

HALLIBURTON

BOREHOLE DIRECTIONAL SURVEY

**CULBREATH OIL & GAS
COMPANY INC**
BREEDEN 1-30
MORLAND-KANACO
SHERIDAN
KANSAS

COMPANY CULBREATH OIL & GAS COMPANY INC
WELL BREEDEN 1-30
FIELD/BLOCK MORLAND-KANACO
COUNTY SHERIDAN
STATE KANSAS

API No. 15-179-21452-00-00
Location (SHL) 2310' FNL & 2310' FWL
SE SE NW
LAT: 39.241774997 N
LONG: 100.26699298 W

Other Services:
GTET
IDT
DSNT
SDLT
MICROLOG
BSAT
ACRT

COMPANY	GL	Sect. 30	Twp. 9S	Rge. 26W	Elev. 2651.0 ft
WELL	KB				10.0 ft above perm. Datum
FIELD/BLOCK	KB				
COUNTY	KB				
STATE	ONE				
Permanent Datum	11-Aug-18				
Log measured from	ONE				
Drilling measured from	4160.0 ft				
	4160.0 ft				
	4103.0 ft				
	263.0 ft				
	8.625 in				
	263.0 ft				
	7.875 in				
	Water Based Mud				
	9.20 g/cc				
	9.50 pH				
	MUD PIT				
	1.19 ohmm				
	0.95 ohmm				
	1.43 ohmm				
	MEAS				
	0.84 ohmm				
	06:44 hr				
	11-Aug-18 04:14				
	140.00 degF				
	12156883				
	SEAN WOLTEMATH				
	LARRY NICHOLSON				

Fold here

Service Ticket No.: 905062355 API No.: 15-179-21452-00-00 PGM Version: WL INSITE R5.6.3 (Build 4)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE				RESISTIVITY SCALE CHANGES			
Date	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole		

RESISTIVITY EQUIPMENT DATA				
Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	ACRT	N/A	ECEN	N/A
	I-11830684			
	S-11830728			

EQUIPMENT DATA							
GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	11013113	Serial No.	12173982	Serial No.	11213308	Serial No.	11019641
Model No.	GTET	Model No.	BSAT	Model No.	SDLT	Model No.	DSNT
Diameter	3.625"	No. of Cent.	N/A	Diameter	5.5"	Diameter	3.625"
Detector Model No.	GTET	Spacing	N/A	Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	Cs-137	Source Type	Am241Be
Length	8"	LSA [Y/N]		Serial No.	5475GW	Serial No.	DSN-436
Distance to Source	10'	FWDA [Y/N]		Strength	1.78 Ci	Strength	15.0 Ci

LOGGING DATA																			
GENERAL				GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.	Depth		Speed ft/min	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix					
	From	To		L	R	L	R		L	R		L	R						
ONE	TD	CSG	REC	0	150	30	10	17.6 us/ft	30	10	2.71 g/cc	30	10	TIME					

1110.00	0.39	1110.0	96.37	2.52	4.43	1.22
1140.00	0.39	1140.0	80.58	2.52	4.63	0.35
1170.00	0.39	1170.0	66.35	2.58	4.82	0.32
1200.00	0.56	1200.0	54.29	2.70	5.03	0.64
1230.00	0.59	1230.0	27.22	2.93	5.22	0.90
1260.00	0.58	1260.0	33.53	3.19	5.38	0.22
1290.00	1.01	1290.0	39.11	3.52	5.63	1.47
1320.00	0.90	1320.0	39.61	3.91	5.94	0.39
1350.00	0.70	1350.0	44.67	4.22	6.22	0.68
1380.00	0.92	1380.0	40.44	4.53	6.51	0.74
1410.00	0.97	1410.0	44.62	4.90	6.84	0.28
1440.00	0.75	1440.0	50.35	5.20	7.17	0.78
1470.00	0.63	1470.0	58.47	5.41	7.46	0.50
1500.00	0.53	1500.0	62.59	5.56	7.72	0.37
1530.00	0.58	1530.0	47.19	5.73	7.96	0.52
1560.00	0.49	1560.0	37.93	5.93	8.15	0.40
1590.00	0.57	1590.0	71.43	6.08	8.37	1.04
1620.00	0.52	1619.9	15.55	6.26	8.55	1.70
1650.00	0.49	1649.9	62.32	6.45	8.69	1.34
1680.00	0.56	1679.9	42.12	6.62	8.91	0.66
1710.00	0.31	1709.9	57.02	6.77	9.07	0.92
1740.00	0.21	1739.9	50.85	6.85	9.18	0.33
1770.00	0.37	1769.9	64.08	6.93	9.31	0.57
1800.00	0.23	1799.9	86.11	6.97	9.46	0.60
1830.00	0.32	1829.9	52.91	7.03	9.58	0.61
1860.00	0.18	1859.9	56.26	7.11	9.69	0.49
1890.00	0.14	1889.9	74.70	7.14	9.77	0.21
1920.00	0.07	1919.9	335.87	7.17	9.79	0.55
1950.00	0.25	1949.9	61.85	7.21	9.84	0.84
1980.00	0.29	1979.9	60.22	7.28	9.97	0.13
2010.00	0.25	2009.9	72.49	7.34	10.09	0.22
2040.00	0.23	2039.9	68.34	7.38	10.21	0.11
2070.00	0.24	2069.9	106.80	7.39	10.33	0.52
2100.00	0.26	2099.9	86.57	7.37	10.46	0.30
2130.00	0.30	2129.9	78.79	7.39	10.60	0.20
2160.00	0.23	2159.9	76.81	7.42	10.74	0.24
2190.00	0.17	2189.9	54.84	7.46	10.84	0.32
2220.00	0.30	2219.9	52.92	7.53	10.94	0.43
2250.00	0.21	2249.9	43.74	7.62	11.04	0.32
2280.00	0.30	2279.9	5.88	7.74	11.09	0.62
2310.00	0.33	2309.9	0.95	7.91	11.09	0.14
2340.00	0.03	2339.9	319.24	8.00	11.09	1.03
2370.00	0.09	2369.9	3.51	8.03	11.09	0.24
2400.00	0.26	2399.9	37.28	8.11	11.13	0.64
2430.00	0.24	2429.9	37.02	8.21	11.21	0.09
2460.00	0.15	2459.9	50.53	8.29	11.28	0.33
2490.00	0.05	2489.9	140.54	8.30	11.31	0.52
2520.00	0.39	2519.9	162.09	8.20	11.35	1.15
2550.00	0.28	2549.9	149.86	8.04	11.42	0.44
2580.00	0.32	2579.9	159.52	7.90	11.49	0.23
2610.00	0.20	2609.9	179.12	7.76	11.52	0.50
2640.00	0.13	2639.9	116.59	7.70	11.55	0.60
2670.00	0.19	2669.9	103.02	7.67	11.62	0.23
2700.00	0.43	2699.9	80.16	7.68	11.78	0.90
2730.00	0.64	2729.9	103.90	7.66	12.06	1.01
2760.00	0.60	2759.9	109.42	7.57	12.37	0.26
2790.00	0.55	2789.9	100.38	7.49	12.66	0.34
2820.00	0.49	2819.9	112.77	7.41	12.92	0.41
2850.00	0.35	2849.9	65.35	7.40	13.12	1.21
2880.00	0.48	2879.9	55.55	7.51	13.31	0.49
2910.00	0.60	2909.9	62.93	7.65	13.55	0.45
2940.00	0.47	2939.9	75.75	7.76	13.81	0.57
2970.00	0.37	2969.9	40.57	7.86	13.99	0.91
3000.00	0.67	2999.9	66.54	8.00	14.22	1.24
3030.00	0.29	3029.9	62.33	8.11	14.45	1.26
3060.00	0.27	3059.9	77.54	8.16	14.58	0.26
3090.00	0.24	3089.9	129.99	8.13	14.70	0.76
3120.00	0.55	3119.9	192.35	7.95	14.72	1.61
3150.00	0.58	3149.9	193.22	7.67	14.65	0.11

3180.00	0.30	3179.9	186.46	7.44	14.61	0.93
3210.00	0.37	3209.9	208.17	7.28	14.55	0.47
3240.00	0.38	3239.9	192.43	7.10	14.49	0.34
3270.00	0.29	3269.9	178.74	6.93	14.47	0.40
3300.00	0.20	3299.9	174.15	6.80	14.48	0.30
3330.00	0.18	3329.9	172.28	6.70	14.49	0.06
3360.00	0.13	3359.9	194.22	6.62	14.49	0.26
3390.00	0.18	3389.9	213.61	6.55	14.45	0.23
3420.00	0.24	3419.9	285.55	6.53	14.36	0.84
3450.00	0.42	3449.9	292.10	6.58	14.20	0.60
3480.00	0.60	3479.9	285.60	6.67	13.95	0.62
3510.00	0.42	3509.9	292.57	6.75	13.70	0.60
3540.00	0.44	3539.9	292.02	6.84	13.49	0.05
3570.00	0.35	3569.9	286.38	6.91	13.29	0.30
3600.00	0.30	3599.9	267.36	6.93	13.13	0.41
3630.00	0.36	3629.9	252.21	6.90	12.96	0.36
3660.00	0.40	3659.9	240.63	6.82	12.78	0.28
3690.00	0.42	3689.9	217.09	6.68	12.62	0.56
3720.00	0.27	3719.9	232.16	6.55	12.50	0.58
3750.00	0.07	3749.9	42.34	6.52	12.46	1.12
3780.00	0.22	3779.9	75.78	6.55	12.53	0.56
3810.00	0.08	3809.9	326.30	6.58	12.57	0.86
3840.00	0.05	3839.9	311.26	6.60	12.55	0.10
3870.00	0.09	3869.9	212.71	6.59	12.53	0.38
3900.00	0.13	3899.9	246.82	6.56	12.48	0.25
3930.00	0.28	3929.9	215.37	6.48	12.41	0.62
3960.00	0.38	3959.9	228.81	6.36	12.29	0.41
3990.00	0.38	3989.9	208.02	6.21	12.17	0.46
4020.00	0.67	4019.9	182.55	5.94	12.11	1.24
4050.00	0.60	4049.9	192.85	5.61	12.07	0.45
4080.00	0.60	4079.9	189.26	5.31	12.01	0.13

**Horizontal displacement is relative to the well head.
Horizontal displacement (closure) at 4,080.00 ft is 13.13 ft along 66.15 deg (Magnetic).**

Data: CULBRTH_BREEDEN

Date: 11-Aug-18 08:34:49

COMPANY	CULBREATH OIL & GAS COMPANY INC		
WELL	BREEDEN 1-30		
FIELD	MORLAND-KANACO		
COUNTY	SHERIDAN	STATE	KANSAS
HALLIBURTON		BOREHOLE DIRECTIONAL SURVEY	