



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

30-015-38991

XTO ENERGY

NASH UNIT #50H

EDDY COUNTY, NEW MEXICO

PREPARED BY: STEVE BIBB

01-19-12
02-07-12
01-19-12
02-07-12

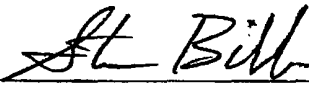


DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) PRITHWISH DAS
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 01-19-12 TO 02-07-12
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:

XTO ENERGY INC.
NASH UNIT #50H
EDDY COUNTY, NM
RIG: PIONEER 33
9. SURVEY CERTIFIED FROM: 6048 TO 11727 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 5218.23 FEET ON A BEARING OF 89.89 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 11795 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



STEVE BIBB
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01

Tie-in Date: 01/19/2012

Date Completed: 02/07/2012

XTO ENERGY

NASH UNIT #50H

EDDY COUNTY, NEW MEXICO

Rig: PIONEER # 33

PathFinder Office Supervisor: STEVE BIBB

PathFinder Field Engineers: P.DAS

B.KITCHENS

Survey Horiz. Reference: WELLHEAD

Ref Coordinates: LAT: 32.18.11.0276 N LON: 103.55.47.3224 W

GRID Reference: NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 624676.8000 Y: 474205.8000

North Aligned To: GRID NORTH

Total Magnetic Correction: 7.47° EAST TO GRID

Vertical Section Plane: 89.88

Survey Vert. Reference: 19.00' Rotary Table To Ground

Altitude: 3018.00' Ground To MSL

Measured Depth	11795.00	(feet)
Inclination	84.68	(deg)
Azimuth	87.65	(deg)
True Vertical Depth	7042.53	(feet)
Vertical Section	5218.23	(feet)
Survey X cord	629895.02	(feet)
Survey Y cord	474215.64	(feet)
Survey Lat	32.30303515 N	(deg)
Survey Lon	103.91292306 W	(deg)
Rectangular Corr. N/S	9.84 N	(feet)
Rectangular Corr. E/W	5218.22 E	(feet)
Closure Distance	5218.23	(feet)
Direction of Closure	89.89	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

XTO ENERGY
NASH UNIT #50H
EDDY COUNTY, NEW MEXICO
Rig:PIONEER # 33
PathFinder Office Supervisor: STEVE BIBB
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Page 01/05
Tie-in Date: 01/19/2012
Date Completed: 02/07/2012

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.18.11.0276 N LON:103.55.47.3224 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 624676.8000 Y: 474205.8000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.47° EAST TO GRID
Vertical Section Plane: 89.88
Survey Vert. Reference: 19.00' Rotary Table To Ground
Altitude:3018.00' Ground To MSL

Survey Calculations by RX5 V6.03E using Minimum Curvature

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)
TIED INTO SCIENTIFIC DRILLING GYRO SURVEY @ 6024'MD.										
6024.00	0.62	246.31	6023.36	0.00	27.99	29.26 S	28.05 E	40.53@	136.21	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6048.00	0.70	233.44	6047.36	24.00	27.75	29.40 S	27.81 E	40.47@	136.59	0.70
6079.00	0.62	141.67	6078.36	31.00	27.70	29.64 S	27.77 E	40.62@	136.87	3.06
6110.00	1.85	112.52	6109.35	31.00	28.27	29.97 S	28.33 E	41.24@	136.61	4.33
6141.00	3.69	103.88	6140.31	31.00	29.70	30.40 S	29.76 E	42.54@	135.61	6.07
6172.00	6.07	98.65	6171.20	31.00	32.29	30.88 S	32.35 E	44.73@	133.67	7.80
6202.00	8.62	96.14	6200.95	30.00	36.09	31.36 S	36.16 E	47.86@	130.94	8.56
6233.00	10.90	93.78	6231.50	31.00	41.32	31.80 S	41.39 E	52.20@	127.54	7.47
6264.00	12.93	92.60	6261.83	31.00	47.71	32.16 S	47.78 E	57.59@	123.94	6.59
6295.00	14.68	91.53	6291.93	31.00	55.10	32.42 S	55.17 E	63.99@	120.44	5.71
6326.00	16.62	91.31	6321.78	31.00	63.46	32.62 S	63.53 E	71.42@	117.18	6.26
6357.00	18.82	91.28	6351.31	31.00	72.90	32.84 S	72.96 E	80.01@	114.23	7.10
6388.00	20.40	90.66	6380.51	31.00	83.30	33.01 S	83.37 E	89.66@	111.60	5.14
6420.00	21.98	89.43	6410.35	32.00	94.86	33.02 S	94.93 E	100.51@	109.18	5.13
6451.00	23.57	88.98	6438.93	31.00	106.86	32.85 S	106.93 E	111.86@	107.08	5.16
6482.00	25.68	88.93	6467.11	31.00	119.78	32.61 S	119.85 E	124.20@	105.22	6.81
6512.00	28.40	88.97	6493.82	30.00	133.41	32.36 S	133.48 E	137.35@	103.63	9.07
6543.00	30.78	88.84	6520.78	31.00	148.72	32.07 S	148.78 E	152.20@	102.16	7.68
6575.00	32.45	88.45	6548.03	32.00	165.49	31.67 S	165.55 E	168.56@	100.83	5.26
6605.00	34.12	88.34	6573.11	30.00	181.94	31.21 S	182.01 E	184.67@	99.73	5.57
6637.00	35.53	88.38	6599.38	32.00	200.21	30.69 S	200.28 E	202.61@	98.71	4.41
6668.00	37.46	89.23	6624.30	31.00	218.64	30.31 S	218.71 E	220.80@	97.89	6.44
6699.00	39.22	89.21	6648.61	31.00	237.87	30.04 S	237.94 E	239.83@	97.20	5.68
6730.00	41.15	89.49	6672.29	31.00	257.87	29.82 S	257.94 E	259.65@	96.59	6.25

PathFinder Energy Services, Inc.

Survey Report

XTO ENERGY
NASH UNIT #50H
EDDY COUNTY, NEW MEXICO
RIG:PIONEER # 33

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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)
6761.00	42.65	89.34	6695.36	31.00	278.58	29.61 S	278.64 E	280.21@	96.07	4.85
6792.00	44.41	89.36	6717.84	31.00	299.92	29.36 S	299.99 E	301.42@	95.59	5.68
6823.00	45.37	89.01	6739.80	31.00	321.80	29.05 S	321.86 E	323.17@	95.16	3.20
6854.00	46.25	88.28	6761.41	31.00	344.02	28.53 S	344.08 E	345.26@	94.74	3.30
6885.00	47.48	88.07	6782.60	31.00	366.63	27.80 S	366.69 E	367.75@	94.34	4.00
6916.00	49.51	88.21	6803.15	31.00	389.84	27.05 S	389.90 E	390.83@	93.97	6.56
6947.00	51.97	88.16	6822.76	31.00	413.83	26.29 S	413.88 E	414.72@	93.63	7.94
6978.00	54.61	88.63	6841.29	31.00	438.67	25.60 S	438.72 E	439.47@	93.34	8.60
7009.00	55.66	88.52	6859.01	31.00	464.10	24.96 S	464.15 E	464.82@	93.08	3.40
7040.00	57.68	88.41	6876.05	31.00	489.99	24.27 S	490.04 E	490.64@	92.84	6.52
7071.00	59.62	88.76	6892.17	31.00	516.46	23.82 S	516.51 E	517.05@	92.62	6.33
7102.00	61.91	89.10	6907.31	31.00	543.50	23.11 S	543.55 E	544.04@	92.43	7.45
7133.00	64.63	89.47	6921.25	31.00	571.19	22.77 S	571.23 E	571.69@	92.28	8.84
7164.00	67.09	89.80	6933.93	31.00	599.47	22.59 S	599.52 E	599.95@	92.16	7.99
7195.00	70.43	89.98	6945.16	31.00	628.36	22.53 S	628.41 E	628.81@	92.05	10.79
7227.00	73.95	90.00	6954.95	32.00	658.82	22.53 S	658.87 E	659.26@	91.96	11.00
7258.00	76.59	90.08	6962.83	31.00	688.80	22.55 S	688.85 E	689.22@	91.87	8.52
7289.00	79.49	90.31	6969.25	31.00	719.13	22.65 S	719.17 E	719.53@	91.80	9.38
7320.00	82.22	90.35	6974.18	31.00	749.73	22.83 S	749.78 E	750.12@	91.74	8.81
7343.00	84.42	90.06	6976.85	23.00	772.57	22.91 S	772.62 E	772.96@	91.70	9.65
7447.00	88.55	87.60	6983.23	104.00	876.33	20.79 S	876.37 E	876.62@	91.36	4.62
7478.00	89.16	89.42	6983.85	31.00	907.31	19.98 S	907.35 E	907.57@	91.26	6.19
7541.00	91.28	91.25	6983.61	63.00	970.30	20.35 S	970.35 E	970.56@	91.20	4.44
7573.00	91.36	90.91	6982.87	32.00	1002.29	20.95 S	1002.33 E	1002.55@	91.20	1.09
7605.00	91.71	90.68	6982.01	32.00	1034.27	21.40 S	1034.32 E	1034.54@	91.19	1.31
7636.00	92.07	91.16	6980.99	31.00	1065.25	21.89 S	1065.30 E	1065.52@	91.18	1.93
7731.00	91.63	89.85	6977.92	95.00	1160.19	22.73 S	1160.24 E	1160.46@	91.12	1.45
7826.00	91.89	89.43	6975.00	95.00	1255.14	22.13 S	1255.19 E	1255.39@	91.01	0.52

PathFinder Energy Services, Inc.

Survey Report

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NASH UNIT #50H
EDDY COUNTY, NEW MEXICO
RIG: PIONEER # 33

Page 03/05

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)
7921.00	91.01	87.54	6972.60	95.00	1350.08	19.62 S	1350.12 E	1350.27@	90.83	2.19
8016.00	89.52	86.70	6972.16	95.00	1444.97	14.85 S	1445.00 E	1445.08@	90.59	1.80
8111.00	89.25	86.59	6973.18	95.00	1539.81	9.29 S	1539.83 E	1539.86@	90.35	0.31
8206.00	87.41	84.78	6975.95	95.00	1634.51	2.15 S	1634.51 E	1634.52@	90.08	2.72
8237.00	88.29	85.46	6977.11	31.00	1665.38	0.49 N	1665.38 E	1665.38@	89.98	3.59
8269.00	89.78	86.44	6977.65	32.00	1697.30	2.75 N	1697.29 E	1697.30@	89.91	5.57
8301.00	90.48	86.44	6977.58	32.00	1729.24	4.73 N	1729.23 E	1729.24@	89.84	2.19
8333.00	91.28	87.36	6977.09	32.00	1761.19	6.46 N	1761.18 E	1761.19@	89.79	3.81
8354.00	91.01	87.54	6976.67	21.00	1782.17	7.40 N	1782.16 E	1782.17@	89.76	1.55
8386.00	91.71	89.12	6975.91	32.00	1814.14	8.33 N	1814.13 E	1814.15@	89.74	5.40
8417.00	92.51	89.82	6974.77	31.00	1845.12	8.62 N	1845.11 E	1845.13@	89.73	3.43
8512.00	93.21	90.88	6970.03	95.00	1940.00	8.04 N	1939.99 E	1940.00@	89.76	1.34
8607.00	89.25	90.09	6967.99	95.00	2034.95	7.24 N	2034.94 E	2034.95@	89.80	4.25
8701.00	88.72	90.53	6969.65	94.00	2128.93	6.73 N	2128.92 E	2128.94@	89.82	0.73
8797.00	88.29	90.09	6972.16	96.00	2224.90	6.21 N	2224.89 E	2224.90@	89.84	0.64
8892.00	89.60	91.23	6973.91	95.00	2319.87	5.11 N	2319.86 E	2319.87@	89.87	1.83
8987.00	90.84	95.18	6973.54	95.00	2414.69	0.20 S	2414.69 E	2414.69@	90.00	4.36
9081.00	89.25	92.99	6973.47	94.00	2508.43	6.89 S	2508.45 E	2508.46@	90.16	2.88
9176.00	90.13	92.55	6973.98	95.00	2603.30	11.48 S	2603.33 E	2603.36@	90.25	1.04
9271.00	88.55	89.38	6975.08	95.00	2698.27	13.08 S	2698.30 E	2698.33@	90.28	3.73
9366.00	90.04	88.94	6976.25	95.00	2793.25	11.69 S	2793.28 E	2793.30@	90.24	1.63
9463.00	90.04	89.38	6976.18	97.00	2890.24	10.27 S	2890.27 E	2890.29@	90.20	0.45
9557.00	90.57	90.53	6975.68	94.00	2984.24	10.19 S	2984.26 E	2984.28@	90.20	1.35
9651.00	88.99	88.68	6976.04	94.00	3078.23	9.55 S	3078.25 E	3078.27@	90.18	2.59
9746.00	89.96	88.07	6976.91	95.00	3173.19	6.85 S	3173.21 E	3173.22@	90.12	1.21
9841.00	88.37	87.01	6978.29	95.00	3268.10	2.78 S	3268.11 E	3268.11@	90.05	2.01
9936.00	90.31	89.38	6979.39	95.00	3363.04	0.22 N	3363.04 E	3363.04@	90.00	3.22
10031.00	91.36	90.46	6978.00	95.00	3458.02	0.35 N	3458.03 E	3458.03@	89.99	1.59

PathFinder Energy Services, Inc.

Survey Report

XTO ENERGY
NASH UNIT #50H
EDDY COUNTY, NEW MEXICO
RIG:PIONEER # 33

Page 04/05

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10126.00	90.40	91.00	6976.54	95.00	3553.00	0.86 S	3553.01 E	3553.01@	90.01	1.16
10221.00	88.90	92.72	6977.12	95.00	3647.94	3.95 S	3647.95 E	3647.95@	90.06	2.40
10316.00	91.71	94.07	6976.62	95.00	3742.74	9.57 S	3742.77 E	3742.79@	90.15	3.28
10411.00	91.19	92.85	6974.21	95.00	3837.53	15.30 S	3837.57 E	3837.60@	90.23	1.40
10506.00	90.04	92.03	6973.19	95.00	3932.42	19.35 S	3932.47 E	3932.52@	90.28	1.49
10601.00	88.55	88.97	6974.36	95.00	4027.40	20.17 S	4027.45 E	4027.50@	90.29	3.58
10695.00	89.16	88.31	6976.24	94.00	4121.36	17.94 S	4121.40 E	4121.44@	90.25	0.96
10790.00	88.99	87.83	6977.78	95.00	4216.30	14.75 S	4216.34 E	4216.36@	90.20	0.54
10821.00	87.49	88.26	6978.73	31.00	4247.26	13.69 S	4247.30 E	4247.32@	90.18	5.03
10852.00	87.32	88.57	6980.13	31.00	4278.22	12.83 S	4278.26 E	4278.28@	90.17	1.14
10884.00	87.14	87.86	6981.68	32.00	4310.17	11.84 S	4310.21 E	4310.22@	90.16	2.29
10916.00	87.41	87.71	6983.20	32.00	4342.11	10.60 S	4342.14 E	4342.16@	90.14	0.97
10947.00	87.41	87.71	6984.60	31.00	4373.06	9.36 S	4373.09 E	4373.10@	90.12	0.00
10978.00	86.00	86.88	6986.38	31.00	4403.98	7.90 S	4404.00 E	4404.01@	90.10	5.28
11009.00	85.56	86.42	6988.66	31.00	4434.84	6.10 S	4434.87 E	4434.87@	90.08	2.05
11040.00	85.82	87.09	6990.99	31.00	4465.71	4.35 S	4465.73 E	4465.73@	90.06	2.31
11072.00	85.82	87.63	6993.33	32.00	4497.59	2.88 S	4497.61 E	4497.61@	90.04	1.68
11104.00	86.09	87.09	6995.58	32.00	4529.48	1.41 S	4529.49 E	4529.50@	90.02	1.88
11136.00	86.88	87.82	6997.54	32.00	4561.39	0.01 N	4561.40 E	4561.40@	90.00	3.36
11167.00	87.49	89.64	6999.07	31.00	4592.35	0.70 N	4592.36 E	4592.36@	89.99	6.19
11199.00	88.37	90.54	7000.22	32.00	4624.33	0.65 N	4624.33 E	4624.33@	89.99	3.93
11231.00	88.20	89.80	7001.18	32.00	4656.31	0.55 N	4656.32 E	4656.32@	89.99	2.37
11262.00	88.72	88.69	7002.01	31.00	4687.30	0.96 N	4687.30 E	4687.30@	89.99	3.95
11293.00	89.96	89.77	7002.37	31.00	4718.29	1.38 N	4718.30 E	4718.30@	89.98	5.30
11325.00	89.78	90.15	7002.44	32.00	4750.29	1.40 N	4750.30 E	4750.30@	89.98	1.31
11357.00	88.55	90.73	7002.91	32.00	4782.29	1.15 N	4782.29 E	4782.29@	89.99	4.25
11389.00	87.85	91.19	7003.92	32.00	4814.26	0.62 N	4814.27 E	4814.27@	89.99	2.62
11420.00	86.97	90.23	7005.32	31.00	4845.23	0.23 N	4845.24 E	4845.24@	90.00	4.20

PathFinder Energy Services, Inc.

Survey Report

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Page 05/05

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)
11451.00	85.12	89.36	7007.45	31.00	4876.15	0.35 N	4876.16 E	4876.16@	90.00	6.59
11482.00	83.54	88.78	7010.52	31.00	4907.00	0.85 N	4907.01 E	4907.01@	89.99	5.43
11514.00	83.45	88.86	7014.14	32.00	4938.79	1.50 N	4938.79 E	4938.79@	89.98	0.38
11546.00	83.80	88.67	7017.70	32.00	4970.58	2.19 N	4970.59 E	4970.59@	89.97	1.24
11577.00	84.06	88.99	7020.97	31.00	5001.40	2.82 N	5001.41 E	5001.41@	89.97	1.33
11608.00	83.89	88.48	7024.23	31.00	5032.23	3.50 N	5032.23 E	5032.23@	89.96	1.73
11639.00	83.98	88.81	7027.50	31.00	5063.04	4.22 N	5063.05 E	5063.05@	89.95	1.10
11671.00	84.24	87.99	7030.79	32.00	5094.86	5.11 N	5094.87 E	5094.87@	89.94	2.68
11703.00	84.42	88.15	7033.95	32.00	5126.69	6.19 N	5126.69 E	5126.69@	89.93	0.75
11727.00	84.68	87.65	7036.23	24.00	5150.57	7.06 N	5150.57 E	5150.57@	89.92	2.34
STRAIGHT-LINE PROJECTION TO BIT @ 11795' MD.										
11795.00	84.68	87.65	7042.53	68.00	5218.23	9.84 N	5218.22 E	5218.23@	89.89	0.00



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET**CLIENT INFORMATION**

CLIENT:	XTO ENERGY		
LEASE / WELL No.:	NASH UNIT	# 50H	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY	NEW MEXICO	USA
RIG:	PIONEER 33		
API WELL No:	30-015-38991		
JOB No:	700005101-WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.47	LWD Calculated:	7.467
		Agreed Upon:	7.47
X =	624676.800000	Feet	Y = 474205.800000
			Feet
SITE LATITUDE:	32.303063 N	SITE LONGITUDE:	103.929812 W
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☒	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	89.88		
KELLY BUSHING ELEVATION:	19		
ALTITUDE:	3018	Feet	WATER DEPTH: N/A
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	6024		
DRIFT ANGLE:	0.62		
DRIFT DIRECTION:	246.31		
TRUE VERTICAL DEPTH:	6023.36		
VERTICAL SECTION:	27.99		
RECTANGULAR COORDINATE (N / S) :	-29.26		
RECTANGULAR COORDINATE (E / W) :	28.05		
CLOSURE DISTANCE / DIRECTION:	40.53	136.21	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	6076	TOTAL DEPTH:	11810
KICKOFF ANGLE:	0	MAX ANGLE:	88.6

PES Engineers:

P. DASB. KITCHENS

**Signature of both field engineers required if applicable

Directional Driller:

W. J. T.

DATE:

1/5/12

Scientific Drilling

Gyroscopic Survey Report for XTO

Well Location	EDDY COUNTY, NEW MEXICO
Well Name	NASH #50H
Rig Name	PIONEER #33
Survey Date	1/19/2012
Latitude	32.3030000°N
North Reference	Grid North
Grid Correction	-0.22 deg
Depth Reference	RKB (19.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 89.88Azim (deg)
Definitive Survey	FINAL GYRO SURVEY
Operator(s)	CHASE BARON, LEO GARZA

Well Notes

Scientific Drilling

Survey Report

Survey: FINAL GYRO SURVEY									
Survey Date: 1/19/2012									
MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Dogleg Severity	Closure Distance
ft	deg	deg	ft	ft	ft	ft	deg	7100ft	ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00
100.00	0.20	22.61	100.00	0.07	0.16	0.07	22.61	0.20	0.18
200.00	0.11	324.36	200.00	0.08	0.41	0.08	11.04	0.17	0.41
300.00	0.07	123.54	300.00	0.08	0.45	0.07	9.33	0.18	0.46
400.00	0.11	135.76	400.00	0.19	0.35	0.19	28.70	0.04	0.40
500.00	0.09	159.34	500.00	0.29	0.21	0.29	54.03	0.04	0.35
600.00	0.22	145.58	600.00	0.42	-0.03	0.42	93.93	0.14	0.42
700.00	0.36	128.54	700.00	0.78	-0.38	0.78	116.26	0.16	0.87
800.00	0.30	138.03	800.00	1.19	-0.77	1.19	122.83	0.08	1.42
900.00	0.36	132.12	899.99	1.59	-1.17	1.60	126.25	0.07	1.98
1000.00	0.41	133.27	999.99	2.08	-1.62	2.09	127.88	0.05	2.64
1100.00	0.53	118.10	1099.99	2.75	-2.08	2.75	127.14	0.17	3.45
1200.00	0.60	114.48	1199.98	3.63	-2.52	3.63	124.71	0.08	4.42
1300.00	0.71	105.66	1299.98	4.71	-2.90	4.71	121.64	0.15	5.53
1400.00	0.70	93.83	1399.97	5.92	-3.11	5.93	117.71	0.15	6.69
1500.00	0.71	83.39	1499.96	7.15	-3.08	7.15	113.32	0.13	7.79
1600.00	0.68	71.30	1599.95	8.32	-2.82	8.33	108.72	0.15	8.79
1700.00	0.70	51.12	1699.95	9.36	-2.25	9.36	103.49	0.24	9.63
1800.00	0.69	38.15	1799.94	10.21	-1.39	10.22	97.72	0.16	10.31
1900.00	0.72	30.72	1899.93	10.91	-0.37	10.91	91.95	0.10	10.92
2000.00	0.47	36.28	1999.93	11.47	0.50	11.47	87.52	0.25	11.48
2100.00	0.38	35.25	2099.92	11.91	1.10	11.90	84.74	0.09	11.96
2200.00	0.24	289.25	2199.92	11.90	1.44	11.89	83.12	0.50	11.98
2300.00	0.50	261.99	2299.92	11.26	1.44	11.26	82.69	0.31	11.35
2400.00	0.39	189.33	2399.92	10.78	1.05	10.77	84.43	0.53	10.82
2500.00	1.32	136.68	2499.91	11.51	-0.12	11.51	90.61	1.13	11.51
2600.00	1.49	134.78	2599.88	13.22	-1.88	13.22	98.08	0.17	13.36
2700.00	1.92	139.46	2699.83	15.23	-4.07	15.23	104.95	0.45	15.77
2800.00	2.31	141.71	2799.77	17.56	-6.92	17.57	111.50	0.40	18.89
2900.00	2.35	143.68	2899.68	20.02	-10.16	20.04	116.88	0.09	22.46
3000.00	2.19	145.29	2999.60	22.31	-13.39	22.34	120.92	0.17	26.05
3100.00	1.58	146.17	3099.55	24.17	-16.10	24.20	123.64	0.61	29.07
3200.00	0.92	125.63	3199.53	25.58	-17.72	25.62	124.66	0.79	31.15
3300.00	0.99	120.54	3299.51	26.97	-18.62	27.01	124.58	0.11	32.81
3400.00	0.82	122.06	3399.50	28.32	-19.44	28.36	124.43	0.17	34.38
3500.00	0.84	114.68	3499.49	29.60	-20.13	29.64	124.18	0.11	35.83
3600.00	0.71	111.12	3599.48	30.84	-20.66	30.88	123.78	0.15	37.16
3700.00	0.65	112.60	3699.47	31.94	-21.10	31.98	123.41	0.06	38.31
3800.00	0.56	116.01	3799.47	32.90	-21.53	32.94	123.16	0.10	39.35
3900.00	0.58	114.09	3899.46	33.79	-21.95	33.84	122.97	0.03	40.33

Scientific Drilling

Survey Report

Survey:		FINAL GYRO SURVEY								
Survey Date:		1/19/2012								
MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Direction deg	Dogleg Severity 1100ft	Closure Distance ft	
4000.00	0.52	109.51	3999.46	34.68	-22.31	34.73	122.71	0.07	41.28	
4100.00	0.36	101.04	4099.45	35.42	-22.52	35.47	122.41	0.17	42.01	
4200.00	0.30	100.54	4199.45	35.98	-22.63	36.03	122.13	0.06	42.55	
4300.00	0.21	96.94	4299.45	36.42	-22.69	36.47	121.90	0.09	42.95	
4400.00	0.22	80.74	4399.45	36.79	-22.69	36.84	121.62	0.06	43.26	
4500.00	0.19	65.90	4499.45	37.14	-22.59	37.18	121.27	0.06	43.51	
4600.00	0.17	81.46	4599.45	37.43	-22.50	37.48	120.97	0.05	43.71	
4700.00	0.07	40.83	4699.45	37.61	-22.43	37.66	120.78	0.12	43.83	
4800.00	0.07	350.99	4799.45	37.64	-22.32	37.69	120.64	0.06	43.81	
4900.00	0.10	224.19	4899.45	37.57	-22.33	37.62	120.69	0.16	43.74	
5000.00	0.15	220.85	4999.45	37.42	-22.49	37.47	120.98	0.05	43.70	
5100.00	0.21	225.63	5099.45	37.20	-22.72	37.25	121.38	0.06	43.63	
5200.00	0.28	228.07	5199.45	36.88	-23.02	36.93	121.93	0.07	43.52	
5300.00	0.39	219.35	5299.45	36.48	-23.44	36.53	122.69	0.12	43.41	
5400.00	0.66	215.92	5399.44	35.93	-24.18	35.98	123.90	0.28	43.35	
5500.00	0.76	223.60	5499.43	35.13	-25.12	35.18	125.53	0.14	43.23	
5600.00	0.93	220.26	5599.42	34.15	-26.22	34.20	127.48	0.18	43.10	
5700.00	1.01	232.40	5699.41	32.92	-27.38	32.98	129.70	0.22	42.86	
5800.00	1.12	255.72	5799.39	31.28	-28.15	31.34	131.94	0.44	42.13	
5900.00	0.90	253.65	5899.38	29.58	-28.62	29.64	133.99	0.22	41.20	
6000.00	0.75	243.13	5999.37	28.25	-29.13	28.31	135.82	0.21	40.62	
6024.00	0.62	246.31	6023.36	27.99	-29.26	28.05	136.21	0.56	40.53	

Scientific Drilling

Survey Report

Survey:		FINAL GYRO SURVEY								
Survey Date:		1/19/2012								
MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Dogleg Severity	Closure Distance	
ft	deg	deg	ft	ft	ft	ft	deg	1/100ft	ft	
4000.00	0.52	109.51	3999.46	34.68	-22.31	34.73	122.71	0.07	41.28	
4100.00	0.36	101.04	4099.45	35.42	-22.52	35.47	122.41	0.17	42.01	
4200.00	0.30	100.54	4199.45	35.98	-22.63	36.03	122.13	0.06	42.55	
4300.00	0.21	96.94	4299.45	36.42	-22.69	36.47	121.90	0.09	42.95	
4400.00	0.22	80.74	4399.45	36.79	-22.69	36.84	121.62	0.06	43.26	
4500.00	0.19	65.90	4499.45	37.14	-22.59	37.18	121.27	0.06	43.51	
4600.00	0.17	81.46	4599.45	37.43	-22.50	37.48	120.97	0.05	43.71	
4700.00	0.07	40.83	4699.45	37.61	-22.43	37.66	120.78	0.12	43.83	
4800.00	0.07	350.99	4799.45	37.64	-22.32	37.69	120.64	0.06	43.81	
4900.00	0.10	224.19	4899.45	37.57	-22.33	37.62	120.69	0.16	43.74	
5000.00	0.15	220.85	4999.45	37.42	-22.49	37.47	120.98	0.05	43.70	
5100.00	0.21	225.63	5099.45	37.20	-22.72	37.25	121.38	0.06	43.63	
5200.00	0.28	228.07	5199.45	36.88	-23.02	36.93	121.93	0.07	43.52	
5300.00	0.39	219.35	5299.45	36.48	-23.44	36.53	122.69	0.12	43.41	
5400.00	0.66	215.92	5399.44	35.93	-24.18	35.98	123.90	0.28	43.35	
5500.00	0.76	223.60	5499.43	35.13	-25.12	35.18	125.53	0.14	43.23	
5600.00	0.93	220.26	5599.42	34.15	-26.22	34.20	127.48	0.18	43.10	
5700.00	1.01	232.40	5699.41	32.92	-27.38	32.98	129.70	0.22	42.86	
5800.00	1.12	255.72	5799.39	31.28	-28.15	31.34	131.94	0.44	42.13	
5900.00	0.90	253.65	5899.38	29.58	-28.62	29.64	133.99	0.22	41.20	
6000.00	0.75	243.13	5999.37	28.25	-29.13	28.31	135.82	0.21	40.62	
6024.00	0.62	246.31	6023.36	27.99	-29.26	28.05	136.21	0.56	40.53	



A Schlumberger Company

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

XTO Energy
Nash Unit #50H
Eddy County, NM
Rig: Pioneer 33

Wed Jan 18 12:35:46 2012

Coordinates

Latitude: 32.303063 N (32 deg. 18 min. 11.0276 sec.)
Longitude: 103.929812 W (-103 deg. 55 min. 47.3224 sec.)
Elevation: 3037.00 feet.
Calculation Date: Jan/18/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.1838 degrees
Total Magnetic Field: 0.48568 gauss
Magnetic Declination: 7.683437 degrees
Horizontal Intensity: 0.241488 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.683437 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 624676.8000 feet
Y: 474205.8000 feet
True to Grid: (convergence) -0.215644 degrees
Magnetic to Grid: 7.467793 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.467793 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

XTO ENERGY
NASH UNIT #50H
NASH DRAW; DELAWARE
Rig: PIONEER # 33

Fri Jan 20 08:33:02 2012

ON LOCATION

Coordinates

Latitude: 32.303063 N (32 deg. 18 min. 11.0276 sec.)
Longitude: 103.929812 W (-103 deg. 55 min. 47.3224 sec.)
Elevation: 3035.50 feet.
Calculation Date: Jan/19/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.1837 degrees
Total Magnetic Field: 0.48567 gauss
Magnetic Declination: 7.683102 degrees
Horizontal Intensity: 0.241487 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.683102 Degr.

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 624676.8000 feet
Y: 474205.8000 feet
True to Grid: (convergence) -0.215644 degrees
Magnetic to Grid: 7.467459 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.467459 Degr.