



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

30-015-39726

DEVON ENERGY

RIGEL 20 FED COM #4H

EDDY COUNTY, NEW MEXICO

PREPARED BY: JUAN ALCOCER

Pathfinder

6213 WCR, 112
Midland, Texas, 79706
Tel. (432)687-1647
Fax (432)687-1544



April 12, 2012

Devon Energy
20 N. Broadway
Oklahoma City, OK

RE: Devon Energy
Rigel 20 Fed Com #4H
API: 30-015-39726
Eddy County, NM
RIG: H&P 300
FIELD: Hackberry, Bone Spring, NW
PES FILE NO.: 12MLD0090

To whom it may concern:

We hereby certify that the enclosed Original Field Survey Data contained in this report represents to the best of our knowledge, a true and accurate survey of the well at the time the survey was run.

DIRECTIONAL SURVEY DATA
1 – Original survey report
2 – Survey report copies

We appreciate the opportunity to work with you and we look forward to your business support. If you have any questions, I can be reached at (432) 687-1647

Sincerely,


JUAN ALCOCER
M/LWD Service Coordinator
PathFinder Energy Services

ML:sh

Pathfinder

6213 WCR. 112
Midland, Texas. 79705
Tel. (432)687-1647
Fax (432)687-1544



DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) ALEX CASTILLO
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 03-15-12 TO 03-20-12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: GAMMA-RAY
8. COMPLETE IDENTIFICATION OF WELL:

DEVON ENERGY
RIGEL 20 FEDERAL COM #4H
EDDY COUNTY, NM
RIG: H&P 300

9. SURVEY CERTIFIED FROM: 8263 TO 13727 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4805.04 FEET ON A BEARING OF 105.79 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 13807 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



JUAN ALCOCER
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 03/14/2012
Date Completed: 03/20/2012

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
HACKBERRY; (BONE SPRING, NW)
Rig:H & P 300
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: ALEX CASTILLO
MIKE SAKAS

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.38.36.3866 N LON: 103.53.56.0965 W
GRID Reference: NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 675053.4100 Y: 598088.0900
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.44° EAST TO GRID
Vertical Section Plane: 105.94
Survey Vert. Reference: 26.00' Rotary Table To Ground
Altitude: 3406.20' Ground To MSL

Measured Depth	13807.00	(feet)
Inclination	88.29	(deg)
Azimuth	87.95	(deg)
True Vertical Depth	8954.11	(feet)
Vertical Section	4805.03	(feet)
Survey X cord	679677.23	(feet)
Survey Y cord	596780.91	(feet)
Survey Lat	32.63979488 N	(deg)
Survey Lon	103.88391215 W	(deg)
Rectangular Corr. N/S	1307.18 S	(feet)
Rectangular Corr. E/W	4623.82 E	(feet)
Closure Distance	4805.04	(feet)
Direction of Closure	105.79	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
Rig:H & P 300
PathFinder Office Supervisor: STEVE BIBB
PathFinder Field Engineers: ALEX CASTILLO
MIKE SAKAS

Page 01/06
Tie-in Date: 03/14/2012
Date Completed: 03/20/2012

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.38.36.3866 N LON:103.53.56.0965 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 675053.4100 Y: 598088.0900
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.44° EAST TO GRID
Vertical Section Plane: 105.94
Survey Vert. Reference: 26.00' Rotary Table To Ground
Altitude:3406.20' Ground To MSL

Survey Calculations by RX5 V6.04 using Minimum Curvature

Measured Depth (ft)	Incl	Drift	TVD	Course	Vertical	TOTAL		Closure		DLS
	(deg)	Dir. (deg)	(ft)	Length (ft)	Section (ft)	Rectangular (ft)	Offsets (ft)	Dist (ft)	Dir (deg)	
THE FOLLOWING ARE VAUGHN ENERGY SERVICE GYRO SURVEYS.										
0.00	0.00	0.00	0.00	0.00	-0.00	0.00 S	0.01 W	0.01@	232.93	0.00
100.00	0.57	36.87	100.00	100.00	0.17	0.39 N	0.29 E	0.49@	36.66	0.57
200.00	1.14	73.73	199.99	100.00	1.19	1.07 N	1.55 E	1.88@	55.31	0.76
300.00	1.97	75.98	299.95	100.00	3.52	1.77 N	4.17 E	4.53@	67.05	0.83
400.00	2.81	78.22	399.86	100.00	7.18	2.68 N	8.24 E	8.66@	71.96	0.85
500.00	2.36	78.93	499.76	100.00	11.19	3.58 N	12.66 E	13.15@	74.21	0.45
600.00	1.92	79.63	599.69	100.00	14.52	4.28 N	16.33 E	16.88@	75.32	0.44
700.00	1.68	80.12	699.64	100.00	17.34	4.83 N	19.42 E	20.01@	76.04	0.24
800.00	1.43	80.61	799.61	100.00	19.79	5.28 N	22.09 E	22.72@	76.55	0.25
900.00	1.52	82.80	899.57	100.00	22.14	5.65 N	24.64 E	25.28@	77.08	0.11
1000.00	1.61	84.98	999.53	100.00	24.67	5.94 N	27.35 E	27.99@	77.74	0.11
1100.00	2.05	81.68	1099.48	100.00	27.61	6.32 N	30.52 E	31.17@	78.29	0.45
1200.00	2.49	78.37	1199.40	100.00	31.17	7.02 N	34.42 E	35.13@	78.47	0.46
1300.00	2.89	77.84	1299.29	100.00	35.32	7.99 N	39.01 E	39.82@	78.43	0.40
1400.00	3.28	77.30	1399.15	100.00	40.05	9.15 N	44.27 E	45.20@	78.32	0.39
1500.00	3.35	76.14	1498.98	100.00	45.10	10.48 N	49.90 E	50.98@	78.14	0.10
1600.00	3.42	74.97	1598.81	100.00	50.19	11.95 N	55.61 E	56.88@	77.87	0.10
1700.00	3.38	71.91	1698.63	100.00	55.19	13.64 N	61.30 E	62.80@	77.45	0.19
1800.00	3.35	68.84	1798.46	100.00	59.97	15.61 N	66.82 E	68.62@	76.85	0.18
1900.00	2.63	67.26	1898.32	100.00	64.09	17.55 N	71.66 E	73.78@	76.24	0.72
2000.00	1.92	65.69	1998.24	100.00	67.16	19.13 N	75.31 E	77.70@	75.75	0.71
2100.00	1.54	61.31	2098.20	100.00	69.39	20.46 N	78.01 E	80.65@	75.30	0.40
2200.00	1.15	56.93	2198.17	100.00	71.01	21.66 N	80.03 E	82.91@	74.86	0.40
2300.00	0.98	59.38	2298.15	100.00	72.25	22.64 N	81.61 E	84.69@	74.50	0.18
2400.00	0.80	61.83	2398.14	100.00	73.34	23.40 N	82.96 E	86.20@	74.25	0.18

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
2500.00	0.67	81.13	2498.13	100.00	74.37	23.82 N	84.15 E	87.46@	74.19	0.28
2600.00	0.55	100.44	2598.13	100.00	75.38	23.83 N	85.20 E	88.47@	74.38	0.24
2700.00	0.59	115.29	2698.12	100.00	76.37	23.52 N	86.14 E	89.29@	74.73	0.15
2800.00	0.63	130.14	2798.12	100.00	77.38	22.95 N	87.03 E	90.00@	75.23	0.16
2900.00	0.79	137.05	2898.11	100.00	78.47	22.09 N	87.92 E	90.65@	75.90	0.18
3000.00	0.95	143.96	2998.10	100.00	79.71	20.91 N	88.87 E	91.30@	76.76	0.19
3100.00	0.96	144.81	3098.08	100.00	81.02	19.56 N	89.84 E	91.95@	77.72	0.02
3200.00	0.97	145.66	3198.07	100.00	82.32	18.17 N	90.80 E	92.61@	78.68	0.02
3300.00	0.94	143.54	3298.05	100.00	83.62	16.82 N	91.77 E	93.30@	79.62	0.05
3400.00	0.91	141.42	3398.04	100.00	84.92	15.53 N	92.75 E	94.04@	80.49	0.05
3500.00	0.95	133.40	3498.03	100.00	86.30	14.34 N	93.85 E	94.94@	81.31	0.14
3600.00	0.99	125.38	3598.01	100.00	87.85	13.27 N	95.16 E	96.08@	82.06	0.14
3700.00	1.35	122.24	3697.99	100.00	89.80	12.15 N	96.86 E	97.62@	82.85	0.36
3800.00	1.70	119.09	3797.96	100.00	92.37	10.80 N	99.15 E	99.74@	83.79	0.36
3900.00	1.68	117.98	3897.91	100.00	95.25	9.39 N	101.74 E	102.17@	84.73	0.04
4000.00	1.66	116.87	3997.87	100.00	98.11	8.05 N	104.33 E	104.64@	85.59	0.04
4100.00	1.69	114.23	4097.83	100.00	100.99	6.79 N	106.96 E	107.18@	86.37	0.08
4200.00	1.73	111.58	4197.78	100.00	103.95	5.62 N	109.71 E	109.86@	87.07	0.09
4300.00	1.56	109.99	4297.74	100.00	106.81	4.60 N	112.39 E	112.49@	87.65	0.18
4400.00	1.38	108.40	4397.71	100.00	109.37	3.76 N	114.82 E	114.88@	88.12	0.19
4500.00	1.12	104.34	4497.69	100.00	111.55	3.14 N	116.91 E	116.95@	88.46	0.27
4600.00	0.86	100.28	4597.67	100.00	113.27	2.76 N	118.59 E	118.62@	88.67	0.27
4700.00	0.64	101.55	4697.66	100.00	114.58	2.52 N	119.88 E	119.90@	88.80	0.22
4800.00	0.42	102.81	4797.66	100.00	115.50	2.32 N	120.78 E	120.80@	88.90	0.22
4900.00	0.26	119.57	4897.66	100.00	116.09	2.13 N	121.34 E	121.35@	88.99	0.19
5000.00	0.09	136.34	4997.66	100.00	116.37	1.96 N	121.59 E	121.60@	89.08	0.18
5100.00	0.07	145.23	5097.66	100.00	116.49	1.85 N	121.68 E	121.69@	89.13	0.02
5200.00	0.04	154.11	5197.66	100.00	116.56	1.77 N	121.73 E	121.74@	89.17	0.03

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
5300.00	0.06	202.44	5297.66	100.00	116.58	1.69 N	121.72 E	121.73@	89.20	0.05
5400.00	0.09	250.77	5397.66	100.00	116.51	1.62 N	121.63 E	121.64@	89.24	0.07
5500.00	0.23	277.48	5497.66	100.00	116.24	1.62 N	121.35 E	121.37@	89.24	0.16
5600.00	0.37	304.18	5597.65	100.00	115.74	1.83 N	120.89 E	120.90@	89.14	0.19
5700.00	0.57	298.69	5697.65	100.00	114.95	2.25 N	120.19 E	120.21@	88.93	0.20
5800.00	0.77	293.20	5797.64	100.00	113.80	2.75 N	119.13 E	119.16@	88.68	0.21
5900.00	0.97	291.55	5897.63	100.00	112.29	3.32 N	117.73 E	117.77@	88.38	0.20
6000.00	1.17	289.89	5997.61	100.00	110.43	3.98 N	115.98 E	116.05@	88.03	0.20
6100.00	1.10	284.13	6097.60	100.00	108.45	4.56 N	114.09 E	114.18@	87.71	0.13
6200.00	1.03	278.36	6197.58	100.00	106.60	4.93 N	112.27 E	112.38@	87.49	0.13
6300.00	0.99	278.44	6297.56	100.00	104.85	5.19 N	110.52 E	110.65@	87.31	0.04
6400.00	0.94	278.53	6397.55	100.00	103.18	5.44 N	108.86 E	108.99@	87.14	0.05
6500.00	0.89	281.02	6497.54	100.00	101.59	5.71 N	107.29 E	107.44@	86.96	0.06
6600.00	0.84	283.51	6597.52	100.00	100.09	6.03 N	105.81 E	105.98@	86.74	0.06
6700.00	0.84	295.86	6697.51	100.00	98.63	6.52 N	104.44 E	104.64@	86.43	0.18
6800.00	0.85	308.20	6797.50	100.00	97.22	7.29 N	103.20 E	103.45@	85.96	0.18
6900.00	1.00	311.55	6897.49	100.00	95.75	8.33 N	101.96 E	102.30@	85.33	0.16
7000.00	1.15	314.90	6997.47	100.00	94.09	9.62 N	100.60 E	101.05@	84.54	0.16
7100.00	1.18	308.04	7097.45	100.00	92.25	10.96 N	99.07 E	99.68@	83.69	0.14
7200.00	1.21	301.18	7197.43	100.00	90.28	12.14 N	97.36 E	98.11@	82.89	0.15
7300.00	0.88	287.75	7297.41	100.00	88.49	12.92 N	95.72 E	96.59@	82.31	0.41
7400.00	0.54	274.32	7397.41	100.00	87.27	13.19 N	94.52 E	95.44@	82.05	0.38
7500.00	0.61	257.58	7497.40	100.00	86.34	13.11 N	93.53 E	94.45@	82.02	0.18
7600.00	0.68	240.85	7597.39	100.00	85.45	12.71 N	92.50 E	93.36@	82.18	0.20
7700.00	0.94	235.50	7697.38	100.00	84.51	11.96 N	91.30 E	92.08@	82.54	0.27
7800.00	1.20	230.15	7797.37	100.00	83.40	10.82 N	89.82 E	90.47@	83.13	0.28
7900.00	1.09	225.98	7897.35	100.00	82.33	9.49 N	88.33 E	88.84@	83.87	0.14
8000.00	0.97	221.81	7997.33	100.00	81.49	8.20 N	87.09 E	87.47@	84.62	0.14

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8100.00	1.10	219.87	8097.31	100.00	80.73	6.83 N	85.91 E	86.18@	85.45	0.13
** TIE IN TO VAUGHN ENERGY SERVICE GYRO SURVEY @ 8171' MD.										
8171.00	1.19	218.49	8168.30	71.00	80.17	5.73 N	85.01 E	85.20@	86.14	0.13
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
8263.00	3.52	195.79	8260.22	92.00	79.81	2.26 N	83.65 E	83.68@	88.45	2.68
8294.00	6.77	179.09	8291.09	31.00	80.34	0.48 S	83.42 E	83.42@	90.33	11.44
8326.00	10.20	172.85	8322.74	32.00	82.00	5.18 S	83.80 E	83.96@	93.54	11.08
8357.00	13.72	169.42	8353.06	31.00	84.72	11.52 S	84.82 E	85.59@	97.73	11.58
8389.00	16.80	166.35	8383.93	32.00	88.70	19.74 S	86.60 E	88.83@	102.84	9.95
8421.00	19.08	165.38	8414.37	32.00	93.64	29.30 S	89.02 E	93.71@	108.22	7.19
8452.00	21.02	165.12	8443.49	31.00	99.07	39.58 S	91.72 E	99.90@	113.34	6.26
8484.00	23.39	164.94	8473.11	32.00	105.28	51.26 S	94.85 E	107.81@	118.39	7.41
8515.00	26.56	161.78	8501.21	31.00	112.34	63.79 S	98.62 E	117.45@	122.90	11.09
8547.00	28.40	159.49	8529.60	32.00	120.88	77.71 S	103.52 E	129.44@	126.90	6.63
8578.00	29.02	156.68	8556.79	31.00	130.02	91.52 S	109.08 E	142.39@	130.00	4.79
8610.00	30.78	155.27	8584.53	32.00	140.27	106.09 S	115.58 E	156.89@	132.55	5.92
8641.00	33.06	155.62	8610.84	31.00	150.91	121.00 S	122.39 E	172.10@	134.67	7.38
8673.00	35.70	156.33	8637.25	32.00	162.51	137.50 S	129.74 E	189.05@	136.66	8.34
8704.00	39.39	156.94	8661.83	31.00	174.47	154.84 S	137.23 E	206.90@	138.45	11.96
8736.00	42.56	158.00	8685.98	32.00	187.52	174.22 S	145.26 E	226.83@	140.18	10.14
8767.00	45.81	157.56	8708.21	31.00	200.87	194.22 S	153.43 E	247.51@	141.69	10.53
8799.00	48.36	158.26	8730.00	32.00	215.30	215.93 S	162.24 E	270.09@	143.08	8.13
8830.00	51.35	157.03	8749.98	31.00	229.99	237.85 S	171.26 E	293.09@	144.24	10.11
8862.00	54.08	156.77	8769.36	32.00	246.03	261.26 S	181.25 E	317.98@	145.25	8.56
8893.00	57.24	156.15	8786.85	31.00	262.30	284.72 S	191.47 E	343.12@	146.08	10.33
8925.00	60.94	156.24	8803.29	32.00	279.85	309.84 S	202.55 E	370.17@	146.83	11.56
8957.00	64.46	156.06	8817.96	32.00	298.05	335.84 S	214.05 E	398.25@	147.49	11.01
8988.00	68.32	155.89	8830.37	31.00	316.29	361.78 S	225.61 E	426.36@	148.05	12.46
9020.00	72.02	155.01	8841.23	32.00	335.84	389.16 S	238.12 E	456.23@	148.54	11.85

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
9051.00	75.53	153.43	8849.89	31.00	355.64	415.95 S	251.06 E	485.85@	148.89	12.33
9083.00	78.70	153.08	8857.02	32.00	376.79	443.81 S	265.10 E	516.95@	149.15	9.96
9114.00	81.87	152.55	8862.25	31.00	397.68	470.98 S	279.06 E	547.45@	149.35	10.36
9145.00	84.42	153.34	8865.95	31.00	418.66	498.39 S	293.06 E	578.17@	149.54	8.61
9239.00	88.55	152.11	8871.71	94.00	482.89	581.76 S	336.04 E	671.84@	149.99	4.58
9334.00	87.67	148.50	8874.85	95.00	550.76	664.23 S	383.07 E	766.77@	150.03	3.91
9429.00	87.23	144.46	8879.08	95.00	622.87	743.33 S	435.47 E	861.50@	149.64	4.27
9523.00	88.64	140.07	8882.47	94.00	698.53	817.60 S	492.95 E	954.71@	148.91	4.90
9618.00	89.96	136.55	8883.63	95.00	778.75	888.53 S	556.11 E	1048.21@	147.96	3.96
9712.00	90.13	131.98	8883.55	94.00	861.47	954.12 S	623.41 E	1139.73@	146.84	4.87
9807.00	91.10	127.94	8882.53	95.00	948.22	1015.12 S	696.21 E	1230.92@	145.56	4.37
9902.00	89.96	124.07	8881.65	95.00	1037.43	1070.95 S	773.04 E	1320.80@	144.18	4.25
9996.00	87.76	120.91	8883.52	94.00	1127.50	1121.42 S	852.30 E	1408.55@	142.76	4.10
10091.00	87.23	117.48	8887.68	95.00	1219.87	1167.71 S	935.14 E	1496.00@	141.31	3.65
10186.00	88.37	113.35	8891.33	95.00	1313.48	1208.44 S	1020.86 E	1581.93@	139.81	4.51
10280.00	88.72	110.18	8893.71	94.00	1406.96	1243.28 S	1108.12 E	1665.44@	138.29	3.39
10375.00	88.02	105.79	8896.42	95.00	1501.83	1272.60 S	1198.42 E	1748.06@	136.72	4.68
10470.00	87.67	102.01	8899.99	95.00	1596.69	1295.40 S	1290.55 E	1828.55@	135.11	3.99
10564.00	89.43	98.58	8902.37	94.00	1690.19	1312.19 S	1382.99 E	1906.44@	133.50	4.10
10659.00	89.34	93.66	8903.39	95.00	1783.76	1322.31 S	1477.42 E	1982.74@	131.83	5.18
10753.00	89.78	92.69	8904.11	94.00	1875.43	1327.52 S	1571.27 E	2056.99@	130.19	1.13
10848.00	89.87	90.76	8904.40	95.00	1967.52	1330.38 S	1666.22 E	2132.18@	128.61	2.03
10943.00	89.52	90.32	8904.91	95.00	2059.10	1331.27 S	1761.22 E	2207.75@	127.08	0.59
11037.00	89.16	89.62	8905.99	94.00	2149.47	1331.22 S	1855.21 E	2283.41@	125.66	0.84
11132.00	89.16	89.35	8907.38	95.00	2240.57	1330.37 S	1950.20 E	2360.75@	124.30	0.28
11226.00	90.48	90.23	8907.68	94.00	2330.86	1330.02 S	2044.19 E	2438.79@	123.05	1.69
11321.00	90.57	90.94	8906.81	95.00	2422.46	1330.99 S	2139.18 E	2519.45@	121.89	0.75
11416.00	90.66	90.76	8905.79	95.00	2514.18	1332.40 S	2234.17 E	2601.31@	120.81	0.21

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

Page 06/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
11510.00	88.29	91.38	8906.65	94.00	2605.02	1334.16 S	2328.14 E	2683.32@	119.82	2.61
11605.00	87.76	91.73	8909.92	95.00	2696.99	1336.73 S	2423.05 E	2767.31@	118.88	0.67
11699.00	87.67	91.29	8913.67	94.00	2787.95	1339.21 S	2516.94 E	2851.05@	118.02	0.48
11794.00	87.76	91.03	8917.46	95.00	2879.73	1341.13 S	2611.84 E	2936.05@	117.18	0.29
11888.00	87.85	91.06	8921.06	94.00	2970.51	1342.84 S	2705.76 E	3020.66@	116.39	0.10
11983.00	87.49	90.52	8924.92	95.00	3062.13	1344.15 S	2800.67 E	3106.53@	115.64	0.68
12077.00	88.11	89.98	8928.53	94.00	3152.56	1344.56 S	2894.60 E	3191.64@	114.92	0.87
12172.00	89.60	89.65	8930.43	95.00	3243.80	1344.26 S	2989.58 E	3277.90@	114.21	1.61
12267.00	89.78	89.51	8930.94	95.00	3334.95	1343.56 S	3084.57 E	3364.48@	113.54	0.24
12361.00	89.87	88.11	8931.23	94.00	3424.78	1341.61 S	3178.55 E	3450.09@	112.88	1.49
12456.00	89.87	89.59	8931.45	95.00	3515.58	1339.70 S	3273.53 E	3537.06@	112.26	1.56
12550.00	90.04	89.41	8931.52	94.00	3605.74	1338.88 S	3367.53 E	3623.92@	111.68	0.26
12645.00	89.78	89.23	8931.67	95.00	3696.77	1337.75 S	3462.52 E	3711.96@	111.12	0.33
12740.00	89.60	89.18	8932.18	95.00	3787.75	1336.44 S	3557.51 E	3800.25@	110.59	0.20
12835.00	89.43	89.02	8932.99	95.00	3878.67	1334.94 S	3652.49 E	3888.80@	110.08	0.25
12930.00	89.25	88.70	8934.08	95.00	3969.47	1333.05 S	3747.47 E	3977.50@	109.58	0.39
13024.00	88.99	88.95	8935.52	94.00	4059.30	1331.13 S	3841.44 E	4065.53@	109.11	0.38
13118.00	88.99	88.91	8937.18	94.00	4149.17	1329.37 S	3935.41 E	4153.87@	108.66	0.04
13213.00	89.08	88.65	8938.78	95.00	4239.93	1327.35 S	4030.37 E	4243.32@	108.23	0.29
13308.00	88.81	88.21	8940.53	95.00	4330.51	1324.75 S	4125.32 E	4332.80@	107.80	0.54
13402.00	88.64	88.12	8942.62	94.00	4420.01	1321.74 S	4219.25 E	4421.43@	107.39	0.20
13497.00	88.46	88.04	8945.03	95.00	4510.40	1318.56 S	4314.16 E	4511.16@	106.99	0.21
13591.00	88.37	87.86	8947.63	94.00	4599.77	1315.19 S	4408.07 E	4600.08@	106.61	0.21
13686.00	88.20	87.77	8950.47	95.00	4690.01	1311.57 S	4502.95 E	4690.08@	106.24	0.20
13727.00	88.29	87.95	8951.73	41.00	4728.97	1310.04 S	4543.91 E	4728.99@	106.08	0.49
STRAIGHT LINE PROJECTION TO BIT DEPTH @ 13807' MD.										
13807.00	88.29	87.95	8954.11	80.00	4805.03	1307.18 S	4623.82 E	4805.04@	105.79	0.00

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
RIGEL 20 FEDERAL COM 4H / 30-015-39726
EDDY COUNTY, NM
RIG:H & P 300

Page 07/06

- ** The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	Devon Energy		
LEASE / WELL No.:	RIGEL 20 FEDERAL COM	#4H	
WELL LOCATION:	EDDY COUNTY, NEW MEXICO		
COUNTY / STATE / COUNTRY:	EDDY	NM	USA
RIG:	H&P 300		
API WELL No:	30-015-39726		
JOB No:	12MLD0090		
P.O. / AFE No.	158212		
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):					
On Wall Plat:	7.5	LWD Calculated:	7.442757	Agreed Upon:	7.44
X = 675053.410000		Feet	Y = 598088.090000		Feet
SITE LATITUDE:	32.643441 N	SITE LONGITUDE:	103.898916 W		
GRID SYSTEM:	TRUE ☐	UTM ☐	LAMBERT ☒	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	105.94				
KELLY BUSHING ELEVATION:	26				
ALTITUDE:	3206.2	Feet	WATER DEPTH:	N/A	Feet

TIE-IN SURVEY

MEASURED DEPTH:	8171		
DRIFT ANGLE:	1.19		
DRIFT DIRECTION:	218.49		
TRUE VERTICAL DEPTH:	8168.3		
VERTICAL SECTION:	80.17		
RECTANGULAR COORDINATE (N / S) :	5.73		
RECTANGULAR COORDINATE (E / W) :	85.01		
CLOSURE DISTANCE / DIRECTION:	85.2	86.14	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	VAUGHN ENERGY SERVICE		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

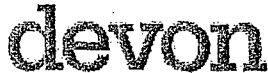
KICKOFF DEPTH:	8305	TOTAL DEPTH:	13898.37
KICKOFF ANGLE:	0	MAX ANGLE:	89.74

PES Engineers: ALEX CASTILLO
MICHAEL SAKAS

**Signature of both field engineers required if applicable

Directional Driller: JORDAN WILLIAMS

DATE: 14-Mar-2012



Company: Devon Energy
Lease/Well: Rigel 20 Fed Com/4H
Location: 10 Miles S Of Loco Hills, NM
Rig Name: H&P 300
State/County: Texas/Eddy
Latitude: 32.91, Longitude: -104.00
GRID North is 0.18 Degrees East of True North
VS-Azi: 0.00 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=26 Feet Elevation= 3406 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: rigel 20 fed com 4h_int.ut

Minimum Curvature Method

Report Date/Time: 3/14/2012 / 10:08

Vaughn Energy Services
Midland, TX
432-663-5444
Zach Garcia

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	0.57	36.87	100.00	0.40	0.30	0.40	0.50	36.87	0.57
200.00	1.14	73.73	199.99	1.08	1.55	1.08	1.89	55.30	0.77
300.00	1.97	75.98	299.95	1.77	4.18	1.77	4.54	67.03	0.83
400.00	2.81	78.22	399.86	2.69	8.25	2.69	8.68	71.94	0.84
500.00	2.36	78.93	499.76	3.59	12.67	3.59	13.17	74.20	0.44
600.00	1.92	79.63	599.69	4.28	16.34	4.28	16.89	75.31	0.44
700.00	1.68	80.12	699.64	4.84	19.43	4.84	20.03	76.03	0.25
800.00	1.43	80.61	799.60	5.29	22.11	5.29	22.73	76.54	0.25
900.00	1.52	82.80	899.57	5.66	24.65	5.66	25.30	77.07	0.10
1000.00	1.61	84.98	999.53	5.95	27.37	5.95	28.01	77.73	0.11
1100.00	2.05	81.68	1099.48	6.33	30.54	6.33	31.18	78.29	0.46
1200.00	2.49	78.37	1199.40	7.03	34.44	7.03	35.15	78.46	0.46
1300.00	2.89	77.84	1299.29	8.00	39.03	8.00	39.84	78.42	0.39
1400.00	3.28	77.30	1399.15	9.16	44.28	9.16	45.22	78.32	0.39
1500.00	3.35	76.14	1498.98	10.49	49.91	10.49	51.00	78.13	0.10
1600.00	3.42	74.97	1598.81	11.96	55.62	11.96	56.89	77.87	0.10
1700.00	3.38	71.91	1698.63	13.65	61.31	13.65	62.81	77.45	0.19
1800.00	3.35	68.84	1798.46	15.62	66.84	15.62	68.64	76.85	0.18
1900.00	2.63	67.26	1898.32	17.56	71.68	17.56	73.80	76.23	0.72
2000.00	1.92	65.69	1998.24	19.14	75.32	19.14	77.71	75.74	0.72
2100.00	1.54	61.31	2098.20	20.47	78.02	20.47	80.66	75.30	0.40
2200.00	1.15	56.93	2198.17	21.66	80.04	21.66	82.92	74.86	0.40
2300.00	0.98	59.38	2298.15	22.65	81.61	22.65	84.70	74.49	0.18
2400.00	0.80	61.83	2398.14	23.41	82.96	23.41	86.20	74.24	0.18
2500.00	0.67	81.13	2498.13	23.83	84.15	23.83	87.46	74.19	0.28
2600.00	0.55	100.44	2598.13	23.83	85.20	23.83	88.47	74.37	0.24
2700.00	0.59	115.29	2698.12	23.52	86.14	23.52	89.29	74.73	0.15
2800.00	0.63	130.14	2798.11	22.95	87.02	22.95	90.00	75.23	0.16
2900.00	0.79	137.05	2898.11	22.09	87.91	22.09	90.65	75.89	0.18
3000.00	0.95	143.96	2998.10	20.91	88.87	20.91	91.30	76.76	0.19
3100.00	0.96	144.81	3098.08	19.55	89.85	19.55	91.95	77.72	0.02
3200.00	0.97	145.66	3198.07	18.17	90.81	18.17	92.61	78.69	0.02
3300.00	0.94	143.54	3298.05	16.80	91.78	16.80	93.30	79.83	0.05
3400.00	0.91	141.42	3398.04	15.52	92.77	15.52	94.05	80.51	0.05

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
3500.00	0.95	133.40	3498.03	14.32	93.87	14.32	94.95	81.33	0.14
3600.00	0.99	125.38	3598.01	13.25	95.18	13.25	96.09	82.07	0.14
3700.00	1.36	122.24	3697.99	12.12	96.87	12.12	97.63	82.87	0.36
3800.00	1.70	119.09	3797.96	10.78	99.16	10.78	99.75	83.80	0.36
3900.00	1.68	117.98	3897.91	9.37	101.75	9.37	102.18	84.74	0.04
4000.00	1.66	116.87	3997.87	8.03	104.33	8.03	104.64	85.60	0.04
4100.00	1.69	114.23	4097.83	6.77	106.97	6.77	107.18	86.38	0.09
4200.00	1.73	111.58	4197.78	5.60	109.73	5.60	109.87	87.08	0.09
4300.00	1.56	109.99	4297.74	4.58	112.41	4.58	112.51	87.67	0.18
4400.00	1.38	108.40	4397.71	3.74	114.83	3.74	114.89	88.14	0.18
4500.00	1.12	104.34	4497.68	3.11	116.93	3.11	116.97	88.47	0.27
4600.00	0.86	100.28	4597.67	2.74	118.62	2.74	118.65	88.68	0.27
4700.00	0.64	101.55	4697.66	2.49	119.90	2.49	119.93	88.81	0.22
4800.00	0.42	102.81	4797.66	2.30	120.81	2.30	120.83	88.91	0.22
4900.00	0.26	119.57	4897.65	2.10	121.37	2.10	121.39	89.01	0.19
5000.00	0.09	136.34	4997.65	1.93	121.62	1.93	121.64	89.09	0.17
5100.00	0.07	145.23	5097.65	1.83	121.71	1.83	121.72	89.14	0.03
5200.00	0.04	154.11	5197.65	1.75	121.76	1.75	121.77	89.18	0.03
5300.00	0.06	202.44	5297.65	1.67	121.75	1.67	121.76	89.22	0.05
5400.00	0.09	250.77	5397.65	1.59	121.66	1.59	121.67	89.25	0.06
5500.00	0.23	277.48	5497.65	1.59	121.39	1.59	121.40	89.25	0.15
5600.00	0.37	304.18	5597.65	1.80	120.93	1.80	120.95	89.15	0.19
5700.00	0.57	298.69	5697.65	2.22	120.23	2.22	120.25	88.94	0.21
5800.00	0.77	293.20	5797.64	2.72	119.18	2.72	119.21	88.69	0.21
5900.00	0.97	291.55	5897.63	3.29	117.78	3.29	117.83	88.40	0.20
6000.00	1.17	289.89	5997.61	3.95	116.03	3.95	116.10	88.05	0.20
6100.00	1.10	284.13	6097.59	4.53	114.14	4.53	114.23	87.73	0.13
6200.00	1.03	278.36	6197.58	4.90	112.32	4.90	112.43	87.50	0.13
6300.00	0.99	278.44	6297.56	5.15	110.58	5.15	110.70	87.33	0.04
6400.00	0.94	278.53	6397.55	5.40	108.92	5.40	109.05	87.16	0.04
6500.00	0.89	281.02	6497.53	5.67	107.34	5.67	107.49	86.97	0.07
6600.00	0.84	283.51	6597.52	5.99	105.87	5.99	106.03	86.76	0.07
6700.00	0.84	295.86	6697.51	6.48	104.50	6.48	104.70	86.45	0.18
6800.00	0.85	308.20	6797.50	7.26	103.25	7.26	103.51	85.98	0.18
6900.00	1.00	311.55	6897.49	8.29	102.02	8.29	102.36	85.35	0.16
7000.00	1.15	314.90	6997.47	9.58	100.66	9.58	101.12	84.57	0.16
7100.00	1.18	308.04	7097.46	10.92	99.14	10.92	99.74	83.72	0.14
7200.00	1.21	301.18	7197.43	12.10	97.43	12.10	98.18	82.92	0.15
7300.00	0.88	287.75	7297.41	12.88	95.79	12.88	96.66	82.34	0.41
7400.00	0.54	274.32	7397.40	13.15	94.60	13.15	95.51	82.09	0.37
7500.00	0.61	257.58	7497.40	13.07	93.60	13.07	94.51	82.05	0.18
7600.00	0.68	240.85	7597.39	12.67	92.56	12.67	93.43	82.21	0.20
7700.00	0.94	235.50	7697.38	11.91	91.37	11.91	92.14	82.57	0.27
7800.00	1.20	230.15	7797.36	10.77	89.89	10.77	90.53	83.16	0.28
7900.00	1.09	225.98	7897.34	9.45	88.40	9.45	88.91	83.90	0.14
8000.00	0.97	221.81	7997.33	8.16	87.16	8.16	87.54	84.65	0.13
8100.00	1.10	219.87	8097.31	6.79	85.97	6.79	86.24	85.49	0.13
8171.00	1.19	218.49	8168.30	5.69	85.08	5.69	85.27	86.17	0.13

HORIZONTAL DISPLACEMENT IS
85.27 FEET AT 86.17 DEGREES



A Schlumberger Company

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

Devon Energy
Rigel 20 Federal Com #4H
Eddy County, Nm
Rig:HP 300

Tue Mar 13 23:30:59 2012

Coordinates

Latitude: 32.643441 N (32 deg. 38 min. 36.3866 sec.)
Longitude: 103.898916 W (-103 deg. 53 min. 56.0965 sec.)
Elevation: 3432.40 feet.
Calculation Date: Mar/13/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5005 degrees
Total Magnetic Field: 0.48759 gauss
Magnetic Declination: 7.677426 degrees
Horizontal Intensity: 0.240095 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.677426 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 675053.4100 feet
Y: 598088.0900 feet
True to Grid: (convergence) -0.234332 degrees
Magnetic to Grid: 7.443094 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.443094 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

DEVON ENERGY
RIGEL 20 FED COM #4H
EDDY COUNTY, NM
Rig:H.P 300

Wed Mar 14 17:13:46 2012

Coordinates

Latitude: 32.643441 N (32 deg. 38 min. 36.3866 sec.)
Longitude: 103.898916 W (-103 deg. 53 min. 56.0965 sec.)
Elevation: 3432.20 feet.
Calculation Date: Mar/14/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.5004 degrees
Total Magnetic Field: 0.48758 gauss
Magnetic Declination: 7.677090 degrees
Horizontal Intensity: 0.240094 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.677090 Degs

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 675053.4100 feet
Y: 598088.0900 feet
True to Grid: (convergence) -0.234332 degrees
Magnetic to Grid: 7.442757 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.442757 Degs.



A GYRO TECHNOLOGIES INC. COMPANY

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

March 22, 2012

Devon Energy Production Company
20 North Broadway
Oklahoma City, OK 73102

Attn: Mark Cooper

Re: **Rigel 20 Fed Com 4H**

Please find enclosed a copy of the survey from 0' to 8,171' ran on the above referenced well.

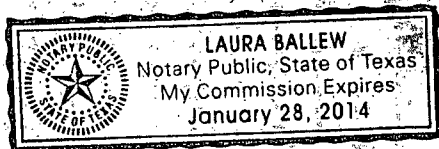
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 23rd day of March
A.D., 2012, by Keith Havelka.



Laura Ballew
Notary Public, State of Texas



Company: Devon Energy
Lease/Well: Rigel 20 Fed Com/4H
Location: 10 Miles S Of Loco Hills, NM
Rig Name: H&P 300
State/County: New Mexico/Eddy
Latitude: 32.91



GRID North is 0.18 Degrees East of True North
VS-Azi: 0.00 Degrees

Depth Reference : RKB=26 Ft Elevation=3406 Ft

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: rigel 20 fed com 4h_int.ut
Minimum Curvature Method
Report Date/Time: 3/23/2012 / 16:17

Vaughn Energy Services
Midland, TX
432-563-5444
Surveyor: Zach Garcia
Rigel 20 Fed Com 4H / API 30-015-39726

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	0.57	36.87	100.00	0.40	0.30	0.40	0.50	36.87	0.57
200.00	1.14	73.73	199.99	1.08	1.55	1.08	1.89	55.30	0.77
300.00	1.97	75.98	299.95	1.77	4.18	1.77	4.54	67.03	0.83
400.00	2.81	78.22	399.86	2.69	8.25	2.69	8.68	71.94	0.84
500.00	2.36	78.93	499.76	3.59	12.67	3.59	13.17	74.20	0.44
600.00	1.92	79.63	599.69	4.28	16.34	4.28	16.89	75.31	0.44
700.00	1.68	80.12	699.64	4.84	19.43	4.84	20.03	76.03	0.25
800.00	1.43	80.61	799.60	5.29	22.11	5.29	22.73	76.54	0.25
900.00	1.52	82.80	899.57	5.66	24.65	5.66	25.30	77.07	0.10
1000.00	1.61	84.98	999.53	5.95	27.37	5.95	28.01	77.73	0.11
1100.00	2.05	81.68	1099.48	6.33	30.54	6.33	31.18	78.29	0.46
1200.00	2.49	78.37	1199.40	7.03	34.44	7.03	35.15	78.46	0.46
1300.00	2.89	77.84	1299.29	8.00	39.03	8.00	39.84	78.42	0.39
1400.00	3.28	77.30	1399.15	9.16	44.28	9.16	45.22	78.32	0.39
1500.00	3.35	76.14	1498.98	10.49	49.91	10.49	51.00	78.13	0.10
1600.00	3.42	74.97	1598.81	11.96	55.62	11.96	56.89	77.87	0.10
1700.00	3.38	71.91	1698.63	13.65	61.31	13.65	62.81	77.45	0.19
1800.00	3.35	68.84	1798.46	15.62	66.84	15.62	68.64	76.85	0.18

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	2.63	67.26	1898.32	17.56	71.68	17.56	73.80	76.23	0.72
2000.00	1.92	65.69	1998.24	19.14	75.32	19.14	77.71	75.74	0.72
2100.00	1.54	61.31	2098.20	20.47	78.02	20.47	80.66	75.30	0.40
2200.00	1.15	56.93	2198.17	21.66	80.04	21.66	82.92	74.86	0.40
2300.00	0.98	59.38	2298.15	22.65	81.61	22.65	84.70	74.49	0.18
2400.00	0.80	61.83	2398.14	23.41	82.96	23.41	86.20	74.24	0.18
2500.00	0.67	81.13	2498.13	23.83	84.15	23.83	87.46	74.19	0.28
2600.00	0.55	100.44	2598.13	23.83	85.20	23.83	88.47	74.37	0.24
2700.00	0.59	115.29	2698.12	23.52	86.14	23.52	89.29	74.73	0.15
2800.00	0.63	130.14	2798.11	22.95	87.02	22.95	90.00	75.23	0.16
2900.00	0.79	137.05	2898.11	22.09	87.91	22.09	90.65	75.89	0.18
3000.00	0.95	143.96	2998.10	20.91	88.87	20.91	91.30	76.76	0.19
3100.00	0.96	144.81	3098.08	19.55	89.85	19.55	91.95	77.72	0.02
3200.00	0.97	145.66	3198.07	18.17	90.81	18.17	92.61	78.69	0.02
3300.00	0.94	143.54	3298.05	16.80	91.78	16.80	93.30	79.63	0.05
3400.00	0.91	141.42	3398.04	15.52	92.77	15.52	94.05	80.51	0.05
3500.00	0.95	133.40	3498.03	14.32	93.87	14.32	94.95	81.33	0.14
3600.00	0.99	125.38	3598.01	13.25	95.18	13.25	96.09	82.07	0.14
3700.00	1.35	122.24	3697.99	12.12	96.87	12.12	97.63	82.87	0.36
3800.00	1.70	119.09	3797.96	10.78	99.16	10.78	99.75	83.80	0.36
3900.00	1.68	117.98	3897.91	9.37	101.75	9.37	102.18	84.74	0.04
4000.00	1.66	116.87	3997.87	8.03	104.33	8.03	104.64	85.60	0.04
4100.00	1.69	114.23	4097.83	6.77	106.97	6.77	107.18	86.38	0.09
4200.00	1.73	111.58	4197.78	5.60	109.73	5.60	109.87	87.08	0.09
4300.00	1.56	109.99	4297.74	4.58	112.41	4.58	112.51	87.67	0.18
4400.00	1.38	108.40	4397.71	3.74	114.83	3.74	114.89	88.14	0.18
4500.00	1.12	104.34	4497.68	3.11	116.93	3.11	116.97	88.47	0.27
4600.00	0.86	100.28	4597.67	2.74	118.62	2.74	118.65	88.68	0.27
4700.00	0.64	101.55	4697.66	2.49	119.90	2.49	119.93	88.81	0.22
4800.00	0.42	102.81	4797.66	2.30	120.81	2.30	120.83	88.91	0.22
4900.00	0.26	119.57	4897.65	2.10	121.37	2.10	121.39	89.01	0.19
5000.00	0.09	136.34	4997.65	1.93	121.62	1.93	121.64	89.09	0.17
5100.00	0.07	145.23	5097.65	1.83	121.71	1.83	121.72	89.14	0.03
5200.00	0.04	154.11	5197.65	1.75	121.76	1.75	121.77	89.18	0.03
5300.00	0.06	202.44	5297.65	1.67	121.75	1.67	121.76	89.22	0.05
5400.00	0.09	250.77	5397.65	1.59	121.66	1.59	121.67	89.25	0.06
5500.00	0.23	277.48	5497.65	1.59	121.39	1.59	121.40	89.25	0.15
5600.00	0.37	304.18	5597.65	1.80	120.93	1.80	120.95	89.15	0.19
5700.00	0.57	298.69	5697.65	2.22	120.23	2.22	120.25	88.94	0.21

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	0.77	293.20	5797.64	2.72	119.18	2.72	119.21	88.69	0.21
5900.00	0.97	291.55	5897.63	3.29	117.78	3.29	117.83	88.40	0.20
6000.00	1.17	289.89	5997.61	3.95	116.03	3.95	116.10	88.05	0.20
6100.00	1.10	284.13	6097.59	4.53	114.14	4.53	114.23	87.73	0.13
6200.00	1.03	278.36	6197.58	4.90	112.32	4.90	112.43	87.50	0.13
6300.00	0.99	278.44	6297.56	5.15	110.58	5.15	110.70	87.33	0.04
6400.00	0.94	278.53	6397.55	5.40	108.92	5.40	109.05	87.16	0.04
6500.00	0.89	281.02	6497.53	5.67	107.34	5.67	107.49	86.97	0.07
6600.00	0.84	283.51	6597.52	5.99	105.87	5.99	106.03	86.76	0.07
6700.00	0.84	295.86	6697.51	6.48	104.50	6.48	104.70	86.45	0.18
6800.00	0.85	308.20	6797.50	7.26	103.25	7.26	103.51	85.98	0.18
6900.00	1.00	311.55	6897.49	8.29	102.02	8.29	102.36	85.35	0.16
7000.00	1.15	314.90	6997.47	9.58	100.66	9.58	101.12	84.57	0.16
7100.00	1.18	308.04	7097.45	10.92	99.14	10.92	99.74	83.72	0.14
7200.00	1.21	301.18	7197.43	12.10	97.43	12.10	98.18	82.92	0.15
7300.00	0.88	287.75	7297.41	12.88	95.79	12.88	96.66	82.34	0.41
7400.00	0.54	274.32	7397.40	13.15	94.60	13.15	95.51	82.09	0.37
7500.00	0.61	257.58	7497.40	13.07	93.60	13.07	94.51	82.05	0.18
7600.00	0.68	240.85	7597.39	12.67	92.56	12.67	93.43	82.21	0.20
7700.00	0.94	235.50	7697.38	11.91	91.37	11.91	92.14	82.57	0.27
7800.00	1.20	230.15	7797.36	10.77	89.89	10.77	90.53	83.16	0.28
7900.00	1.09	225.98	7897.34	9.45	88.40	9.45	88.91	83.90	0.14
8000.00	0.97	221.81	7997.33	8.16	87.16	8.16	87.54	84.65	0.13
8100.00	1.10	219.87	8097.31	6.79	85.97	6.79	86.24	85.49	0.13
8171.00	1.19	218.49	8168.30	5.69	85.08	5.69	85.27	86.17	0.13



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