

EGS Collab Daily Shift Report**Date:** 6/28/19**Written by:** Mark White (mark.white@pnnl.gov; 509.372.6070), 6/28/19**SURF Personnel:** George Vandine**Location(s):** 4100 Level Battery Alcove**Summary:**

We (Mark White, PNNL; Carson Reimers, SDSMT; George Vandine, SURF; Jason Davis, Agapito; and David Zaccardi, Agapito; Trevor Mutchler, SDSMT) took the 6:30 am 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 Run 23. The core from Run 22 showed a transition from amphibolite to rhyolite near the top of the core, with the rhyolite have more natural fractures oriented between 8° and 20° off the core longitudinal axis. Drilling times for the 5-ft sections in the rhyolite increased, making progress slower. By 11:00 drilling had reached a depth of 125 ft, and the core remained rhyolite with natural fractures occurring in parallel sets or conjugates. Orientation of the natural fractures was around 40° off the core longitudinal axis, with the conjugate pairs having crossing angles of 100° to 110°. By 14:00 drilling had reached a depth of 140 ft with the core being rhyolite with the natural fracture angles increasing to 50° off the core longitudinal axis. The target depth for the TV4100 borehole is 50 m (165 ft). At 136 ft, the rock transitioned back to amphibolite, with a thin (i.e., 1.3 – 1.7 cm) quartz band between the rhyolite and amphibolite. Drilling speed for each 5-ft section increased with the transition to the softer amphibolite. Drilling ended at 4:10 on Run 32 at 160 ft. The amphibolite beneath the rhyolite was quite void of natural fractures.

Lead Researcher: Mark White (mark.white@pnnl.gov; 509.372.6070), 6/28/19**Documents or Procedures:** JHAs: EGS-001-RevB, EGS-004-RevB**Inspections:** The work site was inspected for any potential tripping hazards. The water supply line was moved southward to avoid dripping on the core logging station.**Materials Receiving/Shipping:** No additional supplies were brought to the work site today. A component of the borehole logging tool from REFLEX was brought to the site.**Comments:****Recommendations:****Irregularities:****Acts of Safety:** We reminded ourselves of the four tenants of being SAFE (i.e., smart, aware, focused and educated), and related those tenants to the events of yesterday. We reaffirmed that time was a critical component of the work, but that completing the work safely was the first priority.**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	Mark White (PNNL)	06:00	17:00	06:30	16:30
2	George Vandine (SDSTA)	06:00	17:00	06:30	16:30
3	Carson Reimers (SDSMT)	06:00	17:00	06:30	16:30
4	Dave Zaccardi (Agapito)	06:00	17:00	06:30	16:30
5	Jason Davis (Agapito)	06:00	17:00	06:30	16:30
6	Trevor Mutchler	06:00	17:00	06:30	16:30

Sanford
Underground Research Facility
South Dakota Science and Technology Authority

Science Toolbox Form

Date: <u>6/28/19</u>	Location: <u>Battery Alcove 4100</u>	Group Affiliation: <u>EGS Collab</u>
Shift Passdown:		
Planned tasks/SOPs/JHAs: <u>continued drilling and core logging of the TV4100 borehole</u> <u>start drilling and core logging of the TH4100 borehole</u>		
Tools/Resources needed: <u>Agapito drill rig and power source</u> <u>core drilling logging equipment (i.e. cameras, measuring tape)</u>		
Hazards: <u>tight quarters, uneven ground, heavy equipment</u> <u>mechanical equipment, power generation, noise</u>		
Mitigations/PPE: <u>pumping and filtering of drill water</u> <u>emphasized Smart</u> <u>Alert</u> <u>Focus</u> <u>Educated</u>		
<input type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Steel/Hard Toe Boots <input checked="" type="checkbox"/> Self-Rescuer <input checked="" type="checkbox"/> Safety Glass w/Side Shields <input checked="" type="checkbox"/> Reflective Clothing <input type="checkbox"/> Face Shield <input checked="" type="checkbox"/> Hearing Protection (type): <u>insert</u> <input type="checkbox"/> Fall Protection (type): <input type="checkbox"/> Gloves (type): <u>various/leather</u> <input type="checkbox"/> Goggles (type): <input type="checkbox"/> Other:		

By signing below, I confirm that I have received training, had a chance to discuss concerns, and fully understand my task and responsibilities for today's work.

Name (print)	Signature	Name (print)	Signature
Mark White	<u>[Signature]</u>	David Zaccardi	<u>[Signature]</u>
Carson Reimers	<u>[Signature]</u>		
George Vandine	<u>[Signature]</u>		
Trevor Mutchler	<u>[Signature]</u>		
Jason Davis	<u>[Signature]</u>		

Supervisor/Work Lead (name): <u>Mark White</u>	I authorize this work. (signature): <u>[Signature]</u>	Date: <u>06/28/19</u>
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*Room for additional names/signatures and comments on back of page.

Figure 1. Toolbox form



Figure 2. Transition from amphibolite (left) to rhyolite (right).



Figure 3. George Vandine overseeing the core logging.