

PathFinder
Survey Report

Company: EOG Resources
Field: Thames Field
Site: Mackenzie 13 Fee #1H
Well: Mackenzie 13 Fee #1H
Wellpath: Original Hole

Date: 7/18/2005 Time: 09:08:29 Page: 1
Co-ordinate(N/E) Reference: Site: Mackenzie 13 Fee #1H, Grid North
Vertical (TVD) Reference: SITE 18.0
Section (VS) Reference: Well (0.00N,0.00E,0.19Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Thames Field
Eddy, Co. NM
USA

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone
Coordinate System: Site Centre
Geomagnetic Model: igrf2005

Site: Mackenzie 13 Fee #1H

Eddy County, New Mexico

Site Position: Northing: 697531.00 ft Latitude: 32 55 2.662 N
From: Map Easting: 434197.00 ft Longitude: 104 32 51.961 W
Position Uncertainty: 0.00 ft North Reference: Grid
Ground Level: 3590.00 ft Grid Convergence: -0.12 deg

Well: Mackenzie 13 Fee #1H

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 697531.00 ft Latitude: 32 55 2.662 N
+E/-W 0.00 ft Easting: 434197.00 ft Longitude: 104 32 51.961 W
Position Uncertainty: 0.00 ft

Wellpath: Original Hole

Current Datum: SITE Height 18.00 ft Drilled From: Surface
Magnetic Data: 6/23/2005 Tie-on Depth: 0.00 ft
Field Strength: 49557 nT Above System Datum: Mean Sea Level
Vertical Section: Depth From (TVD) +N/-S ft Declination: 8.78 deg
0.00 ft +E/-W ft Mag Dip Angle: 60.80 deg
0.00 ft Direction deg
0.00 ft 0.19

Survey: PathFinder MWD Surveys

Start Date: 7/5/2005

Company: PathFinder Energy Services
Tool:

Engineer: Ron McIntyre
Tied-to: From: Definitive Path

Survey:	PathFinder MWD Surveys										Tool/Comment
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn		
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft		
4100.00	1.25	72.60	4099.41	-38.70	34.34	-38.58	0.00	0.00	0.00		Tie-In to SDI Gyro
4154.00	1.49	60.04	4153.39	-38.17	35.51	-38.05	0.71	0.44	-23.26		Begin PathFinder MWD Surv
4186.00	3.08	39.74	4185.37	-37.30	36.42	-37.18	5.50	4.97	-63.44		
4217.00	6.60	14.78	4216.25	-34.94	37.41	-34.81	12.98	11.35	-80.52		
4249.00	12.31	20.49	4247.81	-29.96	39.08	-29.83	18.06	17.84	17.84		
4281.00	18.03	21.02	4278.68	-22.13	42.05	-21.99	17.88	17.87	1.66		
4313.00	22.60	17.33	4308.68	-11.64	45.66	-11.48	14.83	14.28	-11.53		

MACKENZIE13 #1 Final SURVEY.TXT									
4345.00	26.47	13.37	4337.79	1.18	49.14	1.34	13.13	12.09	-12.37
4376.00	30.69	10.56	4365.01	15.68	52.19	15.86	14.28	13.61	-9.06
4408.00	34.38	8.45	4391.98	32.66	55.01	32.84	12.06	11.53	-6.59
4440.00	37.28	6.87	4417.92	51.22	57.50	51.41	9.51	9.06	-4.94
4472.00	40.71	4.93	4442.79	71.24	59.56	71.44	11.38	10.72	-6.06
4504.00	43.88	3.97	4466.46	92.71	61.22	92.91	10.11	9.91	-3.00
4535.00	46.08	2.74	4488.38	114.58	62.50	114.79	7.63	7.10	-3.97
4566.00	48.10	1.77	4509.49	137.27	63.39	137.48	6.91	6.52	-3.13
4598.00	50.30	0.89	4530.40	161.49	63.95	161.70	7.18	6.87	-2.75
4629.00	53.46	359.92	4549.53	185.87	64.12	186.08	10.49	10.19	-3.13
4661.00	56.81	359.40	4567.82	212.12	63.96	212.33	10.55	10.47	-1.62
4693.00	59.44	359.57	4584.72	239.29	63.72	239.50	8.23	8.22	0.53
4725.00	61.82	359.40	4600.41	267.18	63.47	267.39	7.45	7.44	-0.53
4757.00	64.72	359.92	4614.80	295.75	63.30	295.96	9.18	9.06	1.62
4789.00	67.01	359.49	4627.89	324.95	63.15	325.16	7.26	7.16	-1.34
4821.00	69.12	359.31	4639.84	354.63	62.84	354.84	6.61	6.59	-0.56
4852.00	71.40	359.57	4650.31	383.81	62.55	384.01	7.40	7.35	0.84
4884.00	74.30	0.54	4659.75	414.38	62.58	414.59	9.51	9.06	3.03
4916.00	76.59	358.78	4667.79	445.35	62.40	445.56	8.92	7.16	-5.50
4947.00	78.52	357.73	4674.47	475.61	61.47	475.81	7.05	6.23	-3.39
4979.00	81.16	357.82	4680.11	507.08	60.25	507.28	8.25	8.25	0.28
5011.00	84.33	358.08	4684.15	538.80	59.12	538.99	9.94	9.91	0.81
5043.00	86.61	357.90	4686.68	570.68	58.00	570.86	7.15	7.12	-0.56
5074.00	86.79	358.08	4688.46	601.61	56.91	601.79	0.82	0.58	0.58
5105.00	89.25	358.34	4689.54	632.57	55.94	632.75	7.98	7.94	0.84
5137.00	90.40	358.87	4689.63	664.56	55.16	664.74	3.96	3.59	1.66
5168.00	90.75	359.22	4689.32	695.55	54.65	695.73	1.60	1.13	1.13
5200.00	91.36	359.57	4688.73	727.55	54.31	727.72	2.20	1.91	1.09
5232.00	91.28	359.49	4688.00	759.54	54.05	759.71	0.35	-0.25	-0.25
5264.00	91.19	359.75	4687.31	791.53	53.84	791.70	0.86	-0.28	0.81
5295.00	91.10	359.49	4686.69	822.52	53.63	822.69	0.89	-0.29	-0.84
5327.00	90.92	359.05	4686.12	854.51	53.22	854.69	1.49	-0.56	-1.37
5359.00	90.48	358.78	4685.73	886.51	52.62	886.67	1.61	-1.37	-0.84
5390.00	89.96	358.26	4685.61	917.49	51.82	917.66	2.37	-1.68	-1.68
5422.00	90.04	358.43	4685.61	949.48	50.89	949.64	0.59	0.25	0.53
5454.00	90.84	0.10	4685.37	981.48	50.48	981.64	5.79	2.50	5.22
5486.00	91.01	359.92	4684.85	1013.47	50.49	1013.63	0.77	0.53	-0.56
5517.00	90.92	0.01	4684.33	1044.47	50.47	1044.63	0.41	-0.29	0.29
5549.00	90.84	359.75	4683.84	1076.46	50.40	1076.62	0.85	-0.25	-0.81
5581.00	90.92	359.84	4683.35	1108.46	50.29	1108.62	0.38	0.25	0.28
5645.00	91.28	0.19	4682.12	1172.45	50.30	1172.61	0.78	0.56	0.55
5708.00	90.13	359.84	4681.34	1235.44	50.32	1235.60	1.91	-1.83	-0.56
5771.00	92.42	0.19	4679.94	1298.42	50.34	1298.58	3.68	3.63	0.56
5835.00	92.33	359.57	4677.29	1362.37	50.20	1362.53	0.98	-0.14	-0.97
5898.00	89.96	357.64	4676.03	1425.33	48.67	1425.48	4.85	-3.76	-3.06
5961.00	89.78	357.90	4676.17	1488.28	46.22	1488.42	0.50	-0.29	0.41
6025.00	92.07	359.13	4675.14	1552.24	44.56	1552.38	4.06	3.58	1.92
6088.00	89.43	356.67	4674.31	1615.19	42.25	1615.32	5.73	-4.19	-3.90
6152.00	92.95	359.13	4672.98	1679.11	39.90	1679.24	6.71	5.50	3.84
6216.00	92.95	358.96	4669.69	1743.02	38.84	1743.14	0.27	0.00	-0.27
6279.00	92.33	358.17	4666.79	1805.93	37.26	1806.05	1.59	-0.98	-1.25

MACKENZIE13 #1 Final SURVEY.TXT									
6342.00	92.42	357.82	4664.18	1868.84	35.06	1868.95	0.57	0.14	-0.56
6406.00	90.04	357.73	4662.80	1932.77	32.58	1932.87	3.72	-3.72	-0.14
6469.00	91.19	358.26	4662.13	1995.73	30.37	1995.82	2.01	1.83	0.84
6501.00	89.43	357.73	4661.96	2027.71	29.25	2027.79	5.74	-5.50	-1.66
6533.00	89.34	357.64	4662.30	2059.68	27.96	2059.76	0.40	-0.28	-0.28
6596.00	88.99	357.82	4663.22	2122.62	25.47	2122.70	0.62	-0.56	0.29
6659.00	88.64	357.20	4664.52	2185.55	22.73	2185.61	1.13	-0.56	-0.98
6691.00	88.64	357.82	4665.28	2217.51	21.34	2217.57	1.94	0.00	1.94
6755.00	90.13	357.46	4665.97	2281.45	18.70	2281.50	2.40	2.33	-0.56
6818.00	90.40	357.73	4665.67	2344.39	16.06	2344.44	0.61	0.43	0.43
6882.00	90.66	357.11	4665.08	2408.33	13.18	2408.36	1.05	0.41	-0.97
6945.00	89.78	356.15	4664.84	2471.22	9.48	2471.23	2.07	-1.40	-1.52
7009.00	89.43	355.18	4665.28	2535.03	4.64	2535.03	1.61	-0.55	-1.52
7072.00	91.01	357.38	4665.04	2597.89	0.55	2597.88	4.30	2.51	3.49
7136.00	91.19	357.02	4663.81	2661.80	-2.57	2661.78	0.63	0.28	-0.56
7199.00	90.84	357.29	4662.70	2724.72	-5.70	2724.68	0.70	-0.56	0.43
7261.00	91.36	357.73	4661.51	2786.65	-8.39	2786.60	1.10	0.84	0.71
7324.00	91.45	0.10	4659.96	2849.61	-9.59	2849.56	3.76	0.14	3.76
7387.00	91.36	0.63	4658.42	2912.59	-9.18	2912.54	0.85	-0.14	0.84
7449.00	90.75	1.68	4657.27	2974.57	-7.94	2974.52	1.96	-0.98	1.69
7481.00	90.04	2.12	4657.05	3006.55	-6.87	3006.51	2.61	-2.22	1.37
7543.00	90.57	2.56	4656.72	3068.49	-4.34	3068.46	1.11	0.85	0.71
7606.00	91.71	3.18	4655.47	3131.40	-1.19	3131.38	2.06	1.81	0.98
7668.00	91.28	3.09	4653.85	3193.29	2.20	3193.28	0.71	-0.69	-0.15
7731.00	90.48	3.00	4652.88	3256.19	5.55	3256.19	1.28	-1.27	-0.14
7794.00	91.80	3.09	4651.63	3319.09	8.89	3319.10	2.10	2.10	0.14
7856.00	92.42	3.18	4649.35	3380.95	12.28	3380.97	1.01	1.00	0.15
7919.00	91.63	2.47	4647.12	3443.84	15.38	3443.87	1.69	-1.25	-1.13
7981.00	91.98	3.09	4645.17	3505.73	18.39	3505.77	1.15	0.56	1.00
8044.00	90.40	2.65	4643.86	3568.64	21.54	3568.69	2.60	-2.51	-0.70
8106.00	90.40	2.91	4643.43	3630.56	24.55	3630.62	0.42	0.00	0.42
8169.00	90.75	3.00	4642.80	3693.48	27.80	3693.55	0.57	0.56	0.14
8231.00	89.96	3.09	4642.41	3755.39	31.09	3755.47	1.28	-1.27	0.15
8293.00	89.43	2.56	4642.74	3817.31	34.15	3817.40	1.21	-0.85	-0.85
8335.00	88.90	2.21	4643.35	3859.27	35.89	3859.37	1.51	-1.26	-0.83
8390.00	88.90	2.21	4644.41	3914.22	38.01	3914.32	0.00	0.00	0.00

Last PathFinder MWD Surve
Straight-Line Bit Project

Annotation

MD	TVD	
ft	ft	
4100.00	4099.41	Tie-In to SDI Gyro
4154.00	4153.39	Begin PathFinder MWD Surveys
8335.00	4643.35	Last PathFinder MWD Survey
8390.00	4644.41	Straight-Line Bit Projection