

HALLIBURTON

15-42671

3950 Interwood S. Pkwy • Houston, TX 77032

PHONE 281.986.4400 • FAX 281.986.4499

State of New Mexico, Eddy County

I, Kevin Stolarski certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling) and that on the dates of 11-January-2015 through 3-February-2015, I did conduct or supervise the taking of MWD directional surveys for the well Rustler Bluff 34 24 29 Fed #2H from a depth of 427' MD to a depth of 13938' MD. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling). I am authorized and qualified to make this report and these surveys were conducted at the request of Chevron USA, Inc. for the well Rustler Bluff 34 24 29 Fed #2H, API No. 30-015-42671-0000 in Eddy County, New Mexico. I have reviewed this report and find that it conforms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling).



K. Stolarski
Field Engineer

Chevron USA, Inc.

Rustler Bluff 34 24 29 Fed #2H

Eddy County, New Mexico

Ensign 767

API# 30-015-42671-0000

NM OIL CONSERVATION

ARTESIA DISTRICT

JAN 08 2016

RECEIVED

January 11, 2015 – February 3, 2015

MO-MJ-0901990952

Sperry Drilling Services

MWD Survey Report

Submitted by K. Stolarski

3950 Interwood South Parkway

Houston, TX 77032

Ph: 281.986.4400

HALLIBURTON

**Drilling and Formation
Evaluation**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Survey Report for Chevron USA, Inc.

Rig : Ensign 767
Well Name : Rustler Bluff 34 24 29 Fed 2H
Field Name : Willowlake
Country : USA
Job Number : MO-XX-0901990952
Job Start Date : 11-Jan-15
API Number : 30-015-42671-0000

DIRECTIONAL SURVEY DATA

Tie-In

0.00

0.00

0.00

0.00

0.00 N

0.00 E

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (N)	Departure (E)	Vertical Section (ft)	Depth R/A (ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
427.00	0.89	119.43	426.98	1.64 S	2.90 E	-1.69	0.21
487.00	0.90	126.22	486.98	2.14 S	3.69 E	-2.21	0.18
580.00	1.01	137.64	579.96	3.18 S	4.83 E	-3.26	0.24
760.00	1.39	135.36	759.92	5.90 S	7.43 E	-6.03	0.21
944.00	0.95	139.06	943.88	8.66 S	10.01 E	-8.83	0.23
1134.00	0.81	140.63	1,133.86	10.91 S	11.91 E	-11.12	0.08
1323.00	0.61	149.99	1,322.85	12.81 S	13.26 E	-13.05	0.12
1512.00	0.51	169.57	1,511.84	14.50 S	13.92 E	-14.75	0.11
1702.00	1.09	191.17	1,701.82	17.11 S	13.72 E	-17.34	0.34
1890.00	0.96	210.10	1,889.79	20.23 S	12.58 E	-20.45	0.19
2079.00	1.51	238.01	2,078.75	22.92 S	9.67 E	-23.09	0.42
2268.00	1.38	241.00	2,267.69	25.35 S	5.56 E	-25.45	0.08
2456.00	2.04	153.69	2,455.63	29.46 S	5.06 E	-29.54	1.28
2551.00	1.42	128.26	2,550.58	31.70 S	6.73 E	-31.81	1.03
2646.00	2.40	131.06	2,645.53	33.73 S	9.15 E	-33.89	1.04
2740.00	3.93	133.31	2,739.38	37.23 S	12.98 E	-37.46	1.63
2832.00	4.35	132.95	2,831.14	41.77 S	17.82 E	-42.08	0.46
2934.00	3.40	133.93	2,932.91	46.51 S	22.83 E	-46.90	0.93
3029.00	3.14	137.67	3,027.75	50.39 S	26.61 E	-50.85	0.35
3123.00	2.36	139.67	3,121.65	53.77 S	29.60 E	-54.28	0.84
3217.00	2.68	140.02	3,215.55	56.93 S	32.27 E	-57.49	0.34
3311.00	2.52	141.41	3,309.46	60.23 S	34.97 E	-60.83	0.19
3405.00	2.22	135.91	3,403.38	63.15 S	37.52 E	-63.80	0.40
3499.00	2.42	138.50	3,497.30	65.94 S	40.10 E	-66.64	0.25
3593.00	0.70	63.34	3,591.27	67.17 S	41.93 E	-67.90	2.49
3688.00	0.63	39.39	3,686.26	66.51 S	42.78 E	-67.25	0.30
3783.00	1.25	348.15	3,781.25	65.09 S	42.90 E	-65.84	1.04
3878.00	1.39	340.29	3,876.22	62.99 S	42.30 E	-63.73	0.24
4067.00	2.44	305.77	4,065.12	58.48 S	38.26 E	-59.15	0.80
4256.00	2.99	310.11	4,253.91	52.96 S	31.23 E	-53.50	0.31
4445.00	3.06	285.04	4,442.65	48.47 S	22.59 E	-48.86	0.70
4539.00	1.80	268.02	4,536.57	47.87 S	18.69 E	-48.19	1.53
4728.00	0.46	239.88	4,725.53	48.36 S	15.07 E	-48.62	0.74
4918.00	0.48	251.58	4,915.52	48.99 S	13.65 E	-49.23	0.05
5107.00	0.87	265.55	5,104.51	49.36 S	11.46 E	-49.55	0.22
5296.00	0.31	5.34	5,293.50	48.95 S	10.08 E	-49.12	0.52
5484.00	0.64	314.40	5,481.50	47.70 S	9.38 E	-47.86	0.27
5674.00	0.62	274.73	5,671.48	46.87 S	7.59 E	-47.00	0.23
5862.00	0.36	230.11	5,859.48	47.17 S	6.13 E	-47.27	0.24
6050.00	0.57	225.45	6,047.47	48.20 S	5.01 E	-48.28	0.11

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (ft/100)
6239.00	0.76	224.45	6,236.46	49.74 S	3.47 E	-49.80	0.10
6427.00	0.64	227.45	6,424.45	51.34 S	1.83 E	-51.37	0.06
6616.00	0.62	216.64	6,613.43	52.88 S	0.43 E	-52.88	0.06
6805.00	0.67	238.73	6,802.42	54.28 S	1.13 W	-54.26	0.13
6994.00	2.14	290.70	6,991.37	53.61 S	5.38 W	-53.51	0.95
7088.00	3.54	280.08	7,085.25	52.49 S	9.88 W	-52.30	1.59
7183.00	2.97	295.36	7,180.10	50.92 S	14.99 W	-50.64	1.09
7277.00	2.97	296.31	7,273.97	48.79 S	19.38 W	-48.44	0.05
7372.00	2.08	265.22	7,368.88	47.85 S	23.31 W	-47.43	1.69
7466.00	1.85	250.05	7,462.83	48.50 S	26.44 W	-48.03	0.61
7561.00	1.73	260.75	7,557.78	49.26 S	29.29 W	-48.73	0.37
7655.00	2.10	272.01	7,651.73	49.43 S	32.42 W	-48.85	0.56
7749.00	0.86	293.63	7,745.70	49.08 S	34.78 W	-48.46	1.43
7772.00	0.63	325.32	7,768.69	48.91 S	35.01 W	-48.29	2.00
7867.00	2.21	49.67	7,863.67	47.29 S	33.92 W	-46.69	2.36
7961.00	2.32	56.41	7,957.59	45.07 S	30.95 W	-44.52	0.31
8055.00	2.39	59.77	8,051.51	43.03 S	27.68 W	-42.54	0.16
8149.00	2.82	63.58	8,145.42	41.02 S	23.92 W	-40.59	0.49
8181.00	2.62	63.11	8,177.38	40.34 S	22.56 W	-39.93	0.61
8212.00	3.57	57.53	8,208.34	39.50 S	21.12 W	-39.12	3.20
8244.00	5.95	35.05	8,240.23	37.61 S	19.32 W	-37.26	9.31
8275.00	9.08	23.25	8,270.96	34.04 S	17.44 W	-33.73	11.22
8307.00	11.93	20.30	8,302.42	28.62 S	15.29 W	-28.35	9.05
8338.00	14.61	21.75	8,332.59	21.98 S	12.73 W	-21.75	8.73
8369.00	17.46	22.17	8,362.38	14.04 S	9.53 W	-13.87	9.18
8401.00	19.59	18.66	8,392.72	4.51 S	6.00 W	-4.41	7.52
8433.00	21.34	11.30	8,422.71	6.28 N	3.14 W	6.34	9.72
8464.00	22.61	3.15	8,451.46	17.77 N	1.71 W	17.79	10.65
8495.00	25.14	357.45	8,479.81	30.30 N	1.67 W	30.32	11.02
8527.00	28.02	355.92	8,508.42	44.59 N	2.51 W	44.63	9.26
8559.00	31.73	358.34	8,536.17	60.50 N	3.29 W	60.55	12.19
8590.00	34.89	0.98	8,562.07	77.52 N	3.37 W	77.57	11.22
8622.00	38.28	2.01	8,587.76	96.58 N	2.87 W	96.62	10.76
8653.00	42.28	2.21	8,611.41	116.61 N	2.13 W	116.63	12.89
8685.00	45.97	0.98	8,634.38	138.87 N	1.52 W	138.88	11.84
8716.00	49.62	359.69	8,655.20	161.83 N	1.39 W	161.83	12.17
8748.00	53.72	359.48	8,675.04	186.92 N	1.57 W	186.92	12.83
8780.00	56.85	359.76	8,693.27	213.22 N	1.75 W	213.22	9.81
8811.00	59.55	0.66	8,709.60	239.57 N	1.64 W	239.56	9.07
8843.00	62.40	0.80	8,725.12	267.54 N	1.29 W	267.53	8.91
8874.00	65.32	0.23	8,738.78	295.37 N	1.04 W	295.34	9.56
8906.00	68.22	359.90	8,751.40	324.77 N	1.00 W	324.74	9.12
8937.00	71.42	359.34	8,762.09	353.87 N	1.20 W	353.83	10.45
8969.00	73.21	358.77	8,771.81	384.35 N	1.70 W	384.32	5.84
9000.00	74.53	358.54	8,780.42	414.12 N	2.40 W	414.10	4.34

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Bathymetry (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (ft/100ft)
9032.00	76.14	357.54	8,788.52	445.08 N	3.46 W	445.05	5.87
9063.00	79.19	357.14	8,795.14	475.30 N	4.86 W	475.32	9.91
9095.00	82.09	356.98	8,800.35	506.83 N	6.48 W	506.87	9.09
9158.00	86.67	358.24	8,806.51	569.46 N	9.10 W	569.53	7.53
9189.00	87.47	358.34	8,808.10	600.40 N	10.02 W	600.49	2.60
9284.00	91.76	356.42	8,808.74	695.28 N	14.36 W	695.42	4.94
9378.00	94.26	356.23	8,803.81	788.95 N	20.37 W	789.18	2.67
9473.00	92.59	356.79	8,798.13	883.60 N	26.15 W	883.92	1.85
9568.00	92.84	357.85	8,793.64	978.39 N	30.59 W	978.77	1.14
9663.00	90.71	358.43	8,790.70	1,073.28 N	33.68 W	1073.71	2.32
9757.00	88.67	0.04	8,791.20	1,167.27 N	34.93 W	1167.70	2.76
9820.00	89.66	0.08	8,792.12	1,230.26 N	34.87 W	1230.68	1.57
9851.00	90.37	359.89	8,792.11	1,261.26 N	34.88 W	1261.68	2.36
9946.00	89.07	1.46	8,792.57	1,356.25 N	33.75 W	1356.63	2.14
10040.00	87.04	0.74	8,795.76	1,450.17 N	31.95 W	1450.51	2.30
10132.00	88.61	0.50	8,799.25	1,542.09 N	30.95 W	1542.40	1.73
10226.00	90.68	0.62	8,799.83	1,636.08 N	30.03 W	1636.36	2.20
10321.00	88.67	358.88	8,800.37	1,731.07 N	30.45 W	1731.34	2.80
10415.00	90.59	359.04	8,800.98	1,825.05 N	32.15 W	1825.33	2.04
10509.00	87.72	357.91	8,802.37	1,918.99 N	34.65 W	1919.31	3.28
10604.00	88.40	357.87	8,805.59	2,013.88 N	38.15 W	2014.23	0.72
10699.00	90.92	357.68	8,806.15	2,108.79 N	41.84 W	2109.20	2.67
10793.00	90.15	358.89	8,805.26	2,202.75 N	44.65 W	2203.19	1.52
10888.00	91.57	359.44	8,803.83	2,297.72 N	46.03 W	2298.18	1.60
10950.00	90.22	0.70	8,802.87	2,359.71 N	45.95 W	2360.16	2.98
10982.00	90.09	0.99	8,802.78	2,391.71 N	45.48 W	2392.14	0.98
11076.00	87.66	1.83	8,804.63	2,485.65 N	43.16 W	2486.03	2.74
11170.00	89.35	2.06	8,807.08	2,579.56 N	39.97 W	2579.87	1.82
11264.00	91.20	2.31	8,806.63	2,673.49 N	36.39 W	2673.72	1.98
11359.00	89.26	1.00	8,806.24	2,768.44 N	33.65 W	2768.61	2.46
11454.00	88.27	1.23	8,808.29	2,863.40 N	31.80 W	2863.52	1.07
11548.00	89.60	1.38	8,810.04	2,957.36 N	29.66 W	2957.42	1.42
11643.00	89.44	0.46	8,810.83	3,052.34 N	28.13 W	3052.36	0.98
11737.00	90.55	358.93	8,810.83	3,146.34 N	28.64 W	3146.35	2.01
11832.00	89.85	358.52	8,810.50	3,241.31 N	30.75 W	3241.35	0.86
11926.00	91.39	359.49	8,809.48	3,335.29 N	32.39 W	3335.34	1.94
12021.00	89.54	359.55	8,808.72	3,430.28 N	33.18 W	3430.33	1.95
12115.00	89.51	359.52	8,809.50	3,524.27 N	33.95 W	3524.32	0.05
12210.00	88.43	357.86	8,811.22	3,619.23 N	36.12 W	3619.30	2.08
12304.00	89.88	357.50	8,812.61	3,713.14 N	39.93 W	3713.26	1.59
12398.00	91.76	356.98	8,811.27	3,807.01 N	44.46 W	3807.21	2.07
12493.00	90.65	358.23	8,809.28	3,901.91 N	48.43 W	3902.15	1.75
12588.00	89.07	358.11	8,809.51	3,996.85 N	51.47 W	3997.14	1.66
12682.00	90.37	358.28	8,809.96	4,090.80 N	54.43 W	4091.13	1.39
12777.00	90.96	357.26	8,808.86	4,185.72 N	58.12 W	4186.10	1.24

DIRECTIONAL SURVEY DATA							
Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Depth (ft)
12871.00	90.31	358.09	8,807.82	4,279.64 N	61.93 W	4280.07	1.12
12965.00	90.71	358.16	8,806.99	4,373.59 N	65.01 W	4374.05	0.43
13060.00	90.15	358.41	8,806.27	4,468.54 N	67.85 W	4469.04	0.64
13154.00	88.52	356.89	8,807.36	4,562.45 N	71.70 W	4563.00	2.37
13249.00	89.57	356.84	8,808.94	4,657.29 N	76.90 W	4657.92	1.11
13343.00	91.36	355.42	8,808.18	4,751.07 N	83.24 W	4751.80	2.42
13437.00	93.46	358.11	8,804.24	4,844.82 N	88.54 W	4845.63	3.63
13531.00	92.56	0.36	8,799.30	4,938.68 N	89.79 W	4939.49	2.57
13625.00	93.56	2.62	8,794.28	5,032.50 N	87.36 W	5033.26	2.63
13657.00	94.20	3.04	8,792.11	5,064.39 N	85.78 W	5065.12	2.39
13720.00	95.52	2.50	8,786.78	5,127.09 N	82.74 W	5127.75	2.27
13751.00	94.15	1.74	8,784.16	5,157.96 N	81.60 W	5158.59	5.05
13783.00	92.16	1.26	8,782.40	5,189.90 N	80.76 W	5190.51	6.40
13814.00	90.34	0.70	8,781.73	5,220.88 N	80.23 W	5221.49	6.15
13846.00	90.71	0.27	8,781.43	5,252.88 N	79.96 W	5253.47	1.77
13877.00	89.94	0.17	8,781.26	5,283.88 N	79.84 W	5284.47	2.52
13909.00	89.26	0.31	8,781.48	5,315.88 N	79.70 W	5316.46	2.17
13938.00	89.60	0.63	8,781.77	5,344.88 N	79.46 W	5345.45	1.60
14000.00	89.60	0.63	8,782.20	5,406.87 N	78.78 W	5407.42	0.00

SURVEY FOOTER							
SURVEYS CALCULATED USING SHORT COLLAR METHOD TIE ON SURVEY ASSUMED VERTICAL AT SURFACE SURVEYS FROM 427' MD TO 13938' MD PROVIDED BY SPERRY DRILLING MWD SURVEY AT 13938' MD HAS BEEN PROJECTED TO TD AT 14000' MD. SPERRY ENGINEERS: K. Stofarski, P. Poupart							

DIRECTIONAL SURVEY DATA NOTES

- Calculation based on minimum curvature method.
- Survey coordinates relative to well system reference point.
- TVD values given relative to drilling measurement point.
- Vertical section relative to well head.
- Vertical section is computed along a direction of 358.99 degrees (Grid)
- A total correction of 7.31 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 14,000.00 feet is 5,407.44 feet along 359.17 degrees (Grid)