

Devon Energy

Eddy County, NM (NAD-83)

Onyx PWU 29-28

12H

OH

30-015-44355

Plan: Plan #2

Standard Planning Report

28 July, 2017

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Onyx PWU 29-28
Well: 12H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference: Well 12H
TVD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
MD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project: Eddy County, NM (NAD-83)
Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Onyx PWU 29-28

Site Position:
From: Map
Position Uncertainty: 0.00 usft
Northing: 596,305.26 usft
Easting: 611,703.20 usft
Slot Radius: 13-3/16 "
Latitude: 32° 38' 20.701 N
Longitude: 104° 6' 17.060 W
Grid Convergence: 0.12 °

Well: 12H
Well Position:
+N/-S: -4,036.53 usft
+E/-W: 73.15 usft
Position Uncertainty: 0.00 usft
Wellhead Elevation: 0.00 usft
Latitude: 32° 37' 40.757 N
Longitude: 104° 6' 16.306 W
Ground Level: 3,307.90 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/28/2017	7.43	60.50	48,199

Design: Plan #2

Audit Notes:

Version:
Phase: PLAN
Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	96.89

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,576.63	9.77	196.10	2,571.91	-79.78	-23.03	1.00	1.00	0.00	196.10	
7,230.25	9.77	196.10	7,158.09	-838.20	-241.97	0.00	0.00	0.00	0.00	
8,206.89	0.00	0.00	8,130.00	-917.98	-265.00	1.00	-1.00	0.00	180.00	
8,507.99	0.00	0.00	8,431.10	-917.98	-265.00	0.00	0.00	0.00	0.00	
9,400.05	89.21	90.00	9,004.00	-917.98	300.02	10.00	10.00	10.09	90.00	
16,693.00	89.21	90.00	9,105.00	-917.98	7,592.27	0.00	0.00	0.00	0.00	PBHL (Onyx 12H)

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 TVD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
 MD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (Onyx 12H) - SHL (12H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.00									
1,700.00	1.00	196.10	1,699.99	-0.84	-0.24	-0.14	1.00	1.00	0.00
1,800.00	2.00	196.10	1,799.96	-3.35	-0.97	-0.56	1.00	1.00	0.00
1,900.00	3.00	196.10	1,899.86	-7.54	-2.18	-1.26	1.00	1.00	0.00
2,000.00	4.00	196.10	1,999.68	-13.41	-3.87	-2.23	1.00	1.00	0.00
2,100.00	5.00	196.10	2,099.37	-20.95	-6.05	-3.49	1.00	1.00	0.00
2,200.00	6.00	196.10	2,198.90	-30.16	-8.71	-5.02	1.00	1.00	0.00
2,300.00	7.00	196.10	2,298.26	-41.03	-11.84	-6.83	1.00	1.00	0.00
2,400.00	8.00	196.10	2,397.40	-53.57	-15.47	-8.92	1.00	1.00	0.00
2,500.00	9.00	196.10	2,496.30	-67.77	-19.56	-11.29	1.00	1.00	0.00
2,576.63	9.77	196.10	2,571.91	-79.78	-23.03	-13.29	1.00	1.00	0.00
Start 4653.62 hold at 2576.63 MD									
2,600.00	9.77	196.10	2,594.94	-83.59	-24.13	-13.92	0.00	0.00	0.00
2,700.00	9.77	196.10	2,693.49	-99.88	-28.83	-16.64	0.00	0.00	0.00
2,800.00	9.77	196.10	2,792.04	-116.18	-33.54	-19.35	0.00	0.00	0.00
2,900.00	9.77	196.10	2,890.59	-132.48	-38.24	-22.06	0.00	0.00	0.00
3,000.00	9.77	196.10	2,989.14	-148.78	-42.95	-24.78	0.00	0.00	0.00
3,100.00	9.77	196.10	3,087.69	-165.07	-47.65	-27.49	0.00	0.00	0.00
3,200.00	9.77	196.10	3,186.24	-181.37	-52.36	-30.21	0.00	0.00	0.00
3,300.00	9.77	196.10	3,284.79	-197.67	-57.06	-32.92	0.00	0.00	0.00
3,400.00	9.77	196.10	3,383.35	-213.97	-61.77	-35.64	0.00	0.00	0.00
3,500.00	9.77	196.10	3,481.90	-230.26	-66.47	-38.35	0.00	0.00	0.00
3,600.00	9.77	196.10	3,580.45	-246.56	-71.18	-41.07	0.00	0.00	0.00
3,700.00	9.77	196.10	3,679.00	-262.86	-75.88	-43.78	0.00	0.00	0.00
3,800.00	9.77	196.10	3,777.55	-279.16	-80.59	-46.49	0.00	0.00	0.00
3,900.00	9.77	196.10	3,876.10	-295.45	-85.29	-49.21	0.00	0.00	0.00
4,000.00	9.77	196.10	3,974.65	-311.75	-90.00	-51.92	0.00	0.00	0.00
4,100.00	9.77	196.10	4,073.20	-328.05	-94.70	-54.64	0.00	0.00	0.00
4,200.00	9.77	196.10	4,171.75	-344.35	-99.40	-57.35	0.00	0.00	0.00
4,300.00	9.77	196.10	4,270.30	-360.64	-104.11	-60.07	0.00	0.00	0.00
4,400.00	9.77	196.10	4,368.85	-376.94	-108.81	-62.78	0.00	0.00	0.00
4,500.00	9.77	196.10	4,467.40	-393.24	-113.52	-65.50	0.00	0.00	0.00
4,600.00	9.77	196.10	4,565.95	-409.54	-118.22	-68.21	0.00	0.00	0.00
4,700.00	9.77	196.10	4,664.51	-425.83	-122.93	-70.92	0.00	0.00	0.00
4,800.00	9.77	196.10	4,763.06	-442.13	-127.63	-73.64	0.00	0.00	0.00

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4,900.00	9.77	196.10	4,861.61	-458.43	-132.34	-76.35	0.00	0.00	0.00
5,000.00	9.77	196.10	4,960.16	-474.73	-137.04	-79.07	0.00	0.00	0.00
5,100.00	9.77	196.10	5,058.71	-491.02	-141.75	-81.78	0.00	0.00	0.00
5,200.00	9.77	196.10	5,157.26	-507.32	-146.45	-84.50	0.00	0.00	0.00
5,300.00	9.77	196.10	5,255.81	-523.62	-151.16	-87.21	0.00	0.00	0.00
5,400.00	9.77	196.10	5,354.36	-539.92	-155.86	-89.93	0.00	0.00	0.00
5,500.00	9.77	196.10	5,452.91	-556.21	-160.57	-92.64	0.00	0.00	0.00
5,600.00	9.77	196.10	5,551.46	-572.51	-165.27	-95.35	0.00	0.00	0.00
5,700.00	9.77	196.10	5,650.01	-588.81	-169.98	-98.07	0.00	0.00	0.00
5,800.00	9.77	196.10	5,748.56	-605.11	-174.68	-100.78	0.00	0.00	0.00
5,900.00	9.77	196.10	5,847.11	-621.40	-179.39	-103.50	0.00	0.00	0.00
6,000.00	9.77	196.10	5,945.67	-637.70	-184.09	-106.21	0.00	0.00	0.00
6,100.00	9.77	196.10	6,044.22	-654.00	-188.79	-108.93	0.00	0.00	0.00
6,200.00	9.77	196.10	6,142.77	-670.30	-193.50	-111.64	0.00	0.00	0.00
6,300.00	9.77	196.10	6,241.32	-686.59	-198.20	-114.36	0.00	0.00	0.00
6,400.00	9.77	196.10	6,339.87	-702.89	-202.91	-117.07	0.00	0.00	0.00
6,500.00	9.77	196.10	6,438.42	-719.19	-207.61	-119.78	0.00	0.00	0.00
6,600.00	9.77	196.10	6,536.97	-735.49	-212.32	-122.50	0.00	0.00	0.00
6,700.00	9.77	196.10	6,635.52	-751.78	-217.02	-125.21	0.00	0.00	0.00
6,800.00	9.77	196.10	6,734.07	-768.08	-221.73	-127.93	0.00	0.00	0.00
6,900.00	9.77	196.10	6,832.62	-784.38	-226.43	-130.64	0.00	0.00	0.00
7,000.00	9.77	196.10	6,931.17	-800.68	-231.14	-133.36	0.00	0.00	0.00
7,100.00	9.77	196.10	7,029.72	-816.98	-235.84	-136.07	0.00	0.00	0.00
7,200.00	9.77	196.10	7,128.27	-833.27	-240.55	-138.79	0.00	0.00	0.00
7,230.25	9.77	196.10	7,158.09	-838.20	-241.97	-139.61	0.00	0.00	0.00
Start Drop -1.00									
7,300.00	9.07	196.10	7,226.90	-849.17	-245.14	-141.43	1.00	-1.00	0.00
7,400.00	8.07	196.10	7,325.78	-863.48	-249.27	-143.82	1.00	-1.00	0.00
7,500.00	7.07	196.10	7,424.91	-876.14	-252.92	-145.92	1.00	-1.00	0.00
7,600.00	6.07	196.10	7,524.25	-887.13	-256.09	-147.76	1.00	-1.00	0.00
7,700.00	5.07	196.10	7,623.77	-896.45	-258.79	-149.31	1.00	-1.00	0.00
7,800.00	4.07	196.10	7,723.46	-904.11	-260.99	-150.58	1.00	-1.00	0.00
7,900.00	3.07	196.10	7,823.26	-910.09	-262.72	-151.58	1.00	-1.00	0.00
8,000.00	2.07	196.10	7,923.16	-914.39	-263.96	-152.30	1.00	-1.00	0.00
8,100.00	1.07	196.10	8,023.12	-917.02	-264.72	-152.73	1.00	-1.00	0.00
8,206.89	0.00	0.00	8,130.00	-917.98	-265.00	-152.89	1.00	-1.00	0.00
Start 301.10 hold at 8206.89 MD									
8,300.00	0.00	0.00	8,223.11	-917.98	-265.00	-152.89	0.00	0.00	0.00
8,400.00	0.00	0.00	8,323.11	-917.98	-265.00	-152.89	0.00	0.00	0.00
8,507.99	0.00	0.00	8,431.10	-917.98	-265.00	-152.89	0.00	0.00	0.00
Start DLS 10.00 TFO 90.00									
8,550.00	4.20	90.00	8,473.08	-917.98	-263.46	-151.37	10.00	10.00	0.00
8,600.00	9.20	90.00	8,522.72	-917.98	-257.63	-145.57	10.00	10.00	0.00
8,650.00	14.20	90.00	8,571.66	-917.98	-247.49	-135.51	10.00	10.00	0.00
8,700.00	19.20	90.00	8,619.54	-917.98	-233.13	-121.25	10.00	10.00	0.00
8,750.00	24.20	90.00	8,665.98	-917.98	-214.64	-102.90	10.00	10.00	0.00
8,800.00	29.20	90.00	8,710.64	-917.98	-192.18	-80.60	10.00	10.00	0.00
8,850.00	34.20	90.00	8,753.16	-917.98	-165.92	-54.53	10.00	10.00	0.00
8,900.00	39.20	90.00	8,793.24	-917.98	-136.04	-24.87	10.00	10.00	0.00
8,950.00	44.20	90.00	8,830.56	-917.98	-102.79	8.14	10.00	10.00	0.00
9,000.00	49.20	90.00	8,864.84	-917.98	-66.41	44.26	10.00	10.00	0.00
9,050.00	54.20	90.00	8,895.81	-917.98	-27.19	83.20	10.00	10.00	0.00
9,100.00	59.20	90.00	8,923.25	-917.98	14.59	124.68	10.00	10.00	0.00

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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)
9,150.00	64.20	90.00	8,946.95	-917.98	58.60	168.37	10.00	10.00	0.00
9,200.00	69.20	90.00	8,966.72	-917.98	104.51	213.94	10.00	10.00	0.00
9,250.00	74.20	90.00	8,982.41	-917.98	151.97	261.06	10.00	10.00	0.00
9,300.00	79.20	90.00	8,993.91	-917.98	200.61	309.35	10.00	10.00	0.00
9,350.00	84.20	90.00	9,001.13	-917.98	250.07	358.45	10.00	10.00	0.00
9,400.05	89.21	90.00	9,004.00	-917.98	300.02	408.04	10.00	10.00	0.00
Start 7292.95 hold at 9400.05 MD									
9,500.00	89.21	90.00	9,005.39	-917.98	399.96	507.26	0.00	0.00	0.00
9,600.00	89.21	90.00	9,006.77	-917.98	499.95	606.53	0.00	0.00	0.00
9,700.00	89.21	90.00	9,008.16	-917.98	599.94	705.80	0.00	0.00	0.00
9,800.00	89.21	90.00	9,009.54	-917.98	699.93	805.06	0.00	0.00	0.00
9,900.00	89.21	90.00	9,010.93	-917.98	799.92	904.33	0.00	0.00	0.00
10,000.00	89.21	90.00	9,012.31	-917.98	899.91	1,003.60	0.00	0.00	0.00
10,100.00	89.21	90.00	9,013.70	-917.98	999.90	1,102.87	0.00	0.00	0.00
10,200.00	89.21	90.00	9,015.08	-917.98	1,099.89	1,202.13	0.00	0.00	0.00
10,300.00	89.21	90.00	9,016.47	-917.98	1,199.89	1,301.40	0.00	0.00	0.00
10,400.00	89.21	90.00	9,017.85	-917.98	1,299.88	1,400.67	0.00	0.00	0.00
10,500.00	89.21	90.00	9,019.24	-917.98	1,399.87	1,499.93	0.00	0.00	0.00
10,600.00	89.21	90.00	9,020.62	-917.98	1,499.86	1,599.20	0.00	0.00	0.00
10,700.00	89.21	90.00	9,022.01	-917.98	1,599.85	1,698.47	0.00	0.00	0.00
10,800.00	89.21	90.00	9,023.39	-917.98	1,699.84	1,797.74	0.00	0.00	0.00
10,900.00	89.21	90.00	9,024.78	-917.98	1,799.83	1,897.00	0.00	0.00	0.00
11,000.00	89.21	90.00	9,026.16	-917.98	1,899.82	1,996.27	0.00	0.00	0.00
11,100.00	89.21	90.00	9,027.54	-917.98	1,999.81	2,095.54	0.00	0.00	0.00
11,200.00	89.21	90.00	9,028.93	-917.98	2,099.80	2,194.81	0.00	0.00	0.00
11,300.00	89.21	90.00	9,030.31	-917.98	2,199.79	2,294.07	0.00	0.00	0.00
11,400.00	89.21	90.00	9,031.70	-917.98	2,299.78	2,393.34	0.00	0.00	0.00
11,500.00	89.21	90.00	9,033.08	-917.98	2,399.77	2,492.61	0.00	0.00	0.00
11,600.00	89.21	90.00	9,034.47	-917.98	2,499.76	2,591.88	0.00	0.00	0.00
11,700.00	89.21	90.00	9,035.85	-917.98	2,599.75	2,691.14	0.00	0.00	0.00
11,800.00	89.21	90.00	9,037.24	-917.98	2,699.74	2,790.41	0.00	0.00	0.00
11,900.00	89.21	90.00	9,038.62	-917.98	2,799.73	2,889.68	0.00	0.00	0.00
12,000.00	89.21	90.00	9,040.01	-917.98	2,899.72	2,988.95	0.00	0.00	0.00
12,100.00	89.21	90.00	9,041.39	-917.98	2,999.71	3,088.21	0.00	0.00	0.00
12,200.00	89.21	90.00	9,042.78	-917.98	3,099.70	3,187.48	0.00	0.00	0.00
12,300.00	89.21	90.00	9,044.16	-917.98	3,199.69	3,286.75	0.00	0.00	0.00
12,400.00	89.21	90.00	9,045.55	-917.98	3,299.68	3,386.02	0.00	0.00	0.00
12,500.00	89.21	90.00	9,046.93	-917.98	3,399.67	3,485.28	0.00	0.00	0.00
12,600.00	89.21	90.00	9,048.32	-917.98	3,499.66	3,584.55	0.00	0.00	0.00
12,700.00	89.21	90.00	9,049.70	-917.98	3,599.66	3,683.82	0.00	0.00	0.00
12,800.00	89.21	90.00	9,051.09	-917.98	3,699.65	3,783.09	0.00	0.00	0.00
12,900.00	89.21	90.00	9,052.47	-917.98	3,799.64	3,882.35	0.00	0.00	0.00
13,000.00	89.21	90.00	9,053.86	-917.98	3,899.63	3,981.62	0.00	0.00	0.00
13,100.00	89.21	90.00	9,055.24	-917.98	3,999.62	4,080.89	0.00	0.00	0.00
13,200.00	89.21	90.00	9,056.63	-917.98	4,099.61	4,180.16	0.00	0.00	0.00
13,300.00	89.21	90.00	9,058.01	-917.98	4,199.60	4,279.42	0.00	0.00	0.00
13,400.00	89.21	90.00	9,059.40	-917.98	4,299.59	4,378.69	0.00	0.00	0.00
13,500.00	89.21	90.00	9,060.78	-917.98	4,399.58	4,477.96	0.00	0.00	0.00
13,600.00	89.21	90.00	9,062.17	-917.98	4,499.57	4,577.23	0.00	0.00	0.00
13,700.00	89.21	90.00	9,063.55	-917.98	4,599.56	4,676.49	0.00	0.00	0.00
13,800.00	89.21	90.00	9,064.94	-917.98	4,699.55	4,775.76	0.00	0.00	0.00
13,900.00	89.21	90.00	9,066.32	-917.98	4,799.54	4,875.03	0.00	0.00	0.00
14,000.00	89.21	90.00	9,067.71	-917.98	4,899.53	4,974.30	0.00	0.00	0.00
14,100.00	89.21	90.00	9,069.09	-917.98	4,999.52	5,073.56	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Onyx PWU 29-28
 Well: 12H
 Wellbore: OH
 Design: Plan #2

Local Co-ordinate Reference: Well 12H
 TVD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
 MD Reference: 3307.9' GE + 23.5' KB @ 3331.40usft
 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)
14,200.00	89.21	90.00	9,070.48	-917.98	5,099.51	5,172.83	0.00	0.00	0.00
14,300.00	89.21	90.00	9,071.86	-917.98	5,199.50	5,272.10	0.00	0.00	0.00
14,400.00	89.21	90.00	9,073.25	-917.98	5,299.49	5,371.37	0.00	0.00	0.00
14,500.00	89.21	90.00	9,074.63	-917.98	5,399.48	5,470.63	0.00	0.00	0.00
14,600.00	89.21	90.00	9,076.02	-917.98	5,499.47	5,569.90	0.00	0.00	0.00
14,700.00	89.21	90.00	9,077.40	-917.98	5,599.46	5,669.17	0.00	0.00	0.00
14,800.00	89.21	90.00	9,078.78	-917.98	5,699.45	5,768.43	0.00	0.00	0.00
14,900.00	89.21	90.00	9,080.17	-917.98	5,799.44	5,867.70	0.00	0.00	0.00
15,000.00	89.21	90.00	9,081.55	-917.98	5,899.43	5,966.97	0.00	0.00	0.00
15,100.00	89.21	90.00	9,082.94	-917.98	5,999.43	6,066.24	0.00	0.00	0.00
15,200.00	89.21	90.00	9,084.32	-917.98	6,099.42	6,165.50	0.00	0.00	0.00
15,300.00	89.21	90.00	9,085.71	-917.98	6,199.41	6,264.77	0.00	0.00	0.00
15,400.00	89.21	90.00	9,087.09	-917.98	6,299.40	6,364.04	0.00	0.00	0.00
15,500.00	89.21	90.00	9,088.48	-917.98	6,399.39	6,463.31	0.00	0.00	0.00
15,600.00	89.21	90.00	9,089.86	-917.98	6,499.38	6,562.57	0.00	0.00	0.00
15,700.00	89.21	90.00	9,091.25	-917.98	6,599.37	6,661.84	0.00	0.00	0.00
15,800.00	89.21	90.00	9,092.63	-917.98	6,699.36	6,761.11	0.00	0.00	0.00
15,900.00	89.21	90.00	9,094.02	-917.98	6,799.35	6,860.38	0.00	0.00	0.00
16,000.00	89.21	90.00	9,095.40	-917.98	6,899.34	6,959.64	0.00	0.00	0.00
16,100.00	89.21	90.00	9,096.79	-917.98	6,999.33	7,058.91	0.00	0.00	0.00
16,200.00	89.21	90.00	9,098.17	-917.98	7,099.32	7,158.18	0.00	0.00	0.00
16,300.00	89.21	90.00	9,099.56	-917.98	7,199.31	7,257.45	0.00	0.00	0.00
16,400.00	89.21	90.00	9,100.94	-917.98	7,299.30	7,356.71	0.00	0.00	0.00
16,500.00	89.21	90.00	9,102.33	-917.98	7,399.29	7,455.98	0.00	0.00	0.00
16,600.00	89.21	90.00	9,103.71	-917.98	7,499.28	7,555.25	0.00	0.00	0.00
16,693.00	89.21	90.00	9,105.00	-917.98	7,592.27	7,647.57	0.00	0.00	0.00

TD at 16693.00 - PBHL (12H) - PBHL (Onyx 12H)

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL (Onyx 12H)	0.00	0.00	0.00	0.00	0.00	592,268.73	611,776.35	32° 37' 40.757 N	104° 6' 16.306 W
- plan hits target center									
- Point									
PBHL (Onyx 12H)	0.00	0.00	9,105.00	-917.98	7,592.27	591,350.75	619,368.62	32° 37' 31.503 N	104° 4' 47.551 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,600.00	1,600.00	0.00	0.00	Start Build 1.00
2,576.63	2,571.91	-79.78	-23.03	Start 4653.62 hold at 2576.63 MD
7,230.25	7,158.09	-838.20	-241.97	Start Drop -1.00
8,206.89	8,130.00	-917.98	-265.00	Start 301.10 hold at 8206.89 MD
8,507.99	8,431.10	-917.98	-265.00	Start DLS 10.00 TFO 90.00
9,400.05	9,004.00	-917.98	300.02	Start 7292.95 hold at 9400.05 MD
16,693.00	9,105.00	-917.98	7,592.27	TD at 16693.00

Devon Energy, Onyx PWU 29-28 12H

1. Geologic Formations

TVD of target	9105	Pilot hole depth	N/A
MD at TD:	16693	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	0		
Rustler	40		
Top of Salt	350		
Tansill	1065		
Yates	1230		
Seven Rivers	1520		
Delaware Group	3290		
Lower Brushy	4985		
1st Bone Spring Lime	5210		
1st Bone Spring Sand	6970		
2nd Bone Spring Lime	7075		
2nd Bone Spring Sand	7675		
3rd Bone Spring Lime	7990		
3rd Bone Spring Sand	8675		
Wolfcamp	9200		

*H₂S, water flows, loss of circulation, abnormal pressures, etc.

Devon Energy, Onyx PWU 29-28 12H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.
	From	To				
24"	0	200	13.375"	48	H-40	STC
12.25"	0	3,390	9.625"	36	J-55	LTC
8.75"	0	16,693	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Onyx PWU 29-28 12H

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
13-3/8"						
Surface	226	14.8	6.368	1.33	4 hr 48 mn	C + Adds
9-5/8"	488	12.5	10.654	1.94	31 hr 40 mn	35:65 Poz:C + Adds
Inter.	294	14.8	6.352	1.33	6 hr 48 mn	C + Adds
5-1/2"	655	10.5	15.442	2.43	19 hr 3 mn	C + Adds
Prod	1769	14.5	5.175	1.2	9 hr 6 mn	50:50 Poz:H + Adds

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	25%
9-5/8" Intermediate	0'	25%
5-1/2" Production Casing	2390'	10%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
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Devon Energy, Onyx PWU 29-28 12H

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. • Wellhead will be installed by wellhead representatives. • If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. • Wellhead representative will install the test plug for the initial BOP test. • Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon Energy, Onyx PWU 29-28 12H

	Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.
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5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	200	FW Gel	8.6-8.8	28-34	N/C
200	3390	Saturated Brine	10.0-10.2	28-34	N/C
3390	TD	Cut Brine	8.5-8.7	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

Devon Energy, Onyx PWU 29-28 12H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4119 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? Yes

Will be pre-setting casing? Yes

Attachments

☒ Directional Plan

☐ Other, describe

Devon Energy, Onyx PWU 29-28 62H

1. Geologic Formations

TVD of target	9003	Pilot hole depth	N/A
MD at TD:	16528	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	0		
Rustler	40		
Top of Salt	350		
Tansill	1065		
Yates	1230		
Seven Rivers	1520		
Delaware Group	3290		
Lower Brushy	4985		
1st Bone Spring Lime	5210		
1st Bone Spring Sand	6970		
2nd Bone Spring Lime	7075		
2nd Bone Spring Sand	7675		
3rd Bone Spring Lime	7990		
3rd Bone Spring Sand	8675		
Wolfcamp	9170		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

Devon Energy, Onyx PWU 29-28 62H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.
	From	To				
24"	0	200	13.375"	48	H-40	STC
12.25"	0	3,390	9.625"	36	J-55	LTC
8.75"	0	16,528	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Onyx PWU 29-28 62H

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	226	14.8	6.368	1.33	4 hr 48 mn	C + Adds
9-5/8" Inter.	488	12.5	10.654	1.94	31 hr 40 mn	35:65 Poz:C + Adds
	294	14.8	6.352	1.33	6 hr 48 mn	C + Adds
5-1/2" Prod	655	10.5	15.442	2.43	19 hr 3 mn	C + Adds
	1769	14.5	5.175	1.2	9 hr 6 mn	50:50 Poz:H + Adds

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	25%
9-5/8" Intermediate	0'	25%
5-1/2" Production Casing	2390'	10%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure 3M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure 3M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
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Devon Energy, Onyx PWU 29-28 62H

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. • Wellhead will be installed by wellhead representatives. • If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. • Wellhead representative will install the test plug for the initial BOP test. • Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon Energy, Onyx PWU 29-28 62H

	Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.
	Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	200	FW Gel	8.6-8.8	28-34	N/C
200	3390	Saturated Brine	10.0-10.2	28-34	N/C
3390	TD	Cut Brine	8.5-8.7	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

Devon Energy, Onyx PWU 29-28 62H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4072 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other facets of operation

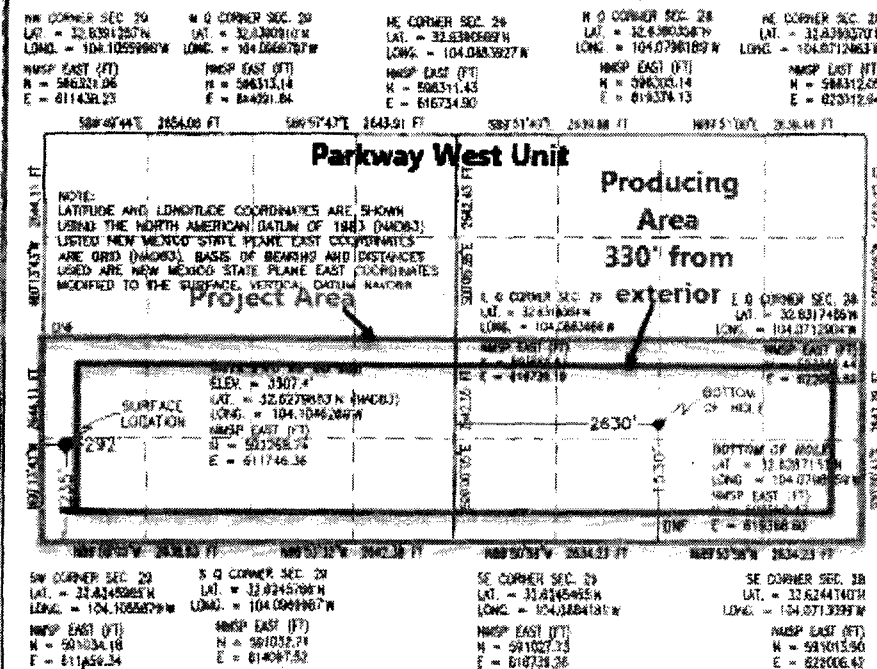
Is this a walking operation? Yes

Will be pre-setting casing? Yes

Attachments

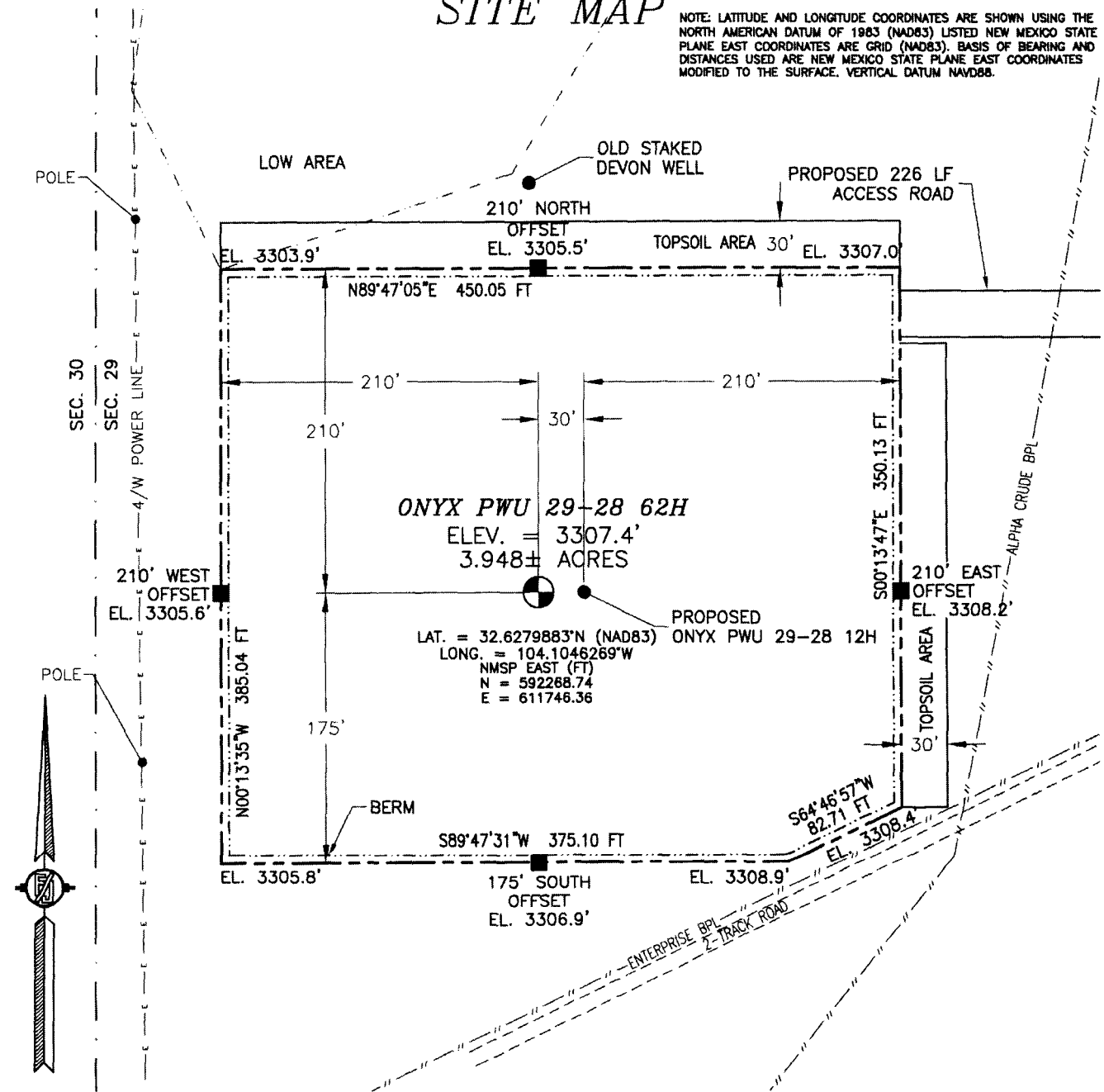
☒ Directional Plan

☐ Other, describe



SECTION 29, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE, VERTICAL DATUM NAVD88.



0 10 50 100 200
SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR 206 (ILLINOIS CAMP ROAD) AND CR 235 (CURRY COMBS ROAD) GO SOUTHEAST & EAST ON CR 235 APPROX. 6.5 MILES TO A LEASE ROAD ON RIGHT (SOUTH) TURN SOUTH ON LEASE ROAD GO APPROX. 2.1 MILES TO ROAD LATH ON RIGHT (WEST) GO WEST 226' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.
ONYX PWU 29-28 62H
LOCATED 1235 FT. FROM THE SOUTH LINE
AND 292 FT. FROM THE WEST LINE OF
SECTION 29, TOWNSHIP 19 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

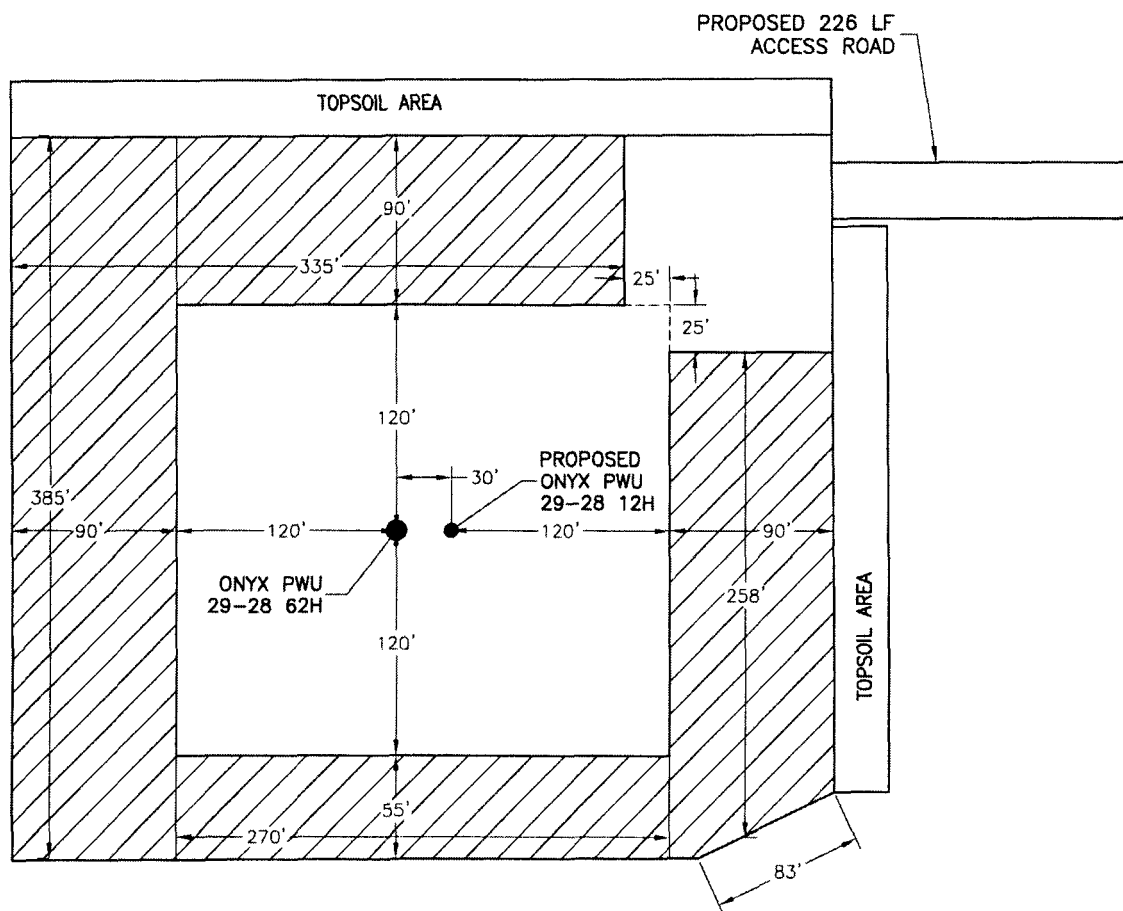
JULY 15, 2017

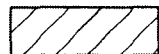
SURVEY NO. 5215

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CARLSBAD, NEW MEXICO

SECTION 29, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN



 DENOTES INTERIM PAD
RECLAMATION AREA
2.171± ACRES



0 10 50 100 200
SCALE 1" = 100'

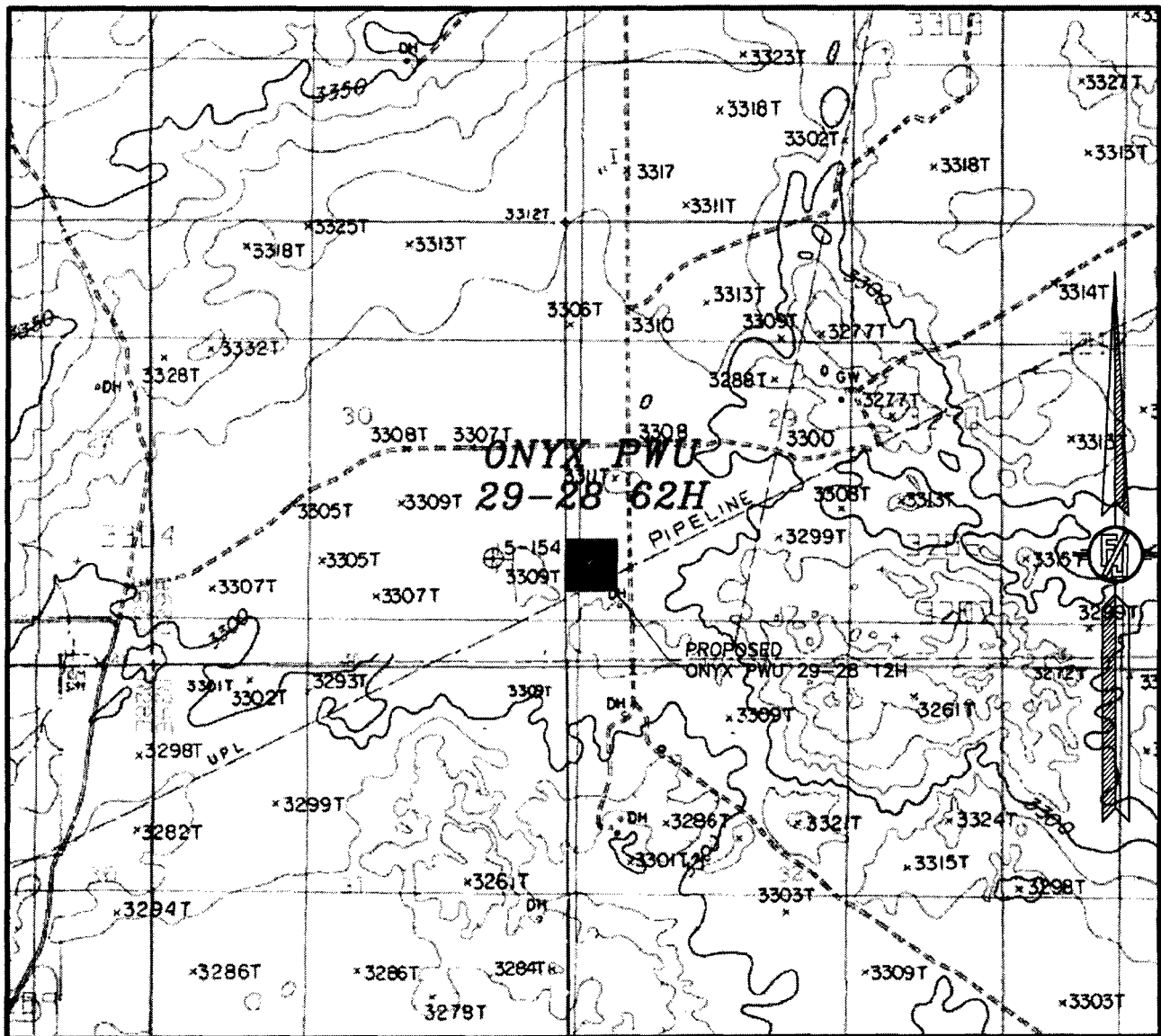
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SECTION 29, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 ILLINOIS CAMP NE

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.
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