0.00	0.0303	33.3	0.007	1.7
22	24.54	2.0	11.5	0.04	0.05	0.00	0.00	0.0304	33.4	0.007	1.7
23	32.78	2.0	11.6	0.15	0.06	0.05	0.00	0.0309	34.0	0.007	1.7
24	30.10	2.0	11.4	0.17	0.07	0.04	0.00	0.0312	34.3	0.008	1.8
25	31.80	1.9	11.5	0.15	0.05	0.00	0.00	0.0315	34.6	0.008	1.8
26	35.00	2.0	11.6	0.10	0.04	0.00	0.00	0.0318	34.9	0.008	1.9
27	33.12	2.0	11.5	0.09	0.05	0.04	0.00	0.0321	35.3	0.008	1.9
28	32.78	1.8	11.3	0.11	0.05	0.04	0.00	0.0323	35.5	0.008	1.9
29	32.36	2.0	11.3	0.12	0.05	0.00	0.00	0.0325	35.7	0.008	2.0
30	32.52	1.8	11.3	0.11	0.05	0.06	0.00	0.0329	36.2	0.008	2.0
31	36.38	1.7	11.2	0.15	0.06	0.06	0.00	0.0332	36.5	0.009	2.0
32	32.18	1.8	11.1	0.14	0.06	0.00	0.04	0.0334	36.7	0.009	2.1
33	33.36	2.0	11.2	0.10	0.06	0.04	0.00	0.0337	37.0	0.009	2.1
34	32.42	1.8	11.0	0.12	0.06	0.05	0.00	0.0340	37.4	0.009	2.1
35	30.62	2.0	11.1	0.12	0.06	0.05	0.00	0.0342	37.6	0.009	2.2
36	32.98	1.8	11.0	0.11	0.06	0.05	0.00	0.0343	37.7	0.009	2.2
37	33.44	1.5	11.0	0.13	0.06	0.04	0.00	0.0346	38.0	0.010	2.4
38	31.46	2.1	11.0	0.09	0.06	0.04	0.00	0.0347	38.1	0.010	2.4
39	31.72	2.2	11.1	0.11	0.06	0.05	0.04	0.0349	38.4	0.010	2.4
40	34.68	1.9	11.0	0.08	0.05	0.05	0.00	0.0350	38.5	0.010	2.4
41	30.96	1.8	11.0	0.15	0.06	0.04	0.00	0.0353	38.8	0.010	2.4
42	34.54	2.0	10.9	0.07	0.06	0.04	0.00	0.0354	38.9	0.010	2.4
43	32.12	1.9	11.0	0.11	0.05	0.04	0.00	0.0356	39.1	0.010	2.4
44	32.18	2.0	10.9	0.12	0.06	0.05	0.00	0.0358	39.3	0.010	2.4
45	31.34	1.6	10.8	0.11	0.06	0.04	0.00	0.0360	39.6	0.010	2.4
46	32.72	1.7	10.9	0.11	0.06	0.05	0.00	0.0362	39.8	0.010	2.4
47	32.78	2.3	10.0	0.10	0.06	0.04	0.00	0.0364	40.0	0.010	2.4
48	32.02	2.1	10.7	0.10	0.06	0.05	0.00	0.0365	40.1	0.010	2.4

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	30.58	1.9	10.9	0.12	0.06	0.06	0.00	0.0367	40.3	0.010	2.4
50	33.06	2.0	11.0	0.09	0.06	0.05	0.00	0.0368	40.4	0.010	2.4
51	32.74	1.8	10.6	0.10	0.06	0.05	0.00	0.0370	40.7	0.010	2.4
52	32.34	1.7	10.8	0.09	0.06	0.04	0.00	0.0371	40.8	0.010	2.4
53	31.64	1.8	10.8	0.12	0.06	0.06	0.00	0.0373	41.0	0.010	2.4
54	32.90	1.9	11.1	0.11	0.06	0.06	0.00	0.0375	41.2	0.010	2.4
55	33.24	1.9	10.7	0.08	0.04	0.05	0.00	0.0375	41.2	0.010	2.4
56	31.66	1.9	10.8	0.12	0.06	0.07	0.00	0.0377	41.4	0.010	2.4
57	33.02	1.7	10.8	0.11	0.05	0.07	0.00	0.0378	41.5	0.010	2.4
58	32.74	2.0	10.8	0.11	0.06	0.07	0.00	0.0380	41.8	0.010	2.4
59	32.24	2.0	10.6	0.11	0.06	0.07	0.00	0.0381	41.9	0.010	2.4
60	31.04	1.7	10.8	0.13	0.06	0.07	0.00	0.0382	42.0	0.010	2.4
61	33.24	2.0	10.6	0.10	0.07	0.06	0.00	0.0383	42.1	0.010	2.4
62	32.02	1.8	10.8	0.11	0.07	0.06	0.00	0.0385	42.3	0.010	2.4
63	33.00	1.8	10.7	0.10	0.07	0.05	0.00	0.0386	42.4	0.010	2.4
64	32.88	1.8	10.5	0.08	0.06	0.05	0.00	0.0387	42.5	0.010	2.4
65	32.34	2.0	10.8	0.09	0.06	0.00	0.00	0.0388	42.6	0.010	2.4
66	32.52	1.8	10.8	0.05	0.00	0.00	0.00	0.0390	42.9	0.010	2.4
67	31.14	1.8	10.8	0.06	0.00	0.00	0.00	0.0391	43.0	0.010	2.4
68	33.56	1.8	10.8	0.04	0.00	0.00	0.00	0.0392	43.1	0.010	2.4
69	32.46	1.8	10.8	0.04	0.00	0.00	0.00	0.0394	43.3	0.010	2.4
70	32.54	2.0	10.7	0.05	0.00	0.00	0.00	0.0395	43.4	0.010	2.4
71	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0395	43.4	0.010	2.4
72	32.68	1.9	11.0	0.06	0.00	0.00	0.00	0.0397	43.6	0.010	2.4
73	29.90	1.8	11.0	0.06	0.00	0.00	0.00	0.0399	43.8	0.010	2.4
74	33.26	2.0	10.7	0.04	0.00	0.00	0.00	0.0400	44.0	0.010	2.4
75	33.60	1.9	10.5	0.00	0.00	0.00	0.00	0.0400	44.0	0.010	2.4
76	32.36	1.9	10.6	0.00	0.00	0.00	0.00	0.0400	44.0	0.010	2.4
77	31.92	2.0	10.7	0.04	0.00	0.00	0.00	0.0401	44.1	0.010	2.4
78	32.76	1.9	10.5	0.04	0.00	0.00	0.00	0.0402	44.2	0.010	2.4
79	32.52	2.0	10.6	0.04	0.00	0.00	0.00	0.0404	44.4	0.010	2.4
80	31.42	1.6	10.9	0.04	0.00	0.00	0.00	0.0405	44.5	0.010	2.4
81	33.28	1.8	10.5	0.04	0.00	0.00	0.00	0.0406	44.6	0.010	2.4
82	30.86	1.8	10.5	0.05	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
83	33.74	1.9	10.3	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
84	32.06	1.8	10.2	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
85	32.38	2.0	10.7	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
86	32.36	2.0	11.1	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
87	31.86	1.9	11.2	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
88	32.64	1.6	10.6	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
REST	1.80	1.4	10.5	0.00	0.00	0.00	0.00	0.0407	44.7	0.010	2.4
WASH	28.10	0.6	10.8	0.05	0.00	0.00	0.00	0.0410	45.1	0.010	2.4
91	34.28	0.2	10.5	0.00	0.00	0.00	0.00	0.0410	45.1	0.010	2.4
92	34.48	<0.1	10.4	0.00	0.00	0.00	0.00	0.0410	45.1	0.010	2.4

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.40	0.1	10.9	1.74	0.88	0.00	0.00	0.0032	4.6	0.002	0.3
3	4.96	1.4	12.0	1.10	0.57	0.00	0.00	0.0061	8.7	0.003	0.7
4	4.90	1.5	11.6	1.20	0.63	0.09	0.07	0.0093	13.3	0.005	1.0
5	5.12	1.8	11.7	0.71	0.43	0.00	0.00	0.0110	15.7	0.006	1.3
6	5.54	1.5	11.8	0.47	0.29	0.00	0.04	0.0124	17.7	0.007	1.5
7	5.38	1.6	11.9	0.56	0.32	0.05	0.04	0.0141	20.1	0.008	1.6
8	5.44	1.7	11.9	0.55	0.35	0.00	0.00	0.0155	22.1	0.008	1.8
9	5.34	1.9	11.3	0.44	0.27	0.00	0.00	0.0168	24.0	0.009	2.0
10	5.34	1.9	11.7	0.44	0.28	0.00	0.04	0.0181	25.9	0.010	2.2
11	5.08	1.7	11.6	0.55	0.38	0.00	0.00	0.0196	28.0	0.011	2.4
12	5.50	1.8	11.6	0.33	0.21	0.00	0.00	0.0206	29.4	0.012	2.5
13	5.20	2.0	11.7	0.33	0.22	0.00	0.00	0.0215	30.7	0.012	2.7
14	5.44	1.8	11.5	0.21	0.17	0.00	0.00	0.0221	31.6	0.013	2.8
15	5.00	1.7	11.4	0.37	0.24	0.00	0.00	0.0231	33.0	0.013	2.9
16	4.88	1.9	11.5	0.19	0.13	0.00	0.00	0.0236	33.7	0.014	3.0
17	5.48	1.9	11.5	0.21	0.13	0.00	0.00	0.0242	34.6	0.014	3.0
18	5.00	2.0	11.4	0.24	0.16	0.00	0.00	0.0249	35.6	0.015	3.2
19	5.36	2.0	11.5	0.26	0.17	0.00	0.00	0.0256	36.6	0.015	3.3
20	5.16	2.0	11.6	0.26	0.16	0.00	0.00	0.0264	37.7	0.015	3.3
21	5.32	2.0	11.5	0.17	0.12	0.00	0.00	0.0268	38.3	0.016	3.4
22	3.98	1.9	11.1	0.24	0.17	0.00	0.00	0.0274	39.1	0.016	3.5
23	5.65	2.0	11.4	0.15	0.11	0.00	0.00	0.0278	39.7	0.016	3.6
24	5.16	1.7	11.3	0.15	0.12	0.00	0.00	0.0282	40.3	0.017	3.7
25	5.38	1.7	11.4	0.18	0.12	0.00	0.00	0.0288	41.1	0.017	3.7
26	5.24	1.9	11.5	0.16	0.12	0.00	0.00	0.0292	41.7	0.018	3.8
27	5.14	1.8	11.3	0.13	0.12	0.00	0.00	0.0296	42.3	0.018	3.9
28	5.12	1.7	11.2	0.15	0.12	0.00	0.00	0.0300	42.9	0.018	3.9
29	5.58	1.8	11.2	0.11	0.08	0.00	0.00	0.0303	43.3	0.018	4.0
30	4.72	2.1	11.3	0.11	0.08	0.00	0.00	0.0306	43.7	0.019	4.0
31	5.32	1.6	11.2	0.12	0.10	0.00	0.00	0.0309	44.1	0.019	4.1
32	5.12	1.8	11.1	0.12	0.09	0.00	0.00	0.0313	44.7	0.019	4.2
33	5.22	2.0	11.2	0.11	0.09	0.00	0.00	0.0316	45.1	0.019	4.2
34	5.26	1.8	11.1	0.13	0.09	0.00	0.00	0.0320	45.7	0.020	4.3
35	5.26	1.9	11.2	0.10	0.07	0.00	0.00	0.0322	46.0	0.020	4.3
36	5.56	1.7	11.0	0.07	0.06	0.00	0.00	0.0324	46.3	0.020	4.3
37	5.26	1.4	11.1	0.09	0.07	0.00	0.00	0.0327	46.7	0.020	4.4
38	5.24	1.8	11.2	0.09	0.07	0.00	0.00	0.0330	47.1	0.020	4.4
39	5.10	1.9	11.3	0.08	0.07	0.00	0.00	0.0332	47.4	0.021	4.5
40	5.36	1.9	11.3	0.09	0.07	0.00	0.00	0.0334	47.7	0.021	4.5
41	5.10	1.9	11.1	0.11	0.07	0.00	0.00	0.0337	48.1	0.021	4.6
42	5.62	1.8	11.3	0.12	0.10	0.10	0.00	0.0341	48.7	0.021	4.6
43	5.44	1.8	11.6	0.11	0.08	0.00	0.00	0.0341	48.7	0.022	4.7
44	5.26	1.6	11.6	0.10	0.07	0.00	0.00	0.0344	49.1	0.022	4.7
45	5.92	1.7	11.0	0.06	0.06	0.00	0.00	0.0346	49.4	0.022	4.8
46	5.18	1.8	11.1	0.09	0.07	0.00	0.00	0.0349	49.9	0.022	4.8
47	5.14	2.0	11.3	0.08	0.07	0.00	0.00	0.0351	50.1	0.022	4.8
48	5.38	2.0	11.0	0.06	0.07	0.00	0.00	0.0353	50.4	0.023	4.9

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	5.48	1.8	11.0	0.06	0.06	0.00	0.00	0.0354	50.6	0.023	4.9
50	4.88	2.0	11.2	0.10	0.08	0.00	0.00	0.0357	51.0	0.023	5.0
51	5.40	1.8	11.0	0.07	0.07	0.00	0.00	0.0359	51.3	0.023	5.0
52	5.66	1.6	11.0	0.05	0.06	0.00	0.00	0.0361	51.6	0.023	5.1
53	5.24	1.6	11.0	0.08	0.06	0.00	0.00	0.0363	51.9	0.024	5.1
54	5.30	1.7	11.2	0.06	0.06	0.00	0.00	0.0365	52.1	0.024	5.1
55	5.34	1.6	10.8	0.08	0.07	0.00	0.00	0.0367	52.4	0.024	5.2
56	5.28	1.8	11.0	0.06	0.06	0.00	0.00	0.0369	52.7	0.024	5.2
57	5.56	1.5	11.1	0.05	0.06	0.00	0.00	0.0370	52.9	0.024	5.3
58	5.32	1.9	11.0	0.07	0.06	0.00	0.00	0.0372	53.1	0.024	5.3
59	5.38	1.9	11.0	0.05	0.06	0.00	0.00	0.0374	53.4	0.025	5.3
60	5.26	1.9	11.0	0.05	0.06	0.00	0.00	0.0375	53.6	0.025	5.4
61	5.04	2.0	11.0	0.07	0.06	0.00	0.00	0.0377	53.9	0.025	5.4
62	5.62	1.7	11.0	0.05	0.05	0.00	0.00	0.0378	54.0	0.025	5.4
63	4.96	1.7	11.2	0.06	0.06	0.00	0.00	0.0380	54.3	0.025	5.5
64	5.50	1.8	10.8	0.05	0.06	0.00	0.00	0.0382	54.6	0.025	5.5
65	5.34	1.9	11.0	0.06	0.06	0.00	0.00	0.0383	54.7	0.026	5.5
66	5.50	1.7	11.0	0.05	0.05	0.00	0.00	0.0385	55.0	0.026	5.6
67	5.30	1.8	11.2	0.11	0.09	0.00	0.00	0.0388	55.4	0.026	5.6
68	5.16	1.9	11.3	0.08	0.08	0.00	0.00	0.0390	55.7	0.026	5.7
69	5.74	1.7	11.1	0.07	0.07	0.00	0.00	0.0392	56.0	0.026	5.7
70	5.36	2.0	11.0	0.05	0.06	0.00	0.00	0.0394	56.3	0.027	5.8
71	5.42	1.7	10.9	0.06	0.06	0.00	0.00	0.0396	56.6	0.027	5.8
72	5.18	1.9	11.1	0.06	0.06	0.00	0.00	0.0397	56.7	0.027	5.8
73	5.12	1.4	11.3	0.05	0.05	0.00	0.00	0.0399	57.0	0.027	5.9
74	5.74	1.7	10.8	0.04	0.04	0.00	0.00	0.0400	57.1	0.027	5.9
75	5.56	1.8	10.6	0.04	0.05	0.00	0.00	0.0401	57.3	0.027	5.9
76	5.36	2.0	10.8	0.05	0.05	0.00	0.00	0.0402	57.4	0.028	6.0
77	4.82	1.9	11.0	0.06	0.06	0.00	0.00	0.0404	57.7	0.028	6.0
78	5.86	1.9	10.8	0.04	0.05	0.00	0.00	0.0405	57.9	0.028	6.0
79	5.20	1.8	10.7	0.05	0.06	0.00	0.00	0.0407	58.1	0.028	6.1
80	5.46	1.7	10.9	0.05	0.06	0.00	0.00	0.0408	58.3	0.028	6.1
81	4.88	1.6	10.8	0.05	0.05	0.00	0.00	0.0410	58.6	0.028	6.1
82	5.92	1.8	10.7	0.05	0.05	0.00	0.00	0.0411	58.7	0.028	6.2
83	5.10	1.7	10.5	0.05	0.05	0.00	0.00	0.0412	58.9	0.029	6.2
84	5.34	1.7	10.9	0.04	0.05	0.00	0.00	0.0414	59.1	0.029	6.2
85	5.68	1.9	10.9	0.00	0.04	0.00	0.00	0.0414	59.1	0.029	6.3
86	4.94	2.0	11.4	0.04	0.05	0.00	0.00	0.0415	59.3	0.029	6.3
87	5.78	1.6	11.4	0.00	0.04	0.00	0.00	0.0415	59.3	0.029	6.3
88	4.98	1.7	10.9	0.04	0.05	0.00	0.00	0.0416	59.4	0.029	6.3
REST	0.60	1.3	10.8	0.04	0.06	0.00	0.00	0.0416	59.4	0.029	6.3
WASH	4.38	0.9	11.3	0.04	0.04	0.00	0.00	0.0417	59.6	0.030	6.5
91	4.96	0.3	10.9	0.04	0.00	0.00	0.00	0.0420	60.0	0.030	6.5
92	5.44	0.2	10.8	0.00	0.00	0.00	0.00	0.0420	60.0	0.030	6.5
93	4.84	0.1	11.1	0.00	0.00	0.00	0.00	0.0420	60.0	0.030	6.5
94	5.92	0.1	10.8	0.00	0.00	0.00	0.00	0.0420	60.0	0.030	6.5
95	5.16	<0.1	11.0	0.00	0.00	0.00	0.00	0.0420	60.0	0.030	6.5
96	5.62	<0.1	10.8	0.00	0.00	0.00	0.00	0.0420	60.0	0.030	6.5

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	11.50	1.1	12.1	0.95	0.25	0.00	0.00	0.0010	0.8	0.000	0.0
3	34.86	1.1	12.2	1.51	0.22	0.00	0.00	0.0060	4.5	0.001	0.0
4	31.48	1.3	11.9	1.41	0.19	0.00	0.00	0.0102	7.7	0.002	0.0
5	32.06	1.8	12.0	0.74	0.18	0.00	0.00	0.0124	9.3	0.002	0.0
6	32.24	1.5	12.0	0.53	0.16	0.00	0.00	0.0140	10.5	0.003	0.0
7	36.42	2.1	12.2	0.33	0.08	0.00	0.00	0.0152	11.4	0.003	0.0
8	30.20	1.8	12.2	0.42	0.10	0.00	0.00	0.0164	12.3	0.003	0.0
9	34.54	1.8	12.1	0.43	0.08	0.00	0.00	0.0178	13.4	0.003	0.0
10	33.46	2.0	12.0	0.40	0.08	0.00	0.00	0.0190	14.3	0.004	0.0
11	30.30	2.0	11.9	0.32	0.07	0.00	0.00	0.0199	15.0	0.004	0.0
12	33.82	1.9	11.9	0.29	0.05	0.00	0.00	0.0209	15.7	0.004	0.0
13	33.76	1.7	12.1	0.21	0.04	0.00	0.00	0.0215	16.2	0.004	0.0
14	32.20	1.9	12.0	0.16	0.00	0.00	0.00	0.0220	16.5	0.004	0.0
15	32.00	2.1	11.9	0.20	0.04	0.00	0.00	0.0226	17.0	0.004	0.0
16	29.88	2.0	11.7	0.24	0.04	0.00	0.00	0.0233	17.5	0.004	0.0
17	34.56	2.0	12.0	0.11	0.00	0.00	0.00	0.0236	17.7	0.004	0.0
18	31.90	2.0	11.8	0.14	0.00	0.00	0.00	0.0241	18.1	0.004	0.0
19	32.42	2.0	11.9	0.15	0.00	0.00	0.00	0.0245	18.4	0.004	0.0
20	31.64	2.0	11.8	0.14	0.00	0.00	0.00	0.0249	18.7	0.004	0.0
21	30.82	2.0	11.8	0.14	0.00	0.00	0.00	0.0254	19.1	0.004	0.0
22	34.20	1.5	11.7	0.08	0.00	0.00	0.00	0.0256	19.2	0.004	0.0
23	31.58	2.3	11.8	0.15	0.00	0.00	0.00	0.0261	19.6	0.004	0.0
24	28.30	2.1	11.7	0.16	0.00	0.00	0.00	0.0265	19.9	0.004	0.0
25	31.24	2.0	11.7	0.13	0.00	0.00	0.00	0.0269	20.2	0.004	0.0
26	34.18	2.0	11.9	0.09	0.00	0.00	0.00	0.0272	20.5	0.004	0.0
27	33.68	2.0	11.8	0.09	0.00	0.00	0.00	0.0274	20.6	0.004	0.0
28	32.22	2.0	11.5	0.10	0.00	0.00	0.00	0.0277	20.8	0.004	0.0
29	31.96	2.2	11.5	0.11	0.00	0.00	0.00	0.0281	21.1	0.004	0.0
30	32.76	2.3	11.4	0.11	0.00	0.00	0.00	0.0284	21.4	0.004	0.0
31	31.78	1.9	11.4	0.16	0.00	0.00	0.00	0.0289	21.7	0.004	0.0
32	32.14	1.8	11.3	0.11	0.00	0.00	0.00	0.0292	22.0	0.004	0.0
33	33.08	2.0	11.3	0.11	0.00	0.00	0.00	0.0296	22.3	0.004	0.0
34	32.58	1.9	11.2	0.09	0.00	0.00	0.00	0.0298	22.4	0.004	0.0
35	29.00	1.9	11.3	0.12	0.00	0.00	0.00	0.0302	22.7	0.004	0.0
36	33.82	2.0	11.1	0.10	0.00	0.00	0.00	0.0305	22.9	0.004	0.0
37	32.84	1.6	11.1	0.12	0.00	0.00	0.00	0.0309	23.2	0.004	0.0
38	30.22	2.0	11.2	0.11	0.00	0.00	0.00	0.0312	23.5	0.004	0.0
39	30.38	1.7	11.2	0.11	0.00	0.00	0.00	0.0315	23.7	0.004	0.0
40	35.60	2.0	11.2	0.09	0.00	0.00	0.00	0.0318	23.9	0.004	0.0
41	30.14	1.9	11.1	0.13	0.00	0.00	0.00	0.0322	24.2	0.004	0.0
42	34.32	1.6	11.0	0.07	0.00	0.00	0.00	0.0324	24.4	0.004	0.0
43	32.20	2.0	11.2	0.10	0.00	0.00	0.00	0.0327	24.6	0.004	0.0
44	31.94	2.0	11.1	0.11	0.00	0.00	0.00	0.0330	24.8	0.004	0.0
45	30.64	1.7	10.9	0.13	0.00	0.00	0.00	0.0334	25.1	0.004	0.0
46	33.40	2.0	11.0	0.11	0.00	0.00	0.00	0.0338	25.4	0.004	0.0
47	32.98	2.2	10.8	0.10	0.00	0.00	0.00	0.0341	25.6	0.004	0.0
48	31.00	2.1	10.8	0.10	0.00	0.00	0.00	0.0344	25.9	0.004	0.0

AILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	30.36	2.0	10.8	0.13	0.04	0.00	0.00	0.0347	26.1	0.004	0.0
50	35.42	2.0	11.0	0.10	0.00	0.00	0.00	0.0351	26.4	0.004	0.0
51	32.22	1.9	10.5	0.10	0.00	0.00	0.00	0.0354	26.6	0.004	0.0
52	32.14	1.5	10.6	0.09	0.00	0.00	0.00	0.0356	26.8	0.004	0.0
53	30.20	1.8	10.6	0.12	0.04	0.00	0.00	0.0360	27.1	0.004	0.0
54	34.30	2.0	10.8	0.08	0.00	0.00	0.00	0.0362	27.2	0.004	0.0
55	30.96	1.6	10.5	0.09	0.00	0.00	0.00	0.0365	27.4	0.004	0.0
56	30.62	2.0	10.6	0.10	0.00	0.00	0.00	0.0368	27.7	0.004	0.0
57	34.10	1.6	10.7	0.09	0.00	0.00	0.00	0.0371	27.9	0.004	0.0
58	32.66	2.4	10.7	0.06	0.00	0.00	0.00	0.0373	28.0	0.004	0.0
59	31.86	2.1	10.6	0.08	0.00	0.00	0.00	0.0375	28.2	0.004	0.0
60	28.42	1.7	10.6	0.09	0.00	0.00	0.00	0.0377	28.3	0.004	0.0
61	34.76	1.9	10.5	0.07	0.00	0.00	0.00	0.0380	28.6	0.004	0.0
62	30.70	1.9	10.7	0.08	0.00	0.00	0.00	0.0382	28.7	0.004	0.0
63	33.18	1.9	10.6	0.07	0.00	0.00	0.00	0.0384	28.9	0.004	0.0
64	33.48	1.9	10.3	0.06	0.00	0.00	0.00	0.0386	29.0	0.004	0.0
65	31.80	2.0	10.7	0.05	0.00	0.00	0.00	0.0388	29.2	0.004	0.0
66	33.18	1.8	10.7	0.07	0.00	0.00	0.00	0.0390	29.3	0.004	0.0
67	29.40	2.2	10.7	0.09	0.00	0.00	0.00	0.0392	29.5	0.004	0.0
68	34.32	1.7	10.7	0.07	0.00	0.00	0.00	0.0395	29.7	0.004	0.0
69	32.14	2.0	10.7	0.06	0.00	0.00	0.00	0.0396	29.8	0.004	0.0
70	31.78	2.0	10.5	0.06	0.00	0.00	0.00	0.0398	29.9	0.004	0.0
71	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0398	29.9	0.004	0.0
72	31.20	1.9	10.8	0.10	0.00	0.00	0.00	0.0401	30.2	0.004	0.0
73	25.50	1.6	10.6	0.10	0.00	0.00	0.00	0.0404	30.4	0.004	0.0
74	34.20	1.8	10.5	0.07	0.00	0.00	0.00	0.0406	30.5	0.004	0.0
75	35.14	1.9	10.4	0.06	0.00	0.00	0.00	0.0408	30.7	0.004	0.0
76	33.72	2.0	10.5	0.06	0.00	0.00	0.00	0.0410	30.8	0.004	0.0
77	30.46	1.9	10.5	0.06	0.00	0.00	0.00	0.0411	30.9	0.004	0.0
78	38.68	1.9	10.4	0.06	0.00	0.00	0.00	0.0414	31.1	0.004	0.0
79	30.78	2.0	10.4	0.06	0.00	0.00	0.00	0.0415	31.2	0.004	0.0
80	30.34	1.7	10.5	0.07	0.00	0.00	0.00	0.0417	31.4	0.004	0.0
81	36.92	1.8	10.4	0.05	0.00	0.00	0.00	0.0419	31.5	0.004	0.0
82	30.70	1.9	10.4	0.05	0.00	0.00	0.00	0.0421	31.7	0.004	0.0
83	34.20	2.0	10.2	0.05	0.00	0.00	0.00	0.0422	31.7	0.004	0.0
84	30.86	1.9	10.6	0.06	0.00	0.00	0.00	0.0424	31.9	0.004	0.0
85	28.48	2.0	10.6	0.06	0.00	0.00	0.00	0.0426	32.0	0.004	0.0
86	35.32	2.0	10.9	0.05	0.00	0.00	0.00	0.0427	32.1	0.004	0.0
87	28.58	1.7	11.0	0.07	0.00	0.00	0.00	0.0429	32.3	0.004	0.0
88	33.42	1.8	10.6	0.06	0.00	0.00	0.00	0.0431	32.4	0.004	0.0
REST	5.86	1.8	10.6	0.07	0.00	0.00	0.00	0.0431	32.4	0.004	0.0
WASH	24.56	0.7	10.3	0.07	0.00	0.00	0.00	0.0433	32.6	0.004	0.0
91	30.96	0.3	10.3	0.06	0.00	0.00	0.00	0.0435	32.7	0.004	0.0
92	30.64	0.1	10.2	0.05	0.00	0.00	0.00	0.0437	32.9	0.004	0.0
93	31.37	<0.1	10.0	0.05	0.00	0.00	0.00	0.0440	33.1	0.004	0.0

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.08	0.8	12.1	2.30	0.78	0.05	0.00	0.0038	2.9	0.001	0.4
3	5.08	1.3	12.2	1.80	0.55	0.00	0.00	0.0086	6.6	0.003	1.0
4	5.38	1.3	11.9	1.90	0.61	0.09	0.00	0.0140	10.8	0.005	1.6
5	4.80	1.5	11.9	1.40	0.51	0.00	0.00	0.0174	13.4	0.006	2.0
6	5.44	1.6	12.0	0.86	0.31	0.00	0.00	0.0199	15.3	0.007	2.3
7	5.02	1.6	12.2	0.75	0.27	0.00	0.00	0.0219	16.8	0.008	2.6
8	4.38	1.6	12.2	1.10	0.39	0.00	0.00	0.0245	18.8	0.008	2.9
9	5.70	1.6	12.2	1.22	0.41	0.00	0.00	0.0282	21.7	0.010	3.3
10	4.64	1.7	12.0	1.21	0.51	0.00	0.00	0.0312	24.0	0.011	3.8
11	5.68	1.9	11.9	0.57	0.25	0.00	0.00	0.0330	25.4	0.012	4.0
12	5.10	1.8	11.9	0.55	0.25	0.00	0.00	0.0345	26.5	0.012	4.3
13	5.02	2.0	12.0	0.47	0.21	0.00	0.00	0.0358	27.5	0.013	4.4
14	5.08	1.7	12.0	0.44	0.20	0.00	0.00	0.0370	28.5	0.014	4.7
15	4.38	1.9	11.8	0.50	0.23	0.00	0.00	0.0381	29.3	0.014	4.8
16	5.58	2.0	11.9	0.35	0.16	0.00	0.00	0.0392	30.2	0.015	5.0
17	4.48	1.9	11.8	0.46	0.18	0.00	0.00	0.0403	31.0	0.015	5.1
18	5.64	1.7	11.8	0.24	0.11	0.00	0.00	0.0410	31.5	0.015	5.3
19	5.42	1.9	11.9	0.29	0.12	0.00	0.00	0.0419	32.2	0.016	5.4
20	4.88	2.0	11.9	0.30	0.12	0.00	0.00	0.0426	32.8	0.016	5.5
21	5.26	1.9	11.8	0.18	0.09	0.00	0.00	0.0431	33.2	0.016	5.6
22	5.10	1.5	11.2	0.22	0.11	0.00	0.00	0.0437	33.6	0.017	5.7
23	5.56	2.1	11.7	0.21	0.11	0.00	0.00	0.0444	34.2	0.017	5.8
24	4.88	2.0	11.7	0.30	0.15	0.00	0.00	0.0452	34.8	0.017	5.9
25	5.26	2.0	11.8	0.24	0.10	0.00	0.00	0.0458	35.2	0.018	6.0
26	4.60	2.0	11.9	0.28	0.14	0.00	0.00	0.0465	35.8	0.018	6.1
27	5.30	2.2	11.8	0.18	0.09	0.00	0.00	0.0470	36.2	0.018	6.2
28	5.06	2.0	11.6	0.19	0.10	0.00	0.00	0.0476	36.6	0.018	6.3
29	5.30	2.0	11.6	0.18	0.10	0.00	0.00	0.0481	37.0	0.019	6.4
30	4.42	2.1	11.6	0.25	0.13	0.00	0.00	0.0487	37.5	0.019	6.6
31	5.68	2.0	11.6	0.19	0.10	0.00	0.00	0.0492	37.8	0.019	6.7
32	4.20	1.9	11.5	0.24	0.12	0.00	0.04	0.0498	38.3	0.020	6.7
33	4.60	2.0	11.5	0.22	0.11	0.00	0.00	0.0503	38.7	0.020	6.8
34	5.18	1.9	11.5	0.24	0.12	0.00	0.00	0.0510	39.2	0.020	6.9
35	4.92	1.9	11.5	0.18	0.10	0.00	0.00	0.0515	39.6	0.020	7.0
36	5.80	1.4	11.5	0.17	1.00	0.00	0.00	0.0520	40.0	0.023	8.1
37	5.06	1.7	11.5	0.17	0.09	0.00	0.00	0.0525	40.4	0.024	8.1
38	2.00	2.0	11.3	0.21	0.10	0.00	0.00	0.0527	40.5	0.024	8.2
39	5.12	1.9	11.5	0.16	0.08	0.00	0.00	0.0531	40.8	0.024	8.3
40	5.30	1.8	11.5	0.15	0.07	0.00	0.00	0.0535	41.2	0.024	8.3
41	4.70	2.0	11.4	0.22	0.11	0.00	0.00	0.0541	41.6	0.024	8.4
42	5.62	1.8	11.5	0.20	0.11	0.00	0.00	0.0547	42.1	0.025	8.6
43	4.96	1.9	11.8	0.21	0.11	0.00	0.00	0.0553	42.5	0.025	8.7
44	4.96	2.0	11.0	0.18	0.10	0.00	0.00	0.0557	42.8	0.025	8.7
45	5.44	1.9	11.3	0.11	0.08	0.00	0.00	0.0561	43.2	0.026	8.8
46	5.18	1.6	11.4	0.14	0.10	0.00	0.00	0.0564	43.4	0.026	8.9
47	4.90	2.0	11.3	0.15	0.09	0.00	0.00	0.0568	43.7	0.026	9.0
48	5.94	2.0	11.2	0.10	0.07	0.00	0.00	0.0572	44.0	0.026	9.1

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	5.16	1.9	11.2	0.12	0.08	0.00	0.00	0.0575	44.2	0.027	9.1
50	4.48	2.0	11.6	0.16	0.10	0.00	0.00	0.0579	44.5	0.027	9.2
51	5.60	1.9	11.2	0.10	0.07	0.00	0.00	0.0582	44.8	0.027	9.3
52	5.74	1.8	11.2	0.07	0.06	0.00	0.00	0.0584	44.9	0.027	9.4
53	4.66	1.9	11.1	0.14	0.09	0.00	0.00	0.0587	45.2	0.027	9.4
54	5.46	1.9	11.4	0.08	0.06	0.00	0.00	0.0590	45.4	0.028	9.5
55	5.20	1.9	11.1	0.10	0.06	0.00	0.00	0.0593	45.6	0.028	9.6
56	4.60	1.8	11.2	0.14	0.08	0.00	0.00	0.0596	45.8	0.028	9.6
57	6.12	1.4	11.3	0.08	0.06	0.00	0.00	0.0599	46.1	0.028	9.7
58	4.98	2.0	11.3	0.10	0.08	0.00	0.00	0.0601	46.2	0.028	9.8
59	5.38	2.0	11.1	0.09	0.07	0.00	0.00	0.0604	46.5	0.029	9.8
60	5.22	1.9	11.2	0.10	0.07	0.00	0.00	0.0607	46.7	0.029	9.9
61	5.18	1.8	11.0	0.12	0.07	0.00	0.00	0.0610	46.9	0.029	10.0
62	4.92	1.8	11.3	0.13	0.08	0.00	0.00	0.0613	47.2	0.029	10.0
63	4.66	1.9	11.2	0.13	0.09	0.00	0.00	0.0617	47.5	0.029	10.1
64	6.00	1.9	10.7	0.08	0.07	0.00	0.00	0.0619	47.6	0.030	10.3
65	4.72	1.9	11.3	0.11	0.08	0.00	0.00	0.0622	47.8	0.030	10.3
66	5.22	1.8	11.4	0.11	0.09	0.00	0.00	0.0625	48.1	0.030	10.3
67	5.96	1.6	11.3	0.10	0.08	0.00	0.00	0.0628	48.3	0.030	10.3
68	4.40	2.0	11.5	0.13	0.10	0.00	0.00	0.0631	48.5	0.030	10.3
69	5.84	2.0	11.2	0.12	0.08	0.00	0.00	0.0635	48.8	0.030	10.3
70	4.50	1.9	11.3	0.11	0.08	0.00	0.00	0.0638	49.1	0.030	10.3
71	5.36	2.0	11.3	0.12	0.08	0.00	0.00	0.0641	49.3	0.030	10.3
72	5.52	1.9	11.5	0.11	0.08	0.00	0.00	0.0645	49.6	0.030	10.3
73	3.94	1.8	11.5	0.13	0.09	0.00	0.00	0.0647	49.8	0.030	10.3
74	6.52	1.9	11.0	0.08	0.06	0.00	0.00	0.0650	50.0	0.030	10.3
75	5.58	1.8	10.8	0.07	0.06	0.00	0.00	0.0652	50.2	0.030	10.3
76	4.40	1.6	11.1	0.12	0.10	0.00	0.00	0.0655	50.4	0.030	10.3
77	4.30	1.9	11.2	0.13	0.09	0.00	0.00	0.0658	50.6	0.030	10.3
78	6.48	2.5	11.0	0.08	0.07	0.00	0.00	0.0661	50.8	0.030	10.3
79	4.40	2.4	11.2	0.13	0.10	0.00	0.00	0.0664	51.1	0.030	10.3
80	4.96	2.2	11.5	0.07	0.08	0.00	0.00	0.0666	51.2	0.030	10.3
81	5.84	2.0	11.0	0.07	0.06	0.00	0.04	0.0668	51.4	0.030	10.3
82	5.04	2.0	10.9	0.07	0.07	0.00	0.00	0.0670	51.5	0.030	10.3
83	5.12	1.9	10.7	0.07	0.06	0.00	0.00	0.0672	51.7	0.030	10.3
84	4.44	1.5	11.1	0.08	0.07	0.00	0.00	0.0674	51.8	0.030	10.3
85	5.20	2.0	11.2	0.07	0.05	0.00	0.00	0.0676	52.0	0.030	10.3
86	5.88	1.4	11.5	0.05	0.05	0.00	0.00	0.0677	52.1	0.030	10.3
87	5.34	2.0	11.6	0.06	0.06	0.00	0.00	0.0679	52.2	0.030	10.3
88	4.94	2.1	11.1	0.07	0.06	0.00	0.00	0.0681	52.4	0.030	10.3
REST	0.22	1.5	11.1	0.06	0.09	0.00	0.00	0.0681	52.4	0.030	10.3
WASH	3.76	1.2	10.9	0.14	0.07	0.00	0.00	0.0684	52.6	0.030	10.3
91	6.30	0.3	10.7	0.04	0.00	0.00	0.00	0.0685	52.7	0.030	10.3
92	5.06	0.2	10.6	0.04	0.00	0.00	0.00	0.0686	52.8	0.030	10.3
93	4.12	0.1	10.7	0.06	0.00	0.00	0.00	0.0687	52.8	0.030	10.3
94	5.92	0.1	10.7	0.04	0.00	0.00	0.00	0.0689	53.0	0.030	10.3
95	3.74	<0.1	10.7	0.04	0.00	0.00	0.00	0.0690	53.1	0.030	10.3
96	5.72	<0.1	10.6	0.00	0.00	0.00	0.00	0.0690	53.1	0.030	10.3

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	14.12	1.3	11.9	0.26	0.05	0.00	0.00	0.0004	1.3	0.000	0.0
3	33.98	1.4	12.0	0.35	0.04	0.00	0.00	0.0015	5.0	0.000	0.0
4	31.62	1.2	11.7	0.24	0.04	0.00	0.00	0.0022	7.3	0.000	0.0
5	32.62	1.9	11.6	0.19	0.00	0.00	0.00	0.0028	9.3	0.000	0.0
6	32.14	1.3	11.7	0.16	0.00	0.00	0.00	0.0033	11.0	0.000	0.0
7	33.28	1.7	11.9	0.15	0.00	0.00	0.00	0.0038	12.7	0.000	0.0
8	31.26	1.7	11.9	0.16	0.06	0.00	0.00	0.0043	14.3	0.001	0.0
9	33.36	1.5	12.0	0.12	0.04	0.00	0.00	0.0046	15.3	0.001	0.0
10	32.48	1.6	11.8	0.09	0.05	0.00	0.00	0.0049	16.3	0.001	0.0
11	31.58	1.4	11.6	0.09	0.06	0.00	0.00	0.0052	17.3	0.001	0.0
12	31.84	1.8	11.5	0.08	0.04	0.00	0.00	0.0054	18.0	0.001	0.0
13	32.70	2.0	11.6	0.04	0.00	0.00	0.00	0.0056	18.7	0.001	0.0
14	32.44	1.8	11.1	0.07	0.00	0.00	0.00	0.0058	19.3	0.001	0.0
15	32.34	1.8	11.4	0.06	0.05	0.00	0.00	0.0060	20.0	0.001	0.0
16	30.22	2.0	11.0	0.09	0.06	0.00	0.00	0.0062	20.7	0.001	0.0
17	35.34	1.9	11.3	0.04	0.00	0.00	0.00	0.0064	21.3	0.001	0.0
18	31.82	1.8	11.2	0.05	0.04	0.00	0.00	0.0065	21.7	0.002	0.0
19	32.38	1.8	11.2	0.05	0.00	0.00	0.00	0.0067	22.3	0.002	0.0
20	32.54	1.7	11.1	0.04	0.00	0.00	0.00	0.0068	22.7	0.002	0.0
21	31.36	1.9	11.1	0.06	0.04	0.00	0.00	0.0070	23.3	0.002	0.0
22	34.20	2.0	11.0	0.00	0.00	0.00	0.00	0.0070	23.3	0.002	0.0
23	32.40	1.9	11.1	0.00	0.00	0.00	0.00	0.0070	23.3	0.002	0.0
24	30.82	1.6	10.9	0.05	0.04	0.00	0.00	0.0071	23.7	0.002	0.0
25	32.10	1.7	10.9	0.04	0.00	0.00	0.00	0.0072	24.0	0.002	0.0
26	33.60	1.8	11.1	0.00	0.00	0.00	0.00	0.0072	24.0	0.002	0.0
27	33.42	1.9	11.0	0.04	0.00	0.00	0.00	0.0074	24.7	0.002	0.0
28	32.64	1.7	10.7	0.00	0.00	0.00	0.00	0.0074	24.7	0.002	0.0
29	32.44	2.1	10.8	0.05	0.00	0.00	0.00	0.0075	25.0	0.002	0.0
30	32.64	1.9	10.9	0.04	0.00	0.00	0.00	0.0076	25.3	0.002	0.0
31	31.02	1.4	10.7	0.05	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
32	33.00	1.9	10.6	0.00	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
33	31.62	2.0	10.7	0.00	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
34	33.84	1.7	10.6	0.00	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
35	32.78	2.1	10.7	0.00	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0078	26.0	0.002	0.0
43	33.02	1.3	10.7	0.11	0.04	0.00	0.00	0.0081	27.0	0.002	0.0
44	32.28	1.9	10.7	0.07	0.00	0.00	0.00	0.0084	28.0	0.002	0.0
45	30.74	1.6	10.6	0.04	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
46	32.78	1.8	10.6	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
47	32.84	1.8	10.5	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
48	32.54	2.0	10.7	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
49	30.64	1.7	10.6	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
50	31.04	2.0	10.8	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
51	32.34	2.0	10.5	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
52	34.46	1.7	10.7	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
53	31.74	1.7	10.6	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0085	28.3	0.002	0.0

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
61	35.62	1.8	10.3	0.08	0.04	0.00	0.00	0.0087	29.0	0.002	0.0
62	33.06	1.7	10.7	0.06	0.00	0.00	0.00	0.0089	29.7	0.002	0.0
63	34.32	1.9	10.7	0.04	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
64	29.66	1.7	10.5	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
65	34.42	2.0	10.6	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
66	32.84	1.7	10.7	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
67	30.14	2.0	10.7	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
68	34.02	1.6	10.8	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
69	32.52	2.0	10.8	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
70	32.06	2.0	10.6	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
WASH	31.84	1.7	10.8	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
73	28.86	0.4	10.9	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
74	34.66	0.3	10.7	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
75	30.36	0.1	10.5	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0
76	34.70	<0.1	10.6	0.00	0.00	0.00	0.00	0.0090	30.0	0.002	0.0

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.28	0.2	11.6	0.45	0.10	0.00	0.00	0.0008	2.7	0.000	0.1
3	5.28	0.4	11.6	0.93	0.08	0.00	0.00	0.0035	11.7	0.000	0.2
4	5.06	0.4	11.4	0.87	0.17	0.00	0.00	0.0058	19.3	0.001	0.4
5	5.66	1.1	11.5	0.52	0.31	0.00	0.00	0.0074	24.7	0.002	0.9
6	5.46	1.3	11.6	0.34	0.30	0.00	0.00	0.0084	28.0	0.003	1.3
7	3.62	1.1	11.6	0.42	0.45	0.00	0.00	0.0093	31.0	0.004	1.7
8	4.96	1.5	11.8	0.32	0.35	0.00	0.00	0.0101	33.7	0.005	2.1
9	6.28	1.4	11.6	0.23	0.23	0.00	0.00	0.0109	36.3	0.005	2.5
10	5.42	1.6	11.5	0.16	0.20	0.00	0.00	0.0114	38.0	0.006	2.8
11	4.44	1.6	11.3	0.24	0.38	0.00	0.00	0.0120	40.0	0.007	3.2
12	4.86	1.6	11.4	0.17	0.22	0.00	0.00	0.0124	41.3	0.007	3.5
13	6.34	1.7	11.5	0.10	0.15	0.00	0.00	0.0127	42.3	0.008	3.8
14	5.36	1.9	11.2	0.08	0.13	0.00	0.00	0.0130	43.3	0.008	4.0
15	4.24	1.8	11.2	0.08	0.16	0.00	0.00	0.0132	44.0	0.009	4.1
16	5.36	1.8	11.4	0.07	0.13	0.00	0.00	0.0134	44.7	0.009	4.3
17	5.18	2.0	11.3	0.09	0.12	0.00	0.00	0.0136	45.3	0.009	4.5
18	6.04	1.7	11.3	0.05	0.07	0.00	0.00	0.0138	46.0	0.010	4.8
19	6.26	1.5	11.3	0.05	0.06	0.00	0.00	0.0139	46.3	0.010	4.8
20	5.58	1.7	11.3	0.05	0.07	0.00	0.00	0.0141	47.0	0.010	4.8
21	5.04	2.0	11.1	0.04	0.07	0.00	0.00	0.0142	47.3	0.010	4.8
22	5.78	1.7	11.3	0.04	0.04	0.00	0.00	0.0143	47.7	0.010	4.8
23	5.66	2.0	11.3	0.04	0.05	0.00	0.00	0.0145	48.3	0.010	4.8
24	5.36	1.8	11.1	0.05	0.05	0.00	0.00	0.0146	48.7	0.010	4.8
25	5.22	1.8	11.3	0.05	0.05	0.00	0.00	0.0147	49.0	0.010	4.8
26	4.40	1.9	11.4	0.04	0.05	0.00	0.00	0.0148	49.3	0.010	4.8
27	4.98	2.0	11.1	0.05	0.04	0.00	0.00	0.0150	50.0	0.010	4.8
28	4.96	1.9	11.1	0.05	0.04	0.00	0.00	0.0151	50.3	0.010	4.8
29	6.14	2.0	11.2	0.04	0.00	0.00	0.00	0.0152	50.7	0.010	4.8
30	5.48	1.9	11.1	0.04	0.04	0.00	0.00	0.0154	51.3	0.010	4.8
31	5.36	1.4	11.1	0.00	0.04	0.00	0.00	0.0154	51.3	0.010	4.8
32	4.90	1.7	11.0	0.04	0.04	0.00	0.00	0.0155	51.7	0.010	4.8
33	5.48	2.0	11.1	0.00	0.00	0.00	0.00	0.0155	51.7	0.010	4.8
34	4.94	1.7	10.9	0.04	0.00	0.00	0.00	0.0156	52.0	0.010	4.8
35	5.10	1.8	11.1	0.00	0.00	0.00	0.00	0.0156	52.0	0.010	4.8
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0156	52.0	0.010	4.8
43	4.30	1.7	11.4	0.09	0.08	0.00	0.00	0.0158	52.7	0.010	4.8
44	4.72	2.0	11.2	0.07	0.07	0.00	0.00	0.0160	53.3	0.010	4.8
45	6.50	1.5	11.1	0.04	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
46	5.50	1.5	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
47	4.60	2.1	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
48	5.80	1.9	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
49	5.70	1.7	11.0-	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
50	5.32	2.0	11.2	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
51	4.42	1.8	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
52	6.04	1.6	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
53	4.70	1.7	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
90 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
61	4.36	1.6	10.7	0.07	0.07	0.00	0.00	0.0160	53.3	0.010	4.8
62	5.06	1.8	11.2	0.04	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
63	5.00	1.2	11.2	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
64	5.14	1.9	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
65	5.18	2.0	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
66	5.48	1.8	11.2	0.00	0.04	0.00	0.00	0.0160	53.3	0.010	4.8
67	6.26	1.7	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
68	4.96	1.8	11.3	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
69	5.76	1.6	11.2	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
70	4.82	2.0	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
71	4.94	1.8	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
REST	0.84	0.0	0.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
WASH	4.60	1.2	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
74	4.90	0.5	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
75	3.22	0.2	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
76	6.94	<0.1	11.1	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8
77	3.64	<0.1	11.0	0.00	0.00	0.00	0.00	0.0160	53.3	0.010	4.8

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	13.14	1.0	12.0	0.79	1.85	0.00	0.00	0.0010	1.9	0.002	0.5
3	14.34	1.4	12.1	0.48	0.72	0.00	0.00	0.0016	3.1	0.003	0.7
4	37.20	1.9	12.0	0.25	0.35	0.00	0.00	0.0024	4.6	0.004	1.0
5	30.16	1.9	12.0	0.23	0.25	0.00	0.00	0.0031	6.0	0.005	1.1
6	33.92	2.0	11.9	0.11	0.12	0.00	0.00	0.0034	6.5	0.006	1.2
7	32.90	1.9	11.8	0.11	0.10	0.00	0.00	0.0038	7.3	0.006	1.3
8	31.44	1.9	11.6	0.13	0.09	0.00	0.00	0.0041	7.9	0.006	1.3
9	33.10	1.8	12.1	0.08	0.06	0.00	0.00	0.0044	8.5	0.006	1.4
10	32.56	1.8	11.7	0.08	0.05	0.00	0.00	0.0046	8.8	0.006	1.4
11	32.72	2.0	11.5	0.07	0.04	0.00	0.00	0.0048	9.2	0.007	1.4
12	33.06	2.0	11.5	0.06	0.04	0.00	0.00	0.0050	9.6	0.007	1.5
13	31.56	1.9	11.1	0.07	0.04	0.00	0.00	0.0052	10.0	0.007	1.5
14	34.54	1.9	11.4	0.07	0.04	0.00	0.00	0.0054	10.4	0.007	1.5
15	29.90	1.8	11.3	0.06	0.00	0.00	0.00	0.0056	10.8	0.007	1.5
16	35.30	1.8	10.3	0.04	0.00	0.00	0.00	0.0057	11.0	0.007	1.5
17	32.46	2.0	11.4	0.04	0.00	0.00	0.00	0.0059	11.3	0.007	1.5
18	31.26	2.0	11.3	0.04	0.00	0.00	0.00	0.0060	11.5	0.007	1.5
19	30.80	1.9	11.2	0.06	0.00	0.00	0.00	0.0061	11.7	0.007	1.5
20	34.18	1.9	11.1	0.04	0.00	0.00	0.00	0.0063	12.1	0.007	1.5
21	33.06	1.9	11.1	0.04	0.00	0.00	0.00	0.0064	12.3	0.007	1.5
22	32.50	2.0	11.0	0.04	0.00	0.00	0.00	0.0065	12.5	0.007	1.5
23	32.66	2.0	11.1	0.04	0.00	0.00	0.00	0.0066	12.7	0.007	1.5
24	32.10	1.9	11.1	0.04	0.00	0.00	0.00	0.0068	13.1	0.007	1.5
25	31.30	1.9	11.0	0.04	0.00	0.00	0.00	0.0069	13.3	0.007	1.5
26	33.00	1.9	10.9	0.04	0.00	0.00	0.00	0.0070	13.5	0.007	1.5
27	31.30	1.9	11.1	0.06	0.00	0.00	0.00	0.0072	13.8	0.007	1.5
28	32.56	1.9	11.0	0.04	0.00	0.00	0.00	0.0073	14.0	0.007	1.5
29	33.46	1.8	11.0	0.00	0.00	0.00	0.00	0.0073	14.0	0.007	1.5
30	31.40	1.7	11.1	0.00	0.00	0.00	0.00	0.0073	14.0	0.007	1.5
31	32.62	2.0	10.6	0.00	0.00	0.00	0.00	0.0073	14.0	0.007	1.5
32	30.58	1.8	11.3	0.00	0.00	0.00	0.00	0.0073	14.0	0.007	1.5
33	28.96	1.8	10.7	0.04	0.00	0.00	0.00	0.0074	14.2	0.007	1.5
34	33.76	1.9	10.9	0.04	0.00	0.00	0.00	0.0075	14.4	0.007	1.5
35	36.12	1.9	11.0	0.00	0.00	0.00	0.00	0.0075	14.4	0.007	1.5
36	31.26	1.8	10.9	0.05	0.00	0.00	0.00	0.0077	14.8	0.007	1.5
37	32.12	1.6	10.9	0.04	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
38	32.80	2.0	11.0	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
39	32.04	1.9	10.9	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
40	31.00	1.6	10.9	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
41	28.84	1.2	10.8	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
42	36.88	2.1	10.8	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
43	32.68	1.8	11.0-	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
44	31.54	1.7	10.9	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0078	15.0	0.007	1.5
52	32.06	1.6	10.6	0.12	0.05	0.00	0.00	0.0081	15.6	0.007	1.6
53	32.30	1.7	10.7	0.04	0.00	0.00	0.00	0.0082	15.8	0.007	1.6
54	31.60	1.8	10.7	0.04	0.00	0.00	0.00	0.0084	16.2	0.007	1.6

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
55	31.32	1.7	10.7	0.00	0.00	0.00	0.00	0.0084	16.2	0.007	1.6
56	31.86	2.0	10.8	0.00	0.00	0.00	0.00	0.0084	16.2	0.007	1.6
57	32.22	2.0	10.6	0.04	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
58	31.55	2.0	10.7	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
59	33.58	2.0	10.6	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
60	30.18	1.5	10.7	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
61	32.20	1.7	10.7	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
62	32.46	2.0	10.8	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
63	31.80	1.9	10.7	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
64	32.36	1.9	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
65	32.96	2.0	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
66	32.74	1.9	10.6	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
67	29.86	1.7	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
68	33.06	1.8	10.4	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
69	33.04	2.2	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
70	32.86	1.7	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
71	31.80	1.9	10.5	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0085	16.3	0.007	1.6
79	32.64	1.5	10.7	0.08	0.06	0.00	0.00	0.0087	16.7	0.007	1.6
80	32.58	2.0	10.6	0.04	0.05	0.00	0.00	0.0088	16.9	0.007	1.6
81	32.08	1.7	10.4	0.04	0.04	0.00	0.00	0.0090	17.3	0.007	1.6
82	30.54	1.7	10.5	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.7
83	34.84	2.0	10.5	0.00	0.00	0.00	0.00	0.0090	17.3	0.008	1.7
84	32.52	1.8	10.5	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.7
85	32.48	2.0	10.5	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.7
86	32.24	1.8	10.8	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.8
87	32.30	1.8	10.3	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.8
88	32.10	1.6	10.3	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.8
89	31.26	1.7	10.6	0.00	0.04	0.00	0.00	0.0090	17.3	0.008	1.8
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0090	17.3	0.008	1.8
WASH	30.80	1.0	10.5	0.00	0.00	0.00	0.00	0.0090	17.3	0.008	1.8
92	32.06	0.3	10.7	0.00	0.00	0.00	0.00	0.0090	17.3	0.008	1.8
93	32.06	0.2	10.7	0.00	0.00	0.00	0.00	0.0090	17.3	0.008	1.8
94	31.76	<0.1	10.5	0.00	0.00	0.00	0.00	0.0090	17.3	0.010	2.2

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
80 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.90	0.4	11.6	0.99	2.48	0.20	0.59	0.0015	3.8	0.004	0.9
3	5.32	1.2	11.8	1.20	1.87	0.28	0.58	0.0044	11.3	0.008	1.8
4	4.83	1.5	11.9	0.78	1.35	0.22	0.43	0.0056	14.4	0.009	2.2
5	5.48	1.7	11.9	0.61	1.07	0.16	0.36	0.0068	17.4	0.011	2.6
6	5.00	1.8	11.8	0.44	0.82	0.13	0.30	0.0076	19.5	0.013	2.9
7	4.82	1.8	11.7	0.38	0.68	0.10	0.23	0.0082	21.0	0.013	3.1
8	5.22	1.8	11.7	0.29	0.50	0.00	0.07	0.0087	22.3	0.014	3.3
9	4.90	1.7	11.8	0.25	0.39	0.00	0.05	0.0094	24.1	0.015	3.5
10	4.96	1.9	11.5	0.23	0.31	0.00	0.04	0.0100	25.6	0.016	3.7
11	5.26	2.0	11.8	0.15	0.20	0.00	0.06	0.0104	26.7	0.016	3.8
12	5.12	2.0	11.7	0.14	0.20	0.00	0.04	0.0108	27.7	0.017	3.8
13	4.40	1.7	11.6	0.15	0.22	0.00	0.00	0.0111	28.5	0.017	3.9
14	5.28	1.9	11.7	0.11	0.15	0.00	0.00	0.0115	29.5	0.017	4.0
15	5.22	2.0	11.5	0.08	0.11	0.00	0.00	0.0117	30.0	0.018	4.1
16	5.02	1.9	11.6	0.08	0.11	0.00	0.00	0.0119	30.5	0.018	4.2
17	5.22	1.8	11.7	0.07	0.10	0.00	0.00	0.0121	31.0	0.018	4.3
18	5.16	1.9	11.7	0.07	0.10	0.00	0.00	0.0123	31.5	0.019	4.3
19	5.12	1.8	11.6	0.06	0.10	0.00	0.00	0.0125	32.1	0.019	4.4
20	4.96	1.9	11.7	0.07	0.09	0.00	0.00	0.0126	32.3	0.019	4.4
21	4.82	1.8	11.5	0.06	0.08	0.00	0.00	0.0128	32.8	0.019	4.5
22	5.08	2.0	11.5	0.06	0.07	0.00	0.00	0.0130	33.3	0.020	4.5
23	5.02	1.9	11.5	0.06	0.07	0.00	0.00	0.0131	33.6	0.020	4.6
24	4.64	1.9	11.6	0.06	0.08	0.00	0.00	0.0133	34.1	0.020	4.6
25	5.60	2.0	11.5	0.05	0.06	0.00	0.00	0.0134	34.4	0.020	4.7
26	5.16	2.0	11.5	0.05	0.06	0.00	0.00	0.0136	34.9	0.020	4.7
27	4.66	1.9	11.5	0.05	0.07	0.00	0.00	0.0137	35.1	0.020	4.7
28	5.24	1.9	11.5	0.04	0.06	0.00	0.00	0.0138	35.4	0.021	4.8
29	5.06	1.9	11.5	0.05	0.06	0.00	0.00	0.0139	35.6	0.021	4.8
30	4.26	1.8	11.4	0.06	0.07	0.00	0.00	0.0141	36.2	0.021	4.9
31	5.72	1.9	11.0	0.06	0.06	0.00	0.00	0.0143	36.7	0.021	4.9
32	4.22	1.9	12.0	0.07	0.08	0.00	0.00	0.0144	36.9	0.021	4.9
33	5.62	2.0	11.4	0.05	0.06	0.00	0.04	0.0146	37.4	0.021	5.0
34	4.92	1.9	11.4	0.04	0.05	0.00	0.00	0.0147	37.7	0.021	5.0
35	5.24	1.8	11.4	0.04	0.06	0.00	0.00	0.0148	37.9	0.022	5.0
36	5.14	1.8	11.4	0.04	0.06	0.00	0.00	0.0149	38.2	0.022	5.1
37	5.04	1.8	11.4	0.04	0.06	0.00	0.00	0.0150	38.5	0.022	5.1
38	5.16	2.0	11.4	0.04	0.07	0.00	0.00	0.0151	38.7	0.022	5.1
39	5.06	1.9	11.5	0.04	0.06	0.00	0.00	0.0152	39.0	0.022	5.2
40	4.32	1.6	11.3	0.06	0.04	0.00	0.00	0.0154	39.5	0.022	5.2
41	4.04	1.7	11.3	0.04	0.07	0.00	0.00	0.0155	39.7	0.023	5.2
42	6.82	1.8	11.3	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.3
43	5.12	1.6	11.4	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.3
44	5.00	1.8	11.4	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.3
45	4.40	1.8	11.5	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.3
46	4.44	1.8	11.3	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.4
47	5.30	1.8	11.2	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.4
48	5.34	1.8	11.1	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.4

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
80 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	5.58	1.8	11.3	0.00	0.04	0.00	0.00	0.0155	39.7	0.023	5.4
50	5.34	1.9	11.2	0.00	0.04	0.00	0.00	0.0155	39.7	0.024	5.5
51	3.96	1.6	10.9	0.00	0.05	0.00	0.00	0.0155	39.7	0.024	5.5
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0155	39.7	0.024	5.5
58	4.78	1.0	11.1	0.06	0.07	0.00	0.00	0.0156	40.0	0.024	5.5
59	4.54	1.8	10.9	0.04	0.07	0.00	0.00	0.0157	40.3	0.024	5.6
60	5.50	1.8	11.1	0.04	0.06	0.00	0.00	0.0158	40.5	0.024	5.6
61	4.98	1.7	11.1	0.00	0.05	0.00	0.00	0.0158	40.5	0.024	5.7
62	4.58	1.8	11.1	0.00	0.06	0.00	0.00	0.0158	40.5	0.025	5.7
63	5.12	1.8	11.1	0.00	0.05	0.00	0.00	0.0158	40.5	0.025	5.7
64	5.28	1.8	11.0	0.00	0.07	0.00	0.00	0.0158	40.5	0.025	5.8
65	5.34	2.0	10.7	0.00	0.05	0.00	0.00	0.0158	40.5	0.025	5.8
66	4.46	2.1	10.8	0.00	0.05	0.00	0.00	0.0158	40.5	0.025	5.8
67	6.08	2.0	10.9	0.00	0.05	0.00	0.00	0.0158	40.5	0.025	5.9
68	4.40	2.0	10.8	0.00	0.04	0.00	0.00	0.0158	40.5	0.025	5.9
69	4.72	1.8	10.9	0.00	0.05	0.00	0.00	0.0158	40.5	0.026	5.9
70	6.16	1.8	10.9	0.00	0.05	0.00	0.00	0.0158	40.5	0.026	6.0
71	4.54	1.8	11.0	0.00	0.05	0.00	0.00	0.0158	40.5	0.026	6.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0158	40.5	0.026	6.0
79	4.62	1.6	11.1	0.07	0.08	0.00	0.00	0.0160	41.0	0.026	6.0
80	5.10	1.8	11.1	0.00	0.06	0.00	0.00	0.0160	41.0	0.026	6.1
81	6.44	1.5	10.9	0.00	0.05	0.00	0.00	0.0160	41.0	0.026	6.1
82	5.18	1.8	10.9	0.00	0.05	0.00	0.00	0.0160	41.0	0.026	6.1
83	4.16	2.0	10.9	0.00	0.05	0.00	0.00	0.0160	41.0	0.027	6.2
84	6.00	1.9	10.9	0.00	0.05	0.00	0.00	0.0160	41.0	0.027	6.2
85	3.38	1.7	10.9	0.00	0.05	0.00	0.00	0.0160	41.0	0.027	6.2
86	4.86	1.8	11.1	0.00	0.05	0.00	0.00	0.0160	41.0	0.027	6.3
87	5.96	1.7	10.7	0.00	0.04	0.00	0.00	0.0160	41.0	0.027	6.3
88	5.90	1.8	10.9	0.00	0.04	0.00	0.00	0.0160	41.0	0.027	6.3
89	4.90	1.6	10.9	0.00	0.04	0.00	0.00	0.0160	41.0	0.027	6.3
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0160	41.0	0.027	6.3
WASH	3.22	1.3	10.6	0.00	0.05	0.00	0.00	0.0160	41.0	0.027	6.4
92	4.90	0.5	11.0	0.00	0.00	0.00	0.00	0.0160	41.0	0.027	6.4
93	5.38	0.2	11.1	0.00	0.00	0.00	0.00	0.0160	41.0	0.027	6.4
94	6.10	<0.1	10.9	0.00	0.00	0.00	0.00	0.0160	41.0	0.030	7.0

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	16.52	0.5	12.0	0.93	0.16	0.00	0.00	0.0014	1.6	0.000	0.0
3	32.88	1.8	12.1	1.30	0.26	0.00	0.00	0.0054	6.2	0.001	0.2
4	32.16	2.0	12.0	0.68	0.16	0.00	0.00	0.0074	8.5	0.002	0.3
5	31.34	2.0	12.2	0.76	0.19	0.00	0.00	0.0096	11.0	0.002	0.4
6	32.86	2.0	12.1	0.36	0.11	0.00	0.00	0.0107	12.3	0.002	0.4
7	32.74	2.1	12.1	0.32	0.09	0.00	0.00	0.0116	13.3	0.003	0.5
8	31.62	2.0	12.1	0.29	0.08	0.00	0.00	0.0125	14.4	0.003	0.5
9	33.10	1.8	12.1	0.19	0.05	0.00	0.00	0.0130	14.9	0.003	0.6
10	30.74	2.0	12.1	0.16	0.04	0.00	0.00	0.0135	15.5	0.003	0.6
11	34.44	2.0	12.1	0.17	0.05	0.00	0.00	0.0140	16.1	0.003	0.6
12	33.10	1.9	12.0	0.13	0.05	0.00	0.00	0.0144	16.6	0.004	0.6
13	32.06	1.9	11.8	0.10	0.04	0.00	0.00	0.0147	16.9	0.004	0.7
14	32.96	2.3	11.9	0.15	0.05	0.00	0.00	0.0152	17.5	0.004	0.7
15	31.94	2.2	11.8	0.15	0.05	0.00	0.00	0.0156	17.9	0.004	0.7
16	32.96	2.1	11.8	0.10	0.04	0.00	0.00	0.0159	18.3	0.004	0.7
17	32.66	2.1	11.9	0.08	0.04	0.00	0.00	0.0162	18.6	0.004	0.8
18	32.44	2.1	11.9	0.08	0.04	0.00	0.00	0.0164	18.9	0.004	0.8
19	31.08	2.0	11.9	0.09	0.04	0.00	0.00	0.0167	19.2	0.004	0.8
20	33.28	2.0	11.9	0.09	0.04	0.00	0.00	0.0169	19.4	0.005	0.8
21	32.12	1.9	11.7	0.07	0.04	0.00	0.00	0.0171	19.7	0.005	0.9
22	32.50	2.0	11.8	0.16	0.05	0.00	0.00	0.0176	20.2	0.005	0.9
23	32.50	2.0	11.8	0.13	0.05	0.00	0.00	0.0180	20.7	0.005	0.9
24	32.06	1.9	11.8	0.12	0.05	0.00	0.00	0.0184	21.1	0.005	0.9
25	31.96	2.0	11.8	0.13	0.05	0.00	0.00	0.0188	21.6	0.005	1.0
26	32.96	2.1	11.7	0.10	0.05	0.00	0.00	0.0191	22.0	0.005	1.0
27	31.38	2.0	11.8	0.11	0.05	0.00	0.00	0.0194	22.3	0.006	1.0
28	32.74	1.9	11.8	0.09	0.04	0.00	0.00	0.0196	22.5	0.006	1.0
29	33.46	2.1	11.8	0.07	0.04	0.00	0.00	0.0199	22.9	0.006	1.1
30	32.08	1.8	11.8	0.08	0.04	0.00	0.00	0.0201	23.1	0.006	1.1
31	32.60	1.8	11.7	0.08	0.04	0.00	0.00	0.0203	23.3	0.006	1.1
32	32.28	2.0	11.7	0.06	0.04	0.00	0.00	0.0205	23.6	0.006	1.1
33	30.30	2.0	11.6	0.10	0.05	0.00	0.04	0.0208	23.9	0.006	1.1
34	31.46	2.0	11.5	0.08	0.04	0.00	0.00	0.0210	24.1	0.006	1.1
35	35.06	1.9	11.6	0.05	0.00	0.00	0.00	0.0212	24.4	0.006	1.1
36	29.70	2.0	11.6	0.09	0.04	0.00	0.00	0.0214	24.6	0.006	1.2
37	33.10	1.8	11.6	0.07	0.04	0.00	0.00	0.0216	24.8	0.007	1.2
38	33.78	2.0	11.5	0.06	0.04	0.00	0.00	0.0218	25.1	0.007	1.2
39	33.10	1.9	11.5	0.05	0.00	0.00	0.00	0.0220	25.3	0.007	1.2
40	29.64	1.6	11.3	0.06	0.04	0.00	0.00	0.0222	25.5	0.007	1.2
41	31.80	2.0	11.3	0.05	0.00	0.00	0.00	0.0223	25.6	0.007	1.2
42	34.10	1.8	11.3	0.06	0.04	0.00	0.00	0.0225	25.9	0.007	1.3
43	30.54	1.9	11.4	0.07	0.00	0.00	0.00	0.0227	26.1	0.007	1.3
44	32.10	2.1	11.3	0.06	0.00	0.00	0.00	0.0229	26.3	0.007	1.3
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0229	26.3	0.007	1.3
52	35.30	1.7	11.0	0.15	0.06	0.00	0.00	0.0233	26.8	0.007	1.3
53	32.18	2.0	11.1	0.11	0.05	0.00	0.00	0.0237	27.2	0.007	1.3
54	32.00	1.9	11.0	0.10	0.05	0.00	0.00	0.0240	27.6	0.007	1.4

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
55	32.80	1.8	11.1	0.09	0.04	0.00	0.00	0.0242	27.8	0.007	1.4
56	28.88	1.9	11.1	0.12	0.04	0.00	0.00	0.0246	28.3	0.008	1.4
57	33.98	2.0	11.0	0.06	0.04	0.00	0.00	0.0247	28.4	0.008	1.4
58	34.34	2.0	11.0	0.06	0.04	0.00	0.00	0.0249	28.6	0.008	1.4
59	33.00	2.1	10.9	0.05	0.04	0.00	0.00	0.0251	28.9	0.008	1.5
60	29.26	1.9	10.4	0.07	0.04	0.00	0.00	0.0253	29.1	0.008	1.5
61	33.66	1.6	10.9	0.06	0.00	0.00	0.00	0.0255	29.3	0.008	1.5
62	32.68	2.0	10.9	0.05	0.00	0.00	0.00	0.0256	29.4	0.008	1.5
63	31.86	1.9	10.9	0.05	0.00	0.00	0.00	0.0258	29.7	0.008	1.5
64	30.87	1.8	10.8	0.06	0.04	0.00	0.00	0.0259	29.8	0.008	1.5
65	35.06	2.0	10.7	0.06	0.04	0.00	0.00	0.0261	30.0	0.008	1.5
66	32.80	1.9	10.8	0.07	0.04	0.00	0.00	0.0263	30.2	0.008	1.6
67	28.98	1.7	10.6	0.08	0.04	0.00	0.00	0.0266	30.6	0.009	1.6
68	32.04	1.7	10.7	0.04	0.04	0.00	0.04	0.0267	30.7	0.009	1.6
69	35.14	2.0	10.3	0.06	0.04	0.00	0.00	0.0269	30.9	0.009	1.6
70	30.76	1.8	10.6	0.06	0.05	0.00	0.00	0.0270	31.0	0.009	1.6
71	33.78	2.0	10.7	0.06	0.04	0.00	0.00	0.0272	31.3	0.009	1.6
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0272	31.3	0.009	1.6
79	32.50	1.8	10.9	0.17	0.07	0.00	0.00	0.0277	31.8	0.009	1.7
80	31.56	1.8	10.8	0.11	0.06	0.00	0.00	0.0280	32.2	0.009	1.7
81	34.06	1.7	10.6	0.09	0.05	0.00	0.00	0.0283	32.5	0.009	1.7
82	32.20	1.7	10.8	0.09	0.05	0.00	0.00	0.0286	32.9	0.010	1.8
83	32.74	2.2	10.7	0.08	0.05	0.05	0.05	0.0288	33.1	0.010	1.8
84	29.48	2.0	10.3	0.07	0.05	0.05	0.04	0.0289	33.2	0.010	1.8
85	35.12	2.0	10.7	0.08	0.05	0.04	0.04	0.0290	33.3	0.010	1.8
86	30.24	1.8	10.9	0.06	0.05	0.04	0.04	0.0290	33.3	0.010	1.8
87	34.58	2.0	10.5	0.06	0.05	0.05	0.04	0.0291	33.4	0.010	1.8
88	32.12	1.6	10.7	0.06	0.05	0.00	0.04	0.0291	33.4	0.010	1.8
89	29.66	1.9	10.7	0.04	0.04	0.00	0.04	0.0292	33.6	0.010	1.8
90	33.14	2.0	11.0	0.04	0.04	0.00	0.04	0.0294	33.8	0.010	1.8
91	34.20	1.7	10.6	0.05	0.05	0.04	0.04	0.0295	33.9	0.010	1.8
92	30.68	1.9	10.7	0.05	0.05	0.04	0.04	0.0295	33.9	0.010	1.8
93	35.56	1.8	10.8	0.05	0.04	0.04	0.04	0.0296	34.0	0.010	1.8
94	32.60	2.0	10.7	0.06	0.05	0.04	0.04	0.0296	34.0	0.010	1.8
95	31.70	1.9	10.5	0.05	0.05	0.05	0.04	0.0297	34.1	0.010	1.8
96	31.82	1.8	10.7	0.06	0.05	0.04	0.04	0.0297	34.1	0.010	1.9
97	33.06	1.9	10.5	0.06	0.05	0.04	0.04	0.0297	34.1	0.010	1.9
98	32.70	1.9	10.7	0.06	0.05	0.04	0.04	0.0298	34.3	0.010	1.9
99	32.16	1.9	10.7	0.07	0.05	0.05	0.04	0.0299	34.4	0.010	1.9
100	33.52	1.7	10.4	0.05	0.05	0.04	0.04	0.0299	34.4	0.010	1.9
101	31.88	2.0	10.7	0.06	0.06	0.04	0.04	0.0299	34.4	0.010	1.9
102	33.02	2.0	10.8	0.06	0.05	0.04	0.05	0.0300	34.5	0.010	1.9
103	32.60	1.9	10.7-	0.06	0.06	0.00	0.05	0.0301	34.6	0.010	1.9
104	32.50	1.9	10.8	0.06	0.06	0.04	0.04	0.0302	34.7	0.010	1.9
105	32.94	1.8	10.9	0.06	0.06	0.04	0.04	0.0303	34.8	0.010	1.9
106	32.26	2.0	10.7	0.06	0.05	0.04	0.05	0.0304	34.9	0.010	1.9
107	32.56	1.8	10.7	0.07	0.06	0.04	0.04	0.0305	35.1	0.010	1.9
108	32.84	2.0	11.0	0.06	0.06	0.04	0.05	0.0305	35.1	0.010	1.9

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
NOMINAL 2 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
109	31.70	1.7	10.9	0.05	0.05	0.04	0.05	0.0305	35.1	0.010	1.9
110	32.96	2.0	10.6	0.06	0.05	0.04	0.05	0.0306	35.2	0.010	1.9
111	32.94	1.8	10.5	0.06	0.06	0.04	0.05	0.0307	35.3	0.010	1.9
112	32.58	1.8	10.7	0.06	0.06	0.04	0.04	0.0307	35.3	0.010	1.9
113	35.10	1.9	10.7	0.06	0.06	0.04	0.05	0.0308	35.4	0.010	1.9
114	32.92	2.0	10.5	0.06	0.05	0.04	0.05	0.0308	35.4	0.010	1.9
115	32.40	2.0	10.6	0.06	0.06	0.04	0.05	0.0309	35.5	0.010	1.9
116	30.52	1.7	10.9	0.06	0.06	0.04	0.05	0.0310	35.6	0.010	1.9
117	34.78	1.8	10.5	0.06	0.05	0.04	0.05	0.0310	35.6	0.010	1.9
118	31.78	1.9	10.5	0.06	0.06	0.00	0.00	0.0311	35.7	0.010	1.9
119	32.68	1.8	10.3	0.06	0.06	0.00	0.00	0.0313	36.0	0.010	1.9
120	31.90	1.9	10.7	0.06	0.06	0.00	0.00	0.0314	36.1	0.010	1.9
121	32.10	1.9	10.7	0.05	0.05	0.00	0.00	0.0316	36.3	0.010	1.9
122	33.34	1.9	11.0	0.05	0.05	0.00	0.00	0.0317	36.4	0.010	1.9
123	30.96	1.9	11.2	0.06	0.06	0.00	0.00	0.0319	36.7	0.010	1.9
124	33.34	1.8	10.7	0.06	0.06	0.00	0.00	0.0320	36.8	0.010	1.9
REST	2.06	1.6	10.6	0.06	0.06	0.00	0.00	0.0320	36.8	0.010	1.9
WASH	29.54	0.9	10.6	0.04	0.00	0.00	0.00	0.0320	36.8	0.010	1.9
127	32.02	0.3	10.3	0.00	0.00	0.00	0.00	0.0320	36.8	0.010	1.9
128	32.72	0.1	10.3	0.00	0.00	0.00	0.00	0.0320	36.8	0.010	1.9
129	32.64	<0.1	10.1	0.00	0.00	0.00	0.00	0.0320	36.8	0.010	1.9

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
80 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.74	1.2	12.0	1.61	1.28	0.32	0.29	0.0032	4.4	0.003	0.5
3	4.84	1.6	12.1	1.51	1.13	0.19	0.19	0.0062	8.5	0.005	1.0
4	4.92	1.7	12.4	1.61	1.17	0.39	0.39	0.0100	13.7	0.007	1.5
5	5.36	1.7	12.2	1.10	0.99	0.25	0.31	0.0120	16.4	0.009	1.8
6	4.94	1.8	12.1	0.79	0.83	0.07	0.11	0.0134	18.4	0.010	2.1
7	4.98	1.8	12.1	0.53	0.56	0.00	0.00	0.0146	20.0	0.012	2.3
8	5.04	1.8	12.1	0.36	0.36	0.09	0.13	0.0156	21.4	0.012	2.5
9	4.74	1.7	12.0	0.27	0.31	0.00	0.04	0.0160	21.9	0.013	2.6
10	5.26	2.0	11.9	0.26	0.28	0.00	0.06	0.0168	23.0	0.014	2.8
11	4.62	1.8	12.0	0.21	0.23	0.00	0.00	0.0173	23.7	0.014	2.8
12	5.50	1.8	11.9	0.21	0.22	0.00	0.00	0.0179	24.5	0.015	3.0
13	4.30	1.6	11.8	0.22	0.24	0.00	0.00	0.0184	25.2	0.015	3.1
14	5.62	1.7	11.8	0.11	0.12	0.00	0.00	0.0187	25.6	0.016	3.2
15	5.20	2.1	11.8	0.12	0.12	0.00	0.00	0.0191	26.2	0.016	3.2
16	4.82	1.9	11.7	0.15	0.16	0.00	0.00	0.0195	26.7	0.016	3.3
17	5.18	1.8	11.8	0.13	0.14	0.00	0.00	0.0198	27.1	0.017	3.4
18	5.26	2.0	11.8	0.13	0.15	0.00	0.00	0.0202	27.7	0.017	3.5
19	4.96	1.8	11.8	0.10	0.14	0.00	0.00	0.0205	28.1	0.017	3.6
20	4.86	2.0	11.9	0.14	0.16	0.00	0.00	0.0208	28.5	0.018	3.7
21	4.82	1.8	11.6	0.13	0.14	0.00	0.00	0.0212	29.0	0.018	3.7
22	4.98	1.8	11.6	0.11	0.12	0.00	0.00	0.0215	29.5	0.019	3.8
23	4.74	1.8	11.7	0.11	0.11	0.00	0.00	0.0217	29.7	0.019	3.8
24	4.90	2.0	11.7	0.12	0.13	0.00	0.00	0.0220	30.1	0.019	3.9
25	5.06	2.0	11.6	0.09	0.11	0.00	0.00	0.0223	30.5	0.020	4.0
26	5.16	1.9	11.6	0.08	0.09	0.00	0.00	0.0225	30.8	0.020	4.0
27	4.74	1.8	11.6	0.10	0.11	0.00	0.00	0.0228	31.2	0.020	4.1
28	4.70	1.8	11.7	0.10	0.10	0.00	0.00	0.0230	31.5	0.020	4.1
29	4.86	1.9	11.6	0.09	0.09	0.00	0.00	0.0233	31.9	0.021	4.2
30	5.32	1.8	11.7	0.08	0.09	0.00	0.00	0.0235	32.2	0.021	4.2
31	5.18	1.8	11.7	0.08	0.09	0.00	0.00	0.0237	32.5	0.021	4.3
32	4.50	1.6	11.6	0.10	0.11	0.00	0.00	0.0239	32.7	0.021	4.3
33	5.02	1.7	11.5	0.08	0.08	0.00	0.00	0.0242	33.2	0.022	4.4
34	4.76	1.8	11.4	0.08	0.08	0.00	0.00	0.0244	33.4	0.022	4.4
35	5.64	1.8	11.5	0.06	0.08	0.00	0.00	0.0245	33.6	0.022	4.5
36	4.04	1.8	11.4	0.10	0.11	0.00	0.00	0.0248	34.0	0.022	4.5
37	5.04	1.6	11.2	0.11	0.12	0.00	0.00	0.0251	34.4	0.023	4.6
38	4.98	1.8	11.5	0.07	0.09	0.00	0.00	0.0252	34.5	0.023	4.6
39	4.96	1.9	11.6	0.09	0.11	0.00	0.00	0.0255	34.9	0.023	4.7
40	5.34	1.8	11.4	0.05	0.08	0.00	0.00	0.0256	35.1	0.023	4.7
41	4.68	1.7	11.3	0.06	0.07	0.00	0.00	0.0258	35.3	0.023	4.8
42	5.30	1.8	11.3	0.05	0.05	0.00	0.00	0.0259	35.5	0.024	4.8
43	5.12	1.8	11.5	0.06	0.06	0.00	0.00	0.0261	35.8	0.024	4.8
44	4.94	1.7	11.4	0.08	0.08	0.00	0.00	0.0263	36.0	0.024	4.9
45	4.60	1.8	11.7	0.13	0.13	0.00	0.00	0.0266	36.4	0.024	5.0
46	5.08	2.0	11.8	0.09	0.19	0.00	0.00	0.0269	36.8	0.025	5.1
47	4.94	1.7	11.2	0.09	0.12	0.00	0.04	0.0271	37.1	0.025	5.1
48	4.74	1.7	11.2	0.08	0.10	0.00	0.00	0.0273	37.4	0.025	5.1

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
80 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	5.30	1.8	11.4	0.07	0.09	0.00	0.00	0.0275	37.7	0.026	5.2
50	4.72	1.8	11.1	0.08	0.09	0.00	0.00	0.0277	37.9	0.026	5.2
51	4.72	1.7	11.2	0.06	0.08	0.00	0.00	0.0279	38.2	0.026	5.3
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0279	38.2	0.026	5.3
58	4.70	2.0	11.2	0.18	0.19	0.00	0.00	0.0283	38.8	0.026	5.4
59	5.00	1.9	11.2	0.09	0.12	0.00	0.00	0.0286	39.2	0.027	5.4
60	5.04	1.7	11.0	0.08	0.11	0.00	0.00	0.0288	39.5	0.027	5.5
61	4.80	1.7	11.2	0.08	0.10	0.05	0.08	0.0290	39.7	0.027	5.6
62	4.06	1.9	11.4	0.09	0.12	0.00	0.00	0.0290	39.7	0.027	5.6
63	6.04	1.8	11.2	0.04	0.07	0.00	0.00	0.0292	40.0	0.028	5.6
64	4.88	1.8	11.0	0.07	0.09	0.00	0.00	0.0294	40.3	0.028	5.7
65	4.96	2.0	10.9	0.05	0.08	0.00	0.00	0.0295	40.4	0.028	5.7
66	4.66	1.9	11.2	0.07	0.10	0.00	0.00	0.0297	40.7	0.028	5.8
67	5.32	1.9	11.0	0.04	0.08	0.00	0.00	0.0298	40.8	0.029	5.8
68	4.56	1.8	11.0	0.06	0.10	0.00	0.05	0.0299	41.0	0.029	5.9
69	4.20	1.9	11.1	0.06	0.09	0.00	0.00	0.0301	41.2	0.029	5.9
70	5.34	1.9	11.0	0.04	0.08	0.00	0.00	0.0302	41.4	0.029	5.9
71	5.16	1.9	11.0	0.05	0.08	0.00	0.00	0.0303	41.5	0.029	6.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0303	41.5	0.029	6.0
79	4.24	1.7	11.5	0.22	0.22	0.00	0.00	0.0308	42.2	0.030	6.1
80	4.80	1.9	11.3	0.12	0.16	0.00	0.00	0.0311	42.6	0.030	6.1
81	5.48	1.7	11.1	0.06	0.10	0.00	0.00	0.0313	42.9	0.030	6.2
82	4.90	1.7	11.1	0.05	0.10	0.00	0.00	0.0314	43.0	0.031	6.3
83	4.78	2.0	11.0	0.06	0.08	0.00	0.00	0.0316	43.3	0.031	6.3
84	5.24	1.8	11.0	0.04	0.07	0.00	0.00	0.0317	43.4	0.031	6.3
85	4.66	1.7	11.0	0.05	0.08	0.00	0.00	0.0318	43.6	0.031	6.4
86	4.28	1.9	11.0	0.05	0.07	0.00	0.00	0.0319	43.7	0.032	6.4
87	5.10	1.8	11.0	0.05	0.08	0.00	0.00	0.0321	44.0	0.032	6.5
88	5.44	1.9	11.1	0.04	0.07	0.00	0.00	0.0322	44.1	0.032	6.5
89	4.90	1.8	11.0	0.05	0.08	0.00	0.04	0.0323	44.2	0.032	6.6
90	4.84	1.8	11.2	0.04	0.07	0.00	0.00	0.0324	44.4	0.032	6.6
91	5.00	1.8	10.9	0.05	0.07	0.00	0.00	0.0326	44.7	0.032	6.6
92	4.40	1.9	11.0	0.04	0.08	0.00	0.00	0.0327	44.8	0.033	6.6
93	5.70	2.0	11.2	0.04	0.06	0.00	0.00	0.0328	44.9	0.033	6.7
94	4.98	2.0	11.2	0.04	0.08	0.00	0.00	0.0329	45.1	0.033	6.7
95	5.08	1.8	10.9	0.06	0.07	0.00	0.00	0.0330	45.2	0.033	6.8
96	4.78	1.9	11.0	0.04	0.07	0.00	0.00	0.0331	45.3	0.033	6.8
97	5.00	1.8	10.9	0.05	0.06	0.00	0.00	0.0333	45.6	0.034	6.8
98	4.30	1.8	11.2	0.04	0.07	0.00	0.00	0.0334	45.8	0.034	6.9
99	4.44	1.8	11.1	0.04	0.07	0.00	0.00	0.0335	45.9	0.034	6.9
100	5.12	1.9	10.7	0.04	0.06	0.00	0.00	0.0336	46.0	0.034	6.9
101	4.78	1.8	11.2	0.07	0.10	0.00	0.00	0.0338	46.3	0.034	7.0
102	4.28	1.9	11.2-	0.08	0.10	0.00	0.00	0.0339	46.4	0.034	7.0
103	5.96	1.9	11.1	0.05	0.08	0.00	0.06	0.0341	46.7	0.035	7.1
104	3.46	1.9	11.1	0.06	0.09	0.00	0.00	0.0342	46.8	0.035	7.1
105	6.40	1.7	11.2	0.05	0.08	0.00	0.00	0.0344	47.1	0.035	7.1
106	4.80	1.8	11.1	0.06	0.08	0.00	0.00	0.0345	47.3	0.035	7.2
107	3.86	1.7	11.0	0.08	0.10	0.00	0.00	0.0347	47.5	0.035	7.2

DAILY COLUMN LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
80 PERCENT MINUS 3/8 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
108	6.04	1.8	11.3	0.06	0.07	0.00	0.00	0.0349	47.8	0.036	7.3
109	3.76	1.7	11.3	0.06	0.09	0.00	0.00	0.0350	47.9	0.036	7.3
110	5.14	1.8	11.0	0.05	0.08	0.00	0.06	0.0351	48.1	0.036	7.3
111	5.48	1.7	10.8	0.05	0.08	0.00	0.00	0.0353	48.4	0.036	7.4
112	4.90	1.7	11.0	0.06	0.10	0.00	0.00	0.0355	48.6	0.036	7.4
113	4.68	1.9	11.1	0.05	0.09	0.00	0.00	0.0356	48.8	0.037	7.5
114	5.50	1.7	10.9	0.06	0.08	0.00	0.00	0.0358	49.0	0.037	7.5
115	5.42	1.8	11.1	0.05	0.09	0.00	0.00	0.0359	49.2	0.037	7.6
116	4.92	1.7	11.2	0.04	0.09	0.00	0.00	0.0360	49.3	0.037	7.6
117	5.10	1.8	10.9	0.04	0.08	0.00	0.05	0.0361	49.5	0.038	7.7
118	4.16	1.8	10.9	0.04	0.08	0.00	0.00	0.0362	49.6	0.038	7.7
119	5.16	1.7	10.7	0.04	0.07	0.00	0.00	0.0363	49.7	0.038	7.7
120	5.16	1.8	11.0	0.05	0.06	0.00	0.00	0.0365	50.0	0.038	7.7
121	5.44	1.8	11.0	0.04	0.06	0.00	0.00	0.0366	50.1	0.038	7.8
122	5.16	1.7	11.3	0.04	0.06	0.00	0.00	0.0367	50.3	0.038	7.8
123	5.20	1.8	11.0	0.00	0.06	0.00	0.00	0.0367	50.3	0.038	7.8
124	3.94	1.7	11.0	0.04	0.07	0.00	0.00	0.0368	50.4	0.039	7.9
REST	1.20	1.5	10.8	0.00	0.07	0.00	0.00	0.0368	50.4	0.039	7.9
WASH	3.62	0.6	11.0	0.05	0.06	0.00	0.00	0.0370	50.7	0.040	8.2
127	6.36	0.3	10.5	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2
128	5.10	0.2	10.3	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2
129	3.68	0.1	10.6	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2
130	5.38	0.1	10.6	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2
131	6.04	<0.1	10.6	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2
132	4.00	<0.1	10.4	0.00	0.00	0.00	0.00	0.0370	50.7	0.040	8.2

DAILY VAT LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
AS RECEIVED FEED SIZE

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	50.18	1.8	11.7	0.25	0.42	0.00	0.00	0.0012	2.5	0.002	0.5
3	48.12	2.6	11.9	0.20	0.27	0.00	0.00	0.0021	4.4	0.003	0.8
4	46.84	2.6	11.7	0.16	0.19	0.00	0.00	0.0028	5.8	0.004	1.0
5	47.02	2.7	11.8	0.15	0.13	0.00	0.00	0.0034	7.1	0.005	1.2
6	51.36	2.0	11.8	0.10	0.07	0.00	0.00	0.0039	8.1	0.005	1.3
7	50.94	2.0	11.8	0.09	0.06	0.00	0.00	0.0044	9.2	0.005	1.3
8	50.12	2.0	11.7	0.09	0.04	0.00	0.00	0.0048	10.0	0.005	1.4
9	49.24	2.0	11.8	0.07	0.00	0.00	0.00	0.0051	10.6	0.005	1.4
10	40.94	1.9	11.8	0.06	0.00	0.00	0.00	0.0053	11.0	0.005	1.4
11	48.54	2.0	11.8	0.05	0.00	0.00	0.00	0.0056	11.7	0.005	1.4
12	50.38	2.0	11.8	0.06	0.00	0.00	0.00	0.0058	12.1	0.005	1.4
13	49.74	1.8	11.5	0.06	0.00	0.00	0.00	0.0061	12.7	0.005	1.4
14	48.52	2.0	11.6	0.04	0.00	0.00	0.00	0.0063	13.1	0.005	1.4
15	47.24	2.0	11.6	0.05	0.00	0.00	0.00	0.0065	13.5	0.005	1.4
16	48.26	1.8	11.1	0.04	0.00	0.00	0.00	0.0067	14.0	0.005	1.4
17	46.00	2.1	11.6	0.04	0.00	0.00	0.00	0.0069	14.4	0.005	1.4
18	46.74	2.1	11.7	0.05	0.00	0.00	0.00	0.0071	14.8	0.005	1.4
19	46.30	1.9	11.6	0.04	0.00	0.00	0.00	0.0073	15.2	0.005	1.4
20	47.44	2.0	11.6	0.05	0.00	0.00	0.00	0.0075	15.6	0.005	1.4
21	46.36	2.0	11.5	0.00	0.00	0.00	0.00	0.0075	15.6	0.005	1.4
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0075	15.6	0.005	1.4
28	44.48	2.1	11.5	0.14	0.00	0.00	0.00	0.0081	16.9	0.005	1.4
35	43.62	2.0	11.4	0.16	0.04	0.00	0.00	0.0087	18.1	0.006	1.4
42	42.52	1.8	11.4	0.13	0.04	0.00	0.00	0.0092	19.2	0.006	1.5
49	44.52	2.1	11.2	0.12	0.00	0.00	0.00	0.0097	20.2	0.006	1.5
56	42.66	1.9	11.1	0.11	0.04	0.00	0.00	0.0102	21.3	0.006	1.5
63	42.72	1.9	11.1	0.11	0.00	0.00	0.00	0.0106	22.1	0.006	1.5
70	43.58	1.9	10.9	0.11	0.04	0.00	0.00	0.0111	23.1	0.006	1.6
77	44.52	1.8	11.0	0.12	0.00	0.00	0.00	0.0116	24.2	0.006	1.6
84	44.12	2.0	10.8	0.11	0.00	0.00	0.00	0.0120	25.0	0.006	1.6
91	44.50	1.7	11.0	0.07	0.04	0.00	0.00	0.0123	25.6	0.006	1.6
98	44.70	1.9	11.0	0.08	0.00	0.00	0.00	0.0127	26.5	0.006	1.6
106	45.42	1.9	11.1	0.07	0.00	0.00	0.00	0.0130	27.1	0.006	1.6
113	45.56	1.9	10.8	0.07	0.00	0.00	0.00	0.0133	27.7	0.006	1.6
120	43.74	1.7	10.8	0.06	0.00	0.00	0.00	0.0135	28.1	0.006	1.6
126	44.28	1.9	10.8	0.07	0.04	0.00	0.00	0.0138	28.8	0.006	1.6
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0138	28.8	0.006	1.6
WASH	43.68	0.5	10.5	0.04	0.00	0.00	0.00	0.0140	29.2	0.006	1.6
129	44.56	0.2	10.4	0.00	0.00	0.00	0.00	0.0140	29.2	0.006	1.6
130	45.16	0.1	10.3	0.00	0.00	0.00	0.00	0.0140	29.2	0.006	1.6
131	45.04	<0.1	10.1	0.00	0.00	0.00	0.00	0.0140	29.2	0.006	1.6
132	44.78	<0.1	10.3	0.00	0.00	0.00	0.00	0.0140	29.2	0.006	1.6
133	43.44	<0.1	10.2	0.00	0.00	0.00	0.00	0.0140	29.2	0.010	2.6

DAILY VAT LEACH DATA, RHYOLITE BRECCIA UNDERGROUND BULK ORE,
AS RECEIVED FEED SIZE

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	50.34	1.8	11.9	0.57	0.10	0.00	0.00	0.0026	3.1	0.001	0.0
3	58.26	2.2	12.1	0.44	0.07	0.00	0.00	0.0050	6.0	0.001	0.0
4	46.82	2.6	12.0	0.29	0.05	0.00	0.00	0.0062	7.4	0.001	0.0
5	46.80	2.5	12.0	0.28	0.04	0.00	0.00	0.0074	8.8	0.001	0.0
6	49.52	2.1	12.0	0.18	0.00	0.00	0.00	0.0082	9.8	0.001	0.0
7	48.52	2.1	12.0	0.16	0.00	0.00	0.00	0.0090	10.7	0.001	0.0
8	47.54	2.0	12.0	0.14	0.00	0.00	0.00	0.0096	11.4	0.001	0.0
9	54.54	1.8	12.1	0.10	0.00	0.00	0.00	0.0101	12.0	0.001	0.0
10	54.20	1.8	12.1	0.10	0.00	0.00	0.00	0.0106	12.6	0.001	0.0
11	52.76	2.0	12.1	0.08	0.00	0.00	0.00	0.0109	13.0	0.001	0.0
12	53.64	2.0	12.0	0.08	0.00	0.00	0.00	0.0113	13.5	0.001	0.0
13	54.36	1.8	11.8	0.06	0.00	0.00	0.00	0.0116	13.8	0.001	0.0
14	55.10	2.3	11.9	0.05	0.00	0.00	0.00	0.0119	14.2	0.001	0.0
15	54.10	2.3	11.8	0.05	0.00	0.00	0.00	0.0121	14.4	0.001	0.0
16	54.34	2.0	11.8	0.05	0.00	0.00	0.00	0.0124	14.8	0.001	0.0
17	53.02	2.1	11.9	0.05	0.00	0.00	0.00	0.0126	15.0	0.001	0.0
18	53.16	2.2	11.9	0.04	0.00	0.00	0.00	0.0128	15.2	0.001	0.0
19	53.06	2.0	11.9	0.04	0.00	0.00	0.00	0.0130	15.5	0.001	0.0
20	52.44	2.1	11.9	0.04	0.00	0.00	0.00	0.0132	15.7	0.001	0.0
21	51.68	2.0	11.7	0.04	0.00	0.00	0.00	0.0134	16.0	0.001	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0134	16.0	0.001	0.0
28	50.12	2.0	11.8	0.17	0.00	0.00	0.00	0.0142	16.9	0.001	0.0
35	51.72	1.9	11.7	0.18	0.00	0.00	0.00	0.0150	17.9	0.001	0.0
42	50.66	1.8	11.7	0.14	0.00	0.00	0.00	0.0157	18.7	0.001	0.0
49	53.00	2.2	11.6	0.14	0.00	0.00	0.00	0.0164	19.5	0.001	0.0
56	52.00	1.9	11.2	0.13	0.00	0.00	0.00	0.0170	20.2	0.001	0.0
63	52.26	2.0	11.3	0.11	0.00	0.00	0.00	0.0175	20.8	0.001	0.0
70	52.50	2.0	11.3	0.11	0.00	0.00	0.00	0.0180	21.4	0.001	0.0
77	52.16	2.0	11.5	0.14	0.00	0.00	0.00	0.0187	22.3	0.001	0.0
84	51.15	1.9	11.3	0.12	0.00	0.00	0.00	0.0193	23.0	0.001	0.0
91	51.36	1.8	11.3	0.10	0.00	0.00	0.00	0.0197	23.5	0.001	0.0
98	50.76	2.0	11.3	0.10	0.00	0.00	0.00	0.0202	24.0	0.001	0.0
106	51.08	2.0	11.5	0.09	0.00	0.00	0.00	0.0206	24.5	0.001	0.0
113	52.24	1.8	11.1	0.09	0.00	0.00	0.00	0.0211	25.1	0.001	0.0
120	50.60	1.9	10.8	0.08	0.00	0.00	0.00	0.0214	25.5	0.001	0.0
126	53.52	1.8	11.0	0.07	0.00	0.00	0.00	0.0218	26.0	0.001	0.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0218	26.0	0.001	0.0
WASH	53.94	0.3	10.1	0.04	0.00	0.00	0.00	0.0220	26.2	0.001	0.0
129	54.56	0.2	10.0	0.00	0.00	0.00	0.00	0.0220	26.2	0.001	0.0
130	55.14	0.1	9.9	0.00	0.00	0.00	0.00	0.0220	26.2	0.001	0.0
131	54.88	<0.1	9.7	0.00	0.00	0.00	0.00	0.0220	26.2	0.001	0.0
132	55.04	<0.1	9.8	0.00	0.00	0.00	0.00	0.0220	26.2	0.001	0.0
133	54.08	<0.1	9.5	0.00	0.00	0.00	0.00	0.0220	26.2	0.001	0.0

APPENDIX VI

McCLELLAND LABORATORIES, INC.
1016 Greg Street, Sparks, Nevada 89431 702 / 356-1300
FAX 702 / 356-8917

Report
on
Agglomerated Heap Leach Cyanidation Testwork - Tiger Bulk Ore Samples
MLI Job Nos. 1552 C.O. #2 and #3
October 16, 1991

for

Mr. Al Liguori
Magma Copper Company
P.O. Box M
San Manuel, AZ 85631

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Report
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Agglomerated Heap Leach Cyanidation Testwork - Tiger Bulk Ore Samples
MLI Job Nos. 1552 C.O. #2 and #3
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P.O. Box M
San Manuel, AZ 85631

EXECUTIVE SUMMARY

Agglomerated column percolation leach tests were conducted on six Tiger (four surface and two underground) bulk ore samples at an 80 percent minus 1/4 inch feed size to determine precious metal recovery, recovery rate, and reagent requirements under simulated heap leaching conditions.

Metallurgical results show that the bulk ore samples were marginally amenable to agglomerated heap leaching treatment at that feed size. Gold recoveries ranged from 46.3 to 67.2 percent, and averaged 57.4 percent in from 69 to 144 days of leaching and washing. Gold recovery rates were fairly rapid for the Cloudburst, Granite, and Rhyolite (surface and U/G) feeds and extraction was substantially complete in 20 days of cyanide solution application. Gold recovery rates were slow for the Quartz Vein and Rhyolite Breccia feeds, and extraction was progressing at a slower rate when cyanide solution application was terminated. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate.

Cyanide consumptions were moderate to high and ranged from 1.56 to 3.33 pounds per ton of ore. The 10 pounds portland cement added during agglomeration pretreatment was sufficient to maintain protective alkalinity at above 10.5 throughout the leaching cycles.

Tail screen analysis results, in general, show that crushing the Tiger ore samples to minus 10 mesh in size would improve ultimate heap leach gold recovery, but fine crushing may not be economically feasible. Fine grinding would be required to achieve maximum liberation of gold values for dissolution by cyanide.

COMPOSITE PREPARATION AND HEAD ASSAYS

A total of six Tiger bulk ore samples (four surface and two underground) were available from a previous testing program. Surface ore samples were designated Cloudburst, Granite, Quartz Vein, and Rhyolite. Underground ore samples were designated Rhyolite and Rhyolite Breccia. Ore samples were stage crushed to 80 percent minus 1/4 inch in size, and were thoroughly blended and split to obtain 100 pounds for a column leach test, and 50 pounds for a head screen analysis.

Head screen analyses were conducted to determine precious metal content and distribution. Head screen analysis results are provided along with tail screen analysis results and recovery by size fraction data later in this report.

AGGLOMERATED COLUMN PERCOLATION LEACH TEST PROCEDURES AND RESULTS

Agglomerated column percolation leach tests were conducted on the six Tiger bulk ore samples at an 80 percent minus 1/4 inch feed size to determine precious metal recovery, recovery rate, and reagent requirements under simulated heap leaching conditions. The feeds were agglomerated by adding 10 pounds portland cement per ton of dry ore, wetting with water to a final moisture content of about 6.2 weight percent, mechanically tumbling to affect agglomeration, and curing in 6" I.D. x 8' high leaching columns for 72 hours before leaching. Columns were loaded in a manner to minimize particle segregation and compaction.

Leaching was conducted by applying cyanide solution, equivalent to 2.0 pounds NaCN per ton of solution, over the ore charges at a rate of 0.005 gpm/ft^2 of column cross-sectional area. Pregnant solutions were collected each 24 hour period and volumes were measured by weighing. Each pregnant solution was sampled and analyzed for gold and silver using conventional A.A. methods. A.A. analyses were checked using the "lead boat" assay method the first 10 days of leaching. Cyanide concentration and pH were determined for each pregnant solution. Pregnant solutions were passed through three stage carbon circuits for adsorption of dissolved values. Barren solutions were sampled, make-up reagents were added, and were recycled to the ore charges daily. Rest cycles were

allowed when pregnant solution grades approached A.A. detection limits to determine if subsequent pregnant solution grades could be improved. Ore charges were allowed to soak in residual cyanide solution (columns drained) during rest cycles. Ore charges were washed with water when leaching was complete to recover dissolved values and to remove residual free cyanide (county requirement). Wash water was applied at the same rate used for leaching. The Rhyolite Breccia residue "blinded" after 3 days of fresh water application. Consequently, water washing was terminated. Moistures required to saturate ore charges (in process solution inventory), for agglomeration, and retained moistures were determined. Drain down volumes and drain down rates were established. Ore apparent bulk densities were measured before and after leaching.

After leaching washing, and drain down, ore charges were removed from the columns and moisture samples were taken immediately. Remaining leached residues were screen assayed to determine residual precious metal content and distribution. Tail screening procedures and size fractions were the same as for head screens to obtain recovery by size fraction data.

Overall metallurgical results from the column leach tests are provided in Tables 1 and 2. Gold leach rate profiles are shown graphically in Figures 1 and 2. Head and tail screen analysis results, and recovery by size fraction data are shown in Tables 3 through 20. Gold metallurgical balances are provided in Tables 21 through 26. Physical ore characteristic data are shown in Table 27. Drain down rate test results are provided in Tables 28 through 32. Drain down rate profiles are shown in Figures 3 through 7. Pertinent daily column leaching data for the column leach tests are provided in the Appendix to this report.

Table 1. - Overall Metallurgical Results, Column Leach Tests, Tiger Surface Bulk Ore Samples, 80 Percent Minus 1/4 Inch Feeds

Metallurgical Results	Sample			
Extraction, pct Total Au	Cloudburst	Granite	Qtz. Vein	Rhyolite
1st Effluent	3.6	10.7	2.1	3.2
in 5 days	27.7	33.8	15.1	40.4
in 10 days	38.2	48.7	23.4	51.8
in 15 days	42.3	53.8	28.1	56.4
in 20 days	45.1	56.9	31.6	59.3
in 30 days	48.5	60.8	35.4	62.1
in 37 days	49.5[1)]	63.0	37.2	63.2[1)]
in 40 days	51.0	63.8	38.0	63.6
in 54 days	53.1[2)]	65.1[1)]	40.2[1)]	64.3[2)]
in 65 days	53.8[3)]	66.2	42.7	64.3[3)]
in 69 days	53.8	66.2	43.4	64.3
in 70 days	53.8	66.2	43.5	N/A
in 77 days	N/A	66.7[2)]	44.5	N/A
in 84 days	N/A	67.2[3)]	46.4	N/A
in 89 days	N/A	67.2	46.4	N/A
in 140 days	N/A	N/A	52.0[3)]	N/A
in 144 days	N/A	N/A	52.1	N/A
Extracted, ozAu/ton ore	0.021	0.041	0.073	0.018
Tail Screen, ozAu/ton	0.018	0.020	0.067	0.010
Calculated Head, ozAu/ton ore	0.039	0.061	0.140	0.028
Head Screen, ozAu/ton ore	0.042	0.058	0.123	0.029
Cyanide Consumed, lb/ton ore	1.56	1.82	3.33	2.02
Cement Added, lb/ton ore	10.0	10.0	10.0	10.0
Final Solution pH	11.1	10.8	10.5	11.0
pH After Water Wash	10.8	10.7	9.7	10.8
Ag Extracted, oz/ton ore	0.01	0.03	0.03	0.01
Ag Recovery, percent	7.1	8.1	12.0	8.3

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 day rest cycle.
3) Begin water wash.

Figure 1. – Gold Leach Rate Profiles,

C.Tests, Surface Samples, 1/4" Feeds

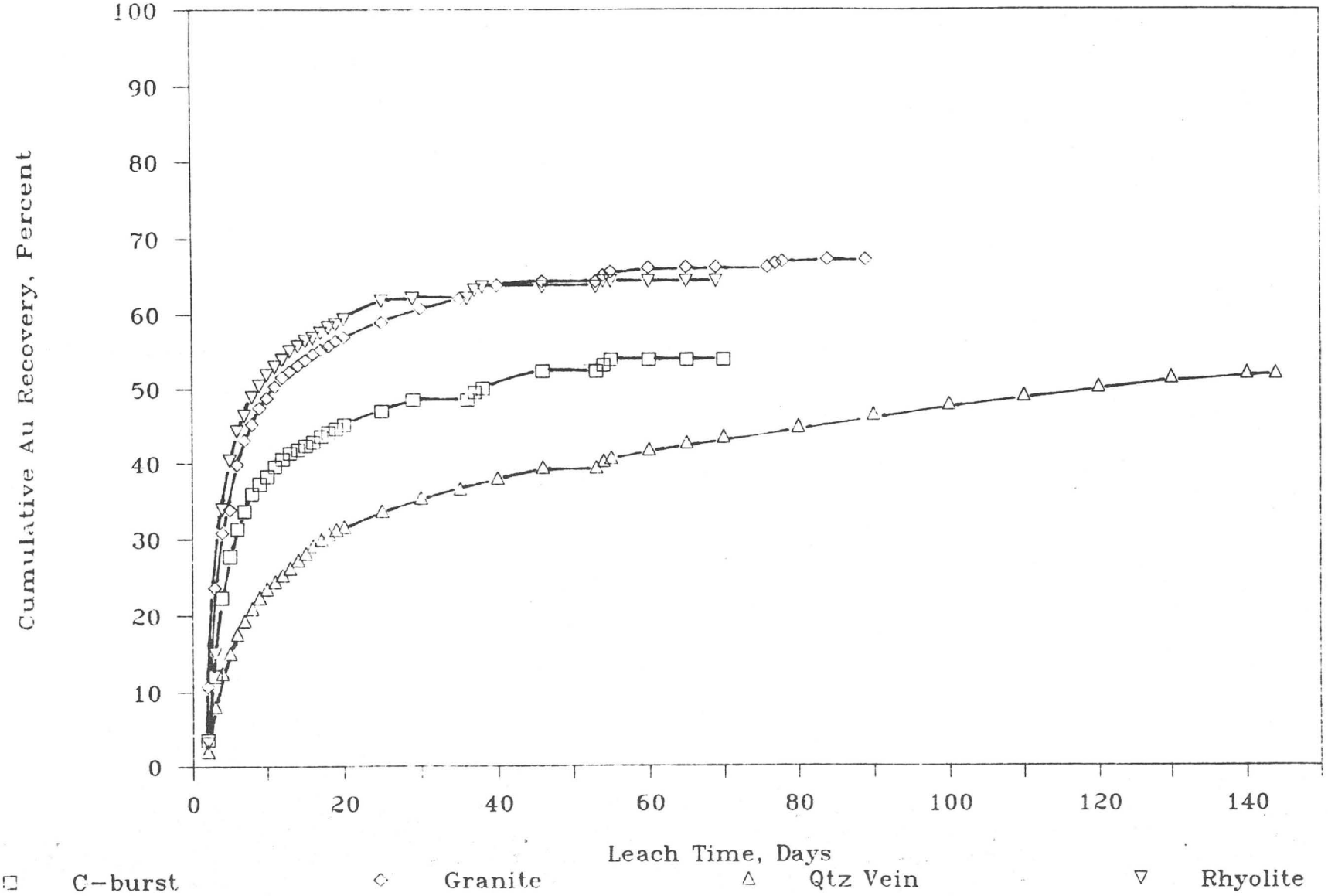


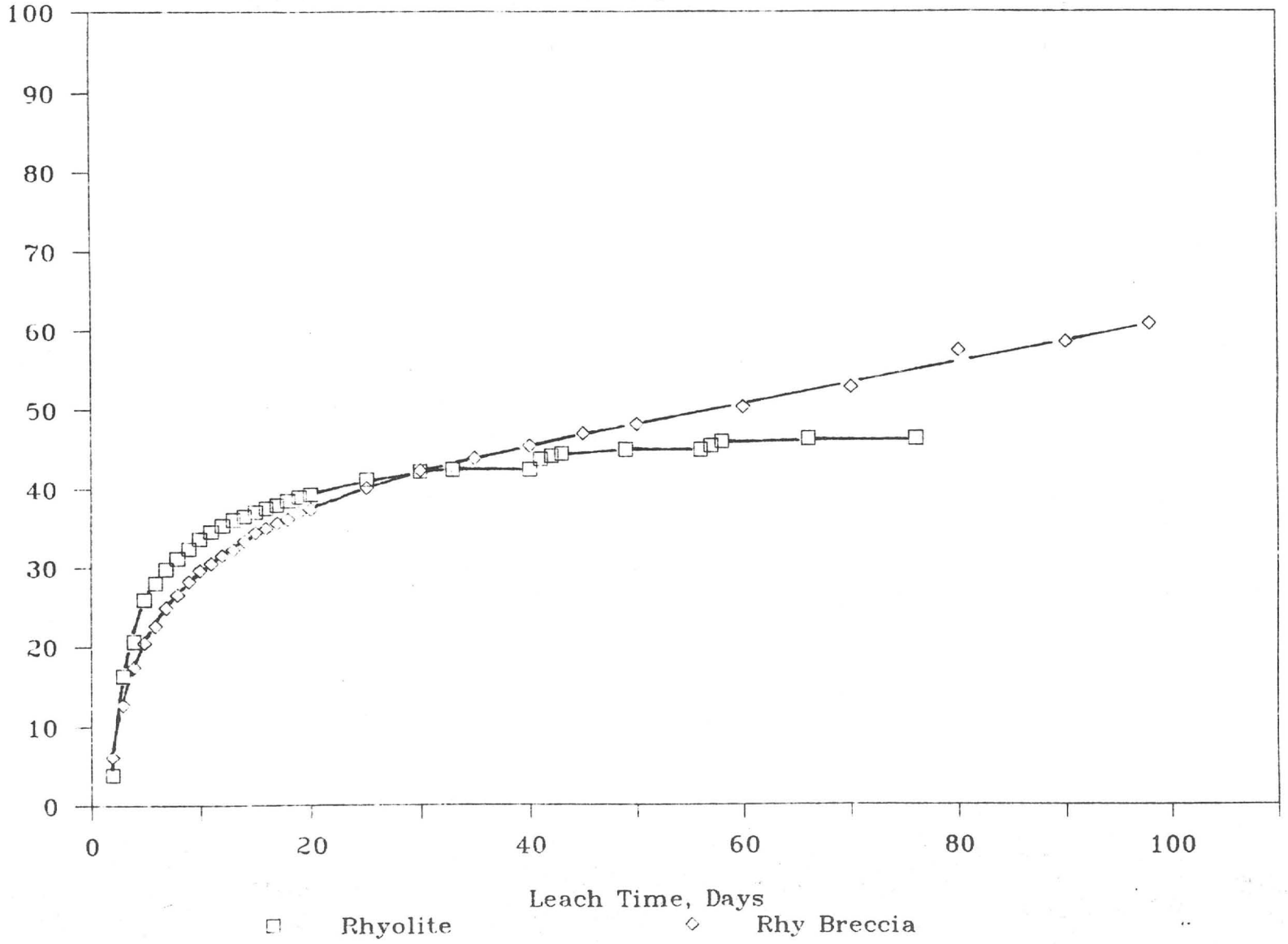
Table 2. - Overall Metallurgical Results, Column Leach Tests, Tiger Underground Bulk Ore Samples, 80 Percent Minus 1/4 Inch Feeds

Metallurigcal Results	Sample	
Extraction, pct Total Au	Rhyolite	Rhy. Breccia
1st Effluent	3.9	6.2
in 5 days	25.9	20.5
in 10 days	33.7	29.6
in 15 days	37.1	34.5
in 20 days	39.3	37.4
in 30 days	42.2	42.3
in 41 days	43.7[1)]	45.7
in 49 days	44.9	47.8
in 57 days	45.4[2)]	49.6
in 66 days	46.3[3)]	51.6
in 76 days	46.3	55.1
in 92 days	N/A	58.8[3)]
in 98 days	N/A	60.8
Extracted, ozAu/ton ore	0.019	0.045
Tail Screen, ozAu/ton	0.022	0.029
Calculated Head, ozAu/ton ore	0.041	0.074
Head Screen, ozAu/ton ore	0.038	0.068
Cyanide Consumed, lb/ton ore	3.20	2.14
Cement Added, lb/ton ore	10.0	10.0
Final Solution pH	10.7	10.8
pH After Water Wash	10.0	10.3
Ag Extracted, oz/ton ore	0.03	0.04
Ag Recovery, percent	8.3	12.1

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 day rest cycle.
3) Begin water wash.

Figure 2. – Gold Leach Rate Profiles,

C. Tests, U/G Samples, 1/4" Feeds



Metallurgical results show that the Tiger bulk ore samples were marginally amenable to heap leaching treatment at an 80 percent minus 1/4 inch feed size. Gold recoveries ranged from 46.3 (Rhyolite U/G) to 67.2 (Granite) percent, and averaged 57.4 percent in from 69 to 144 days of leaching and washing. Silver recoveries were poor and ranged from 7.1 to 12.1 percent.

Gold recovery rates were fairly rapid for Cloudburst, Granite, and Rhyolite (surface and U/G) feeds, and extraction was substantially complete in 20 days of cyanide solution application. Gold recovery rates were slow for the Quartz Vein and Rhyolite Breccia feeds and extraction was progressing at a slower rate when cyanide solution application was terminated. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate. Rest cycles were somewhat effective in improving subsequent effluent grades, but had little effect on improving ultimate recovery or recovery rate.

Cyanide consumptions were moderate to high and ranged from 1.56 (Cloudburst) to 3.33 (Quartz Vein) pounds per ton of ore. Cyanide consumptions for column leach tests are usually higher than those experienced in commercial production. It is expected that commercial consumption would not exceed 0.8 pound per ton of ore. The 10 pounds portland cement added during agglomeration pretreatment was sufficient to maintain protective alkalinity at above 10.5 throughout the leaching cycles.

Water washing was effective in decreasing subsequent effluent free cyanide concentrations from about 1.8 to <0.1 pounds per ton of solution in from 5 to 10 days. Water washing was effective in decreasing effluent pHs from about 10.8 to 10.4 (average).

Table 3. - Head Screen Analysis Results, Cloudburst Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	19.3	19.3	0.065	0.16	29.8	18.0	29.8	18.0
-1/4 +10M	44.5	63.8	0.039	0.19	41.4	49.4	71.2	67.4
-10 +20M	11.5	75.3	0.022	0.17	6.0	11.6	77.2	79.0
-20 +35M	7.2	82.5	0.018	0.20	3.1	8.2	80.3	87.2
-35 +65M	4.8	87.3	0.019	0.18	2.1	5.2	82.4	92.4
-65M	12.7	100.0	0.058	0.10	17.6	7.6	100.0	100.0
Composite	100.0		0.042	0.17	100.0	100.0		

Table 4. - Tail Screen Analysis Results, Column Leached Residue, Cloudburst Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	25.0	25.0	0.035	0.16	48.1	30.8	48.1	30.8
-1/4 +10M	45.8	70.8	0.017	0.12	42.6	42.3	90.7	73.1
-10 +20M	12.4	83.2	0.007	0.12	4.9	11.5	95.6	84.6
-20 +35M	5.7	88.9	0.007	0.13	2.2	5.4	97.8	90.0
-35 +65M	3.0	91.9	0.005	0.12	1.1	3.1	98.9	93.1
-65M	8.1	100.0	0.002	0.11	1.1	6.9	100.0	100.0
Composite	100.0		0.018	0.13	100.0	100.0		

Table 5. - Recovery By Size Fraction Data, Column Leach Test, Cloudburst Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+ 1/4"	19.3	25.0	0.065	0.035	46.2
-1/4 +10M	44.5	45.8	0.039	0.017	56.4
-10 +20M	11.5	12.4	0.022	0.007	68.2
-20 +35M	7.2	5.7	0.018	0.007	61.1
-35 +65M	4.8	3.0	0.019	0.005	73.7
-65M	12.7	8.1	0.058	0.002	96.6
Composite	100.0	100.0	0.042	0.018	57.1

Table 6. - Head Screen Analysis Results, Granite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	21.1	21.1	0.051	0.46	18.5	24.1	18.5	24.1
-1/4 +10M	41.6	62.7	0.041	0.42	29.4	43.4	47.9	67.5
-10 +20M	13.7	76.4	0.044	0.42	10.3	14.4	58.2	81.9
-20 +35M	8.4	84.8	0.055	0.39	7.9	8.2	66.1	90.1
-35 +65M	5.2	90.0	0.070	0.31	6.2	4.0	72.3	94.1
-65M	10.0	100.0	0.161	0.24	27.7	5.9	100.0	100.0
Composite	100.0		0.058	0.40	100.0	100.0		

Table 7. - Tail Screen Analysis Results, Column Leached Residue, Granite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	21.7	21.7	0.034	0.40	38.0	25.8	38.0	25.8
-1/4 +10M	40.0	61.7	0.024	0.35	49.2	41.4	87.2	67.2
-10 +20M	13.8	75.5	0.009	0.33	6.2	13.6	93.4	80.8
-20 +35M	8.3	83.8	0.008	0.32	3.6	8.0	97.0	88.8
-35 +65M	5.3	89.1	0.005	0.29	1.5	4.4	98.5	93.2
-65M	10.9	100.0	0.003	0.21	1.5	6.8	100.0	100.0
Composite	100.0		0.020	0.34	100.0	100.0		

Table 8. - Recovery By Size Fraction Data, Column Leach Test, Granite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+ 1/4"	21.1	21.7	0.051	0.034	33.9
-1/4 +10M	41.6	40.0	0.041	0.024	41.5
-10 +20M	13.7	13.8	0.044	0.009	79.5
-20 +35M	8.4	8.3	0.055	0.008	85.5
-35 +65M	5.2	5.3	0.070	0.005	92.9
-65M	10.0	10.9	0.161	0.003	98.1
Composite	100.0	100.0	0.058	0.020	65.5

Table 9. - Head Screen Analysis Results, Quartz Vein Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	22.0	22.0	0.135	0.22	24.1	19.8	24.1	19.8
-1/4 +10M	42.7	64.7	0.118	0.21	40.8	37.0	64.9	56.8
-10 +20M	11.1	75.8	0.116	0.31	10.5	14.0	75.4	70.8
-20 +35M	7.4	83.2	0.092	0.31	5.5	9.5	80.9	80.3
-35 +65M	5.4	88.6	0.077	0.33	3.4	7.4	84.3	87.7
-65M	11.4	100.0	0.170	0.26	15.7	12.3	100.0	100.0
Composite	100.0		0.123	0.24	100.0	100.0		

Table 10. - Tail Screen Analysis Results, Column Leached Residue, Quartz Vein Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	20.4	20.4	0.089	0.22	27.0	20.1	27.0	20.1
-1/4 +10M	47.1	67.5	0.081	0.20	56.8	42.0	83.8	62.1
-10 +20M	10.1	77.6	0.052	0.25	7.9	11.1	91.7	73.2
-20 +35M	6.9	84.5	0.044	0.30	4.5	9.4	96.2	82.6
-35 +65M	5.1	89.6	0.034	0.32	2.5	7.1	98.7	89.7
-65M	10.4	100.0	0.009	0.22	1.3	10.3	100.0	100.0
Composite	100.0		0.067	0.22	100.0	100.0		

Table 11. - Recovery By Size Fraction Data, Column Leach Test, Quartz Vein Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+ 1/4"	22.0	20.4	0.135	0.089	34.1
-1/4 +10M	42.7	47.1	0.118	0.081	31.4
-10 +20M	11.1	10.1	0.116	0.052	55.2
-20 +35M	7.4	6.9	0.092	0.044	52.2
-35 +65M	5.4	5.1	0.077	0.034	55.8
-65M	11.4	10.4	0.170	0.009	94.7
Composite	100.0	100.0	0.123	0.067	45.5

Table 12. - Head Screen Analysis Results, Rhyolite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	18.6	18.6	0.022	0.19	14.0	21.1	14.0	21.1
-1/4 +10M	44.2	62.8	0.030	0.18	45.2	48.2	59.2	69.3
-10 +20M	13.8	76.6	0.024	0.12	11.2	10.2	70.4	79.5
-20 +35M	7.7	84.3	0.030	0.12	7.8	5.4	78.2	84.9
-35 +65M	2.5	86.8	0.026	0.19	2.4	3.0	80.6	87.9
-65M	13.2	100.0	0.043	0.15	19.4	12.1	100.0	100.0
Composite	100.0		0.029	0.17	100.0	100.0		

Table 13. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	23.7	23.7	0.014	0.13	32.0	27.7	32.0	27.7
-1/4 +10M	45.2	68.9	0.012	0.12	52.4	48.2	84.4	75.9
-10 +20M	11.9	80.8	0.005	0.09	5.8	9.8	90.2	85.7
-20 +35M	6.8	87.6	0.005	0.10	2.9	6.2	93.1	91.9
-35 +65M	3.5	91.1	0.005	0.11	2.0	3.6	95.1	95.5
-65M	8.9	100.0	0.006	0.06	4.9	4.5	100.0	100.0
Composite	100.0		0.010	0.11	100.0	100.0		

Table 14. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Surface Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+ 1/4"	18.6	23.7	0.022	0.014	36.4
-1/4 +10M	44.2	45.2	0.030	0.012	60.0
-10 +20M	13.8	11.9	0.024	0.005	79.2
-20 +35M	7.7	6.8	0.030	0.005	83.3
-35 +65M	2.5	3.5	0.026	0.005	80.8
-65M	13.2	8.9	0.043	0.006	86.0
Composite	100.0	100.0	0.029	0.010	65.5

Table 15. - Head Screen Analysis Results, Rhyolite Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	18.6	18.6	0.058	0.49	28.4	21.1	28.4	21.1
-1/4 +10M	46.6	65.2	0.037	0.43	45.1	46.3	73.5	67.4
-10 +20M	11.3	76.5	0.027	0.40	8.1	10.4	81.6	77.8
-20 +35M	7.2	83.7	0.019	0.41	3.7	6.9	85.3	84.7
-35 +65M	4.6	88.3	0.017	0.44	2.1	4.6	87.4	89.3
-65M	11.7	100.0	0.041	0.39	12.6	10.7	100.0	100.0
Composite	100.0		0.038	0.43	100.0	100.0		

Table 16. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		Distribution, cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+1/4"	18.3	18.3	0.043	0.35	35.6	19.5	35.6	19.5
-1/4 +10M	45.9	64.2	0.025	0.34	51.8	47.6	87.4	67.1
-10 +20M	14.1	78.3	0.012	0.34	7.7	14.6	95.1	81.7
-20 +35M	7.0	85.3	0.007	0.30	2.3	6.4	97.4	88.1
-35 +65M	4.5	89.8	0.006	0.20	1.3	2.7	98.7	90.8
-65M	10.2	100.0	0.003	0.29	1.3	9.2	100.0	100.0
Composite	100.0		0.022	0.33	100.0	100.0		

Table 17. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+ 1/4"	18.6	18.3	0.058	0.043	25.9
-1/4 +10M	46.6	45.9	0.037	0.025	32.4
-10 +20M	11.3	14.1	0.027	0.012	55.6
-20 +35M	7.2	7.0	0.019	0.007	63.2
-35 +65M	4.6	4.5	0.017	0.006	64.7
-65M	11.7	10.2	0.041	0.003	92.7
Composite	100.0	100.0	0.038	0.022	42.1

Table 18. - Head Screen Analysis Results, Rhyolite Breccia Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+1/4"	21.7	21.7	0.061	0.35	19.5	16.9	19.5	16.9
-1/4 +10M	40.0	61.7	0.072	0.47	42.4	41.9	61.9	58.8
-10 +20M	11.3	73.0	0.055	0.53	9.1	13.4	71.0	72.2
-20 +35M	7.4	80.4	0.053	0.53	5.8	8.7	76.8	80.9
-35 +65M	5.1	85.5	0.044	0.57	3.2	6.4	80.0	87.3
-65M	14.5	100.0	0.094	0.39	20.0	12.7	100.0	100.0
Composite	100.0		0.068	0.45	100.0	100.0		

Table 19. - Tail Screen Analysis Results, Column Leached Residue, Rhyolite Breccia Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+1/4"	26.0	26.0	0.031	0.18	27.8	16.5	27.8	16.5
-1/4 +10M	42.0	68.0	0.036	0.31	51.9	45.6	79.7	62.1
-10 +20M	9.1	77.1	0.031	0.38	9.6	12.3	89.3	74.4
-20 +35M	6.2	83.3	0.019	0.28	4.1	5.9	93.4	80.3
-35 +65M	5.2	88.5	0.017	0.41	3.1	7.4	96.5	87.7
-65M	11.5	100.0	0.009	0.30	3.5	12.3	100.0	100.0
Composite	100.0		0.029	0.29	100.0	100.0		

Table 20. - Recovery By Size Fraction Data, Column Leach Test, Rhyolite Breccia Underground Ore, 80 Percent Minus 1/4 Inch Feed

Size Fraction	Weight, Percent Head	Weight, Percent Tail	Assays, ozAu/ton Head	Assays, ozAu/ton Tail	Au Recovery, Percent
+1/4"	21.7	26.0	0.061	0.031	49.2
-1/4 +10M	40.0	42.0	0.072	0.036	50.0
-10 +20M	11.3	9.1	0.055	0.031	43.6
-20 +35M	7.4	6.2	0.053	0.019	64.2
-35 +65M	5.1	5.2	0.044	0.017	61.4
-65M	14.5	11.5	0.094	0.009	90.4
Composite	100.0	100.0	0.068	0.029	57.4

Head screen analysis results show, in general, that contained gold values were not evenly distributed throughout the various size fractions, but were enriched in the minus 65 mesh fractions. Contained silver values were fairly evenly distributed.

Tail screen analysis results for the Rhyolite Breccia leached residue show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 20 mesh fractions. Plus 20 mesh fractions represented 77.1 percent of the tail weight, but contained 89.3 percent of the residual gold.

Tail screen analysis results for the remaining residues show that residual gold values were not evenly distributed throughout the various size fractions, but were enriched in the plus 10 mesh size fractions. Plus 10 mesh fractions averaged 66.6 percent of the tail weight, but contained 86.7 percent of the residual gold. Residual silver values were fairly evenly distributed throughout the various size fractions. These data show that crushing the Tiger bulk ore samples to minus 10 mesh in size would improve ultimate heap leach gold recovery, but fine crushing may not be economically feasible.

Recovery by size fraction confirm tail screen data and indicate that fine grinding would be required for maximum liberation of gold values for dissolution by cyanide.

Table 21. - Gold Metallurgical Balances, Column Leach Test, Cloudburst Surface Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.021	0.019	0.024
Tail Screen, ozAu/ton	0.018	0.018	0.018
Calc'd Head, ozAu/ton ore	0.039	0.037	0.042
Au Recovery, percent	53.8	51.4	57.1
Deviation, ozAu/ton ore[1)]	N/A	0.002	0.003
Precision, percent	100.0	94.9	92.9

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Table 22. - Gold Metallurgical Balances, Column Leach Test, Granite Surface Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.041	0.038	0.038
Tail Screen, ozAu/ton	0.020	0.020	0.020
Calc'd Head, ozAu/ton ore	0.061	0.058	0.058
Au Recovery, percent	67.2	65.5	65.5
Deviation, ozAu/ton ore[1)]	N/A	0.003	0.003
Precision, percent	100.0	95.1	95.1

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Table 23. - Gold Metallurgical Balances, Column Leach Test, Quartz Vein Surface Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.073	0.072	0.056
Tail Screen, ozAu/ton	0.067	0.067	0.067
Calc'd Head, ozAu/ton ore	0.140	0.139	0.123
Au Recovery, percent	52.1	51.8	45.5
Deviation, ozAu/ton ore[1)]	N/A	0.001	0.017
Precision, percent	100.0	99.3	87.9

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Table 24. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Surface Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.018	0.018	0.019
Tail Screen, ozAu/ton	0.010	0.010	0.010
Calc'd Head, ozAu/ton ore	0.028	0.028	0.029
Au Recovery, percent	64.3	64.3	65.5
Deviation, ozAu/ton ore[1)]	N/A	0.000	0.001
Precision, percent	100.0	100.0	96.6

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Table 25. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Underground Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.019	0.020	0.016
Tail Screen, ozAu/ton	0.022	0.022	0.022
Calc'd Head, ozAu/ton ore	0.041	0.042	0.038
Au Recovery, percent	46.3	47.6	42.1
Deviation, ozAu/ton ore[1)]	N/A	0.001	0.003
Precision, percent	100.0	97.6	92.7

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Table 26. - Gold Metallurgical Balances, Column Leach Test, Rhyolite Breccia Underground Bulk Ore Sample

	Balance		
	Sol vs Tail	Carbon vs Tail	Head vs Tail[2)]
Extracted, ozAu/ton ore	0.045	0.044	0.039
Tail Screen, ozAu/ton	0.029	0.029	0.029
Calc'd Head, ozAu/ton ore	0.074	0.073	0.068
Au Recovery, percent	60.8	60.3	57.4
Deviation, ozAu/ton ore[1)]	N/A	0.001	0.006
Precision, percent	100.0	98.6	91.9

1) Deviation from solution versus tail balance.
2) Head screen versus tail balance.

Solution versus tail, carbon versus tail, and head versus tail metallurgical balances agreed fairly closely. Metallurgical balances were within 10 percent experimental precision limits, except for the head versus tail balance for the Quartz Vein sample. Head versus tail metallurgical balances are considered least reliable. Solution versus tail calculated heads were used for calculating all recovery percentages.

Table 27. - Physical Ore Characteristic Data, Tiger Bulk Ore Samples, 80 Percent Minus 1/4 Inch Feeds

Sample	Ore Wt., pounds	Moisture, weight percent for Agglomeration	Moisture, weight percent To Saturate Ore Charge*	Moisture, weight percent Retained	Bulk Density, lb/ft^3 Before	Bulk Density, lb/ft^3 After
Cloundburst Surface	99.3	6.4	15.0	10.6	81.09	81.60
Granite Surface	99.6	5.6	12.3	8.1	89.19	89.51
Quartz Vein Surface	99.9	5.8	9.7	6.4	89.87	90.77
Rhyolite Surface	99.4	6.8	16.2	8.5	79.80	79.80
Rhyolite U/G	99.3	6.9	14.3	8.4	80.14	81.34
Rhyolite Breccia U/G	99.8	5.4	10.4	6.9	86.05	86.55

* Includes moisture for agglomeration.

Physical ore characteristic data show that little "slumping" occurred during leaching. Bulk densities were nearly the same before and after leaching. Moistures required to saturate the ore charges, for agglomeration, and retained moistures were low. No percolation, fines migration, or solution channeling problems were encountered during leaching, except for the Rhyolite Breccia U/G feed which "blinded" during the wash cycle. Visual examination of that residue did not reveal the cause of "blinding".

Table 28. - Drain Down Rate Test, Column Leached Residue, Cloundburst Surface Bulk Ore Sample, 80 Percent Minus 1/4 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate, gal/hr/ton
0.08	0.010	0.20	2.515
0.25	0.011	0.42	1.302
0.50	0.018	0.78	1.449
1.00	0.041	1.61	1.650
2.00	0.049	2.60	0.986
4.00	0.054	3.68	0.543
8.00	0.048	4.65	0.241
12.00	0.021	5.07	0.106
24.00	0.022	5.51	0.037
48.00	0.015	5.81	0.025
72.00	0.016	6.14	0.013
96.00	0.007	6.28	0.006
120.00	0.000	6.28	0.000

Figure 3. — Drain Down Rate Profile,

Col. Leached Residue, 1/4" Feed

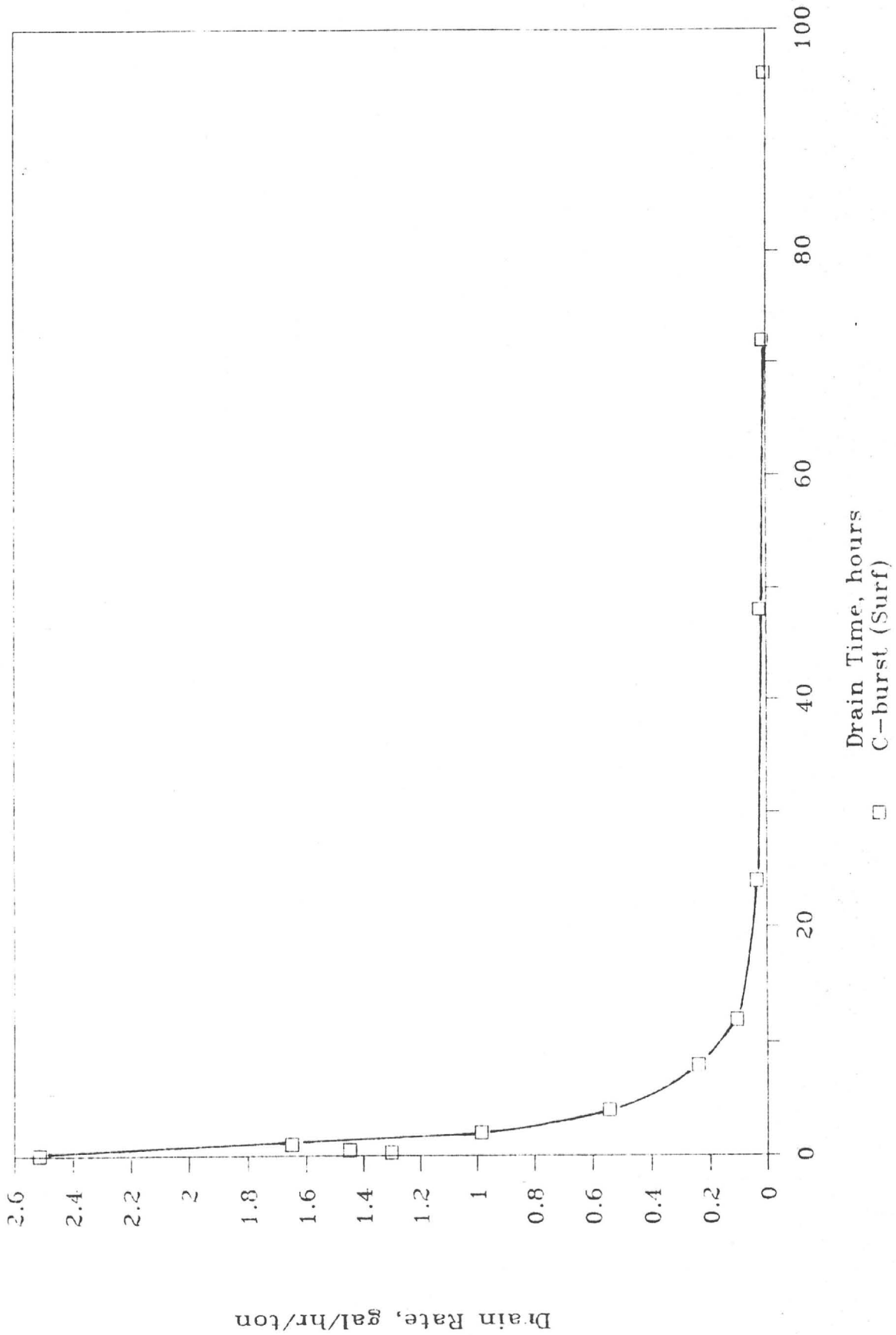


Table 29. - Drain Down Rate Test, Column Leached Residue, Granite Surface Bulk Ore Sample, 80 Percent Minus 1/4 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate, gal/hr/ton
0.08	0.005	0.10	1.255
0.25	0.008	0.26	0.945
0.50	0.011	0.48	0.884
1.00	0.025	0.98	1.004
2.00	0.049	1.97	0.984
4.00	0.078	3.53	0.783
8.00	0.096	5.46	0.482
11.00	0.039	6.24	0.261
24.00	0.055	7.35	0.085
34.00	0.016	7.67	0.032
48.00	0.009	7.85	0.013
72.00	0.009	8.03	0.008
96.00	0.000	8.03	0.000

Figure 4. — Drain Down Rate Profile,

Col. Leached Residue, 1/4" Feed

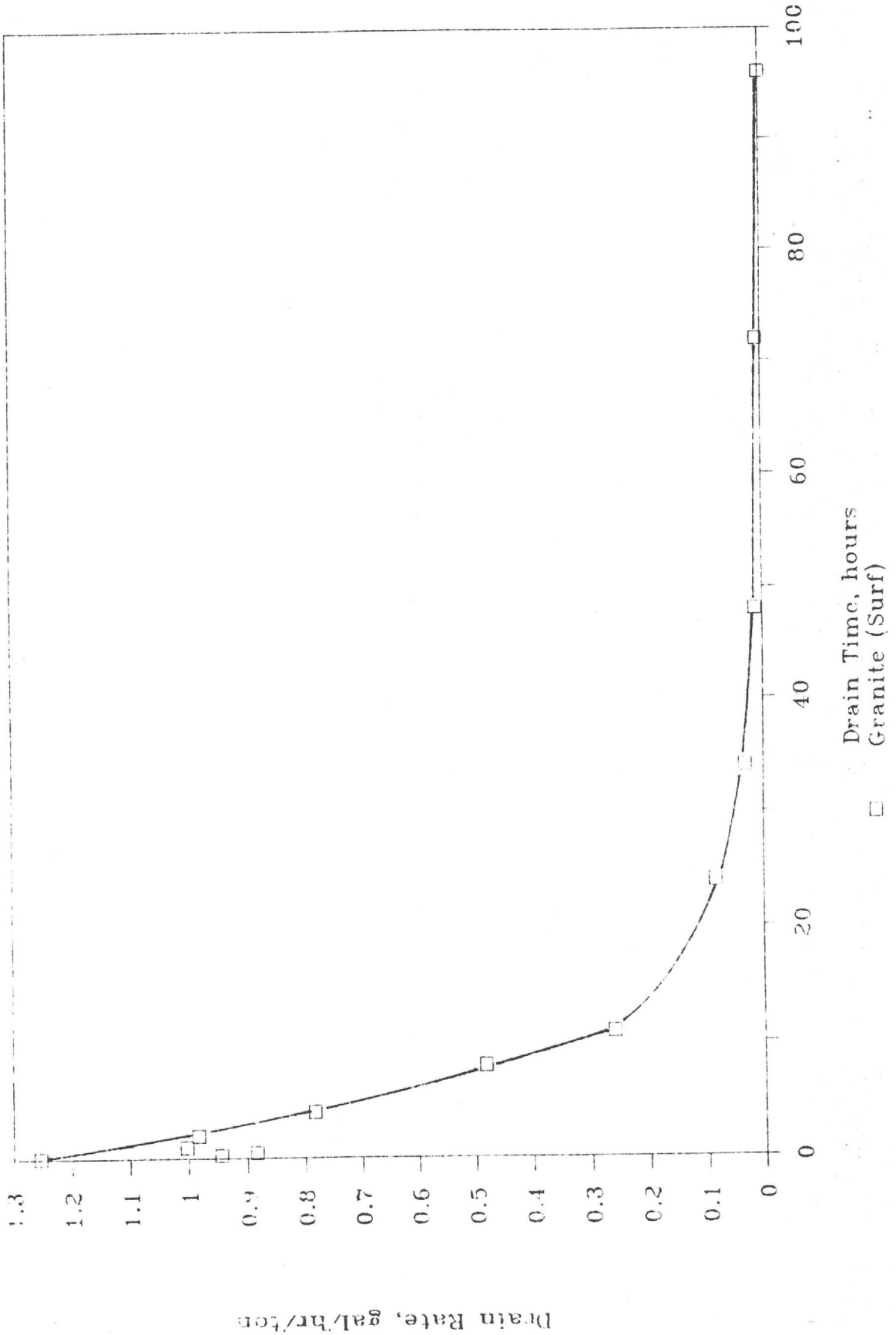


Table 30. - Drain Down Rate Test, Column Leached Residue, Quartz Vein Surface Bulk Ore Sample, 80 Percent Minus 1/4 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate, gal/hr/ton
0.08	0.022	0.44	5.500
0.25	0.039	1.22	4.588
0.50	0.052	2.26	4.160
1.00	0.062	3.50	2.480
2.00	0.051	4.52	1.020
4.00	0.040	5.32	0.400
8.00	0.033	5.98	0.165
12.00	0.021	6.40	0.140
24.00	0.023	6.86	0.038
36.00	0.011	7.08	0.018
48.00	0.009	7.26	0.015
72.00	0.009	7.44	0.008
96.00	0.000	7.44	0.000

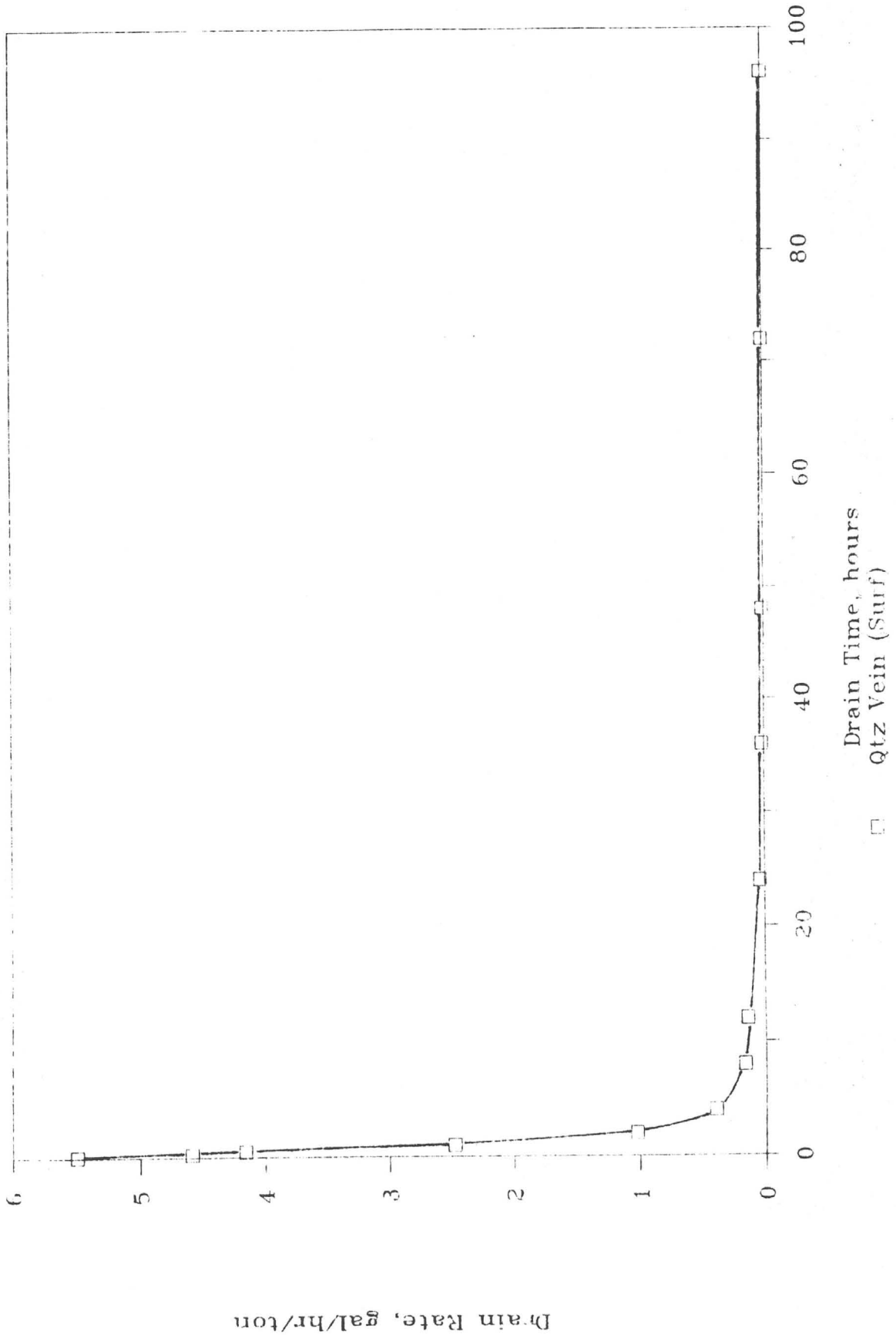


Figure 5. — Drain Down Rate Profile.
Col. Leached Residue, 1/4" Feed
Drain Rate, gal/hr/ton
0
1
2
3
4
5
6
0
20
40
60
80
100
Drain Time, hours
Qtz Vein (Surf)

Table 31. - Drain Down Rate Test, Column Leached Residue, Rhyolite Surface Bulk Ore Sample, 80 Percent Minus 1/4 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate, gal/hr/ton
0.08	0.021	0.42	5.282
0.25	0.041	1.25	4.853
0.50	0.056	2.37	4.507
1.00	0.062	3.62	2.495
2.00	0.073	5.09	1.469
4.00	0.049	6.08	0.493
8.00	0.039	6.86	0.196
12.00	0.022	7.30	0.148
24.00	0.023	7.77	0.039
36.00	0.010	7.97	0.017
48.00	0.006	8.09	0.010
72.00	0.007	8.23	0.006
96.00	0.008	8.39	0.007
120.00	0.003	8.45	0.003

Figure 6. – Drain Down Rate Profile,

Col. Leached Residue, 1/4" Feed

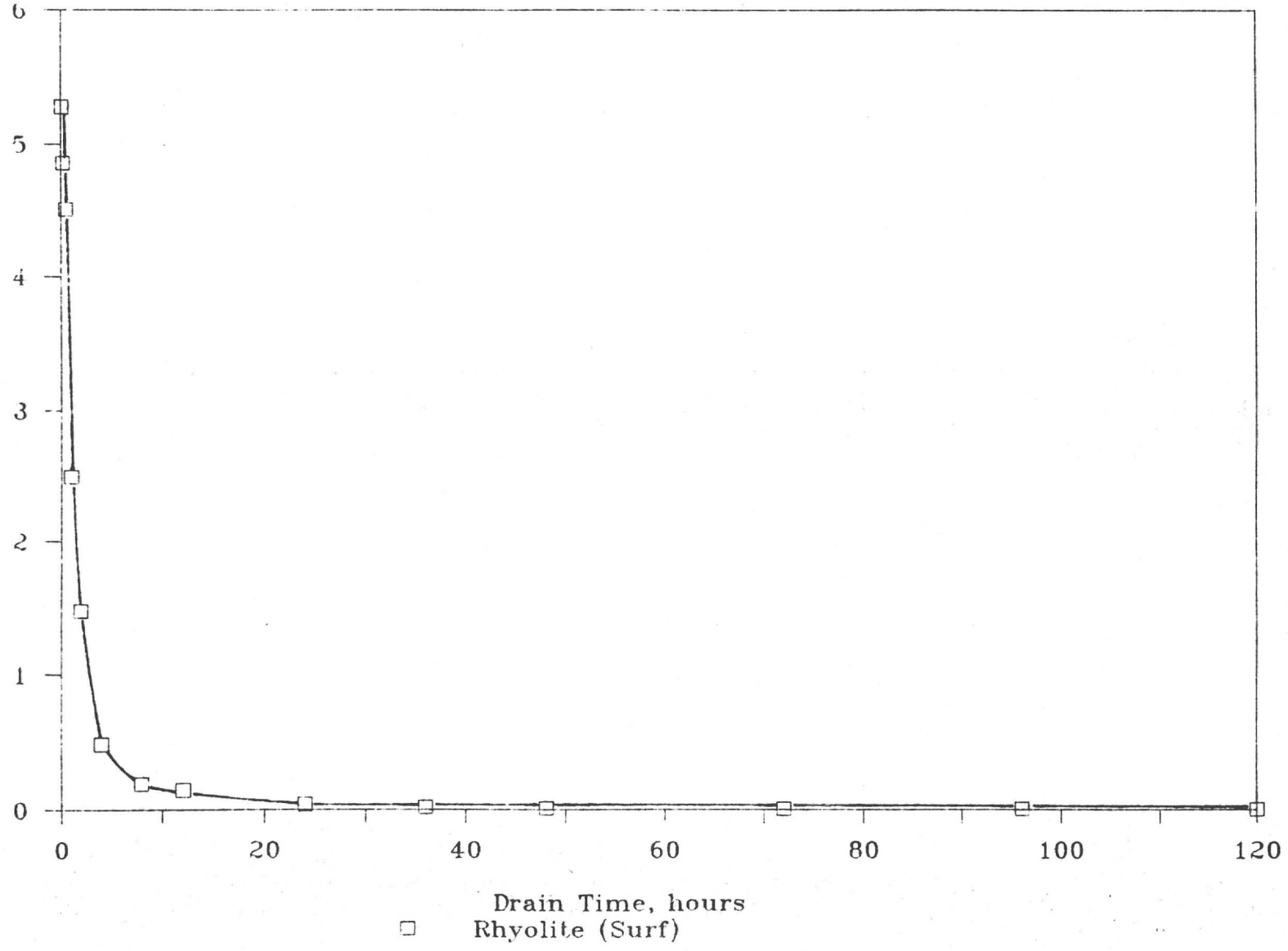
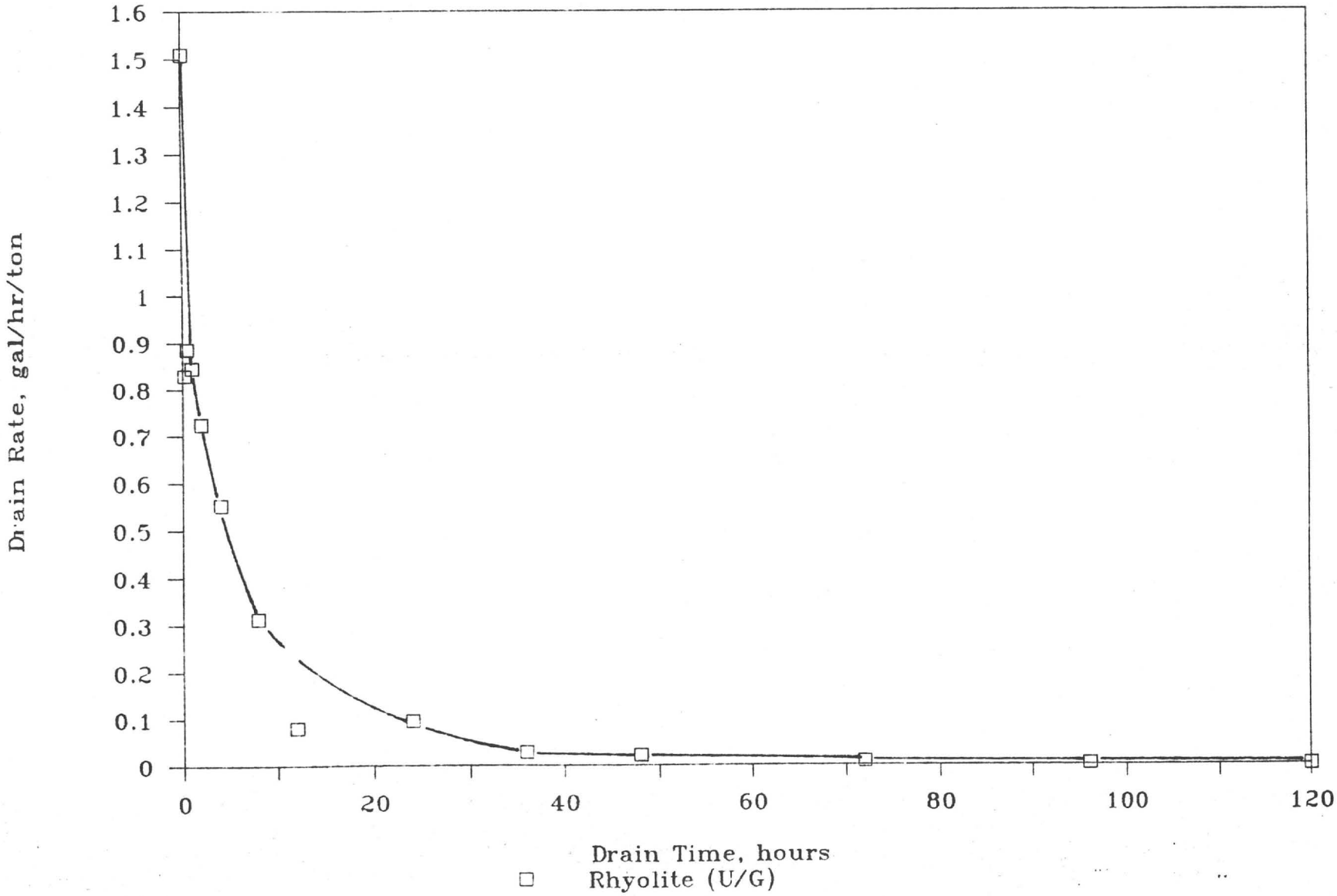


Table 32. - Drain Down Rate Test, Column Leached Residue, Rhyolite Underground Bulk Ore Sample, 80 Percent Minus 1/4 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate, gal/hr/ton
0.08	0.006	0.12	1.509
0.25	0.007	0.26	0.829
0.50	0.011	0.48	0.885
1.00	0.021	0.91	0.845
2.00	0.036	1.63	0.724
4.00	0.055	2.74	0.553
8.00	0.062	3.98	0.312
12.00	0.012	4.23	0.081
24.00	0.057	5.37	0.096
36.00	0.017	5.71	0.029
48.00	0.013	5.98	0.022
72.00	0.010	6.18	0.008
96.00	0.003	6.24	0.003
120.00	0.000	6.24	0.000

Figure 7. – Drain Down Rate Profile,

Col. Leached Residue, 1/4" Feed



Drain down rate tests were conducted on all column leached residues, except for the Rhyolite Breccia U/G feed. Drain down rate test results show that, after termination of solution application, effluent ranging from 6.24 to 8.45 gallons per ton of ore drained from the leached residues. Drain down rates were fairly rapid.

CONCLUSIONS

- The Tiger bulk ore samples were marginally amenable to agglomerated heap leaching treatment at an 80 percent minus 1/4 inch feed size.

- Gold recovery rates were fairly rapid for the Cloudburst, Granite, and Rhyolite ore samples, but were slow for the remaining ore samples. Additional gold values would be extracted with longer leaching cycles, but at a very slow rate.

- Cyanide consumptions were moderate to high, but should be substantially less in commercial production.

- The 10 pounds cement per ton of ore added during agglomeration pretreatment was sufficient to maintain protective alkalinity at above pH 10.5 throughout the leaching cycles.

- Tail screen analysis results show that crushing the Tiger ore samples to minus 10 mesh in size would improve ultimate heap leach gold recovery, but fine crushing may not be economically feasible. Fine grinding would be required to achieve maximum liberation of gold values for dissolution by cyanide.

Jane E McClellan

for Frank A. Macy
Project Manager

APPENDIX

DAILY COLUMN LEACH DATA, CLOUD BURST SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

	Preg. Solution			Solution Analysis preg		barren		Au Ext.		Ag Ext.	
Days leached	Vol. l.	NaCN Conc. lb/ton	pH	Au ppm	Ag ppm	Au ppm	Ag ppm	Au Cum. oz/t	Au Cum. %	Ag Cum. oz/t	Ag Cum. %
START	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.68	0.9	11.6	0.83	0.47	0.00	0.00	0.0014	3.6	0.001	0.6
3	4.28	1.3	11.8	1.17	0.45	0.00	0.00	0.0047	12.1	0.002	1.5
4	5.44	1.2	11.3	1.14	0.41	0.00	0.00	0.0087	22.3	0.004	2.5
5	4.64	1.3	11.5	0.71	0.41	0.00	0.00	0.0108	27.7	0.005	3.4
6	5.76	1.7	11.6	0.37	0.22	0.00	0.00	0.0122	31.3	0.006	4.0
7	5.40	1.6	11.4	0.26	0.18	0.00	0.00	0.0131	33.6	0.006	4.4
8	5.34	1.9	11.7	0.24	0.18	0.00	0.00	0.0140	35.9	0.007	4.9
9	4.84	1.7	11.5	0.18	0.15	0.00	0.00	0.0145	37.2	0.007	5.2
10	4.44	1.7	11.8	0.15	0.13	0.00	0.00	0.0149	38.2	0.008	5.5
11	4.74	1.9	11.3	0.16	0.12	0.00	0.00	0.0154	39.5	0.008	5.7
12	4.80	1.8	11.0	0.12	0.10	0.00	0.00	0.0158	40.5	0.008	5.9
13	4.52	1.9	11.5	0.09	0.07	0.00	0.00	0.0161	41.3	0.009	6.1
14	6.10	2.0	11.6	0.06	0.05	0.00	0.00	0.0163	41.8	0.009	6.2
15	5.30	1.9	12.1	0.06	0.05	0.00	0.00	0.0165	42.3	0.009	6.4
16	5.46	1.8	12.1	0.06	0.04	0.00	0.00	0.0167	42.8	0.009	6.4
17	4.94	1.8	11.5	0.08	0.05	0.00	0.00	0.0170	43.6	0.009	6.6
18	5.34	1.9	11.5	0.05	0.00	0.00	0.00	0.0172	44.1	0.009	6.6
19	4.70	1.9	11.7	0.07	0.05	0.00	0.00	0.0174	44.6	0.009	6.7
20	5.24	1.9	11.3	0.05	0.00	0.00	0.00	0.0176	45.1	0.009	6.7
21	5.76	1.9	11.2	0.04	0.00	0.00	0.00	0.0177	45.4	0.009	6.7
22	5.26	1.9	11.6	0.04	0.00	0.00	0.00	0.0178	45.6	0.009	6.7
23	5.32	1.9	11.5	0.04	0.00	0.00	0.00	0.0180	46.2	0.009	6.7
24	5.18	1.7	11.6	0.05	0.04	0.00	0.00	0.0181	46.4	0.010	7.1
25	3.94	1.8	11.5	0.06	0.04	0.00	0.00	0.0183	46.9	0.010	7.1
26	4.40	1.9	11.3	0.04	0.00	0.00	0.00	0.0184	47.2	0.010	7.1
27	5.46	2.0	11.3	0.05	0.00	0.00	0.00	0.0186	47.7	0.010	7.1
28	5.44	1.8	11.3	0.04	0.00	0.00	0.00	0.0187	47.9	0.010	7.1
29	4.78	1.9	12.0	0.05	0.00	0.00	0.00	0.0189	48.5	0.010	7.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0189	48.5	0.010	7.1
37	5.30	1.4	11.0	0.12	0.07	0.00	0.00	0.0193	49.5	0.010	7.1
38	4.68	1.7	11.1	0.08	0.05	0.00	0.00	0.0195	50.0	0.010	7.1
39	5.74	1.8	11.0	0.06	0.07	0.00	0.00	0.0198	50.8	0.010	7.1
40	5.12	1.9	11.1	0.04	0.00	0.00	0.00	0.0199	51.0	0.010	7.1
41	5.92	1.8	11.2	0.04	0.00	0.00	0.00	0.0200	51.3	0.010	7.1
42	4.10	1.9	11.1	0.04	0.00	0.00	0.00	0.0202	51.8	0.010	7.1
43	5.10	2.0	11.1	0.04	0.00	0.00	0.00	0.0203	52.1	0.010	7.1
44	5.60	1.9	11.2	0.04	0.00	0.00	0.00	0.0204	52.3	0.010	7.1
45	4.60	1.6	11.1	0.00	0.00	0.00	0.00	0.0204	52.3	0.010	7.1
46	5.24	1.8	10.8	0.00	0.00	0.00	0.00	0.0204	52.3	0.010	7.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0204	52.3	0.010	7.1
54	4.50	1.6	10.9	0.10	0.06	0.00	0.00	0.0207	53.1	0.010	7.1
55	5.24	2.0	11.0	0.04	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
56	5.28	2.0	10.9	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
57	4.86	1.7	11.0	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
58	4.62	1.6	11.0	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
59	5.82	1.8	11.0	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
60	3.80	1.8	10.7	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1

DAILY COLUMN LEACH DATA, CLOUD BURST SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days leached	Vol. l.	Conc. lb/ton	pH	Au ppm	Ag ppm	Au ppm	Ag ppm	Cum. oz/t	Cum. %	Cum. oz/t	Cum. %
61	6.44	2.0	11.1	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
62	5.06	1.8	10.9	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
63	5.00	1.8	11.1	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
REST	0.28	1.0	10.8	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
WASH	4.40	1.0	11.0	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
66	4.86	0.3	10.8	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
67	5.34	0.2	10.9	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
68	5.08	0.1	10.7	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
69	4.60	0.1	10.8	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1
70	5.80	<0.1	10.8	0.00	0.00	0.00	0.00	0.0210	53.8	0.010	7.1

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days leached	Vol. l.	Conc. lb/ton	pH	Au ppm	Ag ppm	Au ppm	Ag ppm	Cum. oz/t	Cum. %	Cum. oz/t	Cum. %
START	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.96	1.0	11.9	3.39	1.60	0.00	0.00	0.0065	10.7	0.003	0.8
3	4.22	1.1	11.9	2.91	1.41	0.12	0.08	0.0144	23.6	0.007	1.9
4	6.82	1.5	11.3	1.09	0.66	0.11	0.11	0.0188	30.8	0.010	2.6
5	3.32	1.6	11.7	1.04	0.76	0.06	0.06	0.0206	33.8	0.011	2.9
6	6.30	1.7	11.8	0.95	0.70	0.05	0.08	0.0243	39.8	0.013	3.6
7	5.42	1.8	11.6	0.63	0.49	0.08	0.11	0.0263	43.1	0.015	4.0
8	4.58	2.0	11.8	0.52	0.43	0.00	0.00	0.0276	45.2	0.016	4.3
9	5.56	1.8	11.9	0.37	0.31	0.00	0.00	0.0289	47.4	0.017	4.6
10	4.44	1.7	11.8	0.27	0.23	0.00	0.00	0.0297	48.7	0.018	4.7
11	6.34	1.8	11.5	0.25	0.19	0.00	0.00	0.0307	50.3	0.018	4.9
12	5.26	1.9	11.2	0.19	0.15	0.00	0.00	0.0314	51.5	0.019	5.1
13	5.12	1.9	11.7	0.17	0.13	0.00	0.00	0.0319	52.3	0.019	5.2
14	4.82	2.0	11.9	0.15	0.12	0.00	0.00	0.0324	53.1	0.020	5.3
15	5.64	2.1	12.2	0.12	0.09	0.00	0.00	0.0328	53.8	0.020	5.4
16	5.24	1.9	12.3	0.13	0.09	0.00	0.00	0.0333	54.6	0.020	5.5
17	4.78	1.7	11.7	0.14	0.11	0.00	0.00	0.0337	55.2	0.021	5.6
18	5.50	1.8	11.6	0.09	0.08	0.00	0.00	0.0340	55.7	0.021	5.6
19	5.20	2.2	12.0	0.11	0.07	0.00	0.00	0.0344	56.4	0.021	5.7
20	4.66	1.8	11.5	0.09	0.08	0.00	0.00	0.0347	56.9	0.021	5.8
21	5.64	2.1	11.5	0.08	0.07	0.00	0.00	0.0350	57.4	0.022	5.8
22	4.94	2.0	11.7	0.08	0.07	0.00	0.00	0.0352	57.7	0.022	5.9
23	4.92	1.9	11.6	0.09	0.08	0.00	0.00	0.0355	58.2	0.022	6.0
24	5.68	1.8	11.7	0.06	0.06	0.00	0.00	0.0357	58.5	0.022	6.0
25	4.24	1.9	11.6	0.07	0.06	0.00	0.00	0.0359	58.9	0.022	6.1
26	4.08	1.9	11.5	0.07	0.06	0.00	0.00	0.0361	59.2	0.023	6.1
27	7.02	1.9	11.4	0.05	0.04	0.00	0.00	0.0363	59.5	0.023	6.2
28	5.20	1.8	11.4	0.07	0.05	0.00	0.00	0.0366	60.0	0.023	6.2
29	4.72	1.9	12.1	0.08	0.06	0.00	0.00	0.0368	60.3	0.023	6.3
30	4.96	2.0	11.4	0.08	0.06	0.00	0.00	0.0371	60.8	0.023	6.3
31	5.04	1.6	11.3	0.06	0.06	0.00	0.00	0.0373	61.1	0.024	6.4
32	4.90	2.0	11.3	0.06	0.05	0.00	0.00	0.0374	61.3	0.024	6.4
33	4.50	2.0	11.0	0.05	0.04	0.00	0.00	0.0376	61.6	0.024	6.4
34	5.32	2.0	11.0	0.06	0.05	0.00	0.00	0.0378	62.0	0.024	6.5
35	4.84	1.8	11.4	0.04	0.05	0.00	0.00	0.0379	62.1	0.024	6.5
36	5.60	2.0	11.2	0.06	0.05	0.00	0.00	0.0381	62.5	0.024	6.6
37	4.90	1.8	11.2	0.08	0.05	0.00	0.00	0.0384	63.0	0.024	6.6
38	5.38	2.0	11.2	0.06	0.04	0.00	0.00	0.0386	63.3	0.025	6.6
39	5.06	1.8	11.0	0.04	0.04	0.00	0.00	0.0387	63.4	0.025	6.7
40	5.22	1.9	10.7	0.04	0.04	0.00	0.00	0.0389	63.8	0.025	6.7
41	5.02	1.9	10.5	0.05	0.00	0.00	0.00	0.0390	63.9	0.025	6.7
42	5.46	1.7	10.7	0.00	0.00	0.00	0.00	0.0390	63.9	0.025	6.7
43	4.52	1.9	10.7	0.00	0.00	0.00	0.00	0.0390	63.9	0.025	6.7
44	5.50	2.0	11.2	0.00	0.04	0.00	0.00	0.0390	63.9	0.025	6.8
45	5.58	1.7	11.1	0.00	0.00	0.00	0.00	0.0390	63.9	0.025	6.8
46	5.24	1.8	10.7	0.04	0.04	0.00	0.00	0.0392	64.3	0.025	6.8
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0392	64.3	0.025	6.8
54	4.44	2.0	10.9	0.18	0.13	0.00	0.00	0.0397	65.1	0.026	6.9

DAILY COLUMN LEACH DATA, GRANITE SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
55	5.48	1.8	11.0	0.08	0.07	0.00	0.00	0.0400	65.6	0.026	7.0
56	5.30	1.8	11.0	0.05	0.05	0.00	0.00	0.0401	65.7	0.026	7.0
57	4.96	1.7	11.0	0.04	0.04	0.00	0.00	0.0403	66.1	0.026	7.1
58	5.50	1.9	11.0	0.00	0.04	0.00	0.00	0.0403	66.1	0.026	7.1
59	5.18	1.8	11.0	0.00	0.04	0.00	0.00	0.0403	66.1	0.026	7.1
60	5.22	1.1	10.9	0.00	0.00	0.00	0.00	0.0403	66.1	0.026	7.1
61	5.18	2.0	11.0	0.00	0.04	0.00	0.00	0.0403	66.1	0.027	7.2
62	5.30	2.2	10.8	0.00	0.00	0.00	0.00	0.0403	66.1	0.027	7.2
63	5.18	2.0	11.1	0.00	0.00	0.00	0.00	0.0403	66.1	0.027	7.2
64	4.56	1.9	10.9	0.00	0.04	0.00	0.00	0.0403	66.1	0.027	7.2
65	5.46	1.9	10.8	0.04	0.00	0.00	0.00	0.0404	66.2	0.027	7.2
66	5.22	1.9	10.8	0.00	0.00	0.00	0.00	0.0404	66.2	0.027	7.2
67	4.56	1.9	10.8	0.00	0.00	0.00	0.00	0.0404	66.2	0.027	7.2
68	5.80	1.9	10.8	0.00	0.04	0.00	0.00	0.0404	66.2	0.027	7.2
69	5.08	1.9	10.9	0.00	0.00	0.00	0.00	0.0404	66.2	0.027	7.2
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0404	66.2	0.027	7.2
77	4.34	1.6	10.8	0.09	0.10	0.00	0.00	0.0407	66.7	0.027	7.3
78	5.40	1.8	10.7	0.05	0.05	0.00	0.00	0.0408	66.9	0.027	7.4
79	5.10	1.8	10.7	0.00	0.06	0.00	0.00	0.0408	66.9	0.027	7.4
80	5.08	1.7	10.6	0.00	0.00	0.00	0.00	0.0408	66.9	0.027	7.4
81	5.32	1.8	10.8	0.00	0.00	0.00	0.00	0.0408	66.9	0.027	7.4
82	5.16	2.0	10.8	0.00	0.04	0.00	0.00	0.0408	66.9	0.030	8.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0408	66.9	0.030	8.1
WASH	4.44	1.3	10.7	0.04	0.00	0.00	0.00	0.0410	67.2	0.030	8.1
85	5.06	0.2	10.7	0.00	0.00	0.00	0.00	0.0410	67.2	0.030	8.1
86	4.66	0.1	10.7	0.00	0.00	0.00	0.00	0.0410	67.2	0.030	8.1
87	4.96	0.1	10.7	0.00	0.00	0.00	0.00	0.0410	67.2	0.030	8.1
88	5.36	0.1	11.0	0.00	0.00	0.00	0.00	0.0410	67.2	0.030	8.1
89	5.04	<0.1	10.7	0.00	0.00	0.00	0.00	0.0410	67.2	0.030	8.1

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days leached	Vol. l.	Conc. lb/ton	pH	Au ppm	Ag ppm	Au ppm	Ag ppm	Cum. oz/t	Cum. %	Cum. oz/t	Cum. %
START	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.90	1.0	12.2	1.14	0.76	0.00	0.00	0.0029	2.1	0.002	0.8
3	5.08	1.2	12.1	2.61	0.46	0.00	0.00	0.0114	8.1	0.003	1.2
4	5.00	1.3	11.6	1.89	0.62	0.00	0.00	0.0175	12.5	0.005	2.0
5	5.10	1.4	11.9	1.14	0.53	0.00	0.00	0.0212	15.1	0.007	2.8
6	4.40	1.7	12.0	1.21	0.55	0.00	0.00	0.0246	17.6	0.009	3.6
7	5.46	1.6	11.9	0.68	0.30	0.00	0.00	0.0270	19.3	0.010	4.0
8	5.26	1.9	12.0	0.66	0.30	0.00	0.00	0.0293	20.9	0.011	4.4
9	5.12	1.8	12.2	0.58	0.27	0.00	0.00	0.0312	22.3	0.012	4.8
10	4.44	1.7	11.8	0.58	0.27	0.00	0.00	0.0328	23.4	0.012	4.8
11	5.58	1.8	11.7	0.39	0.17	0.00	0.00	0.0342	24.4	0.013	5.2
12	5.50	1.9	11.5	0.32	0.14	0.00	0.00	0.0354	25.3	0.014	5.6
13	5.10	2.0	11.6	0.37	0.16	0.00	0.00	0.0366	26.1	0.014	5.6
14	4.66	1.9	12.0	0.52	0.19	0.00	0.00	0.0381	27.2	0.015	6.0
15	5.78	1.9	12.0	0.34	0.13	0.00	0.00	0.0394	28.1	0.015	6.0
16	5.10	1.8	12.0	0.42	0.15	0.00	0.00	0.0408	29.1	0.016	6.4
17	5.06	1.9	11.9	0.34	0.15	0.00	0.00	0.0419	29.9	0.016	6.4
18	4.88	1.9	11.9	0.28	0.13	0.00	0.00	0.0428	30.6	0.017	6.8
19	4.76	1.9	11.9	0.30	0.13	0.00	0.00	0.0437	31.2	0.017	6.8
20	5.54	2.0	11.6	0.15	0.07	0.00	0.00	0.0442	31.6	0.017	6.8
21	4.82	2.0	11.7	0.22	0.11	0.00	0.00	0.0449	32.1	0.017	6.8
22	4.54	1.8	11.9	0.18	0.10	0.00	0.00	0.0454	32.4	0.018	7.2
23	5.78	1.9	11.8	0.15	0.08	0.00	0.00	0.0460	32.9	0.018	7.2
24	4.96	2.0	11.9	0.18	0.09	0.00	0.00	0.0466	33.3	0.018	7.2
25	4.88	1.9	11.8	0.17	0.08	0.00	0.00	0.0471	33.6	0.019	7.6
26	4.86	1.8	11.8	0.16	0.08	0.00	0.00	0.0476	34.0	0.019	7.6
27	5.66	1.9	11.6	0.13	0.06	0.00	0.00	0.0481	34.4	0.019	7.6
28	5.00	1.9	11.6	0.14	0.07	0.00	0.00	0.0485	34.6	0.019	7.6
29	5.00	2.0	11.7	0.13	0.08	0.00	0.00	0.0490	35.0	0.020	8.0
30	4.86	1.9	11.7	0.16	0.08	0.00	0.00	0.0495	35.4	0.020	8.0
31	4.66	1.9	11.5	0.13	0.07	0.00	0.00	0.0498	35.6	0.020	8.0
32	5.16	1.8	11.6	0.11	0.07	0.00	0.00	0.0502	35.9	0.020	8.0
33	5.20	2.0	11.3	0.13	0.05	0.00	0.00	0.0506	36.1	0.020	8.0
34	5.10	1.9	11.3	0.12	0.06	0.00	0.00	0.0510	36.4	0.021	8.4
35	5.22	1.9	11.7	0.08	0.06	0.00	0.00	0.0513	36.6	0.021	8.4
36	5.22	2.0	11.4	0.12	0.05	0.00	0.00	0.0517	36.9	0.021	8.4
37	5.12	2.0	11.4	0.11	0.06	0.00	0.00	0.0521	37.2	0.021	8.4
38	5.02	1.8	11.4	0.15	0.07	0.00	0.00	0.0526	37.6	0.021	8.4
39	5.30	2.0	11.2	0.10	0.00	0.00	0.00	0.0529	37.8	0.021	8.4
40	5.02	1.9	11.3	0.10	0.04	0.00	0.00	0.0532	38.0	0.022	8.8
41	4.64	1.9	11.1	0.14	0.05	0.00	0.00	0.0536	38.3	0.022	8.8
42	5.00	1.8	11.2	0.09	0.05	0.00	0.00	0.0539	38.5	0.022	8.8
43	5.42	2.0	11.3	0.10	0.05	0.00	0.00	0.0543	38.8	0.022	8.8
44	5.72	1.9	11.4	0.08	0.00	0.00	0.00	0.0546	39.0	0.022	8.8
45	4.96	1.8	11.3	0.09	0.04	0.00	0.00	0.0549	39.2	0.022	8.8
46	4.98	1.9	11.0	0.10	0.04	0.00	0.00	0.0552	39.4	0.022	8.8
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0552	39.4	0.022	8.8
54	4.36	1.8	11.1	0.40	0.17	0.00	0.00	0.0563	40.2	0.023	9.2

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
55	5.04	1.9	11.2	0.21	0.09	0.00	0.00	0.0570	40.7	0.023	9.2
56	5.60	1.9	11.0	0.12	0.05	0.00	0.00	0.0574	41.0	0.023	9.2
57	4.76	1.9	11.2	0.10	0.04	0.00	0.00	0.0577	41.2	0.023	9.2
58	5.16	1.8	11.2	0.08	0.04	0.00	0.00	0.0580	41.4	0.024	9.6
59	4.96	1.8	11.2	0.08	0.04	0.00	0.00	0.0582	41.6	0.024	9.6
60	4.92	2.2	11.2	0.09	0.04	0.00	0.00	0.0585	41.8	0.024	9.6
61	5.76	1.5	11.2	0.09	0.04	0.00	0.00	0.0589	42.1	0.024	9.6
62	5.28	2.1	11.0	0.06	0.00	0.00	0.00	0.0591	42.2	0.024	9.6
63	4.92	2.0	11.2	0.07	0.04	0.00	0.00	0.0593	42.4	0.024	9.6
64	4.92	2.0	11.0	0.08	0.04	0.00	0.00	0.0595	42.5	0.024	9.6
65	5.10	1.8	11.0	0.07	0.04	0.00	0.00	0.0598	42.7	0.024	9.6
66	5.06	2.0	11.0	0.07	0.00	0.00	0.00	0.0600	42.9	0.024	9.6
67	5.18	1.9	10.9	0.09	0.00	0.00	0.00	0.0603	43.1	0.024	9.6
68	5.16	1.9	10.9	0.07	0.00	0.00	0.00	0.0605	43.2	0.024	9.6
69	5.04	1.9	11.0	0.06	0.00	0.00	0.00	0.0607	43.4	0.024	9.6
70	5.76	1.8	11.1	0.05	0.00	0.00	0.00	0.0609	43.5	0.024	9.6
71	5.02	1.9	11.2	0.06	0.00	0.00	0.00	0.0611	43.6	0.024	9.6
72	5.36	1.8	10.9	0.07	0.00	0.00	0.00	0.0613	43.8	0.024	9.6
73	5.12	1.9	10.8	0.06	0.00	0.00	0.00	0.0615	43.9	0.024	9.6
74	4.82	1.8	10.9	0.07	0.04	0.00	0.00	0.0618	44.1	0.024	9.6
75	5.40	2.0	10.8	0.05	0.00	0.00	0.00	0.0619	44.2	0.024	9.6
76	5.10	1.8	10.9	0.06	0.00	0.00	0.00	0.0621	44.4	0.024	9.6
77	5.00	1.8	10.8	0.06	0.04	0.00	0.00	0.0623	44.5	0.025	10.0
78	4.84	1.9	10.8	0.08	0.05	0.00	0.00	0.0626	44.7	0.025	10.0
79	5.22	1.8	10.8	0.05	0.04	0.00	0.00	0.0627	44.8	0.025	10.0
80	5.14	1.6	10.8	0.05	0.00	0.00	0.00	0.0629	44.9	0.025	10.0
81	5.00	2.2	10.9	0.06	0.04	0.00	0.00	0.0631	45.1	0.025	10.0
82	5.18	1.9	10.8	0.05	0.04	0.00	0.00	0.0633	45.2	0.025	10.0
83	5.04	2.0	10.6	0.05	0.04	0.00	0.00	0.0634	45.3	0.025	10.0
84	5.18	1.8	10.6	0.09	0.04	0.00	0.00	0.0637	45.5	0.025	10.0
85	4.84	1.9	10.8	0.09	0.05	0.00	0.00	0.0640	45.7	0.026	10.4
86	5.10	2.0	10.7	0.07	0.04	0.00	0.00	0.0642	45.9	0.026	10.4
87	4.82	1.9	10.8	0.08	0.05	0.00	0.00	0.0645	46.1	0.026	10.4
88	5.00	1.6	10.9	0.06	0.04	0.00	0.00	0.0647	46.2	0.026	10.4
89	5.26	1.8	10.7	0.06	0.04	0.00	0.00	0.0649	46.4	0.026	10.4
90	4.94	1.9	10.7	0.07	0.06	0.00	0.00	0.0651	46.5	0.026	10.4
91	4.82	1.9	10.7	0.08	0.05	0.00	0.00	0.0654	46.7	0.026	10.4
92	5.32	1.9	10.7	0.05	0.04	0.00	0.00	0.0655	46.8	0.027	10.8
93	4.62	1.9	10.7	0.07	0.05	0.00	0.00	0.0657	46.9	0.027	10.8
94	5.04	1.8	10.8	0.06	0.04	0.00	0.00	0.0659	47.1	0.027	10.8
95	5.22	1.8	10.8	0.05	0.05	0.00	0.00	0.0661	47.2	0.027	10.8
96	4.86	1.8	10.7	0.06	0.06	0.00	0.04	0.0663	47.4	0.027	10.8
97	5.32	1.7	10.8	0.06	0.07	0.00	0.00	0.0665	47.5	0.027	10.8
98	5.10	1.9	10.7	0.06	0.05	0.00	0.00	0.0667	47.6	0.027	10.8
99	4.92	1.8	10.7	0.07	0.05	0.00	0.00	0.0669	47.8	0.028	11.2
100	5.12	1.9	10.6	0.06	0.05	0.00	0.00	0.0671	47.9	0.028	11.2
101	5.06	1.8	10.7	0.06	0.05	0.00	0.04	0.0673	48.1	0.028	11.2
102	4.80	1.8	10.7	0.06	0.06	0.00	0.00	0.0675	48.2	0.028	11.2

DAILY COLUMN LEACH DATA, QUARTZ VEIN SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
103	5.10	1.9	10.6	0.06	0.06	0.00	0.00	0.0677	48.4	0.028	11.2
104	5.40	1.8	10.7	0.04	0.04	0.00	0.00	0.0678	48.4	0.028	11.2
105	4.98	1.8	10.7	0.05	0.06	0.00	0.00	0.0680	48.6	0.029	11.6
106	4.96	1.9	10.7	0.05	0.05	0.00	0.00	0.0681	48.6	0.029	11.6
107	4.68	1.8	10.6	0.06	0.05	0.00	0.00	0.0683	48.8	0.029	11.6
108	5.08	1.9	10.6	0.04	0.04	0.00	0.00	0.0685	48.9	0.029	11.6
109	5.20	1.6	10.6	0.05	0.04	0.00	0.00	0.0686	49.0	0.029	11.6
110	5.52	1.9	10.7	0.06	0.04	0.00	0.00	0.0688	49.1	0.029	11.6
111	5.48	1.9	10.6	0.04	0.04	0.00	0.00	0.0690	49.3	0.029	11.6
112	5.10	1.8	10.6	0.06	0.04	0.00	0.00	0.0692	49.4	0.030	12.0
113	5.16	1.9	10.6	0.05	0.06	0.00	0.00	0.0693	49.5	0.030	12.0
114	4.68	1.8	10.6	0.06	0.05	0.00	0.04	0.0695	49.6	0.030	12.0
115	5.58	1.8	10.5	0.04	0.04	0.00	0.00	0.0697	49.8	0.030	12.0
116	5.06	1.9	10.4	0.04	0.05	0.00	0.00	0.0698	49.9	0.030	12.0
117	5.06	1.9	10.5	0.05	0.05	0.00	0.04	0.0700	50.0	0.030	12.0
118	4.50	2.0	10.6	0.05	0.05	0.00	0.04	0.0701	50.1	0.030	12.0
119	5.16	2.0	10.6	0.05	0.06	0.00	0.05	0.0703	50.2	0.030	12.0
120	5.02	1.9	10.5	0.05	0.06	0.00	0.05	0.0704	50.3	0.030	12.0
121	4.92	1.8	10.4	0.06	0.07	0.00	0.04	0.0706	50.4	0.030	12.0
122	5.14	1.9	10.5	0.06	0.07	0.00	0.05	0.0708	50.6	0.030	12.0
123	4.74	1.9	10.5	0.05	0.09	0.00	0.04	0.0710	50.7	0.030	12.0
124	5.38	1.9	10.5	0.06	0.07	0.00	0.05	0.0712	50.9	0.030	12.0
125	5.08	1.9	10.5	0.05	0.07	0.00	0.00	0.0713	50.9	0.030	12.0
126	5.00	2.0	10.6	0.05	0.05	0.00	0.00	0.0715	51.1	0.030	12.0
127	5.16	1.7	10.5	0.04	0.00	0.00	0.00	0.0716	51.1	0.030	12.0
128	4.78	1.9	10.4	0.05	0.05	0.00	0.00	0.0718	51.3	0.030	12.0
129	5.04	1.8	10.4	0.04	0.00	0.00	0.00	0.0719	51.4	0.030	12.0
130	5.14	1.6	10.7	0.04	0.00	0.00	0.00	0.0721	51.5	0.030	12.0
131	4.96	1.9	10.6	0.04	0.00	0.00	0.00	0.0722	51.6	0.030	12.0
132	5.30	1.8	10.5	0.04	0.00	0.00	0.00	0.0723	51.6	0.030	12.0
133	5.06	1.7	10.4	0.04	0.04	0.00	0.00	0.0724	51.7	0.030	12.0
134	5.14	1.9	10.3	0.04	0.00	0.00	0.00	0.0726	51.9	0.030	12.0
135	4.80	1.9	10.4	0.00	0.00	0.00	0.00	0.0726	51.9	0.030	12.0
136	5.12	1.8	10.4	0.00	0.00	0.00	0.00	0.0726	51.9	0.030	12.0
137	4.82	1.9	10.4	0.04	0.00	0.00	0.00	0.0727	51.9	0.030	12.0
138	5.22	1.8	10.5	0.04	0.04	0.00	0.00	0.0728	52.0	0.030	12.0
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0728	52.0	0.030	12.0
WASH	5.20	1.2	10.4	0.06	0.05	0.00	0.00	0.0730	52.1	0.030	12.0
141	5.20	0.2	10.0	0.00	0.00	0.00	0.00	0.0730	52.1	0.030	12.0
142	4.78	0.1	9.8	0.00	0.00	0.00	0.00	0.0730	52.1	0.030	12.0
143	3.82	0.1	9.6	0.00	0.00	0.00	0.00	0.0730	52.1	0.030	12.0
144	5.22	<0.1	9.7	0.00	0.00	0.00	0.00	0.0730	52.1	0.030	12.0

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days	Vol.	Conc.		Au	Ag	Au	Ag	Cum.	Cum.	Cum.	Cum.
leached	l.	lb/ton	pH	ppm	ppm	ppm	ppm	oz/t	%	oz/t	%
START	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.78	0.1	11.3	0.48	0.00	0.00	0.00	0.0009	3.2	0.000	0.0
3	4.74	1.3	11.5	1.10	0.00	0.00	0.00	0.0042	15.0	0.000	0.0
4	5.74	0.6	11.1	1.41	0.22	0.00	0.00	0.0095	33.9	0.001	0.7
5	4.84	0.8	11.3	0.57	0.33	0.00	0.00	0.0113	40.4	0.002	1.6
6	4.34	1.2	11.5	0.39	0.38	0.00	0.00	0.0124	44.3	0.003	2.4
7	6.34	1.6	11.3	0.16	0.21	0.00	0.00	0.0130	46.4	0.004	3.2
8	4.58	1.5	11.6	0.23	0.37	0.00	0.00	0.0137	48.9	0.005	4.1
9	5.74	1.6	11.6	0.11	0.19	0.00	0.00	0.0141	50.4	0.006	4.7
10	5.16	1.6	11.3	0.11	0.21	0.00	0.00	0.0145	51.8	0.006	5.3
11	4.62	1.7	11.3	0.12	0.22	0.00	0.00	0.0148	52.9	0.007	5.8
12	5.64	1.8	11.0	0.08	0.13	0.00	0.00	0.0151	53.9	0.007	6.2
13	4.72	1.6	11.5	0.09	0.16	0.00	0.00	0.0154	55.0	0.008	6.6
14	4.98	2.0	11.6	0.07	0.11	0.00	0.00	0.0156	55.7	0.008	6.9
15	5.80	1.9	11.9	0.04	0.06	0.00	0.00	0.0158	56.4	0.009	7.1
16	5.26	1.8	11.8	0.05	0.07	0.00	0.00	0.0159	56.8	0.009	7.3
17	4.72	1.8	11.4	0.06	0.09	0.00	0.00	0.0161	57.5	0.009	7.5
18	4.88	1.7	11.3	0.05	0.06	0.00	0.00	0.0163	58.2	0.009	7.7
19	4.34	1.7	11.7	0.06	0.07	0.00	0.00	0.0164	58.6	0.009	7.8
20	5.70	1.8	11.3	0.04	0.05	0.00	0.00	0.0166	59.3	0.010	8.0
21	5.84	1.8	11.3	0.04	0.00	0.00	0.00	0.0167	59.6	0.010	8.0
22	5.24	1.9	11.5	0.04	0.04	0.00	0.00	0.0169	60.4	0.010	8.1
23	5.14	1.9	11.4	0.04	0.04	0.00	0.00	0.0170	60.7	0.010	8.2
24	4.90	1.9	11.4	0.04	0.05	0.00	0.00	0.0171	61.1	0.010	8.3
25	4.78	1.7	11.4	0.04	0.04	0.00	0.00	0.0173	61.8	0.010	8.4
26	4.18	1.8	11.3	0.00	0.04	0.00	0.00	0.0173	61.8	0.010	8.5
27	5.44	1.8	11.3	0.00	0.04	0.00	0.00	0.0173	61.8	0.010	8.7
28	4.84	1.8	11.1	0.04	0.04	0.00	0.00	0.0174	62.1	0.010	8.3
29	4.62	2.0	11.0	0.00	0.04	0.00	0.00	0.0174	62.1	0.010	8.3
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0174	62.1	0.010	8.3
37	5.20	1.5	10.7	0.08	0.11	0.00	0.00	0.0177	63.2	0.010	8.3
38	4.38	1.7	11.0	0.06	0.05	0.00	0.00	0.0178	63.6	0.010	8.3
39	5.82	1.7	10.9	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
40	5.22	1.8	11.1	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
41	5.00	2.0	11.2	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
42	4.90	1.7	11.1	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
43	4.84	1.9	11.2	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
44	4.92	1.8	11.0	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
45	5.52	1.7	11.0	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
46	4.60	1.7	10.7	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0178	63.6	0.010	8.3
54	5.08	1.2	10.5	0.06	0.09	0.00	0.00	0.0180	64.3	0.010	8.3
55	5.42	1.7	10.9	0.00	0.04	0.00	0.00	0.0180	64.3	0.010	8.3
56	5.08	1.8	10.8	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
57	4.92	2.0	11.0	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
58	5.38	1.9	10.9	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
59	5.98	1.8	11.0	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
60	5.08	1.9	10.8	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3

DAILY COLUMN LEACH DATA, RHYOLITE SURFACE BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
61	5.58	2.0	10.9	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
62	5.06	1.9	10.8	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
63	4.98	1.7	11.0	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
REST	0.48	1.0	10.3	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
WASH	4.44	1.1	10.7	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
66	4.96	0.3	10.7	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
67	5.42	0.1	10.8	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
68	5.48	0.1	10.7	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3
69	5.22	<0.1	10.8	0.00	0.00	0.00	0.00	0.0180	64.3	0.010	8.3

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED SIZE

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days leached	Vol. l.	Conc. lb/ton	pH	Au ppm	Ag ppm	Au ppm	Ag ppm	Cum. oz/t	Cum. %	Cum. oz/t	Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.14	0.5	11.3	1.16	2.59	0.00	0.00	0.0016	3.9	0.004	1.1
3	5.42	1.3	11.2	1.45	2.37	0.00	0.07	0.0067	16.3	0.012	3.3
4	3.80	1.7	11.2	0.75	1.27	0.00	0.00	0.0085	20.7	0.015	4.2
5	6.60	1.7	11.2	0.47	0.76	0.00	0.00	0.0106	25.9	0.018	5.0
6	5.40	1.7	11.4	0.27	0.43	0.00	0.00	0.0115	28.0	0.020	5.6
7	5.32	1.8	11.3	0.21	0.29	0.00	0.00	0.0122	29.8	0.021	5.8
8	5.14	2.0	11.3	0.18	0.25	0.00	0.00	0.0128	31.2	0.021	5.8
9	4.52	1.9	11.5	0.18	0.22	0.00	0.00	0.0133	32.4	0.022	6.1
10	5.56	1.9	11.4	0.12	0.16	0.00	0.00	0.0138	33.7	0.023	6.4
11	5.12	1.9	11.4	0.12	0.14	0.00	0.00	0.0142	34.6	0.023	6.4
12	4.94	1.8	11.4	0.10	0.12	0.00	0.00	0.0145	35.4	0.023	6.4
13	5.08	2.0	11.4	0.08	0.10	0.00	0.00	0.0148	36.1	0.024	6.7
14	4.98	1.9	11.2	0.09	0.09	0.04	0.00	0.0150	36.6	0.024	6.7
15	4.86	2.0	11.4	0.08	0.08	0.00	0.00	0.0152	37.1	0.024	6.7
16	5.44	1.9	11.3	0.06	0.07	0.00	0.00	0.0154	37.6	0.025	6.9
17	5.12	1.7	11.1	0.06	0.06	0.00	0.00	0.0156	38.0	0.025	6.9
18	4.98	1.9	11.1	0.06	0.06	0.00	0.00	0.0158	38.5	0.025	6.9
19	4.88	2.0	11.0	0.06	0.05	0.00	0.00	0.0160	39.0	0.025	6.9
20	5.20	2.0	11.7	0.05	0.05	0.00	0.00	0.0161	39.3	0.025	6.9
21	5.06	2.0	11.2	0.05	0.05	0.00	0.00	0.0163	39.8	0.025	6.9
22	5.78	1.9	11.3	0.04	0.05	0.00	0.00	0.0164	40.0	0.026	7.2
23	5.14	1.7	11.0	0.04	0.04	0.00	0.00	0.0166	40.5	0.026	7.2
24	4.84	1.8	11.1	0.05	0.05	0.00	0.00	0.0167	40.7	0.026	7.2
25	5.12	1.9	11.0	0.05	0.05	0.00	0.00	0.0169	41.2	0.026	7.2
26	5.16	1.7	11.0	0.04	0.04	0.00	0.00	0.0170	41.5	0.026	7.2
27	5.00	1.9	11.0	0.04	0.04	0.00	0.00	0.0172	42.0	0.026	7.2
28	3.50	1.9	10.5	0.06	0.05	0.00	0.00	0.0173	42.2	0.026	7.2
29	5.04	2.0	11.0	0.00	0.05	0.00	0.00	0.0173	42.2	0.027	7.5
30	5.76	1.8	11.0	0.00	0.05	0.00	0.00	0.0173	42.2	0.027	7.5
31	4.64	1.8	11.0	0.00	0.04	0.00	0.00	0.0173	42.2	0.027	7.5
32	5.24	2.0	10.9	0.04	0.05	0.00	0.00	0.0174	42.4	0.027	7.5
33	5.08	2.0	11.1	0.00	0.05	0.00	0.00	0.0174	42.4	0.027	7.5
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0174	42.4	0.027	7.5
41	4.54	1.5	10.9	0.17	0.13	0.00	0.05	0.0179	43.7	0.028	7.8
42	4.94	1.4	11.0	0.05	0.07	0.00	0.07	0.0181	44.1	0.028	7.8
43	4.60	1.8	10.9	0.05	0.08	0.00	0.06	0.0182	44.4	0.028	7.8
44	5.64	1.8	10.9	0.00	0.07	0.00	0.06	0.0182	44.4	0.028	7.8
45	4.22	1.7	10.8	0.05	0.08	0.00	0.05	0.0184	44.9	0.028	7.8
46	4.12	1.7	10.8	0.00	0.07	0.00	0.05	0.0184	44.9	0.028	7.8
47	4.60	1.8	11.0	0.00	0.08	0.00	0.00	0.0184	44.9	0.028	7.8
48	6.22	1.8	10.9	0.00	0.07	0.00	0.00	0.0184	44.9	0.028	7.8
49	5.82	1.5	11.0	0.00	0.07	0.00	0.00	0.0184	44.9	0.029	8.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0184	44.9	0.029	8.1
57	3.04	1.4	10.8	0.13	0.15	0.00	0.00	0.0186	45.4	0.029	8.1
58	3.90	1.6	10.7	0.07	0.10	0.00	0.00	0.0188	45.9	0.029	8.1
59	7.06	1.8	10.7	0.00	0.06	0.00	0.06	0.0188	45.9	0.029	8.1
60	4.90	1.7	10.7	0.00	0.07	0.00	0.04	0.0188	45.9	0.029	8.1

DAILY COLUMN LEACH DATA, RHYOLITE UNDERGROUND BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED SIZE

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
61	5.06	1.6	10.8	0.00	0.05	0.00	0.00	0.0188	45.9	0.029	8.1
62	5.02	1.9	10.8	0.00	0.06	0.00	0.04	0.0188	45.9	0.030	8.3
63	4.64	1.9	10.7	0.00	0.07	0.00	0.04	0.0188	45.9	0.030	8.3
64	4.72	1.8	10.7	0.00	0.06	0.00	0.00	0.0188	45.9	0.030	8.3
REST	1.10	1.3	10.4	0.00	0.07	0.00	0.00	0.0188	45.9	0.030	8.3
WASH	1.98	1.4	10.5	0.04	0.07	0.00	0.00	0.0190	46.3	0.030	8.3
67	6.10	0.5	10.6	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
68	4.36	0.1	10.6	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
69	7.04	0.1	10.8	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
70	4.88	0.1	10.8	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
71	5.32	0.1	10.7	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
72	5.00	0.1	10.4	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
73	3.30	0.1	10.3	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
74	4.96	0.1	10.4	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
75	4.10	<0.1	10.0	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3
76	7.52	<0.1	10.0	0.00	0.00	0.00	0.00	0.0190	46.3	0.030	8.3

DAILY COLUMN LEACH DATA, RHYLOITE BRECCIA UNDERGROUND BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED SIZE

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	3.40	1.2	11.7	2.09	1.48	0.00	0.00	0.0046	6.2	0.003	1.0
3	4.72	1.5	11.6	1.59	1.22	0.08	0.09	0.0094	12.7	0.007	2.1
4	5.66	1.7	11.5	1.03	0.90	0.05	0.09	0.0129	17.4	0.010	3.0
5	5.72	1.8	11.4	0.67	0.64	0.00	0.00	0.0152	20.5	0.012	3.6
6	5.04	1.9	11.6	0.47	0.50	0.00	0.06	0.0167	22.6	0.014	4.1
7	5.70	2.0	11.5	0.46	0.45	0.05	0.09	0.0184	24.9	0.015	4.6
8	5.42	1.8	11.5	0.40	0.40	0.00	0.07	0.0196	26.5	0.016	4.9
9	5.12	1.8	11.6	0.39	0.38	0.00	0.00	0.0209	28.2	0.017	5.2
10	5.12	1.8	11.6	0.29	0.30	0.00	0.00	0.0219	29.6	0.018	5.5
11	5.36	2.0	11.6	0.21	0.22	0.00	0.00	0.0226	30.5	0.019	5.7
12	5.34	1.8	11.5	0.19	0.19	0.06	0.07	0.0233	31.5	0.020	5.9
13	5.38	1.8	11.7	0.25	0.25	0.00	0.06	0.0239	32.3	0.020	6.1
14	4.70	2.0	11.4	0.25	0.25	0.00	0.05	0.0247	33.4	0.021	6.3
15	5.92	2.0	11.6	0.21	0.22	0.04	0.09	0.0255	34.5	0.021	6.5
16	5.42	1.8	11.5	0.16	0.19	0.04	0.07	0.0259	35.0	0.022	6.6
17	5.50	1.8	11.5	0.17	0.19	0.00	0.04	0.0264	35.7	0.022	6.7
18	5.52	1.9	11.3	0.13	0.14	0.00	0.00	0.0268	36.2	0.023	6.8
19	4.64	2.0	11.3	0.18	0.17	0.00	0.00	0.0274	37.0	0.023	7.0
20	6.38	1.8	11.3	0.09	0.11	0.00	0.00	0.0277	37.4	0.023	7.1
21	4.82	1.8	11.5	0.19	0.17	0.00	0.00	0.0283	38.2	0.024	7.3
22	6.08	1.8	11.5	0.12	0.12	0.00	0.00	0.0288	38.9	0.024	7.4
23	5.80	1.8	11.0	0.08	0.08	0.00	0.00	0.0291	39.3	0.025	7.5
24	5.58	1.9	11.3	0.08	0.08	0.00	0.00	0.0294	39.7	0.025	7.6
25	5.40	1.9	11.2	0.10	0.08	0.00	0.00	0.0297	40.1	0.025	7.7
26	5.40	1.9	11.2	0.09	0.07	0.00	0.00	0.0300	40.5	0.026	7.8
27	4.38	1.7	11.1	0.13	0.11	0.00	0.00	0.0304	41.1	0.026	7.8
28	5.92	1.3	11.2	0.09	0.08	0.00	0.04	0.0307	41.5	0.026	7.9
29	5.14	1.9	11.1	0.08	0.08	0.00	0.00	0.0310	41.9	0.026	8.0
30	6.04	2.0	11.1	0.08	0.08	0.00	0.00	0.0313	42.3	0.027	8.1
31	5.58	1.9	11.1	0.07	0.08	0.00	0.00	0.0316	42.7	0.027	8.2
32	5.20	2.0	11.1	0.08	0.06	0.00	0.00	0.0318	43.0	0.027	8.2
33	4.96	1.8	11.2	0.07	0.07	0.00	0.04	0.0321	43.4	0.027	8.3
34	6.02	1.8	11.1	0.04	0.06	0.00	0.00	0.0322	43.5	0.027	8.3
35	5.56	1.8	11.0	0.06	0.06	0.00	0.00	0.0324	43.8	0.028	8.4
36	5.06	1.8	10.9	0.07	0.07	0.00	0.00	0.0327	44.2	0.028	8.5
37	4.96	1.9	11.0	0.09	0.08	0.00	0.00	0.0329	44.5	0.028	8.5
38	4.76	1.8	10.9	0.07	0.07	0.00	0.00	0.0332	44.9	0.028	8.6
39	5.88	1.8	11.0	0.05	0.05	0.00	0.00	0.0333	45.0	0.029	8.6
40	5.36	1.8	11.2	0.07	0.07	0.00	0.00	0.0336	45.4	0.029	8.7
41	6.20	1.7	11.0	0.05	0.05	0.00	0.00	0.0338	45.7	0.029	8.8
42	5.30	1.9	11.0	0.06	0.06	0.00	0.05	0.0340	45.9	0.029	8.8
43	4.02	1.8	11.0	0.08	0.09	0.00	0.04	0.0342	46.2	0.029	8.9
44	6.50	1.8	11.0	0.06	0.06	0.00	0.00	0.0345	46.6	0.029	8.9
45	4.70	1.8	10.9	0.07	0.08	0.00	0.00	0.0347	46.9	0.030	9.0
46	4.58	1.8	11.0	0.06	0.07	0.00	0.00	0.0348	47.0	0.030	9.0
47	5.76	1.7	11.1	0.05	0.05	0.00	0.04	0.0350	47.3	0.030	9.1
48	4.86	1.8	10.7	0.05	0.06	0.00	0.04	0.0352	47.6	0.030	9.1

DAILY COLUMN LEACH DATA, RHYLOITE BRECCIA UNDERGROUND BULK ORE,
80 PERCENT MINUS 1/4 INCH FEED SIZE

	Preg. Solution			Solution Analysis				Au Ext.		Ag Ext.	
		NaCN		preg		barren		Au	Au	Ag	Ag
Days	Vol.	Conc.		Au	Ag	Au	Ag	Cum.	Cum.	Cum.	Cum.
leached	l.	lb/ton	pH	ppm	ppm	ppm	ppm	oz/t	%	oz/t	%
49	5.42	1.9	11.1	0.06	0.08	0.00	0.04	0.0354	47.8	0.030	9.2
50	5.34	1.8	10.9	0.06	0.07	0.00	0.00	0.0356	48.1	0.030	9.2
51	4.62	1.8	10.9	0.06	0.07	0.00	0.00	0.0358	48.4	0.031	9.2
52	4.66	1.5	10.9	0.06	0.07	0.00	0.00	0.0360	48.6	0.031	9.3
53	5.98	1.6	10.9	0.04	0.05	0.00	0.00	0.0361	48.8	0.031	9.4
54	4.76	1.8	10.9	0.04	0.06	0.00	0.00	0.0362	48.9	0.031	9.4
55	6.06	1.8	10.9	0.04	0.06	0.00	0.04	0.0364	49.2	0.031	9.5
56	5.44	1.9	10.9	0.04	0.07	0.00	0.04	0.0365	49.3	0.031	9.5
57	5.26	1.7	10.9	0.05	0.08	0.00	0.04	0.0367	49.6	0.032	9.6
58	5.30	1.8	10.9	0.07	0.07	0.00	0.00	0.0369	49.9	0.032	9.6
59	5.50	1.7	10.8	0.04	0.06	0.00	0.00	0.0371	50.1	0.032	9.7
60	5.32	1.7	10.8	0.04	0.05	0.00	0.00	0.0372	50.3	0.032	9.7
61	4.98	1.5	10.8	0.04	0.05	0.00	0.00	0.0373	50.4	0.032	9.8
62	5.40	1.8	10.8	0.05	0.05	0.00	0.04	0.0375	50.7	0.032	9.8
63	5.64	1.8	10.8	0.04	0.06	0.00	0.05	0.0377	50.9	0.032	9.8
64	4.60	1.7	10.8	0.05	0.07	0.00	0.04	0.0378	51.1	0.033	9.8
65	5.58	1.8	10.8	0.05	0.08	0.00	0.00	0.0380	51.4	0.033	9.9
66	4.22	1.7	10.7	0.06	0.07	0.00	0.00	0.0382	51.6	0.033	10.0
67	7.28	1.8	10.7	0.09	0.10	0.00	0.00	0.0386	52.2	0.033	10.1
68	4.92	1.8	10.7	0.07	0.09	0.00	0.05	0.0388	52.4	0.034	10.2
69	5.10	1.7	10.8	0.04	0.09	0.00	0.04	0.0389	52.6	0.034	10.2
70	3.96	1.7	10.8	0.06	0.09	0.00	0.05	0.0391	52.8	0.034	10.3
71	6.42	1.9	10.9	0.08	0.11	0.00	0.04	0.0394	53.2	0.034	10.4
72	4.74	1.8	10.7	0.13	0.16	0.00	0.09	0.0398	53.8	0.035	10.5
73	5.14	1.7	10.7	0.09	0.14	0.00	0.08	0.0401	54.2	0.035	10.5
74	4.90	1.6	10.7	0.08	0.13	0.00	0.08	0.0404	54.6	0.035	10.5
75	3.10	1.7	10.5	0.06	0.12	0.00	0.05	0.0405	54.7	0.035	10.5
76	5.38	1.9	10.5	0.08	0.13	0.00	0.11	0.0408	55.1	0.035	10.7
77	5.00	2.0	10.7	0.29	0.28	0.07	0.11	0.0417	56.4	0.036	10.8
78	5.20	1.8	10.7	0.12	0.15	0.00	0.07	0.0419	56.6	0.036	10.8
79	5.10	1.7	10.7	0.12	0.14	0.00	0.00	0.0423	57.2	0.036	10.9
80	3.54	1.6	10.5	0.10	0.12	0.00	0.00	0.0425	57.4	0.036	11.0
81	4.52	1.6	10.6	0.08	0.10	0.00	0.00	0.0427	57.7	0.037	11.1
82	5.50	1.8	10.5	0.04	0.04	0.00	0.00	0.0429	58.0	0.037	11.2
83	4.06	1.7	10.7	0.00	0.00	0.00	0.00	0.0429	58.0	0.037	11.2
84	5.84	1.7	10.7	0.00	0.04	0.00	0.00	0.0429	58.0	0.037	11.2
85	5.92	1.6	10.7	0.00	0.05	0.00	0.04	0.0429	58.0	0.037	11.2
86	6.12	1.8	10.6	0.00	0.04	0.00	0.00	0.0429	58.0	0.037	11.2
87	3.88	1.7	10.6	0.04	0.05	0.00	0.00	0.0430	58.1	0.037	11.3
88	7.22	1.7	10.6	0.05	0.06	0.00	0.00	0.0432	58.4	0.038	11.4
89	5.54	1.5	10.7	0.04	0.04	0.00	0.00	0.0433	58.5	0.038	11.4
90	5.56	1.6	10.8	0.00	0.05	0.00	0.00	0.0433	58.5	0.038	11.5
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0433	58.5	0.038	11.5
WASH	4.74	1.7	10.5	0.06	0.08	0.00	0.00	0.0435	58.8	0.038	11.5
93	2.92	1.4	10.2	0.10	0.11	0.00	0.00	0.0437	59.1	0.038	11.6
94	2.12	0.4	10.3	0.06	0.08	0.00	0.00	0.0438	59.2	0.038	11.6
PONDED	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0438	59.2	0.038	11.6
98	14.16	0.1	10.3	0.15	0.12	0.00	0.00	0.0450	60.8	0.040	12.1

McCLELLAND LABORATORIES, INC.

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Report
on
Preliminary Agitated Cyanidation Tests - Tiger Mill Tailings
MLI Job No. 1608
May 11, 1991

for

Mr. Joe Fernandez
Magma Copper Company
P.O. Box M
San Manuel, Arizona 85631-0460

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EXECUTIVE SUMMARY

Duplicate direct agitated cyanidation tests were conducted on a composite sample of Tiger Mill tailings at the as received (85 percent minus 65 mesh) feed size to determine precious metals recovery, recovery rate, and reagent requirements. A subsequent prewash/cyanidation test was conducted on the tailings composites to determine if reagent requirements could be decreased.

Metallurgical results show that the tailings are amenable to agitated cyanidation treatment at a minus 65 mesh feed size. Average gold and silver recoveries achieved from the duplicate tests were 58.1 and 43.9 percent, respectively. Gold recovery rates were slow and extraction was progressing at a slower rate when leaching was terminated at 96 hours. Silver recovery rates were slightly more rapid, and extraction was substantially complete in 24 hours. Cyanide consumptions were high at 7.79 pounds per ton of feed (average). Lime requirements were high at 18.4 pounds per ton of feed.

Prewashing with water and subsequent cyanidation was effective in decreasing reagent requirements, but did not markedly effect precious metal recovery or recovery rate. Gold and silver recoveries achieved from the prewash/cyanidation test were 61.9 and 50.0 percent, respectively. Cyanide consumption, even though still high, decreased markedly to 3.44 pounds per ton of feed. Lime requirements decreased from 18.4 to 13.5 pounds per ton of feed.

Tail screen analyses results and recovery by size fraction data show that regrinding to minus 150 mesh in size would be required to improve recovery with subsequent cyanidation treatment. Regrinding may not be economically feasible for the Tiger Mill tailings.

TAILINGS COMPOSITE PREPARATION AND HEAD GRADE DETERMINATIONS

A total of four 55 gallon drums of Tiger Mill tailings was received for compositing and subsequent testwork. Each drum of tailings was blended and split to obtain 10 kilograms for compositing. The tailings composite was prepared by combining the 10 kilogram splits from each drum. The composite was blended and split to obtain samples for bottle roll tests (3 at 2 kilograms), for head screen analysis, and samples for triplicate direct head assay.

Head grades were determined by direct fire assay, by head screen analysis, and by calculation from the respective cyanidation tests. Head assay results and head grade comparisons are provided in Table 1. Head screen analysis results are shown in Table 2. Triplicate fraction assay results from the head screen analysis are provided in Table 3.

Table 1. - Head Assay Results and Head Grade Comparisons, Tiger Mill Tailings Composite

Determination Method	Head Grade, oz/ton Au	Ag
Direct Assay: Initial	0.024	0.36
Duplicate	0.024	0.34
Triplicate	0.024	0.36
Head Screen	0.021	0.31
Calc'd, Bottle Test (A)	0.022	0.38
Calc'd, Bottle Test (B)	0.021	0.35
Calc'd, Bottle Test (C)	0.021	0.32
Arithmetic Average	0.022	0.35
Maximum Deviation from Average	0.002	0.04
Precision, percent	91.7	88.6

Head assay results and calculated heads agreed fairly well for both gold and silver. Calculated head grades are considered more reliable than direct assays because of the quantity of sample evaluated.

Table 2. - Head Screen Analysis Results, Tiger Mill Tailings Composite, As Received Feed

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+65M	13.3	13.3	0.009	0.18	5.6	7.8	5.6	7.8
-65 +100M	12.8	26.1	0.019	0.25	11.2	10.4	16.8	18.2
-100 +150M	14.1	40.2	0.020	0.30	13.1	13.7	29.9	31.9
-150 +200M	8.8	49.0	0.019	0.28	8.0	8.2	37.9	40.1
-200M	51.0	100.0	0.026	0.36	62.1	59.9	100.0	100.0
Composite	100.0		0.021	0.31	100.0	100.0		

Table 3. - Head Screen Fraction Assays, Tiger Mill Tailings Composite, As Received Feed

Size Fraction	Assays, oz/ton							
	Initial		Duplicate		Triplicate		Average	
	Au	Ag	Au	Ag	Au	Ag	Au	Ag
+65M	0.009	0.19	0.009	0.12	0.010	0.23	0.009	0.18
-65 +100M	0.020	0.27	0.017	0.19	0.019	0.28	0.019	0.25
-100 +150M	0.020	0.27	0.020	0.32	0.021	0.31	0.020	0.30
-150 +200M	0.016	0.28	0.021	0.31	0.020	0.24	0.019	0.28
-200M	0.024	0.45	0.027	0.42	0.028	0.21	0.026	0.36

Head screen analysis results show that the as received Tiger Mill tailings contained 0.021 ounce gold and 0.31 ounce silver per ton. Precious metal values were not evenly distributed throughout the various size fraction. A slight depletion of values was observed with the plus 65 mesh fraction, while an enrichment of values was observed in the minus 200 mesh fraction. Agreement between triplicate fraction assays was good.

AGITATED CYANIDATION TEST PROCEDURES AND RESULTS

Direct agitated cyanidation (bottle roll) tests were conducted in duplicate on the tailings composite at the as received (nominal 65 mesh) feed size to determine precious metal recovery, recovery rate, and reagent requirements.

Tailings splits (approximately 2 kilograms) were mixed with water to achieve 40 weight percent solids. Natural pulp pHs were measured. Lime was added to adjust the pH of the pulps to 11.0 before adding the cyanide. Sodium cyanide, equivalent to 2.0 pounds per ton of solution, was added to the alkaline pulps.

Leaching was conducted by rolling the pulps in bottles on the laboratory rolls for 96 hours. Rolling was suspended briefly after 2, 6, 24, 48, and 72 hours so samples of pregnant solution could be taken for analysis. Interim pulp samples were filtered and solids were returned immediately to leaching. Pregnant solution volumes were measured and sampled for Au and Ag analysis using conventional A.A. methods. Cyanide concentration and pH were determined for each pregnant solution. Make-up water, equivalent to that withdrawn, was added to the pulps. Cyanide concentrations were restored to initial levels. Lime was added when necessary to maintain the leaching pH at between 10.9 and 11.3. Rolling was then resumed.

After 96 hours, pulps were filtered to separate liquids and solids. Final pregnant solution volumes were measured and sampled for Au and Ag analysis. Final pH and cyanide concentrations were determined. Leached residues were thoroughly washed and screen assayed to determine residual precious metal content and distribution. Screening procedures and size fractions were the same as for head screens to obtain recovery by size fraction data.

After evaluating data from the duplicate tests, a decision was made to perform a single stage water wash before cyanidation to determine if reagent requirements could be decreased. A 2 kilogram split of tailings was pulped to 25 percent solids with water. The pulp was rolled for one half hour, then was filtered to separate liquids and solids. Filtrate volume was measured and samples were taken for Cl^-, Cr, Au, Pb, Hg, and Ag analysis. Solids were repulped to 40 percent solids and pulp pH was measured. Lime was added to adjust the pH of the pulp to 11.0 before adding the cyanide.

Leaching procedures were the same as described above, except that a mercury analysis was made on a composite of the 72 and 96 hour pregnant solutions. The leached residue was assayed directly in triplicate rather than being screen assayed.

Duplicate tests for the purpose of this report were designated tests A and B. The prewash/cyanidation test was designated test C.

Overall metallurgical results for the three cyanidation tests are shown in Table 4. Leach rate profiles are shown in Figures 1 and 2. Tail screen results and recovery by size fraction data (tests A and B) are provided in Tables 6 through 8. Triplicate tail fraction assays are shown in Tables 9 and 10. Tail assay results for test C are provided in Table 11. Special analysis results on solutions from test C are provided in the Appendix to this report.

Table 4. - Overall Metallurgical Results, Bottle Roll Tests, Tiger Mill Tailings Composite, As Received Feeds

	Test					
Metallurgical Results	A		B		C	
Extraction: pct of total	Au	Ag	Au	Ag	Au	Ag
in 2 hours	27.7	18.4	25.2	20.6	25.2	31.9
in 6 hours	34.5	27.6	31.9	31.4	31.9	40.0
in 24 hours	41.4	37.9	45.2	41.4	43.3	50.0
in 48 hours	52.7	40.3	51.0	44.0	48.6	50.0
in 72 hours	56.4	41.3	54.8	45.1	54.3	50.0
in 96 hours	59.1	42.1	57.1	45.7	61.9	50.0
Extracted, oz/ton feed	0.013	0.16	0.012	0.16	0.013	0.16
Tail Screen, oz/ton[1)]	0.009	0.22	0.009	0.19	0.008	0.16
Calculated Head, oz/ton feed	0.022	0.38	0.021	0.35	0.021	0.32
Head Grade, oz/ton feed[2)]	0.022	0.35	0.022	0.35	0.022	0.35
Cyanide Consumed, lb/ton feed	7.66		7.93		3.44	
Lime Added, lb/ton feed	18.7		18.2		13.5	
Final Solution pH	11.3		11.3		11.1	
Natural pH (40% solids)	5.5		5.5		5.5	
pH After Water Wash (40% solids)	N/A		N/A		5.9	

1) Triplicate tail assays were conducted on the leached residue from Test C.
2) Average of all head grade determinations.

Metallurgical results show that the Tiger Mill tailings are amenable to agitated cyanidation treatment at a nominal 65 mesh (as received) feed size. Gold recoveries from the duplicate tests were 59.1 and 57.1 percent in 96 hours of cyanidation. Silver recoveries were 42.1 and 45.7 percent. Gold recovery rates were slow, and extraction was progressing at a slower, but fairly constant, rate when leaching was terminated. Silver recovery rates were more rapid, and extraction was substantially complete in 24 hours.

Figure 1. – Gold Leach Rate Profiles,

Bottle Roll Tests, Tiger Mill Tailings

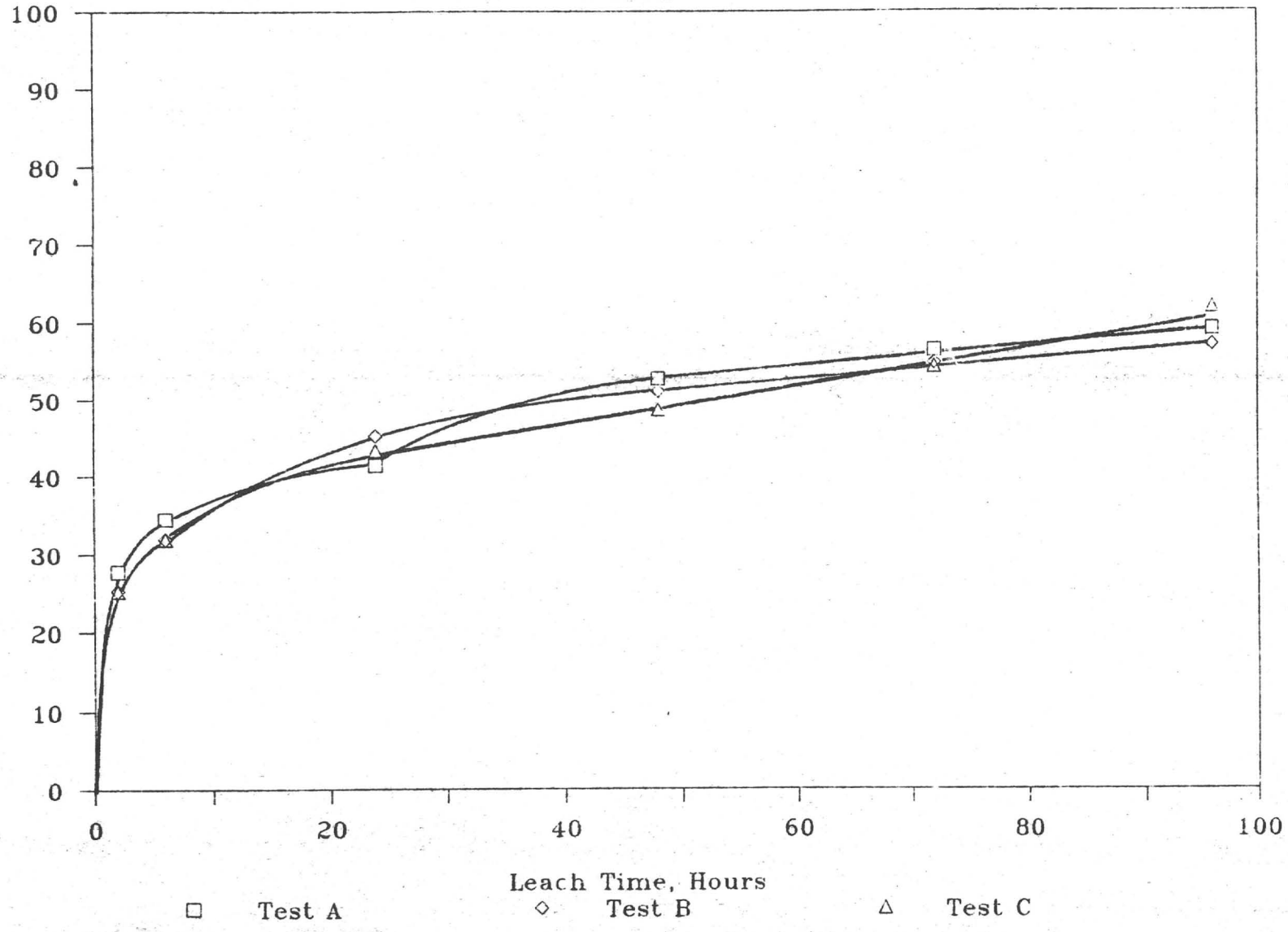
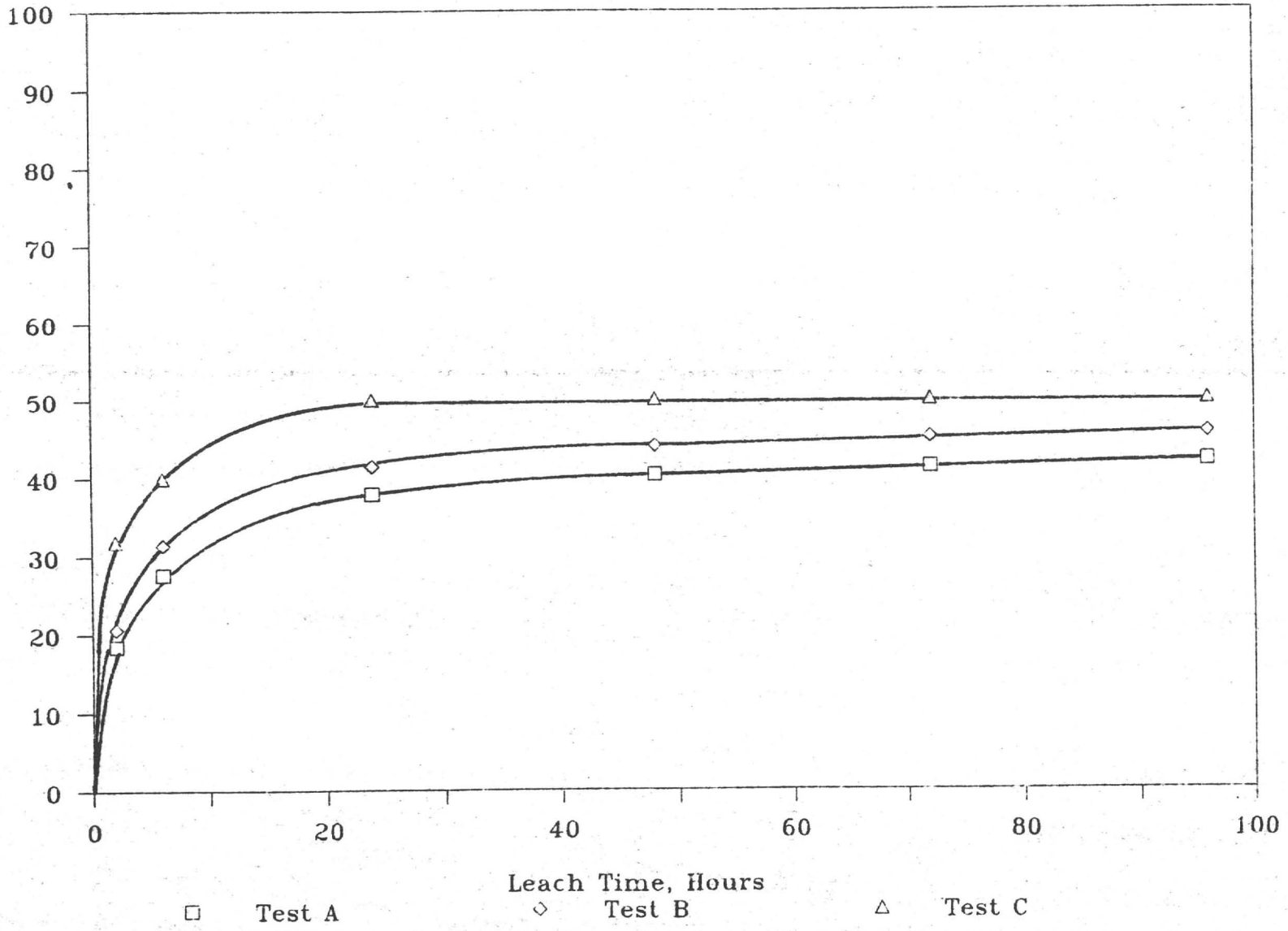


Figure 2. – Silver Leach Rate Profiles,

Bottle Roll Tests, Tiger Mill Tailings



Cyanide consumptions were extremely high at 7.66 and 7.93 pounds per ton of feed. Consumption rates were very rapid the first 6 hours of leaching. Consumption rates were fairly constant after 6 hours. Lime requirements were also high at 18.7 and 18.2 pounds per ton of feed. Lime consumption was rapid the first 6 hour of leaching. Controlling pH however, was not a real problem. An average of 87 percent of the total lime required was added during initial pulp pH adjustment procedures. The remaining 13 percent of the lime was added the first 6 hours of leaching.

Water prewashing was effective in decreasing reagent requirements, but had no substantial effect on precious metal recovery or recovery rate. Cyanide consumption decreased from 7.79 (average) to 3.44 pounds per ton of feed. Consumption rate was fairly constant throughout the leaching cycle. Lime requirements decreased from 18.4 to 13.5 pounds per ton of feed. All the lime required was added during initial pulp pH adjustment procedures.

A multi-stage washing circuit may be effective in additional decrease in reagent requirements. Leach recovery and recovery rate may stay the same if cyanide concentration and leaching pH are reduced. This may also cause a decrease in reagent requirements.

Table 5. - Tail Screen Analysis Results, Bottle Leached Residue, Tiger Mill Tailings, As Received Feed (Test A)

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton Au	Assays, oz/ton Ag	Distribution, percent Au	Distribution, percent Ag	Distribution, cum. percent Au	Distribution, cum. percent Ag
+65M	12.9	12.9	0.008	0.14	11.0	8.3	11.0	8.3
-65 +100M	11.5	24.4	0.010	0.23	13.2	12.0	24.2	20.3
-100 +150M	16.8	41.2	0.011	0.24	19.8	18.4	44.0	38.7
-150 +200M	9.0	50.2	0.007	0.20	6.6	8.3	50.6	47.0
-200M	49.8	100.0	0.009	0.23	49.4	53.0	100.0	100.0
Composite	100.0		0.009	0.22	100.0	100.0		

Table 6. - Recovery By Size Fraction Data, Bottle Roll Test, Tiger Mill Tailings, As Received Feed (Test A)

Size Fraction	Weight, Percent Head	Weight, Percent Tail	Assays, ozAu/ton Head	Assays, ozAu/ton Tail	Au Recovery, Percent
+65M	13.3	12.9	0.009	0.008	11.1
-65 +100M	12.8	11.5	0.019	0.010	47.4
-100 +150M	14.1	16.8	0.020	0.011	45.0
-150 +200M	8.8	9.0	0.019	0.007	63.2
-200M	51.0	49.8	0.026	0.009	65.4
Composite	100.0	100.0	0.021	0.009	57.1

Table 7. - Tail Screen Analysis Results, Bottle Leached Residue, Tiger Mill Tailings, As Received Feed (Test B)

Size Fraction	Weight, percent	Cum. Wt., pct.	Assays, oz/ton		Distribution, percent		cum. percent	
			Au	Ag	Au	Ag	Au	Ag
+65M	14.7	14.7	0.007	0.12	11.1	9.3	11.1	9.3
-65 +100M	12.0	26.7	0.011	0.39	14.4	24.4	25.5	33.7
-100 +150M	14.6	41.3	0.011	0.28	17.8	21.2	43.3	54.9
-150 +200M	9.4	50.7	0.007	0.19	7.8	9.3	51.1	64.2
-200M	49.3	100.0	0.009	0.14	48.9	35.8	100.0	100.0
Composite	100.0		0.009	0.19	100.0	100.0		

Table 8. - Recovery By Size Fraction Data, Bottle Roll Test, Tiger Mill Tailings, As Received Feed (Test B)

Size Fraction	Weight, Percent		Assays, ozAu/ton		Au Recovery, Percent
	Head	Tail	Head	Tail	
+65M	13.3	14.7	0.009	0.007	22.2
-65 +100M	12.8	12.0	0.019	0.011	42.1
-100 +150M	14.1	14.6	0.020	0.011	45.0
-150 +200M	8.8	9.4	0.019	0.007	63.2
-200M	51.0	49.3	0.026	0.009	65.4
Composite	100.0	100.0	0.021	0.009	57.1

Table 9. - Tail Screen Fraction Assays, Bottle Leached Residue, Tiger Mill Tailings Composite, As Received Feed (Test A)

Size Fraction	Assays, oz/ton							
	Initial		Duplicate		Triplicate		Average	
	Au	Ag	Au	Ag	Au	Ag	Au	Ag
+65M	0.008	0.11	0.007	0.15	0.010	0.15	0.008	0.14
-65 +100M	0.010	0.15	0.006	0.27	0.013	0.28	0.010	0.23
-100 +150M	0.013	0.27	0.010	0.21	0.010	0.23	0.011	0.24
-150 +200M	0.005	0.20	0.009	0.18	0.007	0.21	0.007	0.20
-200M	0.010	0.25	0.008	0.27	0.008	0.16	0.009	0.23

Table 10. - Tail Screen Fraction Assays, Bottle Leached Residue, Tiger Mill Tailings Composite, As Received Feed (Test B)

Size Fraction	Assays, oz/ton							
	Initial		Duplicate		Triplicate		Average	
	Au	Ag	Au	Ag	Au	Ag	Au	Ag
+65M	0.005	0.11	0.008	0.10	0.009	0.14	0.007	0.12
-65 +100M	0.012	0.50	0.011	0.48	0.010	0.19	0.011	0.39
-100 +150M	0.013	0.25	0.011	0.21	0.009	0.38	0.011	0.28
-150 +200M	0.007	0.23	0.007	0.15	0.007	0.19	0.007	0.19
-200M	0.011	0.16	0.008	0.10	0.009	0.15	0.009	0.14

Table 11. - Tail Assay Results, Bottle Leached Residue, Tiger Mill Tailings Composite (Test C)

	Tail Assays, oz/ton	
	Au	Ag
Initial	0.008	0.19
Duplicate	0.007	0.14
Triplicate	0.008	0.15
Average	0.008	0.16

Tail screen results show that leached residues contained 0.009 ounce gold and about 0.2 ounce silver per ton. Residual precious metal values were fairly evenly distributed throughout the various size fractions. Fraction assay results indicate that regrinding the tailings to minus 150 mesh in size would improve gold recovery slightly with subsequent agitated cyanidation treatment. Recovery by size fraction data confirm this observation. Regrinding may not be economically feasible for the Tiger Mill tailings.

CONCLUSIONS

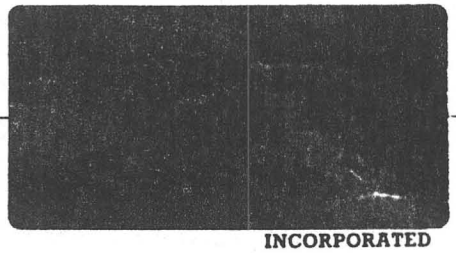
- Tiger Mill tailings are amenable to agitated cyanidation treatment at a nominal 65 mesh feed size.
- Reagent requirements were high.
- Gold recovery rates were slow.
- Water washing (single stage) was effective in decreasing reagent requirements, but had little effect on recovery or recovery rate.

RECOMMENDATIONS

We recommend that multi-stage washing be evaluated for the tailings. We also recommend that blending tailings with Tiger crushed heap leachable ore and subsequent heap leaching be evaluated as a potential processing method and disposal method for the tailings.

Gene E. McClelland
Metallurgist/President

APPENDIX



INCORPORATED

Client: McClelland Laboratories, Incorporated
Address: 1016 Greg Street
Sparks, Nevada 89431
Phone: 356-1300
Date Sampled: Unknown Date Submitted: 4/9/91
Client Reference: Project 1608, Sample CN-Wash Number One.
Laboratory Reference Number: 91-758.
Analysis Performed: Chloride and Total Metals as listed below.

Analysis	Result
Chloride, mg/L	26
Chromium, mg/L	<0.025
Gold, mg/L	<0.1
Lead, mg/L	1.4
Mercury, mg/L	<0.001
Silver, mg/L	<0.01

Analysis By: Hlubucek/Sharp

Approved By: C. W. Sharp Date: 5/7/91

Laboratory Report Number 1072

321 Freeport Blvd., Sparks, Nevada 89431
P.O. Box 6535, Reno, Nevada 89513 (702) 359-0330

[redacted]
INCORPORATED

Client: McClelland Laboratories, Incorporated
Address: 1016 Greg Street
Sparks, Nevada 89431
Phone: 356-1300
Date Sampled: Unknown Date Submitted: 4/15/91
Client Reference: Project 608, Composite of -22 and -23.
Laboratory Reference Number: 91-793.
Analysis Performed: Total Mercury.

COMPOSITE PREG (72 and 96 hr)

Analysis	Result
Mercury, mg/L	0.064

Analysis By: Hlubucek/Sharp

Approved By: C. W. Sharp Date: 5/7/91

Laboratory Report Number 1071

McCLELLAND LABORATORIES, INC.

1016 Greg Street, Sparks, Nevada 89431 702 / 356-1300
FAX 702 / 356-8917

Report
on
Agglomerated Heap Leach Testwork
Tiger Master Composite
MLI Job No. 1635
September 25, 1991

for

Mr. Joe Fernandez
Magma Copper Company
P.O. Box M
San Manuel, AZ 85631-0460

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Report
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Agglomerated Heap Leach Testwork
Tiger Master Composite
MLI Job No. 1635
September 25, 1991

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Mr. Joe Fernandez
Magma Copper Company
P.O. Box M
San Manuel, AZ 85631-0460

EXECUTIVE SUMMARY

A master composite was prepared by combining bulk ore samples and mill tailings from the Tiger project using a weight ratio of 79 percent bulk ore to 21 percent mill tailings. This ratio represents the estimated ratio of ore/tailings reserves available at the Tiger project. The objective for the testing program was to determine the optimum agglomerating conditions and leachability of the feed.

Agglomerate strength and stability tests were conducted on the Tiger master composite at an 80 percent minus 3/8 inch feed size to determine optimum agglomerating conditions. Optimum agglomerating conditions were determined to be; addition of 15 pounds portland cement per ton of dry ore, wetting with water to a final moisture content of about 9 weight percent, mechanically tumbling to affect agglomeration, and curing for 72 hours before leaching.

A column percolation leach test was conducted on the agglomerated master composite to determine precious metal recovery, recovery rate, and reagent requirements under simulated heap leaching conditions.

Overall metallurgical results show that the master composite was marginally amenable heap leaching treatment at an 80 percent minus 3/8 inch feed size. Gold and silver recoveries of 57.1 and 19.4 percent, respectively, were achieved in 86 days of cyanide solution contact. Gold and silver recovery rates were fairly rapid and extraction was substantially complete in 20 days. Additional precious metal values were extracted between 20 and 86 days, but at a very slow rate. Rest cycles were effective in improving subsequent solution grades, but had little effect on improving ultimate recovery.

Cyanide consumption was high at 3.29 pounds per ton of ore. The 15 pounds cement per ton of ore added during agglomeration pretreatment was sufficient to maintain protective alkalinity at above 10.7 throughout the leaching cycle.

COMPOSITE PREPARATION AND HEAD ASSAYS

A total of five bulk ore samples and one mill tailings composite from the Tiger project were available at MLI from a previous testing program. Bulk ore samples were crushed to an 80 percent minus 3/8 inch feed size before compositing. Mill tailings were evaluated at the as received (90 percent minus 65 mesh) feed size. A master composite was prepared, according to instructions provided by Magma Copper Company personnel, to achieve 79 weight percent bulk ore and 21 weight percent mill tailings. The composite was thoroughly blended and split to obtain 120 pounds for a column leach test, 20 pounds for agglomerate strength and stability tests, and samples for triplicate direct head assay.

Head samples were assayed directly using conventional fire assay fusion procedures to determine precious metal content. Composite Make-up and predicted head grade information is shown in Table 1. Head assay results and head grade comparisons are provided in Table 2.

Table 1. - Composite Make-Up and Predicted Head Grade, Tiger Master Composite

Sample	Wt. to Comp., pct.	Head Grade,* oz/ton		Contribution to Comp., percent	
		Au	Ag	Au	Ag
Cloudburst	7.9	0.037	0.19	4.7	4.3
Qtz Monzonite	31.6	0.069	0.40	35.2	36.3
Qtz Vein	15.8	0.133	0.29	33.9	13.3
Rhyolite	15.8	0.036	0.32	9.2	14.7
Rhyolite Breccia	7.9	0.075	0.44	9.6	10.1
Mill Tailings	21.0	0.022	0.35	7.4	21.3
Composite	100.0	0.062	0.35	100.0	100.0

* Average head grades determined from previous testwork (MLI reports dated May 10, 1991 and May 11, 1991).

Table 2. - Head Assay Results and Head Grade Comparisons, Tiger Master Composite

Determination Method	Head Grade, oz/ton	
	Au	Ag
Direct Assay: Initial	0.052	0.37
Duplicate	0.052	0.33
Triplicate	0.051	0.38
Calculated, Column Test	0.063	0.31
Arithmetic Average	0.055	0.35
Maximum Deviation from Average	0.008	0.04
Precision, percent	87.3	88.6

Head grades determined by the various methods agreed fairly closely. However, direct gold head assays averaged 0.011 ounce per ton of ore lower than the calculated head grade for the column leach test. The calculated head grade is considered more reliable than direct head assays because of the quantity of material evaluated and the number of check analyses performed. Calculated column leach test and predicted head grades agreed very closely.

AGGLOMERATE STRENGTH AND STABILITY TEST PROCEDURES AND RESULTS

Agglomerate strength and stability tests were conducted on the Tiger master composite at an 80 percent minus 3/8 inch feed size, using various quantities of portland type II cement, to determine optimum agglomerating conditions. Agglomerate stability tests were conducted by first dry screening the feed and calculating natural weight percentage retained on a 10 mesh screen. Seven, 1 kilogram charges were prepared using the appropriate weight percentage of plus and minus 10 mesh material. Ore charges were agglomerated by adding various quantities of cement, wetting with water to the desired moisture content, mechanically tumbling to affect agglomeration, and curing in sealed containers for 72 hours before "jigging". Prepared agglomerates were placed onto a 10 mesh screen and were "jigged" in and out of a container of water 10 times in a 30 second period. "Jigging" in this manner imparts a sheer stress to the agglomerates substantially more severe than that of normal percolating solution. Stability is measured empirically by comparing the quantity of agglomerates retained on the screen after "jigging" with the quantity of feed naturally retained on a 10 mesh screen (dry screening). A test was conducted where no binder was added to determine the natural binding potential of the feed.

Agglomerate strength tests were conducted by selecting a typical agglomerate from each charge before "jigging" and submerging it in a beaker of water and observing the degree of agglomerate degradation in a 24 hour period. An agglomerate with sufficient green strength to overcome swelling tendencies of contained clays would not degrade in 24 or more hours of complete submersion. Complete degradation means that the submerged agglomerate broke down completely to its natural state within 10 minutes of submersion. Partial degradation means that the prepared agglomerate broke into smaller agglomerates within 24 hours of submersion.

Optimum agglomerating conditions are determined by the point at which near maximum weight percentage was retained on the screen, and the point at which no degradation occurred.

Agglomerate strength and stability test results are provided in Table 3. An agglomerate stability curve is provided in Figure 1.

Table 3. - Agglomerate Strength and Stability Test Results, Tiger Master Composite, 80 Percent Minus 3/8 Inch Feed

Cement Added, lb/ton	Agglomeration Moisture, Wt., percent	Retained on 10M Screen, Weight, percent		Submersion Observation
		Dry	Agglomerated	
0.0	9.1	51.4	72.3	Total Degradation
10.0	8.7	51.4	76.2	Partial Degradation
12.5	9.3	51.4	73.4	Partial Degradation
15.0	8.8	51.4	75.9	No Degradation
17.5	9.1	51.4	77.6	No Degradation
20.0	9.2	51.4	78.2	No Degradation
30.0	9.5	51.4	80.4	No Degradation

Optimum agglomerating conditions were determined to be; addition of 15 pounds cement per ton of dry ore, wetting to a final moisture content of about 9 weight percent, mechanically tumbling to affect agglomeration, and curing for 72 hours before leaching.

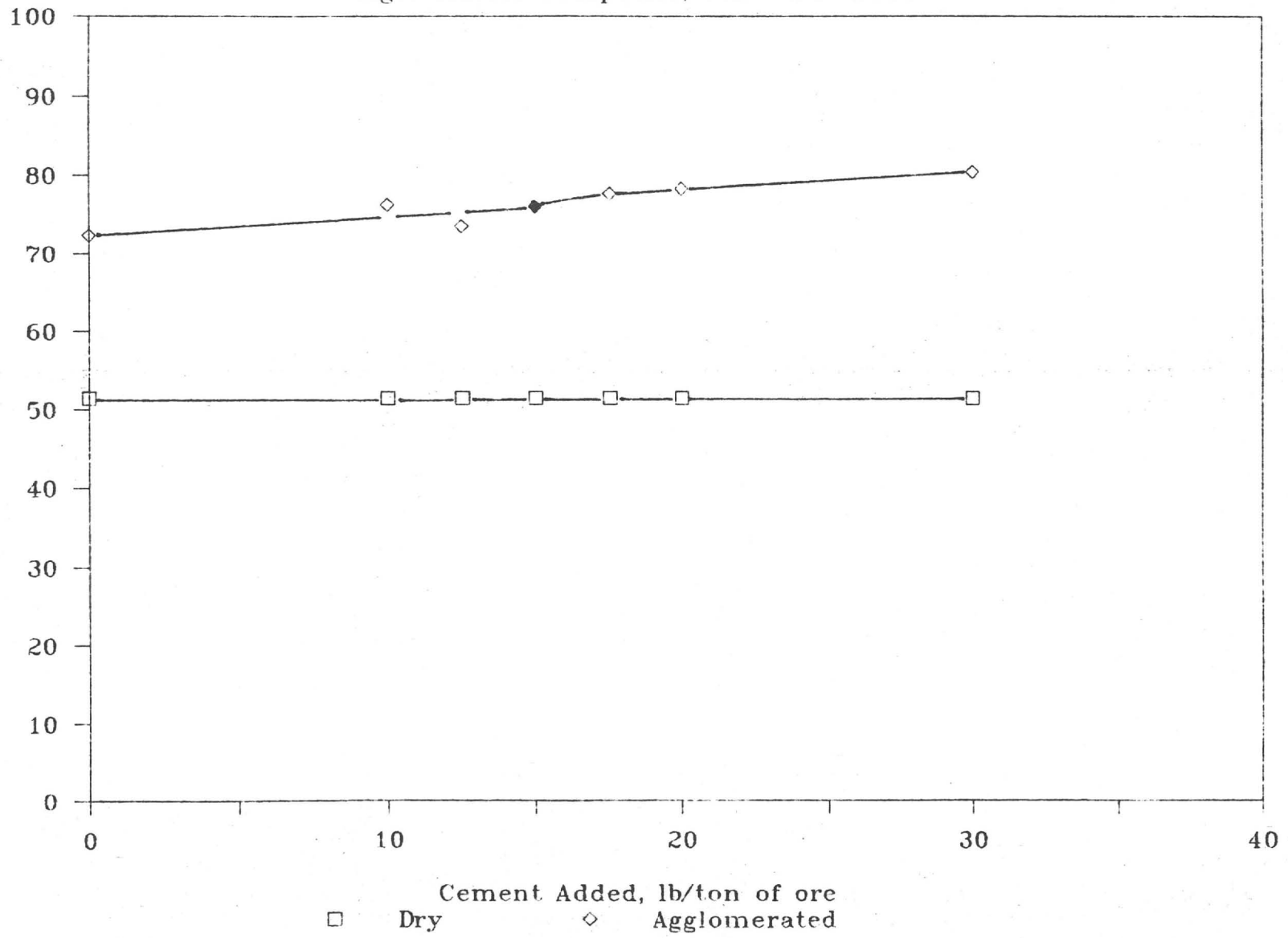
AGGLOMERATED COLUMN PERCOLATION LEACH TEST PROCEDURES AND RESULTS

An agglomerated column percolation leach test was conducted on the Tiger master composite at an 80 percent minus 3/8 inch feed size to determine precious metal recovery, recovery rate, and reagent requirements under simulated heap leaching conditions. The agglomerated feed was charged to a 6" I.D. x 8' high PVC leaching column for 72 hours of curing before leaching.

Leaching was conducted by applying cyanide solution (2.0 pounds NaCN per ton of solution) over the column charge at a rate of 0.005 gpm/ft^2 of column cross-sectional area. Pregnant solutions were collected each 24 hour period. Pregnant effluent solution volumes were measured by weighing, and samples were taken for analysis using conventional A.A. methods. A.A. results were checked using the "lead boat" assay method the first 10 days of leaching. Cyanide concentration and pH were determined for each pregnant effluent. Pregnant solutions were then passed through a three stage carbon circuit for adsorption of dissolved values. Barren solutions were analyzed for

Figure 1 – Agglomerate Stability Curves

Tiger Master Composite, 80% –3/8" Feed



gold, silver, pH, and free cyanide concentration. Barren solution, with appropriate make-up reagent, was applied to the ore charges daily. Rest cycles were allowed between days 51 and 58, and days 66 and 73 to determine if subsequent pregnant solution grades could be improved. The ore charge was allowed to soak in residual cyanide solution (column drained) during the rest cycles. The ore charge was washed with water between days 82 and 86 to recover dissolved precious metal values and to remove residual free cyanide (county requirement). Wash water was applied at the same rate used for leaching. Moistures required to saturate the ore charge (in process solution inventory), for agglomeration, and retained moistures were determined. Drain down rate and volume were established. Ore apparent bulk density was measured before and after leaching.

After leaching, washing, and drain down, the leached residue was removed from the column and moisture samples were taken immediately. The remaining residue was dried, weighed, blended, split, and assayed in triplicate to determine residual precious metal content.

Overall metallurgical results for the column leach test are provided in Table 4. Tail assay results are provided in Table 5. Gold and silver leach rate profiles are shown graphically in Figure 2. Metallurgical balances are provided in Table 6. Physical ore characteristic data are shown in Table 7. Drain down rate test results are shown in Table 8. The drain down rate profile is shown in Figure 3. Pertinent daily column leaching data are provided in the Appendix to this report.

Table 4. - Overall Metallurgical Results, Column Leach Test, Tiger Master Composite

Metallurgical Results	D_{80} 3/8" Feed	
Extraction: pct. of total	Au	Ag
1st Effluent	1.4	0.0
in 5 days	17.9	1.0
in 10 days	40.0	10.0
in 15 days	46.8	12.9
in 20 days	49.5	13.9
in 30 days	52.7	15.2
in 40 days	54.9	16.5
in 59 days[1)]	56.2	17.1
in 74 days[2)]	57.0	17.7
in 82 days[3)]	57.1	18.1
in 86 days	57.1	19.4
Extracted, oz/ton ore	0.036	0.06
Tail Assay, oz/ton[4)]	0.027	0.25
Calculated Head, oz/ton ore	0.063	0.31
Assayed Head, oz/ton ore[5)]	0.055	0.35
Cyanide Consumed, lb/ton ore	3.29	
Cement Added, lb/ton ore	15.0	
Final Solution pH	10.7	
pH After Water Wash	10.7	

1) 1st effluent after 7 day rest cycle.
2) 1st effluent after second 7 day rest cycle.
3) Begin water wash.
4) Average of three.
5) Average of all head grade determinations.

Figure 2. – Leach Rate Profiles,

Column Test, Tiger Master Comp, 3/8"

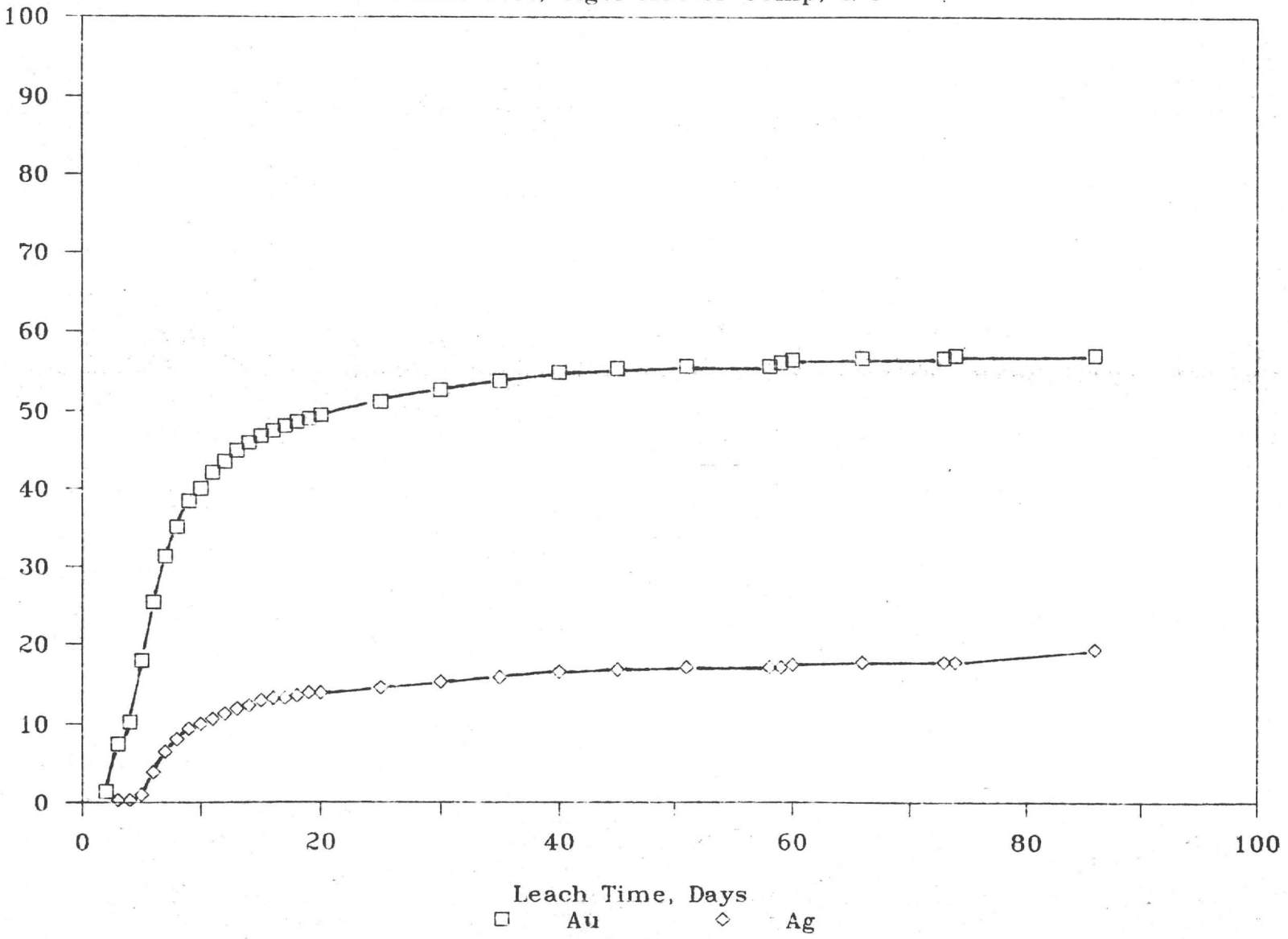


Table 5. - Tail Assay Results, Column Leached Residue, Tiger Master Composite, 80 Percent Minus 3/8 Inch Feed

	Tail Assays, oz/ton	
	Au	Ag
Initial	0.017	0.22
Duplicate	0.034	0.33
Triplicate	0.029	0.20
Average	0.027	0.25

Overall metallurgical results show that the Tiger master composite was marginally amenable to agglomeration heap leaching treatment at an 80 percent minus 3/8 inch feed size. Gold and silver recoveries of 57.1 and 19.4 percent, respectively, were achieved in 86 days of leaching and washing. Gold and silver recovery rates were fairly rapid and extraction was substantially complete in 20 days. An additional 0.0048 ounce gold, and 0.017 ounce silver per ton ore was extracted between days 20 and 86. Additional precious metal values would be extracted with a longer leaching cycle, but at a very slow rate. Rest cycles were effective in improving subsequent solution grades, but had little effect on improving ultimate recovery. The 5 days of water washing was effective in decreasing effluent free cyanide concentration from 1.5 to <0.1 pounds per ton of solution. Water washing was not effective in decreasing subsequent effluent pH.

Cyanide consumption was high at 3.29 pounds per ton of ore. Cyanide consumptions from column leach tests are usually higher than those experienced in commercial production. It is expected that commercial consumption would not exceed 1 pound per ton of ore. Consumption rate was more rapid the first 8 days of leaching. The 15 pounds of cement added to the ore charge during agglomeration pretreatment was sufficient to maintain protective alkalinity at above 10.7 throughout the leaching cycle.

Table 6. - Metallurgical Balances, Column Leach Test, Tiger Master Composite, 80 Percent Minus 3/8 Inch Feed

	Balance					
	Sol vs Tail		Carbon vs Tail		Head vs Tail[2]	
	Au	Ag	Au	Ag	Au	Ag
Extracted, oz/ton ore	0.036	0.06	0.034	0.08	0.025	0.11
Tail Assay, oz/ton	0.027	0.25	0.027	0.25	0.027	0.25
Calculated Head, oz/ton ore	0.063	0.31	0.061	0.33	0.052	0.36
Recovery, percent	57.1	19.4	56.7	24.2	48.1	30.6
Devation, oz/ton ore[1]	0.000	0.00	0.002	0.02	0.011	0.05
Precision, percent	100.0	100.0	96.8	93.9	82.5	86.1

1) Deviation from solution versus tail balance.
2) Based on triplicate head and tail assays.

Solution and carbon versus tail metallurgical balances agreed closely for both gold and silver. The head versus tail metallurgical balance did not agree well with the other two balances. The solution versus tail metallurgical balance is considered most reliable because of the number of check analyses performed on pregnant solution. All recovery percentage calculations were made using the solution versus tail balance.

Table 7. - Physical Ore Characteristic Data, Tiger Master Composite

	Moisture, weight percent			Bulk Density, lb/ft^3	
Ore Wt. pounds	To Saturate Ore Charge*	for Agglomeration	Retained	Before	After
120.0	17.4	8.4	10.4	87.56	88.05

* Includes moisture for agglomeration, and was calculated on a dry ore basis.

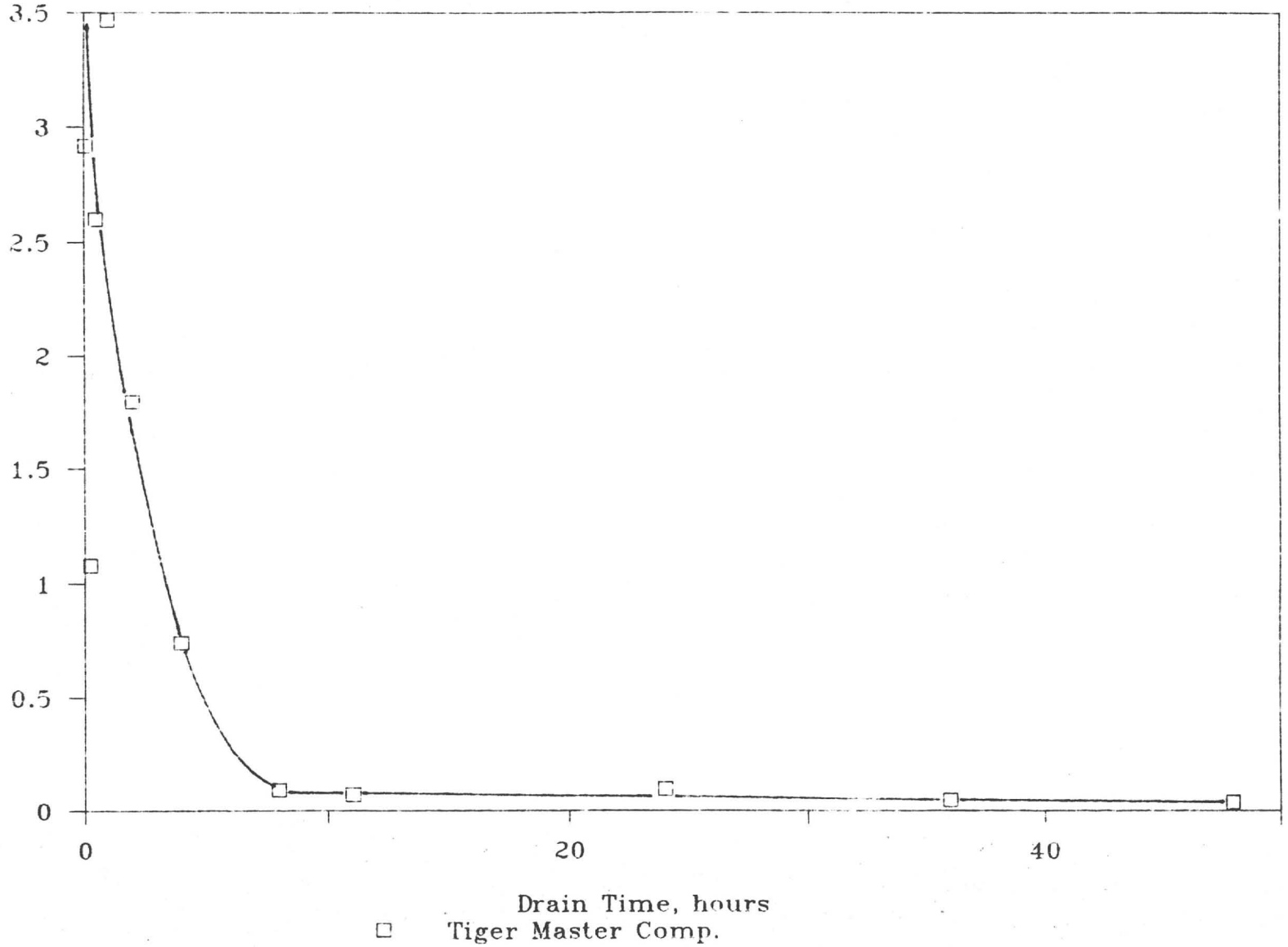
Physical ore characteristic data show that little "slumping" occurred during leaching. Bulk densities were nearly the same before and after leaching. Moistures required to saturate ore charges, for agglomeration, and retained moisture were fairly typical. No percolation, fines migration, or solution channeling problems were encountered during leaching and washing. Visual observation of the leached residue confirmed that agglomerates did not degrade during the 86 day leaching and washing cycle.

Table 8. - Drain Dwon Rate Test, Column Leached Residue, Tiger Master Composite, 80 Percent Minus 3/8 Inch Feed

Drain Time, hours	Effluent Solution		
	Gallons	Cumulative gal/ton ore	Rate gal/hr/ton
0.08	0.014	0.23	2.917
0.25	0.011	0.42	1.078
0.50	0.039	1.07	2.600
1.00	0.104	2.80	3.467
2.00	0.108	4.60	1.800
4.00	0.089	6.08	0.742
8.00	0.022	6.45	0.092
11.00	0.013	6.67	0.072
24.00	0.077	7.95	0.099
36.00	0.034	8.52	0.047
48.00	0.027	8.97	0.038

Figure 3. – Drain Down Rate Profile,

Col. Leached Residue, 80% -3/8" Feed



Drain down rate test results show that, after termination of solution application, an effluent volume of 8.97 gallons per ton of ore drained from the leached/washed residue in 48 hours. Drain down rate was fairly rapid and drain down was substantially complete in 8 hours.

CONCLUSIONS

- Optimum agglomerating conditions for the Tiger master composite were determined to be; addition of 15 pounds cement per ton of dry ore, wetting with water to a final moisture content of about 9 weight percent, mechanically tumbling to affect agglomeration, and curing for 72 hours before leaching.

- The master composite was marginally amenable to agglomerated heap leaching treatment at an 80 percent minus 3/8 inch feed size.

- Gold and silver recovery rates were fairly rapid.

- Cyanide consumption was high but should be substantially less in commercial production.

- The 15 pounds cement per ton of ore added during agglomeration retreatment was sufficient to maintain protective alkalinity above pH 10.7 throughout the leaching cycle.

RECOMMENDATIONS

We recommend that additional heap leach cyanidation testwork be conducted on representative core composites from the Tiger deposit to determine if metallurgical results obtained from bulk ore samples apply to the entire mineable ore body.

Frank A. Macy
Project Manager

APPENDIX

DAILY COLUMN LEACH DATA, TIGER MASTER COMPOSITE (79% BULK ORE/21% TAILINGS), 80 PERCENT MINUS 3/8 INCH FEED SIZE

Days leached	Preg. Solution Vol. 1.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
1	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0000	0.0	0.000	0.0
2	2.56	0.1	11.6	0.66	0.12	0.06	0.00	0.0009	1.4	0.000	0.0
3	4.64	0.2	11.4	1.61	0.22	0.39	0.07	0.0047	7.5	0.001	0.3
4	5.36	0.1	11.1	0.97	0.17	0.00	0.00	0.0064	10.2	0.001	0.3
5	4.18	0.2	11.3	2.19	0.78	0.00	0.00	0.0113	17.9	0.003	1.0
6	5.10	0.5	11.5	1.71	3.24	0.00	0.00	0.0160	25.4	0.012	3.9
7	5.36	1.0	11.6	1.28	2.82	0.12	0.37	0.0197	31.3	0.020	6.5
8	4.94	1.2	11.3	1.06	2.27	0.00	0.11	0.0221	35.1	0.025	8.1
9	5.80	1.6	11.3	0.68	1.44	0.17	0.56	0.0242	38.4	0.029	9.4
10	5.02	1.8	11.4	0.55	1.26	0.04	0.18	0.0252	40.0	0.031	10.0
11	4.66	1.5	11.5	0.54	1.30	0.04	0.20	0.0265	42.1	0.033	10.6
12	4.04	1.5	11.3	0.49	1.10	0.00	0.05	0.0274	43.5	0.035	11.3
13	6.16	1.7	11.4	0.26	0.67	0.00	0.06	0.0283	44.9	0.037	11.9
14	4.78	2.0	11.4	0.23	0.55	0.00	0.05	0.0289	45.9	0.038	12.3
15	4.70	1.8	11.4	0.25	0.56	0.00	0.04	0.0295	46.8	0.040	12.9
16	5.78	1.4	11.4	0.13	0.33	0.00	0.09	0.0299	47.5	0.041	13.2
17	4.60	1.9	11.3	0.14	0.35	0.00	0.17	0.0303	48.1	0.041	13.2
18	5.26	1.8	11.3	0.13	0.36	0.00	0.00	0.0306	48.6	0.042	13.5
19	4.70	1.4	11.1	0.13	0.33	0.00	0.04	0.0309	49.0	0.043	13.9
20	5.08	1.4	11.2	0.11	0.31	0.00	0.00	0.0312	49.5	0.043	13.9
21	4.60	1.4	11.2	0.10	0.31	0.00	0.07	0.0315	50.0	0.044	14.2
22	5.98	1.7	11.1	0.07	0.20	0.00	0.00	0.0317	50.3	0.045	14.5
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.11	0.0317	50.3	0.045	14.5
24	5.16	1.2	11.0	0.09	0.26	0.00	0.10	0.0320	50.8	0.045	14.5
25	3.84	1.6	11.2	0.11	0.32	0.00	0.05	0.0322	51.1	0.045	14.5
26	5.84	1.7	11.1	0.08	0.24	0.00	0.14	0.0324	51.4	0.046	14.8
27	5.42	1.7	11.0	0.07	0.20	0.00	0.13	0.0326	51.7	0.046	14.8
28	5.06	1.8	11.0	0.08	0.25	0.00	0.11	0.0329	52.2	0.046	14.8
29	5.04	1.6	11.0	0.07	0.25	0.00	0.15	0.0331	52.5	0.047	15.2
30	4.22	1.7	11.2	0.07	0.30	0.00	0.09	0.0332	52.7	0.047	15.2
31	5.70	1.6	11.1	0.06	0.25	0.00	0.11	0.0334	53.0	0.048	15.5
32	5.04	1.5	11.0	0.06	0.23	0.00	0.12	0.0336	53.3	0.048	15.5
33	5.02	1.4	11.1	0.04	0.24	0.00	0.12	0.0337	53.5	0.048	15.5
34	5.00	1.5	10.9	0.04	0.22	0.00	0.11	0.0338	53.7	0.048	15.5
35	4.68	1.5	11.0	0.06	0.25	0.00	0.09	0.0339	53.8	0.049	15.8
36	5.30	1.9	10.9	0.04	0.22	0.00	0.15	0.0340	54.0	0.049	15.8
37	4.26	2.0	11.0	0.06	0.20	0.00	0.14	0.0342	54.3	0.049	15.8
38	6.00	2.0	10.9	0.05	0.21	0.00	0.00	0.0343	54.4	0.049	15.8
39	4.60	1.6	11.0	0.06	0.22	0.00	0.00	0.0345	54.8	0.050	16.1
40	5.40	1.9	10.8	0.05	0.21	0.00	0.00	0.0346	54.9	0.051	16.5
41	4.96	1.2	10.5	0.04	0.10	0.00	0.00	0.0347	55.1	0.051	16.5
42	5.02	1.9	10.9	0.04	0.09	0.00	0.04	0.0348	55.2	0.051	16.5
43	4.70	1.6	11.0	0.04	0.07	0.00	0.00	0.0349	55.4	0.051	16.5
44	5.66	1.9	11.0	0.00	0.07	0.00	0.00	0.0349	55.4	0.051	16.5
45	5.22	2.0	10.7	0.00	0.07	0.00	0.00	0.0349	55.4	0.052	16.8
46	5.22	1.6	10.7	0.04	0.08	0.00	0.00	0.0351	55.7	0.052	16.8
47	4.22	1.8	10.7	0.04	0.08	0.00	0.00	0.0351	55.7	0.052	16.8
48	5.44	1.6	10.7	0.00	0.06	0.00	0.00	0.0351	55.7	0.052	16.8

DAILY COLUMN LEACH DATA, TIGER MASTER COMPOSITE (79% BULK ORE/21% TAILINGS), 80 PERCENT MINUS 3/8 INCH FEED SIZE

Days leached	Preg. Solution Vol. l.	NaCN Conc. lb/ton	pH	Solution Analysis preg Au ppm	preg Ag ppm	barren Au ppm	barren Ag ppm	Au Ext. Au Cum. oz/t	Au Ext. Au Cum. %	Ag Ext. Ag Cum. oz/t	Ag Ext. Ag Cum. %
49	5.04	1.3	11.0	0.00	0.06	0.00	0.00	0.0351	55.7	0.052	16.8
50	5.18	1.5	10.9	0.00	0.07	0.00	0.00	0.0351	55.7	0.052	16.8
51	4.78	1.8	10.8	0.00	0.08	0.00	0.00	0.0351	55.7	0.053	17.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0351	55.7	0.053	17.1
59	3.64	1.7	10.7	0.14	0.23	0.00	0.00	0.0354	56.2	0.053	17.1
60	5.24	1.7	10.7	0.08	0.14	0.00	0.00	0.0356	56.5	0.054	17.4
61	4.90	1.7	10.5	0.04	0.10	0.00	0.00	0.0357	56.7	0.054	17.4
62	5.68	1.7	10.8	0.00	0.07	0.00	0.00	0.0357	56.7	0.054	17.4
63	5.10	1.5	10.8	0.00	0.07	0.00	0.04	0.0357	56.7	0.054	17.4
64	4.60	1.2	11.0	0.00	0.07	0.00	0.00	0.0357	56.7	0.054	17.4
65	5.42	1.5	10.8	0.00	0.06	0.00	0.00	0.0357	56.7	0.054	17.4
66	5.04	1.5	10.9	0.00	0.07	0.00	0.00	0.0357	56.7	0.055	17.7
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0357	56.7	0.055	17.7
74	4.74	1.3	10.8	0.08	0.13	0.00	0.00	0.0359	57.0	0.055	17.7
75	5.50	1.4	10.6	0.09	0.12	0.00	0.00	0.0360	57.1	0.055	17.7
76	5.10	1.6	10.7	0.04	0.09	0.00	0.05	0.0360	57.1	0.056	18.1
77	4.72	1.7	10.7	0.00	0.09	0.00	0.00	0.0360	57.1	0.056	18.1
78	5.22	2.0	11.0	0.00	0.08	0.00	0.00	0.0360	57.1	0.056	18.1
79	5.28	1.9	10.5	0.00	0.07	0.00	0.00	0.0360	57.1	0.056	18.1
80	5.18	1.5	10.7	0.00	0.07	0.00	0.00	0.0360	57.1	0.056	18.1
REST	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.0360	57.1	0.056	18.1
WASH	3.80	1.3	10.6	0.04	0.08	0.00	0.00	0.0360	57.1	0.056	18.1
83	3.12	0.9	10.5	0.00	0.06	0.00	0.00	0.0360	57.1	0.057	18.4
84	7.80	0.5	10.7	0.00	0.00	0.00	0.00	0.0360	57.1	0.057	18.4
85	4.82	0.1	10.8	0.00	0.00	0.00	0.00	0.0360	57.1	0.057	18.4
86	5.02	<0.1	10.7	0.00	0.00	0.00	0.00	0.0360	57.1	0.060	19.4