

Devon Energy Corporation
Gaucho Unit 37H
Lea County, NM
Nabors X20
API # 30-025-45152

HOBBS OCD

APR 15 2019

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October 29, 2018 - November 16, 2018
MO-XX-0905240861

Sperry Drilling

MWD Survey Report

Submitted by: Kenneth Otalora

3950 Interwood South Parkway,
Houston, TX 77032

Phone: (281) 986-4400

HALLIBURTON

Sperry Drilling



Survey Report for

Devon Energy Production Company, L.P

Rig	:	Nabors X20
Well Name	:	Gaucha Unit 37H
Field Name	:	Gaucha
Country	:	USA
Job Number	:	MO-XX-0905240861
Job Start Date	:	28-Oct-18
API Number	:	30-025-45152



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GENERAL INFORMATION

Company : Devon Energy Production Company, L.P
Rig : Nabors X20
Well : Gaucho Unit 37H
Field : Gaucho
State : New Mexico
County : Lea
Country : USA
API Number : 30-025-45152
Sperry Drilling Job Number : MO-XX-0905240861
Job Start Date : 28-Oct-18
Job End Date : 30-Nov-18
North Reference : Grid
Total Correction (deg) : 6.390
Dip Angle (deg) : 60.141
Total Magnetic Field (nT) : 47926
Date of Magnetic Data : 28 October, 2018
Well Head coordinates N : 32 deg. 21 min 22.99 sec North
Well Head coordinates E : 103 deg. 29 min 39.45 sec West
Vertical section direction (deg) : 0.00
Unit Number : 11674752
MWD Engineers : Patrick Pettit, Samba Jarju, Gabriele Olguin, Josiele Santos, Kenneth Olatora

Company Representatives : Don Hassel, Duane Goode

Company Geologist :

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 (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
132.00	0.46	173.26	132.00	0.53 S	0.06 E	-0.53	0.35
222.00	0.59	178.32	221.99	1.35 S	0.12 E	-1.35	0.15
312.00	0.76	177.69	311.99	2.41 S	0.16 E	-2.41	0.19
411.00	0.80	177.48	410.98	3.75 S	0.21 E	-3.75	0.04
504.00	0.89	190.16	503.97	5.11 S	0.11 E	-5.11	0.22
594.00	0.83	191.00	593.96	6.44 S	0.13 W	-6.44	0.07
776.00	1.05	197.54	775.93	9.33 S	0.89 W	-9.33	0.13
866.00	0.64	221.36	865.92	10.49 S	1.47 W	-10.49	0.59
957.00	0.66	253.33	956.92	11.02 S	2.31 W	-11.02	0.39
1048.00	0.71	263.57	1,047.91	11.23 S	3.37 W	-11.23	0.15
1138.00	1.31	287.75	1,137.90	10.98 S	4.90 W	-10.98	0.80
1229.00	1.47	315.18	1,228.87	9.84 S	6.72 W	-9.84	0.74
1320.00	1.09	325.13	1,319.85	8.30 S	8.03 W	-8.30	0.48
1410.00	1.34	328.30	1,409.83	6.70 S	9.08 W	-6.70	0.29
1501.00	2.49	323.44	1,500.78	4.21 S	10.81 W	-4.21	1.28
1591.00	2.59	318.67	1,590.69	1.11 S	13.32 W	-1.11	0.26
1682.00	3.96	312.56	1,681.54	2.56 N	16.99 W	2.56	1.55
1776.00	5.77	326.23	1,775.20	8.68 N	22.01 W	8.68	2.27
1869.00	4.93	336.79	1,867.80	16.24 N	26.18 W	16.24	1.39
1963.00	2.12	339.55	1,961.61	21.58 N	28.38 W	21.58	2.99
2057.00	1.05	339.70	2,055.57	24.02 N	29.29 W	24.02	1.14
2150.00	0.83	349.25	2,148.56	25.48 N	29.71 W	25.48	0.29
2195.00	0.60	11.47	2,193.56	26.03 N	29.73 W	26.03	0.79
2341.00	1.51	16.29	2,339.53	28.63 N	29.03 W	28.63	0.63
2434.00	1.41	29.04	2,432.50	30.80 N	28.13 W	30.80	0.36
2529.00	1.30	16.00	2,527.47	32.86 N	27.27 W	32.86	0.34
2623.00	1.29	338.55	2,621.45	34.87 N	27.36 W	34.87	0.88
2717.00	1.97	295.63	2,715.41	36.56 N	29.21 W	36.56	1.44
2812.00	3.11	267.34	2,810.32	37.14 N	33.25 W	37.14	1.75
2906.00	5.19	254.03	2,904.07	35.85 N	39.89 W	35.85	2.42
3000.00	6.65	251.64	2,997.57	32.97 N	49.14 W	32.97	1.57
3095.00	7.09	251.85	3,091.89	29.41 N	59.94 W	29.41	0.46
3188.00	10.48	254.53	3,183.78	25.37 N	73.54 W	25.37	3.67
3282.00	12.35	251.89	3,275.92	19.96 N	91.34 W	19.96	2.07
3376.00	12.77	250.53	3,367.67	13.37 N	110.69 W	13.37	0.55
3471.00	11.86	248.33	3,460.49	6.27 N	129.66 W	6.27	1.08
3603.00	11.47	249.89	3,589.76	3.25 S	154.59 W	-3.25	0.38
3697.00	11.18	251.34	3,681.93	9.38 S	172.00 W	-9.38	0.43
3792.00	10.07	249.29	3,775.30	15.27 S	188.50 W	-15.27	1.23
3886.00	10.03	250.10	3,867.86	20.96 S	203.88 W	-20.96	0.16
3981.00	10.41	247.84	3,961.35	27.01 S	219.61 W	-27.01	0.58



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
4075.00	10.91	247.95	4,053.73	33.56 S	235.72 W	-33.56	0.53
4169.00	11.53	248.41	4,145.93	40.35 S	252.70 W	-40.35	0.67
4263.00	12.28	248.27	4,237.91	47.51 S	270.72 W	-47.51	0.80
4357.00	12.85	248.18	4,329.66	55.10 S	289.71 W	-55.10	0.61
4451.00	12.29	247.21	4,421.40	62.86 S	308.64 W	-62.86	0.64
4545.00	11.93	246.27	4,513.31	70.64 S	326.76 W	-70.64	0.44
4639.00	11.75	245.35	4,605.31	78.54 S	344.35 W	-78.54	0.28
4734.00	11.88	246.60	4,698.30	86.46 S	362.11 W	-86.46	0.30
4828.00	11.56	246.64	4,790.34	94.04 S	379.64 W	-94.04	0.34
4922.00	11.58	245.57	4,882.43	101.67 S	396.88 W	-101.67	0.23
5017.00	11.52	245.09	4,975.50	109.61 S	414.16 W	-109.61	0.12
5176.00	11.68	245.77	5,131.26	122.91 S	443.24 W	-122.91	0.13
5270.00	13.86	258.80	5,222.95	129.00 S	462.97 W	-129.00	3.83
5364.00	12.94	259.39	5,314.39	133.13 S	484.36 W	-133.13	0.99
5458.00	11.60	258.54	5,406.24	136.94 S	503.96 W	-136.94	1.44
5552.00	10.73	257.60	5,498.46	140.70 S	521.77 W	-140.70	0.95
5647.00	9.82	259.13	5,591.93	144.12 S	538.37 W	-144.12	1.00
5741.00	12.01	250.59	5,684.23	148.89 S	555.47 W	-148.89	2.89
5836.00	10.82	247.13	5,777.35	155.64 S	573.00 W	-155.64	1.44
5930.00	13.99	251.83	5,869.15	162.61 S	591.94 W	-162.61	3.54
6024.00	13.32	249.57	5,960.49	169.93 S	612.88 W	-169.93	0.91
6118.00	13.16	249.42	6,051.99	177.48 S	633.04 W	-177.48	0.17
6212.00	13.88	248.98	6,143.39	185.28 S	653.59 W	-185.28	0.77
6305.00	14.17	247.98	6,233.62	193.55 S	674.55 W	-193.55	0.41
6399.00	13.48	247.51	6,324.89	202.06 S	695.34 W	-202.06	0.74
6493.00	12.25	246.15	6,416.53	210.28 S	714.59 W	-210.28	1.35
6588.00	12.72	266.38	6,509.33	215.02 S	734.25 W	-215.02	4.61
6683.00	13.34	267.58	6,601.88	216.14 S	755.64 W	-216.14	0.71
6776.00	13.18	268.02	6,692.40	216.96 S	776.95 W	-216.96	0.20
6869.00	13.28	266.10	6,782.93	218.05 S	798.21 W	-218.05	0.48
6964.00	13.02	265.80	6,875.44	219.58 S	819.77 W	-219.58	0.28
7058.00	13.22	265.04	6,966.99	221.28 S	841.03 W	-221.28	0.28
7152.00	12.32	265.36	7,058.66	223.02 S	861.74 W	-223.02	0.96
7246.00	9.65	262.02	7,150.93	224.93 S	879.54 W	-224.93	2.92
7341.00	10.37	263.62	7,244.49	226.98 S	895.92 W	-226.98	0.81
7435.00	11.64	261.36	7,336.76	229.35 S	913.71 W	-229.35	1.43
7529.00	10.40	259.99	7,429.02	232.25 S	931.44 W	-232.25	1.35
7623.00	9.10	258.55	7,521.66	235.20 S	947.08 W	-235.20	1.41
7718.00	6.95	255.26	7,615.73	238.15 S	960.00 W	-238.15	2.31
7812.00	6.33	253.23	7,709.10	241.10 S	970.46 W	-241.10	0.71
7906.00	5.83	249.31	7,802.57	244.28 S	979.89 W	-244.28	0.69
8000.00	8.24	256.75	7,895.85	247.51 S	990.92 W	-247.51	2.74
8095.00	7.65	259.39	7,989.94	250.23 S	1,003.76 W	-250.23	0.73
8189.00	5.98	256.15	8,083.28	252.56 S	1,014.66 W	-252.56	1.82
8282.00	5.58	256.76	8,175.80	254.75 S	1,023.77 W	-254.75	0.44



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
8376.00	7.07	251.46	8,269.23	257.64 S	1,033.70 W	-257.64	1.70
8469.00	5.34	247.04	8,361.68	261.15 S	1,043.11 W	-261.15	1.93
8563.00	7.44	250.27	8,455.09	264.91 S	1,052.87 W	-264.91	2.27
8657.00	10.91	251.79	8,547.88	269.74 S	1,067.05 W	-269.74	3.70
8751.00	9.07	245.51	8,640.45	275.60 S	1,082.25 W	-275.60	2.27
8845.00	10.64	258.52	8,733.07	280.40 S	1,097.50 W	-280.40	2.89
8939.00	9.12	257.78	8,825.67	283.70 S	1,113.28 W	-283.70	1.62
9034.00	10.60	267.78	8,919.28	285.63 S	1,129.38 W	-285.63	2.38
9128.00	7.91	263.89	9,012.04	286.66 S	1,144.45 W	-286.66	2.94
9222.00	4.83	251.11	9,105.46	288.63 S	1,154.63 W	-288.63	3.59
9316.00	3.94	234.58	9,199.18	291.78 S	1,161.00 W	-291.78	1.64
9411.00	4.00	223.83	9,293.96	296.06 S	1,165.96 W	-296.06	0.78
9505.00	4.00	204.50	9,387.73	301.41 S	1,169.59 W	-301.41	1.43
9599.00	4.85	195.26	9,481.45	308.23 S	1,171.99 W	-308.23	1.18
9693.00	0.90	199.92	9,575.32	312.76 S	1,173.29 W	-312.76	4.21
9788.00	0.73	236.98	9,670.31	313.79 S	1,174.05 W	-313.79	0.57
9882.00	1.33	340.18	9,764.30	313.09 S	1,174.93 W	-313.09	1.76
9929.00	9.49	358.19	9,811.05	308.69 S	1,175.23 W	-308.69	17.52
9976.00	16.59	352.41	9,856.81	298.16 S	1,176.24 W	-298.16	15.34
10024.00	23.79	347.51	9,901.83	281.89 S	1,179.25 W	-281.89	15.40
10070.00	29.63	347.20	9,942.91	261.73 S	1,183.78 W	-261.73	12.70
10117.00	35.05	347.38	9,982.60	237.21 S	1,189.30 W	-237.21	11.53
10164.00	37.27	357.58	10,020.58	209.79 S	1,192.86 W	-209.79	13.63
10211.00	41.29	353.75	10,056.96	180.14 S	1,195.15 W	-180.14	9.99
10259.00	44.99	351.87	10,091.98	147.59 S	1,199.27 W	-147.59	8.16
10306.00	48.25	350.75	10,124.26	113.83 S	1,204.44 W	-113.83	7.15
10354.00	51.39	351.60	10,155.22	77.59 S	1,210.06 W	-77.59	6.68
10401.00	51.34	349.22	10,184.57	41.40 S	1,216.18 W	-41.40	3.96
10448.00	59.56	351.85	10,211.21	3.24 S	1,222.49 W	-3.24	18.08
10494.00	63.65	354.46	10,233.08	36.92 N	1,227.30 W	36.92	10.20
10541.00	66.80	357.36	10,252.78	79.48 N	1,230.32 W	79.48	8.73
10588.00	68.82	357.79	10,270.53	122.95 N	1,232.16 W	122.95	4.38
10636.00	70.09	0.27	10,287.37	167.89 N	1,232.92 W	167.89	5.51
10683.00	73.20	359.06	10,302.17	212.49 N	1,233.19 W	212.49	7.05
10730.00	74.95	355.62	10,315.07	257.63 N	1,235.29 W	257.63	7.96
10777.00	75.97	355.32	10,326.87	302.98 N	1,238.88 W	302.98	2.26
10824.00	79.11	355.76	10,337.01	348.73 N	1,242.45 W	348.73	6.74
10843.00	82.49	356.93	10,340.05	367.44 N	1,243.65 W	367.44	18.80
10937.00	88.55	359.27	10,347.39	461.05 N	1,246.74 W	461.05	6.91
11032.00	88.80	359.47	10,349.59	556.02 N	1,247.79 W	556.02	0.34
11126.00	87.97	358.67	10,352.23	649.97 N	1,249.31 W	649.97	1.23
11220.00	90.92	359.73	10,353.15	743.95 N	1,250.62 W	743.95	3.33
11314.00	91.08	358.83	10,351.50	837.92 N	1,251.81 W	837.92	0.97
11408.00	91.33	358.69	10,349.53	931.88 N	1,253.84 W	931.88	0.30
11502.00	89.66	0.04	10,348.72	1,025.87 N	1,254.88 W	1025.87	2.28

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
11596.00	89.91	0.23	10,349.07	1,119.86 N	1,254.66 W	1119.86	0.33
11690.00	90.37	358.86	10,348.84	1,213.86 N	1,255.41 W	1213.86	1.54
11784.00	90.03	358.05	10,348.51	1,307.82 N	1,257.94 W	1307.82	0.93
11878.00	90.18	357.81	10,348.34	1,401.76 N	1,261.34 W	1401.76	0.30
11972.00	91.85	358.84	10,346.67	1,495.70 N	1,264.08 W	1495.70	2.09
12067.00	90.49	358.36	10,344.73	1,590.65 N	1,266.40 W	1590.65	1.52
12160.00	90.15	359.62	10,344.21	1,683.63 N	1,268.04 W	1683.63	1.40
12253.00	89.97	0.76	10,344.12	1,776.63 N	1,267.73 W	1776.63	1.24
12348.00	88.27	359.78	10,345.58	1,871.61 N	1,267.29 W	1871.61	2.07
12442.00	87.22	359.44	10,349.27	1,965.54 N	1,267.93 W	1965.54	1.17
12537.00	91.20	0.50	10,350.58	2,060.51 N	1,267.98 W	2060.51	4.34
12631.00	92.13	0.33	10,347.85	2,154.47 N	1,267.29 W	2154.47	1.01
12725.00	92.32	0.68	10,344.20	2,248.39 N	1,266.47 W	2248.39	0.42
12819.00	90.89	3.13	10,341.57	2,342.29 N	1,263.34 W	2342.29	3.02
12913.00	88.71	1.87	10,341.90	2,436.19 N	1,259.24 W	2436.19	2.68
13008.00	88.80	1.42	10,343.96	2,531.13 N	1,256.52 W	2531.13	0.48
13102.00	88.77	0.86	10,345.96	2,625.09 N	1,254.65 W	2625.09	0.60
13197.00	88.30	0.52	10,348.38	2,720.05 N	1,253.50 W	2720.05	0.61
13290.00	89.35	0.49	10,350.29	2,813.03 N	1,252.68 W	2813.03	1.13
13385.00	89.54	359.75	10,351.21	2,908.02 N	1,252.48 W	2908.02	0.80
13480.00	90.03	359.65	10,351.57	3,003.02 N	1,252.98 W	3003.02	0.53
13573.00	91.23	359.32	10,350.55	3,096.01 N	1,253.82 W	3096.01	1.34
13667.00	89.54	359.21	10,349.92	3,190.00 N	1,255.02 W	3190.00	1.80
13761.00	90.55	358.51	10,349.84	3,283.98 N	1,256.89 W	3283.98	1.31
13854.00	89.48	357.87	10,349.82	3,376.93 N	1,259.83 W	3376.93	1.34
13948.00	87.50	357.95	10,352.29	3,470.83 N	1,263.26 W	3470.83	2.11
14042.00	87.00	357.64	10,356.80	3,564.65 N	1,266.87 W	3564.65	0.63
14136.00	88.03	359.25	10,360.88	3,658.52 N	1,269.42 W	3658.52	2.03
14230.00	88.15	359.10	10,364.01	3,752.46 N	1,270.77 W	3752.46	0.20
14324.00	88.46	359.61	10,366.79	3,846.41 N	1,271.83 W	3846.41	0.63
14418.00	90.25	0.77	10,367.85	3,940.40 N	1,271.52 W	3940.40	2.27
14512.00	90.52	0.28	10,367.22	4,034.40 N	1,270.66 W	4034.40	0.60
14606.00	90.56	359.98	10,366.33	4,128.39 N	1,270.44 W	4128.39	0.32
14700.00	89.78	359.29	10,366.05	4,222.39 N	1,271.04 W	4222.39	1.11
14795.00	90.77	0.41	10,365.60	4,317.38 N	1,271.29 W	4317.38	1.57
14889.00	89.26	359.82	10,365.57	4,411.38 N	1,271.10 W	4411.38	1.72
14983.00	86.95	358.86	10,368.68	4,505.32 N	1,272.18 W	4505.32	2.66
15012.00	86.76	358.72	10,370.27	4,534.27 N	1,272.80 W	4534.27	0.81
15074.00	86.76	358.72	10,373.78	4,596.15 N	1,274.18 W	4596.15	0.00

**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 0.00 degrees (Grid)
- A total correction of 6.39 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 15,074.00 feet is 4,769.50 feet along 344.51 degrees (Grid)

WARRANTY

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3950 Interwood S. Pkwy • Houston, TX 77032
PHONE 281.986.4400 • FAX 281.986.4499

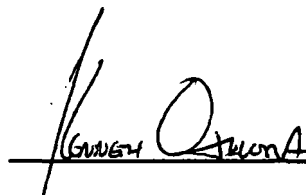
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State of New Mexico, Lea County

I, Kenneth Otolara certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling) and that on the dates of October 29, 2018 through November 16, 2018, I did conduct or supervise the taking of MWD directional surveys for the Gaucho Unit 37H well from a depth of 132' MD to a depth of 15012' 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 Devon Energy Corporation, for the Gaucho Unit 37H well in Lea County. I have reviewed this report and find that it confirms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling.)



Kenneth Otolara
Field Engineer