



Devon Energy

Eddy Co., New Mexico (Nad 83)

North Pure Gold 9 Fed #18H

North Pure Gold 9 Fed #18H

30-015-37616

Lateral #1

30-015-37616

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Survey: Cudd MWD Survey #1

Standard Survey Report

18 April, 2011





Cudd Drilling & Measurement Services

Survey Report



Company:	Devon Energy	Local Co-ordinate Reference:	Site North Pure Gold 9 Fed #18H
Project:	Eddy Co., New Mexico (Nad 83)	TVD Reference:	WELL @ 3391.00ft (Original Well Elev)
Site:	North Pure Gold 9 Fed #18H	MD Reference:	WELL @ 3391.00ft (Original Well Elev)
Well:	North Pure Gold 9 Fed #18H	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: North: Pure Gold 9 Fed #18H, Sec9, T-23S, R-31E					
Site Position:		Northing:	478,256.89 ft	Latitude:	32° 18' 48.892 N
From:	Map	Easting:	712,758.46 ft	Longitude:	103° 46' 42.413 W
Position Uncertainty:	0 00 ft	Slot Radius:	"	Grid Convergence:	0.30 °

Well:	North Pure Gold 9 Fed #18H					
Well Position	+N/-S	0 00 ft	Northing:	478,256.89 ft	Latitude:	32° 18' 48.892 N
	+E/-W	0.00 ft	Easting:	712,758.46 ft	Longitude:	103° 46' 42.413 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	3,391.00 ft	Ground Level:	3,371.00 ft

Wellbore:	Lateral #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	01/14/10	7.85	60.29	48,821

Design	Lateral #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	12,300.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	359.68	

Survey Program		Date	04/18/11		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	12,300.00	Gyro Survey #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
12,300.00	16,645.00	Cudd MWD Survey #1 (Lateral #1)	CUDD MWD	MWD - Standard CUDD MWD	

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)
12,300.00	1.68	248.64	12,297.59	-57.79	-123.37	-57.10	0.00	0.00	0.00
12,334.00	6.00	344.30	12,331.52	-56.26	-124.32	-55.56	18.79	12.71	281.35
First Cudd MWD Survey									
12,366.00	7.40	343.70	12,363.31	-52.67	-125.35	-51.97	4.38	4.38	-1.88
12,397.00	11.90	351.00	12,393.86	-47.60	-126.41	-46.89	15.01	14.52	23.55
12,429.00	14.90	358.00	12,424.99	-40.22	-127.07	-39.51	10.64	9.38	21.88
12,460.00	17.90	359.40	12,454.72	-31.47	-127.26	-30.76	9.76	9.68	4.52
12,492.00	21.10	1.00	12,484.88	-20.79	-127.21	-20.08	10.14	10.00	5.00
12,524.00	25.10	0.00	12,514.31	-8.24	-127.11	-7.53	12.56	12.50	-3.13
12,555.00	28.50	359.90	12,541.98	5.73	-127.12	6.44	10.97	10.97	-0.32
12,587.00	32.00	359.00	12,569.62	21.85	-127.28	22.56	11.03	10.94	-2.81
12,616.00	34.80	359.20	12,593.82	37.81	-127.53	38.52	9.66	9.66	0.69



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Survey Report



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Project:	Eddy Co., New Mexico (Nad 83)	TVD Reference:	WELL @ 3391.00ft (Original Well Elev)
Site:	North Pure Gold 9 Fed #18H	MD Reference:	WELL @ 3391.00ft (Original Well Elev)
Well:	North Pure Gold 9 Fed #18H	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)	
12,647.00	36.80	359.60	12,618.97	55.94	-127.72	56.65	6.50	6.45	1.29	
12,679.00	38.00	358.50	12,644.39	75.37	-128.04	76.09	4.29	3.75	-3.44	
12,710.00	38.90	358.00	12,668.67	94.64	-128.63	95.36	3.07	2.90	-1.61	
12,742.00	40.90	358.70	12,693.21	115.16	-129.22	115.88	6.41	6.25	2.19	
12,773.00	42.90	0.10	12,716.29	135.86	-129.43	136.58	7.12	6.45	4.52	
12,805.00	45.70	359.70	12,739.19	158.20	-129.47	158.92	8.79	8.75	-1.25	
12,837.00	49.60	359.50	12,760.74	181.85	-129.64	182.57	12.20	12.19	-0.63	
12,868.00	54.50	1.00	12,779.80	206.28	-129.52	207.00	16.26	15.81	4.84	
12,899.00	59.60	2.50	12,796.65	232.28	-128.72	232.99	16.94	16.45	4.84	
12,931.00	64.50	2.50	12,811.65	260.51	-127.49	261.22	15.31	15.31	0.00	
12,963.00	68.20	2.10	12,824.48	289.79	-126.31	290.49	11.62	11.56	-1.25	
12,994.00	69.90	2.70	12,835.57	318.72	-125.10	319.41	5.77	5.48	1.94	
13,026.00	71.60	1.70	12,846.12	348.90	-123.94	349.59	6.08	5.31	-3.13	
13,057.00	74.00	2.00	12,855.28	378.50	-122.98	379.18	7.80	7.74	0.97	
13,088.00	76.00	1.90	12,863.31	408.42	-121.97	409.10	6.46	6.45	-0.32	
13,120.00	76.40	2.00	12,870.94	439.48	-120.91	440.15	1.29	1.25	0.31	
13,151.00	77.80	2.00	12,877.86	469.68	-119.85	470.34	4.52	4.52	0.00	
13,183.00	80.00	1.80	12,884.02	501.06	-118.81	501.72	6.90	6.88	-0.63	
13,214.00	81.00	2.10	12,889.14	531.62	-117.77	532.27	3.36	3.23	0.97	
13,246.00	82.70	2.70	12,893.67	563.27	-116.45	563.91	5.63	5.31	1.88	
13,277.00	84.10	3.50	12,897.24	594.01	-114.78	594.65	5.19	4.52	2.58	
13,309.00	84.40	2.70	12,900.44	625.81	-113.06	626.43	2.66	0.94	-2.50	
13,340.00	84.10	3.20	12,903.55	656.61	-111.47	657.22	1.87	-0.97	1.61	
13,372.00	84.30	3.00	12,906.78	688.40	-109.75	689.00	0.88	0.63	-0.63	
13,403.00	85.80	2.50	12,909.46	719.25	-108.27	719.84	5.10	4.84	-1.61	
13,435.00	86.50	1.60	12,911.60	751.15	-107.13	751.74	3.56	2.19	-2.81	
13,467.00	86.70	1.60	12,913.50	783.09	-106.23	783.67	0.63	0.63	0.00	
13,498.00	87.60	1.60	12,915.04	814.03	-105.37	814.61	2.90	2.90	0.00	
13,530.00	88.60	1.50	12,916.10	846.00	-104.50	846.58	3.14	3.13	-0.31	
13,561.00	90.20	1.30	12,916.43	876.99	-103.75	877.56	5.20	5.16	-0.65	
13,593.00	91.10	1.50	12,916.07	908.98	-102.97	909.54	2.88	2.81	0.63	
13,624.00	90.90	1.40	12,915.53	939.97	-102.18	940.52	0.72	-0.65	-0.32	
13,656.00	90.10	1.40	12,915.25	971.96	-101.40	972.51	2.50	-2.50	0.00	
13,687.00	90.10	1.40	12,915.19	1,002.95	-100.64	1,003.49	0.00	0.00	0.00	
13,718.00	90.30	1.00	12,915.08	1,033.94	-99.99	1,034.48	1.44	0.65	-1.29	
13,781.00	90.50	1.30	12,914.64	1,096.92	-98.73	1,097.46	0.57	0.32	0.48	
13,875.00	90.50	1.80	12,913.82	1,190.89	-96.19	1,191.40	0.53	0.00	0.53	
13,970.00	90.10	1.70	12,913.33	1,285.84	-93.28	1,286.34	0.43	-0.42	-0.11	
14,064.00	90.30	2.50	12,913.00	1,379.78	-89.84	1,380.26	0.88	0.21	0.85	
14,159.00	90.70	2.50	12,912.17	1,474.68	-85.70	1,475.14	0.42	0.42	0.00	
14,254.00	91.00	3.20	12,910.76	1,569.55	-80.97	1,569.98	0.80	0.32	0.74	
14,349.00	90.60	2.70	12,909.43	1,664.42	-76.09	1,664.82	0.67	-0.42	-0.53	
14,443.00	90.40	3.00	12,908.61	1,758.30	-71.41	1,758.67	0.38	-0.21	0.32	
14,538.00	91.30	3.80	12,907.20	1,853.12	-65.78	1,853.46	1.27	0.95	0.84	
14,632.00	91.70	3.60	12,904.74	1,946.89	-59.71	1,947.19	0.48	0.43	-0.21	
14,727.00	91.30	2.80	12,902.26	2,041.71	-54.41	2,041.98	0.94	-0.42	-0.84	
14,825.00	90.20	1.60	12,900.97	2,139.62	-50.65	2,139.87	1.66	-1.12	-1.22	
14,920.00	90.20	1.90	12,900.64	2,234.58	-47.75	2,234.81	0.32	0.00	0.32	
15,015.00	90.10	2.50	12,900.39	2,329.51	-44.10	2,329.72	0.64	-0.11	0.63	
15,109.00	90.90	1.20	12,899.57	2,423.45	-41.07	2,423.64	1.62	0.85	-1.38	
15,204.00	91.30	1.80	12,897.75	2,518.40	-38.58	2,518.58	0.76	0.42	0.63	
15,298.00	90.90	2.00	12,895.94	2,612.33	-35.47	2,612.49	0.48	-0.43	0.21	
15,393.00	89.10	0.10	12,895.94	2,707.31	-33.73	2,707.45	2.75	-1.89	-2.00	
15,487.00	90.40	0.90	12,896.35	2,801.30	-32.91	2,801.44	1.62	1.38	0.85	



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Survey Report



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Well:	North Pure Gold 9 Fed #18H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
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)
15,581.00	90.20	1.00	12,895.86	2,895.29	-31.35	2,895.42	0.24	-0.21	0.11
15,676.00	90.20	1.00	12,895.53	2,990.27	-29.69	2,990.39	0.00	0.00	0.00
15,770.00	90.40	1.00	12,895.04	3,084.26	-28.05	3,084.37	0.21	0.21	0.00
15,865.00	90.40	0.90	12,894.38	3,179.24	-26.47	3,179.34	0.11	0.00	-0.11
15,960.00	90.10	0.50	12,893.96	3,274.23	-25.31	3,274.32	0.53	-0.32	-0.42
16,055.00	90.10	0.10	12,893.80	3,369.23	-24.82	3,369.32	0.42	0.00	-0.42
16,149.00	90.50	359.70	12,893.30	3,463.23	-24.98	3,463.31	0.60	0.43	-0.43
16,244.00	90.40	358.80	12,892.56	3,558.22	-26.22	3,558.31	0.95	-0.11	-0.95
16,338.00	90.50	358.60	12,891.82	3,652.19	-28.36	3,652.29	0.24	0.11	-0.21
16,433.00	90.90	358.20	12,890.66	3,747.15	-31.01	3,747.26	0.60	0.42	-0.42
16,527.00	90.30	357.00	12,889.67	3,841.06	-34.94	3,841.19	1.43	-0.64	-1.28
16,588.00	91.20	356.80	12,888.88	3,901.96	-38.24	3,902.11	1.51	1.48	-0.33
Last Cudd MWD Survey									
16,645.00	91.20	356.80	12,887.68	3,958.86	-41.42	3,959.03	0.00	0.00	0.00
Proj to Bit									

Survey Annotations:				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
12,334.00	12,331.52	-56.26	-124.32	First Cudd MWD Survey
16,588.00	12,888.88	3,901.96	-38.24	Last Cudd MWD Survey
16,645.00	12,887.68	3,958.86	-41.42	Proj to Bit

Checked By: _____	Approved By: _____	Date: _____
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