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XTO

North Vacuum Abo
NVAU #242H
NVAU #242H
OH

Survey: Survey #1

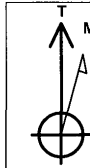
Pathfinder X & Y Survey Report

18 August, 2008

PATHFINDER
ENERGY SERVICES



Project: North Vacuum Abo
Site: NVAU #242H
Well: NVAU #242H
Wellbore: OH
Plan: Plan #1 (NVAU #242H/OH)

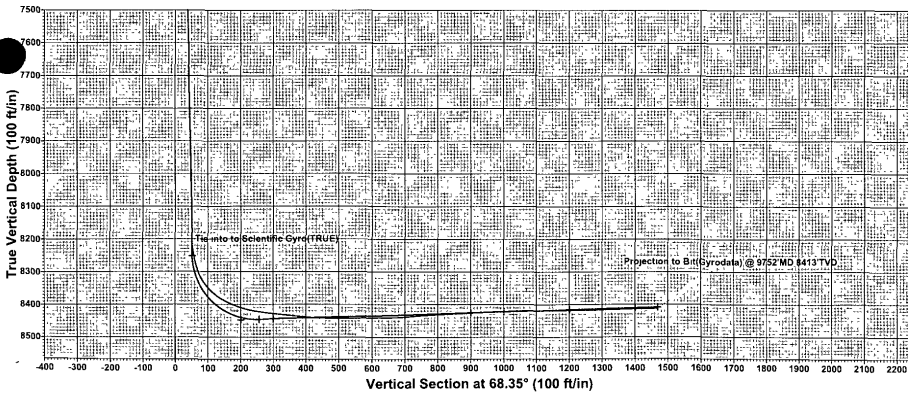
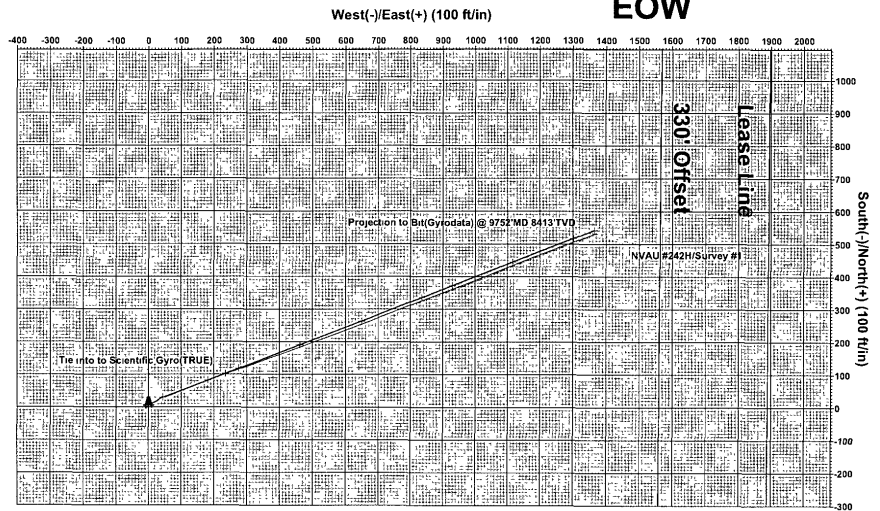


Azimuths to True North
Magnetic North: 7.95°
Magnetic Field
Strength: 49313.6snT
Dip Angle: 60.82°
Date: 2008/07/28
Model: IGRF200510



PROJECT DETAILS North Vacuum Abo
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: True

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSec	Target	
1	8283.00	0.92	90.63	8252.31	29.35	44.60	0.00	0.00	52.28		
2	8566.92	92.26	68.74	8446.00	103.40	335.62	29.12	-01.68	356.77		
3	8582.80	92.74	68.74	8446.31	108.15	350.39	3.00	0.96	272.63		
4	8610.20	92.74	68.74	8444.00	118.07	275.91	0.00	0.00	300.00	TGT @ 300' VS	
5	8647.69	91.61	68.74	8442.58	131.65	210.81	3.00	-179.68	337.46		
6	8810.48	91.61	68.74	8438.00	180.66	462.47	0.00	0.00	500.18	TGT @ 500' VS	
7	8814.02	91.72	68.74	8437.90	191.95	465.76	3.00	1.77	503.72		
8	9010.75	91.72	68.74	8432.00	263.25	649.92	0.00	0.00	700.36	TGT @ 700' VS	
9	9020.67	92.02	68.74	8431.08	266.84	658.37	3.00	0.05	710.28	TGT @ 900' VS	
10	9210.51	92.02	68.74	8428.00	335.63	835.08	0.00	0.00	900.00	TGT @ 900' VS	
11	9221.36	91.69	68.73	8424.05	339.56	845.19	3.00	-178.86	910.84		
12	9311.19	91.69	68.73	8422.00	372.13	928.86	0.00	0.00	1000.63	TGT @ 1000' VS	
13	9512.11	91.72	68.74	8421.97	372.46	929.72	3.00	13.05	1001.54		
14	9511.46	91.72	68.74	8416.00	444.71	1115.42	0.00	0.00	1200.80	TGT @ 1200' VS	
15	9521.10	91.43	68.74	8415.74	446.20	1124.40	3.00	179.94	1210.44		
16	9711.16	91.43	68.74	8411.00	517.10	1301.47	0.00	0.00	1400.44	TGT @ 1400' VS	
17	9720.44	91.71	68.74	8410.75	520.46	1310.11	3.00	-1.05	1409.71		
18	9779.11	91.71	68.74	8409.00	541.72	1364.76	0.00	0.00	1468.35	PBHL @ 9779 1MD, 8409TVD	



WELL DETAILS NVAU #242H							
Ground Elevation		4023.00		Well @ 4023.00ft (Original Well Elev)			
RKB Elevation				Original Well Elev			
+N/S	+E/W	North	East	Latitude	Longitude	Slot	
0.00	0.00	658659.500	747357.100	32° 46' 29.269 N	103° 31' 41.749 W		

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)							
Name	TVD	+N/S	+E/W	North	East	Shape	
KOP @ 8814' MD, 8437' TVD	8283.00	29.35	44.59	658680.190	747401.476	Point	
PBHL @ 9779 1MD, 8409TVD	8409.00	541.72	1364.76	659202.600	748717.700	Point	
TGT @ 1400' VS	8411.00	517.10	1301.47	659177.490	748654.600	Point	
TGT @ 1200' VS	8416.00	444.71	1115.42	659103.690	748460.100	Point	
TGT @ 1000' VS	8422.00	372.13	928.86	659029.690	748283.100	Point	
TGT @ 900' VS	8425.00	335.63	835.08	658992.480	748189.600	Point	
TGT @ 700' VS	8432.00	263.25	649.02	658918.680	748004.100	Point	
TGT @ 500' VS	8438.00	190.66	462.47	658844.680	747818.100	Point	
TGT @ 300' VS	8444.00	118.07	275.91	658770.670	747632.100	Point	
Landing Point @ 8566 9MD, 8446TVD	8446.00	102.40	235.82	658754.690	747591.830	Point	
TGT @ 200' VS	8447.00	81.92	182.93	658733.810	747539.400	Point	

Plan Plan #1 (NVAU #242H/OH)
Created By: Nate Bingham Date: 10/02/2008
Checked: _____ Date: _____



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023.00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Project	North Vacuum Abo		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	NVAU #242H		
Site Position:		Northing:	658,650 500 ft
From:	Map	Easting:	747,357 100 ft
Position Uncertainty:	0 00 ft	Slot Radius:	"
		Latitude:	32° 48' 29.269 N
		Longitude:	103° 31' 41.749 W
		Grid Convergence:	0 44 "

Well	NVAU #242H					
Well Position	+N/-S	0 00 ft	Northing:	658,650 500 ft	Latitude:	32° 48' 29.269 N
	+E/-W	0 00 ft	Easting:	747,357 100 ft	Longitude:	103° 31' 41.749 W
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	4,023 00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2008/07/28	7.95	60 82	49,314

Design		OH		
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	68 35



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Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Survey Program		Date	2008/08/18		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100 00	8,200 00	Gyro (OH)			
8,294 00	9,752 00	Survey #1 (OH)			

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,200 00	0.89	88 54	8,199 31	4,176 31	29 34	43 76	51.50	0 00	658,680 18	747,400 64
Tie into to Scientific Gyro(TRUE)										
8,294.00	17 80	76 70	8,291.73	4,268 73	32 69	58.58	66.51	18.01	658,683.64	747,415 43
8,325.00	29 20	68 60	8,320 12	4,297 12	36 56	70 28	78 81	38.14	658,687.59	747,427 10
8,357.00	39 70	65 40	8,346.47	4,323 47	43.68	86.89	96.87	33.29	658,694 84	747,443.65
8,389.00	50 40	67.40	8,369 05	4,346.05	52.70	107 62	119 47	33.73	658,704.02	747,464.32
8,420 00	60 60	67 80	8,386 59	4,363 59	62 41	131 21	144 98	32.92	658,713.91	747,487.83
8,452 00	67 30	69 20	8,400 63	4,377.63	72 94	157 95	173 72	21 30	658,724.64	747,514 49
8,483.00	72 90	69.40	8,411 18	4,388 18	83 23	185 21	202 85	18 07	658,735 14	747,541.67
8,516.00	78 90	71 10	8,419.21	4,396 21	94 04	215.32	234.82	18.86	658,746 18	747,571.69
8,547.00	82.50	71 00	8,424.22	4,401.22	103.97	244.25	265.37	11.62	658,756 33	747,600.55
8,578 00	83 80	70 30	8,427 92	4,404.92	114 17	273 28	296 13	4.76	658,766 75	747,629 51
8,610 00	83 90	70 20	8,431 35	4,408 35	124 92	303 23	327 93	0.44	658,777 73	747,659 37
8,642 00	83 90	69 30	8,434.75	4,411 75	135 93	333 08	359 73	2 80	658,788 97	747,689 14
8,673 00	84 30	69 70	8,437.94	4,414.94	146 73	361.96	390 56	1 82	658,799 98	747,717 94
8,705 00	85 70	71 70	8,440.73	4,417 73	157 27	392 05	422 41	7 61	658,810 75	747,747.94
8,737 00	89 00	69 50	8,442.21	4,419.21	167.88	422.19	454 35	12 39	658,821 59	747,778.00
8,768 00	88 80	68 70	8,442.80	4,419.80	178.94	451.15	485.34	2 66	658,832 87	747,806 87
8,799 00	91 20	69.50	8,442 80	4,419.80	190 00	480.11	516 33	8 16	658,844 15	747,835 75
8,831 00	91 40	69.60	8,442.07	4,419 07	201.18	510 08	548 32	0 70	658,855.55	747,865.63
8,863 00	91 10	70 00	8,441 38	4,418 38	212 22	540 11	580 30	1 56	658,866 83	747,895.57



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Pathfinder X & Y Survey Report



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Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023.00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,895.00	90.80	69.20	8,440.85	4,417.85	223.38	570.09	612.29	2.67	658,878.21	747,925.48
8,926.00	90.50	69.10	8,440.49	4,417.49	234.41	599.06	643.28	1.02	658,889.46	747,954.36
8,958.00	92.70	69.10	8,439.60	4,416.60	245.82	628.94	675.27	6.87	658,901.10	747,984.15
8,990.00	94.30	68.70	8,437.65	4,414.65	257.32	658.74	707.20	5.15	658,912.83	748,013.86
9,021.00	94.00	68.60	8,435.40	4,412.40	268.57	687.54	738.12	1.02	658,924.30	748,042.57
9,053.00	93.50	69.00	8,433.31	4,410.31	280.12	717.31	770.05	2.00	658,936.07	748,072.25
9,085.00	93.50	68.80	8,431.36	4,408.36	291.62	747.11	801.99	0.62	658,947.80	748,101.97
9,116.00	93.20	68.40	8,429.55	4,406.55	302.91	775.92	832.94	1.61	658,959.31	748,130.69
9,148.00	93.10	68.60	8,427.79	4,404.79	314.62	805.65	864.89	0.70	658,971.25	748,160.33
9,180.00	92.50	69.30	8,426.22	4,403.22	326.10	835.48	896.85	2.88	658,982.95	748,190.07
9,243.00	93.00	69.60	8,423.20	4,400.20	348.19	894.40	959.76	0.93	659,005.49	748,248.82
9,275.00	92.60	69.50	8,421.64	4,398.64	359.36	924.35	991.72	1.29	659,016.88	748,278.68
9,307.00	92.40	69.00	8,420.24	4,397.24	370.68	954.24	1,023.68	1.68	659,028.44	748,308.49
9,338.00	91.50	69.10	8,419.19	4,396.19	381.76	983.18	1,054.66	2.92	659,039.74	748,337.34
9,370.00	90.00	68.70	8,418.77	4,395.77	393.28	1,013.03	1,086.66	4.85	659,051.48	748,367.10
9,402.00	90.40	68.00	8,418.66	4,395.66	405.09	1,042.77	1,118.66	2.52	659,063.51	748,396.76
9,433.00	89.90	68.20	8,418.58	4,395.58	416.65	1,071.53	1,149.66	1.74	659,075.29	748,425.43
9,465.00	90.80	68.50	8,418.38	4,395.38	428.45	1,101.27	1,181.66	2.96	659,087.33	748,455.08
9,496.00	90.60	68.00	8,418.00	4,395.00	439.94	1,130.07	1,212.65	1.74	659,099.03	748,483.78
9,528.00	91.00	68.30	8,417.55	4,394.55	451.85	1,159.76	1,244.65	1.56	659,111.17	748,513.39
9,560.00	90.70	69.10	8,417.08	4,394.08	463.47	1,189.57	1,276.65	2.67	659,123.02	748,543.11
9,591.00	91.30	69.50	8,416.54	4,393.54	474.43	1,218.57	1,307.64	2.33	659,134.19	748,572.02
9,623.00	91.70	69.00	8,415.70	4,392.70	485.76	1,248.48	1,339.62	2.00	659,145.75	748,601.85
9,655.00	91.30	69.40	8,414.86	4,391.86	497.12	1,278.39	1,371.61	1.77	659,157.34	748,631.66
9,686.00	90.90	69.00	8,414.27	4,391.27	508.13	1,307.36	1,402.60	1.82	659,168.57	748,660.55
9,711.00	91.20	68.90	8,413.81	4,390.81	517.10	1,330.69	1,427.59	1.26	659,177.72	748,683.81



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023.00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,752.00	91.20	68.90	8,412.95	4,389.95	531.86	1,368.93	1,468.58	0.00	659,192.77	748,721.94
Projection to Bit(Gyrodatta) @ 9752'MD 8413'TVD										



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Site:	NVAU #242H	MD Reference:	WELL @ 4023 00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TGT @ 1400' VS - survey misses by 10.99ft at 9683 75ft MD (8414.30 TVD, 507 32 N, 1305 26 E) - Point	0 00	0 44	8,411 00	517 10	1,301.47	659,177 490	748,654 600	32° 48' 34 386 N	103° 31' 26.501 W
PBHL @ 9779.1' MD, i - survey misses by 11 41ft at 9751.75ft MD (8412 96 TVD, 531 77 N, 1368 69 E) - Point	0 00	0 44	8,409.00	541 72	1,364 76	659,202 600	748,717.700	32° 48' 34.629 N	103° 31' 25.759 W
TGT @ 1200' VS - survey misses by 10 12ft at 9484 19ft MD (8418.13 TVD, 435.53 N, 1119.11 E) - Point	0 00	0 44	8,416.00	444 71	1,115 42	659,103 690	748,469 100	32° 48' 33 669 N	103° 31' 28 680 W
TGT @ 200' VS - survey misses by 35.11ft at 8489 22ft MD (8412 95 TVD, 85 32 N, 190.79 E) - Point	0 00	0 44	8,447.00	81 92	182 93	658,733.810	747,539 400	32° 48' 30 080 N	103° 31' 39 606 W
TGT @ 700' VS - survey misses by 10 93ft at 8983 43ft MD (8438 12 TVD, 254.94 N, 652 63 E) - Point	0.00	0 44	8,432 00	263 25	649.02	658,918 680	748,004.100	32° 48' 31.874 N	103° 31' 34.145 W
Landing Point @ 856f - survey misses by 22 80ft at 8541 96ft MD (8423 54 TVD, 102.35 N, 239.52 E) - Point	0.00	0 44	8,446 00	102.40	235 62	658,754.690	747,591 930	32° 48' 30 282 N	103° 31' 38.989 W
TGT @ 1000' VS - survey misses by 10 40ft at 9283 72ft MD (8421 25 TVD, 362.42 N, 932 50 E) - Point	0 00	0 44	8,422 00	372 13	928.86	659,029.690	748,283.100	32° 48' 32 951 N	103° 31' 30.866 W
TGT @ 900' VS - survey misses by 9 12ft at 9183 03ft MD (8426 09 TVD, 327 17 N, 838.31 E) - Point	0.00	0 44	8,425 00	335 63	835 08	658,992 480	748,189 600	32° 48' 32 590 N	103° 31' 31 965 W
TGT @ 300' VS - survey misses by 15 82ft at 8583 49ft MD (8428 51 TVD, 116 01 N, 278.42 E) - Point	0 00	0 44	8,444 00	118 07	275 91	658,770 670	747,632 100	32° 48' 30.438 N	103° 31' 38 517 W
KOP @ 8814' MD, 84 - survey misses by 4.51ft at 8253 30ft MD (8252 29 TVD, 30 44 N, 48 91 E) - Point	0.00	0 44	8,253 00	29 35	44 59	658,680.190	747,401 470	32° 48' 29 560 N	103° 31' 41 227 W
TGT @ 500' VS - survey misses by 8 47ft at 8782 76ft MD (8442.96 TVD, 184.25 N, 464 91 E) - Point	0 00	0 44	8,438 00	190 66	462 47	658,844.680	747,818 100	32° 48' 31 156 N	103° 31' 36.331 W



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Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Single User Db

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TGT @ 1400' VS - survey misses by 10 99ft at 9683 75ft MD (8414 30 TVD, 507.32 N, 1305 26 E) - Point	0.00	0.44	8,411.00	517.10	1,301.47	659,177.490	748,654.600	32° 48' 34.386 N	103° 31' 26.501 W
PBHL @ 9779.1' MD, : - survey misses by 11 41ft at 9751 75ft MD (8412 96 TVD, 531 77 N, 1368.69 E) - Point	0.00	0.44	8,409.00	541.72	1,364.76	659,202.600	748,717.700	32° 48' 34.629 N	103° 31' 25.759 W
TGT @ 1200' VS - survey misses by 10 12ft at 9484 19ft MD (8418 13 TVD, 435.53 N, 1119 11 E) - Point	0.00	0.44	8,416.00	444.71	1,115.42	659,103.690	748,469.100	32° 48' 33.669 N	103° 31' 28.680 W
TGT @ 200' VS - survey misses by 35.11ft at 8489 22ft MD (8412.95 TVD, 85 32 N, 190 79 E) - Point	0.00	0.44	8,447.00	81.92	182.93	658,733.810	747,539.400	32° 48' 30.080 N	103° 31' 39.606 W
TGT @ 700' VS - survey misses by 10.93ft at 8983.43ft MD (8438 12 TVD, 254 94 N, 652 63 E) - Point	0.00	0.44	8,432.00	263.25	649.02	658,918.680	748,004.100	32° 48' 31.874 N	103° 31' 34.145 W
Landing Point @ 856ft - survey misses by 22.80ft at 8541 96ft MD (8423 54 TVD, 102 35 N, 239.52 E) - Point	0.00	0.44	8,446.00	102.40	235.62	658,754.690	747,591.930	32° 48' 30.282 N	103° 31' 38.989 W
TGT @ 1000' VS - survey misses by 10.40ft at 9283 72ft MD (8421 25 TVD, 362 42 N, 932 50 E) - Point	0.00	0.44	8,422.00	372.13	928.86	659,029.690	748,283.100	32° 48' 32.951 N	103° 31' 30.866 W
TGT @ 900' VS - survey misses by 9 12ft at 9183.03ft MD (8426.09 TVD, 327 17 N, 838.31 E) - Point	0.00	0.44	8,425.00	335.63	835.08	658,992.480	748,189.600	32° 48' 32.590 N	103° 31' 31.965 W
TGT @ 300' VS - survey misses by 15 82ft at 8583 49ft MD (8428 51 TVD, 116.01 N, 278 42 E) - Point	0.00	0.44	8,444.00	118.07	275.91	658,770.670	747,632.100	32° 48' 30.438 N	103° 31' 38.517 W
KOP @ 8814' MD, 84 - survey misses by 4 51ft at 8253.30ft MD (8252 29 TVD, 30.44 N, 48.91 E) - Point	0.00	0.44	8,253.00	29.35	44.59	658,680.190	747,401.470	32° 48' 29.560 N	103° 31' 41.227 W
TGT @ 500' VS - survey misses by 8 47ft at 8782 76ft MD (8442 96 TVD, 184 25 N, 464 91 E) - Point	0.00	0.44	8,438.00	190.66	462.47	658,844.680	747,818.100	32° 48' 31.156 N	103° 31' 36.331 W



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023 00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023 00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TGT @ 1400' VS - survey misses by 10 99ft at 9683 75ft MD (8414 30 TVD, 507 32 N, 1305 26 E) - Point	0.00	0.44	8,411 00	517.10	1,301 47	659,177 490	748,654 600	32° 48' 34.386 N	103° 31' 26 501 W
PBHL @ 9779 1'MD, : - survey misses by 11.41ft at 9751.75ft MD (8412 96 TVD, 531 77 N, 1368.69 E) - Point	0 00	0.44	8,409 00	541 72	1,364.76	659,202 600	748,717 700	32° 48' 34.629 N	103° 31' 25 759 W
TGT @ 1200'VS - survey misses by 10 12ft at 9484 19ft MD (8418 13 TVD, 435.53 N, 1119 11 E) - Point	0 00	0.44	8,416.00	444 71	1,115 42	659,103.690	748,469.100	32° 48' 33 669 N	103° 31' 28 680 W
TGT @ 200' VS - survey misses by 35.11ft at 8489 22ft MD (8412 95 TVD, 85.32 N, 190.79 E) - Point	0.00	0.44	8,447.00	81.92	182 93	658,733 810	747,539.400	32° 48' 30 080 N	103° 31' 39 606 W
TGT @ 700' VS - survey misses by 10 93ft at 8983 43ft MD (8438 12 TVD, 254.94 N, 652 63 E) - Point	0.00	0.44	8,432.00	263 25	649 02	658,918.680	748,004.100	32° 48' 31.874 N	103° 31' 34 145 W
Landing Point @ 856ft - survey misses by 22 80ft at 8541 96ft MD (8423 54 TVD, 102 35 N, 239 52 E) - Point	0 00	0.44	8,446.00	102.40	235 62	658,754 690	747,591.930	32° 48' 30.282 N	103° 31' 38.989 W
TGT @ 1000' VS - survey misses by 10 40ft at 9283 72ft MD (8421.25 TVD, 362 42 N, 932 50 E) - Point	0 00	0 44	8,422 00	372.13	928.86	659,029 690	748,283.100	32° 48' 32.951 N	103° 31' 30 866 W
TGT @ 900' VS - survey misses by 9 12ft at 9183 03ft MD (8426.09 TVD, 327 17 N, 838.31 E) - Point	0 00	0.44	8,425.00	335.63	835 08	658,992 480	748,189 600	32° 48' 32 590 N	103° 31' 31 965 W
TGT @ 300'VS - survey misses by 15 82ft at 8583.49ft MD (8428 51 TVD, 116.01 N, 278 42 E) - Point	0.00	0.44	8,444 00	118 07	275.91	658,770 670	747,632 100	32° 48' 30 438 N	103° 31' 38 517 W
KOP @ 8814' MD, 84 - survey misses by 4 51ft at 8253 30ft MD (8252 29 TVD, 30 44 N, 48.91 E) - Point	0.00	0 44	8,253 00	29.35	44.59	658,680.190	747,401.470	32° 48' 29.560 N	103° 31' 41 227 W
TGT @ 500' VS - survey misses by 8 47ft at 8782.76ft MD (8442 96 TVD, 184.25 N, 464 91 E) - Point	0 00	0 44	8,438.00	190 66	462.47	658,844.680	747,818.100	32° 48' 31.156 N	103° 31' 36 331 W



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023 00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023 00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TGT @ 1400' VS - survey misses by 10 99ft at 9683 75ft MD (8414.30 TVD, 507.32 N, 1305.26 E) - Point	0 00	0 44	8,411 00	517 10	1,301 47	659,177 490	748,654 600	32° 48' 34 386 N	103° 31' 26 501 W
PBHL @ 9779 1'MD, i - survey misses by 11.41ft at 9751.75ft MD (8412 96 TVD, 531 77 N, 1368.69 E) - Point	0 00	0 44	8,409 00	541.72	1,364 76	659,202 600	748,717 700	32° 48' 34.629 N	103° 31' 25.759 W
TGT @ 1200'VS - survey misses by 10 12ft at 9484 19ft MD (8418.13 TVD, 435 53 N, 1119 11 E) - Point	0 00	0 44	8,416 00	444.71	1,115 42	659,103 690	748,469.100	32° 48' 33 669 N	103° 31' 28 680 W
TGT @ 200' VS - survey misses by 35.11ft at 8489.22ft MD (8412 95 TVD, 85 32 N, 190.79 E) - Point	0.00	0 44	8,447 00	81.92	182 93	658,733 810	747,539 400	32° 48' 30.080 N	103° 31' 39.606 W
TGT @ 700' VS - survey misses by 10 93ft at 8983 43ft MD (8438.12 TVD, 254 94 N, 652 63 E) - Point	0 00	0 44	8,432 00	263.25	649.02	658,918 680	748,004 100	32° 48' 31.874 N	103° 31' 34.145 W
Landing Point @ 856ft - survey misses by 22 80ft at 8541.96ft MD (8423.54 TVD, 102.35 N, 239.52 E) - Point	0.00	0 44	8,446.00	102.40	235.62	658,754 690	747,591 930	32° 48' 30 282 N	103° 31' 38 989 W
TGT @ 1000' VS - survey misses by 10 40ft at 9283 72ft MD (8421 25 TVD, 362 42 N, 932 50 E) - Point	0 00	0 44	8,422 00	372 13	928 86	659,029.690	748,283 100	32° 48' 32 951 N	103° 31' 30.866 W
TGT @ 900' VS - survey misses by 9.12ft at 9183 03ft MD (8426 09 TVD, 327 17 N, 838 31 E) - Point	0.00	0 44	8,425 00	335 63	835 08	658,992 480	748,189.600	32° 48' 32 590 N	103° 31' 31 965 W
TGT @ 300'VS - survey misses by 15.82ft at 8583 49ft MD (8428 51 TVD, 116 01 N, 278.42 E) - Point	0.00	0 44	8,444 00	118.07	275 91	658,770 670	747,632 100	32° 48' 30.438 N	103° 31' 38.517 W
KOP @ 8814' MD, 84 - survey misses by 4 51ft at 8253 30ft MD (8252 29 TVD, 30 44 N, 48 91 E) - Point	0 00	0 44	8,253 00	29 35	44 59	658,680.190	747,401 470	32° 48' 29.560 N	103° 31' 41 227 W
TGT @ 500' VS - survey misses by 8.47ft at 8782.76ft MD (8442 96 TVD, 184.25 N, 464 91 E) - Point	0.00	0 44	8,438 00	190 66	462 47	658,844 680	747,818 100	32° 48' 31 156 N	103° 31' 36 331 W



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023.00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023.00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003 16 Single User Db

Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
TGT @ 1400' VS - survey misses by 10 99ft at 9683.75ft MD (8414 30 TVD, 507 32 N, 1305 26 E) - Point	0.00	0.44	8,411.00	517.10	1,301.47	659,177.490	748,654.600	32° 48' 34.386 N	103° 31' 26.501 W	
PBHL @ 9779 1' MD, : - survey misses by 11 41ft at 9751 75ft MD (8412 96 TVD, 531 77 N, 1368.69 E) - Point	0.00	0.44	8,409.00	541.72	1,364.76	659,202.600	748,717.700	32° 48' 34.629 N	103° 31' 25.759 W	
TGT @ 1200' VS - survey misses by 10.12ft at 9484 19ft MD (8418.13 TVD, 435 53 N, 1119 11 E) - Point	0.00	0.44	8,416.00	444.71	1,115.42	659,103.690	748,469.100	32° 48' 33.669 N	103° 31' 28.680 W	
TGT @ 200' VS - survey misses by 35 11ft at 8489.22ft MD (8412 95 TVD, 85.32 N, 190 79 E) - Point	0.00	0.44	8,447.00	81.92	182.93	658,733.810	747,539.400	32° 48' 30.080 N	103° 31' 39.606 W	
TGT @ 700' VS - survey misses by 10 93ft at 8983.43ft MD (8438 12 TVD, 254 94 N, 652 63 E) - Point	0.00	0.44	8,432.00	263.25	649.02	658,918.680	748,004.100	32° 48' 31.874 N	103° 31' 34.145 W	
Landing Point @ 856f - survey misses by 22 80ft at 8541 96ft MD (8423 54 TVD, 102 35 N, 239 52 E) - Point	0.00	0.44	8,446.00	102.40	235.62	658,754.690	747,591.930	32° 48' 30.282 N	103° 31' 38.989 W	
TGT @ 1000' VS - survey misses by 10 40ft at 9283 72ft MD (8421 25 TVD, 362 42 N, 932 50 E) - Point	0.00	0.44	8,422.00	372.13	928.86	659,029.690	748,283.100	32° 48' 32.951 N	103° 31' 30.866 W	
TGT @ 900' VS - survey misses by 9.12ft at 9183.03ft MD (8426 09 TVD, 327 17 N, 838.31 E) - Point	0.00	0.44	8,425.00	335.63	835.08	658,992.480	748,189.600	32° 48' 32.590 N	103° 31' 31.965 W	
TGT @ 300' VS - survey misses by 15 82ft at 8583 49ft MD (8428 51 TVD, 116.01 N, 278 42 E) - Point	0.00	0.44	8,444.00	118.07	275.91	658,770.670	747,632.100	32° 48' 30.438 N	103° 31' 38.517 W	
KOP @ 8814' MD, 84 - survey misses by 4 51ft at 8253 30ft MD (8252.29 TVD, 30 44 N, 48 91 E) - Point	0.00	0.44	8,253.00	29.35	44.59	658,680.190	747,401.470	32° 48' 29.560 N	103° 31' 41.227 W	
TGT @ 500' VS - survey misses by 8.47ft at 8782.76ft MD (8442 96 TVD, 184 25 N, 464 91 E) - Point	0.00	0.44	8,438.00	190.66	462.47	658,844.680	747,818.100	32° 48' 31.156 N	103° 31' 36.331 W	



Pathfinder Energy Services
Pathfinder X & Y Survey Report



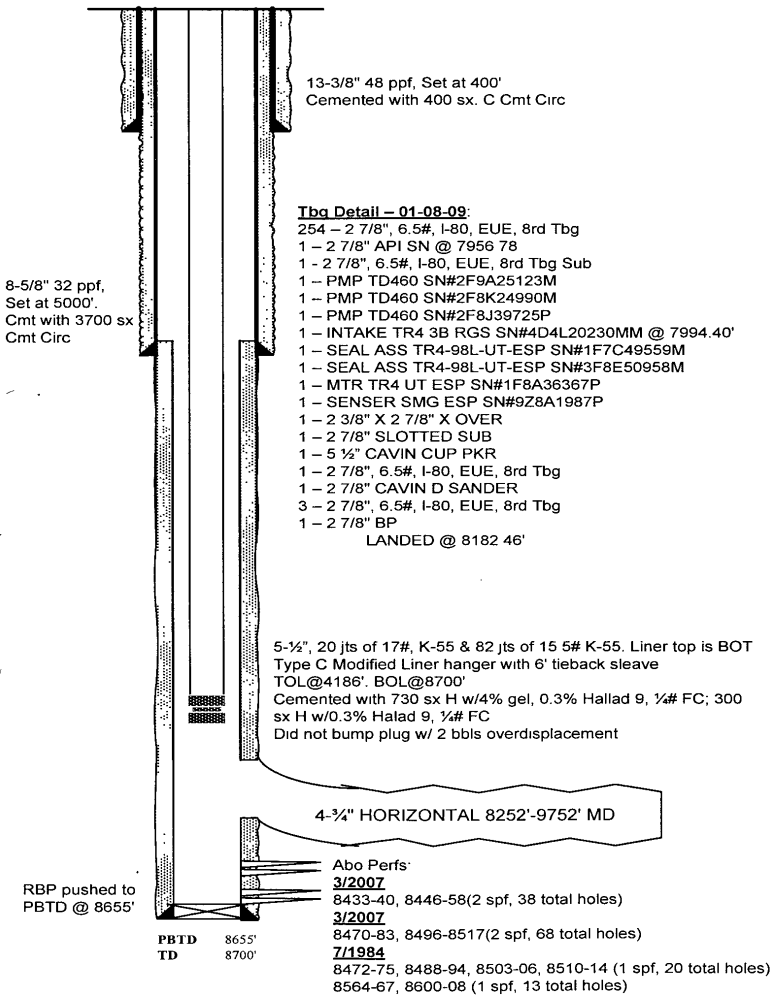
Company:	XTO	Local Co-ordinate Reference:	Well NVAU #242H
Project:	North Vacuum Abo	TVD Reference:	WELL @ 4023.00ft (Original Well Elev)
Site:	NVAU #242H	MD Reference:	WELL @ 4023 00ft (Original Well Elev)
Well:	NVAU #242H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Single User Db

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,200 00	8,199.31	29 34	43 76	Tie into to Scientific Gyro(TRUE)
9,752 00	8,412 95	531 86	1,368.93	Projection to Bit(Gyrodata) @ 9752'MD 8413'TVD

Checked By: _____ Approved By: _____ Date: _____

North Vacuum ABO Unit #242H

WELLBORE DIAGRAM



DATA
LOCATION: UNIT G, SEC. 26 T17-S & R34-E, 1809' FNL & 1890' FEL
COUNTY/STATE: LEA NM
STATUS: PRODUCER
FIELD: N. VACUUM ABO
API #: 30-025-28602
FORMATION: ABO
COMPL DATE: JULY 1984
SPUD DATE: 06-06-84
IP: 180 BO/ 71 MCF/ 177 BW

COMPLETION DATA
07-84: PERFORATE 8564-67 & 8600-08(13', 13 HOLES); ACIDIZE W/2900 GALS 15% NEFE & 26 RCNBS AIR 4.9 BPM, SWAB 5 BFPH, 99% OIL CUT, SET RBP @ 8550', TEST TO 1000 PSI, OK. PERF 8472-75, 8488-95, 8503-06 & 8510-14 (20', 20 HOLES), ACDZ W/7100 GAL 15% NEFE & 49 RCNBS, DID NOT BALL OUT, AIR 5 BPM. INTERVAL FLOWED 100 BO & 91 BW ON 32/64 CHK, SAMPLE WAS 70% OIL CUT POH W/ PKR, RETRIEVE RBP PUT BOTH INTERVALS ON PRODUCTION IPT: 180 BO, 71 BW, 177 MCF ON 8/9/84

WORKOVER HISTORY
07-91: ACDZ PERFS W/ 1500 GAL 15% HCL + 50 RCNBS, AIR 4 BPM @ 2250 PSI, BALLED OUT ATTEMPTED TO FRAC INTERVAL DOWN 3 1/2" WS, PUMPED 26880 GAL 30# X-LINKED BORATE GEL & 45000# SUPER DC 20/40 SAND, SCREENED OUT WITH 30,000# SAND IN FORMATION & ON 6 PPG SAND ON FORMATION, AIR 30 BPM & 6000 PSI, CO W/ CT & RWTP
03-07: PERF 8470-8517 (34', 68 TOTAL HOLES), SET RBP @ 8546' ACDZ 8470-8517 INTERVAL W/ 3000 GAL 20% HCL & 150 BS, DID NOT BALL OUT, AIR 6.0 BPM, ISIP 3118 PSI, 15 MIN 2108 PSI SURGED OFF BS, ACDZ 8470-8517 INTERVAL W/ 6000 GAL 20% ULTRAGEL & 20 BS, AIR 7.7 BPM, ISIP 3230 PSI, 15 MIN 2945 PSI MOVE UP RBP @ SET @ 8468', PERF 8433-8458 (19', 38 TOTAL HOLES) ACDZ 8433-58 INTERVAL W/ 3000 GAL 20% HCL & 50 BS, DID NOT BALL OUT, AIR 6.0 BPM, SURGED OFF BS, ACDZ 8433-58 INTERVAL W/ 6000 GAL 20% ULTRAGEL, AIR 7.9 BPM, ISIP 3208 PSI, 15 MIN 3002 PSI. RWTP
08-2008: - DRILL ABO 'B' LATERAL SET WEATHERFORD HE RBP @ 8253' (WL DEPTH). SET WEATHERFORD WHIPSTOCK. TOP OF WHIPSTOCK @ 8240', MILL WINDOW FROM 8240' TO 8252'. DRILL 4 3/4" LATERAL TO 9752' MD.

LATERAL DETAILS
KOP: 8240'
CURVE: 8240'-8547' MD
 8240'-8424' TVD
LATERAL: 8547'-9752' MD
 8412'-8442' TVD

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North Vacuum ABO Unit #242H

WELLBORE DIAGRAM

09-17-08: ACDZ ABO OH F/9151 – 9752' W/750 GALS 15% HCL ACID, FLUSHED W/81 BBLS OF 2% KCL WTR. 1.25" BALL WENT ON SEAT & SET PKRS @ 950 PSIG. AIR 6.3 BPM, MIN/MAX PRESS – 327 PSIG/4750 PSIG, MIN/MAX - .4 BPM/6.3 BPM, ISIP – 3750 PSIG, 5" – 3100 PSIG, 10" 2614 PSIG, 15" 2115 PSIG.

11-26-08: RIH ON 4 5/8" BIT & TAG @ TD 9736' W/LITTLE RESISTANCE, FOUND WRONG THREAD ON PKR BHA, SWAPPED OUT 12.53# P-110 ULTRA FJ TBG FOR 9.3# P-110 ULTRA FJ TBG.

12-05-08: ACDZ ABO ZONE LATERAL IN 4 STGS; F/9521 – 9752 W/2000 GALS OF 15% HCL ACID, 2000 GALS 35# LINEAR GET, 50000 GALS SPECTRA FRAC 35000 CONTAINING 70000# 30/50 ECONOPROP. F/9150 – 9450' W/2000 GALS OF 15% HCL ACID, 2000 GALS 35# LINEAR GET, 50000 GALS SPECTRA FRAC 35000 CONTAINING 50000# 30/50 ECONOPROP. F/8850 – 9150' W/2000 GALS OF 15% HCL ACID, 2000 GALS 35# LINEAR GET, 50000 GALS SPECTRA FRAC 35000 CONTAINING 50000# 30/50 ECONOPROP. F/8550 – 8850' W/2000 GALS OF 15% HCL ACID, 2000 GALS 35# LINEAR GET, 50000 GALS SPECTRA FRAC 35000 CONTAINING 50000# 30/50 ECONOPROP. ISIP @ 6013 PSI, 5" 5059 PSI, 10" 4507 PSI, 15" 4090 PSI. MADE 16 RUNS REC 263 BBLS/ 23.5 OIL/ 239.5 WTR/ BFL@ 100' EFL @ 300'.

12-12-08: RIH W/3 JTS 2 7/8" L80 TBG & LATCH ONTO WFORD WHIPSTOCK POOH & LD. ATTEMPTED TO LATCH ONTO RBP, PUSHED RBP TO 8655', PBTD @ 8655' & BTM PERF @ 8605'. RIH W/SUB PMP EQUIP. MOTOR SETTING DEPTH @ 8045.01'. PRE WO WELL TST: 38 BO/ 169 BW/ 80 MCF, POST WO WELL TEST: 88 BO/ 483 BW/ 57 MCF. API VSD @ 61 HTZ.

12-31-08: PRE WO WELL TST: 38 BO/ 169 BW/ 80 MCF. POST WO WELL TST: 89 BO/397 BW/ 54 MCF. FLAP – 4306' API VSD @ 64 HTZ.

01-06-09: PREP TO PULL GROUNDED ESP, POOH W/2 7/8" L80 TBG & LD WOOD GROUP SUB PMP. RIH W/NEW WOOD GROUP SUB PMP, 2 7/8" L80 PROD TBG. PMP INTAKE @ 7994.40', LATERAL @ 8252'. SENSER @ 8042.02', 8200' OF 2# RND CALBE. WELL PMPD UP IN 19", RWTP.

01-25-09: PRE WO WELL TST: 38 BO/ 169 BW/ 80 MCF. POST WO WELL TST: 84 BO/ 325 BW/ 45 MCF. API VSD @ 70 HTZ/ FLAP 3950'.