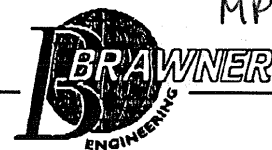


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c.o. Brawner Engineering LTD.



CONSULTING GEOTECHNICAL ENGINEERING

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February 16, 2000

Ministry of Energy & Mines
Mines Inspection Branch
5th. Floor, 1810 Blanshard St.
Victoria, B.C.
V8W 9N3

Attn: Tim Eaton, P. Eng.
Manager, Geotechnical Engineering

Dear Mr. Eaton:

Re: Mount Polley Mining Corp.
Tailings Storage Facility Cyclone Sand Review

Further to your request of February 4, 2000 I have reviewed the report by Knight Piesold Ltd. on Cycloned Sand Construction of Stage 3 and Ongoing Stages of the Tailings Storage Facility at Mount Polley Mine.

INTRODUCTION

I note that Mt. Polley is anxious to move to cyclone sand construction for their TSF dam. EMPR is concerned that they may have not completed realistic cost estimates and recognized all the construction difficulties.

In addition:

(core)

- i) The fill has shifted upstream a bit and might be narrow above the existing dam crest.
- ii) The need and effectiveness of the upstream drainage pipe has not been clearly demonstrated.
- iii) The cycloned sand has a high silt content and therefore lower permeability.

I also have received concerns from Mr. G. Headley, Senior Geotechnical Engineer on February 11, 2000. The project involves three embankments - The main, perimeter and south dams. The

main embankment is the highest 57 meters - which represents a medium-high structure, certainly not unusual.

DESIGN

The design is a modified centerline design with a clay till core and a hydrauliced silty sand downstream section. The silty sand is obtained by cycloning the tailings. To recognize the somewhat finer gradation than usual for this type of structure the downstream slope has been flattened from 2H:1V to 3H:1V. This is a reasonable trade-off provided vertical permeability is available. The downstream zone will be developed with ongoing raises.

DESIGN AND CONSTRUCTION CONTROL

The design proposed is sensitive to many features which will require close control. These include:

- ◆ an adequate materials balance
- ◆ successful control of piezometric pressures in the dam and foundations
- ◆ reasonable vertical drainability of the hydrauliced tailings
- ◆ adequate density of the hydrauliced tailings
- ◆ adequate under-drainage
- ◆ optimization of cyclone operation over 7 months
- ◆ adequate Q_r/Q_c field inspection program
- ◆ adequate cyclone and hydraulicing operating personnel and facilities

FIELD AND DESIGN PROGRAMS

Knight Piesold have performed considerable geotechnical and materials characteristics tests. They include:

- ◆ review of a very large scale field cyclone and hydraulicing test program (200,000 m³)
- ◆ field gradation and density testing
- ◆ field permeability and drainage evaluation
- ◆ tailings gradation and density testing
- ◆ seepage analysis
- ◆ stability analysis - static and dynamic for the dam and foundations
- ◆ final design stability allows for plugged drains
- ◆ shear strength and permeability assessment of the tailings
- ◆ emphasis that the ongoing design may be modified based on experience - the observational approach

I would note that the testing, evaluation and analysis generally meet the standard of the industry requirements. Conservation has been incorporated in tailings properties and the stability analysis.

PAST EXPERIENCE

The use of the centerline method was used successfully at Gibraltar and Brenda Mines. It is recognized that the gradation of Mt. Polley is finer, therefore it is recommended that Knight Piesold - Mt. Polley Mines provide some further information such as:

- ◆ other projects internationally where a reasonably similar tailings gradation has been used successfully
- ◆ foundation finger drains have been used under hydraulically placed tailings for downstream construction
- ◆ adequate density has been obtained using hydraulic placement of tailings
- ◆ the cell deposition system they propose has been successful elsewhere
- ◆ the foundation glacial fluvial sand is not subject to liquefaction under the site load conditions

RECOMMENDATIONS

The first year of hydraulic tailings disposal is critical.

It is recommended that Knight Piesold and Mt. Polley Mines meet the following requirements:

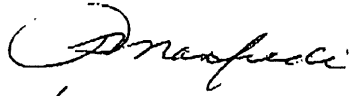
- ◆ Develop redundancy in the hydraulic tailings disposal system - pipelines and cyclones.
- ◆ Establish a comprehensive Q_p/Q_c monitoring system and report data to EMPR monthly. This frequency may be relaxed pending successful procedures and results after year one.
- ◆ Review the hydraulicing program annually and redesign the following year's program if necessary.
- ◆ Install adequate instrumentation to allow the observational approach to be successful.
- ◆ Incorporate a top filter in the finger drain design.
- ◆ Ensure the width of the center clayey core is wide enough to be constructed effectively.
- ◆ Monitor the mass tailings balance to ensure the yearly volumes are available.
- ◆ Develop the year one design of pipelines and cyclones and submit it to EMPR for information.
- ◆ Review the estimated cost estimate.
- ◆ Re-assess the need of the upstream drainage pipe.
- ◆ Communicate with EMPR immediately if the hydraulic tailings program develops problems and advise operational changes proposed.

- ◆ Develop a hydraulic tailings deposition operating manual as soon as reasonably possible.
- ◆ Ensure the surface drainage collection systems and pressure relief wells are operational at the commencement of the hydraulic program.

Providing the list of recommendations listed herein are met or agreed to, I consider you can recommend the use of the hydraulic downstream design be approved subject to annual review.

If you have any questions please contact me.

Yours truly,



C.O. Brawner, P. Eng.

COB/pm