

Memorandum

To:	Rick Pattenden, Mainstream Aquatics	Date:	June 5, 2004
cc:	Dan Johnson & Greg Missal, Tahera	From:	Cam Scott / Chris Page
Subject:	Blast Zone Effects	Project #:	1CT004.06.950

Rick,

In your e-mail dated 23 April, 2004, you requested that we address the following tasks in relation to the use of explosives in the proposed Jericho pit adjacent to Carat Lake:

1. Examine the assumptions used as a basis for the effects assessment presented in the FEIA (Attachment B.2.3) to assess their validity.
2. Change the assumptions as required and re-calculate the blast zone distance from detonation point using the equations in Wright and Hopky (1998) and criteria of 13 mm/s for peak particle velocity (PPV) and 50 kPa for instantaneous pressure change (IPC). Note that 50 kPa reflects a doubling of the IPC in response to the presence of ice.
3. Calculate blast zone distance over the life of mine, taking into account pit diameter and pit depth.

The results of our assessment are provided below. Tasks 1 and 2 have been combined into a single task.

Assumptions used in the FEIS

Our assessment of the assumptions which form the basis of the equations used to calculate the PPV and IPC was provided in an e-mail dated 23 April, 2004. The comments in that e-mail are repeated here.

The variables in the equations are the charge weight per delay (how much explosive goes off on a single delay; a blast might be many charges to give a total blast up to a hundred times the individual charge weight), the assumptions for compressional wave velocity and the density of the rock. The only variable we can modify is the charge weight.

The mine operation contractor, Nuna Logistics, indicate they will be using 6.5 in diameter holes with a bench height of 10m giving approximately 150kg of explosive per hole. Nuna will be using a single hole per delay.

The wave velocity in rock could be 5.6 km/s compared to the 4.6 km/s assumed; the water velocity is correct.

Therefore the estimates in Table 2.2 of the FEIS might be considered conservative, i.e. the calculated values will be lower.

The charge weight per delay is approximate because there is the potential for errors to be made during blasting operations. But usually the equations and the thresholds take this uncertainty into account and measurements in the field are often much lower.

In summary, the blast size and assumptions on timing used in the FEIS are applicable.

Calculation of the blast zone distance over the life of mine

We re-estimated the distance from the edge of the proposed open pit to Carat Lake and found that it was 259 m, not the 200m assumed previously in the FEIS. In reality, this will not be the distance at mine startup, but reflects the minimum distance at some point early in the mine life. The approximate change in the minimum distance, taken as a true distance, between the edge of Carat Lake and the blast zone over the life of mine (LOM) is provided in Figure 1. As shown in Figure 1, the minimum distance from the blast zone to the edge of Carat Lake increases with time.

Recalculation of the PPV and IPC

The following table provides a summary of the depth, PPV and IPC over the mine life. The calculations used to develop the table include the correction for doubling of IPC due to reflection off of the ice and revision of the maximum acceptable threshold down to 50kpa from the original 100kpa.

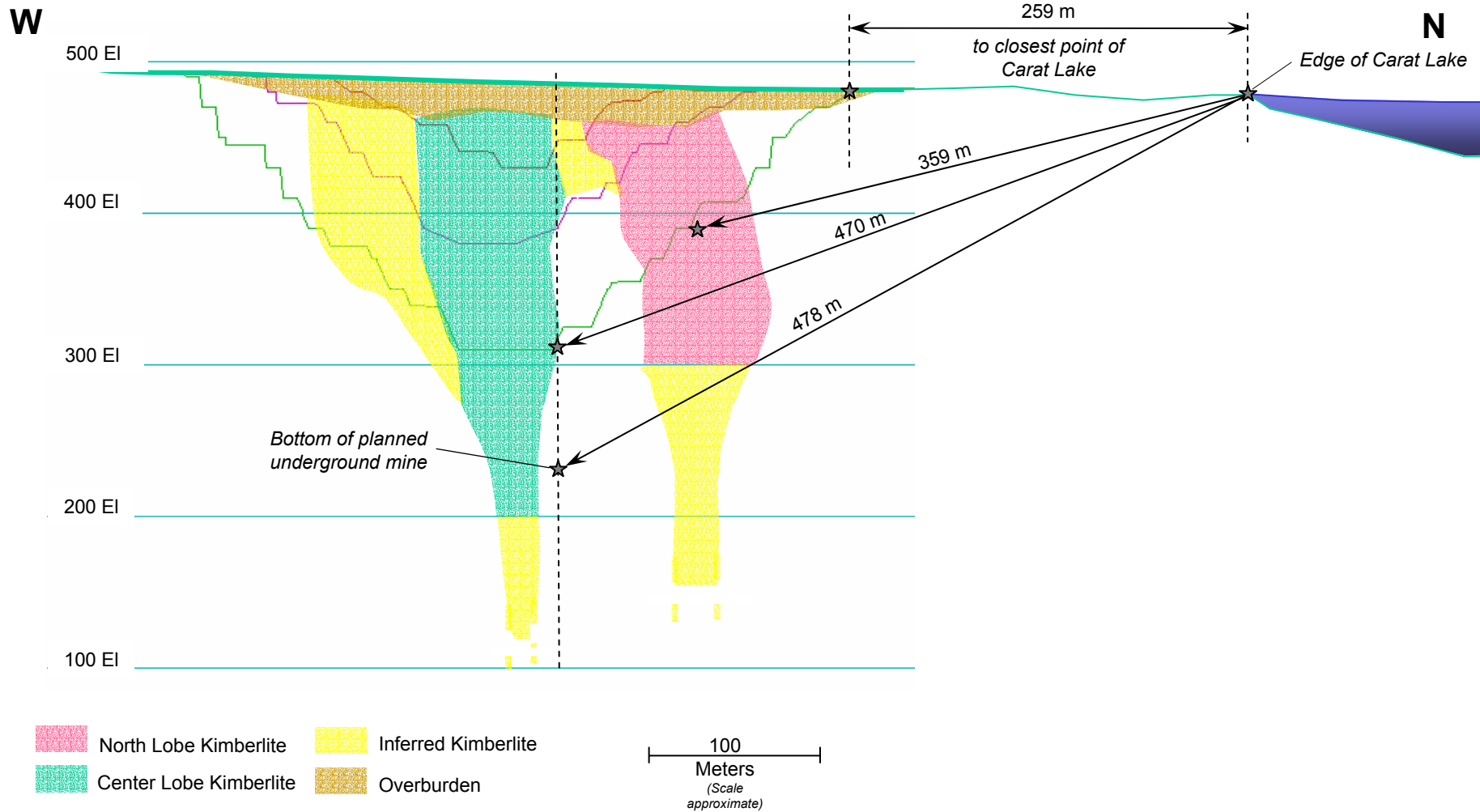
Summary of the PPV and IPC over the Life of Mine

Critical Parameters	Compliance Targets	Minimum Distance corresponding to the PPV Compliance Target	Minimum Distance corresponding to the IPC Compliance Target	Presented in FEIS	Life of Mine (LOM)			
					~ Yr 1 or 2	End of ~ Yr 2	End of ~ Yr 4	End of Mine Life
Distance (m)		227	178	200	259	359	470	478
PPV (mm/s)	13	13.0		16.0	10.6	6.3	4.1	4.0
IPC (kPa)	25*		25.1	20.6	13.8	8.2	5.3	5.2

*Includes correction for doubling of IPC due to reflection off of ice, and revision of maximum acceptable threshold down to 50 kPa from 100 kPa.

Based on the compliance targets of 13 mm/s and 25 kPa, the minimum distances required to satisfy the IPC and PPV criteria are 178 m and 227 m, respectively. Therefore, based on a minimum distance of 260 m, the compliance targets related to blasting are not exceeded over the LOM.

We would be pleased to respond to any questions you might have regarding this memo.



TAHERA CORPORATION

Jericho Project, Nunavut

Distances for use in Analysis of Blasting Targets

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APPROVED:

FIGURE:

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