EGS Collab Daily Shift Report
Date: 6/26/19
Written by: Mark White (mark.white@pnnl.gov; 509.372.6070), 6/26/19
SURF Personnel: George Vandine
Location(s): 4100 Level Battery Alcove

Summary:

We (Mark White, PNNL; Carson Reimers, SDSMT; Russell Hinkley, Reflex; George Vandine, SURF; Jason Davis, Agapito; and David Zaccardi, Agapito) took the 6:30 am cage down to the 4100 Level and conducted a toolbox talk at the Battery Alcove. We executed a pressure test on the Portland cement around the borehole casing and observed that the casing was not holding pressure. We next injected air into the casing and observed air bubbles rising from the water filled depression around the collar of the casing. This water level was below the top of the cap, but within the coupling between the cap coupling and the top of the casing pipe. We then took a walk to the Ross Shaft, as a practice in secondary egress from the work site. George Vandine pointed out the location of the ramp to the 4850, which would serve as a tertiary egress. After returning from the Ross Shaft walk, we prepared to pressure cement the casing with cement introduced in the casing. In preparing for this, we baled water out of the depression around the casing cap, while the casing was pressurized with air. After baling the water to a level below the casing coupling, we noticed that the air bubbling stopped. This was an indication that there was a leak at that point in the system. We refit the casing cap, using Teflon tape on the threads, and found that the system held 100 psi of air pressure. Satisfied that the casing grout was holding pressure, we proceeded to drill and core TV4100.

During the drilling of cement in casing, Russell Hinkley gave us a demonstration of the REFLEX TN14 gyrocompass tool, which will be used to align the horizontal borehole, TH4100. We set up the gyrocompass on the core logging table and manually set it to the azimuth and dip we expected for borehole TH4100. The gyrocompass was then calibrated, and the readings agreed with our expectations (see figure below).

On Run 7 of the coring we made a depth calibration. The bottom of Run 7 was measure with a plumb bob on a string at 34.7' from the top of the casing collar. This differed from the core log record by 2.4', which agrees with the amount of core that was drilled on Monday 06/24/19 before the core log record started.

Coring part way through Run 12, with the finished depth of Run 11 being 55.1 ft. After coring the REFLEX downhole trajectory tool was used in multishoot mode at shot points 5 ft apart. The initial dip of the borehole was measured at -89.37° and at 35 ft at -89.22°. The cumulative deviation at the 35 depth is 3" north and ½" east.

Lead Researcher: Mark White (mark.white@pnnl.gov; 509.372.6070), 6/25/19
Documents or Procedures: JHAs: EGS-001-RevB, EGS-004-RevB

Inspections: We inspected the borehole casing cement for leaks. We inspected the path from the work site at the Battery Alcove to the Ross Shaft.

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

Comments: We avoided pressure cementing the casing, which would have meant lost drilling time, by observing the cessation of bubbling from the water in the borehole depression during the baling. This simple observation by David Zaccardi saved considerable lost drilling time.

Recommendations: N/A

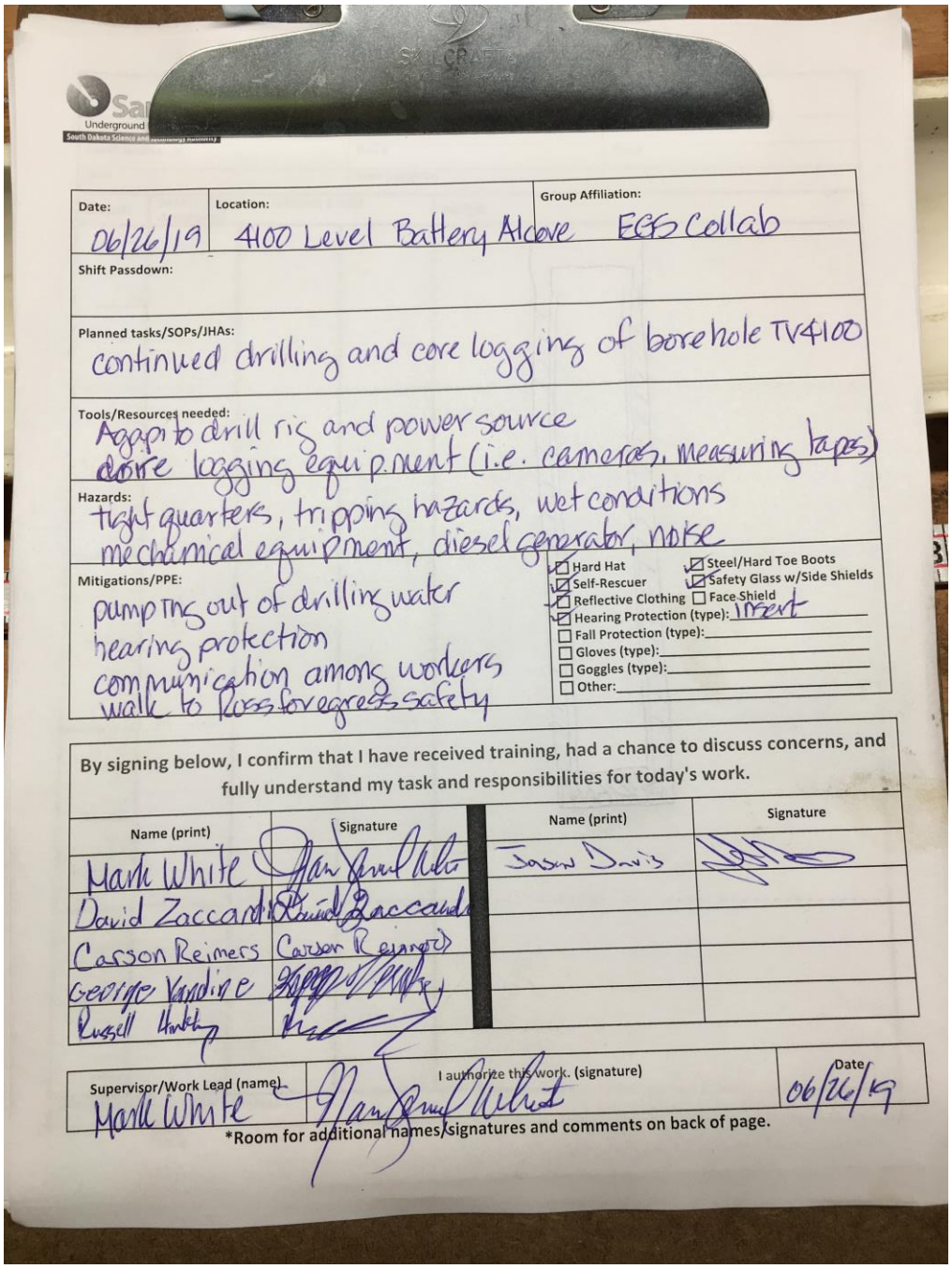
Irregularities: The casing cap was not sufficiently tightened enough to prevent leakage, leading us to believe the casing cement was leaking.

Acts of Safety: We discussed the need for continued communication during the Toolbox Talk to avoid accidents with the tight quarters of the work site. George Vandine additionally reminded everyone of the need to be aware of the dangers of walk on and around the train rails.

Near Misses or Incidents: N/A

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	18:00	06:30	17:30
2	*George Vandine (SDSTA)*	06:00	18:00	06:30	17:30
3	*Carson Reimers (SDSMT)*	06:00	18:00	06:30	17:30
4	*Dave Zaccardi (Agapito)*	06:00	18:00	06:30	17:30
5	*Jason Davis (Agapito)*	06:00	18:00	06:30	17:30
6	*Russell Hinkley (Reflex)*	06:00	18:00	06:30	17:30



Underground
South Dakota Science and

Date:	Location:	Group Affiliation:
06/26/19	4100 Level Battery Alcove	EGS Collab

Shift Passdown:

Planned tasks/SOPs/JHAs:
continued drilling and core logging of borehole TV4100

Tools/Resources needed:
Aggpi to drill rig and power source
core logging equipment (i.e. cameras, measuring tapes)

Hazards:
tight quarters, tripping hazards, wet conditions
mechanical equipment, diesel generator, noise

Mitigations/PPE:
pumping out of drilling water
hearing protection
communication among workers
walk to Ross for egress safety

- ☑ Hard Hat
- ☑ Steel/Hard Toe Boots
- ☑ Self-Rescuer
- ☑ Safety Glass w/Side Shields
- ☑ Reflective Clothing
- ☐ Face Shield
- ☑ Hearing Protection (type): insert
- ☐ Fall Protection (type):
- ☐ Gloves (type):
- ☐ Goggles (type):
- ☐ 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		Jason Davis	
David Zaccardi			
Carson Reimers			
George Vardine			
Russell Hunter			

Supervisor/Work Lead (name)	I authorize this work. (signature)	Date
Mark White		06/26/19

*Room for additional names/signatures and comments on back of page.

Figure 1. Toolbox form

Figure 2. Air bubbles appearing at water surface during initial pressure test.

Figure 3. REFLEX Gyroscope test alignment for borehole TH4100.

Figure 4. Cured cement sample from TV4100 casing set.

Figure 5. Drilling Run 9 of borehole TV4100.