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Dhawan, Neelam, NMENV

From: Don Hickmott [dhickmott@lanl.gov]
Sent: Monday, July 30, 2007 12:08 PM
To: Dhawan, Neelam, NMENV; Young, John, NMENV
Cc: kmv@lanl.gov; jmccann@lanl.gov; mcinroy@lanl.gov; gldover@lanl.gov
Subject: Infiltration of water into Ponds Borehole

John and Neelam,

Just to keep you guys in the loop. This past week we drilled the boreholes in the 90s Line Pond. While drilling the Pond on Friday PM, an estimated 200-300 gallons of rainwater entered the central borehole, which was at that time open to a depth of ~ 70 ft.

We had completed the borehole to the TD of 150 ft on Wednesday PM. While pulling out on Thursday (to neutron probe) the drill bit got stuck at a depth of ~ 70 ft. There was a lot of lightning on Thursday (but minimal rain), so the crew was shut down most of the day.

On Friday AM we were able to neutron probe (although the upper 70 ft was through the drill string). Following neutron probing, the crew grouted the borehole to 70 ft depth. At that point the crew made a first attempt to overdrill the drill string, but were unsuccessful - the auger bit wore off.

In the late PM, approximately 3 PM, there was about 2 hours of very hard rain (~ 1/4 in. rainstorm) . When the crew returned to the pond it had 2-3 in. of water in it (diameter of ~ 30 ft). There was also water in the annulus of the borehole (~ 10 in. diameter) but not in the inner drill pipe. We would estimate that the volume of water in the hole was 200-300 gallons.

We decided to work on Saturday, to make sure that if another rainstorm came, that additional infiltration would not occur. We tried to overdrill the hole again (burned out another auger bit) and made the decision to grout the 70 ft of drill pipe into the hole. This was completed on Saturday.

A few things to note:

- 1) the crew had put bentonite around the well head, to try to minimize any infiltration into the borehole, but this obviously didn't work given the large storm of Friday.
- 2) We have taken a sample of the water that was in the Pond, so we will know what the contaminants in the water were.
- 3) We don't think that too much water was draining out of the borehole into fractures or surge beds, because the Pond was still quite full of water on Saturday morning - although it is certainly possible that some water made it out into the formation.

If you want more details, feel free to give me a call.

Thx, Don



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