

EGS Collab Daily Shift Report

Date: 7/2/19

Written by: Jake Horner (jake.horner@pnnl.gov; 509.438.3116), 7/2/19

SURF Personnel: George Vandine

Location(s): 4100 Level Battery Alcove

Summary:

Jake Horner and Carson Reimers arrived at 6:00 a.m. and were informed by George Vandine that an All Hands meeting for SURF staff would delay work until after 8:00. After the meeting was over the team (Jake Horner, PNNL; Carson Reimers, SDSMT; George Vandine, SURF; Jason Davis, Agapito; and David Zaccardi, Agapito) took the 8:30 cage down to the 4100 Level and conducted a toolbox talk at the Battery Alcove. Drilling started immediately following the toolbox talk, with the continuation of TV4100 Run 32. The final depth of TV4100 was reached on run 33 at 165.25 ft, and the core remained amphibolite with no apparent natural fractures. The borehole was then flushed and a REFLEX downhole trajectory tool survey was conducted at 5 ft intervals from 40 to 150 ft. The survey was conducted while the last 5 ft core remained downhole, which prevented the acquisition of an additional survey point at 155 ft. The driller informed us that it was left in place to mitigate the risk of getting the tool stuck below the core bit. After completing the gyro survey, the final core and drilling tubes were removed and the borehole was capped.

At 12:00 the crew began repositioning the drill rig to set up for drilling borehole TH4100. The REFLEX TN14 gyrocompass tool was calibrated and used to align the drill tubes to an azimuth of 45.0° with a dip of -5.1°. Aligning the rig proved to be quite challenging and the first core run was not initiated until 14:07. After reaching a depth 1.8 ft on run 1 the gyrocompass was reattached to the drilling tubes to check alignment and the rig had shifted to an azimuth of 45.6° and a dip of -4.9°. The crew removed core run 1 (0-1.8 ft) and worked to realign the rig. Drilling resumed to a depth of 12 ft and the alignment was checked again, recording a 45.4° azimuth and a -4.9° dip.

Drilling resumed through the afternoon with an average penetration rate of ~30 min/5 ft core. Competent amphibolite was present throughout and was largely void of natural fractures. Late in the shift, George presented the option of having other SURF staff come down and release him at 6:30 pm so that the crew could stay as late as 8:30 pm to complete the borehole and final downhole trajectory survey. The crew agreed to stay late and a total of 35.3 ft of TH4100 borehole was drilled and core collected in eight runs by 7:40 pm. However, this presented little time to complete the downhole trajectory survey and we decided to wait until tomorrow morning (7/3) when there would be sufficient time for QA. The crew secured the site at 7:40 pm and reached the surface by 8:00 pm.

Lead Researcher: Jake Horner (jake.horner@pnnl.gov; 509.438.3116), 7/2/19

Documents or Procedures: JHAs: EGS-001-RevB, EGS-004-RevB

Inspections:

Materials Receiving/Shipping: No additional supplies were brought to the work site today.

Comments:

Recommendations:

Irregularities: When drilling TH4100, drilling fluid flowed from a nearby (< 2 ft away) fracture within the wall (see figure 3). The fracture will be fully inspected tomorrow morning (7/3).

Acts of Safety: Zaccardi introduced Horner to the power pack supporting drilling operations and explained the functionality and various safety features.

Near Misses or Incidents:**EGS Collab Personnel Hours (Surface and Underground):**

	Name	Surface Hours		Underground Hours	
		Time In	Time Out	Time In	Time Out
1	<i>Jake Horner (PNNL)</i>	06:00	20:15	08:30	20:00
2	<i>George Vandine (SDSTA)</i>	06:00	19:00	08:30	18:30
3	<i>Carson Reimers (SDSMT)</i>	06:00	20:15	08:30	20:00
4	<i>Dave Zaccardi (Agapito)</i>	06:00	20:15	08:30	20:00
5	<i>Jason Davis (Agapito)</i>	06:00	20:15	08:30	20:00
6	<i>Alternate Guides (SDSMT)</i>	Unknown	20:15	Unknown	20:00



Figure 1. Performing TV4100 downhole trajectory survey (40-150 ft).



Figure 2. Using the REFLEX TN14 gyrocompass tool to align the drill for TH4100



Figure 3. Drilling fluid flowing from a fracture to the lower left of TH4100