Results of Directional Survey

API number:	30-025-40708			
OGRID:		Operator:	DEVON ENERGY PRODUCTION COMPANY, LP	
		Property:	CASWELL 23 FEDERAL	# 1H

surface	ULSTR:	A	23	T	17S	R	32E
				335	FNL	260	FEL
BH Loc	ULSTR:	D	23	T	17S	R	32E
10308	MD	5792.9	TVD	351	FNL	328	FWL
						4952	FEL
Top Perf/OH	ULSTR:	A	23	T	17S	R	32E
6580	MD	5882.9	TVD	296	FNL	1231	FEL
Bot Perf/OH	ULSTR:	D	23	T	17S	R	32E
10262	MD	5793.5	TVD	352	FNL	374	FWL
						4906	FEL

	MD	N/S	E/W	VD
	6563	41.93	-954.16	5881.04
TOP PERFS/OH	**6580**	39.28	-970.85	5882.92
	6595	36.95	-985.57	5884.58
	10221	-17.91	-4604.84	5794.09
BOT PERFS/OH	**10262**	-16.98	-4645.83	5793.54
	10308	-15.93	-4691.81	5792.92

NEXT TO LAST	10221	-17.91	-4604.84	5794.09
LAST READING	10308	-15.93	-4691.81	5792.92
TD	**10308**	-15.93	-4691.81	5792.92

Surface Location	335	FN	260	FE
Projected BHL	351	FN	4952	FE
Location of				
Top Perfs/OH	296	FN	1231	FE
Bottom Perfs/OH	352	FN	4906	FE

SUMMARY of Subsurface Locations

Surface Location	A-23-17S-32E	335	FN	260	FE	Vert. Depth
Top Perfs/OH	A-23-17S-32E	296	FN	1231	FE	5882.92
Bottom Perfs/OH	D-23-17S-32E	352	FN	4906	FE	5793.54
Projected TD	D-23-17S-32E	351	FN	4952	FE	5792.92

HALLIBURTON

3950 Interwood South Pkwy Houston, TX 77032
Phone 281-986-4416 Fax 281-986-4499

October 29, 2012

Devon Energy Production, Co
Attn: Judy Barnett
20 N. Broadway
Oklahoma City, Ok
73102

Final Survey for:

Well Name:	Caswell 23 Federal 1H
County:	Lea County, NM
Rig Name:	Cactus 126
Sperry Job #:	9437534

Judy Barnett

Enclosed you will find the following survey information on the above referenced well:

0 *Survey Report(s)*
0 *MWD End of Well Report(s)*
2 Certified Letters for New Mexico NMOCD

We appreciate the opportunity to serve you and welcome any comments or suggestions that you may have regarding our service. You may contact your local sales representative, **Ryan Annesley @ 405-231-1868**
Should you have any questions or require additional information regarding the enclosed information, please do not hesitate to contact me at (281) 986-4400.

Once again, we thank you for your business.

Sincerely,

Rachell Ortiz
Sperry Drilling Services

HALLIBURTON

14103 Interwood S. Parkway • Houston, TX 77032

PHONE 281.986.4400 • FAX 281.986.4499

State of New Mexico, Lea County

I, Andy Naquin, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry Drilling) and that on the dates of 14 October 2012 through 23 October 2012, I did conduct or supervise the taking of MWD directional surveys for the well Caswell 23 Federal 1H from a depth of 5302' MD to a depth of 10221' 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 this survey which was conducted at the request of Devon Energy for the well of Caswell 23 Federal 1H API No. 30-025-40708-0000 in Lea County, New Mexico. 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).

Field Engineer

Devon Energy

Caswell 23 Federal 1H
Lea County, NM
Cactus 126
API# 30-025-40708-0000

October 14, 2012 – October 23, 2012
HD-MJ-0009437534

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	:	Cactus 126
Well Name	:	Caswell 23 Federal 1H
Field Name	:	Maljamar West, Paddock, Yeso
Country	:	U.S.A.
Job Number	:	HD-MJ-0009437534
Job Start Date	:	16-Oct-12
API Number	:	30-025-40708

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GENERAL INFORMATION

Company	: Devon Energy
Rig	: Cactus 126
Well	: Caswell 23 Federal 1H
Field	: Maljamar West, Paddock, Yeso
State	: New Mexico
County	: Lea County
Country	: U.S.A.
API Number	: 30-025-40708
Sperry Drilling Job Number	: HD-MJ-0009437534
Job Start Date	: 16-Oct-12
Job End Date	: 23-Oct-12
North Reference	: Grid
Total Correction (deg)	: 7.320
Dip Angle (deg)	: 60.652
Total Magnetic Field (nT)	: 48844
Date of Magnetic Data	: 15 October, 2012
Well Head coordinates N	: 32 deg. 49 min 34.99 sec North
Well Head coordinates E	: 103 deg. 43 min 45.61 sec West
Vertical section direction (deg)	: 269.85
Unit Number	: 10927546
MWD Engineers	: Andy Naquin, Brandon Silvas
Company Representatives	: Rudy Lopez
Company Geologist:	: Zach Poland,

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')
72.31	0.22	342.58	72.31	0.13 N	0.04 W	0.04	0.30
167.15	0.51	319.73	167.15	0.63 N	0.37 W	0.37	0.34
261.99	0.55	334.42	261.98	1.36 N	0.84 W	0.83	0.15
356.83	0.60	349.10	356.82	2.26 N	1.13 W	1.12	0.16
451.67	0.45	342.81	451.66	3.10 N	1.33 W	1.32	0.17
546.51	0.32	336.52	546.49	3.70 N	1.55 W	1.54	0.14
641.35	0.42	337.34	641.33	4.26 N	1.79 W	1.78	0.11
736.19	0.53	338.17	736.17	4.99 N	2.08 W	2.07	0.12
831.03	0.52	326.81	831.00	5.76 N	2.48 W	2.47	0.11
925.87	0.54	315.46	925.84	6.44 N	3.03 W	3.02	0.11
1020.71	0.50	299.56	1,020.68	6.96 N	3.71 W	3.69	0.16
1115.55	0.46	283.67	1,115.51	7.26 N	4.44 W	4.42	0.15
1210.39	0.51	301.29	1,210.35	7.56 N	5.17 W	5.15	0.17
1305.23	0.55	318.91	1,305.19	8.13 N	5.83 W	5.80	0.18
1400.07	0.50	320.65	1,400.02	8.79 N	6.39 W	6.36	0.06
1494.91	0.44	322.40	1,494.86	9.40 N	6.87 W	6.85	0.07
1589.75	0.37	348.75	1,589.70	9.99 N	7.15 W	7.13	0.21
1684.59	0.29	15.11	1,684.53	10.52 N	7.15 W	7.12	0.18
1779.43	0.32	20.04	1,779.37	11.00 N	7.00 W	6.97	0.04
1874.27	0.34	24.96	1,874.21	11.50 N	6.79 W	6.76	0.04
1969.11	1.05	34.11	1,969.04	12.48 N	6.18 W	6.15	0.76
2063.95	1.75	43.25	2,063.86	14.25 N	4.70 W	4.67	0.77
2158.79	1.68	56.96	2,158.65	16.07 N	2.55 W	2.50	0.44
2253.63	1.60	40.66	2,253.46	17.83 N	0.52 W	0.47	0.50
2348.47	1.46	26.14	2,348.26	19.92 N	0.88 E	-0.93	0.43
2443.31	1.32	21.63	2,443.07	22.02 N	1.81 E	-1.87	0.19
2538.15	1.16	24.36	2,537.89	23.91 N	2.61 E	-2.67	0.18
2632.99	0.98	27.08	2,632.71	25.50 N	3.38 E	-3.44	0.20
2727.83	0.88	22.44	2,727.54	26.90 N	4.02 E	-4.09	0.13
2822.67	0.80	17.80	2,822.37	28.20 N	4.50 E	-4.58	0.11
2917.51	0.71	20.50	2,917.20	29.38 N	4.91 E	-4.99	0.10
3012.35	0.63	23.21	3,012.04	30.41 N	5.32 E	-5.40	0.09
3107.19	0.66	43.25	3,106.87	31.29 N	5.90 E	-5.99	0.24
3202.03	0.69	63.30	3,201.71	31.94 N	6.79 E	-6.87	0.25
3296.87	0.62	63.24	3,296.54	32.43 N	7.76 E	-7.84	0.07
3391.71	0.57	63.18	3,391.37	32.88 N	8.64 E	-8.72	0.05
3486.55	0.74	66.13	3,486.21	33.34 N	9.62 E	-9.70	0.18
3581.39	0.89	69.09	3,581.04	33.85 N	10.86 E	-10.95	0.16
3676.23	0.89	72.38	3,675.87	34.33 N	12.25 E	-12.34	0.05
3771.07	0.91	75.66	3,770.69	34.74 N	13.69 E	-13.78	0.06
3865.91	0.92	80.17	3,865.52	35.06 N	15.17 E	-15.26	0.08

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
3960.75	0.96	84.67	3,960.35	35.26 N	16.71 E	-16.80	0.09
4055.59	0.90	82.10	4,055.18	35.44 N	18.24 E	-18.33	0.08
4150.43	0.82	79.53	4,150.01	35.67 N	19.64 E	-19.73	0.09
4245.27	0.86	71.37	4,244.84	36.02 N	20.98 E	-21.08	0.13
4340.11	0.90	83.21	4,339.67	36.33 N	22.40 E	-22.49	0.20
4434.95	0.88	90.90	4,434.49	36.41 N	23.86 E	-23.96	0.13
4529.79	0.86	98.59	4,529.32	36.29 N	25.30 E	-25.39	0.12
4624.63	0.88	88.40	4,624.15	36.20 N	26.73 E	-26.82	0.16
4719.47	0.89	78.22	4,718.98	36.37 N	28.18 E	-28.27	0.17
4814.31	1.03	77.04	4,813.81	36.72 N	29.73 E	-29.83	0.15
4909.15	1.16	75.87	4,908.63	37.14 N	31.49 E	-31.59	0.14
5003.99	0.98	74.11	5,003.45	37.60 N	33.20 E	-33.30	0.19
5098.83	0.82	72.35	5,098.28	38.03 N	34.63 E	-34.73	0.17
5193.67	0.78	70.81	5,193.11	38.44 N	35.89 E	-35.99	0.05
5302.00	8.88	315.77	5,301.02	44.69 N	30.74 E	-30.85	8.53
5333.00	10.51	304.14	5,331.58	47.99 N	26.73 E	-26.85	8.19
5365.00	13.35	301.28	5,362.89	51.55 N	21.15 E	-21.29	9.07
5396.00	16.32	302.80	5,392.85	55.77 N	14.43 E	-14.58	9.65
5428.00	21.67	305.31	5,423.10	61.62 N	5.83 E	-5.99	16.91
5460.00	24.79	301.94	5,452.50	68.59 N	4.69 W	4.51	10.59
5492.00	29.37	302.20	5,480.99	76.32 N	17.03 W	16.83	14.34
5523.00	33.35	299.54	5,507.45	84.58 N	30.88 W	30.66	13.57
5555.00	38.31	299.05	5,533.39	93.74 N	47.21 W	46.97	15.52
5586.00	42.36	297.20	5,557.02	103.18 N	64.91 W	64.64	13.63
5618.00	46.25	294.47	5,579.92	112.90 N	85.03 W	84.73	13.55
5650.00	49.49	291.49	5,601.38	122.15 N	106.88 W	106.56	12.26
5681.00	52.10	287.27	5,620.98	130.10 N	129.53 W	129.19	13.50
5713.00	54.54	283.09	5,640.10	136.80 N	154.29 W	153.93	12.93
5745.00	57.09	278.69	5,658.08	141.78 N	180.28 W	179.91	13.91
5777.00	59.21	275.47	5,674.97	145.12 N	207.25 W	206.87	10.81
5808.00	62.20	271.99	5,690.14	146.87 N	234.22 W	233.83	13.74
5840.00	64.67	268.82	5,704.45	147.06 N	262.83 W	262.45	11.75
5871.00	67.14	265.26	5,717.11	145.59 N	291.09 W	290.70	13.18
5902.00	70.13	263.53	5,728.40	142.77 N	319.81 W	319.44	10.94
5932.00	71.92	261.97	5,738.15	139.19 N	347.95 W	347.59	7.74
5963.00	73.08	261.28	5,747.47	134.88 N	377.20 W	376.85	4.30
5994.00	74.23	260.83	5,756.19	130.25 N	406.59 W	406.25	3.95
6026.00	74.56	260.34	5,764.80	125.21 N	436.99 W	436.66	1.79
6058.00	74.45	260.60	5,773.35	120.11 N	467.41 W	467.09	0.85
6089.00	74.45	261.07	5,781.66	115.35 N	496.89 W	496.59	1.46
6121.00	74.63	261.01	5,790.19	110.55 N	527.35 W	527.06	0.59
6153.00	74.66	261.36	5,798.67	105.82 N	557.85 W	557.57	1.03
6184.00	75.13	261.87	5,806.74	101.46 N	587.46 W	587.19	2.21
6216.00	75.87	261.00	5,814.76	96.84 N	618.09 W	617.84	3.51
6248.00	77.74	260.26	5,822.06	91.77 N	648.83 W	648.59	6.25

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
6279.00	78.62	260.38	5,828.41	86.67 N	678.74 W	678.51	2.89
6311.00	78.69	260.19	5,834.70	81.37 N	709.66 W	709.45	0.62
6343.00	78.77	260.52	5,840.96	76.12 N	740.60 W	740.40	1.05
6374.00	79.04	260.88	5,846.93	71.20 N	770.62 W	770.44	1.42
6406.00	78.81	260.56	5,853.07	66.14 N	801.62 W	801.44	1.21
6437.00	78.61	260.61	5,859.14	61.16 N	831.61 W	831.44	0.65
6469.00	78.95	261.29	5,865.37	56.23 N	862.61 W	862.46	2.33
6500.00	79.62	261.83	5,871.13	51.75 N	892.73 W	892.60	2.76
6532.00	80.76	260.63	5,876.59	46.95 N	923.90 W	923.77	5.12
6563.00	82.73	260.54	5,881.04	41.93 N	954.16 W	954.05	6.38
6595.00	84.56	261.47	5,884.58	36.95 N	985.57 W	985.47	6.41
6627.00	85.85	261.13	5,887.25	32.13 N	1,017.09 W	1017.00	4.18
6658.00	87.84	261.91	5,888.96	27.56 N	1,047.70 W	1047.63	6.87
6690.00	88.02	262.30	5,890.11	23.17 N	1,079.38 W	1079.32	1.35
6721.00	88.18	262.66	5,891.14	19.11 N	1,110.10 W	1110.04	1.27
6753.00	88.67	263.17	5,892.02	15.17 N	1,141.84 W	1141.80	2.22
6785.00	90.25	263.79	5,892.32	11.54 N	1,173.63 W	1173.60	5.28
6817.00	90.40	263.88	5,892.14	8.10 N	1,205.44 W	1205.42	0.55
6848.00	90.25	264.16	5,891.97	4.87 N	1,236.28 W	1236.26	1.03
6880.00	90.22	264.04	5,891.84	1.59 N	1,268.11 W	1268.10	0.39
6912.00	89.75	265.59	5,891.85	1.30 S	1,299.97 W	1299.97	5.04
6943.00	89.35	265.94	5,892.09	3.59 S	1,330.89 W	1330.89	1.73
6975.00	89.20	265.99	5,892.50	5.85 S	1,362.81 W	1362.82	0.50
7006.00	89.01	265.72	5,892.98	8.09 S	1,393.72 W	1393.74	1.05
7038.00	89.47	266.33	5,893.40	10.31 S	1,425.64 W	1425.66	2.39
7069.00	89.60	266.20	5,893.65	12.33 S	1,456.57 W	1456.60	0.57
7101.00	90.77	267.31	5,893.55	14.14 S	1,488.52 W	1488.55	5.03
7132.00	91.38	266.97	5,892.97	15.69 S	1,519.48 W	1519.51	2.26
7164.00	92.44	268.11	5,891.90	17.06 S	1,551.43 W	1551.47	4.85
7195.00	92.93	268.48	5,890.44	17.99 S	1,582.38 W	1582.42	2.00
7227.00	93.18	268.66	5,888.74	18.78 S	1,614.33 W	1614.37	0.96
7259.00	93.12	268.41	5,886.98	19.60 S	1,646.27 W	1646.31	0.78
7291.00	93.80	269.12	5,885.05	20.29 S	1,678.20 W	1678.25	3.05
7322.00	94.02	269.44	5,882.94	20.68 S	1,709.13 W	1709.17	1.26
7353.00	93.86	269.62	5,880.81	20.93 S	1,740.05 W	1740.10	0.78
7385.00	93.86	269.57	5,878.65	21.15 S	1,771.98 W	1772.03	0.16
7417.00	93.86	269.79	5,876.50	21.33 S	1,803.90 W	1803.96	0.68
7448.00	94.08	270.14	5,874.35	21.35 S	1,834.83 W	1834.88	1.33
7480.00	94.17	270.26	5,872.05	21.24 S	1,866.75 W	1866.80	0.45
7512.00	93.92	270.41	5,869.79	21.06 S	1,898.67 W	1898.72	0.88
7543.00	93.83	270.31	5,867.70	20.86 S	1,929.60 W	1929.64	0.44
7575.00	94.23	270.67	5,865.45	20.59 S	1,961.52 W	1961.56	1.70
7620.00	94.11	270.80	5,862.18	20.01 S	2,006.39 W	2006.44	0.39
7669.00	94.17	271.10	5,858.64	19.20 S	2,055.26 W	2055.30	0.62
7716.00	94.08	271.27	5,855.26	18.23 S	2,102.13 W	2102.17	0.42

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
7764.00	93.98	271.82	5,851.88	16.94 S	2,149.99 W	2150.03	1.15
7811.00	93.80	271.63	5,848.69	15.54 S	2,196.86 W	2196.89	0.56
7858.00	93.71	271.78	5,845.62	14.14 S	2,243.74 W	2243.77	0.38
7905.00	93.05	271.52	5,842.85	12.79 S	2,290.64 W	2290.66	1.49
7954.00	92.96	272.00	5,840.27	11.29 S	2,339.55 W	2339.57	0.98
8001.00	92.84	271.84	5,837.89	9.72 S	2,386.46 W	2386.48	0.42
8048.00	92.93	271.20	5,835.53	8.47 S	2,433.38 W	2433.40	1.37
8095.00	92.97	270.91	5,833.11	7.60 S	2,480.31 W	2480.32	0.62
8143.00	92.72	270.98	5,830.73	6.81 S	2,528.25 W	2528.26	0.54
8190.00	92.53	271.06	5,828.58	5.97 S	2,575.19 W	2575.20	0.42
8238.00	92.20	270.98	5,826.60	5.12 S	2,623.14 W	2623.15	0.71
8332.00	93.57	271.08	5,821.87	3.43 S	2,717.01 W	2717.01	1.47
8427.00	92.93	271.52	5,816.48	1.28 S	2,811.83 W	2811.82	0.82
8522.00	91.73	271.59	5,812.61	1.30 N	2,906.71 W	2906.70	1.27
8617.00	90.49	271.09	5,810.77	3.52 N	3,001.67 W	3001.65	1.41
8712.00	88.83	269.22	5,811.33	3.78 N	3,096.66 W	3096.64	2.64
8807.00	89.69	268.57	5,812.56	1.95 N	3,191.63 W	3191.61	1.14
8901.00	90.40	267.99	5,812.48	0.87 S	3,285.59 W	3285.58	0.98
8996.00	90.19	268.07	5,812.00	4.13 S	3,380.53 W	3380.53	0.25
9090.00	89.91	268.32	5,811.92	7.09 S	3,474.48 W	3474.49	0.39
9185.00	90.22	267.59	5,811.82	10.48 S	3,569.42 W	3569.44	0.83
9280.00	90.00	267.76	5,811.64	14.33 S	3,664.34 W	3664.37	0.29
9374.00	89.69	267.81	5,811.89	17.97 S	3,758.27 W	3758.31	0.33
9469.00	89.57	268.27	5,812.51	21.22 S	3,853.21 W	3853.26	0.50
9564.00	91.17	269.71	5,811.89	22.89 S	3,948.19 W	3948.24	2.27
9658.00	92.16	269.76	5,809.16	23.33 S	4,042.15 W	4042.20	1.05
9754.00	90.74	269.54	5,806.73	23.91 S	4,138.11 W	4138.16	1.50
9849.00	91.67	269.94	5,804.73	24.33 S	4,233.09 W	4233.14	1.06
9943.00	92.59	270.36	5,801.24	24.08 S	4,327.02 W	4327.07	1.08
10038.00	91.92	271.56	5,797.51	22.49 S	4,421.94 W	4421.98	1.45
10133.00	90.77	271.42	5,795.28	20.01 S	4,516.88 W	4516.91	1.22
10221.00	90.77	271.31	5,794.09	17.91 S	4,604.84 W	4604.87	0.13
10308.00	90.77	271.31	5,792.92	15.93 S	4,691.81 W	4691.84	0.00

SURVEY FOOTER

SURVEYS CALCULATED USING LONG COLLAR METHOD
TIE-ON SURVEY ASSUMED VERTICAL AT SURFACE
SURVEYS FROM 72.31' MD TO 5193.67' MD ARE PROVIDED BY VAUGHN ENERGY SERVICES.
SURVEYS FROM 5302.00' MD TO 10221' MD ARE PROVIDED BY SPERRY DRILLING MWD.
SURVEY AT 10221.00' MD HAS BEEN PROJECTED TO TD AT 10308.00' MD

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 269.85 degrees (Grid)
- A total correction of 7.32 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 10,308.00 feet is 4,691.84 feet along 269.81 degrees (Grid)

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

VAUGHN ENERGY SERVICES
A GYRO TECHNOLOGIES INC. COMPANY

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

October 19, 2012

Devon Energy Production Company
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010

Attn: Patti Riechers

Re: **Caswell 23 Federal No. 001H**

Please find enclosed a copy of the survey from 0' to 7,068' 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 19th day of October, A.D., 2012, by Keith Havelka.

Laura Ballew
Notary Public, State of Texas

LAURA BALLEW
Notary Public, State of Texas
My Commission Expires
January 28, 2014

Company: DEVON ENERGY PRODUCTION COMPANY

Lease/Well: CASWELL 23 FEDERAL/NO. 001H

Rig Name: CACTUS 126

State/County: NEW MEXICO/LEA

Latitude: 32.83, Longitude: -103.73

GRID North is 0.33 Degrees East of True North

VS-Azi: 0.00 Degrees

Depth Reference : RKB=25 FT.

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey.ut

Minimum Curvature Method

Report Date/Time: 10/19/2012 / 09:03

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Danny Spring

Caswell 23 Federal No. 001H / API 30-025-40708

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	****
72.31	0.22	342.58	72.31	0.13	-0.04	0.13	0.14	342.58	0.30
167.15	0.51	319.73	167.15	0.63	-0.37	0.63	0.73	329.60	0.33
261.99	0.55	334.42	261.98	1.36	-0.84	1.36	1.59	328.39	0.15
356.83	0.60	349.10	356.82	2.25	-1.13	2.25	2.52	333.46	0.16
451.67	0.45	342.81	451.66	3.09	-1.33	3.09	3.37	336.75	0.17
546.51	0.32	336.52	546.49	3.69	-1.55	3.69	4.00	337.30	0.14
641.35	0.42	337.34	641.33	4.25	-1.78	4.25	4.61	337.26	0.10
736.19	0.53	338.17	736.17	4.98	-2.08	4.98	5.40	337.34	0.12
831.03	0.52	326.81	831.00	5.75	-2.48	5.75	6.26	336.68	0.11
925.87	0.54	315.46	925.84	6.43	-3.03	6.43	7.10	334.78	0.11
1020.71	0.50	299.56	1020.68	6.95	-3.70	6.95	7.88	331.95	0.16
1115.55	0.46	283.67	1115.51	7.25	-4.44	7.25	8.50	328.52	0.15
1210.39	0.51	301.29	1210.35	7.56	-5.17	7.56	9.15	325.63	0.16
1305.23	0.55	318.91	1305.19	8.12	-5.83	8.12	9.99	324.33	0.18
1400.07	0.50	320.65	1400.02	8.78	-6.38	8.78	10.85	323.97	0.06
1494.91	0.44	322.40	1494.86	9.39	-6.87	9.39	11.63	323.80	0.06
1589.75	0.37	348.75	1589.70	9.98	-7.15	9.98	12.28	324.36	0.21
1684.59	0.29	15.11	1684.53	10.51	-7.15	10.51	12.71	325.76	0.18

VES Survey Date: 10/12/2012

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
1779.43	0.32	20.04	1779.37	10.99	-7.00	10.99	13.03	327.52	0.05
1874.27	0.34	24.96	1874.21	11.50	-6.79	11.50	13.35	329.45	0.03
1969.11	1.05	34.11	1969.04	12.47	-6.18	12.47	13.92	333.63	0.75
2063.95	1.75	43.25	2063.86	14.24	-4.70	14.24	15.00	341.73	0.78
2158.79	1.68	56.96	2158.65	16.06	-2.54	16.06	16.26	351.00	0.44
2253.63	1.60	40.66	2253.45	17.82	-0.51	17.82	17.83	358.35	0.50
2348.47	1.46	26.14	2348.26	19.91	0.88	19.91	19.93	2.54	0.44
2443.31	1.32	21.63	2443.07	22.01	1.82	22.01	22.09	4.72	0.19
2538.15	1.16	24.36	2537.89	23.90	2.61	23.90	24.04	6.24	0.18
2632.99	0.98	27.08	2632.71	25.49	3.38	25.49	25.71	7.55	0.20
2727.83	0.88	22.44	2727.54	26.88	4.02	26.88	27.18	8.51	0.13
2822.67	0.80	17.80	2822.37	28.18	4.50	28.18	28.54	9.07	0.11
2917.51	0.71	20.50	2917.20	29.36	4.91	29.36	29.77	9.49	0.10
3012.35	0.63	23.21	3012.04	30.40	5.32	30.40	30.86	9.93	0.09
3107.19	0.66	43.25	3106.87	31.27	5.90	31.27	31.82	10.69	0.24
3202.03	0.69	63.30	3201.70	31.92	6.78	31.92	32.64	11.99	0.25
3296.87	0.62	63.24	3296.54	32.41	7.75	32.41	33.32	13.44	0.07
3391.71	0.57	63.18	3391.37	32.85	8.62	32.85	33.96	14.71	0.05
3486.55	0.74	66.13	3486.21	33.31	9.60	33.31	34.67	16.08	0.18
3581.39	0.89	69.09	3581.04	33.82	10.85	33.82	35.52	17.78	0.16
3676.23	0.89	72.38	3675.87	34.31	12.23	34.31	36.42	19.63	0.05
3771.07	0.91	75.66	3770.69	34.72	13.67	34.72	37.31	21.49	0.06
3865.91	0.92	80.17	3865.52	35.03	15.15	35.03	38.17	23.39	0.08
3960.75	0.96	84.67	3960.35	35.24	16.69	35.24	38.99	25.35	0.09
4055.59	0.90	82.10	4055.18	35.41	18.22	35.41	39.83	27.23	0.08
4150.43	0.82	79.53	4150.01	35.64	19.63	35.64	40.68	28.84	0.09
4245.27	0.86	71.37	4244.84	35.99	20.97	35.99	41.65	30.23	0.13
4340.11	0.90	83.21	4339.67	36.31	22.39	36.31	42.66	31.66	0.20
4434.95	0.88	90.90	4434.49	36.38	23.86	36.38	43.51	33.26	0.13
4529.79	0.86	98.59	4529.32	36.27	25.30	36.27	44.22	34.90	0.13
4624.63	0.88	88.40	4624.15	36.18	26.73	36.18	44.98	36.46	0.16
4719.47	0.89	78.22	4718.98	36.35	28.18	36.35	45.99	37.78	0.17
4814.31	1.03	77.04	4813.81	36.69	29.73	36.69	47.22	39.02	0.14
4909.15	1.16	75.87	4908.63	37.12	31.49	37.12	48.68	40.31	0.15
5003.99	0.98	74.11	5003.45	37.57	33.21	37.57	50.15	41.47	0.19
5098.83	0.82	72.35	5098.28	38.00	34.64	38.00	51.42	42.35	0.17
5193.67	0.78	70.81	5193.11	38.42	35.89	38.42	52.58	43.05	0.05
5288.51	0.72	69.27	5287.94	38.84	37.06	38.84	53.69	43.65	0.07
5383.35	0.76	62.47	5382.78	39.35	38.17	39.35	54.82	44.13	0.10

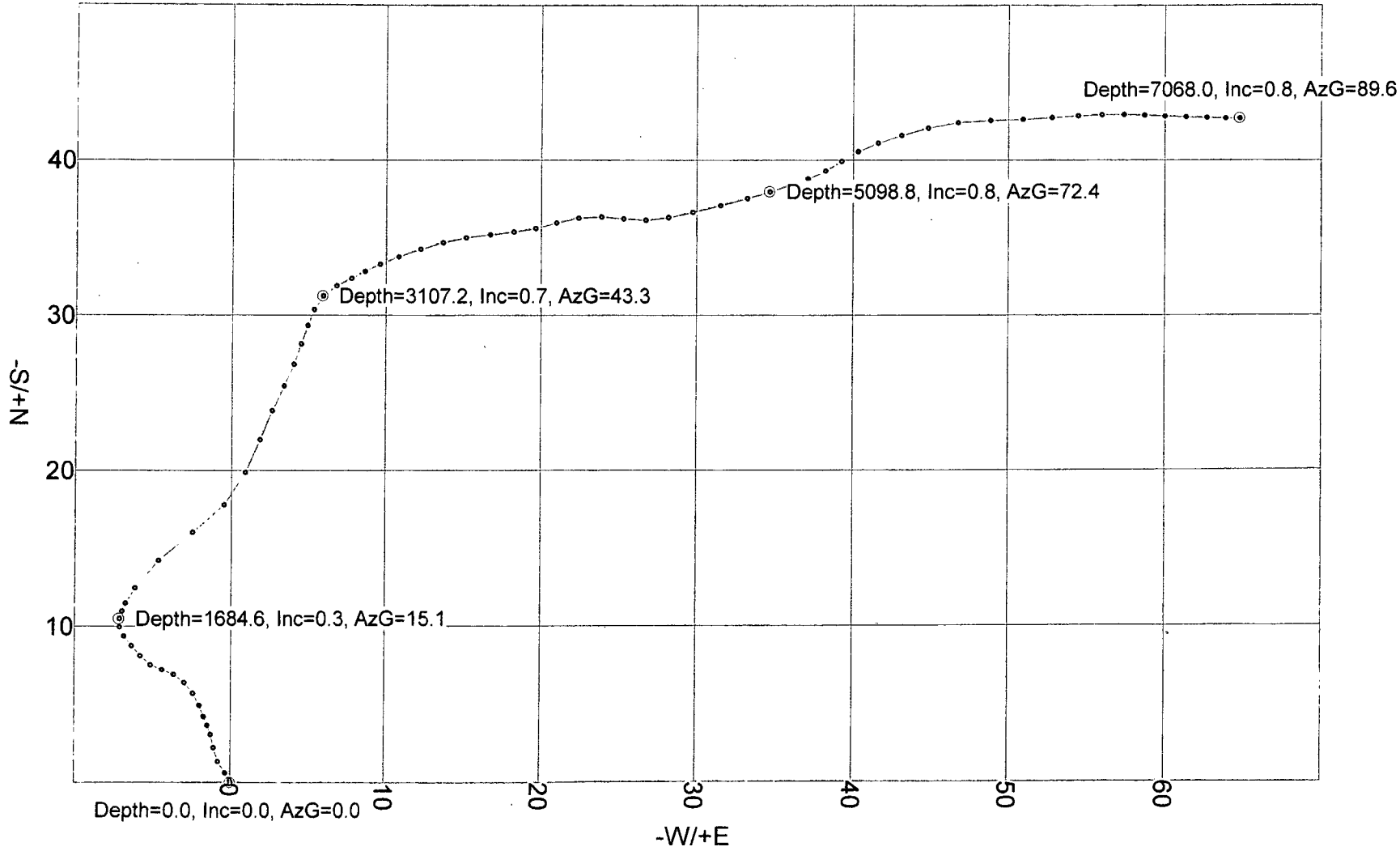
VES Survey Date: 10/12/2012

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
5478.19	0.71	55.66	5477.61	39.97	39.22	39.97	56.00	44.46	0.11
5573.03	0.79	63.26	5572.44	40.60	40.29	40.60	57.20	44.78	0.13
5667.87	0.88	70.85	5667.27	41.13	41.57	41.13	58.48	45.30	0.15
5762.71	1.03	73.36	5762.10	41.62	43.08	41.62	59.90	45.99	0.16
5857.55	1.12	75.86	5856.92	42.09	44.80	42.09	61.47	46.78	0.11
5952.39	1.22	82.69	5951.74	42.44	46.70	42.44	63.11	47.73	0.18
6047.23	1.33	89.53	6046.56	42.58	48.80	42.58	64.77	48.89	0.19
6142.07	1.19	87.23	6141.37	42.64	50.88	42.64	66.39	50.04	0.16
6236.91	1.05	84.94	6236.20	42.76	52.73	42.76	67.89	50.96	0.15
6331.75	0.96	86.84	6331.02	42.88	54.39	42.88	69.26	51.74	0.10
6426.59	0.88	88.74	6425.85	42.94	55.91	42.94	70.50	52.47	0.09
6521.43	0.83	90.48	6520.68	42.95	57.33	42.95	71.63	53.16	0.06
6616.27	0.77	92.22	6615.51	42.92	58.65	42.92	72.68	53.80	0.07
6711.11	0.81	92.28	6710.34	42.87	59.96	42.87	73.71	54.44	0.05
6805.95	0.84	92.35	6805.17	42.82	61.33	42.82	74.80	55.08	0.03
6900.79	0.76	91.80	6900.00	42.77	62.66	42.77	75.86	55.68	0.09
6995.63	0.70	91.26	6994.83	42.74	63.86	42.74	76.84	56.21	0.07
7068.00	0.78	89.59	7067.20	42.73	64.80	42.73	77.62	56.60	0.12

devon

Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Danny Spring
Caswell 23 Federal No. 001H / API 30-025-40708

VES
VAUGHN ENERGY SERVICES



VES Survey Date: 10/12/2012