

A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

30-015-39418

July 31, 2012

Devon Energy Production Co., L.P.
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010



Attn: Mark Cooper

Re: **Capella 14 Federal Com No. 004H**

Please find enclosed a copy of the survey from 0.00' to 8473.20' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

Sincerely,

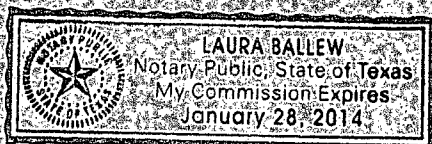

Keith Havelka
Operations

STATE OF TEXAS §

§

COUNTY OF NUECES §

This instrument was acknowledged before me on the 2nd day of August
A.D. 2012, by Keith Havelka



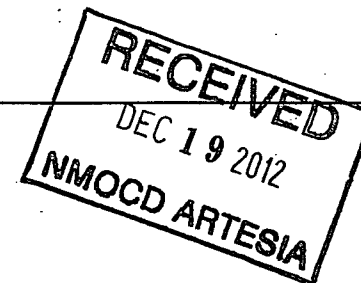

Laura Ballew
Notary Public, State of Texas

Company: Devon Energy Production Co., LP
Lease/Well: Capella 14 Federal Com / No. 004H



Rig Name: McVay Drilling 10
State/County: New Mexico / Eddy
Latitude: 32.67

GRID North is 0.26 Degrees East of True North
VS-Azi: 179.60 Degrees



DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01_int.ut
Minimum Curvature Method
Report Date/Time: 7/31/2012 / 09:57

Vaughn Energy Services
Corpus Christi, Texas
800-606-4976

Surveyor: Shane Nelson
Capella 14 Federal Com No. 004 / API 30-015-39418

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
166.00	0.99	189.62	165.99	-1.42	-0.24	1.41	1.44	189.62	0.60
260.40	1.28	233.97	260.37	-2.84	-1.23	2.83	3.10	203.42	0.95
354.80	1.57	279.53	354.75	-3.25	-3.36	3.23	4.68	225.98	1.20
449.20	1.71	254.66	449.11	-3.41	-6.00	3.37	6.90	240.40	0.76
543.60	1.85	229.19	543.47	-4.77	-8.51	4.72	9.76	240.70	0.84
638.00	1.39	226.39	637.83	-6.56	-10.49	6.48	12.37	237.98	0.50
732.40	0.92	223.78	732.21	-7.89	-11.83	7.81	14.22	236.31	0.50
826.80	0.98	218.66	826.60	-9.07	-12.86	8.98	15.74	234.82	0.11
921.20	1.05	213.51	920.98	-10.42	-13.85	10.33	17.33	233.03	0.12
1015.60	0.72	240.20	1015.37	-11.44	-14.84	11.33	18.74	232.37	0.56
1110.00	0.37	267.17	1109.77	-11.75	-15.66	11.64	19.57	233.12	0.44
1204.40	0.26	294.71	1204.17	-11.67	-16.16	11.56	19.93	234.15	0.20
1298.80	0.14	322.26	1298.56	-11.50	-16.42	11.38	20.04	235.00	0.16
1393.20	0.59	7.42	1392.96	-10.93	-16.42	10.81	19.73	236.36	0.53
1487.60	1.04	52.74	1487.35	-9.93	-15.68	9.82	18.56	237.65	0.80
1582.00	1.82	54.83	1581.72	-8.55	-13.78	8.46	16.22	238.17	0.83
1676.40	2.60	56.56	1676.05	-6.51	-10.76	6.43	12.58	238.84	0.83
1770.80	2.67	68.80	1770.35	-4.53	-6.92	4.48	8.28	236.80	0.60
1865.20	2.74	81.12	1864.65	-3.39	-2.65	3.37	4.30	217.98	0.62

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1959.60	2.33	63.82	1958.96	-2.19	1.30	2.20	2.55	149.30	0.91
2054.00	1.92	46.27	2053.29	-0.26	4.17	0.28	4.17	93.52	0.81
2148.40	1.58	43.67	2147.65	1.78	6.21	-1.74	6.46	74.01	0.36
2242.80	1.25	41.20	2242.02	3.50	7.78	-3.44	8.53	65.82	0.36
2337.20	1.17	27.89	2336.40	5.12	8.91	-5.06	10.28	60.11	0.31
2431.60	1.10	14.49	2430.78	6.86	9.59	-6.79	11.79	54.44	0.29
2526.00	0.96	22.66	2525.17	8.46	10.12	-8.39	13.20	50.11	0.22
2620.40	0.81	31.02	2619.56	9.76	10.77	-9.69	14.54	47.81	0.20
2714.80	1.04	18.61	2713.94	11.15	11.39	-11.07	15.94	45.61	0.32
2809.20	1.28	6.02	2808.32	13.02	11.78	-12.94	17.56	42.14	0.37
2903.60	1.30	346.03	2902.70	15.11	11.63	-15.03	19.07	37.59	0.48
2998.00	1.32	349.97	2997.08	17.22	11.18	-17.14	20.53	32.99	0.10
3092.40	1.20	352.38	3091.45	19.28	10.86	-19.20	22.13	29.39	0.14
3186.80	1.08	19.18	3185.83	21.11	11.02	-21.03	23.81	27.57	0.58
3281.20	1.18	26.09	3280.22	22.82	11.74	-22.74	25.67	27.23	0.18
3375.60	1.28	32.82	3374.59	24.58	12.74	-24.49	27.69	27.40	0.18
3470.00	1.30	22.90	3468.97	26.45	13.73	-26.35	29.80	27.43	0.24
3564.40	1.31	12.83	3563.35	28.49	14.38	-28.39	31.92	26.79	0.24
3658.80	1.14	352.42	3657.72	30.48	14.50	-30.38	33.75	25.44	0.50
3753.20	0.97	331.91	3752.11	32.11	14.00	-32.01	35.03	23.56	0.44
3847.60	0.74	6.16	3846.50	33.42	13.69	-33.32	36.12	22.28	0.58
3942.00	0.51	40.89	3940.89	34.35	14.04	-34.25	37.10	22.23	0.46
4036.40	0.63	26.75	4035.29	35.13	14.54	-35.03	38.02	22.49	0.19
4130.80	0.74	12.20	4129.68	36.19	14.91	-36.08	39.14	22.39	0.22
4225.20	0.73	356.37	4224.07	37.39	15.00	-37.28	40.28	21.86	0.22
4319.60	0.72	340.53	4318.47	38.55	14.76	-38.45	41.28	20.95	0.21
4414.00	0.90	351.05	4412.86	39.85	14.45	-39.74	42.38	19.93	0.25
4508.40	1.09	1.80	4507.24	41.48	14.36	-41.38	43.89	19.09	0.28
4602.80	0.90	356.60	4601.63	43.12	14.34	-43.02	45.44	18.40	0.22
4697.20	0.72	351.28	4696.02	44.45	14.21	-44.35	46.66	17.73	0.21
4791.60	0.70	338.64	4790.41	45.57	13.91	-45.47	47.64	16.97	0.17
4886.00	0.69	325.95	4884.81	46.58	13.38	-46.49	48.46	16.02	0.16
4980.40	0.74	328.44	4979.20	47.57	12.74	-47.48	49.25	14.99	0.06
5074.80	0.79	331.07	5073.59	48.66	12.11	-48.57	50.14	13.98	0.06
5169.20	0.86	3.58	5167.98	49.93	11.84	-49.85	51.32	13.34	0.50
5263.60	0.94	36.34	5262.37	51.27	12.34	-51.18	52.73	13.54	0.54
5358.00	0.84	50.43	5356.76	52.33	13.33	-52.24	54.00	14.29	0.26
5452.40	0.73	64.37	5451.15	53.03	14.41	-52.93	54.95	15.20	0.23
5546.80	0.77	61.49	5545.54	53.59	15.51	-53.48	55.79	16.14	0.06
5641.20	0.82	58.47	5639.93	54.25	16.64	-54.14	56.75	17.06	0.07

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5735.60	0.82	28.73	5734.32	55.20	17.55	-55.07	57.92	17.63	0.45
5830.00	0.82	358.76	5828.71	56.46	17.86	-56.34	59.22	17.55	0.45
5924.40	0.80	357.33	5923.10	57.80	17.81	-57.67	60.48	17.13	0.03
6018.80	0.79	356.15	6017.49	59.10	17.74	-58.98	61.71	16.70	0.02
6113.20	0.84	23.47	6111.89	60.38	17.97	-60.26	63.00	16.57	0.41
6207.60	0.90	51.03	6206.28	61.48	18.82	-61.35	64.30	17.02	0.44
6302.00	1.03	50.40	6300.66	62.49	20.05	-62.35	65.63	17.79	0.15
6396.40	1.17	49.53	6395.04	63.66	21.44	-63.51	67.17	18.61	0.15
6490.80	1.22	48.00	6489.42	64.95	22.92	-64.79	68.88	19.43	0.06
6585.20	1.27	46.47	6583.80	66.35	24.42	-66.17	70.70	20.21	0.06
6679.60	1.45	58.61	6678.18	67.68	26.19	-67.50	72.58	21.16	0.36
6774.00	1.63	70.87	6772.54	68.74	28.48	-68.54	74.41	22.50	0.40
6868.40	1.48	81.99	6866.91	69.35	30.94	-69.13	75.94	24.05	0.36
6962.80	1.32	93.09	6961.28	69.46	33.24	-69.23	77.00	25.57	0.33
7057.20	1.32	54.07	7055.66	70.04	35.20	-69.79	78.39	26.68	0.93
7151.60	1.31	14.63	7150.03	71.72	36.35	-71.46	80.40	26.88	0.94
7246.00	1.28	23.55	7244.41	73.73	37.04	-73.47	82.52	26.68	0.22
7340.40	1.26	32.88	7338.79	75.57	38.03	-75.31	84.60	26.71	0.22
7434.80	1.45	9.56	7433.16	77.62	38.79	-77.35	86.78	26.55	0.61
7529.20	1.64	345.96	7527.53	80.12	38.66	-79.84	88.96	25.76	0.70
7623.60	1.38	359.66	7621.89	82.57	38.33	-82.30	91.03	24.90	0.47
7718.00	1.11	13.68	7716.27	84.59	38.54	-84.32	92.96	24.49	0.43
7812.40	0.97	13.34	7810.66	86.26	38.94	-85.99	94.64	24.29	0.15
7906.80	0.83	12.88	7905.04	87.71	39.28	-87.43	96.10	24.12	0.15
8001.20	0.89	38.72	7999.43	88.95	39.89	-88.67	97.48	24.15	0.41
8095.60	0.94	64.79	8093.82	89.85	41.04	-89.56	98.78	24.55	0.44
8190.00	1.07	76.16	8188.21	90.39	42.60	-90.09	99.92	25.23	0.25
8284.40	1.21	87.41	8282.59	90.64	44.45	-90.33	100.96	26.12	0.28
8378.80	1.06	81.46	8376.97	90.82	46.31	-90.49	101.95	27.02	0.20
8473.20	0.92	75.36	8471.36	91.14	47.91	-90.80	102.96	27.73	0.19

Devon Energy
Capella 14 Fed Com 4H
Eddy County, NM
McVay 10
API# 30-015-39418-0000

July 26, 2012 – August 05, 2012
HD-MJ-0009649363

Sperry Drilling Services
MWD Survey Report

Submitted by Andy Naquin
3950 Interwood South Parkway
Houston, TX 77032
Ph: 281.986.4400

HALLIBURTON

**Drilling and Formation
Evaluation**



Survey Report for Devon Energy

Rig : McVay 10
Well Name : Capella 14 Fed Com 4H
Field Name : Hackberry, Sandstone
Country : USA
Job Number : HD-XX-0009649363
Job Start Date : 26-Jul-12
API Number : 30-015-39418-0000



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1. Directional Survey Data

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)
166.00	0.99	189.62	165.99	1.41 S	0.24 W	1.41	0.60
260.40	1.28	233.97	260.37	2.84 S	1.23 W	2.83	0.95
354.80	1.57	279.53	354.75	3.24 S	3.36 W	3.22	1.20
449.20	1.71	254.66	449.11	3.40 S	5.99 W	3.36	0.76
543.60	1.85	229.19	543.47	4.77 S	8.50 W	4.71	0.84
638.00	1.39	226.39	637.83	6.56 S	10.48 W	6.48	0.49
732.40	0.92	223.78	732.21	7.89 S	11.84 W	7.81	0.50
826.80	0.98	218.66	826.60	9.07 S	12.87 W	8.98	0.11
921.20	1.05	213.51	920.98	10.42 S	13.85 W	10.33	0.12
1015.60	0.72	240.20	1,015.37	11.44 S	14.84 W	11.33	0.55
1110.00	0.37	267.17	1,109.77	11.75 S	15.66 W	11.64	0.45
1204.40	0.26	294.71	1,204.17	11.67 S	16.16 W	11.56	0.20
1298.80	0.14	322.26	1,298.56	11.49 S	16.42 W	11.38	0.16
1393.20	0.59	7.42	1,392.96	10.92 S	16.43 W	10.81	0.53
1487.60	1.04	52.74	1,487.35	9.92 S	15.69 W	9.81	0.80
1582.00	1.82	54.83	1,581.72	8.54 S	13.78 W	8.44	0.83
1676.40	2.60	56.56	1,676.05	6.49 S	10.77 W	6.42	0.83
1770.80	2.67	68.80	1,770.35	4.52 S	6.93 W	4.47	0.60
1865.20	2.74	81.12	1,864.65	3.38 S	2.65 W	3.36	0.62
1959.60	2.33	63.82	1,958.96	2.18 S	1.30 E	2.19	0.91
2054.00	1.92	46.27	2,053.29	0.24 S	4.16 E	0.27	0.81
2148.40	1.58	43.67	2,147.65	1.79 N	6.21 E	-1.75	0.37
2242.80	1.25	41.20	2,242.02	3.51 N	7.78 E	-3.46	0.36
2337.20	1.17	27.89	2,336.40	5.14 N	8.91 E	-5.07	0.31
2431.60	1.10	14.49	2,430.78	6.87 N	9.59 E	-6.80	0.29
2526.00	0.96	22.66	2,525.17	8.47 N	10.12 E	-8.40	0.21
2620.40	0.81	31.02	2,619.56	9.77 N	10.77 E	-9.70	0.21
2714.80	1.04	18.61	2,713.94	11.16 N	11.39 E	-11.08	0.32
2809.20	1.28	6.02	2,808.32	13.02 N	11.77 E	-12.94	0.37
2903.60	1.30	346.03	2,902.70	15.11 N	11.62 E	-15.02	0.47
2998.00	1.32	349.97	2,997.08	17.22 N	11.17 E	-17.14	0.10
3092.40	1.20	352.38	3,091.45	19.27 N	10.85 E	-19.19	0.14
3186.80	1.08	19.18	3,185.83	21.09 N	11.02 E	-21.01	0.57
3281.20	1.18	26.09	3,280.22	22.80 N	11.74 E	-22.72	0.18
3375.60	1.28	32.82	3,374.59	24.56 N	12.73 E	-24.47	0.19
3470.00	1.30	22.90	3,468.97	26.43 N	13.72 E	-26.33	0.24
3564.40	1.31	12.83	3,563.35	28.47 N	14.38 E	-28.37	0.24
3658.80	1.14	352.42	3,657.73	30.45 N	14.49 E	-30.35	0.49
3753.20	0.97	331.91	3,752.11	32.09 N	13.99 E	-31.99	0.44
3847.60	0.74	6.16	3,846.50	33.40 N	13.68 E	-33.30	0.58
3942.00	0.51	40.89	3,940.89	34.32 N	14.02 E	-34.22	0.46

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
4036.40	0.63	26.75	4,035.29	35.10 N	14.53 E	-35.00	0.19
4130.80	0.74	12.20	4,129.68	36.16 N	14.90 E	-36.06	0.22
4225.20	0.73	356.37	4,224.08	37.36 N	14.99 E	-37.25	0.21
4319.60	0.72	340.53	4,318.47	38.52 N	14.75 E	-38.41	0.21
4414.00	0.90	351.05	4,412.86	39.81 N	14.44 E	-39.71	0.25
4508.40	1.09	1.80	4,507.24	41.44 N	14.35 E	-41.34	0.28
4602.80	0.90	356.60	4,601.63	43.08 N	14.33 E	-42.98	0.22
4697.20	0.72	351.28	4,696.02	44.40 N	14.20 E	-44.30	0.21
4791.60	0.70	338.64	4,790.41	45.53 N	13.90 E	-45.43	0.17
4886.00	0.69	325.95	4,884.81	46.54 N	13.37 E	-46.44	0.16
4980.40	0.74	328.44	4,979.20	47.53 N	12.73 E	-47.44	0.06
5074.80	0.79	331.07	5,073.59	48.61 N	12.10 E	-48.53	0.06
5169.20	0.86	3.58	5,167.98	49.89 N	11.83 E	-49.81	0.49
5263.60	0.94	36.34	5,262.37	51.22 N	12.33 E	-51.13	0.54
5358.00	0.84	50.43	5,356.76	52.29 N	13.33 E	-52.19	0.25
5452.40	0.73	64.37	5,451.15	52.99 N	14.40 E	-52.89	0.23
5546.80	0.77	61.49	5,545.54	53.55 N	15.50 E	-53.44	0.06
5641.20	0.82	58.47	5,639.93	54.21 N	16.63 E	-54.09	0.07
5735.60	0.82	28.73	5,734.32	55.15 N	17.53 E	-55.03	0.45
5830.00	0.82	358.76	5,828.71	56.42 N	17.84 E	-56.29	0.45
5924.40	0.80	357.33	5,923.11	57.75 N	17.80 E	-57.63	0.03
6018.80	0.79	356.15	6,017.50	59.06 N	17.72 E	-58.94	0.02
6113.20	0.84	23.47	6,111.89	60.34 N	17.96 E	-60.22	0.41
6207.60	0.90	51.03	6,206.28	61.45 N	18.81 E	-61.31	0.44
6302.00	1.03	50.40	6,300.66	62.45 N	20.04 E	-62.31	0.14
6396.40	1.17	49.53	6,395.05	63.62 N	21.43 E	-63.47	0.15
6490.80	1.22	48.00	6,489.43	64.92 N	22.91 E	-64.76	0.06
6585.20	1.27	46.47	6,583.80	66.31 N	24.41 E	-66.14	0.06
6679.60	1.45	58.61	6,678.18	67.65 N	26.19 E	-67.47	0.36
6774.00	1.63	70.87	6,772.54	68.72 N	28.48 E	-68.51	0.40
6868.40	1.48	81.99	6,866.91	69.32 N	30.95 E	-69.11	0.36
6962.80	1.32	93.09	6,961.28	69.44 N	33.25 E	-69.20	0.33
7057.20	1.32	54.07	7,055.66	70.02 N	35.21 E	-69.77	0.93
7151.60	1.31	14.63	7,150.03	71.70 N	36.36 E	-71.44	0.94
7246.00	1.28	23.55	7,244.41	73.71 N	37.06 E	-73.45	0.22
7340.40	1.26	32.88	7,338.79	75.55 N	38.04 E	-75.28	0.22
7434.80	1.45	9.56	7,433.16	77.60 N	38.81 E	-77.32	0.61
7529.20	1.64	345.96	7,527.53	80.08 N	38.68 E	-79.81	0.70
7623.60	1.38	359.66	7,621.90	82.53 N	38.34 E	-82.26	0.47
7718.00	1.11	13.68	7,716.27	84.56 N	38.55 E	-84.29	0.43
7812.40	0.97	13.34	7,810.66	86.22 N	38.95 E	-85.95	0.15
7906.80	0.83	12.88	7,905.05	87.67 N	39.29 E	-87.39	0.15
8001.20	0.89	38.72	7,999.44	88.91 N	39.90 E	-88.62	0.41
8095.60	0.94	64.79	8,093.82	89.81 N	41.06 E	-89.52	0.44
8190.00	1.07	76.16	8,188.21	90.35 N	42.61 E	-90.05	0.25

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100)
8284.40	1.21	87.41	8,282.59	90.60 N	44.47 E	-90.29	0.28
8378.80	1.06	81.46	8,376.97	90.78 N	46.33 E	-90.45	0.20
8473.20	0.92	75.36	8,471.36	91.10 N	47.92 E	-90.76	0.19
8507.00	0.92	126.27	8,505.15	91.01 N	48.40 E	-90.67	2.34
8538.00	2.74	181.32	8,536.14	90.12 N	48.59 E	-89.78	7.56
8569.00	6.28	190.50	8,567.04	87.71 N	48.26 E	-87.37	11.61
8601.00	9.51	190.13	8,598.73	83.38 N	47.47 E	-83.05	10.10
8633.00	13.90	188.76	8,630.06	76.98 N	46.42 E	-76.65	13.74
8664.00	17.48	190.43	8,659.90	68.72 N	45.01 E	-68.40	11.64
8696.00	20.65	194.76	8,690.14	58.53 N	42.70 E	-58.23	10.85
8727.00	23.53	202.08	8,718.87	47.50 N	38.98 E	-47.23	12.83
8759.00	27.36	199.24	8,747.76	34.64 N	34.16 E	-34.40	12.57
8790.00	31.36	194.70	8,774.77	20.10 N	29.76 E	-19.89	14.74
8822.00	34.72	193.06	8,801.60	3.16 N	25.59 E	-2.99	10.88
8853.00	37.61	189.86	8,826.62	14.76 S	21.97 E	14.91	11.13
8885.00	38.41	187.72	8,851.84	34.23 S	18.97 E	34.37	4.83
8916.00	40.91	186.28	8,875.70	53.87 S	16.56 E	53.99	8.59
8948.00	44.71	185.53	8,899.17	75.50 S	14.33 E	75.60	11.96
8979.00	46.61	182.96	8,920.84	97.60 S	12.70 E	97.69	8.52
9011.00	50.04	184.12	8,942.11	121.45 S	11.22 E	121.53	11.06
9042.00	51.46	180.67	8,961.73	145.43 S	10.22 E	145.50	9.76
9076.00	53.67	181.04	8,982.40	172.42 S	9.82 E	172.49	6.55
9105.00	54.67	181.44	8,999.37	195.93 S	9.31 E	195.99	3.65
9136.00	56.21	181.55	9,016.96	221.45 S	8.64 E	221.51	4.98
9168.00	59.21	178.66	9,034.05	248.49 S	8.60 E	248.55	12.08
9199.00	62.18	178.16	9,049.23	275.51 S	9.36 E	275.57	9.68
9231.00	66.25	179.54	9,063.15	304.31 S	9.93 E	304.37	13.30
9263.00	68.98	181.30	9,075.33	333.89 S	9.71 E	333.95	9.94
9294.00	71.65	181.96	9,085.78	363.07 S	8.87 E	363.12	8.84
9326.00	74.27	182.43	9,095.15	393.64 S	7.70 E	393.68	8.33
9357.00	78.60	180.40	9,102.42	423.75 S	6.96 E	423.79	15.34
9388.00	81.94	179.08	9,107.66	454.30 S	7.10 E	454.34	11.56
9420.00	84.95	178.32	9,111.32	486.08 S	7.82 E	486.12	9.69
9451.00	87.01	178.03	9,113.49	516.99 S	8.81 E	517.04	6.73
9483.00	88.67	178.73	9,114.70	548.95 S	9.72 E	549.01	5.63
9578.00	89.29	180.28	9,116.39	643.93 S	10.54 E	643.99	1.76
9672.00	91.42	179.26	9,115.80	737.92 S	10.92 E	737.98	2.51
9767.00	91.42	179.05	9,113.44	832.88 S	12.33 E	832.95	0.22
9861.00	90.71	178.40	9,111.70	926.84 S	14.42 E	926.92	1.02
9955.00	91.20	179.97	9,110.13	1,020.81 S	15.76 E	1020.90	1.75
10050.00	91.45	177.71	9,107.93	1,115.76 S	17.69 E	1115.86	2.40
10144.00	89.97	179.01	9,106.76	1,209.71 S	20.38 E	1209.83	2.10
10239.00	90.31	179.26	9,106.53	1,304.70 S	21.82 E	1304.82	0.44
10333.00	89.87	179.08	9,106.38	1,398.69 S	23.18 E	1398.82	0.50
10427.00	89.57	180.09	9,106.85	1,492.69 S	23.85 E	1492.82	1.12

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100')
10521.00	90.09	179.51	9,107.12	1,586.68 S	24.18 E	1586.81	0.83
10616.00	89.44	181.62	9,107.51	1,681.67 S	23.24 E	1681.79	2.33
10710.00	89.75	182.45	9,108.17	1,775.61 S	19.90 E	1775.71	0.94
10805.00	90.03	182.64	9,108.35	1,870.52 S	15.68 E	1870.58	0.36
10899.00	91.01	181.73	9,107.49	1,964.44 S	12.09 E	1964.48	1.43
10993.00	91.01	181.37	9,105.83	2,058.39 S	9.55 E	2058.41	0.37
11088.00	89.97	180.14	9,105.01	2,153.38 S	8.30 E	2153.38	1.70
11182.00	89.60	179.60	9,105.37	2,247.38 S	8.51 E	2247.38	0.70
11277.00	89.60	179.59	9,106.03	2,342.37 S	9.17 E	2342.38	0.01
11371.00	90.46	178.52	9,105.98	2,436.36 S	10.73 E	2436.37	1.47
11466.00	90.31	179.26	9,105.34	2,531.34 S	12.57 E	2531.36	0.80
11561.00	91.19	178.73	9,104.10	2,626.31 S	14.24 E	2626.35	1.08
11655.00	92.86	177.85	9,100.78	2,720.21 S	17.04 E	2720.26	2.01
11749.00	91.36	178.11	9,097.31	2,814.08 S	20.35 E	2814.16	1.62
11843.00	91.55	178.83	9,094.93	2,908.02 S	22.86 E	2908.11	0.79
11938.00	90.31	180.33	9,093.39	3,003.00 S	23.56 E	3003.09	2.05
12032.00	88.33	180.19	9,094.50	3,096.98 S	23.13 E	3097.07	2.10
12126.00	89.69	179.90	9,096.12	3,190.97 S	23.05 E	3191.05	1.48
12221.00	90.31	179.49	9,096.12	3,285.97 S	23.55 E	3286.05	0.78
12315.00	89.94	179.79	9,095.92	3,379.96 S	24.14 E	3380.05	0.51
12409.00	91.27	179.80	9,094.93	3,473.96 S	24.47 E	3474.04	1.42
12504.00	91.45	180.49	9,092.67	3,568.93 S	24.23 E	3569.01	0.75
12597.00	91.37	180.32	9,090.38	3,661.90 S	23.58 E	3661.97	0.21
12692.00	90.06	181.53	9,089.20	3,756.87 S	22.04 E	3756.94	1.88
12786.00	90.09	181.39	9,089.07	3,850.84 S	19.65 E	3850.89	0.16
12881.00	90.57	180.49	9,088.52	3,945.83 S	18.09 E	3945.86	1.07
12975.00	90.31	179.43	9,087.80	4,039.82 S	18.15 E	4039.85	1.16
13070.00	90.66	180.14	9,087.00	4,134.82 S	18.50 E	4134.85	0.83
13165.00	91.19	181.37	9,085.46	4,229.80 S	17.25 E	4229.81	1.41
13259.00	90.40	178.96	9,084.16	4,323.78 S	16.98 E	4323.79	2.70
13354.00	90.57	179.79	9,083.35	4,418.77 S	18.01 E	4418.79	0.89
13448.00	89.78	179.03	9,083.06	4,512.76 S	18.99 E	4512.79	1.16
13495.00	89.48	178.17	9,083.36	4,559.75 S	20.13 E	4559.78	1.94
13556.00	89.48	178.17	9,083.91	4,620.71 S	22.08 E	4620.76	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 179.60 degrees (Grid)
- A total correction of 7.45 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 13,556.00 feet is 4,620.77 feet along 179.73 degrees (Grid)

SURVEYS CALCULATED USING SHORT COLLAR METHOD

TIE-ON SURVEY ASSUMED VERTICAL AT SURFACE

SURVEYS FROM 166.00' MD TO 8473.20' MD ARE PROVIDED BY VAUGHN ENERGY SERVICES.

SURVEYS FROM 8507.00' MD TO 13495.00' MD ARE PROVIDED BY SPERRY DRILLING MWD

SURVEY AT 13495.00' MD HAS BEEN PROJECTED TO TD AT 13556.00' MD

SPERRY ENGINEERS: ANDY NAQUIN, KENNETH MARSHALL

WARRANTY

HALLIBURTON ENERGY SERVICES, INC. WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON ENERGY SERVICES, INC. CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION, AND PRODUCTION OPERATION. HALLIBURTON ENERGY SERVICES, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON ENERGY SERVICES, INC. SERVICES BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON ENERGY SERVICES, INC.

HALLIBURTON

Sperry Drilling

HALLIBURTON / SPERRY DRILLING
3950 INTERWOOD SOUTH PARKWAY
HOUSTON, TEXAS 77032
OFFICE: 281.986.4400

Devon Energy
Capella 14 Fed Com 4H
Eddy County, NM
McVay 10
API# 30-015-39418-0000

July 26, 2012 – August 05, 2012
HD-MJ-0009649363

Sperry Drilling Services
MWD End of Well Report

Submitted by Andy Naquin
3950 Interwood South Parkway
Houston, Texas 77032
Ph: 281.986.4400

HALLIBURTON

Drilling and Formation
Evaluation

End of Well Report for Devon Energy

Rig : McVay 10
Well Name : Capella 14 Fed Com 4H
Field Name : Hackberry, Sandstone
Country : USA
Job Number : HD-XX-0009649363
Job Start Date : 26-Jul-12
API Number : 30-015-39418-0000

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GENERAL INFORMATION

Company : Devon Energy
Rig : McVay 10
Well : Capella 14 Fed Com 4H
Field : Hackberry, Sandstone
County : Eddy County, NM
Country : USA
API Number : 30-015-39418-0000
Sperry Drilling Job Number : HD-XX-0009649363
Job Start Date : 26-Jul-12
Job End Date : 05-Aug-12
North Reference : Grid
Total Correction (deg) : 7.453
Dip Angle (deg) : 60.489
Total Magnetic Field (nT) : 48761
Date of Magnetic Data : 26 July, 2012
Well Head coordinates N : 32 deg. 40 min 0.58 sec North
Well Head coordinates E : 103 deg. 50 min 50.28 sec West
Vertical section direction (deg) : 179.60
Unit Number : 11579706
MWD Engineers : Andy Naquin, Kenneth Marshall

Company Representatives : Richard Hargrove
Company Geologist : Zac Poland

OPERATIONAL OVERVIEW

HALLIBURTON / SPERRY DRILLING WAS CONTRACTED BY DEVON ENERGY TO PERFORM DIRECTIONAL DRILLING AND MWD SERVICES FOR THE CAPELLA 14 FED COM 4H WELL IN EDDY COUNTY, NEW MEXICO. EQUIPMENT AND PERSONNEL ARRIVED ON LOCATION ON 25-JULY-12.

RUN 100 26-JULY-12: DRILLED FROM 8517' MD / 8515' TVD TO 9510' MD / 9114' TVD. POOH TO PICK UP LATERAL ASSEMBLY. MOTOR BEND 2.12°. 100% MWD RUN.

RUN 200 29-JULY-12: DRILLED FROM 9510' MD / 9114' TVD TO 9649' MD / 9105' TVD. POOH DUE TO MWD FAILURE. MOTOR BEND 1.50°. 100% MWD RUN.

RUN 300 30-JULY-12: DRILLED FROM 9649' MD / 9105' TVD TO 13556' MD / 9083' TVD. POOH DUE TO TD WELL. MOTOR BEND 1.50°. 100% MWD RUN.

SUMMARY OF MWD RUNS

Run No.	Rig Run No.	Hole Size (in)	MWD Service	Start Depth (ft)	End Depth (ft)	Drill/Wipe Distance (ft)	Run Start Date Time	Run End Date Time	BRT Hrs	Oper. Hrs	Circ. Hrs	Max Temp (degF)	Serv Int.	Trip for MWD	Failure Type
100	01	8.75	D/GWD	8517.00	9510.00	993.00	26-Jul-12 22:30	29-Jul-12 12:00	61.50	61.500	46.500	141.80	No	No	Post-Run MWD-1
200	02	8.75	D/GWD	9510.00	9649.00	139.00	29-Jul-12 22:00	30-Jul-12 13:30	15.50	15.500	5.000	131.00	No	Yes	Run MWD-1
300	03	8.75	D/GWD	9649.00	13556.00	3907.00	30-Jul-12 16:00	05-Aug-12 07:00	135.00	135.000	99.000	156.20	No	No	

BIT RUN SUMMARY
RUN TIME DATA

MWD Run : 100	Run Start : 26-Jul-12 22:30	BRT Hrs : 61.50	Circ. Hrs : 46.50
Rig Run No. : 01	Run End : 29-Jul-12 12:00	Hole Size (in) : 8.75	Oper. Hrs : 61.50

DRILLING DATA

Start Depth (ft) : 8517.00	Footage (ft) : 993.00	Avg WOB (klb) : 20.0	Avg ROP (fph) : 30.00
End Depth (ft) : 9510.00	Avg Flow Rate(gpm) : 500	Avg TOB (ft-lb) : 2000	Avg SPP (psig) : 2100
Drilling Hrs (hr) : 30.000	Avg RPM (rpm) : 0	Avg Bend (ft-lb) : 2.12	

MUD DATA

Mud Type : Saturated Brines			
Weight (ppg) : 8.60	Viscosity (spqt) : 28.00	PV (cP) : 1	YP (lbf2) : 1.00
Chlorides (ppm) : 28000	Max Temp (degF) : 141.80	% Solids(%) : 0.10	% Sand (%) : 0.10
pH (pH) : 9.50	Fluid Loss(mptm) : NA	% Oil (%) :	O:W :

MWD PERFORMANCE

Tool OD (in) : 6.75	Type : D/GWD	Min. Inc. (deg): 0.14	Min. Inc. Depth (ft) : 1298.80
Final Az. (deg) : 178.03	Max Op. Press. (psig) 4075	Max. Inc. (deg): 87.01	Max. Inc. Depth (ft) : 9451.00
MWD Real Time % : 100		MWD Recorded % : 100	

COMMENTS

26-JULY-12: DRILLED FROM 8517' MD / 8515' TVD TO 9510' MD / 9114' TVD. POOH TO PICK UP LATERAL ASSEMBLY. MOTOR BEND 2.12°. 100% MWD RUN.

(1) 30x HWDP
5.00 in OD / 3.00 in ID

(2) MWD

(3) Float Sub
6.75 in OD / 2.75 in ID
SN : SE11883632

(4) 6 3/4" SperryDrill Lobe 6/7 -
5.0 stg

6.75 in OD / 4.50 in ID

(5) Roller Cone Insert
8.75 in OD / 2.31 in ID
SN : 5209194

Length
(ft)

Cumulative
Length (ft)

1041.20

(1) 940.25

1x Non Mag Flex Collar
6.75 in OD / 2.75 in ID
SN : SD49654

100.95

(2) 67.14

(3) 3.57

33.81

6-3/4" DGWD 650 HOS
6.88 in OD / 3.13 in ID
SN : 11403798

(4) 29.24

30.24

*[1]Pos Pulser MK8 175C - SN :
11110771

*[2]TM Sonde 175C - SN : 10902555

*[3]GM Sonde 175C - SN :
10475394

*[4]DM Sonde - SN : 10455812

(5) 1.00

1.00

1x Non Mag Flex Collar
6.63 in OD / 2.75 in ID
SN : SD42971

Length
(ft)

Sensor Dist
From Bit
(ft)

30.86

6.30

[3] 58.82

[4] 52.76

29.98

BIT RUN SUMMARY

RUN TIME DATA

MWD Run : 200	Run Start : 29-Jul-12 22:00	BRT Hrs : 15.50	Circ. Hrs : 5.00
Rig Run No. : 02	Run End : 30-Jul-12 13:30	Hole Size (in) : 8.75	Oper. Hrs : 15.50

DRILLING DATA

Start Depth (ft) : 9510.00	Footage (ft) : 139.00	Avg WOB (klb) : 29.0	Avg ROP (fph) : 80.00
End Depth (ft) : 9649.00	Avg Flow Rate(gpm) : 500	Avg TOB (ft-lb) : 10000	Avg SPP (psig) : 2200
Drilling Hrs (hr) : 4.000	Avg RPM (rpm) : 45	Avg Bend (ft-lb) : 1.50	

MUD DATA

Mud Type : Saturated Brines			
Weight (ppg) : 8.60	Viscosity (spqt) : 28.00	PV (cP) : 1	YP (lbf2) : 1.00
Chlorides (ppm) : 25000	Max Temp (degF) : 131.00	% Solids(%) : 0.10	% Sand (%) : 0.10
pH (pH) : 9.50	Fluid Loss(mptm) : NA	% Oil (%) :	O:W :

MWD PERFORMANCE

Tool OD (in) : 6.75	Type : D/GWD	Min. Inc. (deg): 88.67	Min. Inc. Depth (ft) : 9483.00
Final Az. (deg) : 178.73	Max Op. Press. (psig) 4071	Max. Inc. (deg): 88.67	Max. Inc. Depth (ft) : 9483.00
MWD Real Time % : 90		MWD Recorded % : 100	

COMMENTS

29-JULY-12: DRILLED FROM 9510' MD / 9114' TVD TO 9649' MD / 9105' TVD. POOH DUE TO MWD FAILURE. MOTOR BEND 1.50°. 50% MWD RUN.

	Length (ft)	Cumulative Length (ft)		Length (ft)	Sensor Dist From Bit (ft)
(1) 30x HWDP 5.00 in OD / 3.00 in ID					
(2) 55 stands Drill Pipe 5.00 in OD / 4.28 in ID		6269.63			
(3) MWD					
(4) Integral Blade Stabilizer 6.75 in OD / 2.75 in ID SN : SD22217	(1) 940.25		1 x Non Mag Flex Collar 6.75 in OD / 2.75 in ID SN : SD49654	30.86	
(5) Float Sub 6.75 in OD / 2.75 in ID SN : SE11883632					
(6) 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg 6.75 in OD / 4.50 in ID		5329.38			
(7) PDC 8.75 in OD / 2.31 in ID SN : 11799868	(2) 5222.96		6-3/4" DGWD 650 System HOS 6.88 in OD / 3.13 in ID SN : 11403798 *[1]Pos Pulser MK8 175C - SN : 11512245 *[2]TM Sonde 175C - SN : 11398957 *[3]GM Sonde 175C - SN : 10505251 *[4]DM Sonde - SN : 11566419	6.30	[3] 64.29 [4] 58.23
		106.42			
	(3) 67.14				
	(4) 6.10	39.28			
	(5) 3.57	33.18			
		29.61			
	(6) 28.56		1 x Non Mag Flex Collar 6.63 in OD / 2.75 in ID SN : SD42971	29.98	
	(7) 1.05	1.05			

BIT RUN SUMMARY
RUN TIME DATA

MWD Run : 300	Run Start : 30-Jul-12 16:00	BRT Hrs : 135.00	Circ. Hrs : 99.00
Rig Run No. : 03	Run End : 05-Aug-12 07:00	Hole Size (in) : 8.75	Oper. Hrs : 135.00

DRILLING DATA

Start Depth (ft) : 9649.00	Footage (ft) : 3907.00	Avg WOB (klb) : 35.0	Avg ROP (fph) : 80.00
End Depth (ft) : 13556.00	Avg Flow Rate(gpm) : 500	Avg TOB (ft-lb) : 15	Avg SPP (psig) : 2500
Drilling Hrs (hr) : 80.000	Avg RPM (rpm) : 50	Avg Bend (ft-lb) : 1.50	

MUD DATA

Mud Type : Saturated Brines			
Weight (ppg) : 8.60	Viscosity (spqt) : 27.00	PV (cP) : 1	YP (lbf2) : 1.00
Chlorides (ppm) : 28000	Max Temp (degF) : 156.20	% Solids(%) : 0.10	% Sand (%) : 0.10
pH (pH) : 9.50	Fluid Loss(mptm) : NA	% Oil (%) : 0.00	O:W : 0

MWD PERFORMANCE

Tool OD (in) : 6.75	Type : D/GWD	Min. Inc. (deg): 88.33	Min. Inc. Depth (ft) : 12032.00
Final Az. (deg) : 178.17	Max Op. Press. (psig) 4065	Max. Inc. (deg): 92.86	Max. Inc. Depth (ft) : 11655.00
MWD Real Time % : 100		MWD Recorded % : 100	

COMMENTS

30-JULY-12: DRILLED FROM 9649' MD / 9105' TVD TO 13556' MD / 9083' TVD. POOH DUE TO TD WELL. MOTOR BEND 1.50°. 100% MWD RUN.

(1) 30x HWD
5.00 in OD / 3.00 in ID

(2) 55 stands DP (G)
5.00 in OD / 4.28 in ID

(3) MWD

(4) Integral Blade Stabilizer
6.75 in OD / 2.75 in ID
SN: SD22217

(5) Float Sub
6.75 in OD / 2.75 in ID
SN: SE11883632

(6) 6 3/4" SperryDrill Lobe 6/7 -
5.0 stg
6.75 in OD / 4.50 in ID

(7) PDC
8.75 in OD / 2.31 in ID
SN: 11799868

Length
(ft)

Cumulative
Length (ft)

(1) 940.25

6269.63

(2) 5222.96

5329.38

(3) 67.14

106.42

(4) 6.10

39.28

(5) 3.57

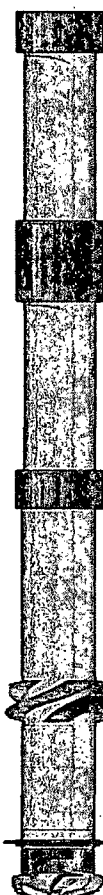
33.18

(6) 28.56

29.61

(7) 1.05

1.05



Length
(ft)

Sensor Dist
From Bit
(ft)

30.86

6.30

29.98

[3] 64.29

[4] 58.23

1 x Non Mag Flex Collar
6.75 in OD / 2.75 in ID
SN: SD49654

6 3/4" DGWD 650 System HOS
6.88 in OD / 3.13 in ID
SN: 11403798

*[1] Pos Pulser MK8 175C - SN: 11110771

*[2] TM Sonde 175C - SN: 10902555

*[3] GM Sonde 175C - SN: 10484416

*[4] DM Sonde - SN: 11566419

1 x Non Mag Flex Collar
6.63 in OD / 2.75 in ID
SN: SD42971



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)
166.00	0.99	189.62	165.99	1.41 S	0.24 W	1.41	0.60
260.40	1.28	233.97	260.37	2.84 S	1.23 W	2.83	0.95
354.80	1.57	279.53	354.75	3.24 S	3.36 W	3.22	1.20
449.20	1.71	254.66	449.11	3.40 S	5.99 W	3.36	0.76
543.60	1.85	229.19	543.47	4.77 S	8.50 W	4.71	0.84
638.00	1.39	226.39	637.83	6.56 S	10.48 W	6.48	0.49
732.40	0.92	223.78	732.21	7.89 S	11.84 W	7.81	0.50
826.80	0.98	218.66	826.60	9.07 S	12.87 W	8.98	0.11
921.20	1.05	213.51	920.98	10.42 S	13.85 W	10.33	0.12
1015.60	0.72	240.20	1,015.37	11.44 S	14.84 W	11.33	0.55
1110.00	0.37	267.17	1,109.77	11.75 S	15.66 W	11.64	0.45
1204.40	0.26	294.71	1,204.17	11.67 S	16.16 W	11.56	0.20
1298.80	0.14	322.26	1,298.56	11.49 S	16.42 W	11.38	0.16
1393.20	0.59	7.42	1,392.96	10.92 S	16.43 W	10.81	0.53
1487.60	1.04	52.74	1,487.35	9.92 S	15.69 W	9.81	0.80
1582.00	1.82	54.83	1,581.72	8.54 S	13.78 W	8.44	0.83
1676.40	2.60	56.56	1,676.05	6.49 S	10.77 W	6.42	0.83
1770.80	2.67	68.80	1,770.35	4.52 S	6.93 W	4.47	0.60
1865.20	2.74	81.12	1,864.65	3.38 S	2.65 W	3.36	0.62
1959.60	2.33	63.82	1,958.96	2.18 S	1.30 E	2.19	0.91
2054.00	1.92	46.27	2,053.29	0.24 S	4.16 E	0.27	0.81
2148.40	1.58	43.67	2,147.65	1.79 N	6.21 E	-1.75	0.37
2242.80	1.25	41.20	2,242.02	3.51 N	7.78 E	-3.46	0.36
2337.20	1.17	27.89	2,336.40	5.14 N	8.91 E	-5.07	0.31
2431.60	1.10	14.49	2,430.78	6.87 N	9.59 E	-6.80	0.29
2526.00	0.96	22.66	2,525.17	8.47 N	10.12 E	-8.40	0.21
2620.40	0.81	31.02	2,619.56	9.77 N	10.77 E	-9.70	0.21
2714.80	1.04	18.61	2,713.94	11.16 N	11.39 E	-11.08	0.32
2809.20	1.28	6.02	2,808.32	13.02 N	11.77 E	-12.94	0.37
2903.60	1.30	346.03	2,902.70	15.11 N	11.62 E	-15.02	0.47
2998.00	1.32	349.97	2,997.08	17.22 N	11.17 E	-17.14	0.10
3092.40	1.20	352.38	3,091.45	19.27 N	10.85 E	-19.19	0.14
3186.80	1.08	19.18	3,185.83	21.09 N	11.02 E	-21.01	0.57
3281.20	1.18	26.09	3,280.22	22.80 N	11.74 E	-22.72	0.18
3375.60	1.28	32.82	3,374.59	24.56 N	12.73 E	-24.47	0.19
3470.00	1.30	22.90	3,468.97	26.43 N	13.72 E	-26.33	0.24
3564.40	1.31	12.83	3,563.35	28.47 N	14.38 E	-28.37	0.24
3658.80	1.14	352.42	3,657.73	30.45 N	14.49 E	-30.35	0.49
3753.20	0.97	331.91	3,752.11	32.09 N	13.99 E	-31.99	0.44
3847.60	0.74	6.16	3,846.50	33.40 N	13.68 E	-33.30	0.58
3942.00	0.51	40.89	3,940.89	34.32 N	14.02 E	-34.22	0.46

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
4036.40	0.63	26.75	4,035.29	35.10 N	14.53 E	-35.00	0.19
4130.80	0.74	12.20	4,129.68	36.16 N	14.90 E	-36.06	0.22
4225.20	0.73	356.37	4,224.08	37.36 N	14.99 E	-37.25	0.21
4319.60	0.72	340.53	4,318.47	38.52 N	14.75 E	-38.41	0.21
4414.00	0.90	351.05	4,412.86	39.81 N	14.44 E	-39.71	0.25
4508.40	1.09	1.80	4,507.24	41.44 N	14.35 E	-41.34	0.28
4602.80	0.90	356.60	4,601.63	43.08 N	14.33 E	-42.98	0.22
4697.20	0.72	351.28	4,696.02	44.40 N	14.20 E	-44.30	0.21
4791.60	0.70	338.64	4,790.41	45.53 N	13.90 E	-45.43	0.17
4886.00	0.69	325.95	4,884.81	46.54 N	13.37 E	-46.44	0.16
4980.40	0.74	328.44	4,979.20	47.53 N	12.73 E	-47.44	0.06
5074.80	0.79	331.07	5,073.59	48.61 N	12.10 E	-48.53	0.06
5169.20	0.86	3.58	5,167.98	49.89 N	11.83 E	-49.81	0.49
5263.60	0.94	36.34	5,262.37	51.22 N	12.33 E	-51.13	0.54
5358.00	0.84	50.43	5,356.76	52.29 N	13.33 E	-52.19	0.25
5452.40	0.73	64.37	5,451.15	52.99 N	14.40 E	-52.89	0.23
5546.80	0.77	61.49	5,545.54	53.55 N	15.50 E	-53.44	0.06
5641.20	0.82	58.47	5,639.93	54.21 N	16.63 E	-54.09	0.07
5735.60	0.82	28.73	5,734.32	55.15 N	17.53 E	-55.03	0.45
5830.00	0.82	358.76	5,828.71	56.42 N	17.84 E	-56.29	0.45
5924.40	0.80	357.33	5,923.11	57.75 N	17.80 E	-57.63	0.03
6018.80	0.79	356.15	6,017.50	59.06 N	17.72 E	-58.94	0.02
6113.20	0.84	23.47	6,111.89	60.34 N	17.96 E	-60.22	0.41
6207.60	0.90	51.03	6,206.28	61.45 N	18.81 E	-61.31	0.44
6302.00	1.03	50.40	6,300.66	62.45 N	20.04 E	-62.31	0.14
6396.40	1.17	49.53	6,395.05	63.62 N	21.43 E	-63.47	0.15
6490.80	1.22	48.00	6,489.43	64.92 N	22.91 E	-64.76	0.06
6585.20	1.27	46.47	6,583.80	66.31 N	24.41 E	-66.14	0.06
6679.60	1.45	58.61	6,678.18	67.65 N	26.19 E	-67.47	0.36
6774.00	1.63	70.87	6,772.54	68.72 N	28.48 E	-68.51	0.40
6868.40	1.48	81.99	6,866.91	69.32 N	30.95 E	-69.11	0.36
6962.80	1.32	93.09	6,961.28	69.44 N	33.25 E	-69.20	0.33
7057.20	1.32	54.07	7,055.66	70.02 N	35.21 E	-69.77	0.93
7151.60	1.31	14.63	7,150.03	71.70 N	36.36 E	-71.44	0.94
7246.00	1.28	23.55	7,244.41	73.71 N	37.06 E	-73.45	0.22
7340.40	1.26	32.88	7,338.79	75.55 N	38.04 E	-75.28	0.22
7434.80	1.45	9.56	7,433.16	77.60 N	38.81 E	-77.32	0.61
7529.20	1.64	345.96	7,527.53	80.08 N	38.68 E	-79.81	0.70
7623.60	1.38	359.66	7,621.90	82.53 N	38.34 E	-82.26	0.47
7718.00	1.11	13.68	7,716.27	84.56 N	38.55 E	-84.29	0.43
7812.40	0.97	13.34	7,810.66	86.22 N	38.95 E	-85.95	0.15
7906.80	0.83	12.88	7,905.05	87.67 N	39.29 E	-87.39	0.15
8001.20	0.89	38.72	7,999.44	88.91 N	39.90 E	-88.62	0.41
8095.60	0.94	64.79	8,093.82	89.81 N	41.06 E	-89.52	0.44
8190.00	1.07	76.16	8,188.21	90.35 N	42.61 E	-90.05	0.25

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100)
8284.40	1.21	87.41	8,282.59	90.60 N	44.47 E	-90.29	0.28
8378.80	1.06	81.46	8,376.97	90.78 N	46.33 E	-90.45	0.20
8473.20	0.92	75.36	8,471.36	91.10 N	47.92 E	-90.76	0.19
8507.00	0.92	126.27	8,505.15	91.01 N	48.40 E	-90.67	2.34
8538.00	2.74	181.32	8,536.14	90.12 N	48.59 E	-89.78	7.56
8569.00	6.28	190.50	8,567.04	87.71 N	48.26 E	-87.37	11.61
8601.00	9.51	190.13	8,598.73	83.38 N	47.47 E	-83.05	10.10
8633.00	13.90	188.76	8,630.06	76.98 N	46.42 E	-76.65	13.74
8664.00	17.48	190.43	8,659.90	68.72 N	45.01 E	-68.40	11.64
8696.00	20.65	194.76	8,690.14	58.53 N	42.70 E	-58.23	10.85
8727.00	23.53	202.08	8,718.87	47.50 N	38.98 E	-47.23	12.83
8759.00	27.36	199.24	8,747.76	34.64 N	34.16 E	-34.40	12.57
8790.00	31.36	194.70	8,774.77	20.10 N	29.76 E	-19.89	14.74
8822.00	34.72	193.06	8,801.60	3.16 N	25.59 E	-2.99	10.88
8853.00	37.61	189.86	8,826.62	14.76 S	21.97 E	14.91	11.13
8885.00	38.41	187.72	8,851.84	34.23 S	18.97 E	34.37	4.83
8916.00	40.91	186.28	8,875.70	53.87 S	16.56 E	53.99	8.59
8948.00	44.71	185.53	8,899.17	75.50 S	14.33 E	75.60	11.96
8979.00	46.61	182.96	8,920.84	97.60 S	12.70 E	97.69	8.52
9011.00	50.04	184.12	8,942.11	121.45 S	11.22 E	121.53	11.06
9042.00	51.46	180.67	8,961.73	145.43 S	10.22 E	145.50	9.76
9076.00	53.67	181.04	8,982.40	172.42 S	9.82 E	172.49	6.55
9105.00	54.67	181.44	8,999.37	195.93 S	9.31 E	195.99	3.65
9136.00	56.21	181.55	9,016.96	221.45 S	8.64 E	221.51	4.98
9168.00	59.21	178.66	9,034.05	248.49 S	8.60 E	248.55	12.08
9199.00	62.18	178.16	9,049.23	275.51 S	9.36 E	275.57	9.68
9231.00	66.25	179.54	9,063.15	304.31 S	9.93 E	304.37	13.30
9263.00	68.98	181.30	9,075.33	333.89 S	9.71 E	333.95	9.94
9294.00	71.65	181.96	9,085.78	363.07 S	8.87 E	363.12	8.84
9326.00	74.27	182.43	9,095.15	393.64 S	7.70 E	393.68	8.33
9357.00	78.60	180.40	9,102.42	423.75 S	6.96 E	423.79	15.34
9388.00	81.94	179.08	9,107.66	454.30 S	7.10 E	454.34	11.56
9420.00	84.95	178.32	9,111.32	486.08 S	7.82 E	486.12	9.69
9451.00	87.01	178.03	9,113.49	516.99 S	8.81 E	517.04	6.73
9483.00	88.67	178.73	9,114.70	548.95 S	9.72 E	549.01	5.63
9578.00	89.29	180.28	9,116.39	643.93 S	10.54 E	643.99	1.76
9672.00	91.42	179.26	9,115.80	737.92 S	10.92 E	737.98	2.51
9767.00	91.42	179.05	9,113.44	832.88 S	12.33 E	832.95	0.22
9861.00	90.71	178.40	9,111.70	926.84 S	14.42 E	926.92	1.02
9955.00	91.20	179.97	9,110.13	1,020.81 S	15.76 E	1020.90	1.75
10050.00	91.45	177.71	9,107.93	1,115.76 S	17.69 E	1115.86	2.40
10144.00	89.97	179.01	9,106.76	1,209.71 S	20.38 E	1209.83	2.10
10239.00	90.31	179.26	9,106.53	1,304.70 S	21.82 E	1304.82	0.44
10333.00	89.87	179.08	9,106.38	1,398.69 S	23.18 E	1398.82	0.50
10427.00	89.57	180.09	9,106.85	1,492.69 S	23.85 E	1492.82	1.12

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
10521.00	90.09	179.51	9,107.12	1,586.68 S	24.18 E	1586.81	0.83
10616.00	89.44	181.62	9,107.51	1,681.67 S	23.24 E	1681.79	2.33
10710.00	89.75	182.45	9,108.17	1,775.61 S	19.90 E	1775.71	0.94
10805.00	90.03	182.64	9,108.35	1,870.52 S	15.68 E	1870.58	0.36
10899.00	91.01	181.73	9,107.49	1,964.44 S	12.09 E	1964.48	1.43
10993.00	91.01	181.37	9,105.83	2,058.39 S	9.55 E	2058.41	0.37
11088.00	89.97	180.14	9,105.01	2,153.38 S	8.30 E	2153.38	1.70
11182.00	89.60	179.60	9,105.37	2,247.38 S	8.51 E	2247.38	0.70
11277.00	89.60	179.59	9,106.03	2,342.37 S	9.17 E	2342.38	0.01
11371.00	90.46	178.52	9,105.98	2,436.36 S	10.73 E	2436.37	1.47
11466.00	90.31	179.26	9,105.34	2,531.34 S	12.57 E	2531.36	0.80
11561.00	91.19	178.73	9,104.10	2,626.31 S	14.24 E	2626.35	1.08
11655.00	92.86	177.85	9,100.78	2,720.21 S	17.04 E	2720.26	2.01
11749.00	91.36	178.11	9,097.31	2,814.08 S	20.35 E	2814.16	1.62
11843.00	91.55	178.83	9,094.93	2,908.02 S	22.86 E	2908.11	0.79
11938.00	90.31	180.33	9,093.39	3,003.00 S	23.56 E	3003.09	2.05
12032.00	88.33	180.19	9,094.50	3,096.98 S	23.13 E	3097.07	2.10
12126.00	89.69	179.90	9,096.12	3,190.97 S	23.05 E	3191.05	1.48
12221.00	90.31	179.49	9,096.12	3,285.97 S	23.55 E	3286.05	0.78
12315.00	89.94	179.79	9,095.92	3,379.96 S	24.14 E	3380.05	0.51
12409.00	91.27	179.80	9,094.93	3,473.96 S	24.47 E	3474.04	1.42
12504.00	91.45	180.49	9,092.67	3,568.93 S	24.23 E	3569.01	0.75
12597.00	91.37	180.32	9,090.38	3,661.90 S	23.58 E	3661.97	0.21
12692.00	90.06	181.53	9,089.20	3,756.87 S	22.04 E	3756.94	1.88
12786.00	90.09	181.39	9,089.07	3,850.84 S	19.65 E	3850.89	0.16
12881.00	90.57	180.49	9,088.52	3,945.83 S	18.09 E	3945.86	1.07
12975.00	90.31	179.43	9,087.80	4,039.82 S	18.15 E	4039.85	1.16
13070.00	90.66	180.14	9,087.00	4,134.82 S	18.50 E	4134.85	0.83
13165.00	91.19	181.37	9,085.46	4,229.80 S	17.25 E	4229.81	1.41
13259.00	90.40	178.96	9,084.16	4,323.78 S	16.98 E	4323.79	2.70
13354.00	90.57	179.79	9,083.35	4,418.77 S	18.01 E	4418.79	0.89
13448.00	89.78	179.03	9,083.06	4,512.76 S	18.99 E	4512.79	1.16
13495.00	89.48	178.17	9,083.36	4,559.75 S	20.13 E	4559.78	1.94
13556.00	89.48	178.17	9,083.91	4,620.71 S	22.08 E	4620.76	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 179.60 degrees (Grid)
- A total correction of 7.45 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 13,556.00 feet is 4,620.77 feet along 179.73 degrees (Grid)

SURVEYS CALCULATED USING SHORT COLLAR METHOD

TIE-ON SURVEY ASSUMED VERTICAL AT SURFACE

SURVEYS FROM 166.00' MD TO 8473.20' MD ARE PROVIDED BY VAUGHN ENERGY SERVICES.

SURVEYS FROM 8507.00' MD TO 13495.00' MD ARE PROVIDED BY SPERRY DRILLING MWD

SURVEY AT 13495.00' MD HAS BEEN PROJECTED TO TD AT 13556.00' MD

SPERRY ENGINEERS: ANDY NAQUIN, KENNETH MARSHALL

WARRANTY

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SERVICE INTERRUPT REPORT

MWD Run Number	:100	Time / Date of Failure	:30-Jul-12 01:00
Rig Bit Number	:01	Depth at Time of Failure (ft)	:9510
MWD Run Start Time / Date	:26-Jul-12 10:30	Lost Rig Hours	:
MWD Run End Time / Date	:29-Jul-12 12:00		

RIG ACTIVITY

Doing post run tests after we layed tools down.

DESCRIPTION OF FAILURE

HD-XX-0009649363r100: GM's Bank B was cascading the last 100 feet of the run. The DM's max temperature of its magnetometers and inclinometers were higher than the average temperatures and higher than the TM's temperatures in the parameter report.

ACTION TAKEN

Because of the readings in the parameter report and the QC plot, the DM and GM were failed.

OPERATION IMPACT

REASON FOR FAILURE

SERVICE INTERRUPT REPORT

MWD Run Number	:200	Time / Date of Failure	:30-Jul-12 06:00
Rig Bit Number	:02	Depth at Time of Failure (ft)	:9649
MWD Run Start Time / Date	:29-Jul-12 10:00	Lost Rig Hours	:
MWD Run End Time / Date	:30-Jul-12 01:30		

RIG ACTIVITY

We were drilling ahead in lateral and about to pump up a survey.

DESCRIPTION OF FAILURE

HD-XX-0009649363r200: We tried to pump up a survey, but the tool was not communicating properly. We were getting counts, but it was showing Bus Off. It did that for about an hour while we were troubleshooting, then the decision was made to TOH.

ACTION TAKEN

During the time while we were troubleshooting, we changed pumps, swapped data rates, and lists. We rotated down about 10 feet and then pulled up to try and take a survey, but still had same problem. We tried to pump a sweep, decrease flow, and increase flow, but continued to have the same problem. We tested the tools, and everything appeared to test fine, except for high subbus current in the parameter report. The TM and pulser were failed along with the interconnects.

OPERATION IMPACT

REASON FOR FAILURE

HALLIBURTON / SPERRY DRILLING
3950 INTERWOOD SOUTH PARKWAY
HOUSTON, TEXAS 77032
OFFICE: 281.986.4400