



**NM OIL CONSERVATION  
ARTESIA DISTRICT**

**AUG 02 2018**

**RECEIVED**

## **EOG Resources - Artesia**

**Eddy County (NAD83)**

**Boyd**

**Boyd X State Com #16H**

**Lateral**

**Plan: Plan #1**

## **Standard Planning Report**

**31 July, 2018**



Planning Report

Database:	EDM 5000.14	Local Co-ordinate Reference:	Well Boyd X State Com #16H
Company:	EOG Resources - Artesia	TVD Reference:	KB @ 3492.000usft (Training Rig)
Project:	Eddy County (NAD83)	MD Reference:	KB @ 3492.000usft (Training Rig)
Site:	Boyd	North Reference:	Grid
Well:	Boyd X State Com #16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Eddy County (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Boyd				
Site Position:		Northing:	604,833.30 usft	Latitude:	32° 39' 45.475 N
From:	Map	Easting:	492,327.60 usft	Longitude:	104° 29' 33.330 W
Position Uncertainty:	0.000 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.09°

Well	Boyd X State Com #16H					
Well Position	+N/-S	-1,163.460 usft	Northing:	603,669.84 usft	Latitude:	32° 39' 33.928 N
	+E/-W	-2,268.310 usft	Easting:	490,059.29 usft	Longitude:	104° 29' 59.844 W
Position Uncertainty	0.000 usft		Wellhead Elevation:	3,523.000 usft	Ground Level:	3,505.000 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/16/2018	7.32	60.30	48,001.18426620

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.000
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.000	0.000	0.000	88.259

Plan Survey Tool Program	Date 7/31/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.000	7,961.960 Plan #1 (Lateral)	MWD	OWSG MWD - Standard

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	
1,250.000	0.00	0.000	1,250.000	0.000	0.000	0.00	0.00	0.00	0.00	
1,876.900	0.00	0.000	1,876.900	0.000	0.000	0.00	0.00	0.00	0.00	
2,542.587	60.00	66.700	2,427.229	125.906	292.351	9.00	9.00	0.00	66.70	
2,617.587	60.00	66.700	2,464.729	151.597	352.005	0.00	0.00	0.00	0.00	
2,922.205	88.83	90.365	2,546.811	204.615	635.114	12.00	9.46	7.77	42.36	
7,961.960	88.83	90.365	2,650.000	172.490	5,673.710	0.00	0.00	0.00	0.00	[BSC#16H]BHL1



Planning Report

Database: EDM 5000.14  
 Company: EOG Resources - Artesia  
 Project: Eddy County (NAD83)  
 Site: Boyd  
 Well: Boyd X State Com #16H  
 Wellbore: Lateral  
 Design: Plan #1

Local Co-ordinate Reference: Well Boyd X State Com #16H  
 TVD Reference: KB @ 3492.000usft (Training Rig)  
 MD Reference: KB @ 3492.000usft (Training Rig)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.000	0.00	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00
100.000	0.00	0.000	100.000	0.000	0.000	0.000	0.00	0.00	0.00
200.000	0.00	0.000	200.000	0.000	0.000	0.000	0.00	0.00	0.00
300.000	0.00	0.000	300.000	0.000	0.000	0.000	0.00	0.00	0.00
400.000	0.00	0.000	400.000	0.000	0.000	0.000	0.00	0.00	0.00
500.000	0.00	0.000	500.000	0.000	0.000	0.000	0.00	0.00	0.00
600.000	0.00	0.000	600.000	0.000	0.000	0.000	0.00	0.00	0.00
700.000	0.00	0.000	700.000	0.000	0.000	0.000	0.00	0.00	0.00
800.000	0.00	0.000	800.000	0.000	0.000	0.000	0.00	0.00	0.00
900.000	0.00	0.000	900.000	0.000	0.000	0.000	0.00	0.00	0.00
1,000.000	0.00	0.000	1,000.000	0.000	0.000	0.000	0.00	0.00	0.00
1,100.000	0.00	0.000	1,100.000	0.000	0.000	0.000	0.00	0.00	0.00
1,200.000	0.00	0.000	1,200.000	0.000	0.000	0.000	0.00	0.00	0.00
1,250.000	0.00	0.000	1,250.000	0.000	0.000	0.000	0.00	0.00	0.00
1,300.000	0.00	0.000	1,300.000	0.000	0.000	0.000	0.00	0.00	0.00
1,400.000	0.00	0.000	1,400.000	0.000	0.000	0.000	0.00	0.00	0.00
1,500.000	0.00	0.000	1,500.000	0.000	0.000	0.000	0.00	0.00	0.00
1,600.000	0.00	0.000	1,600.000	0.000	0.000	0.000	0.00	0.00	0.00
1,700.000	0.00	0.000	1,700.000	0.000	0.000	0.000	0.00	0.00	0.00
1,800.000	0.00	0.000	1,800.000	0.000	0.000	0.000	0.00	0.00	0.00
1,875.900	0.00	0.000	1,875.900	0.000	0.000	0.000	0.00	0.00	0.00
<b>KOP 9°/100' BUILD RATE</b>									
1,900.000	2.17	66.700	1,899.994	0.180	0.419	0.424	9.00	9.00	0.00
1,950.000	6.67	66.700	1,949.833	1.704	3.956	4.006	9.00	9.00	0.00
2,000.000	11.17	66.700	1,999.215	4.769	11.074	11.214	9.00	9.00	0.00
2,050.000	15.67	66.700	2,047.838	9.358	21.729	22.003	9.00	9.00	0.00
2,100.000	20.17	66.700	2,095.400	15.441	35.854	36.307	9.00	9.00	0.00
2,150.000	24.67	66.700	2,141.609	22.982	53.363	54.037	9.00	9.00	0.00
2,200.000	29.17	66.700	2,186.180	31.933	74.148	75.084	9.00	9.00	0.00
2,250.000	33.67	66.700	2,228.838	42.240	98.081	99.319	9.00	9.00	0.00
2,300.000	38.17	66.700	2,269.320	53.840	125.014	126.592	9.00	9.00	0.00
2,350.000	42.67	66.700	2,307.377	66.659	154.781	156.735	9.00	9.00	0.00
2,400.000	47.17	66.700	2,342.773	80.821	187.199	189.562	9.00	9.00	0.00
2,450.000	51.67	66.700	2,375.290	95.637	222.087	224.871	9.00	9.00	0.00
2,500.000	56.17	66.700	2,404.729	111.617	259.172	262.444	9.00	9.00	0.00
2,542.567	60.00	66.700	2,427.229	125.906	292.351	296.042	9.00	9.00	0.00
<b>START 75° TANGENT</b>									
2,600.000	60.00	66.700	2,455.945	145.580	338.033	342.301	0.00	0.00	0.00
2,617.567	60.00	66.700	2,464.729	151.598	352.006	356.450	0.00	0.00	0.00
<b>END 60° TANGENT</b>									
2,625.000	60.66	67.389	2,468.408	154.116	357.953	362.471	12.00	8.89	9.28
2,650.000	62.91	69.645	2,480.228	162.179	378.450	383.204	12.00	8.99	9.02
2,675.000	65.19	71.810	2,491.168	169.593	399.668	404.637	12.00	9.13	8.66
2,700.000	67.50	73.897	2,501.198	176.340	421.548	426.712	12.00	9.25	8.35
2,725.000	69.84	75.915	2,510.291	182.400	444.030	449.368	12.00	9.35	8.07
2,750.000	72.20	77.873	2,518.421	187.757	467.053	472.543	12.00	9.44	7.83
2,775.000	74.58	79.779	2,525.567	192.397	490.554	496.174	12.00	9.52	7.63
2,800.000	76.98	81.843	2,531.708	196.306	514.467	520.195	12.00	9.58	7.45
2,825.000	79.39	83.470	2,536.829	199.474	538.728	544.541	12.00	9.63	7.31
2,850.000	81.80	85.269	2,540.914	201.892	563.271	569.145	12.00	9.68	7.20
2,875.000	84.23	87.046	2,543.953	203.554	588.027	593.941	12.00	9.71	7.11
2,887.746	85.47	87.946	2,545.097	204.109	600.709	606.634	12.00	9.72	7.08

[BSC#16H]FTP1 2887 MD (2545' TVD)



Planning Report

Database: EDM 5000.14  
 Company: EOG Resources - Artesia  
 Project: Eddy County (NAD83)  
 Site: Boyd  
 Well: Boyd X State Com #16H  
 Wellbore: Lateral  
 Design: Plan #1

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

Well Boyd X State Com #16H  
 KB @ 3492.000usft (Training Rig)  
 KB @ 3492.000usft (Training Rig)  
 Grid  
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,900.000	86.66	88.808	2,545.937	204.455	612.929	618.858	12.00	9.73	7.04
2,922.205	88.83	90.365	2,546.811	204.615	635.114	641.038	12.00	9.74	7.01
[BSC#16H]EOC1 2922' MD (2546' TVD)									
3,000.000	88.83	90.365	2,548.404	204.119	712.891	718.784	0.00	0.00	0.00
3,100.000	88.83	90.365	2,550.451	203.481	812.868	818.878	0.00	0.00	0.00
3,200.000	88.83	90.365	2,552.499	202.844	912.845	918.587	0.00	0.00	0.00
3,300.000	88.83	90.365	2,554.546	202.207	1,012.822	1,018.499	0.00	0.00	0.00
3,400.000	88.83	90.365	2,556.594	201.569	1,112.799	1,118.410	0.00	0.00	0.00
3,500.000	88.83	90.365	2,558.641	200.932	1,212.776	1,218.322	0.00	0.00	0.00
3,600.000	88.83	90.365	2,560.689	200.294	1,312.753	1,318.233	0.00	0.00	0.00
3,700.000	88.83	90.365	2,562.736	199.657	1,412.730	1,418.145	0.00	0.00	0.00
3,800.000	88.83	90.365	2,564.784	199.019	1,512.707	1,518.056	0.00	0.00	0.00
3,900.000	88.83	90.365	2,566.831	198.382	1,612.684	1,617.967	0.00	0.00	0.00
4,000.000	88.83	90.365	2,568.879	197.745	1,712.661	1,717.879	0.00	0.00	0.00
4,100.000	88.83	90.365	2,570.926	197.107	1,812.638	1,817.790	0.00	0.00	0.00
4,200.000	88.83	90.365	2,572.974	196.470	1,912.615	1,917.702	0.00	0.00	0.00
4,300.000	88.83	90.365	2,575.021	195.832	2,012.592	2,017.613	0.00	0.00	0.00
4,400.000	88.83	90.365	2,577.069	195.195	2,112.569	2,117.525	0.00	0.00	0.00
4,500.000	88.83	90.365	2,579.116	194.557	2,212.546	2,217.436	0.00	0.00	0.00
4,600.000	88.83	90.365	2,581.164	193.920	2,312.523	2,317.348	0.00	0.00	0.00
4,700.000	88.83	90.365	2,583.211	193.283	2,412.500	2,417.259	0.00	0.00	0.00
4,800.000	88.83	90.365	2,585.259	192.645	2,512.477	2,517.171	0.00	0.00	0.00
4,900.000	88.83	90.365	2,587.306	192.008	2,612.454	2,617.082	0.00	0.00	0.00
5,000.000	88.83	90.365	2,589.354	191.370	2,712.431	2,716.994	0.00	0.00	0.00
5,100.000	88.83	90.365	2,591.401	190.733	2,812.408	2,816.905	0.00	0.00	0.00
5,200.000	88.83	90.365	2,593.449	190.095	2,912.385	2,916.816	0.00	0.00	0.00
5,300.000	88.83	90.365	2,595.496	189.458	3,012.362	3,016.728	0.00	0.00	0.00
5,400.000	88.83	90.365	2,597.544	188.821	3,112.339	3,116.639	0.00	0.00	0.00
5,500.000	88.83	90.365	2,599.591	188.183	3,212.316	3,216.551	0.00	0.00	0.00
5,600.000	88.83	90.365	2,601.639	187.546	3,312.293	3,316.462	0.00	0.00	0.00
5,700.000	88.83	90.365	2,603.686	186.908	3,412.270	3,416.374	0.00	0.00	0.00
5,800.000	88.83	90.365	2,605.734	186.271	3,512.247	3,516.285	0.00	0.00	0.00
5,900.000	88.83	90.365	2,607.781	185.633	3,612.224	3,616.197	0.00	0.00	0.00
6,000.000	88.83	90.365	2,609.829	184.996	3,712.201	3,716.108	0.00	0.00	0.00
6,100.000	88.83	90.365	2,611.876	184.359	3,812.178	3,816.020	0.00	0.00	0.00
6,200.000	88.83	90.365	2,613.924	183.721	3,912.155	3,915.931	0.00	0.00	0.00
6,300.000	88.83	90.365	2,615.971	183.084	4,012.132	4,015.843	0.00	0.00	0.00
6,400.000	88.83	90.365	2,618.019	182.446	4,112.109	4,115.754	0.00	0.00	0.00
6,500.000	88.83	90.365	2,620.066	181.809	4,212.086	4,215.665	0.00	0.00	0.00
6,600.000	88.83	90.365	2,622.114	181.171	4,312.063	4,315.577	0.00	0.00	0.00
6,700.000	88.83	90.365	2,624.161	180.534	4,412.040	4,415.488	0.00	0.00	0.00
6,800.000	88.83	90.365	2,626.209	179.897	4,512.017	4,515.400	0.00	0.00	0.00
6,900.000	88.83	90.365	2,628.256	179.259	4,611.994	4,615.311	0.00	0.00	0.00
7,000.000	88.83	90.365	2,630.304	178.622	4,711.971	4,715.223	0.00	0.00	0.00
7,100.000	88.83	90.365	2,632.351	177.984	4,811.948	4,815.134	0.00	0.00	0.00
7,200.000	88.83	90.365	2,634.399	177.347	4,911.925	4,915.046	0.00	0.00	0.00
7,300.000	88.83	90.365	2,636.446	176.709	5,011.902	5,014.957	0.00	0.00	0.00
7,400.000	88.83	90.365	2,638.494	176.072	5,111.879	5,114.869	0.00	0.00	0.00
7,500.000	88.83	90.365	2,640.541	175.435	5,211.856	5,214.780	0.00	0.00	0.00
7,600.000	88.83	90.365	2,642.589	174.797	5,311.833	5,314.691	0.00	0.00	0.00
7,700.000	88.83	90.365	2,644.636	174.160	5,411.810	5,414.603	0.00	0.00	0.00
7,800.000	88.83	90.365	2,646.684	173.522	5,511.787	5,514.514	0.00	0.00	0.00
7,900.000	88.83	90.365	2,648.731	172.885	5,611.764	5,614.426	0.00	0.00	0.00



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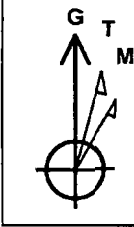
Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,981.960	88.83	90.365	2,650.000	172.490	5,673.710	5,676.331	0.00	0.00	0.00
[BSC#16H]BHL1 7982' MD (2650' TVD)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
[BSC#16H]FTP1 - hit/miss target - Shape	0.00	360.000	2,545.000	204.290	600.710	603,874.13	490,660.00	32° 39' 35.959 N	104° 29' 52.821 W
- plan misses target center by 0.206usft at 2887.746usft MD (2545.087 TVD, 204.109 N, 600.709 E)									
- Point									
[BSC#16H]BHL1 - plan hits target center - Point	0.00	0.000	2,650.000	172.490	5,673.710	603,842.33	495,733.00	32° 39' 35.718 N	104° 28' 53.477 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
1,875.900	1,875.900	0.000	0.000	KOP 9°/100' BUILD RATE
2,542.567	2,427.229	125.906	292.351	START 75' TANGENT
2,617.587	2,464.729	151.598	352.006	END 60° TANGENT
2,887.746	2,545.097	204.109	600.709	[BSC#16H]FTP1 2887' MD (2545' TVD)
2,922.205	2,546.811	204.815	635.114	[BSC#16H]EOC1 2922' MD (2546' TVD)
7,981.960	2,650.000	172.490	5,673.710	[BSC#16H]BHL1 7982' MD (2650' TVD)

Project: Eddy County (NAD83)  
 Site: Boyd  
 Well: Boyd X State Com #16H  
 Wellbore: Lateral  
 Design: Plan #1  
 Ground Elevation 3505.000  
 Northing 603669.84  
 Easting 490059.29

PROJECT DETAILS: Eddy County (NAD83)  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone  
 System Datum: Mean Sea Level



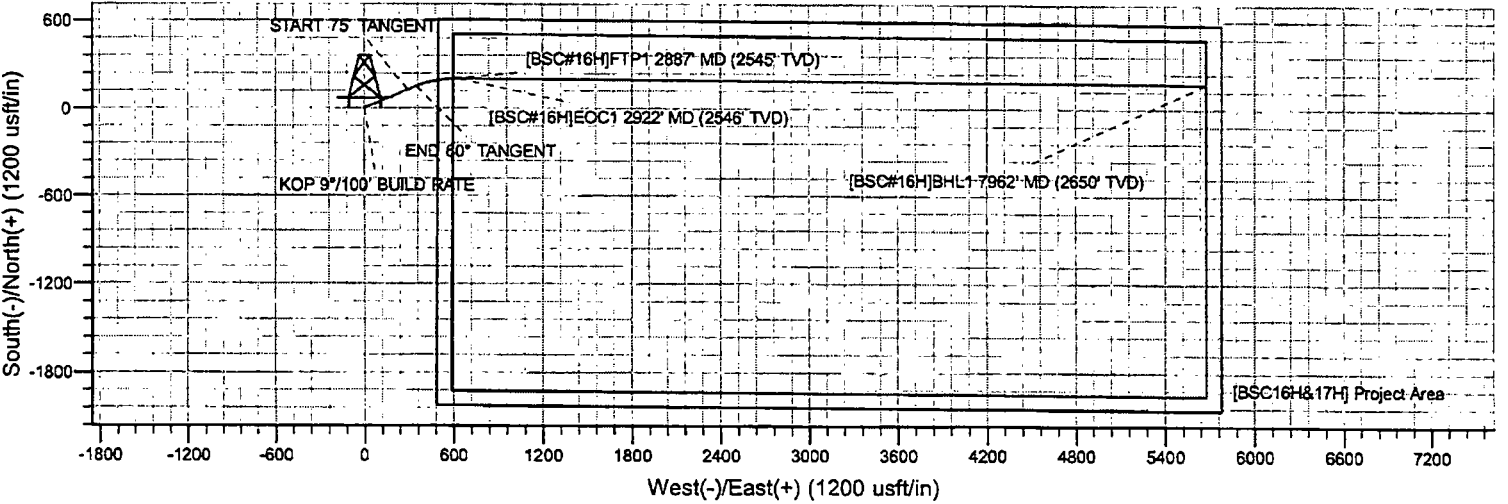
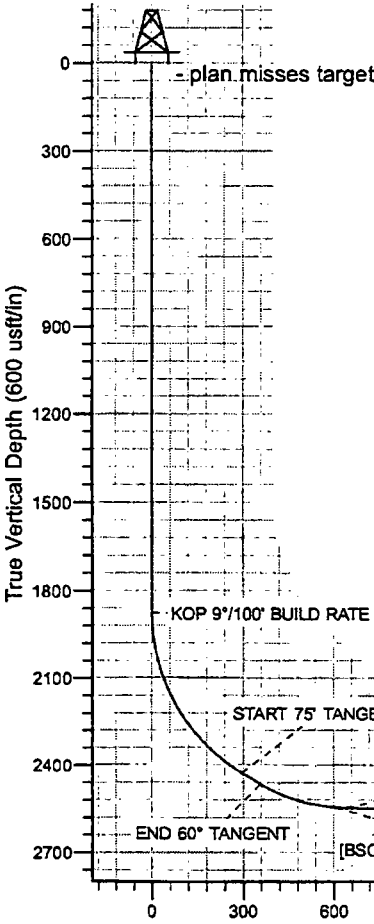
Azimuths to Grid North  
 True North: 0.09°  
 Magnetic North: 7.41°  
 Magnetic Field  
 Strength: 48001.2snT  
 Dip Angle: 60.30°  
 Date: 5/16/2018  
 Model: IGRF2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.000
2	1250.000	0.00	0.000	1250.000	0.000	0.000	0.00	0.00	0.000
3	1875.900	0.00	0.000	1875.900	0.000	0.000	0.00	0.00	0.000
4	2542.567	60.00	66.700	2427.229	125.906	292.351	9.00	66.70	296.042
5	2617.567	60.00	66.700	2464.729	151.597	352.005	0.00	0.00	356.450
6	2922.205	88.83	90.365	2546.811	204.615	635.114	12.00	42.36	641.038
7	7961.960	88.83	90.365	2650.000	172.490	673.710	0.00	0.00	5676.331

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
[BSC#16H]FTP1	2545.000	204.290	600.710	603874.13	490660.00
- plan misses target center by 0.206usft at 2887.746usft MD (2545.097 TVD, 204.109 N, 600.709 E)					
[BSC#16H]BHL1	2650.000	172.490	5673.710	603842.33	495733.00
- plan hits target center					



Vertical Section at 88.259° (600 usft/in)