W.R. # 1168003M00

Utah Geological Survey
Lithologic Log

Well ID: Pavant Area PA-4

Well Location: (C-19-08)02dcc / 14.0 miles SSW of Delta, Utah

UTM: x 351620 m, y 4338792 m NAD 83 _____

~~N~~ x 315 ft, ~~E~~ W 376 ft from S 1/4 Corner, Sec 2, T 19 ~~N~~ S R 8 ~~E~~ W, SLBM ~~USM~~

Start Date 9/6/2012 Completion Date 9/18/2012 Driller U.S.G.S., Jack Hennagan

Drilling Method: Mud / Rotary from 0 to 540 ft

_____ from _____ to _____

_____ from _____ to _____

Total Depth 540 feet

Static Water Level UNK

Water Level Date _____

Measured From _____

Borehole Diameter: 7-7/8 in from 0 to 540 ft

_____ from _____ to _____

_____ from _____ to _____

Casing Type & Diameter: 6-in steel & lk cap from +1.5 to 3.5'

2-in PVC (sealed) from +1.5 to 540'

_____ from _____ to _____

Screen Type & Diameter: N/A from _____ to _____

N/A from _____ to _____

Ground Elevation: 4637 ft (est.)

Logged By M. Gwynn/R. Blackett (UGS)

Geophysical Log ☐ Yes ☒ No

Other Logs: High-precision Temperature

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
0	:-:-:-:-	7.9" OPEN HOLE	6-in steel protective casing with locking cover cemented in with well pad. Annulus filled with bentonite grout #30% solids) to TD. 7.875-in well bore to TD. TCI tricone bit 0-29 ft, drag bit 29-540 ft. Fracture at 11 ft-moderate circ problems to TD.	0-4': Very lt tan clay and very fine-fine sand, some coarse basaltic sand and pebbles.
	-:-:-:-:			4-10': dK gy vesicular basalt (top of flow).
5	▮▮▮▮▮▮▮			
	▮▮▮▮▮▮▮			
10	▮▮▮▮▮▮▮			10-20': 25% lt gy clay and 75% dk gy vesicular basalt (11-13'); 10% lt tan clay and 90% dk gy basalt (13-20'). Fracture/fault zone at 11' caused some loss of circulation
	▮▮▮▮▮▮▮			
15	▮▮▮▮▮▮▮			
	▮▮▮▮▮▮▮			
20	▮▮▮▮▮▮▮			20-28': Dk gy vesicular basalt (base at 28').
	▮▮▮▮▮▮▮			28-30': Lt gy-tan clay mixed with basalt cuttings (poor returns).
25	▮▮▮▮▮▮▮	2" PVC		
	▮▮▮▮▮▮▮			
30	--------			30-40': Lt gy-tan hydrated clay mixed with basalt cuttings (probably from formation above) (poor returns).

35	--------			

40	--------			40-50': Lt gy-tan hydrated clay and some tan clay mixed with basalt cuttings (probably from formation above).

45	--------			

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
		7.9" OPEN HOLE		50-60': AA
55				
60				60-70': 85% tan and 15% lt gy-tan hydrated clay and some basalt cuttings from upper section of hole.
65				
70				70-80': Very cohesive hydrated tan clay transitioning to lt gy at bottom of interval and some basalt cuttings from upper section of hole (decreasing qty).
75		2" PVC		
80				80-90': Less cohesive lt tan-gy hydrated clay (tan in middle of interval) and minor basalt cuttings.
85				
90				90-100': Cohesive lt tan-gy hydrated clay and minor basalt cuttings.
95				
100				100-110': Cohesive (more than above) gy-tan hydrated clay.
105				
110				110-120': AA
115				
120				120-130': Cohesive gy-tan and lt gy hydrated clay. Some basalt chips (probably from above sections).
125				
130				130-140': AA
135				
140				140-150': Tan hydrated clay and some basalt chips (probably from above sections)
145				

Well ID: Pavant Area PA-4 Page 3 of 6

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
		7.9"		150-160': AA
155		POINT		
160		HOLE		160-170': Very coarse basaltic sand. Few pebbles of angular to sub-angular shale/limestone. Minor tan clay.
165				
170		WITH		170-180': Med-coarse basaltic sand, sub-angular to sub-rounded and moderately sorted. Some tan and gy-tan clay (especially near bottom of interval).
175				
180		2"		180-190': Lt gy and some gy-tan hydrated clay. 5-10% Med-very coarse basaltic sand, sub-angular to sub-rounded (few angular) and some sub-angular pebbles of LS/SH/basalt (diminishing at bottom of interval).
185		PVC		
190				190-200': Cohesive gy-tan hydrated clay and minor sand/pebbles as above.
195				
200				200-210': AA, except no pebbles present.
205				
210				210-220': AA
215				
220				220-230': AA
225				
230				230-240': 95% lt gy and 5% gy-tan cohesive clay. Minor sand as above.
235				
240				240-250': AA
245				

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
		7.9" OPEN HOLE		250-260': AA
255				
260				260-280': Clay; medium gray to tan w/minor black grit
265				
270				
275		2" PVC		
280				280-290': As above; with basalt chips (probably from sump trench)
285				
290				290-300': Clay; medium gray to tan, poor sample, much drilling mud from new mud mixture
295				
300				300-320': Clay: medium gray to tan
305				
310				
315				
320				320-340': Clay; medium gray
325				
330				
335				
340				
345			loss of circulation	340-350': As above; with basalt chips from sump trench (poor sample)

Well ID: Pavant Area PA-4

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
		7.9" OPEN HOLE	loss of circulation	350-360': Clay; medium gray with basalt chips from sump trench (poor samples)
355				
360				As above (poor samples)
365				
370				As above (poor samples)
375				
380		2" PVC		380-390': No sample, poor returns
385				
390			poor circulation	390-430': clay; medium gray with volcanic rock fragments (vrf) grit, very poor samples (Note: driller suspects clay "boot" around drill collar due to high pressure + poor circulation) continue poor samples to 430 ft
395				
400				
405				
410				
415				
420				
425				
430				430-450': clay; light tan with vrf (black) grit
435				
440				
445				

Well ID: Pavant Area PA-4

DEPTH	LITHOLOGY	WELL DIAGRAM	DRILLING INFO	LITHOLOGY DESCRIPTION
		7.9" OPEN HOLE WITH 2" PVC		450-470': clay; light tan with vrf (black) grit
455				
460				
465				
470				470-520': as above; with small chips of hard, dark tan clay
475				
480				
485				
490				
495				
500				
505				
510				
515				
520				520-540': clay; light tan to gray with small chips of harddark tan clay
525				
530				
535				
540				Total Depth: 540 feet
545				