



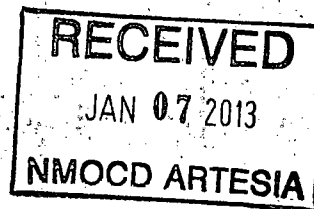
A GYRO TECHNOLOGIES INC. COMPANY

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

30-015-40105

September 4, 2012

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



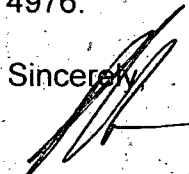
Attn: Mark Cooper

Re: Spica 25 Federal No. 004H

Please find enclosed a copy of the survey from 0.00' to 6955.00' 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,

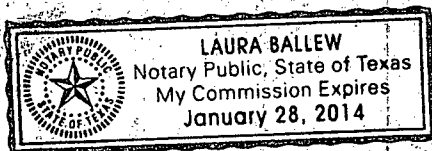

Keith Havelka
Operations

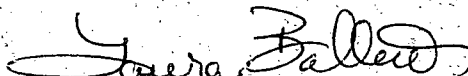
STATE OF TEXAS

COUNTY OF NUECES

§
§
§

This instrument was acknowledged before me on the 5th day of September A.D., 2012, by Keith Havelka.





Laura Ballew
Notary Public, State of Texas



Company: Devon Energy Production Co., LP
 Lease/Well: Spica 25 Federal / No. 004H
 Location: SEC25 T19s R31e
 Rig Name: McVay 10
 State/County: New Mexico / Eddy
 Latitude: 32.63
 GRID North is 0.27 Degrees East of True North
 VS-Azi: 89.63 Degrees



Depth Reference : RKB = 20'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
 Minimum Curvature Method
 Report Date/Time: 9/4/2012 / 11:02

Vaughn Energy Services
 Gardendale, Texas
 432-563-5444

Surveyor: Colby Ware
 Spica 25 Federal No. 004H / API 30-015-40105

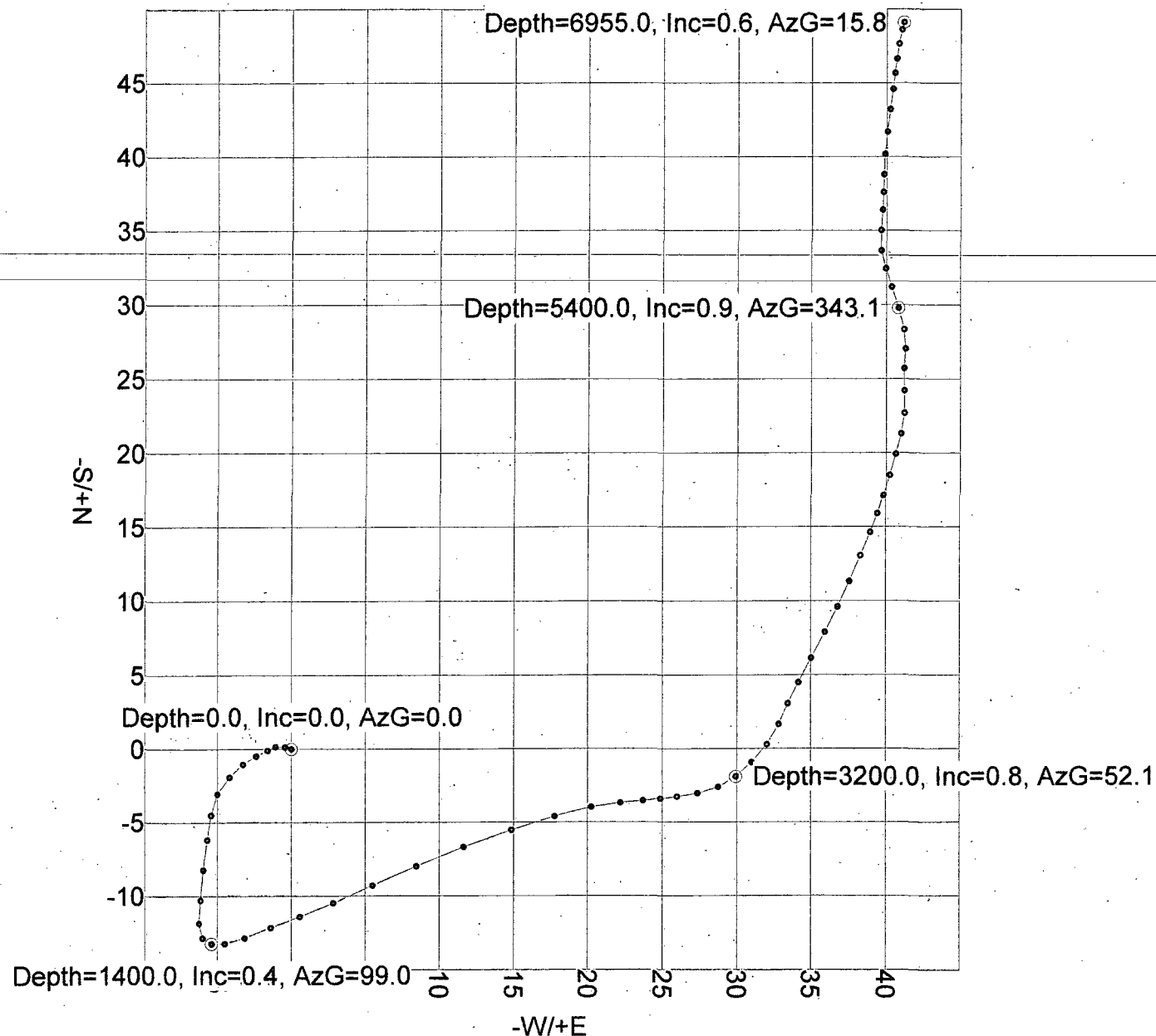
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.51	286.53	100.00	0.13	-0.43	-0.43	0.44	286.53	0.51
200.00	0.26	241.88	200.00	0.15	-1.05	-1.05	1.06	277.94	0.37
300.00	0.42	243.87	299.99	-0.12	-1.58	-1.58	1.58	265.65	0.16
400.00	0.56	244.45	399.99	-0.49	-2.34	-2.34	2.39	258.19	0.14
500.00	0.67	233.53	499.99	-1.05	-3.25	-3.26	3.42	252.13	0.17
600.00	0.79	222.61	599.98	-1.91	-4.19	-4.20	4.61	245.54	0.18
700.00	0.85	209.15	699.97	-3.06	-5.02	-5.04	5.88	238.62	0.20
800.00	0.89	185.69	799.96	-4.48	-5.46	-5.49	7.06	230.61	0.36
900.00	1.06	190.55	899.94	-6.17	-5.71	-5.75	8.40	222.77	0.19
1000.00	1.30	185.41	999.92	-8.21	-5.98	-6.04	10.16	216.07	0.26
1100.00	1.07	184.43	1099.90	-10.27	-6.16	-6.23	11.98	210.96	0.24
1200.00	0.73	183.44	1199.89	-11.84	-6.27	-6.35	13.40	207.92	0.34
1300.00	0.53	141.20	1299.88	-12.84	-6.02	-6.10	14.18	205.14	0.49
1400.00	0.37	98.95	1399.88	-13.24	-5.42	-5.50	14.31	202.25	0.36
1500.00	0.66	83.47	1499.87	-13.23	-4.53	-4.61	13.98	198.89	0.33
1600.00	1.00	67.98	1599.86	-12.83	-3.14	-3.22	13.21	193.74	0.40
1700.00	1.16	68.64	1699.85	-12.14	-1.38	-1.46	12.22	186.50	0.16
1800.00	1.24	69.29	1799.82	-11.38	0.58	0.50	11.40	177.11	0.08

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
1900.00	1.54	66.58	1899.79	-10.47	2.83	2.76	10.84	164.89	0.31
2000.00	1.79	65.86	1999.75	-9.29	5.49	5.43	10.79	149.44	0.24
2100.00	1.93	66.45	2099.70	-7.98	8.45	8.40	11.63	133.35	0.14
2200.00	2.03	69.04	2199.64	-6.67	11.65	11.61	13.43	119.79	0.14
2300.00	1.87	71.22	2299.58	-5.51	14.85	14.82	15.84	110.37	0.18
2400.00	1.64	73.40	2399.53	-4.58	17.77	17.74	18.35	104.46	0.24
2500.00	1.30	79.01	2499.50	-3.96	20.25	20.22	20.63	101.05	0.37
2600.00	0.95	84.62	2599.48	-3.66	22.19	22.17	22.49	99.37	0.36
2700.00	0.78	84.39	2699.47	-3.52	23.70	23.67	23.96	98.44	0.17
2800.00	0.57	84.16	2799.46	-3.40	24.87	24.85	25.10	97.79	0.21
2900.00	0.73	81.87	2899.46	-3.26	26.00	25.98	26.20	97.15	0.17
3000.00	0.86	79.57	2999.45	-3.03	27.37	27.35	27.54	96.32	0.13
3100.00	0.82	65.83	3099.44	-2.60	28.76	28.74	28.88	95.18	0.21
3200.00	0.77	52.10	3199.43	-1.90	29.94	29.93	30.00	93.63	0.20
3300.00	0.87	44.40	3299.42	-0.94	31.01	31.00	31.02	91.74	0.14
3400.00	0.96	36.69	3399.40	0.27	32.04	32.04	32.04	89.51	0.15
3500.00	0.90	23.28	3499.39	1.67	32.85	32.86	32.89	87.09	0.23
3600.00	0.84	24.88	3599.38	3.06	33.47	33.49	33.61	84.78	0.06
3700.00	1.00	26.74	3699.37	4.50	34.17	34.20	34.47	82.49	0.16
3800.00	1.15	28.61	3799.35	6.17	35.05	35.09	35.59	80.02	0.16
3900.00	1.11	26.86	3899.33	7.92	35.97	36.02	36.83	77.59	0.06
4000.00	1.07	25.11	3999.31	9.63	36.80	36.86	38.04	75.34	0.05
4100.00	1.09	23.72	4099.29	11.34	37.58	37.65	39.26	73.20	0.04
4200.00	1.06	22.33	4199.28	13.07	38.32	38.40	40.49	71.16	0.04
4300.00	0.87	21.92	4299.26	14.64	38.95	39.05	41.61	69.40	0.19
4400.00	0.69	18.50	4399.25	15.92	39.43	39.53	42.52	68.02	0.19
4500.00	0.79	17.22	4499.24	17.14	39.82	39.93	43.36	66.71	0.10
4600.00	0.85	15.94	4599.23	18.51	40.23	40.35	44.28	65.29	0.06
4700.00	0.86	14.97	4699.22	19.94	40.62	40.75	45.25	63.86	0.02
4800.00	0.77	14.01	4799.21	21.32	40.98	41.12	46.19	62.52	0.09
4900.00	0.84	4.43	4899.20	22.70	41.20	41.35	47.04	61.15	0.15
5000.00	0.91	354.84	4999.19	24.22	41.19	41.34	47.78	59.54	0.16
5100.00	0.81	4.51	5099.18	25.72	41.17	41.33	48.54	58.01	0.18
5200.00	0.70	4.17	5199.17	27.03	41.27	41.44	49.33	56.78	0.10
5300.00	0.81	348.62	5299.16	28.34	41.17	41.36	49.98	55.46	0.23
5400.00	0.92	343.07	5399.15	29.79	40.80	40.99	50.52	53.86	0.13
5500.00	0.79	342.32	5499.14	31.22	40.36	40.56	51.03	52.28	0.12
5600.00	0.69	341.56	5599.13	32.45	39.96	40.17	51.48	50.92	0.10
5700.00	0.74	350.80	5699.12	33.67	39.66	39.88	52.03	49.67	0.13

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
5800.00	0.83	5.04	5799.11	35.03	39.62	39.85	52.89	48.52	0.21
5900.00	0.74	3.61	5899.10	36.40	39.73	39.96	53.88	47.50	0.10
6000.00	0.64	1.19	5999.10	37.59	39.78	40.02	54.73	46.62	0.10
6100.00	0.74	0.96	6099.09	38.80	39.80	40.05	55.58	45.73	0.11
6200.00	0.85	4.74	6199.08	40.18	39.87	40.13	56.61	44.78	0.12
6300.00	0.90	7.22	6299.07	41.70	40.03	40.30	57.80	43.83	0.06
6400.00	0.86	7.71	6399.06	43.22	40.23	40.51	59.05	42.95	0.03
6500.00	0.72	7.28	6499.05	44.58	40.41	40.70	60.17	42.19	0.15
6600.00	0.53	6.86	6599.04	45.66	40.55	40.84	61.06	41.61	0.19
6700.00	0.59	7.19	6699.04	46.63	40.67	40.97	61.87	41.09	0.06
6800.00	0.59	9.51	6799.03	47.65	40.82	41.12	62.74	40.58	0.02
6900.00	0.52	13.50	6899.03	48.59	41.01	41.32	63.58	40.16	0.08
6955.00	0.57	15.76	6954.02	49.09	41.14	41.45	64.05	39.96	0.10



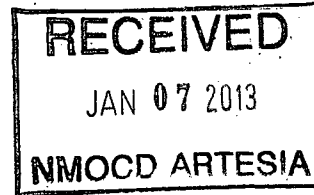
Vaughn Energy Services
Gardendale, Texas
432-563-5444
Surveyor: Colby Ware
Spica 25 Federal No. 004H / API 30-015-40105



VES Survey Date: 08/28/2012

**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL



Well Name and Num: Spica 25 Fed 4H
Location: Sec. 25, T19S, R31E
Operator: Devon
Drilling Contractor: McVay Drilling Company

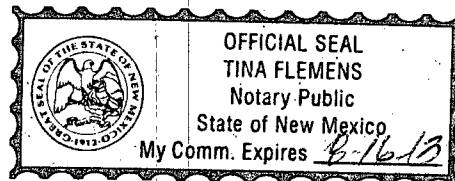
The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.74	400	10.78	7993	89.86	11588		
0.78	655	10.38	8189	89.70	12060		
1.57	970	11.15	8228	91.65	12532		
0.73	1235	12.97	8323	90.49	12815		
1.35	1900	12.80	8387	92.87	13382		
2.25	2200	9.68	8479	91.89	13855		
0.69	2878	8.68	8542				
0.55	4840	7.87	8668				
0.83	5155	11.71	8888				
0.53	5438	30.85	9108				
0.68	6005	56.58	9324				
0.89	6503	72.80	9517				
0.19	7125	92.10	9982				
2.30	7251	89.90	10266				
5.81	7408	88.53	10738				
12.30	7693	90.63	11305				
12.21	7787	90.70	11399				

By: Hunter C. [Signature]

Subscribed and sworn to before me this 17th day of September, 2012

Tina Flemens
Notary Public, Lea County, New Mexico





Weatherford[®]

Evaluation, Drilling & Intervention

10000 West County Rd. 116

P.O. Box 61028

Midland, TX USA 79711

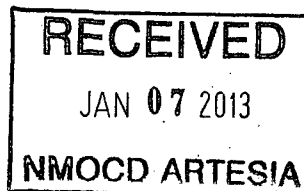
Tel. (432) 561-8892 Fax (432) 561-8895

Devon Energy
333 W. Sherridan Ave
Oklahoma City, OK, 73102

Date: September 12, 2012

Attention: John Prejean

Re: Devon Energy
Well: Spica 25 Federal #4H
Eddy County, New Mexico



Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

Name & Title Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Ben Hernandez	4H	8071' MD	9/1/2012	Measurement
MWD Supervisor		13855' MD	9/12/2012	While Drilling

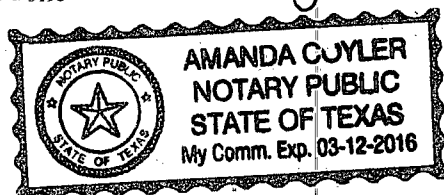
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Jesse Aguilar
Area Manager

On this, the 14th day of September, 2012, before me a notary public, the undersigned officer, personally appeared Jesse Aguilar, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.

Notary Public





Weatherford

WFT Survey Report X & Y's

**Weatherford**

Company: Devon Energy				Date: 9/11/2012				Time: 06:54:16				Page: 1			
Field: Eddy Co., NM (NAD 83)				Co-ordinate(NE) Reference: Well: Spica 25 Federal #4H, Grid North											
Site: Spica 25 Federal #4H				Vertical (TVD) Reference: SITE 3517.0											
Well: Spica 25 Federal #4H				Section (VS) Reference: Well (0.00N,0.00E,89.63Azi)											
Wellpath: 1				Survey Calculation Method: Minimum Curvature								Db: Sybase			
Survey: Wft Svy				Start Date: 9/4/2012											
Company: Weatherford				Engineer: Russell W. Joyner											
Tool: MWD;MWD - Standard				Tied-to: User Defined											
Field: Eddy Co., NM (NAD 83)															
Map System: US State Plane Coordinate System 1983				Map Zone: New Mexico, Eastern Zone											
Geo Datum: GRS 1980				Coordinate System: Well Centre											
Sys Datum: Mean Sea Level				Geomagnetic Model: IGRF2010											
Site: Spica 25 Federal #4H															
Site Position:				Northing: 591586.57 ft				Latitude: 32 37 31.117 N							
From: Map				Easting: 696231.17 ft				Longitude: 103 49 48.792 W							
Position Uncertainty: 0.00 ft								North Reference: Grid							
Ground Level: 3497.00 ft								Grid Convergence: 0.27 deg							
Well: Spica 25 Federal #4H				Slot Name:											
Well Position: +N/-S 0.00 ft				Northing: 591586.57 ft				Latitude: 32 37 31.117 N							
+E/-W 0.00 ft				Easting: 696231.17 ft				Longitude: 103 49 48.792 W							
Position Uncertainty: 0.00 ft															
Wellpath: 1				Drilled From: Surface											
Current Datum: SITE				Height: 3517.00 ft				Tie-on Depth: 0.00 ft							
Magnetic Data: 9/1/2012								Above System Datum: Mean Sea Level							
Field Strength: 48734 nT								Declination: 7.59 deg							
Vertical Section: Depth From (TVD)				+N/-S				Mag Dip Angle: 60.48 deg							
ft				ft				+E/-W				Direction			
0.00				0.00				0.00				89.63			
Survey															
MD	Incl	Azim	TVD	N/S	E/W	DLS	VS	MapN	MapE	Comment					
ft	deg	deg	ft	ft	ft	deg/100ft	ft	ft	ft						
7993.00	10.78	250.09	7981.91	15.23	-66.13	0.00	-66.03	591601.80	696165.04	Tie On SDI					
8071.00	10.35	250.97	8058.59	10.46	-79.61	0.59	-79.54	591597.03	696151.56	First Wft Svy					
8103.00	9.91	251.31	8090.09	8.64	-84.94	1.39	-84.88	591595.21	696146.23						
8134.00	9.72	252.60	8120.63	7.00	-89.96	0.94	-89.92	591593.57	696141.21						
8165.00	10.38	255.88	8151.16	5.54	-95.17	2.82	-95.13	591592.11	696136.00						
8197.00	10.79	260.33	8182.62	4.33	-100.92	2.86	-100.89	591590.90	696130.25						
8228.00	11.15	265.16	8213.05	3.59	-106.76	3.18	-106.74	591590.16	696124.41						
8260.00	12.11	268.01	8244.39	3.22	-113.20	3.50	-113.18	591589.79	696117.97						
8291.00	12.50	270.29	8274.68	3.12	-119.81	2.01	-119.78	591589.69	696111.36						
8323.00	12.97	271.23	8305.89	3.22	-126.86	1.61	-126.84	591589.79	696104.31						
8354.00	12.84	271.44	8336.11	3.38	-133.78	0.45	-133.76	591589.95	696097.39						
8384.00	12.86	276.08	8365.36	3.81	-140.43	3.44	-140.41	591590.38	696090.74						
8416.00	11.75	278.58	8396.62	4.68	-147.20	3.85	-147.16	591591.25	696083.97						
8447.00	10.48	279.60	8427.04	5.62	-153.10	4.15	-153.06	591592.19	696078.07						
8479.00	9.68	278.44	8458.55	6.50	-158.63	2.58	-158.58	591593.07	696072.54						
8510.00	8.67	277.12	8489.15	7.17	-163.53	3.33	-163.48	591593.74	696067.64						
8542.00	8.68	276.30	8520.78	7.73	-168.32	0.39	-168.27	591594.30	696062.85						
8573.00	8.56	277.44	8551.43	8.29	-172.93	0.67	-172.87	591594.86	696058.24						
8605.00	8.43	277.24	8583.08	8.89	-177.62	0.42	-177.56	591595.46	696053.55						
8636.00	8.23	278.27	8613.76	9.50	-182.07	0.80	-182.00	591596.07	696049.10						
8668.00	7.87	278.06	8645.44	10.14	-186.51	1.13	-186.44	591596.71	696044.66						
8699.00	5.46	275.22	8676.23	10.57	-190.08	7.84	-190.00	591597.14	696041.09						
8730.00	2.81	269.28	8707.15	10.69	-192.31	8.65	-192.23	591597.26	696038.86						
8762.00	0.65	237.35	8739.13	10.58	-193.24	7.14	-193.17	591597.15	696037.93						



Weatherford

WFT Survey Report X & Y's

**Weatherford**

Company: Devon Energy
Field: Eddy Co. NM (NAD 83)
Site: Spica 25 Federal #4H
Well: Spica 25 Federal #4H
Wellpath: 1

Date: 9/11/2012 Time: 06:54:16 Page: 2
Co-ordinate(NE) Reference: Well: Spica 25 Federal #4H Grid: North
Vertical (TVD) Reference: SITE 3517.0
Section (VS) Reference: Well (0.00N, 0.00E, 89.63Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
8793.00	2.28	90.96	8770.12	10.48	-192.77	9.17	-192.70	591597.05	696038.40	
8825.00	5.40	86.77	8802.05	10.55	-190.63	9.78	-190.56	591597.12	696040.54	
8856.00	8.76	83.56	8832.81	10.90	-186.83	10.91	-186.76	591597.47	696044.34	
8888.00	11.71	84.32	8864.29	11.50	-181.18	9.23	-181.10	591598.07	696049.99	
8919.00	13.69	85.04	8894.53	12.12	-174.39	6.41	-174.31	591598.69	696056.78	
8951.00	17.44	83.83	8925.36	12.97	-165.85	11.76	-165.76	591599.54	696065.32	
8982.00	20.75	83.52	8954.65	14.09	-155.77	10.68	-155.68	591600.66	696075.40	
9013.00	23.21	84.00	8983.39	15.35	-144.24	7.96	-144.13	591601.92	696086.93	
9045.00	25.44	84.52	9012.55	16.66	-131.12	7.00	-131.01	591603.23	696100.05	
9076.00	28.18	85.94	9040.21	17.82	-117.19	9.08	-117.07	591604.39	696113.98	
9108.00	30.85	87.63	9068.06	18.69	-101.45	8.74	-101.33	591605.26	696129.72	
9139.00	34.63	89.26	9094.13	19.13	-84.70	12.52	-84.57	591605.70	696146.47	
9171.00	37.74	90.44	9119.95	19.17	-65.81	9.96	-65.68	591605.74	696165.36	
9202.00	40.87	90.59	9143.94	19.00	-46.17	10.10	-46.05	591605.57	696185.00	
9234.00	44.69	90.70	9167.42	18.75	-24.45	11.94	-24.32	591605.32	696206.72	
9265.00	48.64	90.81	9188.69	18.45	-1.90	12.74	-1.78	591605.02	696229.27	
9297.00	52.81	90.95	9208.94	18.07	22.86	13.04	22.98	591604.64	696254.03	
9328.00	56.58	90.49	9226.86	17.76	48.15	12.22	48.27	591604.33	696279.32	
9359.00	59.95	90.21	9243.16	17.60	74.51	10.90	74.62	591604.17	696305.68	
9391.00	62.52	90.40	9258.56	17.45	102.56	8.05	102.67	591604.02	696333.73	
9422.00	65.47	90.77	9272.15	17.16	130.42	9.58	130.53	591603.73	696361.59	
9454.00	68.80	91.06	9284.58	16.69	159.90	10.44	160.00	591603.26	696391.07	
9486.00	70.68	91.34	9295.66	16.06	189.91	5.93	190.01	591602.63	696421.08	
9517.00	72.89	91.82	9305.35	15.25	219.34	7.28	219.44	591601.82	696450.51	
9548.00	76.15	91.26	9313.62	14.45	249.20	10.66	249.29	591601.02	696480.37	
9580.00	79.01	90.96	9320.50	13.84	280.44	8.98	280.53	591600.41	696511.61	
9604.00	80.58	91.08	9324.76	13.42	304.06	6.56	304.14	591599.99	696535.23	
9636.00	82.06	90.81	9329.59	12.90	335.69	4.70	335.76	591599.47	696566.86	
9667.00	84.67	90.04	9333.17	12.67	366.48	8.77	366.55	591599.24	696597.65	
9699.00	86.29	90.35	9335.69	12.56	398.38	5.15	398.45	591599.13	696629.55	
9730.00	86.22	89.97	9337.71	12.48	429.31	1.24	429.38	591599.05	696660.48	
9762.00	88.25	89.87	9339.26	12.52	461.27	6.35	461.34	591599.09	696692.44	
9793.00	91.26	89.68	9339.39	12.64	492.27	9.73	492.34	591599.21	696723.44	
9825.00	91.40	89.46	9338.65	12.88	524.26	0.81	524.33	591599.45	696755.43	
9888.00	91.33	89.38	9337.15	13.52	587.24	0.17	587.31	591600.09	696818.41	
9982.00	92.10	88.54	9334.33	15.23	681.18	1.21	681.26	591601.80	696912.35	
10077.00	92.45	88.25	9330.56	17.88	776.06	0.48	776.16	591604.45	697007.23	
10172.00	90.98	88.84	9327.72	20.30	870.99	1.67	871.10	591606.87	697102.16	
10266.00	89.93	89.87	9326.97	21.35	964.98	1.56	965.09	591607.92	697196.15	
10361.00	88.74	91.34	9328.08	20.35	1059.96	1.99	1060.07	591606.92	697291.13	
10455.00	89.72	91.11	9329.34	18.34	1153.93	1.07	1154.02	591604.91	697385.10	
10549.00	88.53	90.38	9330.77	17.12	1247.91	1.49	1247.99	591603.69	697479.08	
10644.00	88.88	90.22	9332.92	16.62	1342.88	0.41	1342.96	591603.19	697574.05	
10738.00	88.53	90.38	9335.05	16.13	1436.86	0.41	1436.93	591602.70	697668.03	
10832.00	88.88	90.08	9337.17	15.75	1530.83	0.49	1530.90	591602.32	697762.00	
10927.00	87.97	89.71	9339.78	15.93	1625.79	1.03	1625.86	591602.50	697856.96	
11021.00	87.83	89.44	9343.23	16.62	1719.73	0.32	1719.80	591603.19	697950.90	
11116.00	90.28	89.28	9344.79	17.68	1814.70	2.58	1814.78	591604.25	698045.87	
11210.00	90.56	89.26	9344.10	18.88	1908.69	0.30	1908.77	591605.45	698139.86	
11305.00	90.63	88.34	9343.12	20.87	2003.67	0.97	2003.76	591607.44	698234.84	
11399.00	90.70	88.21	9342.03	23.70	2097.62	0.16	2097.73	591610.27	698328.79	
11494.00	90.14	89.83	9341.33	25.33	2192.60	1.80	2192.71	591611.90	698423.77	



Weatherford

WFT Survey Report X & Y's

**Weatherford**

Company: Devon Energy	Date: 9/11/2012	Time: 06:54:16	Page: 3
Field: Eddy Co. NM (NAD 83)	Co-ordinate(NE) Reference: Well: Spica 25 Federal #4H; Grid North		
Site: Spica 25 Federal #4H	Vertical (TVD) Reference: SITE 3517.0		
Well: Spica 25 Federal #4H	Section (VS) Reference: Well (0.00N, 0.00E, 89.63Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey

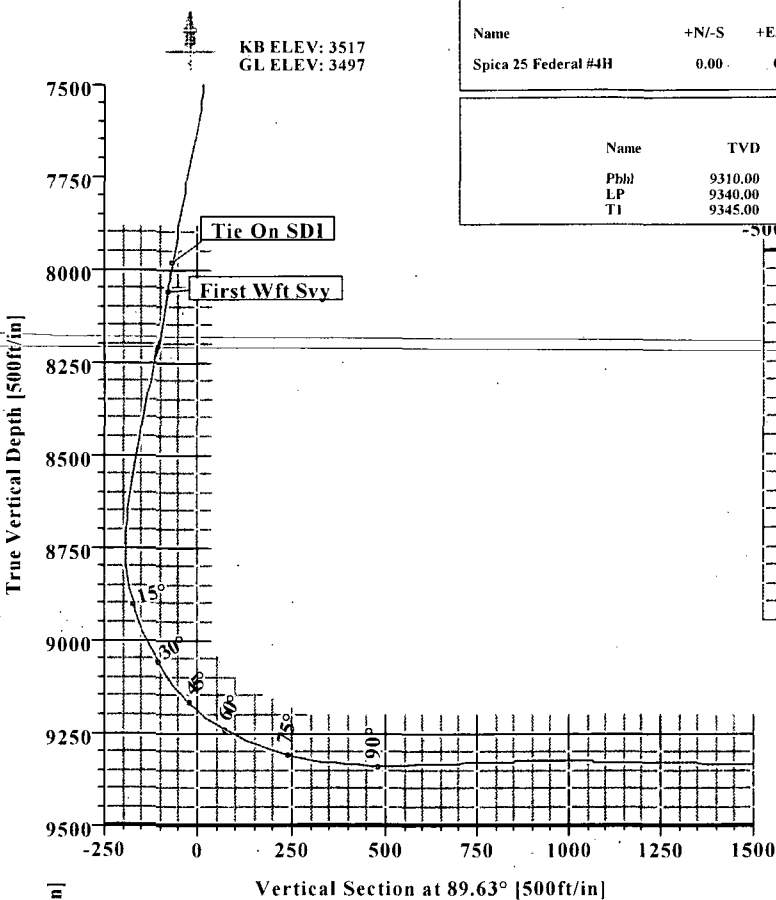
MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
11588.00	89.86	89.02	9341.33	26.27	2286.59	0.91	2286.71	591612.84	698517.76	
11682.00	92.31	89.81	9339.55	27.23	2380.56	2.74	2380.69	591613.80	698611.73	
11777.00	92.03	91.47	9335.95	26.17	2475.48	1.77	2475.60	591612.74	698706.65	
11871.00	90.98	91.18	9333.48	24.00	2569.42	1.16	2569.53	591610.57	698800.59	
11966.00	91.54	91.69	9331.39	21.62	2664.37	0.80	2664.46	591608.19	698895.54	
12060.00	89.79	90.47	9330.30	19.85	2758.34	2.27	2758.41	591606.42	698989.51	
12155.00	90.00	90.60	9330.48	18.96	2853.34	0.26	2853.40	591605.53	699084.51	
12249.00	90.14	88.98	9330.36	19.30	2947.33	1.73	2947.40	591605.87	699178.50	
12344.00	90.49	89.06	9329.84	20.93	3042.32	0.38	3042.39	591607.50	699273.49	
12438.00	90.91	88.82	9328.69	22.67	3136.30	0.51	3136.38	591609.24	699367.47	
12532.00	91.61	88.08	9326.62	25.21	3230.24	1.08	3230.33	591611.78	699461.41	
12627.00	90.00	88.43	9325.29	28.10	3325.18	1.73	3325.29	591614.67	699556.35	
12721.00	90.35	89.82	9325.00	29.54	3419.17	1.52	3419.29	591616.11	699650.34	
12815.00	90.49	90.06	9324.31	29.64	3513.16	0.30	3513.28	591616.21	699744.33	
12910.00	91.12	89.45	9322.98	30.04	3608.15	0.92	3608.27	591616.61	699839.32	
13004.00	91.96	88.47	9320.45	31.75	3702.10	1.37	3702.23	591618.32	699933.27	
13098.00	92.80	90.42	9316.55	32.66	3796.01	2.26	3796.14	591619.23	700027.18	
13193.00	90.70	90.19	9313.65	32.15	3890.96	2.22	3891.09	591618.72	700122.13	
13287.00	91.68	90.27	9311.70	31.77	3984.94	1.05	3985.06	591618.34	700216.11	
13382.00	92.87	90.15	9307.92	31.43	4079.86	1.26	4079.98	591618.00	700311.03	
13476.00	90.28	89.94	9305.34	31.35	4173.82	2.76	4173.93	591617.92	700404.99	
13570.00	88.60	90.41	9306.26	31.07	4267.81	1.86	4267.92	591617.64	700498.98	
13665.00	89.44	90.78	9307.88	30.08	4362.79	0.97	4362.89	591616.65	700593.96	
13755.00	90.98	90.69	9307.56	28.92	4452.78	1.71	4452.87	591615.49	700683.95	
13855.00	91.89	90.92	9305.05	27.52	4552.73	0.94	4552.82	591614.09	700783.90	Last Wft Svy
13902.00	91.89	90.92	9303.50	26.77	4599.70	0.00	4599.78	591613.34	700830.87	Proj. To Bit

Annotation

MD ft	TVD ft	
7993.00	7981.91	Tie On SDI
8071.00	8058.59	First Wft Svy
13855.00	9305.05	Last Wft Svy
13902.00	9303.50	Proj. To Bit



Spica 25 Federal #4H Eddy Co, NM



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	12627.00	90.00	88.43	9325.30	28.10	3325.14	0.00	0.00	3325.25	
2	12682.92	90.70	89.96	9324.96	28.89	3381.05	3.00	65.46	3381.17	
3	13912.91	90.70	89.96	9310.00	29.83	4610.95	0.00	0.00	4611.05	Pbhl

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Spica 25 Federal #4H	0.00	0.00	591586.57	696231.17	32°37'31.117N	103°49'48.792W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Pbhl	9310.00	29.83	4610.95	591616.40	700842.12	Point
LP	9340.00	12.42	374.90	591598.99	696606.07	Point
T1	9345.00	12.25	1896.97	591598.82	698128.14	Point

FIELD DETAILS

Eddy Co., NM (NAD 83)

Geodetic System: US State Plane Coordinate System 1983

Ellipsoid: GRS 1980

Zone: New Mexico, Eastern Zone

Magnetic Model: IGRF2010

System Datum: Mean Sea Level

Local North: Grid North

SITE DETAILS

Spica 25 Federal #4H

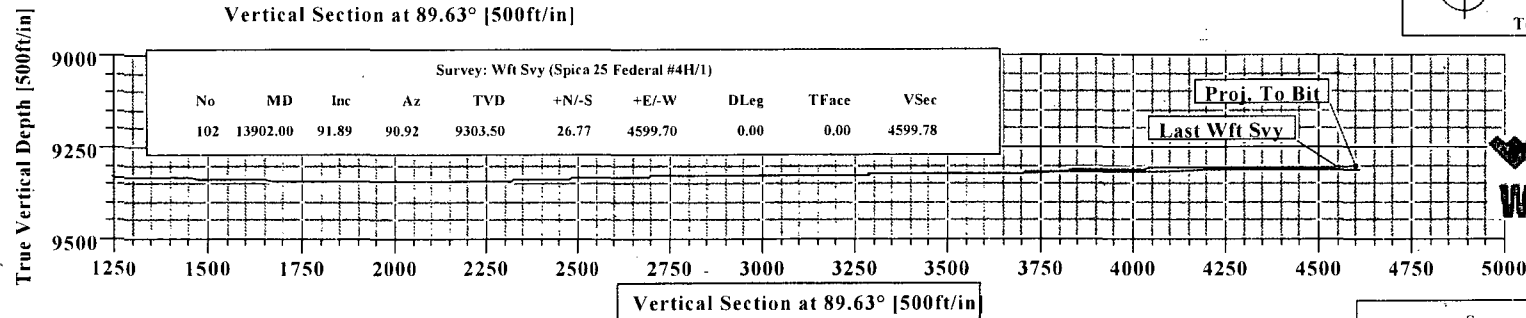
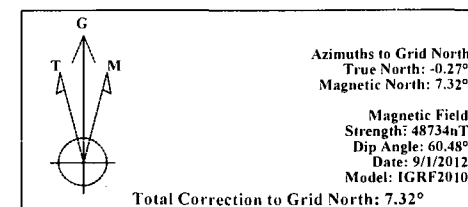
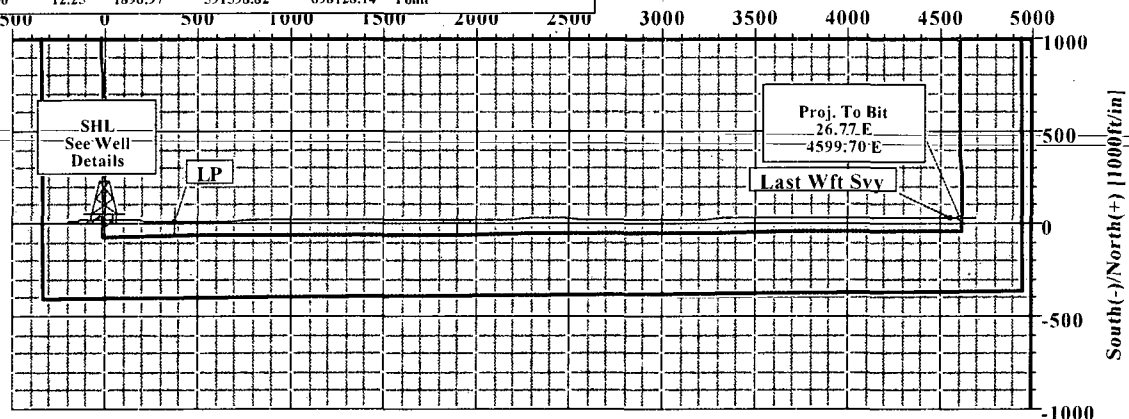
Site Centre Northing: 591586.57

Easting: 696231.17

Ground Level: 3497.00

Positional Uncertainty: 0.00

Convergence: 0.27



Weatherford

Survey: Wft Svy (Spica 25 Federal #4H/1)

Created By: Russell W. Joyner

Date: 9/11/2012

HALLIBURTON

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

September 7, 2012

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

Final Survey for:
Well Name: Spica 25 Federal 4H
County: Eddy County, NM
Rig Name: McVay 10
Sperry Job #: 9748690

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)

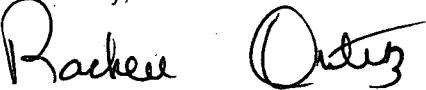
2 Certified Letters for New Mexico NMOCD

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

3950 Interwood South Parkway • Houston, TX 77032

PHONE 281.986.4400 • FAX 281.986.4499

State of New Mexico, Eddy County

I, Paul R. White, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry Drilling) and that on the dates of August 27 through September 01, 2012 I did conduct or supervise the taking of a MWD Directional surveys for the well Spica 25 Federal 4H. Halliburton Energy Services, Inc. (AKA Sperry Drilling) surveys were not used due to un-certifiable quality of data. I am authorized and qualified to make this report conducted at the request of Devon Energy Inc. for the Spica 25 Federal 4H well, API No. 30-015-40105 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).

Paul R White

Paul R. White
MWD Field Engineer

Devon
Spica 25 Federal 4H
Eddy County, New Mexico
McVay 10
API# 30-015-40105

August 27, 2012– September 01, 2012
HD-MJ-0009748690

Sperry Drilling
MWD Survey Report

Submitted by Paul White
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 : Spica 25 Federal 4H
Field Name : Hackberry (Bonè Springs Sand)
Country : USA
Job Number : HD-XX-0009748690
Job Start Date : 28-Aug-12
API Number : 30-015-40105

RECEIVED

JAN 07 2013

NMOCD ARTESIA

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)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
100.00	0.51	286.53	100.00	0.13 N	0.43 W	-0.43	0.51
200.00	0.26	241.88	200.00	0.15 N	1.05 W	-1.05	0.37
300.00	0.42	243.87	299.99	0.12 S	1.58 W	-1.58	0.16
400.00	0.56	244.45	399.99	0.49 S	2.35 W	-2.36	0.14
500.00	0.67	233.53	499.99	1.05 S	3.26 W	-3.27	0.16
600.00	0.79	222.61	599.98	1.91 S	4.20 W	-4.21	0.18
700.00	0.85	209.15	699.97	3.06 S	5.03 W	-5.05	0.20
800.00	0.89	185.69	799.96	4.48 S	5.47 W	-5.50	0.36
900.00	1.06	190.55	899.94	6.17 S	5.71 W	-5.75	0.19
1000.00	1.30	185.41	999.92	8.20 S	5.99 W	-6.04	0.26
1100.00	1.07	184.43	1,099.90	10.26 S	6.17 W	-6.23	0.23
1200.00	0.73	183.44	1,199.89	11.83 S	6.28 W	-6.36	0.34
1300.00	0.53	141.20	1,299.88	12.83 S	6.03 W	-6.11	0.49
1400.00	0.37	98.95	1,399.88	13.24 S	5.42 W	-5.50	0.36
1500.00	0.66	83.47	1,499.87	13.22 S	4.53 W	-4.61	0.32
1600.00	1.00	67.98	1,599.86	12.83 S	3.15 W	-3.23	0.40
1700.00	1.16	68.64	1,699.85	12.13 S	1.39 W	-1.47	0.16
1800.00	1.24	69.29	1,799.82	11.38 S	0.56 E	0.49	0.08
1900.00	1.54	66.58	1,899.79	10.47 S	2.81 E	2.74	0.31
2000.00	1.79	65.86	1,999.75	9.29 S	5.46 E	5.40	0.25
2100.00	1.93	66.45	2,099.70	7.98 S	8.43 E	8.38	0.14
2200.00	2.03	69.04	2,199.64	6.68 S	11.63 E	11.59	0.13
2300.00	1.87	71.22	2,299.58	5.52 S	14.83 E	14.79	0.18
2400.00	1.64	73.40	2,399.53	4.58 S	17.74 E	17.71	0.24
2500.00	1.30	79.01	2,499.50	3.96 S	20.23 E	20.20	0.37
2600.00	0.95	84.62	2,599.48	3.66 S	22.17 E	22.14	0.37
2700.00	0.78	84.39	2,699.47	3.52 S	23.67 E	23.65	0.17
2800.00	0.57	84.16	2,799.46	3.40 S	24.84 E	24.82	0.21
2900.00	0.73	81.87	2,899.46	3.26 S	25.97 E	25.95	0.16
3000.00	0.86	79.57	2,999.45	3.04 S	27.34 E	27.32	0.13
3100.00	0.82	65.83	3,099.44	2.61 S	28.73 E	28.71	0.20
3200.00	0.77	52.10	3,199.43	1.90 S	29.91 E	29.90	0.20
3300.00	0.87	44.40	3,299.42	0.95 S	30.97 E	30.97	0.15
3400.00	0.96	36.69	3,399.40	0.27 N	32.00 E	32.01	0.15
3500.00	0.90	23.28	3,499.39	1.66 N	32.82 E	32.83	0.23
3600.00	0.84	24.88	3,599.38	3.05 N	33.43 E	33.45	0.06
3700.00	1.00	26.74	3,699.37	4.49 N	34.14 E	34.16	0.16
3800.00	1.15	28.61	3,799.35	6.15 N	35.01 E	35.05	0.15
3900.00	1.11	26.86	3,899.33	7.90 N	35.93 E	35.98	0.05
4000.00	1.07	25.11	3,999.31	9.61 N	36.76 E	36.82	0.05

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
4100.00	1.09	23.72	4,099.29	11.32 N	37.54 E	37.61	0.03
4200.00	1.06	22.33	4,199.28	13.05 N	38.27 E	38.36	0.04
4300.00	0.87	21.92	4,299.26	14.61 N	38.91 E	39.00	0.19
4400.00	0.69	18.50	4,399.25	15.89 N	39.38 E	39.48	0.19
4500.00	0.79	17.22	4,499.24	17.11 N	39.78 E	39.89	0.10
4600.00	0.85	15.94	4,599.23	18.49 N	40.19 E	40.30	0.06
4700.00	0.86	14.97	4,699.22	19.92 N	40.58 E	40.71	0.02
4800.00	0.77	14.01	4,799.21	21.30 N	40.94 E	41.08	0.09
4900.00	0.84	4.43	4,899.20	22.68 N	41.16 E	41.30	0.15
5000.00	0.91	354.84	4,999.19	24.21 N	41.14 E	41.30	0.16
5100.00	0.81	4.51	5,099.18	25.70 N	41.13 E	41.29	0.18
5200.00	0.70	4.17	5,199.17	27.02 N	41.23 E	41.40	0.11
5300.00	0.81	348.62	5,299.16	28.32 N	41.13 E	41.32	0.23
5400.00	0.92	343.07	5,399.15	29.78 N	40.76 E	40.95	0.14
5500.00	0.79	342.32	5,499.14	31.20 N	40.32 E	40.52	0.13
5600.00	0.69	341.56	5,599.13	32.43 N	39.92 E	40.13	0.10
5700.00	0.74	350.80	5,699.12	33.64 N	39.62 E	39.84	0.13
5800.00	0.83	5.04	5,799.12	35.00 N	39.58 E	39.81	0.21
5900.00	0.74	3.61	5,899.11	36.36 N	39.69 E	39.92	0.09
6000.00	0.64	1.19	5,999.10	37.57 N	39.74 E	39.98	0.10
6100.00	0.74	0.96	6,099.09	38.77 N	39.76 E	40.01	0.10
6200.00	0.85	4.74	6,199.08	40.16 N	39.84 E	40.09	0.12
6300.00	0.90	7.22	6,299.07	41.68 N	40.00 E	40.26	0.06
6400.00	0.86	7.71	6,399.06	43.20 N	40.19 E	40.47	0.04
6500.00	0.72	7.28	6,499.05	44.56 N	40.37 E	40.66	0.14
6600.00	0.53	6.86	6,599.04	45.65 N	40.51 E	40.80	0.19
6700.00	0.59	7.19	6,699.04	46.62 N	40.63 E	40.93	0.06
6800.00	0.59	9.51	6,799.03	47.64 N	40.78 E	41.09	0.02
6900.00	0.52	13.50	6,899.03	48.58 N	40.97 E	41.28	0.08
6955.00	0.57	15.76	6,954.03	49.09 N	41.10 E	41.42	0.10
6975.00	0.64	7.55	6,974.02	49.30 N	41.14 E	41.46	0.56
7000.00	0.65	3.70	6,999.02	49.58 N	41.17 E	41.49	0.18
7025.00	0.65	3.00	7,024.02	49.86 N	41.19 E	41.51	0.03
7050.00	0.69	7.35	7,049.02	50.15 N	41.21 E	41.54	0.26
7075.00	0.79	4.86	7,074.02	50.47 N	41.25 E	41.57	0.42
7100.00	0.71	3.29	7,099.02	50.80 N	41.27 E	41.60	0.33
7125.00	0.72	357.48	7,124.01	51.11 N	41.27 E	41.60	0.29
7150.00	0.68	0.81	7,149.01	51.42 N	41.27 E	41.60	0.23
7175.00	0.77	350.71	7,174.01	51.73 N	41.24 E	41.58	0.62
7200.00	0.92	319.98	7,199.01	52.05 N	41.09 E	41.42	1.88
7225.00	1.62	292.65	7,224.00	52.34 N	40.63 E	40.97	3.63
7250.00	2.67	283.97	7,248.98	52.62 N	39.74 E	40.08	4.38
7275.00	3.72	279.57	7,273.94	52.89 N	38.38 E	38.72	4.31
7300.00	4.70	278.22	7,298.88	53.17 N	36.56 E	36.91	3.94
7325.00	5.28	276.11	7,323.78	53.44 N	34.41 E	34.75	2.43

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100)
7350.00	5.43	275.47	7,348.67	53.68 N	32.08 E	32.43	0.65
7375.00	5.41	274.65	7,373.56	53.88 N	29.73 E	30.08	0.32
7400.00	5.66	274.66	7,398.44	54.08 N	27.33 E	27.68	1.00
7425.00	5.70	274.74	7,423.32	54.28 N	24.86 E	25.21	0.16
7450.00	5.66	270.95	7,448.20	54.41 N	22.39 E	22.74	1.51
7475.00	5.77	269.20	7,473.07	54.41 N	19.90 E	20.26	0.82
7500.00	6.31	264.87	7,497.94	54.27 N	17.28 E	17.63	2.82
7525.00	7.25	260.97	7,522.76	53.90 N	14.35 E	14.70	4.18
7550.00	7.97	259.17	7,547.54	53.32 N	11.09 E	11.44	3.03
7575.00	9.03	256.05	7,572.27	52.53 N	7.49 E	7.83	4.62
7600.00	9.75	254.34	7,596.93	51.48 N	3.54 E	3.88	3.09
7625.00	10.50	251.68	7,621.54	50.19 N	0.66 W	-0.33	3.53
7650.00	11.54	247.93	7,646.08	48.54 N	5.14 W	-4.82	5.05
7675.00	12.12	245.90	7,670.55	46.53 N	9.85 W	-9.55	2.86
7700.00	12.31	244.44	7,694.98	44.31 N	14.65 W	-14.36	1.45
7725.00	12.39	243.04	7,719.40	41.94 N	19.45 W	-19.17	1.24
7750.00	12.45	242.45	7,743.82	39.48 N	24.23 W	-23.97	0.56
7775.00	12.29	240.87	7,768.24	36.94 N	28.94 W	-28.70	1.50
7800.00	12.11	239.97	7,792.67	34.33 N	33.53 W	-33.31	1.05
7825.00	11.81	238.68	7,817.13	31.69 N	37.99 W	-37.78	1.61
7850.00	11.59	237.85	7,841.61	29.02 N	42.30 W	-42.11	1.11
7875.00	11.49	237.41	7,866.11	26.34 N	46.52 W	-46.35	0.53
7900.00	11.30	237.62	7,890.61	23.69 N	50.69 W	-50.54	0.78
7925.00	10.92	237.47	7,915.15	21.10 N	54.76 W	-54.62	1.52
7950.00	10.79	239.88	7,939.70	18.66 N	58.78 W	-58.66	1.89
7975.00	11.11	246.10	7,964.24	16.51 N	63.00 W	-62.90	4.89
7993.00	10.78	250.09	7,981.92	15.23 N	66.17 W	-66.07	4.59

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 89.63 degrees (Grid)
- A total correction of 7.42 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 7,993.00 feet is 67.90 feet along 282.96 degrees (Grid)

TIE-ON SURVEY ASSUMED VERTICAL AT SURFACE.

SURVEYS FROM 100' MD TO 6955' MD PROVIDED BY VAUGHN ENERGY SERVICES.
SURVEYS FROM 6975' MD TO 7993' MD PROVIDED BY SCIENTIFIC DRILLING.
SPERRY DRILLING ENGINEERS: PAUL WHITE, LAKENDRICK SMITH

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 77032-3346

PHONE: 281-986-4400
FAX: 281-986-4498

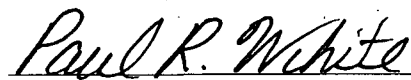
HALLIBURTON

3950 Interwood South Parkway • Houston, TX 77032

PHONE 281.986.4400 • FAX 281.986.4499

State of New Mexico, Eddy County

I, Paul R. White, certify that I am employed by Halliburton Energy Services, Inc. (AKA Sperry Drilling) and that on the dates of August 27 through September 01, 2012 I did conduct or supervise the taking of a MWD Directional surveys for the well Spica 25 Federal 4H. Halliburton Energy Services, Inc. (AKA Sperry Drilling) surveys were not used due to un-certifiable quality of data. I am authorized and qualified to make this report conducted at the request of Devon Energy Inc. for the Spica 25 Federal 4H well, API No. 30-015-40105 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).



Paul R. White
MWD Field Engineer

Devon
Spica 25 Federal 4H
Eddy County, New Mexico
McVay 10
API# 30-015-40105

August 27, 2012– September 01, 2012
HD-MJ-0009748690

Sperry Drilling
MWD Survey Report

Submitted by Paul White
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	:	Spica 25 Federal 4H
Field Name	:	Hackberry (Bone Springs Sand)
Country	:	USA
Job Number	:	HD-XX-0009748690
Job Start Date	:	28-Aug-12
API Number	:	30-015-40105

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)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
100.00	0.51	286.53	100.00	0.13 N	0.43 W	-0.43	0.51
200.00	0.26	241.88	200.00	0.15 N	1.05 W	-1.05	0.37
300.00	0.42	243.87	299.99	0.12 S	1.58 W	-1.58	0.16
400.00	0.56	244.45	399.99	0.49 S	2.35 W	-2.36	0.14
500.00	0.67	233.53	499.99	1.05 S	3.26 W	-3.27	0.16
600.00	0.79	222.61	599.98	1.91 S	4.20 W	-4.21	0.18
700.00	0.85	209.15	699.97	3.06 S	5.03 W	-5.05	0.20
800.00	0.89	185.69	799.96	4.48 S	5.47 W	-5.50	0.36
900.00	1.06	190.55	899.94	6.17 S	5.71 W	-5.75	0.19
1000.00	1.30	185.41	999.92	8.20 S	5.99 W	-6.04	0.26
1100.00	1.07	184.43	1,099.90	10.26 S	6.17 W	-6.23	0.23
1200.00	0.73	183.44	1,199.89	11.83 S	6.28 W	-6.36	0.34
1300.00	0.53	141.20	1,299.88	12.83 S	6.03 W	-6.11	0.49
1400.00	0.37	98.95	1,399.88	13.24 S	5.42 W	-5.50	0.36
1500.00	0.66	83.47	1,499.87	13.22 S	4.53 W	-4.61	0.32
1600.00	1.00	67.98	1,599.86	12.83 S	3.15 W	-3.23	0.40
1700.00	1.16	68.64	1,699.85	12.13 S	1.39 W	-1.47	0.16
1800.00	1.24	69.29	1,799.82	11.38 S	0.56 E	0.49	0.08
1900.00	1.54	66.58	1,899.79	10.47 S	2.81 E	2.74	0.31
2000.00	1.79	65.86	1,999.75	9.29 S	5.46 E	5.40	0.25
2100.00	1.93	66.45	2,099.70	7.98 S	8.43 E	8.38	0.14
2200.00	2.03	69.04	2,199.64	6.68 S	11.63 E	11.59	0.13
2300.00	1.87	71.22	2,299.58	5.52 S	14.83 E	14.79	0.18
2400.00	1.64	73.40	2,399.53	4.58 S	17.74 E	17.71	0.24
2500.00	1.30	79.01	2,499.50	3.96 S	20.23 E	20.20	0.37
2600.00	0.95	84.62	2,599.48	3.66 S	22.17 E	22.14	0.37
2700.00	0.78	84.39	2,699.47	3.52 S	23.67 E	23.65	0.17
2800.00	0.57	84.16	2,799.46	3.40 S	24.84 E	24.82	0.21
2900.00	0.73	81.87	2,899.46	3.26 S	25.97 E	25.95	0.16
3000.00	0.86	79.57	2,999.45	3.04 S	27.34 E	27.32	0.13
3100.00	0.82	65.83	3,099.44	2.61 S	28.73 E	28.71	0.20
3200.00	0.77	52.10	3,199.43	1.90 S	29.91 E	29.90	0.20
3300.00	0.87	44.40	3,299.42	0.95 S	30.97 E	30.97	0.15
3400.00	0.96	36.69	3,399.40	0.27 N	32.00 E	32.01	0.15
3500.00	0.90	23.28	3,499.39	1.66 N	32.82 E	32.83	0.23
3600.00	0.84	24.88	3,599.38	3.05 N	33.43 E	33.45	0.06
3700.00	1.00	26.74	3,699.37	4.49 N	34.14 E	34.16	0.16
3800.00	1.15	28.61	3,799.35	6.15 N	35.01 E	35.05	0.15
3900.00	1.11	26.86	3,899.33	7.90 N	35.93 E	35.98	0.05
4000.00	1.07	25.11	3,999.31	9.61 N	36.76 E	36.82	0.05

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100)
4100.00	1.09	23.72	4,099.29	11.32 N	37.54 E	37.61	0.03
4200.00	1.06	22.33	4,199.28	13.05 N	38.27 E	38.36	0.04
4300.00	0.87	21.92	4,299.26	14.61 N	38.91 E	39.00	0.19
4400.00	0.69	18.50	4,399.25	15.89 N	39.38 E	39.48	0.19
4500.00	0.79	17.22	4,499.24	17.11 N	39.78 E	39.89	0.10
4600.00	0.85	15.94	4,599.23	18.49 N	40.19 E	40.30	0.06
4700.00	0.86	14.97	4,699.22	19.92 N	40.58 E	40.71	0.02
4800.00	0.77	14.01	4,799.21	21.30 N	40.94 E	41.08	0.09
4900.00	0.84	4.43	4,899.20	22.68 N	41.16 E	41.30	0.15
5000.00	0.91	354.84	4,999.19	24.21 N	41.14 E	41.30	0.16
5100.00	0.81	4.51	5,099.18	25.70 N	41.13 E	41.29	0.18
5200.00	0.70	4.17	5,199.17	27.02 N	41.23 E	41.40	0.11
5300.00	0.81	348.62	5,299.16	28.32 N	41.13 E	41.32	0.23
5400.00	0.92	343.07	5,399.15	29.78 N	40.76 E	40.95	0.14
5500.00	0.79	342.32	5,499.14	31.20 N	40.32 E	40.52	0.13
5600.00	0.69	341.56	5,599.13	32.43 N	39.92 E	40.13	0.10
5700.00	0.74	350.80	5,699.12	33.64 N	39.62 E	39.84	0.13
5800.00	0.83	5.04	5,799.12	35.00 N	39.58 E	39.81	0.21
5900.00	0.74	3.61	5,899.11	36.36 N	39.69 E	39.92	0.09
6000.00	0.64	1.19	5,999.10	37.57 N	39.74 E	39.98	0.10
6100.00	0.74	0.96	6,099.09	38.77 N	39.76 E	40.01	0.10
6200.00	0.85	4.74	6,199.08	40.16 N	39.84 E	40.09	0.12
6300.00	0.90	7.22	6,299.07	41.68 N	40.00 E	40.26	0.06
6400.00	0.86	7.71	6,399.06	43.20 N	40.19 E	40.47	0.04
6500.00	0.72	7.28	6,499.05	44.56 N	40.37 E	40.66	0.14
6600.00	0.53	6.86	6,599.04	45.65 N	40.51 E	40.80	0.19
6700.00	0.59	7.19	6,699.04	46.62 N	40.63 E	40.93	0.06
6800.00	0.59	9.51	6,799.03	47.64 N	40.78 E	41.09	0.02
6900.00	0.52	13.50	6,899.03	48.58 N	40.97 E	41.28	0.08
6955.00	0.57	15.76	6,954.03	49.09 N	41.10 E	41.42	0.10
6975.00	0.64	7.55	6,974.02	49.30 N	41.14 E	41.46	0.56
7000.00	0.65	3.70	6,999.02	49.58 N	41.17 E	41.49	0.18
7025.00	0.65	3.00	7,024.02	49.86 N	41.19 E	41.51	0.03
7050.00	0.69	7.35	7,049.02	50.15 N	41.21 E	41.54	0.26
7075.00	0.79	4.86	7,074.02	50.47 N	41.25 E	41.57	0.42
7100.00	0.71	3.29	7,099.02	50.80 N	41.27 E	41.60	0.33
7125.00	0.72	357.48	7,124.01	51.11 N	41.27 E	41.60	0.29
7150.00	0.68	0.81	7,149.01	51.42 N	41.27 E	41.60	0.23
7175.00	0.77	350.71	7,174.01	51.73 N	41.24 E	41.58	0.62
7200.00	0.92	319.98	7,199.01	52.05 N	41.09 E	41.42	1.88
7225.00	1.62	292.65	7,224.00	52.34 N	40.63 E	40.97	3.63
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7275.00	3.72	279.57	7,273.94	52.89 N	38.38 E	38.72	4.31
7300.00	4.70	278.22	7,298.88	53.17 N	36.56 E	36.91	3.94
7325.00	5.28	276.11	7,323.78	53.44 N	34.41 E	34.75	2.43

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
7350.00	5.43	275.47	7,348.67	53.68 N	32.08 E	32.43	0.65
7375.00	5.41	274.65	7,373.56	53.88 N	29.73 E	30.08	0.32
7400.00	5.66	274.66	7,398.44	54.08 N	27.33 E	27.68	1.00
7425.00	5.70	274.74	7,423.32	54.28 N	24.86 E	25.21	0.16
7450.00	5.66	270.95	7,448.20	54.41 N	22.39 E	22.74	1.51
7475.00	5.77	269.20	7,473.07	54.41 N	19.90 E	20.26	0.82
7500.00	6.31	264.87	7,497.94	54.27 N	17.28 E	17.63	2.82
7525.00	7.25	260.97	7,522.76	53.90 N	14.35 E	14.70	4.18
7550.00	7.97	259.17	7,547.54	53.32 N	11.09 E	11.44	3.03
7575.00	9.03	256.05	7,572.27	52.53 N	7.49 E	7.83	4.62
7600.00	9.75	254.34	7,596.93	51.48 N	3.54 E	3.88	3.09
7625.00	10.50	251.68	7,621.54	50.19 N	0.66 W	-0.33	3.53
7650.00	11.54	247.93	7,646.08	48.54 N	5.14 W	-4.82	5.05
7675.00	12.12	245.90	7,670.55	46.53 N	9.85 W	-9.55	2.86
7700.00	12.31	244.44	7,694.98	44.31 N	14.65 W	-14.36	1.45
7725.00	12.39	243.04	7,719.40	41.94 N	19.45 W	-19.17	1.24
7750.00	12.45	242.45	7,743.82	39.48 N	24.23 W	-23.97	0.56
7775.00	12.29	240.87	7,768.24	36.94 N	28.94 W	-28.70	1.50
7800.00	12.11	239.97	7,792.67	34.33 N	33.53 W	-33.31	1.05
7825.00	11.81	238.68	7,817.13	31.69 N	37.99 W	-37.78	1.61
7850.00	11.59	237.85	7,841.61	29.02 N	42.30 W	-42.11	1.11
7875.00	11.49	237.41	7,866.11	26.34 N	46.52 W	-46.35	0.53
7900.00	11.30	237.62	7,890.61	23.69 N	50.69 W	-50.54	0.78
7925.00	10.92	237.47	7,915.15	21.10 N	54.76 W	-54.62	1.52
7950.00	10.79	239.88	7,939.70	18.66 N	58.78 W	-58.66	1.89
7975.00	11.11	246.10	7,964.24	16.51 N	63.00 W	-62.90	4.89
7993.00	10.78	250.09	7,981.92	15.23 N	66.17 W	-66.07	4.59

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- Horizontal displacement (closure) at 7,993.00 feet is 67.90 feet along 282.96 degrees (Grid)

TIE-ON SURVEY ASSUMED VERTICAL AT SURFACE.

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SPERRY DRILLING ENGINEERS: PAUL WHITE, LAKENDRICK SMITH

WARRANTY

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