HLWYM HEmails

From: Wesley Patrick
Sent: Tuesday, March 20, 2007 4:48 PM
To: Goodluck Ofoegbu; Asadul Chowdhury; Budhi Sagar; Roman Kazban; Sitakanta Mohanty; Scott Painter; Gordon Wittmeyer
Subject: RE: March-21 Briefing on Thermal-Mechanical Modeling of Progressive Drift Degradation
Attachments: March-21 Briefing on Thermal-Mechanical Modeling of Progressive Drift Degradation

All,

Unfortunately, I have a three-way conflict with the subject meeting. With Budhi, David, and Gary all on travel, I am not able to attend the subject meeting. Gordon (acting for Budhi) and Sitakanta need to be present in the meeting.

Absent my direct participation, following are points that need to be considered and acted on in defining the path forward. NOTE: This message has been sent only to those who I understand to be the principals involved in the work, given the sensitivity of the subject.

1. The thermal results are no surprise at all. The temperature at any point in a mass is controlled by the thermal properties outside/beyond that point and the thermal sources that point sees. Properties between the heat source and that point affect only transient temperatures. In addition to expressing this repeatedly in our discussions, I commended to those doing the thermal calculations to look at basic thermal handbooks on the subject to find closed-form solutions that show this. It appears this has not yet been done.

2. The thermal-mechanical results are no surprise at all. Given the very predictable thermal response described above and the analysts' assumption of B=1.0 (i.e., no bulking of the rock rubble), there is no plausible physical mechanism for arresting progressive drift degradation. One should expect that the rock mass will spall progressively upward until the hole daylights at the surface. This was discussed at length in the last meeting, with slightly different arguments posed by McCartin and Patrick. In addition, a back-of-the-envelope estimate was given that with an assumed B=1.4, drift degradation should choke off in the range of 7-10 meters (if memory serves me right).

Unless the modeling approach is changed substantially to introduce an appropriate measure of realism, the approach currently being pursued will not lead to a meaningful result. Meanwhile, I am becoming increasingly concerned that both the available time and our opportunity to demonstrate engineering acumen and judgment in solving this problem are quickly slipping away.

Wes.

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