

Lampiran 1

Perbandingan Ramalan CB Predictor dan Multiple Reggression Pada Penggunaan Biji Timah Yang Dipengaruhi Oleh Proses Penerimaan Material/Produksi Tambang dan Kadar Sn

Periode	CB Predictor			Model Multiple Regression		
	Forecast	Upper: 90%	Lower: 10%	Forecast	Upper: 90%	Lower: 10%
1	5,758.88	8,337.98	3,179.78	5,759.14	6,897.08	4,621.21
2	5,779.69	8,662.87	2,896.50	5,779.95	7,446.07	4,113.83
3	5,800.50	8,799.47	2,801.53	5,800.76	7,637.81	3,963.71
4	5,821.30	8,920.50	2,722.11	5,821.57	7,784.21	3,858.92
5	5,842.11	9,087.78	2,596.45	5,842.38	8,009.54	3,675.21
6	5,862.92	9,246.15	2,479.69	5,863.18	8,193.76	3,532.61
7	5,883.73	9,384.19	2,383.26	5,883.99	8,339.91	3,428.07
8	5,904.54	9,485.02	2,324.06	5,904.80	8,416.95	3,392.65
9	5,925.34	9,533.06	2,317.62	5,925.61	8,467.54	3,383.67
10	5,946.15	9,567.53	2,324.77	5,946.42	8,432.16	3,460.68
11	5,966.96	9,562.18	2,371.74	5,967.22	8,400.50	3,533.95
12	5,987.77	9,487.32	2,488.21	5,988.03	8,149.02	3,827.04
13	6,008.57	9,427.54	2,589.61	6,008.84	8,022.41	3,995.27
14	6,029.38	9,309.23	2,749.53	6,029.65	7,642.19	4,417.10
15	6,050.19	9,130.25	2,970.13	6,050.46	7,285.17	4,815.75
16	6,071.00	9,182.19	2,959.81	6,071.26	7,005.40	5,137.12
17	6,091.81	9,284.33	2,899.28	6,092.07	7,010.39	5,173.76
18	6,112.61	9,359.43	2,865.79	6,112.88	6,633.81	5,591.95
19	6,133.42	9,484.20	2,782.64	6,133.69	6,574.17	5,693.20
20	6,154.23	9,744.54	2,563.92	6,154.50	6,582.96	5,726.04
21	6,175.04	9,892.29	2,457.78	6,175.30	6,446.83	5,903.77
22	6,195.84	9,991.93	2,399.76	6,196.11	6,197.06	6,195.16
23	6,216.65	10,269.38	2,163.92	6,216.92	6,173.47	6,260.37
24	6,237.46	10,605.12	1,869.80	6,237.73	5,412.18	7,063.28
25	6,258.27	10,566.36	1,950.17	6,258.54	4,610.78	7,906.29
26	6,279.08	11,027.53	1,530.62	6,279.34	3,627.17	8,931.52
27	6,299.88	11,397.25	1,202.52	6,300.15	3,445.93	9,154.37
28	6,320.69			6,320.96		
29	6,341.50			6,341.77		
30	6,362.31			6,362.58		
31	6,383.11			6,383.38		
32	6,403.92			6,404.19		
33	6,424.73			6,425.00		
34	6,445.54			6,445.81		
35	6,466.35			6,466.62		
36	6,487.15			6,487.42		

Lampiran 2

Perbandingan Ramalan CB Predictor dan Multiple Regression Pada Penggunaan Terak Yang Dipengaruhi Oleh Proses Penerimaan/Produksi Terak dan Kadar Sn

Periode	CB Predictor			Model Regression		
	Forecast	Upper: 95%	Lower: 5%	Forecast	Upper: 95%	Lower: 5%
1	3,094.70	5,104.08	1,085.33	3,094.93	2,137.64	4,052.22
2	3,123.07	5,149.59	1,096.55	3,123.31	2,171.83	4,074.79
3	3,151.44	5,220.32	1,082.56	3,151.68	2,176.90	4,126.47
4	3,179.81	5,287.70	1,071.91	3,180.06	2,177.38	4,182.75
5	3,208.18	5,311.27	1,105.09	3,208.44	2,245.73	4,171.14
6	3,236.55	5,416.10	1,057.00	3,236.81	2,177.31	4,296.31
7	3,264.92	5,479.13	1,050.71	3,265.19	2,161.68	4,368.70
8	3,293.29	5,519.60	1,066.98	3,293.57	2,177.76	4,409.38
9	3,321.66	5,575.99	1,067.32	3,321.94	2,157.97	4,485.92
10	3,350.03	5,595.77	1,104.28	3,350.32	2,188.67	4,511.97
11	3,378.40	5,660.29	1,096.50	3,378.70	2,153.92	4,603.47
12	3,406.77	5,758.56	1,054.97	3,407.07	2,053.55	4,760.59
13	3,435.14	5,808.56	1,061.71	3,435.45	2,027.11	4,843.79
14	3,463.50	5,853.92	1,073.09	3,463.83	2,039.21	4,888.44
15	3,491.87	5,822.88	1,160.87	3,492.20	2,157.90	4,826.50
16	3,520.24	5,837.92	1,202.57	3,520.58	2,219.88	4,821.28
17	3,548.61	5,852.19	1,245.04	3,548.95	2,266.34	4,831.57
18	3,576.98	5,867.29	1,286.67	3,577.33	2,405.08	4,749.58
19	3,605.35	5,867.13	1,343.57	3,605.71	2,365.15	4,846.27
20	3,633.72	5,865.22	1,402.23	3,634.08	2,735.53	4,532.64
21	3,662.09	5,850.17	1,474.02	3,662.46	2,913.95	4,410.97
22	3,690.46	5,867.39	1,513.53	3,690.84	3,135.58	4,246.09
23	3,718.83	5,994.40	1,443.26	3,719.21	3,208.34	4,230.08
24	3,747.20	6,535.33	959.07	3,747.59	4,168.83	3,326.35
25	3,775.57	6,739.17	811.97	3,775.97	4,341.15	3,210.78
26	3,803.94	7,567.03	40.84	3,804.34	5,249.16	2,359.53
27	3,832.31	7,722.55	(57.94)	3,832.72	5,459.69	2,205.75
28	3,860.68			3,861.09		4,307.66
29	3,889.05			3,889.47		
30	3,917.42			3,917.85		
31	3,945.79			3,946.22		
32	3,974.16			3,974.60		
33	4,002.53			4,002.98		
34	4,030.90			4,031.35		
35	4,059.26			4,059.73		
36	4,087.63			4,088.11		
28	3,860.68	1.68E+307	-1.68E+307			

Lampiran 3

Perbandingan Ramalan CB Predictor dan Multiple Regression Pada Penggunaan Bijih Timah Yang Dipengaruhi Oleh Penggunaan Bahan-bahan Pembantu

Periode	Peramalan CB Predictor			Model Multiple Regression		
	Forecast	Upper: 95%	Lower: 5%	Forecast	Upper: 95%	Lower: 5%
1	6,849.66	10,293.70	3,405.63	6,849.94	4,506.81	9,193.06
2	6,868.45	10,618.18	3,118.72	6,868.73	4,018.65	9,718.82
3	6,887.24	10,817.58	2,956.90	6,887.53	3,750.52	10,024.55
4	6,906.03	10,851.41	2,960.65	6,906.33	3,701.51	10,111.15
5	6,924.82	10,943.06	2,906.59	6,925.12	3,575.25	10,275.00
6	6,943.61	11,012.70	2,874.53	6,943.92	3,496.42	10,391.42
7	6,962.40	10,976.32	2,948.49	6,962.72	3,550.68	10,374.76
8	6,981.20	10,737.97	3,224.42	6,981.51	3,905.98	10,057.05
9	6,999.99	10,833.33	3,166.64	7,000.31	3,794.94	10,205.68
10	7,018.78	10,960.05	3,077.51	7,019.11	3,663.12	10,375.09
11	7,037.57	10,878.84	3,196.30	7,037.91	3,810.65	10,265.16
12	7,056.36	10,857.00	3,255.71	7,056.70	3,863.79	10,249.61
13	7,075.15	10,936.02	3,214.28	7,075.50	3,815.47	10,335.53
14	7,093.94	11,023.61	3,164.26	7,094.30	3,635.13	10,553.46
15	7,112.73	11,132.46	3,093.00	7,113.09	3,487.40	10,738.79
16	7,131.52	11,124.11	3,138.92	7,131.89	3,435.00	10,828.78
17	7,150.31	11,122.84	3,177.78	7,150.69	3,428.51	10,872.86
18	7,169.10	11,114.65	3,223.55	7,169.48	3,376.64	10,962.33
19	7,187.89	10,772.55	3,603.23	7,188.28	3,851.57	10,524.99
20	7,206.68	11,235.26	3,178.10	7,207.08	2,964.30	11,449.85
21	7,225.47	11,490.70	2,960.24	7,225.87	2,640.51	11,811.23
22	7,244.26	11,906.81	2,581.71	7,244.67	1,702.97	12,786.37
23	7,263.05	11,592.21	2,933.90	7,263.47	2,115.21	12,411.72
24	7,281.84	12,144.16	2,419.53	7,282.26	887.47	13,677.05
25	7,300.63	12,312.86	2,288.40	7,301.06	597.18	14,004.93
26	7,319.42	14,120.09	518.76	7,319.86	(1,923.36)	16,563.07
27	7,338.21	14,416.10	260.33	7,338.65	(1,933.69)	16,611.00
28	7,357.00			7,357.45	3,657.13	11,101.50
29	7,375.79			7,376.25	4,786.36	10,617.47
30	7,394.59			7,395.04	4,635.57	10,768.26
31	7,413.38			7,413.84	12,952.00	12,952.00
32	7,432.17			7,432.64	12,952.00	12,952.00
33	7,450.96			7,451.43	12,952.00	12,952.00
34	7,469.75			7,470.23	12,952.00	12,952.00
35	7,488.54			7,489.03	12,952.00	12,952.00
36	7,507.33			7,507.82	12,952.00	12,952.00

Lampiran 4

Perbandingan Ramalan CB Predictor dan Multiple Regression Pada Penggunaan Terak Yang Dipengaruhi Oleh Penggunaan Bahan-bahan Pembantu

Periode	CB Predictor Program			Model Multiple Regression		
	Forecast	Upper: 95%	Lower: 5%	Forecast	Upper: 95%	Lower: 5%
1	2,149.53	4,320.83	(21.77)	2,143.17	2,636.29	1,650.05
2	2,149.48	4,462.79	(163.82)	2,143.12	2,765.83	1,520.42
3	2,149.44	4,505.04	(206.16)	2,143.08	2,722.77	1,563.40
4	2,149.40	4,538.76	(239.97)	2,143.04	2,708.51	1,577.57
5	2,149.36	4,551.45	(252.74)	2,143.00	2,700.11	1,585.89
6	2,149.32	4,533.69	(235.06)	2,142.96	2,638.37	1,647.54
7	2,149.27	4,509.95	(211.40)	2,142.91	2,580.96	1,704.87
8	2,149.23	4,567.41	(268.95)	2,142.87	2,667.34	1,618.41
9	2,149.19	4,603.80	(305.42)	2,142.83	2,704.51	1,581.15
10	2,149.15	4,645.90	(347.61)	2,142.79	2,794.38	1,491.20
11	2,149.11	4,678.09	(379.88)	2,142.75	2,865.20	1,420.29
12	2,149.06	4,690.08	(391.95)	2,142.70	2,906.95	1,378.46
13	2,149.02	4,720.05	(422.01)	2,142.66	2,930.89	1,354.44
14	2,148.98	4,685.49	(387.54)	2,142.62	2,910.17	1,375.07
15	2,148.94	4,531.44	(233.57)	2,142.58	2,725.88	1,559.27
16	2,148.89	4,407.41	(109.62)	2,142.54	2,526.13	1,758.94
17	2,148.85	4,460.84	(163.13)	2,142.49	2,689.97	1,595.02
18	2,148.81	4,468.80	(171.18)	2,142.45	2,685.77	1,599.13
19	2,148.77	4,455.23	(157.69)	2,142.41	2,658.86	1,625.96
20	2,148.73	4,347.19	(49.73)	2,142.37	2,514.68	1,770.06
21	2,148.68	4,218.05	79.32	2,142.33	2,237.41	2,047.25
22	2,148.64	4,204.13	93.16	2,142.28	2,242.62	2,041.95
23	2,148.60	4,189.11	108.09	2,142.24	2,213.13	2,071.35
24	2,148.56	4,183.54	113.58	2,142.20	2,334.17	1,950.23
25	2,148.52	4,186.48	110.56	2,142.16	2,342.65	1,941.67
26	2,148.47	4,197.09	99.86	2,142.12	2,438.24	1,845.99
27	2,148.43	4,207.78	89.09	2,142.07	2,486.85	1,797.30
28	2,148.39	4,242.21	54.58	2,142.03	2,665.66	1,618.40
29	2,148.35			2,141.99		
30	2,148.31			2,141.95		
31	2,148.26			2,141.91		
32	2,148.22			2,141.86		
33	2,148.18			2,141.82		
34	2,148.14			2,141.78		
35	2,148.10			2,141.74		
36	2,148.05			2,141.70		

Lampiran 5

Perbandingan Ramalan CB Predictor dan Multiple Regression Pada Produksi Logam Timah Yang Dipengaruhi Oleh Penerimaan Material, Penggunaan Bijih Timah Untuk Peleburan dan Penggunaan Al Scrap

Periode	CB Predictor			Model Multiple Regression		
	Forecast	Upper: 95%	Lower: 5%	Forecast	Upper: 95%	Lower: 5%
1	3,769.23	4,996.83	2,541.64	3,769.11	5,131.96	2,406.26
2	3,769.23	5,342.75	2,195.71	3,769.11	5,552.47	1,985.75
3	3,769.23	5,602.77	1,935.70	3,769.11	5,841.35	1,696.88
4	3,769.23	5,753.32	1,785.15	3,769.11	6,015.81	1,522.42
5	3,769.23	5,768.54	1,769.92	3,769.11	6,056.83	1,481.40
6	3,769.23	5,999.29	1,539.17	3,769.11	6,314.39	1,223.84
7	3,769.23	6,141.64	1,396.82	3,769.11	6,477.90	1,060.33
8	3,769.23	6,240.99	1,297.47	3,769.11	6,592.06	946.17
9	3,769.23	6,291.55	1,246.92	3,769.11	6,648.02	890.20
10	3,769.23	6,311.41	1,227.05	3,769.11	6,671.27	866.95
11	3,769.23	6,349.86	1,188.60	3,769.11	6,710.34	827.89
12	3,769.23	6,303.75	1,234.71	3,769.11	6,652.46	885.77
13	3,769.23	6,189.55	1,348.92	3,769.11	6,526.71	1,011.52
14	3,769.23	6,025.82	1,512.64	3,769.11	6,339.22	1,199.01
15	3,769.23	5,945.37	1,593.09	3,769.11	6,228.43	1,309.80
16	3,769.23	5,842.89	1,695.57	3,769.11	6,117.84	1,420.39
17	3,769.23	5,829.23	1,709.24	3,769.11	6,114.58	1,423.65
18	3,769.23	5,685.20	1,853.27	3,769.11	5,961.31	1,576.92
19	3,769.23	5,445.77	2,092.70	3,769.11	5,720.95	1,817.28
20	3,769.23	5,377.12	2,161.35	3,769.11	5,665.11	1,873.12
21	3,769.23	5,279.43	2,259.04	3,769.11	5,564.02	1,974.21
22	3,769.23	5,428.34	2,110.12	3,769.11	5,709.43	1,828.80
23	3,769.23	5,548.14	1,990.33	3,769.11	5,848.03	1,690.20
24	3,769.23	5,377.98	2,160.48	3,769.11	5,652.70	1,885.53
25	3,769.23	5,280.69	2,257.78	3,769.11	5,488.29	2,049.94
26	3,769.23	5,217.95	2,320.51	3,769.11	5,378.90	2,159.33
27	3,769.23	5,216.60	2,321.86	3,769.11	5,387.46	2,150.76
28	3,769.23	5,483.59	2,054.87	3,769.11	5,673.36	1,864.87
29	3,769.23	5,290.84	2,247.62	3,769.11	5,514.34	2,023.89
30	3,769.23			3,769.11	1,864.48	1,366.17
31	3,769.23			3,769.11	1,250.20	1,250.20
32	3,769.23			3,769.11	1,250.20	1,250.20
33	3,769.23			3,769.11	1,250.20	1,250.20
34	3,769.23			3,769.11	1,250.20	1,250.20
35	3,769.23			3,769.11	1,250.20	1,250.20
36	3,769.23			3,769.11	1,250.20	1,250.20

Lampiran 6
Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Bijih Timah Dipengaruhi
Oleh Proses Penerimaan Material/Produksi Tambang dan Kadar Sn "Auto
Distribution"

Chart Bins	Rata Penggunaan Bijih Timah "Auto Dist"			Total Penggunaan Bijih timh "Auto Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	5,453.04	5,457.55	5	65,436.48	65,490.58	5
2	5,457.55	5,462.06	9	65,490.58	65,544.67	9
3	5,462.06	5,466.56	5	65,544.67	65,598.77	5
4	5,466.56	5,471.07	7	65,598.77	65,652.87	7
5	5,471.07	5,475.58	13	65,652.87	65,706.97	13
6	5,475.58	5,480.09	9	65,706.97	65,761.07	9
7	5,480.09	5,484.60	13	65,761.07	65,815.17	13
8	5,484.60	5,489.11	14	65,815.17	65,869.26	14
9	5,489.11	5,493.61	12	65,869.26	65,923.36	12
10	5,493.61	5,498.12	21	65,923.36	65,977.46	21
11	5,498.12	5,502.63	24	65,977.46	66,031.56	24
12	5,502.63	5,507.14	21	66,031.56	66,085.66	21
13	5,507.14	5,511.65	28	66,085.66	66,139.76	28
14	5,511.65	5,516.15	32	66,139.76	66,193.85	32
15	5,516.15	5,520.66	41	66,193.85	66,247.95	41
16	5,520.66	5,525.17	31	66,247.95	66,302.05	31
17	5,525.17	5,529.68	38	66,302.05	66,356.15	38
18	5,529.68	5,534.19	43	66,356.15	66,410.25	43
19	5,534.19	5,538.70	49	66,410.25	66,464.35	49
20	5,538.70	5,543.20	48	66,464.35	66,518.44	48
21	5,543.20	5,547.71	63	66,518.44	66,572.54	63
22	5,547.71	5,552.22	56	66,572.54	66,626.64	56
23	5,552.22	5,556.73	73	66,626.64	66,680.74	73
24	5,556.73	5,561.24	92	66,680.74	66,734.84	92
25	5,561.24	5,565.74	66	66,734.84	66,788.94	66
26	5,565.74	5,570.25	96	66,788.94	66,843.03	96
27	5,570.25	5,574.76	94	66,843.03	66,897.13	94
28	5,574.76	5,579.27	108	66,897.13	66,951.23	108
29	5,579.27	5,583.78	105	66,951.23	67,005.33	105
30	5,583.78	5,588.29	121	67,005.33	67,059.43	121
31	5,588.29	5,592.79	113	67,059.43	67,113.52	113
32	5,592.79	5,597.30	140	67,113.52	67,167.62	140
33	5,597.30	5,601.81	125	67,167.62	67,221.72	125
34	5,601.81	5,606.32	123	67,221.72	67,275.82	123
35	5,606.32	5,610.83	140	67,275.82	67,329.92	140
36	5,610.83	5,615.33	158	67,329.92	67,384.02	158
37	5,615.33	5,619.84	158	67,384.02	67,438.11	158
38	5,619.84	5,624.35	172	67,438.11	67,492.21	172
39	5,624.35	5,628.86	175	67,492.21	67,546.31	175
40	5,628.86	5,633.37	191	67,546.31	67,600.41	191
41	5,633.37	5,637.88	215	67,600.41	67,654.51	215
42	5,637.88	5,642.38	189	67,654.51	67,708.61	189
43	5,642.38	5,646.89	216	67,708.61	67,762.70	216
44	5,646.89	5,651.40	192	67,762.70	67,816.80	192
45	5,651.40	5,655.91	214	67,816.80	67,870.90	214
46	5,655.91	5,660.42	211	67,870.90	67,925.00	211
47	5,660.42	5,664.92	228	67,925.00	67,979.10	228
48	5,664.92	5,669.43	211	67,979.10	68,033.20	211
49	5,669.43	5,673.94	202	68,033.20	68,087.29	202
50	5,673.94	5,678.45	224	68,087.29	68,141.39	224

Lampiran 6 (Lanjutan)

51	5,678.45	5,682.96	231	68,141.39	68,195.49	231
52	5,682.96	5,687.47	225	68,195.49	68,249.59	225
53	5,687.47	5,691.97	235	68,249.59	68,303.69	235
54	5,691.97	5,696.48	194	68,303.69	68,357.79	194
55	5,696.48	5,700.99	219	68,357.79	68,411.88	219
56	5,700.99	5,705.50	190	68,411.88	68,465.98	190
57	5,705.50	5,710.01	212	68,465.98	68,520.08	212
58	5,710.01	5,714.51	194	68,520.08	68,574.18	194
59	5,714.51	5,719.02	219	68,574.18	68,628.28	219
60	5,719.02	5,723.53	204	68,628.28	68,682.38	204
61	5,723.53	5,728.04	196	68,682.38	68,736.47	196
62	5,728.04	5,732.55	174	68,736.47	68,790.57	174
63	5,732.55	5,737.06	167	68,790.57	68,844.67	167
64	5,737.06	5,741.56	144	68,844.67	68,898.77	144
65	5,741.56	5,746.07	169	68,898.77	68,952.87	169
66	5,746.07	5,750.58	154	68,952.87	69,006.96	154
67	5,750.58	5,755.09	176	69,006.96	69,061.06	176
68	5,755.09	5,759.60	146	69,061.06	69,115.16	146
69	5,759.60	5,764.10	126	69,115.16	69,169.26	126
70	5,764.10	5,768.61	136	69,169.26	69,223.36	136
71	5,768.61	5,773.12	130	69,223.36	69,277.46	130
72	5,773.12	5,777.63	123	69,277.46	69,331.55	123
73	5,777.63	5,782.14	89	69,331.55	69,385.65	89
74	5,782.14	5,786.65	104	69,385.65	69,439.75	104
75	5,786.65	5,791.15	105	69,439.75	69,493.85	105
76	5,791.15	5,795.66	98	69,493.85	69,547.95	98
77	5,795.66	5,800.17	68	69,547.95	69,602.05	68
78	5,800.17	5,804.68	49	69,602.05	69,656.14	49
79	5,804.68	5,809.19	66	69,656.14	69,710.24	66
80	5,809.19	5,813.70	55	69,710.24	69,764.34	55
81	5,813.70	5,818.20	53	69,764.34	69,818.44	53
82	5,818.20	5,822.71	44	69,818.44	69,872.54	44
83	5,822.71	5,827.22	46	69,872.54	69,926.64	46
84	5,827.22	5,831.73	34	69,926.64	69,980.73	34
85	5,831.73	5,836.24	29	69,980.73	70,034.83	29
86	5,836.24	5,840.74	43	70,034.83	70,088.93	43
87	5,840.74	5,845.25	31	70,088.93	70,143.03	31
88	5,845.25	5,849.76	28	70,143.03	70,197.13	28
89	5,849.76	5,854.27	21	70,197.13	70,251.23	21
90	5,854.27	5,858.78	18	70,251.23	70,305.32	18
91	5,858.78	5,863.29	17	70,305.32	70,359.42	17
92	5,863.29	5,867.79	8	70,359.42	70,413.52	8
93	5,867.79	5,872.30	11	70,413.52	70,467.62	11
94	5,872.30	5,876.81	13	70,467.62	70,521.72	13
95	5,876.81	5,881.32	7	70,521.72	70,575.82	7
96	5,881.32	5,885.83	8	70,575.82	70,629.91	8
97	5,885.83	5,890.33	7	70,629.91	70,684.01	7
98	5,890.33	5,894.84	5	70,684.01	70,738.11	5
99	5,894.84	5,899.35	3	70,738.11	70,792.21	3
100	5,899.35	5,903.86	4	70,792.21	70,846.31	4

Lampiran 7

Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Bijih Timah Dipengaruhi Oleh Proses Penerimaan Material/Produksi Terak dan Kadar Sn “Normal Distribution”

Chart Bins	Rata-rata Penggunaan B.T Normal Dist			Total Penggunaan B.T Normal Dist		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	5,064.86	5,074.57	3	60,778.31	60,894.78	3
2	5,074.57	5,084.27	3	60,894.78	61,011.25	3
3	5,084.27	5,093.98	8	61,011.25	61,127.72	8
4	5,093.98	5,103.68	5	61,127.72	61,244.19	5
5	5,103.68	5,113.39	9	61,244.19	61,360.66	9
6	5,113.39	5,123.09	15	61,360.66	61,477.13	15
7	5,123.09	5,132.80	13	61,477.13	61,593.60	13
8	5,132.80	5,142.51	16	61,593.60	61,710.06	16
9	5,142.51	5,152.21	22	61,710.06	61,826.53	22
10	5,152.21	5,161.92	19	61,826.53	61,943.00	19
11	5,161.92	5,171.62	20	61,943.00	62,059.47	20
12	5,171.62	5,181.33	27	62,059.47	62,175.94	27
13	5,181.33	5,191.03	25	62,175.94	62,292.41	25
14	5,191.03	5,200.74	20	62,292.41	62,408.88	20
15	5,200.74	5,210.45	26	62,408.88	62,525.35	26
16	5,210.45	5,220.15	32	62,525.35	62,641.81	32
17	5,220.15	5,229.86	36	62,641.81	62,758.28	36
18	5,229.86	5,239.56	46	62,758.28	62,874.75	46
19	5,239.56	5,249.27	46	62,874.75	62,991.22	46
20	5,249.27	5,258.97	33	62,991.22	63,107.69	33
21	5,258.97	5,268.68	50	63,107.69	63,224.16	50
22	5,268.68	5,278.39	58	63,224.16	63,340.63	58
23	5,278.39	5,288.09	79	63,340.63	63,457.10	79
24	5,288.09	5,297.80	75	63,457.10	63,573.56	75
25	5,297.80	5,307.50	86	63,573.56	63,690.03	86
26	5,307.50	5,317.21	83	63,690.03	63,806.50	83
27	5,317.21	5,326.91	90	63,806.50	63,922.97	90
28	5,326.91	5,336.62	102	63,922.97	64,039.44	102
29	5,336.62	5,346.33	124	64,039.44	64,155.91	124
30	5,346.33	5,356.03	109	64,155.91	64,272.38	109
31	5,356.03	5,365.74	125	64,272.38	64,388.84	125
32	5,365.74	5,375.44	120	64,388.84	64,505.31	120
33	5,375.44	5,385.15	154	64,505.31	64,621.78	154
34	5,385.15	5,394.85	145	64,621.78	64,738.25	145
35	5,394.85	5,404.56	181	64,738.25	64,854.72	181
36	5,404.56	5,414.27	161	64,854.72	64,971.19	161
37	5,414.27	5,423.97	166	64,971.19	65,087.66	166
38	5,423.97	5,433.68	149	65,087.66	65,204.13	149
39	5,433.68	5,443.38	191	65,204.13	65,320.59	191
40	5,443.38	5,453.09	197	65,320.59	65,437.06	197
41	5,453.09	5,462.79	193	65,437.06	65,553.53	193
42	5,462.79	5,472.50	206	65,553.53	65,670.00	206
43	5,472.50	5,482.21	223	65,670.00	65,786.47	223
44	5,482.21	5,491.91	204	65,786.47	65,902.94	204
45	5,491.91	5,501.62	179	65,902.94	66,019.41	179
46	5,501.62	5,511.32	193	66,019.41	66,135.88	193
47	5,511.32	5,521.03	216	66,135.88	66,252.34	216
48	5,521.03	5,530.73	223	66,252.34	66,368.81	223
49	5,530.73	5,540.44	218	66,368.81	66,485.28	218
50	5,540.44	5,550.15	260	66,485.28	66,601.75	260

Lampiran 7 (Lanjutan)

51	5,550.15	5,559.85	240	66,601.75	66,718.22	240
52	5,559.85	5,569.56	230	66,718.22	66,834.69	230
53	5,569.56	5,579.26	236	66,834.69	66,951.16	236
54	5,579.26	5,588.97	217	66,951.16	67,067.63	217
55	5,588.97	5,598.67	177	67,067.63	67,184.09	177
56	5,598.67	5,608.38	232	67,184.09	67,300.56	232
57	5,608.38	5,618.09	196	67,300.56	67,417.03	196
58	5,618.09	5,627.79	194	67,417.03	67,533.50	194
59	5,627.79	5,637.50	222	67,533.50	67,649.97	222
60	5,637.50	5,647.20	177	67,649.97	67,766.44	177
61	5,647.20	5,656.91	202	67,766.44	67,882.91	202
62	5,656.91	5,666.61	175	67,882.91	67,999.37	175
63	5,666.61	5,676.32	171	67,999.37	68,115.84	171
64	5,676.32	5,686.03	178	68,115.84	68,232.31	178
65	5,686.03	5,695.73	149	68,232.31	68,348.78	149
66	5,695.73	5,705.44	154	68,348.78	68,465.25	154
67	5,705.44	5,715.14	140	68,465.25	68,581.72	140
68	5,715.14	5,724.85	125	68,581.72	68,698.19	125
69	5,724.85	5,734.55	142	68,698.19	68,814.66	142
70	5,734.55	5,744.26	126	68,814.66	68,931.12	126
71	5,744.26	5,753.97	120	68,931.12	69,047.59	120
72	5,753.97	5,763.67	102	69,047.59	69,164.06	102
73	5,763.67	5,773.38	97	69,164.06	69,280.53	97
74	5,773.38	5,783.08	108	69,280.53	69,397.00	108
75	5,783.08	5,792.79	75	69,397.00	69,513.47	75
76	5,792.79	5,802.49	86	69,513.47	69,629.94	86
77	5,802.49	5,812.20	65	69,629.94	69,746.41	65
78	5,812.20	5,821.91	84	69,746.41	69,862.87	84
79	5,821.91	5,831.61	47	69,862.87	69,979.34	47
80	5,831.61	5,841.32	46	69,979.34	70,095.81	46
81	5,841.32	5,851.02	52	70,095.81	70,212.28	52
82	5,851.02	5,860.73	50	70,212.28	70,328.75	50
83	5,860.73	5,870.43	39	70,328.75	70,445.22	39
84	5,870.43	5,880.14	36	70,445.22	70,561.69	36
85	5,880.14	5,889.85	40	70,561.69	70,678.16	40
86	5,889.85	5,899.55	30	70,678.16	70,794.62	30
87	5,899.55	5,909.26	28	70,794.62	70,911.09	28
88	5,909.26	5,918.96	22	70,911.09	71,027.56	22
89	5,918.96	5,928.67	24	71,027.56	71,144.03	24
90	5,928.67	5,938.37	24	71,144.03	71,260.50	24
91	5,938.37	5,948.08	25	71,260.50	71,376.97	25
92	5,948.08	5,957.79	21	71,376.97	71,493.44	21
93	5,957.79	5,967.49	17	71,493.44	71,609.90	17
94	5,967.49	5,977.20	16	71,609.90	71,726.37	16
95	5,977.20	5,986.90	4	71,726.37	71,842.84	4
96	5,986.90	5,996.61	9	71,842.84	71,959.31	9
97	5,996.61	6,006.31	4	71,959.31	72,075.78	4
98	6,006.31	6,016.02	8	72,075.78	72,192.25	8
99	6,016.02	6,025.73	3	72,192.25	72,308.72	3
100	6,025.73	6,035.43	3	72,308.72	72,425.19	3

Lampiran 8

Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Terak Dipengaruhi Oleh Proses Penerimaan Material/Produksi Terak dan Kadar Sn "Auto Distribution"

Chart Bins	Rata-rata Penggunaan Terak Auto Dist			Jumlah Penggunaan Terak "Auto Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	2,008.63	2,013.00	6	24,103.57	24,156.03	6
2	2,013.00	2,017.37	6	24,156.03	24,208.49	6
3	2,017.37	2,021.75	4	24,208.49	24,260.96	4
4	2,021.75	2,026.12	8	24,260.96	24,313.42	8
5	2,026.12	2,030.49	4	24,313.42	24,365.88	4
6	2,030.49	2,034.86	13	24,365.88	24,418.34	13
7	2,034.86	2,039.23	15	24,418.34	24,470.80	15
8	2,039.23	2,043.61	12	24,470.80	24,523.26	12
9	2,043.61	2,047.98	14	24,523.26	24,575.72	14
10	2,047.98	2,052.35	19	24,575.72	24,628.19	19
11	2,052.35	2,056.72	14	24,628.19	24,680.65	14
12	2,056.72	2,061.09	33	24,680.65	24,733.11	33
13	2,061.09	2,065.46	23	24,733.11	24,785.57	23
14	2,065.46	2,069.84	28	24,785.57	24,838.03	28
15	2,069.84	2,074.21	32	24,838.03	24,890.49	32
16	2,074.21	2,078.58	35	24,890.49	24,942.95	35
17	2,078.58	2,082.95	35	24,942.95	24,995.42	35
18	2,082.95	2,087.32	39	24,995.42	25,047.88	39
19	2,087.32	2,091.69	58	25,047.88	25,100.34	58
20	2,091.69	2,096.07	48	25,100.34	25,152.80	48
21	2,096.07	2,100.44	63	25,152.80	25,205.26	63
22	2,100.44	2,104.81	67	25,205.26	25,257.72	67
23	2,104.81	2,109.18	73	25,257.72	25,310.18	73
24	2,109.18	2,113.55	76	25,310.18	25,362.65	76
25	2,113.55	2,117.93	81	25,362.65	25,415.11	81
26	2,117.93	2,122.30	82	25,415.11	25,467.57	82
27	2,122.30	2,126.67	85	25,467.57	25,520.03	85
28	2,126.67	2,131.04	96	25,520.03	25,572.49	96
29	2,131.04	2,135.41	99	25,572.49	25,624.95	99
30	2,135.41	2,139.78	109	25,624.95	25,677.42	109
31	2,139.78	2,144.16	121	25,677.42	25,729.88	121
32	2,144.16	2,148.53	115	25,729.88	25,782.34	115
33	2,148.53	2,152.90	119	25,782.34	25,834.80	119
34	2,152.90	2,157.27	149	25,834.80	25,887.26	149
35	2,157.27	2,161.64	152	25,887.26	25,939.72	152
36	2,161.64	2,166.02	179	25,939.72	25,992.18	179
37	2,166.02	2,170.39	172	25,992.18	26,044.65	172
38	2,170.39	2,174.76	176	26,044.65	26,097.11	176
39	2,174.76	2,179.13	181	26,097.11	26,149.57	181
40	2,179.13	2,183.50	181	26,149.57	26,202.03	181
41	2,183.50	2,187.87	195	26,202.03	26,254.49	195
42	2,187.87	2,192.25	188	26,254.49	26,306.95	188
43	2,192.25	2,196.62	196	26,306.95	26,359.41	196
44	2,196.62	2,200.99	200	26,359.41	26,411.88	200
45	2,200.99	2,205.36	216	26,411.88	26,464.34	216
46	2,205.36	2,209.73	220	26,464.34	26,516.80	220
47	2,209.73	2,214.10	206	26,516.80	26,569.26	206
48	2,214.10	2,218.48	240	26,569.26	26,621.72	240
49	2,218.48	2,222.85	234	26,621.72	26,674.18	234
50	2,222.85	2,227.22	213	26,674.18	26,726.64	213

Lampiran 8 (Lanjutan)

51	2,227.22	2,231.59	235	26,726.64	26,779.11	235
52	2,231.59	2,235.96	233	26,779.11	26,831.57	233
53	2,235.96	2,240.34	229	26,831.57	26,884.03	229
54	2,240.34	2,244.71	257	26,884.03	26,936.49	257
55	2,244.71	2,249.08	190	26,936.49	26,988.95	190
56	2,249.08	2,253.45	249	26,988.95	27,041.41	249
57	2,253.45	2,257.82	198	27,041.41	27,093.87	198
58	2,257.82	2,262.19	208	27,093.87	27,146.34	208
59	2,262.19	2,266.57	197	27,146.34	27,198.80	197
60	2,266.57	2,270.94	224	27,198.80	27,251.26	224
61	2,270.94	2,275.31	184	27,251.26	27,303.72	184
62	2,275.31	2,279.68	188	27,303.72	27,356.18	188
63	2,279.68	2,284.05	168	27,356.18	27,408.64	168
64	2,284.05	2,288.43	163	27,408.64	27,461.10	163
65	2,288.43	2,292.80	145	27,461.10	27,513.57	145
66	2,292.80	2,297.17	132	27,513.57	27,566.03	132
67	2,297.17	2,301.54	158	27,566.03	27,618.49	158
68	2,301.54	2,305.91	135	27,618.49	27,670.95	135
69	2,305.91	2,310.28	112	27,670.95	27,723.41	112
70	2,310.28	2,314.66	127	27,723.41	27,775.87	127
71	2,314.66	2,319.03	123	27,775.87	27,828.33	123
72	2,319.03	2,323.40	111	27,828.33	27,880.80	111
73	2,323.40	2,327.77	92	27,880.80	27,933.26	92
74	2,327.77	2,332.14	106	27,933.26	27,985.72	106
75	2,332.14	2,336.52	84	27,985.72	28,038.18	84
76	2,336.52	2,340.89	73	28,038.18	28,090.64	73
77	2,340.89	2,345.26	75	28,090.64	28,143.10	75
78	2,345.26	2,349.63	71	28,143.10	28,195.56	71
79	2,349.63	2,354.00	63	28,195.56	28,248.03	63
80	2,354.00	2,358.37	69	28,248.03	28,300.49	69
81	2,358.37	2,362.75	50	28,300.49	28,352.95	50
82	2,362.75	2,367.12	43	28,352.95	28,405.41	43
83	2,367.12	2,371.49	43	28,405.41	28,457.87	43
84	2,371.49	2,375.86	29	28,457.87	28,510.33	29
85	2,375.86	2,380.23	36	28,510.33	28,562.79	36
86	2,380.23	2,384.60	30	28,562.79	28,615.26	30
87	2,384.60	2,388.98	28	28,615.26	28,667.72	28
88	2,388.98	2,393.35	13	28,667.72	28,720.18	13
89	2,393.35	2,397.72	17	28,720.18	28,772.64	17
90	2,397.72	2,402.09	17	28,772.64	28,825.10	17
91	2,402.09	2,406.46	20	28,825.10	28,877.56	20
92	2,406.46	2,410.84	7	28,877.56	28,930.03	7
93	2,410.84	2,415.21	15	28,930.03	28,982.49	15
94	2,415.21	2,419.58	9	28,982.49	29,034.95	9
95	2,419.58	2,423.95	14	29,034.95	29,087.41	14
96	2,423.95	2,428.32	11	29,087.41	29,139.87	11
97	2,428.32	2,432.69	11	29,139.87	29,192.33	11
98	2,432.69	2,437.07	7	29,192.33	29,244.79	7
99	2,437.07	2,441.44	9	29,244.79	29,297.26	9
100	2,441.44	2,445.81	2	29,297.26	29,349.72	2

Lampiran 9

Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Terak Dipengaruhi Oleh Proses Penerimaan Material/Produksi Tambang dan Kadar Sn "Normal Distribution"

Chart Bins	Rata-rata Pel Terak "Normal Dist"			Jumlah Penggunaan Terak "Normal Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	2,070.37	2,073.52	5	24,844.39	24,882.28	5
2	2,073.52	2,076.68	3	24,882.28	24,920.18	3
3	2,076.68	2,079.84	10	24,920.18	24,958.07	10
4	2,079.84	2,083.00	7	24,958.07	24,995.97	7
5	2,083.00	2,086.16	9	24,995.97	25,033.86	9
6	2,086.16	2,089.31	14	25,033.86	25,071.76	14
7	2,089.31	2,092.47	16	25,071.76	25,109.66	16
8	2,092.47	2,095.63	16	25,109.66	25,147.55	16
9	2,095.63	2,098.79	6	25,147.55	25,185.45	6
10	2,098.79	2,101.95	18	25,185.45	25,223.34	18
11	2,101.95	2,105.10	22	25,223.34	25,261.24	22
12	2,105.10	2,108.26	23	25,261.24	25,299.13	23
13	2,108.26	2,111.42	26	25,299.13	25,337.03	26
14	2,111.42	2,114.58	29	25,337.03	25,374.93	29
15	2,114.58	2,117.74	31	25,374.93	25,412.82	31
16	2,117.74	2,120.89	23	25,412.82	25,450.72	23
17	2,120.89	2,124.05	44	25,450.72	25,488.61	44
18	2,124.05	2,127.21	38	25,488.61	25,526.51	38
19	2,127.21	2,130.37	35	25,526.51	25,564.40	35
20	2,130.37	2,133.53	49	25,564.40	25,602.30	49
21	2,133.53	2,136.68	46	25,602.30	25,640.20	46
22	2,136.68	2,139.84	57	25,640.20	25,678.09	57
23	2,139.84	2,143.00	74	25,678.09	25,715.99	74
24	2,143.00	2,146.16	75	25,715.99	25,753.88	75
25	2,146.16	2,149.31	79	25,753.88	25,791.78	79
26	2,149.31	2,152.47	101	25,791.78	25,829.68	101
27	2,152.47	2,155.63	93	25,829.68	25,867.57	93
28	2,155.63	2,158.79	96	25,867.57	25,905.47	96
29	2,158.79	2,161.95	100	25,905.47	25,943.36	100
30	2,161.95	2,165.10	116	25,943.36	25,981.26	116
31	2,165.10	2,168.26	137	25,981.26	26,019.15	137
32	2,168.26	2,171.42	125	26,019.15	26,057.05	125
33	2,171.42	2,174.58	150	26,057.05	26,094.95	150
34	2,174.58	2,177.74	169	26,094.95	26,132.84	169
35	2,177.74	2,180.89	152	26,132.84	26,170.74	152
36	2,180.89	2,184.05	174	26,170.74	26,208.63	174
37	2,184.05	2,187.21	155	26,208.63	26,246.53	155
38	2,187.21	2,190.37	173	26,246.53	26,284.42	173
39	2,190.37	2,193.53	174	26,284.42	26,322.32	174
40	2,193.53	2,196.68	194	26,322.32	26,360.22	194
41	2,196.68	2,199.84	210	26,360.22	26,398.11	210
42	2,199.84	2,203.00	190	26,398.11	26,436.01	190
43	2,203.00	2,206.16	210	26,436.01	26,473.90	210
44	2,206.16	2,209.32	216	26,473.90	26,511.80	216
45	2,209.32	2,212.47	218	26,511.80	26,549.69	218
46	2,212.47	2,215.63	215	26,549.69	26,587.59	215
47	2,215.63	2,218.79	198	26,587.59	26,625.49	198
48	2,218.79	2,221.95	251	26,625.49	26,663.38	251
49	2,221.95	2,225.11	212	26,663.38	26,701.28	212
50	2,225.11	2,228.26	217	26,701.28	26,739.17	217

Lampiran 9 (Lanjutan)

51	2,228.26	2,231.42	212	26,739.17	26,777.07	212
52	2,231.42	2,234.58	210	26,777.07	26,814.96	210
53	2,234.58	2,237.74	227	26,814.96	26,852.86	227
54	2,237.74	2,240.90	211	26,852.86	26,890.76	211
55	2,240.90	2,244.05	202	26,890.76	26,928.65	202
56	2,244.05	2,247.21	208	26,928.65	26,966.55	208
57	2,247.21	2,250.37	202	26,966.55	27,004.44	202
58	2,250.37	2,253.53	219	27,004.44	27,042.34	219
59	2,253.53	2,256.69	195	27,042.34	27,080.23	195
60	2,256.69	2,259.84	182	27,080.23	27,118.13	182
61	2,259.84	2,263.00	180	27,118.13	27,156.03	180
62	2,263.00	2,266.16	197	27,156.03	27,193.92	197
63	2,266.16	2,269.32	165	27,193.92	27,231.82	165
64	2,269.32	2,272.48	167	27,231.82	27,269.71	167
65	2,272.48	2,275.63	162	27,269.71	27,307.61	162
66	2,275.63	2,278.79	158	27,307.61	27,345.50	158
67	2,278.79	2,281.95	149	27,345.50	27,383.40	149
68	2,281.95	2,285.11	144	27,383.40	27,421.30	144
69	2,285.11	2,288.27	121	27,421.30	27,459.19	121
70	2,288.27	2,291.42	117	27,459.19	27,497.09	117
71	2,291.42	2,294.58	129	27,497.09	27,534.98	129
72	2,294.58	2,297.74	117	27,534.98	27,572.88	117
73	2,297.74	2,300.90	99	27,572.88	27,610.77	99
74	2,300.90	2,304.06	101	27,610.77	27,648.67	101
75	2,304.06	2,307.21	101	27,648.67	27,686.57	101
76	2,307.21	2,310.37	67	27,686.57	27,724.46	67
77	2,310.37	2,313.53	74	27,724.46	27,762.36	74
78	2,313.53	2,316.69	70	27,762.36	27,800.25	70
79	2,316.69	2,319.85	62	27,800.25	27,838.15	62
80	2,319.85	2,323.00	65	27,838.15	27,876.04	65
81	2,323.00	2,326.16	53	27,876.04	27,913.94	53
82	2,326.16	2,329.32	57	27,913.94	27,951.84	57
83	2,329.32	2,332.48	31	27,951.84	27,989.73	31
84	2,332.48	2,335.64	38	27,989.73	28,027.63	38
85	2,335.64	2,338.79	32	28,027.63	28,065.52	32
86	2,338.79	2,341.95	34	28,065.52	28,103.42	34
87	2,341.95	2,345.11	22	28,103.42	28,141.32	22
88	2,345.11	2,348.27	26	28,141.32	28,179.21	26
89	2,348.27	2,351.43	19	28,179.21	28,217.11	19
90	2,351.43	2,354.58	19	28,217.11	28,255.00	19
91	2,354.58	2,357.74	14	28,255.00	28,292.90	14
92	2,357.74	2,360.90	15	28,292.90	28,330.79	15
93	2,360.90	2,364.06	15	28,330.79	28,368.69	15
94	2,364.06	2,367.22	15	28,368.69	28,406.59	15
95	2,367.22	2,370.37	12	28,406.59	28,444.48	12
96	2,370.37	2,373.53	6	28,444.48	28,482.38	6
97	2,373.53	2,376.69	9	28,482.38	28,520.27	9
98	2,376.69	2,379.85	7	28,520.27	28,558.17	7
99	2,379.85	2,383.01	8	28,558.17	28,596.06	8
100	2,383.01	2,386.16	4	28,596.06	28,633.96	4

Lampiran 10
Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan B.T Dipengaruhi Oleh
Penggunaan BBM, Redktor dan Fluks “Auto Distribution”

Chart Bins	Rata2 Bijih Timah Yang Dilebur "Auto Dist"			Total Bijih Timah Yang Dilebur "Auto Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	3,811.00	3,843.71	5	45,731.99	46,124.56	5
2	3,843.71	3,876.43	3	46,124.56	46,517.12	3
3	3,876.43	3,909.14	5	46,517.12	46,909.69	5
4	3,909.14	3,941.85	9	46,909.69	47,302.25	9
5	3,941.85	3,974.57	7	47,302.25	47,694.82	7
6	3,974.57	4,007.28	10	47,694.82	48,087.39	10
7	4,007.28	4,040.00	15	48,087.39	48,479.95	15
8	4,040.00	4,072.71	17	48,479.95	48,872.52	17
9	4,072.71	4,105.42	20	48,872.52	49,265.08	20
10	4,105.42	4,138.14	17	49,265.08	49,657.65	17
11	4,138.14	4,170.85	14	49,657.65	50,050.22	14
12	4,170.85	4,203.57	28	50,050.22	50,442.78	28
13	4,203.57	4,236.28	22	50,442.78	50,835.35	22
14	4,236.28	4,268.99	24	50,835.35	51,227.92	24
15	4,268.99	4,301.71	33	51,227.92	51,620.48	33
16	4,301.71	4,334.42	34	51,620.48	52,013.05	34
17	4,334.42	4,367.13	39	52,013.05	52,405.61	39
18	4,367.13	4,399.85	47	52,405.61	52,798.18	47
19	4,399.85	4,432.56	59	52,798.18	53,190.75	59
20	4,432.56	4,465.28	51	53,190.75	53,583.31	51
21	4,465.28	4,497.99	46	53,583.31	53,975.88	46
22	4,497.99	4,530.70	65	53,975.88	54,368.44	65
23	4,530.70	4,563.42	67	54,368.44	54,761.01	67
24	4,563.42	4,596.13	69	54,761.01	55,153.58	69
25	4,596.13	4,628.85	93	55,153.58	55,546.14	93
26	4,628.85	4,661.56	97	55,546.14	55,938.71	97
27	4,661.56	4,694.27	81	55,938.71	56,331.28	81
28	4,694.27	4,726.99	115	56,331.28	56,723.84	115
29	4,726.99	4,759.70	100	56,723.84	57,116.41	100
30	4,759.70	4,792.41	125	57,116.41	57,508.97	125
31	4,792.41	4,825.13	130	57,508.97	57,901.54	130
32	4,825.13	4,857.84	113	57,901.54	58,294.11	113
33	4,857.84	4,890.56	131	58,294.11	58,686.67	131
34	4,890.56	4,923.27	145	58,686.67	59,079.24	145
35	4,923.27	4,955.98	183	59,079.24	59,471.80	183
36	4,955.98	4,988.70	168	59,471.80	59,864.37	168
37	4,988.70	5,021.41	181	59,864.37	60,256.94	181
38	5,021.41	5,054.13	178	60,256.94	60,649.50	178
39	5,054.13	5,086.84	169	60,649.50	61,042.07	169
40	5,086.84	5,119.55	155	61,042.07	61,434.64	155
41	5,119.55	5,152.27	204	61,434.64	61,827.20	204
42	5,152.27	5,184.98	191	61,827.20	62,219.77	191
43	5,184.98	5,217.69	200	62,219.77	62,612.33	200
44	5,217.69	5,250.41	212	62,612.33	63,004.90	212
45	5,250.41	5,283.12	194	63,004.90	63,397.47	194
46	5,283.12	5,315.84	216	63,397.47	63,790.03	216
47	5,315.84	5,348.55	204	63,790.03	64,182.60	204
48	5,348.55	5,381.26	207	64,182.60	64,575.16	207
49	5,381.26	5,413.98	202	64,575.16	64,967.73	202
50	5,413.98	5,446.69	214	64,967.73	65,360.30	214

Lampiran 10 (Lanjutan)

51	5,446.69	5,479.41	237	65,360.30	65,752.86	237
52	5,479.41	5,512.12	234	65,752.86	66,145.43	234
53	5,512.12	5,544.83	230	66,145.43	66,538.00	230
54	5,544.83	5,577.55	212	66,538.00	66,930.56	212
55	5,577.55	5,610.26	203	66,930.56	67,323.13	203
56	5,610.26	5,642.97	193	67,323.13	67,715.69	193
57	5,642.97	5,675.69	212	67,715.69	68,108.26	212
58	5,675.69	5,708.40	184	68,108.26	68,500.83	184
59	5,708.40	5,741.12	198	68,500.83	68,893.39	198
60	5,741.12	5,773.83	199	68,893.39	69,285.96	199
61	5,773.83	5,806.54	189	69,285.96	69,678.52	189
62	5,806.54	5,839.26	179	69,678.52	70,071.09	179
63	5,839.26	5,871.97	196	70,071.09	70,463.66	196
64	5,871.97	5,904.69	155	70,463.66	70,856.22	155
65	5,904.69	5,937.40	152	70,856.22	71,248.79	152
66	5,937.40	5,970.11	179	71,248.79	71,641.36	179
67	5,970.11	6,002.83	138	71,641.36	72,033.92	138
68	6,002.83	6,035.54	150	72,033.92	72,426.49	150
69	6,035.54	6,068.25	145	72,426.49	72,819.05	145
70	6,068.25	6,100.97	144	72,819.05	73,211.62	144
71	6,100.97	6,133.68	119	73,211.62	73,604.19	119
72	6,133.68	6,166.40	117	73,604.19	73,996.75	117
73	6,166.40	6,199.11	137	73,996.75	74,389.32	137
74	6,199.11	6,231.82	90	74,389.32	74,781.88	90
75	6,231.82	6,264.54	77	74,781.88	75,174.45	77
76	6,264.54	6,297.25	78	75,174.45	75,567.02	78
77	6,297.25	6,329.97	69	75,567.02	75,959.58	69
78	6,329.97	6,362.68	80	75,959.58	76,352.15	80
79	6,362.68	6,395.39	63	76,352.15	76,744.72	63
80	6,395.39	6,428.11	64	76,744.72	77,137.28	64
81	6,428.11	6,460.82	46	77,137.28	77,529.85	46
82	6,460.82	6,493.53	45	77,529.85	77,922.41	45
83	6,493.53	6,526.25	45	77,922.41	78,314.98	45
84	6,526.25	6,558.96	43	78,314.98	78,707.55	43
85	6,558.96	6,591.68	31	78,707.55	79,100.11	31
86	6,591.68	6,624.39	38	79,100.11	79,492.68	38
87	6,624.39	6,657.10	24	79,492.68	79,885.24	24
88	6,657.10	6,689.82	29	79,885.24	80,277.81	29
89	6,689.82	6,722.53	29	80,277.81	80,670.38	29
90	6,722.53	6,755.25	15	80,670.38	81,062.94	15
91	6,755.25	6,787.96	12	81,062.94	81,455.51	12
92	6,787.96	6,820.67	12	81,455.51	81,848.08	12
93	6,820.67	6,853.39	12	81,848.08	82,240.64	12
94	6,853.39	6,886.10	7	82,240.64	82,633.21	7
95	6,886.10	6,918.81	7	82,633.21	83,025.77	7
96	6,918.81	6,951.53	5	83,025.77	83,418.34	5
97	6,951.53	6,984.24	6	83,418.34	83,810.91	6
98	6,984.24	7,016.96	7	83,810.91	84,203.47	7
99	7,016.96	7,049.67	5	84,203.47	84,596.04	5
100	7,049.67	7,082.38	3	84,596.04	84,988.60	3

Lampiran 11
Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Bijih Timah Dipengaruhi
Oleh Penggunaan BBM, Redktor dan Fluks “Normal Distribution”

Chart Bins	Rata2 Bijih Timah Yang Dilebur "Normal Dist"			Total Bijih Timah Yang Dilebur "Normal Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	3,848.52	3,880.60	7	46,182.25	46,567.14	7
2	3,880.60	3,912.67	4	46,567.14	46,952.04	4
3	3,912.67	3,944.74	3	46,952.04	47,336.93	3
4	3,944.74	3,976.82	12	47,336.93	47,721.83	12
5	3,976.82	4,008.89	6	47,721.83	48,106.72	6
6	4,008.89	4,040.97	16	48,106.72	48,491.62	16
7	4,040.97	4,073.04	12	48,491.62	48,876.51	12
8	4,073.04	4,105.12	11	48,876.51	49,261.41	11
9	4,105.12	4,137.19	13	49,261.41	49,646.30	13
10	4,137.19	4,169.27	18	49,646.30	50,031.19	18
11	4,169.27	4,201.34	20	50,031.19	50,416.09	20
12	4,201.34	4,233.42	20	50,416.09	50,800.98	20
13	4,233.42	4,265.49	18	50,800.98	51,185.88	18
14	4,265.49	4,297.56	32	51,185.88	51,570.77	32
15	4,297.56	4,329.64	35	51,570.77	51,955.67	35
16	4,329.64	4,361.71	27	51,955.67	52,340.56	27
17	4,361.71	4,393.79	35	52,340.56	52,725.46	35
18	4,393.79	4,425.86	36	52,725.46	53,110.35	36
19	4,425.86	4,457.94	46	53,110.35	53,495.25	46
20	4,457.94	4,490.01	58	53,495.25	53,880.14	58
21	4,490.01	4,522.09	48	53,880.14	54,265.04	48
22	4,522.09	4,554.16	68	54,265.04	54,649.93	68
23	4,554.16	4,586.24	70	54,649.93	55,034.82	70
24	4,586.24	4,618.31	61	55,034.82	55,419.72	61
25	4,618.31	4,650.38	78	55,419.72	55,804.61	78
26	4,650.38	4,682.46	89	55,804.61	56,189.51	89
27	4,682.46	4,714.53	85	56,189.51	56,574.40	85
28	4,714.53	4,746.61	95	56,574.40	56,959.30	95
29	4,746.61	4,778.68	110	56,959.30	57,344.19	110
30	4,778.68	4,810.76	126	57,344.19	57,729.09	126
31	4,810.76	4,842.83	129	57,729.09	58,113.98	129
32	4,842.83	4,874.91	139	58,113.98	58,498.88	139
33	4,874.91	4,906.98	138	58,498.88	58,883.77	138
34	4,906.98	4,939.06	161	58,883.77	59,268.66	161
35	4,939.06	4,971.13	169	59,268.66	59,653.56	169
36	4,971.13	5,003.20	169	59,653.56	60,038.45	169
37	5,003.20	5,035.28	178	60,038.45	60,423.35	178
38	5,035.28	5,067.35	171	60,423.35	60,808.24	171
39	5,067.35	5,099.43	182	60,808.24	61,193.14	182
40	5,099.43	5,131.50	182	61,193.14	61,578.03	182
41	5,131.50	5,163.58	190	61,578.03	61,962.93	190
42	5,163.58	5,195.65	194	61,962.93	62,347.82	194
43	5,195.65	5,227.73	196	62,347.82	62,732.72	196
44	5,227.73	5,259.80	236	62,732.72	63,117.61	236
45	5,259.80	5,291.88	227	63,117.61	63,502.51	227
46	5,291.88	5,323.95	219	63,502.51	63,887.40	219
47	5,323.95	5,356.02	229	63,887.40	64,272.29	229
48	5,356.02	5,388.10	206	64,272.29	64,657.19	206
49	5,388.10	5,420.17	228	64,657.19	65,042.08	228
50	5,420.17	5,452.25	207	65,042.08	65,426.98	207

Lampiran 11 (Lanjutan)

51	5,452.25	5,484.32	220	65,426.98	65,811.87	220
52	5,484.32	5,516.40	246	65,811.87	66,196.77	246
53	5,516.40	5,548.47	206	66,196.77	66,581.66	206
54	5,548.47	5,580.55	223	66,581.66	66,966.56	223
55	5,580.55	5,612.62	178	66,966.56	67,351.45	178
56	5,612.62	5,644.70	224	67,351.45	67,736.35	224
57	5,644.70	5,676.77	241	67,736.35	68,121.24	241
58	5,676.77	5,708.84	212	68,121.24	68,506.14	212
59	5,708.84	5,740.92	192	68,506.14	68,891.03	192
60	5,740.92	5,772.99	188	68,891.03	69,275.92	188
61	5,772.99	5,805.07	175	69,275.92	69,660.82	175
62	5,805.07	5,837.14	148	69,660.82	70,045.71	148
63	5,837.14	5,869.22	197	70,045.71	70,430.61	197
64	5,869.22	5,901.29	155	70,430.61	70,815.50	155
65	5,901.29	5,933.37	162	70,815.50	71,200.40	162
66	5,933.37	5,965.44	153	71,200.40	71,585.29	153
67	5,965.44	5,997.52	142	71,585.29	71,970.19	142
68	5,997.52	6,029.59	139	71,970.19	72,355.08	139
69	6,029.59	6,061.66	126	72,355.08	72,739.98	126
70	6,061.66	6,093.74	115	72,739.98	73,124.87	115
71	6,093.74	6,125.81	114	73,124.87	73,509.76	114
72	6,125.81	6,157.89	78	73,509.76	73,894.66	78
73	6,157.89	6,189.96	96	73,894.66	74,279.55	96
74	6,189.96	6,222.04	107	74,279.55	74,664.45	107
75	6,222.04	6,254.11	101	74,664.45	75,049.34	101
76	6,254.11	6,286.19	97	75,049.34	75,434.24	97
77	6,286.19	6,318.26	75	75,434.24	75,819.13	75
78	6,318.26	6,350.34	62	75,819.13	76,204.03	62
79	6,350.34	6,382.41	67	76,204.03	76,588.92	67
80	6,382.41	6,414.48	62	76,588.92	76,973.82	62
81	6,414.48	6,446.56	40	76,973.82	77,358.71	40
82	6,446.56	6,478.63	47	77,358.71	77,743.61	47
83	6,478.63	6,510.71	48	77,743.61	78,128.50	48
84	6,510.71	6,542.78	45	78,128.50	78,513.39	45
85	6,542.78	6,574.86	34	78,513.39	78,898.29	34
86	6,574.86	6,606.93	28	78,898.29	79,283.18	28
87	6,606.93	6,639.01	20	79,283.18	79,668.08	20
88	6,639.01	6,671.08	35	79,668.08	80,052.97	35
89	6,671.08	6,703.16	18	80,052.97	80,437.87	18
90	6,703.16	6,735.23	21	80,437.87	80,822.76	21
91	6,735.23	6,767.30	17	80,822.76	81,207.66	17
92	6,767.30	6,799.38	15	81,207.66	81,592.55	15
93	6,799.38	6,831.45	12	81,592.55	81,977.45	12
94	6,831.45	6,863.53	17	81,977.45	82,362.34	17
95	6,863.53	6,895.60	15	82,362.34	82,747.23	15
96	6,895.60	6,927.68	9	82,747.23	83,132.13	9
97	6,927.68	6,959.75	4	83,132.13	83,517.02	4
98	6,959.75	6,991.83	9	83,517.02	83,901.92	9
99	6,991.83	7,023.90	4	83,901.92	84,286.81	4
100	7,023.90	7,055.98	4	84,286.81	84,671.71	4

Lampiran 12
Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Terak Dipengaruhi Oleh
Penggunaan BBM, Redktor dan Fluks "Auto Distribution"

Chart Bins	Rata-rata penggunaan terak "Auto Dist"			Total penggunaan terak "Auto Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	2,020.74	2,033.98	7	24,248.91	24,407.76	7
2	2,033.98	2,047.22	4	24,407.76	24,566.60	4
3	2,047.22	2,060.45	7	24,566.60	24,725.45	7
4	2,060.45	2,073.69	4	24,725.45	24,884.29	4
5	2,073.69	2,086.93	5	24,884.29	25,043.14	5
6	2,086.93	2,100.17	9	25,043.14	25,201.98	9
7	2,100.17	2,113.40	7	25,201.98	25,360.83	7
8	2,113.40	2,126.64	14	25,360.83	25,519.67	14
9	2,126.64	2,139.88	19	25,519.67	25,678.52	19
10	2,139.88	2,153.11	21	25,678.52	25,837.36	21
11	2,153.11	2,166.35	22	25,837.36	25,996.21	22
12	2,166.35	2,179.59	34	25,996.21	26,155.05	34
13	2,179.59	2,192.82	22	26,155.05	26,313.90	22
14	2,192.82	2,206.06	28	26,313.90	26,472.74	28
15	2,206.06	2,219.30	33	26,472.74	26,631.59	33
16	2,219.30	2,232.54	41	26,631.59	26,790.43	41
17	2,232.54	2,245.77	42	26,790.43	26,949.28	42
18	2,245.77	2,259.01	24	26,949.28	27,108.12	24
19	2,259.01	2,272.25	41	27,108.12	27,266.97	41
20	2,272.25	2,285.48	52	27,266.97	27,425.81	52
21	2,285.48	2,298.72	39	27,425.81	27,584.66	39
22	2,298.72	2,311.96	68	27,584.66	27,743.50	68
23	2,311.96	2,325.20	67	27,743.50	27,902.35	67
24	2,325.20	2,338.43	80	27,902.35	28,061.19	80
25	2,338.43	2,351.67	77	28,061.19	28,220.04	77
26	2,351.67	2,364.91	89	28,220.04	28,378.88	89
27	2,364.91	2,378.14	89	28,378.88	28,537.73	89
28	2,378.14	2,391.38	102	28,537.73	28,696.57	102
29	2,391.38	2,404.62	88	28,696.57	28,855.42	88
30	2,404.62	2,417.86	110	28,855.42	29,014.26	110
31	2,417.86	2,431.09	128	29,014.26	29,173.11	128
32	2,431.09	2,444.33	126	29,173.11	29,331.95	126
33	2,444.33	2,457.57	117	29,331.95	29,490.80	117
34	2,457.57	2,470.80	139	29,490.80	29,649.64	139
35	2,470.80	2,484.04	152	29,649.64	29,808.48	152
36	2,484.04	2,497.28	188	29,808.48	29,967.33	188
37	2,497.28	2,510.51	200	29,967.33	30,126.17	200
38	2,510.51	2,523.75	168	30,126.17	30,285.02	168
39	2,523.75	2,536.99	157	30,285.02	30,443.86	157
40	2,536.99	2,550.23	204	30,443.86	30,602.71	204
41	2,550.23	2,563.46	171	30,602.71	30,761.55	171
42	2,563.46	2,576.70	209	30,761.55	30,920.40	209
43	2,576.70	2,589.94	226	30,920.40	31,079.24	226
44	2,589.94	2,603.17	211	31,079.24	31,238.09	211
45	2,603.17	2,616.41	217	31,238.09	31,396.93	217
46	2,616.41	2,629.65	217	31,396.93	31,555.78	217
47	2,629.65	2,642.89	235	31,555.78	31,714.62	235
48	2,642.89	2,656.12	219	31,714.62	31,873.47	219
49	2,656.12	2,669.36	216	31,873.47	32,032.31	216
50	2,669.36	2,682.60	208	32,032.31	32,191.16	208

Lampiran 12 (Lanjutan)

51	2,682.60	2,695.83	192	32,191.16	32,350.00	192
52	2,695.83	2,709.07	233	32,350.00	32,508.85	233
53	2,709.07	2,722.31	258	32,508.85	32,667.69	258
54	2,722.31	2,735.54	199	32,667.69	32,826.54	199
55	2,735.54	2,748.78	246	32,826.54	32,985.38	246
56	2,748.78	2,762.02	210	32,985.38	33,144.23	210
57	2,762.02	2,775.26	202	33,144.23	33,303.07	202
58	2,775.26	2,788.49	205	33,303.07	33,461.92	205
59	2,788.49	2,801.73	208	33,461.92	33,620.76	208
60	2,801.73	2,814.97	182	33,620.76	33,779.61	182
61	2,814.97	2,828.20	199	33,779.61	33,938.45	199
62	2,828.20	2,841.44	195	33,938.45	34,097.30	195
63	2,841.44	2,854.68	179	34,097.30	34,256.14	179
64	2,854.68	2,867.92	143	34,256.14	34,414.99	143
65	2,867.92	2,881.15	147	34,414.99	34,573.83	147
66	2,881.15	2,894.39	154	34,573.83	34,732.68	154
67	2,894.39	2,907.63	163	34,732.68	34,891.52	163
68	2,907.63	2,920.86	142	34,891.52	35,050.37	142
69	2,920.86	2,934.10	139	35,050.37	35,209.21	139
70	2,934.10	2,947.34	143	35,209.21	35,368.06	143
71	2,947.34	2,960.58	113	35,368.06	35,526.90	113
72	2,960.58	2,973.81	97	35,526.90	35,685.75	97
73	2,973.81	2,987.05	98	35,685.75	35,844.59	98
74	2,987.05	3,000.29	89	35,844.59	36,003.44	89
75	3,000.29	3,013.52	95	36,003.44	36,162.28	95
76	3,013.52	3,026.76	94	36,162.28	36,321.13	94
77	3,026.76	3,040.00	62	36,321.13	36,479.97	62
78	3,040.00	3,053.23	69	36,479.97	36,638.82	69
79	3,053.23	3,066.47	62	36,638.82	36,797.66	62
80	3,066.47	3,079.71	43	36,797.66	36,956.51	43
81	3,079.71	3,092.95	53	36,956.51	37,115.35	53
82	3,092.95	3,106.18	44	37,115.35	37,274.20	44
83	3,106.18	3,119.42	33	37,274.20	37,433.04	33
84	3,119.42	3,132.66	34	37,433.04	37,591.89	34
85	3,132.66	3,145.89	33	37,591.89	37,750.73	33
86	3,145.89	3,159.13	27	37,750.73	37,909.58	27
87	3,159.13	3,172.37	16	37,909.58	38,068.42	16
88	3,172.37	3,185.61	28	38,068.42	38,227.26	28
89	3,185.61	3,198.84	18	38,227.26	38,386.11	18
90	3,198.84	3,212.08	30	38,386.11	38,544.95	30
91	3,212.08	3,225.32	16	38,544.95	38,703.80	16
92	3,225.32	3,238.55	17	38,703.80	38,862.64	17
93	3,238.55	3,251.79	23	38,862.64	39,021.49	23
94	3,251.79	3,265.03	9	39,021.49	39,180.33	9
95	3,265.03	3,278.26	15	39,180.33	39,339.18	15
96	3,278.26	3,291.50	9	39,339.18	39,498.02	9
97	3,291.50	3,304.74	6	39,498.02	39,656.87	6
98	3,304.74	3,317.98	3	39,656.87	39,815.71	3
99	3,317.98	3,331.21	5	39,815.71	39,974.56	5
100	3,331.21	3,344.45	9	39,974.56	40,133.40	9

Lampiran 13
Hasil Perhitungan Simulasi Monte Carlo Untuk Penggunaan Terak Dipengaruhi Oleh
Penggunaan BBM, Redktor dan Fluks “Normal Distribution”

Chart Bins	Rata2 Penggunaan Terak "Normal Dist"			Jumlah Terak Yang Dilebur "Normal Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	2,239.34	2,246.62	4	26,872.08	26,959.46	4
2	2,246.62	2,253.90	5	26,959.46	27,046.83	5
3	2,253.90	2,261.18	3	27,046.83	27,134.21	3
4	2,261.18	2,268.46	4	27,134.21	27,221.58	4
5	2,268.46	2,275.75	12	27,221.58	27,308.95	12
6	2,275.75	2,283.03	10	27,308.95	27,396.33	10
7	2,283.03	2,290.31	16	27,396.33	27,483.70	16
8	2,290.31	2,297.59	11	27,483.70	27,571.07	11
9	2,297.59	2,304.87	15	27,571.07	27,658.45	15
10	2,304.87	2,312.15	24	27,658.45	27,745.82	24
11	2,312.15	2,319.43	20	27,745.82	27,833.20	20
12	2,319.43	2,326.71	25	27,833.20	27,920.57	25
13	2,326.71	2,334.00	18	27,920.57	28,007.94	18
14	2,334.00	2,341.28	32	28,007.94	28,095.32	32
15	2,341.28	2,348.56	33	28,095.32	28,182.69	33
16	2,348.56	2,355.84	31	28,182.69	28,270.06	31
17	2,355.84	2,363.12	30	28,270.06	28,357.44	30
18	2,363.12	2,370.40	38	28,357.44	28,444.81	38
19	2,370.40	2,377.68	45	28,444.81	28,532.19	45
20	2,377.68	2,384.96	52	28,532.19	28,619.56	52
21	2,384.96	2,392.24	64	28,619.56	28,706.93	64
22	2,392.24	2,399.53	64	28,706.93	28,794.31	64
23	2,399.53	2,406.81	75	28,794.31	28,881.68	75
24	2,406.81	2,414.09	74	28,881.68	28,969.05	74
25	2,414.09	2,421.37	101	28,969.05	29,056.43	101
26	2,421.37	2,428.65	76	29,056.43	29,143.80	76
27	2,428.65	2,435.93	109	29,143.80	29,231.18	109
28	2,435.93	2,443.21	106	29,231.18	29,318.55	106
29	2,443.21	2,450.49	94	29,318.55	29,405.92	94
30	2,450.49	2,457.77	124	29,405.92	29,493.30	124
31	2,457.77	2,465.06	130	29,493.30	29,580.67	130
32	2,465.06	2,472.34	109	29,580.67	29,668.05	109
33	2,472.34	2,479.62	127	29,668.05	29,755.42	127
34	2,479.62	2,486.90	138	29,755.42	29,842.79	138
35	2,486.90	2,494.18	156	29,842.79	29,930.17	156
36	2,494.18	2,501.46	158	29,930.17	30,017.54	158
37	2,501.46	2,508.74	162	30,017.54	30,104.91	162
38	2,508.74	2,516.02	170	30,104.91	30,192.29	170
39	2,516.02	2,523.31	201	30,192.29	30,279.66	201
40	2,523.31	2,530.59	199	30,279.66	30,367.04	199
41	2,530.59	2,537.87	202	30,367.04	30,454.41	202
42	2,537.87	2,545.15	198	30,454.41	30,541.78	198
43	2,545.15	2,552.43	206	30,541.78	30,629.16	206
44	2,552.43	2,559.71	228	30,629.16	30,716.53	228
45	2,559.71	2,566.99	198	30,716.53	30,803.90	198
46	2,566.99	2,574.27	210	30,803.90	30,891.28	210
47	2,574.27	2,581.55	224	30,891.28	30,978.65	224
48	2,581.55	2,588.84	223	30,978.65	31,066.03	223
49	2,588.84	2,596.12	204	31,066.03	31,153.40	204
50	2,596.12	2,603.40	191	31,153.40	31,240.77	191

Lampiran 13 (Lanjutan)

51	2,603.40	2,610.68	215	31,240.77	31,328.15	215
52	2,610.68	2,617.96	228	31,328.15	31,415.52	228
53	2,617.96	2,625.24	219	31,415.52	31,502.90	219
54	2,625.24	2,632.52	213	31,502.90	31,590.27	213
55	2,632.52	2,639.80	244	31,590.27	31,677.64	244
56	2,639.80	2,647.08	214	31,677.64	31,765.02	214
57	2,647.08	2,654.37	238	31,765.02	31,852.39	238
58	2,654.37	2,661.65	186	31,852.39	31,939.76	186
59	2,661.65	2,668.93	210	31,939.76	32,027.14	210
60	2,668.93	2,676.21	194	32,027.14	32,114.51	194
61	2,676.21	2,683.49	176	32,114.51	32,201.89	176
62	2,683.49	2,690.77	162	32,201.89	32,289.26	162
63	2,690.77	2,698.05	166	32,289.26	32,376.63	166
64	2,698.05	2,705.33	169	32,376.63	32,464.01	169
65	2,705.33	2,712.62	166	32,464.01	32,551.38	166
66	2,712.62	2,719.90	169	32,551.38	32,638.75	169
67	2,719.90	2,727.18	128	32,638.75	32,726.13	128
68	2,727.18	2,734.46	145	32,726.13	32,813.50	145
69	2,734.46	2,741.74	151	32,813.50	32,900.88	151
70	2,741.74	2,749.02	133	32,900.88	32,988.25	133
71	2,749.02	2,756.30	108	32,988.25	33,075.62	108
72	2,756.30	2,763.58	110	33,075.62	33,163.00	110
73	2,763.58	2,770.86	97	33,163.00	33,250.37	97
74	2,770.86	2,778.15	86	33,250.37	33,337.75	86
75	2,778.15	2,785.43	85	33,337.75	33,425.12	85
76	2,785.43	2,792.71	76	33,425.12	33,512.49	76
77	2,792.71	2,799.99	67	33,512.49	33,599.87	67
78	2,799.99	2,807.27	65	33,599.87	33,687.24	65
79	2,807.27	2,814.55	64	33,687.24	33,774.61	64
80	2,814.55	2,821.83	59	33,774.61	33,861.99	59
81	2,821.83	2,829.11	71	33,861.99	33,949.36	71
82	2,829.11	2,836.39	44	33,949.36	34,036.74	44
83	2,836.39	2,843.68	40	34,036.74	34,124.11	40
84	2,843.68	2,850.96	36	34,124.11	34,211.48	36
85	2,850.96	2,858.24	40	34,211.48	34,298.86	40
86	2,858.24	2,865.52	35	34,298.86	34,386.23	35
87	2,865.52	2,872.80	29	34,386.23	34,473.60	29
88	2,872.80	2,880.08	34	34,473.60	34,560.98	34
89	2,880.08	2,887.36	25	34,560.98	34,648.35	25
90	2,887.36	2,894.64	16	34,648.35	34,735.73	16
91	2,894.64	2,901.93	17	34,735.73	34,823.10	17
92	2,901.93	2,909.21	13	34,823.10	34,910.47	13
93	2,909.21	2,916.49	17	34,910.47	34,997.85	17
94	2,916.49	2,923.77	10	34,997.85	35,085.22	10
95	2,923.77	2,931.05	9	35,085.22	35,172.60	9
96	2,931.05	2,938.33	9	35,172.60	35,259.97	9
97	2,938.33	2,945.61	3	35,259.97	35,347.34	3
98	2,945.61	2,952.89	4	35,347.34	35,434.72	4
99	2,952.89	2,960.17	6	35,434.72	35,522.09	6
100	2,960.17	2,967.46	1	35,522.09	35,609.46	1

Lampiran 14
Hasil Perhitungan Simulasi Monte Carlo Untuk Pod Lgm Tmh Dipengaruhi Oleh Prod
Tambang, Penggunaan Bijih Timah, dan Al Scrap "Auto Distribution"

Chart Bins	Rata-rata Prod Lgm Timah "Auto Dist"			Total Produk "Auto Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	3,674.24	3,675.80	2	44,090.89	44,109.66	2
2	3,675.80	3,677.37	7	44,109.66	44,128.43	7
3	3,677.37	3,678.93	3	44,128.43	44,147.20	3
4	3,678.93	3,680.50	10	44,147.20	44,165.97	10
5	3,680.50	3,682.06	9	44,165.97	44,184.74	9
6	3,682.06	3,683.63	9	44,184.74	44,203.51	9
7	3,683.63	3,685.19	9	44,203.51	44,222.27	9
8	3,685.19	3,686.75	15	44,222.27	44,241.04	15
9	3,686.75	3,688.32	14	44,241.04	44,259.81	14
10	3,688.32	3,689.88	12	44,259.81	44,278.58	12
11	3,689.88	3,691.45	19	44,278.58	44,297.35	19
12	3,691.45	3,693.01	20	44,297.35	44,316.12	20
13	3,693.01	3,694.57	22	44,316.12	44,334.89	22
14	3,694.57	3,696.14	33	44,334.89	44,353.66	33
15	3,696.14	3,697.70	31	44,353.66	44,372.43	31
16	3,697.70	3,699.27	33	44,372.43	44,391.20	33
17	3,699.27	3,700.83	39	44,391.20	44,409.97	39
18	3,700.83	3,702.39	45	44,409.97	44,428.74	45
19	3,702.39	3,703.96	54	44,428.74	44,447.51	54
20	3,703.96	3,705.52	57	44,447.51	44,466.27	57
21	3,705.52	3,707.09	52	44,466.27	44,485.04	52
22	3,707.09	3,708.65	78	44,485.04	44,503.81	78
23	3,708.65	3,710.22	54	44,503.81	44,522.58	54
24	3,710.22	3,711.78	91	44,522.58	44,541.35	91
25	3,711.78	3,713.34	77	44,541.35	44,560.12	77
26	3,713.34	3,714.91	75	44,560.12	44,578.89	75
27	3,714.91	3,716.47	86	44,578.89	44,597.66	86
28	3,716.47	3,718.04	125	44,597.66	44,616.43	125
29	3,718.04	3,719.60	110	44,616.43	44,635.20	110
30	3,719.60	3,721.16	106	44,635.20	44,653.97	106
31	3,721.16	3,722.73	141	44,653.97	44,672.74	141
32	3,722.73	3,724.29	107	44,672.74	44,691.51	107
33	3,724.29	3,725.86	149	44,691.51	44,710.28	149
34	3,725.86	3,727.42	154	44,710.28	44,729.04	154
35	3,727.42	3,728.98	159	44,729.04	44,747.81	159
36	3,728.98	3,730.55	148	44,747.81	44,766.58	148
37	3,730.55	3,732.11	176	44,766.58	44,785.35	176
38	3,732.11	3,733.68	187	44,785.35	44,804.12	187
39	3,733.68	3,735.24	185	44,804.12	44,822.89	185
40	3,735.24	3,736.81	179	44,822.89	44,841.66	179
41	3,736.81	3,738.37	188	44,841.66	44,860.43	188
42	3,738.37	3,739.93	215	44,860.43	44,879.20	215
43	3,739.93	3,741.50	207	44,879.20	44,897.97	207
44	3,741.50	3,743.06	205	44,897.97	44,916.74	205
45	3,743.06	3,744.63	208	44,916.74	44,935.51	208
46	3,744.63	3,746.19	193	44,935.51	44,954.28	193
47	3,746.19	3,747.75	229	44,954.28	44,973.05	229
48	3,747.75	3,749.32	219	44,973.05	44,991.81	219
49	3,749.32	3,750.88	202	44,991.81	45,010.58	202
50	3,750.88	3,752.45	224	45,010.58	45,029.35	224

Lampiran 14 (Lanjutan)

51	3,752.45	3,754.01	218	45,029.35	45,048.12	218
52	3,754.01	3,755.57	246	45,048.12	45,066.89	246
53	3,755.57	3,757.14	234	45,066.89	45,085.66	234
54	3,757.14	3,758.70	210	45,085.66	45,104.43	210
55	3,758.70	3,760.27	219	45,104.43	45,123.20	219
56	3,760.27	3,761.83	232	45,123.20	45,141.97	232
57	3,761.83	3,763.39	228	45,141.97	45,160.74	228
58	3,763.39	3,764.96	198	45,160.74	45,179.51	198
59	3,764.96	3,766.52	190	45,179.51	45,198.28	190
60	3,766.52	3,768.09	187	45,198.28	45,217.05	187
61	3,768.09	3,769.65	175	45,217.05	45,235.81	175
62	3,769.65	3,771.22	171	45,235.81	45,254.58	171
63	3,771.22	3,772.78	177	45,254.58	45,273.35	177
64	3,772.78	3,774.34	152	45,273.35	45,292.12	152
65	3,774.34	3,775.91	178	45,292.12	45,310.89	178
66	3,775.91	3,777.47	125	45,310.89	45,329.66	125
67	3,777.47	3,779.04	136	45,329.66	45,348.43	136
68	3,779.04	3,780.60	141	45,348.43	45,367.20	141
69	3,780.60	3,782.16	146	45,367.20	45,385.97	146
70	3,782.16	3,783.73	123	45,385.97	45,404.74	123
71	3,783.73	3,785.29	124	45,404.74	45,423.51	124
72	3,785.29	3,786.86	128	45,423.51	45,442.28	128
73	3,786.86	3,788.42	82	45,442.28	45,461.05	82
74	3,788.42	3,789.98	92	45,461.05	45,479.82	92
75	3,789.98	3,791.55	93	45,479.82	45,498.58	93
76	3,791.55	3,793.11	86	45,498.58	45,517.35	86
77	3,793.11	3,794.68	62	45,517.35	45,536.12	62
78	3,794.68	3,796.24	53	45,536.12	45,554.89	53
79	3,796.24	3,797.81	71	45,554.89	45,573.66	71
80	3,797.81	3,799.37	56	45,573.66	45,592.43	56
81	3,799.37	3,800.93	56	45,592.43	45,611.20	56
82	3,800.93	3,802.50	40	45,611.20	45,629.97	40
83	3,802.50	3,804.06	34	45,629.97	45,648.74	34
84	3,804.06	3,805.63	38	45,648.74	45,667.51	38
85	3,805.63	3,807.19	38	45,667.51	45,686.28	38
86	3,807.19	3,808.75	30	45,686.28	45,705.05	30
87	3,808.75	3,810.32	36	45,705.05	45,723.82	36
88	3,810.32	3,811.88	29	45,723.82	45,742.58	29
89	3,811.88	3,813.45	29	45,742.58	45,761.35	29
90	3,813.45	3,815.01	20	45,761.35	45,780.12	20
91	3,815.01	3,816.57	21	45,780.12	45,798.89	21
92	3,816.57	3,818.14	14	45,798.89	45,817.66	14
93	3,818.14	3,819.70	13	45,817.66	45,836.43	13
94	3,819.70	3,821.27	9	45,836.43	45,855.20	9
95	3,821.27	3,822.83	9	45,855.20	45,873.97	9
96	3,822.83	3,824.39	4	45,873.97	45,892.74	4
97	3,824.39	3,825.96	8	45,892.74	45,911.51	8
98	3,825.96	3,827.52	10	45,911.51	45,930.28	10
99	3,827.52	3,829.09	5	45,930.28	45,949.05	5
100	3,829.09	3,830.65	3	45,949.05	45,967.82	3

Lampiran 15
Hasil Perhitungan Simulasi Monte Carlo Untuk Pod Lgm Tmh Dipengaruhi Oleh Prod
Tambang, Penggunaan Bijih Timah, dan Al Scrap "Normal Distribution"

Chart Bins	Rata-rata Prd Lgm Tmh "Normal Dist"			Total Prodkg Lg Timah "Normal Dist"		
	Minimum	Maximum	Frequency	Minimum	Maximum	Frequency
1	3,607.07	3,610.85	4	43,284.85	43,330.24	4
2	3,610.85	3,614.63	4	43,330.24	43,375.62	4
3	3,614.63	3,618.42	9	43,375.62	43,421.00	9
4	3,618.42	3,622.20	10	43,421.00	43,466.38	10
5	3,622.20	3,625.98	13	43,466.38	43,511.76	13
6	3,625.98	3,629.76	20	43,511.76	43,557.14	20
7	3,629.76	3,633.54	10	43,557.14	43,602.52	10
8	3,633.54	3,637.32	20	43,602.52	43,647.90	20
9	3,637.32	3,641.11	10	43,647.90	43,693.28	10
10	3,641.11	3,644.89	13	43,693.28	43,738.66	13
11	3,644.89	3,648.67	24	43,738.66	43,784.04	24
12	3,648.67	3,652.45	26	43,784.04	43,829.42	26
13	3,652.45	3,656.23	26	43,829.42	43,874.80	26
14	3,656.23	3,660.01	25	43,874.80	43,920.18	25
15	3,660.01	3,663.80	40	43,920.18	43,965.56	40
16	3,663.80	3,667.58	27	43,965.56	44,010.94	27
17	3,667.58	3,671.36	44	44,010.94	44,056.32	44
18	3,671.36	3,675.14	44	44,056.32	44,101.70	44
19	3,675.14	3,678.92	43	44,101.70	44,147.08	43
20	3,678.92	3,682.70	49	44,147.08	44,192.46	49
21	3,682.70	3,686.49	61	44,192.46	44,237.84	61
22	3,686.49	3,690.27	47	44,237.84	44,283.22	47
23	3,690.27	3,694.05	51	44,283.22	44,328.60	51
24	3,694.05	3,697.83	72	44,328.60	44,373.98	72
25	3,697.83	3,701.61	79	44,373.98	44,419.36	79
26	3,701.61	3,705.40	81	44,419.36	44,464.74	81
27	3,705.40	3,709.18	96	44,464.74	44,510.12	96
28	3,709.18	3,712.96	101	44,510.12	44,555.50	101
29	3,712.96	3,716.74	106	44,555.50	44,600.88	106
30	3,716.74	3,720.52	115	44,600.88	44,646.26	115
31	3,720.52	3,724.30	128	44,646.26	44,691.64	128
32	3,724.30	3,728.09	147	44,691.64	44,737.02	147
33	3,728.09	3,731.87	124	44,737.02	44,782.40	124
34	3,731.87	3,735.65	139	44,782.40	44,827.78	139
35	3,735.65	3,739.43	143	44,827.78	44,873.16	143
36	3,739.43	3,743.21	149	44,873.16	44,918.54	149
37	3,743.21	3,746.99	179	44,918.54	44,963.92	179
38	3,746.99	3,750.78	192	44,963.92	45,009.30	192
39	3,750.78	3,754.56	196	45,009.30	45,054.68	196
40	3,754.56	3,758.34	172	45,054.68	45,100.06	172
41	3,758.34	3,762.12	205	45,100.06	45,145.44	205
42	3,762.12	3,765.90	224	45,145.44	45,190.82	224
43	3,765.90	3,769.68	184	45,190.82	45,236.20	184
44	3,769.68	3,773.47	201	45,236.20	45,281.58	201
45	3,773.47	3,777.25	200	45,281.58	45,326.96	200
46	3,777.25	3,781.03	221	45,326.96	45,372.35	221
47	3,781.03	3,784.81	205	45,372.35	45,417.73	205
48	3,784.81	3,788.59	229	45,417.73	45,463.11	229
49	3,788.59	3,792.37	198	45,463.11	45,508.49	198
50	3,792.37	3,796.16	211	45,508.49	45,553.87	211

Lampiran 15 (Lanjutan)

51	3,796.16	3,799.94	231	45,553.87	45,599.25	231
52	3,799.94	3,803.72	211	45,599.25	45,644.63	211
53	3,803.72	3,807.50	239	45,644.63	45,690.01	239
54	3,807.50	3,811.28	238	45,690.01	45,735.39	238
55	3,811.28	3,815.06	202	45,735.39	45,780.77	202
56	3,815.06	3,818.85	208	45,780.77	45,826.15	208
57	3,818.85	3,822.63	239	45,826.15	45,871.53	239
58	3,822.63	3,826.41	231	45,871.53	45,916.91	231
59	3,826.41	3,830.19	212	45,916.91	45,962.29	212
60	3,830.19	3,833.97	215	45,962.29	46,007.67	215
61	3,833.97	3,837.75	174	46,007.67	46,053.05	174
62	3,837.75	3,841.54	159	46,053.05	46,098.43	159
63	3,841.54	3,845.32	171	46,098.43	46,143.81	171
64	3,845.32	3,849.10	191	46,143.81	46,189.19	191
65	3,849.10	3,852.88	152	46,189.19	46,234.57	152
66	3,852.88	3,856.66	155	46,234.57	46,279.95	155
67	3,856.66	3,860.44	169	46,279.95	46,325.33	169
68	3,860.44	3,864.23	134	46,325.33	46,370.71	134
69	3,864.23	3,868.01	106	46,370.71	46,416.09	106
70	3,868.01	3,871.79	123	46,416.09	46,461.47	123
71	3,871.79	3,875.57	104	46,461.47	46,506.85	104
72	3,875.57	3,879.35	100	46,506.85	46,552.23	100
73	3,879.35	3,883.13	112	46,552.23	46,597.61	112
74	3,883.13	3,886.92	101	46,597.61	46,642.99	101
75	3,886.92	3,890.70	93	46,642.99	46,688.37	93
76	3,890.70	3,894.48	81	46,688.37	46,733.75	81
77	3,894.48	3,898.26	79	46,733.75	46,779.13	79
78	3,898.26	3,902.04	65	46,779.13	46,824.51	65
79	3,902.04	3,905.82	56	46,824.51	46,869.89	56
80	3,905.82	3,909.61	55	46,869.89	46,915.27	55
81	3,909.61	3,913.39	42	46,915.27	46,960.65	42
82	3,913.39	3,917.17	52	46,960.65	47,006.03	52
83	3,917.17	3,920.95	46	47,006.03	47,051.41	46
84	3,920.95	3,924.73	29	47,051.41	47,096.79	29
85	3,924.73	3,928.51	35	47,096.79	47,142.17	35
86	3,928.51	3,932.30	26	47,142.17	47,187.55	26
87	3,932.30	3,936.08	22	47,187.55	47,232.93	22
88	3,936.08	3,939.86	28	47,232.93	47,278.31	28
89	3,939.86	3,943.64	22	47,278.31	47,323.69	22
90	3,943.64	3,947.42	18	47,323.69	47,369.07	18
91	3,947.42	3,951.20	14	47,369.07	47,414.45	14
92	3,951.20	3,954.99	19	47,414.45	47,459.84	19
93	3,954.99	3,958.77	13	47,459.84	47,505.22	13
94	3,958.77	3,962.55	14	47,505.22	47,550.60	14
95	3,962.55	3,966.33	8	47,550.60	47,595.98	8
96	3,966.33	3,970.11	6	47,595.98	47,641.36	6
97	3,970.11	3,973.89	8	47,641.36	47,686.74	8
98	3,973.89	3,977.68	14	47,686.74	47,732.12	14
99	3,977.68	3,981.46	9	47,732.12	47,777.50	9
100	3,981.46	3,985.24	4	47,777.50	47,822.88	4