

Typical Pit Planning Schedule for One Month

Memorandum from Assistant Pit Planning Engineer to General Mine Superintendent on the mining plan for March 1971.

- 1) Ore tonnage to be supplied to the Mill will be 1,643,000 tons. This provides for an average milling rate of 53,000 tpd.
- 2) Total tonnage to be loaded and hauled out of the Pit will be 3,564,000 tons at a waste-to-ore ratio of 1.17:1. This is equivalent to 132,000 tons per mine day.
- 3) The copper cut-off grade is 0.25%.
- 4) The 12-cu yd shovel, assisted by one 6-cu yd shovel and one 4½-yd shovel, will load 407,000 tons on Bench 7, and 1,088,000 tons on Bench 9; these figures include 407,000 tons from the stripping area.
- 5) LoTi feed to the mill for the month will be at an average rate of 28%, i.e. 466,000 tons.
- 6) Below is a summary of the ore to be sent to the Mill during March, 1971:

Bench	Tons ore	% Cu	Tons copper
7	25,000	0.86	216.0
8	312,000	0.51	1,603.9
9	363,000	0.45	1,648.1
10	220,000	0.57	1,250.5
11	432,000	0.66	2,859.3
12	108,000	1.20	1,296.6
13	183,000	0.40	734.4
Total	1,643,000	0.58	9,608.8

How Planned Weekly Production Compared with Actual Production

Memorandum from Assistant Pit Planning Engineer to General Mine Superintendent on reconciliation between ore program and ore production for week ending Jan. 30, 1971:

Bench	Code	Planned	Code	Actual
9	C/411	54,000 tons @ 0.47	C/411	63,000 tons @ 0.47
			C/423	14,732 tons @ 0.63

Remarks: Shovel performance better than anticipated

10	C/308	30,000 tons @ 0.52	C/308	35,264 tons @ 0.52
	C/309	41,000 tons @ 0.29	C/309	23,722 tons @ 0.29
	C/310	25,000 tons @ 0.48	C/310	

Remarks: Underloading caused by shovel breakdown

11			C/128	2,262 tons @ 0.63
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Remarks: Clean up

12	C/54	96,000 tons @ 0.85	C/54	85,260 tons @ 0.85
	C/55	28,000 tons @ 0.57	C/55	7,076 tons @ 0.57
	P	68,000 tons @ 0.37	C/56	63,510 tons @ 0.37
			C/51	4,872 tons @ 0.50

Remarks: Underloading due to full stockpile

13			C/2	4,640 tons @ 0.31
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Remarks: Sump made deeper

Marginal dump		30,000 tons @ 0.37		45,878 tons @ 0.37
		372,000 tons @ 0.53		373,520 tons @ 0.53

Remarks: Overloaded to compensate for C/309, C/54 and C/55

Note: LoTi-Ore delivered to Primary Crushers: 98,774 tons = 25% of total feed

Typical Weekly Ore Production Forecast

Memorandum from Assistant Pit Planning Engineer to General Mine Superintendent on grade of ore for delivery to the primary crushers; forecast for the week ending March 13, 1971, and the week ending March 20, 1971:

Estimated Grade for March, 1971	0.57% Cu
Estimated Grade for week ending March 13, 1971	0.58% Cu
Estimated Grade for week ending March 20, 1971	0.57% Cu

Bench	Week ending	Tons Cu	Code
Bench 13	Week ending March 13, 1971		
3,000 tons @ 0.52	15.6	C/5	
8,000 tons @ 0.27	21.6	P	
6,000 tons @ 0.42	25.2	P	
Bench 13	Week ending March 20, 1971		
32,000 tons @ 0.42	134.4	C/P	
20,000 tons @ 0.41	82.0	P	

Bench 12	Week ending March 13, 1971		
18,000 tons @ 1.09	196.2	C/70	
9,000 tons @ 1.32	118.8	C/63	

Bench 11	Week ending March 13, 1971		
22,000 tons @ 0.74	162.8	C/181	
23,000 tons @ 0.67	154.1	C/183	
34,000 tons @ 0.56	190.4	P	
17,000 tons @ 0.91	154.7	P	

Bench 11	Week ending March 20, 1971		
16,000 tons @ 0.91	145.6	P	
80,000 tons @ 0.66	528.0	P	

Bench 10	Week ending March 13, 1971		
57,000 tons @ 0.58	330.6	C/318	
15,000 tons @ 0.35	52.5	C/319	

Bench 10	Week ending March 20, 1971		
16,000 tons @ 0.58	92.8	C/318	

Bench 9	Week ending March 13, 1971		
66,000 tons @ 0.51	336.6	P	

Bench 9	Week ending March 13, 1971		
134,000 tons @ 0.51	683.4	P	

Bench 8	Week ending March 13, 1971		
50,000 tons @ 0.49	245.0	C/527	
18,000 tons @ 0.34	61.2	P	
17,000 tons @ 0.26	44.2	P	
9,000 tons @ 0.42	37.8	P	
372,000 tons @ 0.58	2,147.3		

Bench 8	Week ending March 20, 1971		
19,000 tons @ 0.42	79.8	C/523	
37,000 tons @ 0.81	299.7	P	
19,000 tons @ 0.43	81.7	P	
373,000 tons @ 0.57	2,127.4		

11 cells fed in parallel. The first 6 cells feed to cleaners, while the remaining 5 cells are recycled back to the feed as middlings. Rougher concentrates go to a three-cell bank; and cleaner concentrates go to a three-cell bank; and cleaner concentrates to a two-cell recleaner to make final concentrates. Cleaner tails are cycled back to rougher heads, and recleaner tails go back to cleaner feed.

Currently, testwork is underway in Section 6 to regrind the concentrate fractions to produce improved grade.

Reagents

Various collectors have been tried but the best to date continues to be potassium amyl xanthate. Reagent 425 (Cyanamid) was used at start-up as a froth modifier, but in early 1969 this was replaced by a locally made product 41G produced by National Chemical Products S.A. This reagent has contributed substantially to recovery as it

cleaner bank. The last 10 cells of each bank make middlings which are circulated back to the Agitair feed.

Agitair tails are fed to the 10-cell bank of Fagergrens. The first two cells go to cleaning; the last 8 are recycled to the head of the Fagergrens. Cleaner tails go back to the Agitair heads.

*On the new Section 6, all flotation machines are 8.5 cu m Fagergrens. Current configuration is two banks of