



Caza Petroleum

Lea County
Moore Cowbell "27" State
#1H
OH

RECEIVED

FEB 10 2010
HOBBSD

1st. Lateral Abandoned
SUR: P-27-12s-32e, 660/S & 990/E
BHL: O-27-12s-32e, 548/S & 1619/E
API # 30-025-39404

Survey: 1st Lateral

Pathfinder X & Y Survey Report

18 January, 2010

PATHFINDER



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Caza Petroleum		Local Co-ordinate Reference:		Well #1H	
Project: Lea County		TVD Reference:		WELL @ 4361.50ft (26.5'KB Correction)	
Site: Moore Cowbell "27" State		MD Reference:		WELL @ 4361.50ft (26.5'KB Correction)	
Well: #1H		North Reference:		Grid	
Wellbore: OH		Survey Calculation Method:		Minimum Curvature	
Design: OH		Database:		Midland Database	

Project Lea County					
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 Moore Cowbell "27" State					
Site Position:		Northing: 816,927.280 ft		Latitude: 33° 14' 38.943 N	
From: Map		Easting: 693,692.810 ft		Longitude: 103° 41' 59.313 W	
Position Uncertainty: 0.00 ft		Slot Radius:		Grid Convergence: 0.35 °	

Well #1H					
Well Position +N/-S 0.00 ft		Northing: 816,927.280 ft		Latitude: 33° 14' 38.943 N	
+E/-W 0.00 ft		Easting: 693,692.810 ft		Longitude: 103° 41' 59.313 W	
Position Uncertainty 0.00 ft		Wellhead Elevation: ft		Ground Level: 4,335.00 ft	

Wellbore OH					
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/30/2009	7.90	61.16	49,392

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	269.60	



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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Survey Program		Date 01/15/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	8,200.00	GYRO (OH)	CB-GYRO-MS	Camera based gyro multishot	
8,364.00	9,494.00	MWD #2 Lat (OH)	MWD	MWD - Standard	

Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
8,200.00	1.21	90.20	8,197.67	3,836.17	-123.07	28.20	-27.34	0.00	816,804.21	693,721.01	
8,364.00	14.95	272.54	8,359.95	3,998.45	-122.13	8.67	-7.81	9.85	816,805.15	693,701.48	
8,395.00	20.14	271.90	8,389.50	4,028.00	-121.77	-0.67	1.52	16.75	816,805.51	693,692.14	
8,427.00	24.62	271.43	8,419.08	4,057.58	-121.42	-12.84	13.69	14.01	816,805.86	693,679.97	
8,458.00	29.28	270.17	8,446.71	4,085.21	-121.24	-26.89	27.73	15.14	816,806.04	693,665.92	
8,490.00	33.85	269.91	8,473.97	4,112.47	-121.23	-43.63	44.48	14.29	816,806.05	693,649.18	
8,521.00	37.81	270.19	8,499.10	4,137.60	-121.21	-61.78	62.62	12.79	816,806.07	693,631.03	
8,553.00	41.50	270.89	8,523.73	4,162.23	-121.02	-82.19	83.04	11.62	816,806.26	693,610.62	
8,584.00	44.93	270.75	8,546.32	4,184.82	-120.71	-103.42	104.26	11.07	816,806.57	693,589.39	
8,616.00	49.24	270.25	8,568.10	4,206.60	-120.51	-126.84	127.68	13.52	816,806.77	693,565.97	
8,648.00	53.73	270.22	8,588.02	4,226.52	-120.41	-151.88	152.71	14.03	816,806.87	693,540.93	
8,679.00	58.21	270.31	8,605.37	4,243.87	-120.29	-177.56	178.40	14.45	816,806.99	693,515.25	
8,710.00	61.82	270.52	8,620.86	4,259.36	-120.10	-204.41	205.24	11.66	816,807.18	693,488.40	
8,742.00	65.16	270.75	8,635.14	4,273.64	-119.78	-233.04	233.87	10.46	816,807.50	693,459.77	
8,774.00	68.24	271.07	8,647.80	4,286.30	-119.31	-262.42	263.25	9.67	816,807.97	693,430.39	
8,805.00	72.02	271.30	8,658.33	4,296.83	-118.71	-291.56	292.38	12.21	816,808.57	693,401.25	
8,837.00	76.41	271.95	8,667.03	4,305.53	-117.83	-322.33	323.15	13.86	816,809.45	693,370.48	
8,869.00	80.28	271.58	8,673.50	4,312.00	-116.87	-353.65	354.46	12.15	816,810.41	693,339.16	
8,891.00	82.81	272.02	8,676.73	4,315.23	-116.18	-375.40	376.20	11.67	816,811.10	693,317.41	
8,919.08	86.17	271.53	8,679.43	4,317.93	-115.32	-403.33	404.13	12.09	816,811.96	693,289.48	
TGT0(MC#1H)											



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Site: Moore Cowbell "27" State
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
WELL @ 4361.50ft (26.5'KB Correction)
WELL @ 4361.50ft (26.5'KB Correction)
Grid
Minimum Curvature
Midland Database

Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,923.00	86.64	271.46	8,679.67	4,318.17	-115.22	-407.25	408.04	12.09	816,812.06	693,285.56
8,955.00	88.49	270.73	8,681.03	4,319.53	-114.61	-439.21	440.00	6.21	816,812.67	693,253.60
8,986.00	88.32	270.87	8,681.89	4,320.39	-114.17	-470.19	470.98	0.71	816,813.11	693,222.62
9,018.00	88.32	270.65	8,682.83	4,321.33	-113.75	-502.18	502.96	0.69	816,813.53	693,190.63
9,050.00	88.26	271.14	8,683.79	4,322.29	-113.25	-534.16	534.94	1.54	816,814.03	693,158.65
9,081.00	87.65	270.64	8,684.89	4,323.39	-112.77	-565.14	565.91	2.54	816,814.51	693,127.67
9,113.00	87.20	269.97	8,686.33	4,324.83	-112.60	-597.10	597.87	2.52	816,814.68	693,095.71
9,145.00	87.20	270.03	8,687.89	4,326.39	-112.60	-629.06	629.84	0.19	816,814.68	693,063.75
PBHL(DLAT) - PBHL(MC#1H) - TGT1@1960VS(Mc#1H) - TGT1Dlateral										



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Well:	#1H	North Reference:	Gnd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland Database

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
TGT1@1960VS(Mc#	0.00	0.00	8,716.50	-76.37	-1,960.00	816,850.910	691,732.810	33° 14' 38.304 N	103° 42' 22.396 W
- survey misses target center by 1331.74ft at 9145.00ft MD (8687.89 TVD, -112.60 N, -629.06 E)									
- Point									
TGT1Dlateral	0.00	0.00	8,741.50	-75.65	-1,960.00	816,851.630	691,732.810	33° 14' 38.311 N	103° 42' 22.396 W
- survey misses target center by 1332.53ft at 9145.00ft MD (8687.89 TVD, -112.60 N, -629.06 E)									
- Point									
PBHL(DLAT)	0.00	0.00	8,720.45	-27.95	-3,970.30	816,899.330	689,722.510	33° 14' 38.902 N	103° 42' 46.062 W
- survey misses target center by 3342.47ft at 9145.00ft MD (8687.89 TVD, -112.60 N, -629.06 E)									
- Point									
TGT0(MC#1H)	0.00	0.00	8,678.50	-2.79	-400.00	816,924.490	693,292.810	33° 14' 38.939 N	103° 42' 4.023 W
- survey misses target center by 112.58ft at 8919.08ft MD (8679.43 TVD, -115.32 N, -403.33 E)									
- Point									
PBHL(MC#1H)	0.00	0.00	8,741.00	-27.95	-3,970.30	816,899.330	689,722.510	33° 14' 38.902 N	103° 42' 46.062 W
- survey misses target center by 3342.73ft at 9145.00ft MD (8687.89 TVD, -112.60 N, -629.06 E)									
- Point									

Checked By: _____ Approved By: _____ Date: _____