July 6, 2007

After the release of the Final Agenda on July 5, 2007, we did receive additional questions related to ground freezing from our Expert Advisors (Topic 1 in the July 17-18 Technical Sessions in Hay River). Please add these to your consideration for this topic:

- **Water quality vs freezing temperature:** Poor water quality can depress the freezing temperature. What is the freezing temperature that was used for the design of the ground freezing system? What is the justification for the adopted freezing temperature?

- **Design criteria for the freeze wall:** What are the conditions that need to be achieved before the freeze wall is considered fully developed (i.e. ground temperature distribution, freeze wall thickness and depth, heat extraction, etc.)? Was a tolerance for drilling accuracy adopted for the freeze pipes? What is the corrective measure for drilling deviation that exceeds the allowable tolerance?

- **Scheduling of the freeze wall:** The construction of the shaft is apparently scheduled to begin before the completion of the freeze wall. Dewatering will likely be required for the construction of the shaft, which would induce groundwater movement that could impact the development of the freeze wall. Does the design of the ground freezing system address this potential groundwater movement?

- **Thermal erosion at the base of the freeze wall:** Groundwater movement will be induced at the base of the freeze wall during dewatering for mine operation. Thermal erosion could occur at the base of the freeze wall if the groundwater velocities are too high. Did the design establish a maximum allowable groundwater flow velocity to prevent thermal erosion along the freeze wall? And how was it calculated?

More information on the adopted design criteria would also be valuable.

Regards,

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