



EOG Resources, Inc.

Eddy Co., NM

Vaca Key

#1H

30-015-44564

OH

Survey: Survey #2 - NDS

Standard Survey Report

02 March, 2018

**NM OIL CONSERVATION
ARTESIA DISTRICT**

MAY 22 2018

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Nabors
Survey Report



Company: EOG Resources, Inc.
Project: Eddy Co., NM
Site: Vaca Key
Well: #1H
Wellbore: OH
Design: Surveys

Local Co-ordinate Reference: Well#1H
TVD Reference: KB=12.7' @ 3648.70ft (PDC 822)
MD Reference: KB=12.7' @ 3648.70ft (PDC 822)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: RYANUSA_32Bit

Project	Eddy Co., NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Vaca Key				
Site Position:		Northing:	575,568.900 usft	Latitude:	32° 34' 55.47299 N
From:	Map	Easting:	469,374.700 usft	Longitude:	104° 34' 1.08514 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.13 °

Well	#1H					
Well Position	+N/-S	0.00 ft	Northing:	575,568.900 usf	Latitude:	32° 34' 55.47299 N
	+E/-W	0.00 ft	Easting:	469,374.700 usf	Longitude:	104° 34' 1.08514 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,636.00 ft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/12/2018	7.55	60.32	48,172.00000000

Design	Surveys				
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	89.89	

Survey Program	Date 3/2/2018				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
12.70	1,222.70	1 - Survey #2 (OH)	MWD+HRGM	OWSG MWD + HRGM	
1,394.00	7,067.00	Survey #2 - NDS (OH)	MWD+HRGM	OWSG MWD + HRGM	

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)
1,222.70	0.50	166.88	1,222.62	-11.27	0.23	0.21	0.00	0.00	0.00
1,394.00	1.00	171.16	1,393.91	-13.48	0.63	0.60	0.29	0.29	2.50
1,573.00	0.75	176.08	1,572.89	-16.19	0.95	0.92	0.15	-0.14	2.75
1,617.00	0.94	179.77	1,616.88	-16.84	0.97	0.94	0.45	0.43	8.39
1,662.00	3.06	68.85	1,661.86	-16.77	2.09	2.06	7.79	4.71	-246.49
1,706.00	8.25	70.43	1,705.63	-15.29	6.17	6.14	11.80	11.80	3.59
1,751.00	13.13	73.42	1,749.84	-12.75	14.11	14.09	10.91	10.84	6.64
1,796.00	14.88	72.37	1,793.50	-9.54	24.52	24.50	3.93	3.89	-2.33
1,841.00	15.88	72.72	1,836.89	-5.96	35.90	35.89	2.23	2.22	0.78
1,885.00	18.81	72.37	1,878.88	-2.03	48.41	48.41	6.66	6.66	-0.80



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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)
1,930.00	21.94	76.76	1,921.06	2.10	63.52	63.52	7.74	6.96	9.76
1,975.00	25.13	82.74	1,962.32	5.23	81.19	81.20	8.85	7.09	13.29
2,019.00	28.50	87.13	2,001.59	6.94	100.95	100.96	8.88	7.66	9.98
2,064.00	31.44	88.89	2,040.57	7.70	123.41	123.42	6.82	6.53	3.91
2,077.00	32.56	89.16	2,051.59	7.82	130.29	130.31	6.67	6.59	2.10
330' HL Crossing at Heel 2077'MD									
2,109.00	35.31	89.77	2,078.14	7.98	148.16	148.17	8.67	8.60	1.90
2,153.00	39.13	91.18	2,113.17	7.75	174.76	174.78	8.90	8.68	3.20
2,198.00	43.13	91.35	2,147.06	7.09	204.35	204.36	8.89	8.89	0.38
2,243.00	47.19	91.18	2,178.78	6.39	236.24	236.25	9.03	9.02	-0.38
2,287.00	51.63	91.00	2,207.40	5.76	269.64	269.65	10.10	10.09	-0.41
2,332.00	56.00	90.82	2,233.96	5.18	305.95	305.96	9.72	9.71	-0.40
2,377.00	59.69	91.00	2,257.91	4.58	344.03	344.04	8.21	8.20	0.40
2,421.00	61.19	91.00	2,279.62	3.91	382.30	382.31	3.41	3.41	0.00
2,466.00	62.69	91.00	2,300.78	3.22	422.00	422.01	3.33	3.33	0.00
2,511.00	63.94	90.82	2,320.99	2.58	462.20	462.21	2.80	2.78	-0.40
2,555.00	66.38	90.65	2,339.47	2.07	502.13	502.13	5.56	5.55	-0.39
2,600.00	69.94	89.95	2,356.21	1.85	543.89	543.89	8.04	7.91	-1.56
2,645.00	76.63	88.19	2,369.15	2.56	586.96	586.96	15.33	14.87	-3.91
2,734.00	82.69	87.13	2,385.12	6.14	674.40	674.41	6.91	6.81	-1.19
2,823.00	88.50	88.01	2,391.95	9.90	763.01	763.03	6.60	6.53	0.99
2,913.00	91.31	88.01	2,392.10	13.02	852.95	852.97	3.12	3.12	0.00
3,002.00	93.06	90.12	2,388.70	14.48	941.87	941.89	3.08	1.97	2.37
3,092.00	92.31	91.00	2,384.49	13.60	1,031.76	1,031.79	1.28	-0.83	0.98
3,136.00	90.19	91.70	2,383.53	12.56	1,075.74	1,075.76	5.07	-4.82	1.59
3,226.00	86.69	91.18	2,385.98	10.30	1,165.66	1,165.68	3.93	-3.89	-0.58
3,315.00	85.31	90.82	2,392.19	8.75	1,254.43	1,254.44	1.60	-1.55	-0.40
3,404.00	83.44	89.42	2,400.91	8.56	1,342.99	1,343.01	2.62	-2.10	-1.57
3,493.00	84.56	88.72	2,410.21	10.00	1,431.49	1,431.51	1.48	1.26	-0.79
3,583.00	86.63	88.72	2,417.13	12.01	1,521.20	1,521.22	2.30	2.30	0.00
3,656.00	87.13	89.59	2,421.10	13.08	1,594.08	1,594.10	1.37	0.68	1.19
3,745.00	87.81	89.77	2,425.03	13.58	1,682.99	1,683.02	0.79	0.76	0.20
3,834.00	89.81	89.24	2,426.88	14.35	1,771.97	1,771.99	2.32	2.25	-0.60
3,924.00	88.13	90.30	2,428.49	14.71	1,861.95	1,861.97	2.21	-1.87	1.18
4,013.00	87.25	90.30	2,432.08	14.24	1,950.87	1,950.89	0.99	-0.99	0.00
4,097.00	89.25	90.47	2,434.65	13.68	2,034.83	2,034.85	2.39	2.38	0.20
4,187.00	88.31	92.06	2,436.56	11.69	2,124.78	2,124.80	2.05	-1.04	1.77
4,276.00	87.81	91.00	2,439.57	9.32	2,213.69	2,213.71	1.32	-0.56	-1.19
4,366.00	89.44	91.00	2,441.73	7.75	2,303.65	2,303.66	1.81	1.81	0.00
4,455.00	88.38	91.18	2,443.43	6.05	2,392.62	2,392.63	1.21	-1.19	0.20
4,544.00	89.38	91.00	2,445.17	4.36	2,481.58	2,481.59	1.14	1.12	-0.20
4,633.00	88.38	89.77	2,446.91	3.76	2,570.56	2,570.57	1.78	-1.12	-1.38
4,723.00	88.50	88.72	2,449.36	4.95	2,660.52	2,660.52	1.17	0.13	-1.17



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4,813.00	87.88	88.19	2,452.20	7.37	2,750.44	2,750.45	0.91	-0.69	-0.59
4,902.00	89.38	87.84	2,454.33	10.45	2,839.36	2,839.38	1.73	1.69	-0.39
4,992.00	89.69	88.36	2,455.06	13.44	2,929.31	2,929.33	0.67	0.34	0.58
5,081.00	87.06	88.54	2,457.58	15.84	3,018.23	3,018.26	2.96	-2.96	0.20
5,171.00	89.00	87.84	2,460.68	18.69	3,108.13	3,108.16	2.29	2.16	-0.78
5,260.00	88.25	87.31	2,462.81	22.45	3,197.02	3,197.06	1.03	-0.84	-0.60
5,349.00	87.69	88.36	2,465.96	25.81	3,285.90	3,285.94	1.34	-0.63	1.18
5,439.00	88.50	89.77	2,468.96	27.28	3,375.84	3,375.88	1.81	0.90	1.57
5,528.00	89.81	90.82	2,470.27	26.82	3,464.82	3,464.87	1.89	1.47	1.18
5,618.00	88.56	90.65	2,471.55	25.67	3,554.80	3,554.85	1.40	-1.39	-0.19
5,707.00	88.75	89.95	2,473.64	25.20	3,643.78	3,643.82	0.81	0.21	-0.79
5,796.00	88.00	89.77	2,476.16	25.42	3,732.74	3,732.78	0.87	-0.84	-0.20
5,886.00	88.88	89.42	2,478.61	26.05	3,822.70	3,822.75	1.05	0.98	-0.39
5,977.00	88.00	89.95	2,481.09	26.55	3,913.67	3,913.71	1.13	-0.97	0.58
6,066.00	89.56	89.59	2,482.98	26.91	4,002.64	4,002.69	1.80	1.75	-0.40
6,155.00	89.38	90.12	2,483.81	27.14	4,091.64	4,091.68	0.63	-0.20	0.60
6,245.00	88.75	90.30	2,485.28	26.81	4,181.63	4,181.67	0.73	-0.70	0.20
6,334.00	87.94	90.30	2,487.85	26.34	4,270.59	4,270.63	0.91	-0.91	0.00
6,423.00	89.63	90.12	2,489.73	26.01	4,359.56	4,359.61	1.91	1.90	-0.20
6,513.00	88.69	89.77	2,491.05	26.10	4,449.55	4,449.59	1.11	-1.04	-0.39
6,602.00	87.25	90.47	2,494.20	25.91	4,538.49	4,538.54	1.80	-1.62	0.79
6,692.00	87.25	91.18	2,498.52	24.62	4,628.38	4,628.42	0.79	0.00	0.79
6,781.00	88.44	91.35	2,501.87	22.66	4,717.29	4,717.33	1.35	1.34	0.19
6,856.00	88.23	91.06	2,504.05	21.08	4,792.25	4,792.28	0.48	-0.28	-0.39
330' HL Crossing at Toe 6856'MD									
6,871.00	88.19	91.00	2,504.52	20.81	4,807.24	4,807.27	0.48	-0.28	-0.39
6,960.00	90.06	90.65	2,505.88	19.53	4,896.21	4,896.24	2.14	2.10	-0.39
7,005.00	91.31	90.30	2,505.34	19.16	4,941.21	4,941.23	2.88	2.78	-0.78
7,067.00	91.31	90.30	2,503.92	18.83	5,003.19	5,003.22	0.00	0.00	0.00

PTB

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,077.00	2,051.59	7.82	130.29	330' HL Crossing at Heel 2077'MD
6,856.00	2,504.05	21.08	4,792.25	330' HL Crossing at Toe 6856'MD
7,067.00	2,503.92	18.83	5,003.19	PTB