

30-015-36369

Yates Petroleum Corporation

Eddy Co, New Mexico (Nad-83)

Glow Worm ALX Fed #16H

Glow Worm ALX Fed #16H

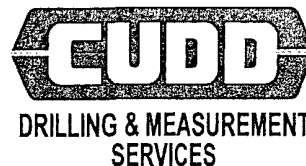
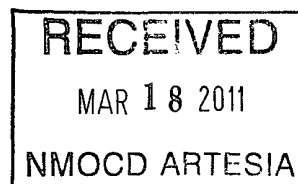
30-015-36369

Lateral #1

Survey: Cudd MWD Survey #1

Standard Survey Report

05 January, 2011



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CUDD Drilling & Measurement Services

Survey Report



Company:	Yates Petroleum Corporation	Local Co-ordinate Reference:	Site Glow Worm ALX Fed #16H
Project:	Eddy Co, New Mexico (Nad-83)	TVD Reference:	WELL @ 3420.00ft (Original Well Elev)
Site:	Glow Worm ALX Fed #16H	MD Reference:	WELL @ 3420.00ft (Original Well Elev)
Well:	Glow Worm ALX Fed #16H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003.21 Single User Db

Project:	Eddy Co, New Mexico (Nad-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:		Glow Worm ALX Fed #16H, Sec 4, T-23S, R-31E			
Site Position:		Northing:	487,946.69 ft	Latitude:	32° 20' 24.759 N
From:	Map	Easting:	713,102.05 ft	Longitude:	103° 46' 37.823 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.30 °

Well:	Glow Worm ALX Fed #16H					
Well Position	+N/-S	0.00 ft	Northing:	487,946.69 ft	Latitude:	32° 20' 24.759 N
	+E/-W	0.00 ft	Easting:	713,102.05 ft	Longitude:	103° 46' 37.823 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,420.00 ft	Ground Level:	3,397.00 ft	

Wellbore	Lateral #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/30/10	7.74	60.29	48,752

Design:	Lateral #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	179.62	

Survey Program		Date	01/05/11		
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
100.00	551.00	MS Energy Survey #1 (Lateral #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
779.00	12,525.00	Cudd MWD Survey #1 (Lateral #1)	Cudd MWD	Cudd MWD - Standard	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
551.00	1.00	273.76	550.98	0.38	-3.88	-0.41	0.00	0.00	0.00
Tie-In to Gyro Survey									
779.00	1.70	285.30	778.91	1.40	-9.13	-1.46	0.33	0.31	5.06
First Cudd MWD Survey									
1,036.00	1.60	287.40	1,035.81	3.48	-16.23	-3.59	0.05	-0.04	0.82
1,259.00	2.00	291.20	1,258.70	5.82	-22.83	-5.97	0.19	0.18	1.70
1,449.00	1.30	279.90	1,448.62	7.39	-28.04	-7.58	0.40	-0.37	-5.95
1,640.00	1.40	279.60	1,639.57	8.15	-32.47	-8.37	0.05	0.05	-0.16
1,830.00	1.60	280.20	1,829.50	9.01	-37.37	-9.26	0.11	0.11	0.32
2,020.00	1.90	271.10	2,019.41	9.54	-43.13	-9.82	0.21	0.16	-4.79
2,211.00	2.10	274.20	2,210.30	9.86	-49.79	-10.19	0.12	0.10	1.62
2,401.00	1.80	264.50	2,400.19	9.83	-56.23	-10.20	0.23	-0.16	-5.11



CUDD Drilling & Measurement Services

Survey Report



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Project:	Eddy Co, New Mexico (Nad-83)	TVD Reference:	WELL @ 3420.00ft (Original Well Elev)
Site:	Glow Worm ALX Fed #16H	MD Reference:	WELL @ 3420.00ft (Original Well Elev)
Well:	Glow Worm ALX Fed #16H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003.21 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,591.00	2.00	258.20	2,590.08	8.86	-62.45	-9.27	0.15	0.11	-3.32	
2,781.00	2.30	225.30	2,779.95	5.50	-68.40	-5.95	0.66	0.16	-17.32	
2,971.00	0.80	198.40	2,969.88	1.56	-71.53	-2.03	0.86	-0.79	-14.16	
3,161.00	0.90	198.80	3,159.86	-1.11	-72.43	0.63	0.05	0.05	0.21	
3,351.00	1.10	177.90	3,349.83	-4.34	-72.85	3.86	0.22	0.11	-11.00	
3,541.00	2.00	151.50	3,539.76	-9.08	-71.20	8.61	0.59	0.47	-13.89	
3,731.00	2.10	156.30	3,729.64	-15.18	-68.22	14.73	0.10	0.05	2.53	
3,921.00	1.90	165.60	3,919.53	-21.42	-66.03	20.98	0.20	-0.11	4.89	
4,018.00	2.10	163.60	4,016.47	-24.68	-65.13	24.25	0.22	0.21	-2.06	
4,148.00	2.30	158.50	4,146.37	-29.40	-63.50	28.98	0.22	0.15	-3.92	
4,339.00	0.70	187.50	4,337.30	-34.12	-62.25	33.71	0.90	-0.84	15.18	
4,529.00	0.90	179.40	4,527.28	-36.76	-62.39	36.35	0.12	0.11	-4.26	
4,719.00	0.80	159.40	4,717.26	-39.49	-61.90	39.09	0.16	-0.05	-10.53	
4,909.00	0.60	188.60	4,907.25	-41.72	-61.59	41.31	0.21	-0.11	15.37	
5,099.00	0.70	159.00	5,097.24	-43.79	-61.32	43.38	0.18	0.05	-15.58	
5,289.00	0.60	145.10	5,287.22	-45.69	-60.33	45.29	0.10	-0.05	-7.32	
5,479.00	0.70	150.20	5,477.21	-47.51	-59.19	47.12	0.06	0.05	2.68	
5,670.00	0.60	139.40	5,668.20	-49.28	-57.96	48.90	0.08	-0.05	-5.65	
5,859.00	0.40	165.50	5,857.19	-50.67	-57.15	50.29	0.16	-0.11	13.81	
6,025.00	0.70	160.10	6,023.19	-52.19	-56.66	51.81	0.18	0.18	-3.25	
6,215.00	0.50	165.80	6,213.17	-54.08	-56.06	53.71	0.11	-0.11	3.00	
6,405.00	0.60	155.90	6,403.17	-55.79	-55.45	55.43	0.07	0.05	-5.21	
6,596.00	0.50	185.94	6,594.16	-57.53	-55.13	57.17	0.16	-0.05	15.73	
6,787.00	0.40	252.74	6,785.15	-58.56	-55.85	58.19	0.26	-0.05	34.97	
6,977.00	0.50	208.54	6,975.15	-59.49	-56.88	59.11	0.18	0.05	-23.26	
7,167.00	0.60	209.24	7,165.14	-61.08	-57.76	60.70	0.05	0.05	0.37	
7,357.00	0.50	232.94	7,355.13	-62.45	-58.91	62.06	0.13	-0.05	12.47	
7,516.00	1.50	180.44	7,514.11	-64.95	-59.48	64.56	0.79	0.63	-33.02	
7,570.00	2.90	186.10	7,568.07	-67.01	-59.63	66.62	2.62	2.59	10.48	
7,602.00	5.80	183.30	7,599.97	-69.43	-59.81	69.04	9.08	9.06	-8.75	
7,634.00	9.60	180.70	7,631.68	-73.72	-59.93	73.32	11.92	11.88	-8.13	
7,665.00	13.10	180.10	7,662.06	-79.82	-59.97	79.42	11.30	11.29	-1.94	
7,697.00	16.70	179.40	7,692.98	-88.04	-59.93	87.65	11.26	11.25	-2.19	
7,729.00	20.00	178.60	7,723.35	-98.12	-59.75	97.72	10.34	10.31	-2.50	
7,761.00	23.40	178.30	7,753.08	-109.94	-59.43	109.55	10.63	10.63	-0.94	
7,792.00	26.60	179.10	7,781.17	-123.04	-59.13	122.64	10.38	10.32	2.58	
7,824.00	30.00	179.00	7,809.34	-138.20	-58.88	137.81	10.63	10.63	-0.31	
7,856.00	33.20	179.20	7,836.59	-154.97	-58.62	154.58	10.01	10.00	0.63	
7,887.00	37.10	179.40	7,861.94	-172.81	-58.40	172.42	12.59	12.58	0.65	
7,919.00	41.00	179.90	7,886.78	-192.97	-58.28	192.58	12.23	12.19	1.56	
7,951.00	44.60	179.60	7,910.26	-214.70	-58.19	214.31	11.27	11.25	-0.94	
7,982.00	48.50	180.40	7,931.57	-237.20	-58.19	236.81	12.72	12.58	2.58	
8,014.00	52.10	179.80	7,952.01	-261.82	-58.23	261.43	11.34	11.25	-1.88	
8,046.00	55.70	179.30	7,970.86	-287.67	-58.03	287.28	11.32	11.25	-1.56	
8,078.00	59.40	178.30	7,988.03	-314.66	-57.46	314.28	11.86	11.56	-3.13	
8,109.00	63.30	177.50	8,002.89	-341.84	-56.46	341.46	12.78	12.58	-2.58	
8,141.00	67.00	176.50	8,016.34	-370.84	-54.93	370.46	11.90	11.56	-3.13	
8,172.00	71.40	176.00	8,027.34	-399.75	-53.04	399.39	14.27	14.19	-1.61	
8,204.00	75.40	176.60	8,036.48	-430.34	-51.06	430.00	12.63	12.50	1.88	
8,236.00	78.90	177.10	8,043.60	-461.49	-49.35	461.15	11.04	10.94	1.56	
8,292.00	80.60	177.10	8,053.56	-516.52	-46.56	516.20	3.04	3.04	0.00	
8,324.00	83.10	177.40	8,058.10	-548.16	-45.04	547.85	7.87	7.81	0.94	
8,356.00	84.70	177.70	8,061.50	-579.95	-43.68	579.65	5.09	5.00	0.94	
8,388.00	87.40	177.60	8,063.70	-611.84	-42.37	611.55	8.44	8.44	-0.31	



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Survey Report



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Design:	Lateral #1	Database:	EDM 2003.21 Single User Db

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,419.00	90.10	176.80	8,064.38	-642.80	-40.86	642.51	9.08	8.71	-2.58
8,451.00	92.00	176.20	8,063.79	-674.73	-38.90	674.46	6.23	5.94	-1.88
8,483.00	92.50	176.30	8,062.54	-706.64	-36.81	706.38	1.59	1.56	0.31
8,515.00	92.80	175.80	8,061.06	-738.52	-34.61	738.28	1.82	0.94	-1.56
8,578.00	93.40	175.70	8,057.65	-801.26	-29.95	801.04	0.97	0.95	-0.16
8,642.00	92.00	174.40	8,054.64	-864.95	-24.43	864.77	2.98	-2.19	-2.03
8,705.00	92.40	174.00	8,052.22	-927.58	-18.07	927.44	0.90	0.63	-0.63
8,769.00	93.00	174.20	8,049.20	-991.17	-11.50	991.07	0.99	0.94	0.31
8,832.00	93.50	173.70	8,045.63	-1,053.72	-4.87	1,053.66	1.12	0.79	-0.79
8,896.00	93.10	173.90	8,041.95	-1,117.24	2.03	1,117.23	0.70	-0.63	0.31
8,959.00	91.30	174.80	8,039.53	-1,179.88	8.23	1,179.91	3.19	-2.86	1.43
9,022.00	90.10	174.40	8,038.76	-1,242.59	14.16	1,242.66	2.01	-1.90	-0.63
9,086.00	89.40	174.00	8,039.04	-1,306.27	20.62	1,306.37	1.26	-1.09	-0.63
9,149.00	89.70	174.40	8,039.53	-1,368.94	26.99	1,369.09	0.79	0.48	0.63
9,212.00	90.20	174.60	8,039.59	-1,431.65	33.03	1,431.84	0.85	0.79	0.32
9,307.00	90.80	174.40	8,038.76	-1,526.21	42.13	1,526.45	0.67	0.63	-0.21
9,403.00	89.70	175.90	8,038.34	-1,621.86	50.25	1,622.16	1.94	-1.15	1.56
9,498.00	90.60	178.50	8,038.09	-1,716.74	54.89	1,717.06	2.90	0.95	2.74
9,593.00	90.30	181.20	8,037.34	-1,811.73	55.14	1,812.05	2.86	-0.32	2.84
9,688.00	90.50	181.20	8,036.68	-1,906.70	53.15	1,907.01	0.21	0.21	0.00
9,783.00	91.30	180.70	8,035.19	-2,001.68	51.57	2,001.97	0.99	0.84	-0.53
9,878.00	91.60	180.70	8,032.79	-2,096.64	50.41	2,096.93	0.32	0.32	0.00
9,974.00	89.90	180.80	8,031.53	-2,192.62	49.16	2,192.90	1.77	-1.77	0.10
10,069.00	89.60	182.30	8,031.94	-2,287.58	46.59	2,287.84	1.61	-0.32	1.58
10,165.00	89.80	181.80	8,032.45	-2,383.52	43.15	2,383.75	0.56	0.21	-0.52
10,260.00	90.50	182.30	8,032.20	-2,478.46	39.76	2,478.66	0.91	0.74	0.53
10,355.00	90.90	182.70	8,031.04	-2,573.36	35.61	2,573.54	0.60	0.42	0.42
10,451.00	89.50	181.90	8,030.70	-2,669.28	31.76	2,669.43	1.68	-1.46	-0.83
10,546.00	89.20	180.80	8,031.78	-2,764.24	29.52	2,764.38	1.20	-0.32	-1.16
10,641.00	90.70	180.80	8,031.86	-2,859.23	28.20	2,859.35	1.58	1.58	0.00
10,737.00	88.60	180.60	8,032.45	-2,955.22	27.02	2,955.33	2.20	-2.19	-0.21
10,832.00	88.40	180.40	8,034.94	-3,050.18	26.19	3,050.29	0.30	-0.21	-0.21
10,928.00	89.60	180.40	8,036.61	-3,146.16	25.52	3,146.26	1.25	1.25	0.00
11,023.00	90.20	180.40	8,036.78	-3,241.16	24.86	3,241.25	0.63	0.63	0.00
11,119.00	90.70	180.60	8,036.02	-3,337.15	24.02	3,337.24	0.56	0.52	0.21
11,214.00	91.50	179.80	8,034.20	-3,432.13	23.69	3,432.21	1.19	0.84	-0.84
11,309.00	91.20	179.80	8,031.96	-3,527.10	24.02	3,527.19	0.32	-0.32	0.00
11,404.00	90.60	179.70	8,030.47	-3,622.09	24.44	3,622.17	0.64	-0.63	-0.11
11,500.00	90.20	179.70	8,029.80	-3,718.09	24.94	3,718.17	0.42	-0.42	0.00
11,618.00	89.80	180.60	8,029.80	-3,836.09	24.63	3,836.16	0.83	-0.34	0.76
11,713.00	88.10	180.90	8,031.54	-3,931.06	23.39	3,931.13	1.82	-1.79	0.32
11,809.00	88.30	180.30	8,034.55	-4,027.01	22.38	4,027.07	0.66	0.21	-0.63
11,904.00	88.20	180.30	8,037.46	-4,121.96	21.89	4,122.01	0.11	-0.11	0.00
12,000.00	88.70	178.30	8,040.05	-4,217.91	23.06	4,217.97	2.15	0.52	-2.08
12,095.00	88.90	177.90	8,042.04	-4,312.84	26.21	4,312.92	0.47	0.21	-0.42
12,190.00	89.60	177.90	8,043.29	-4,407.77	29.69	4,407.87	0.74	0.74	0.00
12,285.00	90.40	177.90	8,043.29	-4,502.70	33.17	4,502.82	0.84	0.84	0.00
12,380.00	91.40	178.00	8,041.79	-4,597.63	36.57	4,597.77	1.06	1.05	0.11
12,468.00	91.70	179.00	8,039.41	-4,685.56	38.87	4,685.72	1.19	0.34	1.14
Last Cudd MWD Survey									
12,525.00	91.70	179.00	8,037.72	-4,742.53	39.86	4,742.69	0.00	0.00	0.00
Proj to Bit									



CUDD Drilling & Measurement Services

Survey Report



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Project:	Eddy Co, New Mexico (Nad-83)	TVD Reference:	WELL @ 3420.00ft (Original Well Elev)
Site:	Glow Worm ALX Fed #16H	MD Reference:	WELL @ 3420.00ft (Original Well Elev)
Well:	Glow Worm ALX Fed #16H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003.21 Single User Db

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/S (ft)	+E/W (ft)	
551.00	550.98	0.38	-3.88	Tie-In to Gyro Survey
779.00	778.91	1.40	-9.13	First Cudd MWD Survey
12,468.00	8,039.41	-4,685.56	38.87	Last Cudd MWD Survey
12,525.00	8,037.72	-4,742.53	39.86	Proj to Bit

Checked By: _____	Approved By: _____	Date: _____
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Project: Eddy Co, New Mexico (Nad-83)
Site: Glow Worm ALX Fed #16H
Well: Glow Worm ALX Fed #16H
Wellbore: Lateral #1
Design: Design #2



SECTION DETAILS										
Sec	MD	Inc	Adj	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	8577.00	92.80	175.80	8058.42	-800.32	-30.43	0.00	0.00	800.10	
2	8677.35	92.80	175.80	8043.75	-1099.51	-8.46	0.00	0.00	1099.43	
3	9030.73	90.00	179.45	8040.00	-1252.66	-2.11	3.00	127.49	1252.62	
4	12521.57	90.00	179.45	8040.00	-4743.34	31.29	0.00	0.00	4743.45	PBHL - TD (GWALXF#16H)12-28-10

ANNOTATIONS		
TVD	MD	Annotation
8043.75	8677.35	Drop 37100'
8040.00	9030.73	EOC - Hold 190.0° @ A: 179.45°

PROJECT DETAILS: Eddy Co, New Mexico (Nad-83)	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico Eastern Zone
System Datum:	Mean Sea Level

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL - TD (GWALXF#16H)12-26-10	8040.00	-4743.34	31.29	483203.36	713133.35	32° 19' 37.620 N	103° 46' 37.746 W	Point	
PBHL - TD (GWALXF#16H)	8060.00	-4743.34	31.29	483203.36	713133.35	32° 19' 37.620 N	103° 46' 37.746 W	Point	

WELL DETAILS: Glow Worm ALX Fed #16H							
Ground Level: 3397.00							
WELL @ 3420.00ft (Original Well Elev)							
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot	
0.00	0.00	487946.69	713102.05	32° 20' 24.759 N	103° 46' 37.823 W		

Plan Design #2 (Glow Worm ALX Fed #16H/Lateral #1)	
Created By: Mike Starkey	Date: 16.17, January 05 2011
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

