

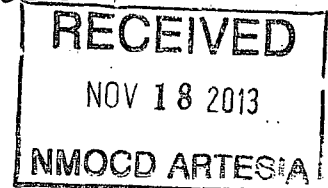


A GYRO TECHNOLOGIES INC. COMPANY

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

June 12, 2013

30-015-40357



Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: DODD FEDERAL UNIT NO. 900H

Please find enclosed a copy of the survey from 0.00' to 3998.00' ran on the above referenced well.

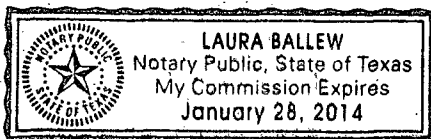
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 12th day of June, A.D., 2013, by Keith Havelka.

Laura Ballew
Notary Public, State of Texas



Company: COG OPERATING LLC (CONCHO)

Lease/Well: DODD FEDERAL UNIT /900H



Rig Name: SILVER OAK #3

State/County: NEW MEXICO/EDDY

Latitude: 32.86, Longitude: -104.07

GRID North is 0.14 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB=17'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyrododdfed900h.ut

Minimum Curvature Method

Report Date/Time: 6/12/2013 / 14:19

Vaughn Energy Services

Conway, Ark

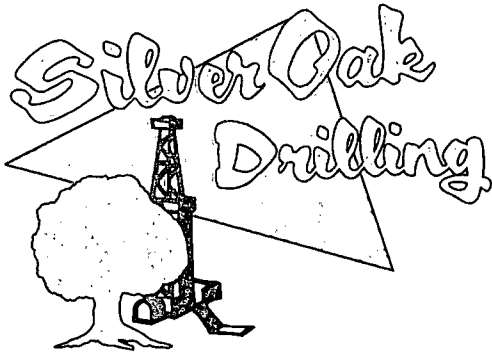
501-730-0602

Surveyor: Michael Komarek

DODD FEDERAL UNIT NO. 900H / API 30-015-40357

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	0.35	92.17	100.00	-0.01	0.31	-0.01	0.31	92.17	0.35
200.00	0.93	125.77	199.99	-0.50	1.28	-0.50	1.37	111.35	0.67
300.00	0.96	123.53	299.98	-1.43	2.63	-1.43	3.00	118.60	0.04
400.00	0.92	122.98	399.97	-2.33	4.00	-2.33	4.63	120.25	0.04
500.00	1.17	107.75	499.95	-3.08	5.64	-3.08	6.43	118.62	0.37
600.00	1.19	93.24	599.93	-3.45	7.65	-3.45	8.39	114.26	0.30
700.00	1.10	88.96	699.91	-3.49	9.65	-3.49	10.26	109.88	0.12
800.00	0.84	87.17	799.89	-3.44	11.34	-3.44	11.85	106.85	0.26
900.00	0.77	93.63	899.88	-3.44	12.75	-3.44	13.21	105.10	0.11
1000.00	0.61	94.48	999.88	-3.53	13.96	-3.53	14.40	104.18	0.17
1100.00	0.38	111.11	1099.87	-3.69	14.80	-3.69	15.25	103.99	0.26
1200.00	0.39	145.84	1199.87	-4.09	15.30	-4.09	15.84	104.96	0.23
1300.00	0.29	147.70	1299.87	-4.58	15.63	-4.58	16.29	106.35	0.10
1400.00	0.25	148.42	1399.87	-4.99	15.88	-4.99	16.64	107.43	0.04
1500.00	0.22	104.01	1499.87	-5.22	16.18	-5.22	17.00	107.88	0.18
1600.00	0.23	68.66	1599.87	-5.19	16.55	-5.19	17.34	107.42	0.14
1700.00	0.17	60.87	1699.87	-5.05	16.87	-5.05	17.60	106.66	0.06
1800.00	0.19	83.27	1799.87	-4.95	17.16	-4.95	17.86	106.10	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
1900.00	0.14	59.76	1899.87	-4.87	17.43	-4.87	18.10	105.62	0.08
2000.00	0.02	144.48	1999.86	-4.83	17.55	-4.83	18.20	105.38	0.14
2100.00	0.21	234.30	2099.86	-4.95	17.41	-4.95	18.10	105.88	0.22
2200.00	0.46	242.92	2199.86	-5.24	16.89	-5.24	17.69	107.24	0.25
2300.00	0.60	241.00	2299.86	-5.68	16.07	-5.68	17.05	109.48	0.14
2400.00	0.69	244.98	2399.85	-6.19	15.07	-6.19	16.29	112.34	0.09
2500.00	0.74	241.46	2499.84	-6.76	13.95	-6.76	15.50	115.84	0.07
2600.00	0.74	224.13	2599.84	-7.53	12.94	-7.53	14.97	120.19	0.22
2700.00	0.69	233.29	2699.83	-8.35	12.01	-8.35	14.62	124.82	0.12
2800.00	0.55	235.66	2799.82	-8.98	11.13	-8.98	14.30	128.90	0.15
2900.00	0.49	239.74	2899.82	-9.46	10.36	-9.46	14.04	132.40	0.06
3000.00	0.37	233.22	2999.82	-9.88	9.73	-9.88	13.87	135.43	0.13
3100.00	0.46	231.56	3099.81	-10.32	9.16	-10.32	13.80	138.42	0.08
3200.00	0.34	244.73	3199.81	-10.70	8.58	-10.70	13.71	141.28	0.15
3300.00	0.30	262.51	3299.81	-10.86	8.05	-10.86	13.51	143.46	0.11
3400.00	0.32	257.95	3399.81	-10.95	7.51	-10.95	13.28	145.54	0.03
3500.00	0.35	265.61	3499.81	-11.03	6.93	-11.03	13.03	147.85	0.06
3600.00	0.34	243.56	3599.80	-11.19	6.36	-11.19	12.87	150.39	0.13
3700.00	0.32	272.89	3699.80	-11.31	5.81	-11.31	12.71	152.78	0.17
3800.00	0.20	277.78	3799.80	-11.27	5.36	-11.27	12.48	154.55	0.11
3900.00	0.30	259.75	3899.80	-11.29	4.93	-11.29	12.32	156.43	0.13
3998.00	0.23	236.33	3997.80	-11.45	4.51	-11.45	12.30	158.52	0.13



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

June 17, 2013

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Dodd Federal Unit #900H
350' FNL & 1475' FWL
Sec. 10, T17S, R29E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

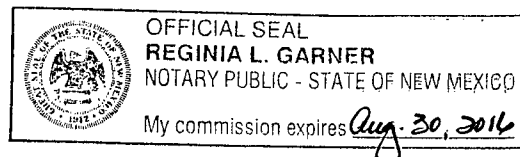
A handwritten signature in cursive script, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 17th day of June, 2013.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public

Dodd Federal Unit #900H

Date	Depth	Dev/Incl	Dir/Azm
6/1/2013	84	0.10	
6/1/2013	195	0.70	
6/2/2013	447	1.40	
6/2/2013	569	1.00	
6/3/2013	810	1.10	
6/3/2013	1053	1.00	
6/3/2013	1296	0.40	
6/5/2013	1759	1.00	
6/5/2013	2260	0.70	
6/6/2013	2728	0.50	
6/6/2013	3228	0.70	
6/6/2013	3730	0.30	
6/8/2013	4092	0.53	146.41
6/8/2013	4123	1.39	106.85
6/8/2013	4154	3.56	102.94
6/8/2013	4217	9.55	104.27
6/8/2013	4248	12.81	107.69
6/8/2013	4280	16.34	108.04
6/8/2013	4312	19.65	107.94
6/8/2013	4343	23.47	108.07
6/8/2013	4468	35.80	112.82
6/8/2013	4500	39.00	113.34
6/8/2013	4531	42.11	113.42
6/8/2013	4567	45.19	112.62
6/8/2013	4594	48.43	111.42
6/8/2013	4625	51.40	112.46
6/8/2013	4656	53.94	112.02
6/8/2013	4688	56.24	111.18
6/9/2013	4812	66.09	111.03
6/9/2013	4843	69.03	110.18
6/9/2013	4875	72.79	109.60
6/9/2013	4906	77.52	108.89
6/9/2013	4970	85.40	108.79
6/9/2013	5001	87.84	1001.24
6/9/2013	5032	88.58	108.47
6/9/2013	5063	88.15	108.35
6/10/2013	5219	90.92	104.98
6/10/2013	5251	91.14	104.52
6/10/2013	5282	92.31	103.33
6/10/2013	5407	90.74	96.57
6/10/2013	5439	90.75	95.00
6/10/2013	5470	90.15	93.81
6/10/2013	5501	84.72	93.11

Date	Depth	Dev/Incl	Dir/Azm
6/10/2013	5532	89.45	91.44
6/10/2013	5564	90.19	90.21
6/10/2013	5595	91.48	88.41
6/10/2013	5626	90.99	87.39
6/10/2013	5657	91.08	85.80
6/11/2013	5876	87.44	84.04
6/11/2013	5907	90.37	83.47
6/11/2013	5938	89.94	83.93
6/11/2013	6001	90.71	84.28
6/11/2013	6095	91.85	84.85
6/11/2013	6188	90.89	84.92
6/11/2013	6281	91.20	85.16
6/11/2013	6374	91.66	85.80
6/11/2013	6468	91.30	86.16
6/12/2013	6563	90.55	85.55
6/12/2013	6656	91.51	85.48
6/12/2013	6750	90.95	85.54
6/12/2013	6843	91.26	86.29
6/12/2013	6936	92.03	85.67
6/12/2013	7030	91.85	85.57
6/12/2013	7123	91.36	85.74
6/13/2013	7216	91.42	84.69
6/13/2013	7310	91.20	84.58
6/13/2013	7403	90.49	84.76
6/13/2013	7497	91.57	84.21
6/13/2013	7591	91.42	84.45
6/13/2013	7686	90.80	84.52
6/14/2013	7779	90.92	83.42
6/14/2013	7873	92.19	83.76
6/14/2013	7967	92.28	84.14
6/14/2013	8061	91.82	84.03

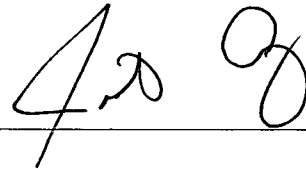
HALLIBURTON

3950 Interwood S. Parkway • Houston, TX 77032

PHONE 281.986.4400 • FAX 281.986.4499

State of New Mexico, Eddy County

I, Jonathan Curry, certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling Services) and that on the dates of 6-June-13 through 14-June-13, I did conduct or supervise the taking of DWD directional surveys for the Dodd Federal Unit 900H well from a depth of 4061' MD to a depth of 8092' MD. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling). I am authorized and qualified to make this report and these surveys were conducted at the request of COG Operating LLC for the Dodd Federal Unit 900H, API No. 30-015-40357-00-X1 in Eddy County, NM. 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 Services).



Field Engineer

COG Operating, LLC.
Dodd Federal Unit 900 H
Eddy County, NM
Silver Oak #3
API# 30-015-40357-00-X1

June 6, 2013 – June 14, 2013
HD-MJ-900461329

Sperry Drilling
MWD Survey Report

Submitted by JONATHAN CURRY
3950 Interwood S. Pkwy. Houston Texas 77032
Ph: 281.986.4400

HALLIBURTON

Drilling and Formation
Evaluation



Survey Report for COG Operating, LLC

Rig : Silver Oak #3
Well Name : Dodd Federal Unit 900H
Field Name : Dodd - Glorieta -Upper Yeso
Country : USA
Job Number : HD-XX-0900461329
Job Start Date : 06-Jun-13
API Number : 30-015-40357-00-X1



TABLE OF CONTENTS

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')
100.00	0.35	92.17	100.00	0.01 S	0.31 E	0.31	0.35
200.00	0.93	125.77	199.99	0.50 S	1.27 E	1.28	0.67
300.00	0.96	123.53	299.98	1.43 S	2.63 E	2.66	0.05
400.00	0.92	122.98	399.97	2.33 S	4.00 E	4.06	0.04
500.00	1.17	107.75	499.95	3.08 S	5.64 E	5.72	0.37
600.00	1.19	93.24	599.93	3.45 S	7.65 E	7.74	0.30
700.00	1.10	88.96	699.91	3.49 S	9.65 E	9.74	0.12
800.00	0.84	87.17	799.89	3.44 S	11.34 E	11.43	0.26
900.00	0.77	93.63	899.88	3.45 S	12.74 E	12.83	0.11
1000.00	0.61	94.48	999.88	3.53 S	13.94 E	14.03	0.16
1100.00	0.38	111.11	1,099.87	3.69 S	14.78 E	14.88	0.27
1200.00	0.39	145.84	1,199.87	4.09 S	15.29 E	15.39	0.23
1300.00	0.29	147.70	1,299.87	4.59 S	15.61 E	15.73	0.10
1400.00	0.25	148.42	1,399.87	4.99 S	15.86 E	15.99	0.04
1500.00	0.22	104.01	1,499.87	5.22 S	16.16 E	16.30	0.18
1600.00	0.23	68.66	1,599.87	5.19 S	16.53 E	16.67	0.14
1700.00	0.17	60.87	1,699.87	5.05 S	16.85 E	16.98	0.07
1800.00	0.19	83.27	1,799.87	4.96 S	17.15 E	17.27	0.07
1900.00	0.14	59.76	1,899.87	4.88 S	17.42 E	17.54	0.08
2000.00	0.02	144.48	1,999.87	4.83 S	17.53 E	17.65	0.14
2100.00	0.21	234.30	2,099.87	4.95 S	17.39 E	17.52	0.21
2200.00	0.46	242.92	2,199.86	5.24 S	16.89 E	17.02	0.25
2300.00	0.60	241.00	2,299.86	5.68 S	16.07 E	16.22	0.14
2400.00	0.69	244.98	2,399.85	6.18 S	15.07 E	15.23	0.10
2500.00	0.74	241.46	2,499.85	6.75 S	13.95 E	14.13	0.07
2600.00	0.74	224.13	2,599.84	7.52 S	12.94 E	13.14	0.22
2700.00	0.69	233.29	2,699.83	8.34 S	12.01 E	12.23	0.12
2800.00	0.55	235.66	2,799.82	8.97 S	11.13 E	11.36	0.14
2900.00	0.49	239.74	2,899.82	9.46 S	10.36 E	10.61	0.07
3000.00	0.37	233.22	2,999.82	9.87 S	9.79 E	9.99	0.13
3100.00	0.46	231.56	3,099.81	10.31 S	9.16 E	9.43	0.09
3200.00	0.34	244.73	3,199.81	10.69 S	8.58 E	8.86	0.15
3300.00	0.30	262.51	3,299.81	10.85 S	8.05 E	8.34	0.11
3400.00	0.32	257.95	3,399.81	10.94 S	7.52 E	7.81	0.03
3500.00	0.35	265.61	3,499.81	11.02 S	6.94 E	7.23	0.05
3600.00	0.34	243.56	3,599.80	11.18 S	6.37 E	6.67	0.13
3700.00	0.32	272.89	3,699.80	11.30 S	5.82 E	6.13	0.17
3800.00	0.20	277.78	3,799.80	11.26 S	5.37 E	5.67	0.12
3900.00	0.30	259.75	3,899.80	11.28 S	4.94 E	5.24	0.13
3998.00	0.23	236.33	3,997.80	11.44 S	4.53 E	4.83	0.13
4061.00	0.15	146.41	4,060.80	11.58 S	4.47 E	4.78	0.44



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100)
4092.00	0.53	253.69	4,091.80	11.65 S	4.35 E	4.66	1.91
4123.00	1.39	106.85	4,122.80	11.80 S	4.58 E	4.89	5.98
4154.00	3.56	102.94	4,153.77	12.13 S	5.87 E	6.20	7.02
4186.00	6.38	103.13	4,185.64	12.75 S	8.57 E	8.91	8.81
4217.00	9.55	104.27	4,216.34	13.78 S	12.75 E	13.11	10.24
4249.00	12.81	107.69	4,247.73	15.51 S	18.70 E	19.11	10.40
4281.00	16.34	108.04	4,278.69	17.98 S	26.36 E	26.84	11.03
4312.00	19.65	107.94	4,308.17	20.94 S	35.47 E	36.02	10.68
4343.00	23.47	108.07	4,337.00	24.46 S	46.30 E	46.94	12.33
4374.00	26.71	110.17	4,365.07	28.78 S	58.72 E	59.47	10.82
4405.00	30.33	111.40	4,392.30	34.04 S	72.55 E	73.44	11.84
4437.00	32.96	112.62	4,419.54	40.34 S	88.11 E	89.16	8.45
4468.00	35.89	112.82	4,445.11	47.11 S	104.27 E	105.50	9.45
4500.00	39.00	113.34	4,470.51	54.74 S	122.17 E	123.60	9.76
4531.00	42.11	113.42	4,494.06	62.74 S	140.67 E	142.30	10.04
4562.00	45.19	112.62	4,516.49	71.10 S	160.36 E	162.21	10.10
4594.00	48.47	111.92	4,538.38	79.94 S	181.96 E	184.04	10.37
4625.00	51.40	112.46	4,558.33	88.90 S	203.92 E	206.24	9.52
4656.00	53.94	112.02	4,577.13	98.23 S	226.73 E	229.29	8.29
4688.00	56.24	111.18	4,595.44	107.89 S	251.13 E	253.94	7.52
4719.00	58.52	111.37	4,612.15	117.36 S	275.46 E	278.52	7.35
4750.00	61.09	112.24	4,627.74	127.31 S	300.33 E	303.65	8.63
4781.00	63.80	111.99	4,642.08	137.66 S	325.79 E	329.38	8.79
4812.00	66.09	111.03	4,655.21	147.95 S	351.92 E	355.77	7.90
4843.00	69.03	110.18	4,667.04	158.03 S	378.74 E	382.85	9.82
4875.00	72.79	109.60	4,677.50	168.32 S	407.17 E	411.55	11.88
4906.00	77.52	108.89	4,685.44	178.19 S	435.45 E	440.08	15.40
4938.00	81.73	108.47	4,691.21	188.26 S	465.27 E	470.16	13.22
4970.00	85.40	108.79	4,694.79	198.42 S	495.39 E	500.55	11.52
5001.00	87.84	109.21	4,696.62	208.50 S	524.65 E	530.06	7.99
5032.00	88.58	108.42	4,697.58	218.49 S	553.98 E	559.65	3.48
5063.00	88.15	108.35	4,698.47	228.26 S	583.38 E	589.31	1.41
5095.00	88.15	107.27	4,699.50	238.04 S	613.84 E	620.01	3.35
5126.00	88.37	106.19	4,700.44	246.96 S	643.51 E	649.91	3.57
5157.00	88.71	106.46	4,701.23	255.67 S	673.25 E	679.88	1.40
5188.00	89.88	105.46	4,701.62	264.19 S	703.05 E	709.90	4.96
5219.00	90.92	104.98	4,701.40	272.33 S	732.96 E	740.02	3.72
5251.00	91.14	104.52	4,700.82	280.48 S	763.90 E	771.16	1.58
5282.00	92.31	103.33	4,699.89	287.94 S	793.98 E	801.43	5.38
5314.00	92.65	101.66	4,698.50	294.86 S	825.19 E	832.81	5.33
5345.00	92.77	99.99	4,697.04	300.67 S	855.60 E	863.37	5.38
5376.00	91.79	98.23	4,695.80	305.58 S	886.18 E	894.08	6.52
5407.00	90.74	96.57	4,695.12	309.57 S	916.92 E	924.91	6.32
5439.00	90.25	95.00	4,694.84	312.80 S	948.75 E	956.81	5.14
5470.00	90.15	93.81	4,694.73	315.18 S	979.66 E	987.78	3.86



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (N)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
5501.00	89.72	93.11	4,694.77	317.05 S	1,010.60 E	1018.76	2.66
5532.00	89.45	91.44	4,694.99	318.28 S	1,041.58 E	1049.75	5.43
5564.00	90.19	90.21	4,695.10	318.74 S	1,073.57 E	1081.75	4.49
5595.00	91.48	88.41	4,694.65	318.37 S	1,104.56 E	1112.72	7.15
5626.00	90.99	87.39	4,693.98	317.23 S	1,135.54 E	1143.65	3.66
5657.00	91.08	85.80	4,693.42	315.39 S	1,166.47 E	1174.53	5.15
5688.00	90.89	85.41	4,692.89	313.02 S	1,197.38 E	1205.36	1.39
5720.00	90.80	84.38	4,692.42	310.17 S	1,229.25 E	1237.14	3.21
5751.00	90.59	83.89	4,692.04	307.00 S	1,260.08 E	1267.88	1.73
5782.00	90.52	83.34	4,691.74	303.56 S	1,290.89 E	1298.58	1.78
5813.00	90.15	83.73	4,691.55	300.07 S	1,321.69 E	1329.28	1.74
5845.00	90.12	83.75	4,691.48	296.58 S	1,353.50 E	1360.98	0.11
5876.00	89.44	84.04	4,691.59	293.28 S	1,384.33 E	1391.71	2.39
5907.00	90.37	83.47	4,691.64	289.91 S	1,415.14 E	1422.42	3.51
5938.00	89.94	83.93	4,691.56	286.51 S	1,445.95 E	1453.13	2.04
5970.00	90.59	84.13	4,691.41	283.18 S	1,477.78 E	1484.86	2.11
6001.00	90.71	84.28	4,691.06	280.05 S	1,508.62 E	1515.60	0.63
6095.00	91.85	84.85	4,688.97	271.14 S	1,602.17 E	1608.88	1.35
6188.00	90.89	84.92	4,686.75	262.85 S	1,694.77 E	1701.22	1.03
6281.00	91.20	85.16	4,685.05	254.81 S	1,787.41 E	1793.61	0.42
6374.00	91.66	85.80	4,682.72	247.48 S	1,880.09 E	1886.06	0.85
6468.00	91.30	86.16	4,680.29	240.89 S	1,973.83 E	1979.59	0.55
6562.00	90.55	85.55	4,678.78	234.09 S	2,067.57 E	2073.11	1.02
6656.00	91.51	85.48	4,677.08	226.74 S	2,161.26 E	2166.57	1.02
6750.00	90.95	85.54	4,675.06	219.38 S	2,254.95 E	2260.03	0.59
6843.00	91.26	86.29	4,673.26	212.75 S	2,347.70 E	2352.57	0.87
6936.00	92.03	85.67	4,670.58	206.23 S	2,440.43 E	2445.09	1.06
7030.00	91.85	85.57	4,667.40	199.05 S	2,534.10 E	2538.53	0.23
7123.00	91.36	85.74	4,664.80	192.01 S	2,626.80 E	2631.01	0.56
7216.00	91.42	84.69	4,662.55	184.26 S	2,719.44 E	2723.41	1.13
7310.00	91.20	84.58	4,660.40	175.47 S	2,813.01 E	2816.71	0.26
7403.00	90.49	84.76	4,659.03	166.84 S	2,905.59 E	2909.03	0.79
7497.00	91.57	84.21	4,657.33	157.80 S	2,999.14 E	3002.30	1.29
7591.00	91.42	84.45	4,654.88	148.52 S	3,092.65 E	3095.53	0.31
7686.00	90.80	84.52	4,653.04	139.39 S	3,187.19 E	3189.79	0.65
7779.00	90.92	83.42	4,651.64	129.63 S	3,279.67 E	3281.97	1.18
7873.00	92.19	83.76	4,649.08	119.14 S	3,373.04 E	3375.03	1.39
7967.00	92.28	84.14	4,645.42	109.24 S	3,466.45 E	3468.13	0.42
8061.00	91.82	84.03	4,642.06	99.56 S	3,559.89 E	3561.28	0.50
8092.00	91.66	84.02	4,641.12	96.33 S	3,590.70 E	3592.00	0.51
8161.00	91.66	84.02	4,639.12	89.14 S	3,659.30 E	3660.37	0.01

SURVEY FOOTER

SURVEYS CALCULATED USING THE LONG COLLAR METHOD.

WELL ASSUMED VERTICAL AT WELLHEAD.

SURVEYS FROM 100' MD TO 3998' MD PROVIDED BY VAUGHN ENERGY SERVICES.

SURVEY FOOTER

SURVEYS FROM 4061' MD TO 8092' MD PROVIDED BY SPERRY DRILLING SERVICES.
 SURVEY AT 8092' MD IS PROJECTED TO TD AT 8161' MD.
 SPERRY DRILLING ENGINEERS: JONATHAN CURRY, KEVIN STOLARSKI.

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 91.54 degrees (Grid)
- A total correction of 7.59 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 8,161.00 feet is 3,660.39 feet along 91.40 degrees (Grid)

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| Sperry Drilling



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