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April 03, 1986

Mr. K. A. Forgaard  
Vice President and General Manager  
Curragh Resources  
Faro, Yukon Territory

Dear Kurt:

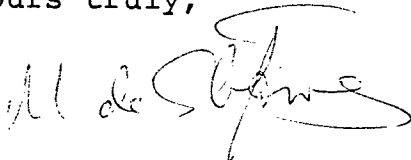
Re: Possible Deepening of JB Phase

I have attached the results of a brief study I have made on the possibility of deepening the JB phase in order to avoid the October 1986 shortfall in sulphide ore feed to the mill.

From this, it appears that this interval can be reduced from the present 30 days and it may be possible to remove it altogether.

I think it is worth having Kilborn look at the practicality and economics of doing this.

Yours truly,



M. de St. Jorre  
Representative

cc: P. Roberts

attach.

## DEEPENING OF JB PHASE TO 3690

### Introduction

The January 31, 1986 budget update projects an ore shortfall of about 340,000 metric tons in October 1986 which is planned to be filled with oxide ore from the stockpile. This switch at the time the mill is reaching full production introduces uncertainties and the potential for increased costs, lower recoveries and off-specification concentrates. If the introduction of this material into the mill at this time can be avoided, it will remove the chance that cash flow from the sale of concentrates could be seriously reduced at a very critical time.

From a brief study of the reserve level plans, it is evident that these are significant tonnages of +6% Pb and Zn ore directly below the present planned pit bottom of the JB phase at 3750 elevation. I believe that a study should be carried out to determine if it is both feasible and economic to deepen the JB phase and maintain sulphide feed to the mill throughout 1986.

### Deepening Plan

On each of the three 20 foot lifts below 3750 elevation in the JB phase (benches 3730, 3710 and 3690) there is in excess of 200,000 metric tons of +6% ore, either directly below or within 150 feet of the present planned outline of 3750 level bench.

I have roughed out a plan that goes down to 3690 and takes in some 640,000 metric tons grading 7.9% Pb and Zn.

The incremental volumes and tonnages of waste and ore respectively that would be produced from such a plan are shown below.

<u>Bench</u>	<u>Waste (BCY)</u>	<u>Ore</u>	
		<u>Tonnes</u>	<u>Grade</u>
3830-3850	240,000		
3810-3830	214,000		
3790-3810	196,000		
3770-3790	198,000		
3750-3770	165,000		
3730-3750	179,000	231,600	8.4
3710-3730	113,000	267,600	7.7
3690-3710	<u>46,000</u>	<u>141,600</u>	<u>7.4</u>
Totals	<u>1,351,000</u>	<u>640,800</u>	<u>7.9</u>

The outlines of these three lower benches are shown on attached sketches A, B and C.

The access ramp stays in its present location on the east side of the pit, but swings out to the west from its present location as it moves above 3790 elevation.

The outline chosen is definitely not optimal, since it probably takes in too much waste to the north (for the amount of ore obtained) and in fact, it may be preferable not to go below 3710 elevation.

The plan shown is based on an average pit slope angle of 38.5°.

### Economic Justifications

All of the excavation shown lies within the ultimate pit limits, thus all of the rock will eventually be broken and moved. Looking at the quantities involved, waste movement will require 38 days of budget production (35,200 BCY/day) and will uncover 57 days of milling feed (11,160 metric ton/day). Thus, there is an apparent advance in ore production if this stripping is done in JB phase rather than A phase. A phase ore production will be delayed at least 38 days, probably more since 3 x 20 foot sinking cuts will be required but there should be sufficient ore in the bottom 60 feet of JB phase to both make up the October shortfall and cover most of the time required to make up for the delay in the A phase stripping. Thus, the ore production gap will be reduced from 30 days to about 10. By further refinement of this plan, it could possibly be reduced to zero.

The actual cost of doing this will be the inefficiencies resulting from going 60 feet deeper in a tight pit; the benefits will be those derived from the continuity of sulphide feed to the mill and a more constant concentrate quality.

### Timing

If a deeper JB phase is undertaken, it will extend 3830A bench to the west and 3830 B bench to the north, the size of these extensions being determined by the final pit outline taken on the bottom bench (either 3690 or 3710). If this option is to be considered, it needs to be studied and acted upon quickly.

### Conclusions

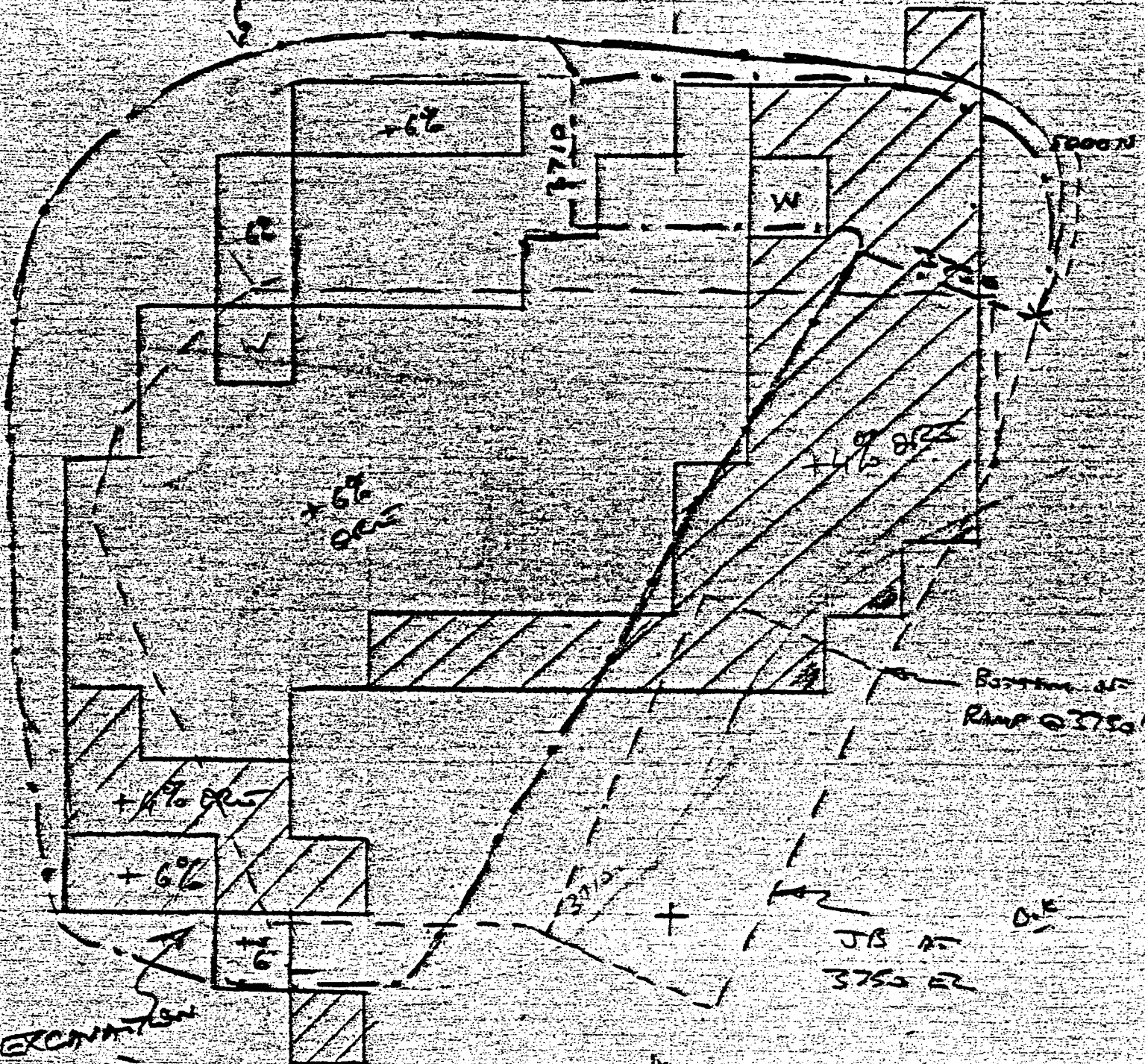
Deepening of the JB phase either to 3690 or 3710 may enable the October 1986 sulphide ore shortfall to be avoided. In order to decide if it is economically worthwhile to do so, a more detailed study is required than the cursory examination of the plan that I have made.



# Sketch B

OUTLINE

+ 35' HORIZ  
FROM 3690 EL  
OUTLINE



Bottom at  
RAMP @ 3750!

JS AT  
3750 EL

Excavation  
at 3710

+ 6%

3690 EL

3710

3710

+ 6%

+ 6%  
SLOPE

+ 6%  
SLOPE

+ 6%

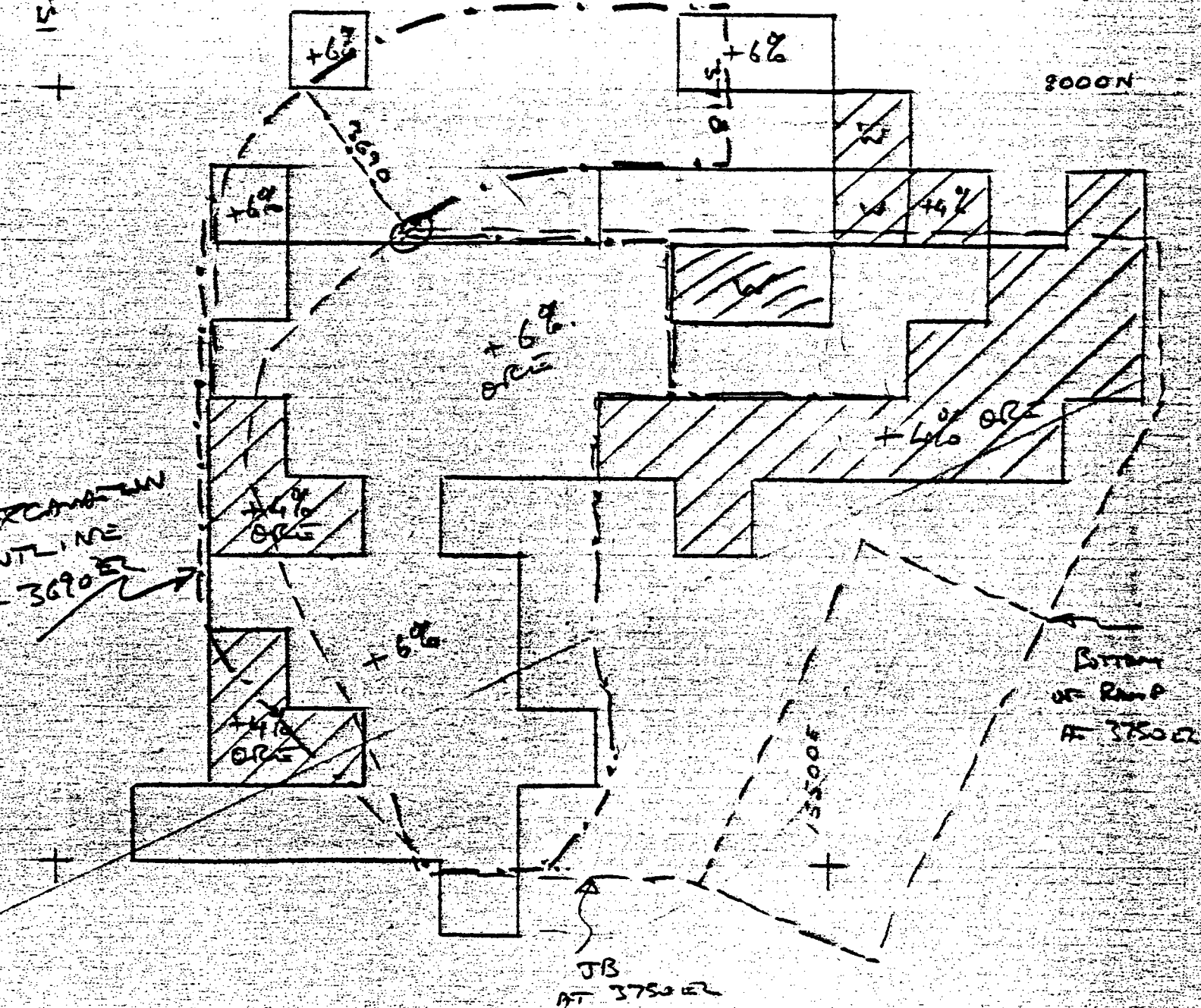
6'

W

DOOR

SKETCH C

15900 EL



+6%