

Submit To Appropriate District Office Two Copies I 1623 N. French Dr., Hobbs, NM 88240 II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Rd., Aztec, NM 87410 IV 1220 S. St. Francis Dr., Santa Fe, NM 87505		State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505			Form C-105 Revised April 3, 2017					
		1. WELL API NO. <u>015</u> 30-025-43045								
		2. Type of Lease ☒ STATE ☐ FEE ☐ FED/INDIAN								
		3. State Oil & Gas Lease No.								
WELL COMPLETION OR RECOMPLETION REPORT AND LOG										
4. Reason for filing: ☒ COMPLETION REPORT (Fill in boxes #1 through #31 for State and Fee wells only) ☐ C-144 CLOSURE ATTACHMENT (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)				5. Lease Name or Unit Agreement Name Craig State						
				6. Well Number: NM OIL CONSERVATION ARTESIA DISTRICT 13H						
7. Type of Completion: ☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER				FEB 08 2019						
8. Name of Operator COG Operating LLC				9. OGRID 229137 RECEIVED						
10. Address of Operator 2208 W. Main Street Artesia, NM 88210				11. Pool name or Wildcat WC-015 G-03 S252636M; Bone Spring						
12. Location	Unit Ltr	Section	Township	Range	Lot	Feet from the				
face:	B	36	25S	26E		255				
BH:	N	36	25S	26E		200				
13. Date Spudded 5/5/18	14. Date T.D. Reached 5/30/18	15. Date Rig Released 6/1/18	16. Date Completed (Ready to Produce) 10/9/18 <u>10-8-18</u>		17. Elevations (DF and RKB, RT, GR, etc.) 3266' GR					
18. Total Measured Depth of Well 12646' <u>7780</u>		19. Plug Back Measured Depth 12444'		20. Was Directional Survey Made? Yes		21. Type Electric and Other Logs Run None				
22. Producing Interval(s), of this completion - Top, Bottom, Name 7960-12435' Bone Spring <u>7780-12345</u>										
23. CASING RECORD (Report all strings set in well)										
CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED					
13 3/8"	54.5# <u>J55</u>	293'	17 1/2"	<u>C</u> 1025 sx <u>350 sk - circ</u>						
9 5/8"	47 # <u>J55</u>	2407'	12 1/4"	<u>B</u> 1025 sx - <u>circ</u>						
5 1/2"	23# <u>P110</u>	12631'	8 1/2"	<u>C</u> 2150 sx - <u>circ</u>						
24. LINER RECORD										
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN						
				25. TUBING RECORD						
SIZE		DEPTH SET		PACKER SET						
26. Perforation record (interval, size, and number) 7960-12435' (780) <u>7780-12435'</u>				27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC. <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>DEPTH INTERVAL</th> <th>AMOUNT AND KIND MATERIAL USED</th> </tr> <tr> <td>7960-12435' <u>7780-12435'</u></td> <td>Acidz w/41,328 gal 7 1/2%; Frac with 9,349,742# sand & 7,585,410 gal fluid</td> </tr> </table>			DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED	7960-12435' <u>7780-12435'</u>	Acidz w/41,328 gal 7 1/2%; Frac with 9,349,742# sand & 7,585,410 gal fluid
DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED									
7960-12435' <u>7780-12435'</u>	Acidz w/41,328 gal 7 1/2%; Frac with 9,349,742# sand & 7,585,410 gal fluid									
28. PRODUCTION										
Date First Production 10/09/18 <u>10-8-18</u>		Production Method (Flowing, gas lift, pumping - Size and type pump) <u>Flowing gas lift</u>			Well Status (Prod. or Shut-in) <u>Producing</u>					
Date of Test <u>10/09/18 OK</u>	Hours Tested 24	Choke Size 58/64"	Prod'n For Test Period 2 Hrs Oil - Bbl. 424	Gas - MCF 1830	Water - Bbl. 1075	Gas - Oil Ratio				
Flow Tubing Press. 500#	Casing Pressure 1200#	Calculated 24-Hour Rate	Oil - Bbl. 424	Gas - MCF 1830	Water - Bbl. 1075	Oil Gravity - API - (Corr.)				
29. Disposition of Gas (Sold, used for fuel, vented, etc.) Sold					30. Test Witnessed By Jace Farmer					
31. List Attachments Surveys										
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.					33. Rig Release Date: 6/1/18					
34. If an on-site burial was used at the well, report the exact location of the on-site burial:										
Latitude		Longitude		NAD83						
I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief										
Signature <u>Amanda Avery</u>		Printed Name: Amanda Avery		Title Regulatory Tech		Date: 2/8/19				
E-mail Address: aavery@concho.com										

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well and not later than 60 days after completion of closure. When submitted as a completion report, this shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 11, 12 and 26-31 shall be reported for each zone.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico			Northwestern New Mexico	
T. Anhy	T. Canyon		T. Ojo Alamo	T. Penn A"
T. Salt	T. Strawn		T. Kirtland	T. Penn. "B"
B. Salt	T. Atoka	1750'	T. Fruitland	T. Penn. "C"
T. Yates	T. Miss		T. Pictured Cliffs	T. Penn. "D"
T. 7 Rivers	T. Devonian		T. Cliff House	T. Leadville
T. Queen	T. Silurian		T. Menefee	T. Madison
T. Grayburg	T. Montoya		T. Point Lookout	T. Elbert
T. San Andres	T. Rustler		T. Mancos	T. McCracken
T. Glorieta	T. Lamar	1943'	T. Gallup	T. Ignacio Otzte
T. Paddock	T. Bell Canyon	1995'	Base Greenhorn	T. Granite
T. Blinebry	T. Cherry Canyon	2835'	T. Dakota	
T. Tubb	T. Brushy Canyon	3947'	T. Morrison	
T. Drinkard	T. Bone Spring GL	5558'	T. Todilto	
T. Abo	T. 1 st Bone Spring	6511'	T. Entrada	
T. Wolfcamp	T. 2 nd Bone Spring- Sand	7045'	T. Wingate	
T. Penn	T. 3 rd Bone Spring		T. Chinle	
T. Cisco (Bough C)	T. Wolfcamp		T. Permian	

OIL OR GAS SANDS OR ZONES

No. 1. from.....to.....

No. 3, from.....to.....

No. 2, from.....to.....

No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3. from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology

From	To	Thickness In Feet	Lithology



CONCHO

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

CRAIG STATE #13H

30-015-43045

OWB

Design: ACTUAL WELLPATH

Standard Survey Report

07 June, 2018



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Project EDDY COUNTY, NM

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site ATLAS

Site Position: Northing: 371,480.80 usft Latitude: 32° 1' 15.933 N
From: Map Easting: 573,599.60 usft Longitude: 104° 5' 45.086 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.13 "

Well CRAIG STATE #13H

Well Position: +N/-S 0.0 usft Northing: 397,464.00 usft Latitude: 32° 5' 33.763 N
+E/-W 0.0 usft Easting: 528,080.90 usft Longitude: 104° 14' 33.565 W
Position Uncertainty: 3.0 usft Wellhead Elevation: usft Ground Level: 3,266.0 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	11/9/2017	7.23	59.81	47,735.15278813

Design ACTUAL WELLPATH

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	196.29

Survey Program Date 6/1/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	7,217.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
7,314.0	12,646.0	MWD - CURVE/LATERAL (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.77	310.07	100.0	0.4	-0.5	-0.3	0.77	0.77	0.00
125.0	0.78	301.72	125.0	0.6	-0.8	-0.4	0.45	0.04	-33.40
150.0	0.77	300.48	150.0	0.8	-1.1	-0.5	0.08	-0.04	-4.96
175.0	0.85	301.14	175.0	1.0	-1.4	-0.6	0.32	0.32	2.64
200.0	0.85	301.05	200.0	1.2	-1.7	-0.7	0.01	0.00	-0.36
225.0	0.82	298.62	225.0	1.4	-2.0	-0.7	0.19	-0.12	-9.72
250.0	0.76	297.63	250.0	1.5	-2.3	-0.8	0.25	-0.24	-3.96
275.0	0.78	300.60	275.0	1.7	-2.6	-0.9	0.18	0.08	11.88
300.0	0.92	294.66	300.0	1.9	-2.9	-1.0	0.66	0.56	-23.76



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
325.0	0.87	296.15	325.0	2.0	-3.3	-1.0	0.22	-0.20	5.96
350.0	0.87	300.52	350.0	2.2	-3.6	-1.1	0.27	0.00	17.48
375.0	0.83	298.77	375.0	2.4	-3.9	-1.2	0.19	-0.16	-7.00
400.0	0.82	301.62	400.0	2.6	-4.3	-1.3	0.17	-0.04	11.40
425.0	0.75	297.96	425.0	2.7	-4.6	-1.3	0.34	-0.28	-14.64
450.0	0.91	290.92	450.0	2.9	-4.9	-1.4	0.76	0.64	-28.16
475.0	0.91	292.44	475.0	3.0	-5.3	-1.4	0.10	0.00	6.08
500.0	0.98	287.77	500.0	3.2	-5.6	-1.5	0.42	0.28	-18.68
525.0	1.01	286.09	525.0	3.3	-6.1	-1.5	0.17	0.12	-6.72
550.0	0.99	282.27	549.9	3.4	-6.5	-1.5	0.28	-0.08	-15.28
575.0	0.98	281.44	574.9	3.5	-6.9	-1.4	0.07	-0.04	-3.32
600.0	1.02	284.50	599.9	3.6	-7.3	-1.4	0.27	0.16	12.24
625.0	1.08	282.50	624.9	3.7	-7.8	-1.4	0.28	0.24	-8.00
650.0	1.23	283.40	649.9	3.8	-8.3	-1.3	0.60	0.60	3.60
675.0	1.25	288.40	674.9	4.0	-8.8	-1.3	0.44	0.08	20.00
700.0	1.26	286.37	699.9	4.1	-9.3	-1.3	0.18	0.04	-8.12
725.0	1.30	286.25	724.9	4.3	-9.8	-1.3	0.16	0.16	-0.48
750.0	1.27	286.09	749.9	4.4	-10.4	-1.3	0.12	-0.12	-0.64
775.0	1.33	285.58	774.9	4.6	-10.9	-1.3	0.24	0.24	-2.04
800.0	1.25	284.95	799.9	4.7	-11.5	-1.3	0.32	-0.32	-2.52
825.0	1.20	283.86	824.9	4.9	-12.0	-1.3	0.22	-0.20	-4.36
850.0	1.21	284.36	849.9	5.0	-12.5	-1.3	0.06	0.04	2.00
875.0	0.91	286.05	874.9	5.1	-12.9	-1.3	1.21	-1.20	6.76
900.0	0.55	293.70	899.9	5.2	-13.2	-1.3	1.49	-1.44	30.60
925.0	0.52	300.81	924.9	5.3	-13.5	-1.3	0.29	-0.12	28.44
950.0	0.38	334.87	949.9	5.5	-13.6	-1.4	1.18	-0.56	136.24
975.0	0.52	3.16	974.9	5.7	-13.6	-1.6	1.03	0.56	113.16
1,000.0	0.40	1.63	999.9	5.9	-13.6	-1.8	0.48	-0.48	-6.12
1,025.0	0.51	5.61	1,024.9	6.1	-13.6	-2.0	0.46	0.44	15.92
1,050.0	0.51	9.26	1,049.9	6.3	-13.6	-2.2	0.13	0.00	14.60
1,075.0	0.56	10.83	1,074.9	6.5	-13.5	-2.4	0.21	0.20	6.28
1,100.0	0.62	20.94	1,099.9	6.7	-13.4	-2.7	0.48	0.24	40.44
1,125.0	0.54	22.49	1,124.9	7.0	-13.4	-3.0	0.33	-0.32	6.20
1,150.0	0.55	13.27	1,149.9	7.2	-13.3	-3.2	0.35	0.04	-36.88
1,175.0	0.67	37.67	1,174.9	7.4	-13.2	-3.4	1.13	0.48	97.60
1,200.0	0.73	39.20	1,199.9	7.7	-13.0	-3.7	0.25	0.24	6.12
1,225.0	0.86	46.26	1,224.9	7.9	-12.7	-4.0	0.65	0.52	28.24
1,250.0	1.02	53.06	1,249.9	8.2	-12.4	-4.4	0.78	0.64	27.20
1,275.0	0.93	60.53	1,274.9	8.4	-12.1	-4.7	0.62	-0.36	29.88
1,300.0	0.95	62.00	1,299.8	8.6	-11.7	-5.0	0.13	0.08	5.88
1,325.0	0.83	74.11	1,324.8	8.8	-11.4	-5.2	0.89	-0.48	48.44
1,350.0	0.71	92.32	1,349.8	8.8	-11.0	-5.4	1.08	-0.48	72.84
1,375.0	0.63	97.29	1,374.8	8.8	-10.7	-5.4	0.40	-0.32	19.88



Survey Report

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Wellbore: OWB
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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)
1,400.0	0.57	95.65	1,399.8	8.8	-10.5	-5.5	0.25	-0.24	-6.56
1,425.0	0.65	101.81	1,424.8	8.7	-10.2	-5.5	0.41	0.32	24.64
1,450.0	0.73	99.99	1,449.8	8.7	-9.9	-5.5	0.33	0.32	-7.28
1,475.0	0.80	101.15	1,474.8	8.6	-9.6	-5.6	0.29	0.28	4.64
1,500.0	0.49	110.84	1,499.8	8.5	-9.3	-5.6	1.31	-1.24	38.76
1,525.0	0.35	145.24	1,524.8	8.4	-9.2	-5.5	1.13	-0.56	137.60
1,550.0	0.47	196.96	1,549.8	8.3	-9.2	-5.4	1.49	0.48	206.88
1,575.0	0.47	216.56	1,574.8	8.1	-9.3	-5.2	0.64	0.00	78.40
1,600.0	0.54	235.25	1,599.8	7.9	-9.4	-5.0	0.71	0.28	74.76
1,625.0	0.68	250.40	1,624.8	7.8	-9.6	-4.8	0.85	0.56	60.60
1,650.0	0.70	263.09	1,649.8	7.8	-9.9	-4.7	0.62	0.08	50.76
1,675.0	1.10	272.29	1,674.8	7.7	-10.3	-4.5	1.70	1.60	36.80
1,700.0	1.29	274.35	1,699.8	7.8	-10.8	-4.4	0.78	0.76	8.24
1,725.0	1.59	276.64	1,724.8	7.8	-11.5	-4.3	1.22	1.20	9.16
1,750.0	1.92	276.31	1,749.8	7.9	-12.2	-4.2	1.32	1.32	-1.32
1,775.0	2.14	276.36	1,774.8	8.0	-13.1	-4.0	0.88	0.88	0.20
1,800.0	2.96	276.62	1,799.8	8.2	-14.2	-3.8	3.28	3.28	1.04
1,825.0	3.72	279.61	1,824.7	8.4	-15.7	-3.6	3.12	3.04	11.96
1,850.0	4.79	277.63	1,849.6	8.6	-17.5	-3.4	4.32	4.28	-7.92
1,875.0	5.53	278.40	1,874.5	8.9	-19.7	-3.1	2.97	2.96	3.08
1,900.0	6.24	278.12	1,899.4	9.3	-22.3	-2.7	2.84	2.84	-1.12
1,925.0	6.74	278.35	1,924.3	9.7	-25.1	-2.3	2.00	2.00	0.92
1,950.0	6.80	277.17	1,949.1	10.1	-28.0	-1.9	0.61	0.24	-4.72
1,975.0	7.01	278.08	1,973.9	10.5	-31.0	-1.4	0.95	0.84	3.64
2,000.0	6.91	277.80	1,998.7	10.9	-34.0	-1.0	0.42	-0.40	-1.12
2,025.0	6.95	277.38	2,023.5	11.3	-36.9	-0.5	0.26	0.16	-1.68
2,050.0	6.96	277.03	2,048.3	11.7	-39.9	0.0	0.17	0.04	-1.40
2,075.0	7.20	276.11	2,073.2	12.1	-43.0	0.5	1.06	0.96	-3.68
2,100.0	7.43	273.91	2,098.0	12.3	-46.2	1.1	1.45	0.92	-8.80
2,125.0	7.62	272.35	2,122.7	12.5	-49.4	1.9	1.12	0.76	-6.24
2,150.0	7.79	270.86	2,147.5	12.6	-52.8	2.7	1.05	0.68	-5.96
2,175.0	7.80	271.13	2,172.3	12.7	-56.2	3.6	0.15	0.04	1.08
2,200.0	7.80	271.34	2,197.0	12.7	-59.6	4.5	0.11	0.00	0.84
2,225.0	7.77	271.36	2,221.8	12.8	-63.0	5.4	0.12	-0.12	0.08
2,250.0	7.67	271.16	2,246.6	12.9	-66.3	6.2	0.41	-0.40	-0.80
2,275.0	7.91	270.82	2,271.4	13.0	-69.7	7.1	0.98	0.96	-1.36
2,300.0	7.93	270.70	2,296.1	13.0	-73.2	8.0	0.10	0.08	-0.48
2,325.0	7.98	270.81	2,320.9	13.1	-76.6	9.0	0.21	0.20	0.44
2,350.0	7.94	271.12	2,345.6	13.1	-80.1	9.9	0.23	-0.16	1.24
2,375.0	7.91	270.63	2,370.4	13.2	-83.5	10.8	0.30	-0.12	-1.96
2,400.0	7.88	270.09	2,395.2	13.2	-87.0	11.7	0.32	-0.12	-2.16
2,425.0	7.80	267.66	2,419.9	13.1	-90.4	12.8	1.36	-0.32	-9.72
2,450.0	7.93	268.56	2,444.7	13.0	-93.8	13.8	0.72	0.52	3.60



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
2,475.0	7.94	268.37	2,469.5	12.9	-97.2	14.9	0.11	0.04	-0.76
2,500.0	7.86	268.19	2,494.2	12.8	-100.7	16.0	0.33	-0.32	-0.72
2,525.0	7.84	268.47	2,519.0	12.7	-104.1	17.0	0.17	-0.08	1.12
2,550.0	7.92	268.09	2,543.8	12.6	-107.5	18.1	0.38	0.32	-1.52
2,575.0	7.83	268.05	2,568.5	12.5	-110.9	19.1	0.36	-0.36	-0.16
2,600.0	7.85	268.11	2,593.3	12.4	-114.3	20.2	0.09	0.08	0.24
2,625.0	7.78	268.01	2,618.0	12.3	-117.7	21.3	0.29	-0.28	-0.40
2,650.0	7.75	267.27	2,642.8	12.1	-121.1	22.3	0.42	-0.12	-2.96
2,675.0	7.54	266.85	2,667.6	12.0	-124.4	23.4	0.87	-0.84	-1.68
2,700.0	7.56	267.76	2,692.4	11.8	-127.7	24.5	0.48	0.08	3.64
2,725.0	7.58	267.03	2,717.2	11.6	-131.0	25.6	0.39	0.08	-2.92
2,750.0	7.59	267.16	2,741.9	11.5	-134.3	26.7	0.08	0.04	0.52
2,775.0	7.46	267.20	2,766.7	11.3	-137.6	27.7	0.52	-0.52	0.16
2,800.0	7.44	266.36	2,791.5	11.1	-140.8	28.8	0.44	-0.08	-3.36
2,825.0	7.31	266.78	2,816.3	10.9	-144.0	29.9	0.56	-0.52	1.68
2,850.0	7.15	266.50	2,841.1	10.8	-147.2	31.0	0.66	-0.64	-1.12
2,875.0	7.10	266.73	2,865.9	10.6	-150.2	32.0	0.23	-0.20	0.92
2,900.0	7.07	266.94	2,890.7	10.4	-153.3	33.0	0.16	-0.12	0.84
2,925.0	7.15	267.31	2,915.5	10.3	-156.4	34.0	0.37	0.32	1.48
2,950.0	7.48	269.62	2,940.3	10.2	-159.6	35.0	1.77	1.32	9.24
2,975.0	7.94	273.73	2,965.1	10.3	-162.9	35.9	2.87	1.84	16.44
3,000.0	8.32	274.78	2,989.9	10.5	-166.5	36.6	1.63	1.52	4.20
3,025.0	8.49	274.59	3,014.6	10.8	-170.1	37.3	0.69	0.68	-0.76
3,050.0	9.22	272.41	3,039.3	11.1	-174.0	38.2	3.21	2.92	-8.72
3,075.0	10.23	268.78	3,063.9	11.1	-178.2	39.3	4.72	4.04	-14.52
3,100.0	10.39	269.11	3,088.5	11.0	-182.6	40.7	0.68	0.64	1.32
3,125.0	10.43	268.90	3,113.1	10.9	-187.2	42.0	0.22	0.16	-0.84
3,150.0	10.49	268.86	3,137.7	10.9	-191.7	43.4	0.24	0.24	-0.16
3,175.0	10.46	268.82	3,162.3	10.8	-196.2	44.7	0.12	-0.12	-0.16
3,200.0	10.46	269.52	3,186.9	10.7	-200.8	46.1	0.51	0.00	2.80
3,225.0	10.23	269.67	3,211.5	10.7	-205.3	47.4	0.93	-0.92	0.60
3,250.0	10.09	269.59	3,236.1	10.6	-209.7	48.6	0.56	-0.56	-0.32
3,275.0	9.91	269.24	3,260.7	10.6	-214.0	49.9	0.76	-0.72	-1.40
3,300.0	9.85	269.46	3,285.3	10.5	-218.3	51.1	0.28	-0.24	0.88
3,325.0	9.79	269.34	3,310.0	10.5	-222.6	52.4	0.25	-0.24	-0.48
3,350.0	9.63	270.01	3,334.6	10.5	-226.8	53.6	0.78	-0.64	2.68
3,375.0	9.48	269.65	3,359.2	10.5	-230.9	54.8	0.65	-0.60	-1.44
3,400.0	9.37	269.16	3,383.9	10.4	-235.0	55.9	0.54	-0.44	-1.96
3,425.0	9.27	269.35	3,408.6	10.4	-239.1	57.1	0.42	-0.40	0.76
3,450.0	9.07	269.23	3,433.3	10.3	-243.1	58.3	0.80	-0.80	-0.48
3,475.0	8.96	269.16	3,458.0	10.3	-247.0	59.5	0.44	-0.44	-0.28
3,500.0	8.77	268.46	3,482.7	10.2	-250.8	60.6	0.87	-0.76	-2.80
3,525.0	8.62	268.53	3,507.4	10.1	-254.6	61.8	0.60	-0.60	0.28
3,550.0	8.64	268.51	3,532.1	10.0	-258.4	62.9	0.08	0.08	-0.08



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
3,575.0	8.57	268.01	3,556.8	9.9	-262.1	64.1	0.41	-0.28	-2.00
3,600.0	8.48	267.86	3,581.5	9.7	-265.8	65.2	0.37	-0.36	-0.60
3,625.0	8.33	267.36	3,606.3	9.6	-269.5	66.4	0.67	-0.60	-2.00
3,650.0	8.33	267.30	3,631.0	9.4	-273.1	67.6	0.03	0.00	-0.24
3,675.0	8.41	266.69	3,655.7	9.2	-276.7	68.8	0.48	0.32	-2.44
3,700.0	8.37	270.05	3,680.5	9.1	-280.4	69.9	1.97	-0.16	13.44
3,725.0	8.47	271.70	3,705.2	9.2	-284.0	70.9	1.05	0.40	6.60
3,750.0	8.55	272.16	3,729.9	9.3	-287.7	71.8	0.42	0.32	1.84
3,775.0	8.60	272.02	3,754.6	9.4	-291.4	72.7	0.22	0.20	-0.56
3,800.0	8.53	271.93	3,779.4	9.6	-295.2	73.6	0.29	-0.28	-0.36
3,825.0	8.38	272.86	3,804.1	9.7	-298.8	74.5	0.81	-0.60	3.72
3,850.0	8.36	272.93	3,828.8	9.9	-302.5	75.4	0.09	-0.08	0.28
3,875.0	8.44	273.91	3,853.5	10.1	-306.1	76.2	0.66	0.32	3.92
3,900.0	8.33	274.70	3,878.3	10.4	-309.7	76.9	0.64	-0.44	3.16
3,925.0	8.42	274.61	3,903.0	10.7	-313.4	77.7	0.36	0.36	-0.36
3,950.0	8.39	274.82	3,927.7	11.0	-317.0	78.4	0.17	-0.12	0.84
3,975.0	8.19	275.05	3,952.5	11.3	-320.6	79.1	0.81	-0.80	0.92
4,000.0	7.98	273.77	3,977.2	11.6	-324.1	79.8	1.11	-0.84	-5.12
4,025.0	7.96	273.13	4,002.0	11.8	-327.6	80.6	0.36	-0.08	-2.56
4,050.0	7.86	272.75	4,026.8	12.0	-331.0	81.4	0.45	-0.40	-1.52
4,075.0	7.93	273.82	4,051.5	12.2	-334.4	82.2	0.65	0.28	4.28
4,100.0	8.72	273.82	4,076.3	12.4	-338.1	83.0	3.16	3.16	0.00
4,125.0	8.96	274.95	4,101.0	12.7	-341.9	83.7	1.18	0.96	4.52
4,150.0	9.02	274.25	4,125.7	13.0	-345.8	84.5	0.50	0.24	-2.80
4,175.0	9.20	274.10	4,150.3	13.3	-349.7	85.4	0.73	0.72	-0.60
4,200.0	9.95	274.71	4,175.0	13.6	-353.9	86.2	3.03	3.00	2.44
4,225.0	10.08	275.04	4,199.6	14.0	-358.2	87.1	0.57	0.52	1.32
4,250.0	10.05	275.24	4,224.2	14.4	-362.6	87.9	0.18	-0.12	0.80
4,275.0	10.04	275.07	4,248.8	14.8	-366.9	88.8	0.13	-0.04	-0.68
4,300.0	9.90	274.79	4,273.5	15.1	-371.2	89.6	0.59	-0.56	-1.12
4,325.0	9.73	274.72	4,298.1	15.5	-375.5	90.5	0.68	-0.68	-0.28
4,350.0	9.41	274.34	4,322.7	15.8	-379.6	91.3	1.30	-1.28	-1.52
4,375.0	8.99	274.18	4,347.4	16.1	-383.6	92.2	1.68	-1.68	-0.64
4,400.0	8.76	273.03	4,372.1	16.4	-387.4	93.0	1.16	-0.92	-4.60
4,425.0	8.72	272.48	4,396.8	16.5	-391.2	93.9	0.37	-0.16	-2.20
4,450.0	8.71	273.48	4,421.5	16.7	-395.0	94.8	0.61	-0.04	4.00
4,475.0	8.72	273.39	4,446.3	17.0	-398.8	95.6	0.07	0.04	-0.36
4,500.0	8.65	273.13	4,471.0	17.2	-402.6	96.5	0.32	-0.28	-1.04
4,525.0	8.72	273.46	4,495.7	17.4	-406.3	97.3	0.34	0.28	1.32
4,550.0	8.75	273.31	4,520.4	17.6	-410.1	98.2	0.15	0.12	-0.60
4,575.0	8.38	272.52	4,545.1	17.8	-413.8	99.0	1.55	-1.48	-3.16
4,600.0	8.23	272.14	4,569.9	18.0	-417.4	99.9	0.64	-0.60	-1.52
4,625.0	8.41	271.69	4,594.6	18.1	-421.1	100.8	0.77	0.72	-1.80



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
4,650.0	8.78	270.11	4,619.3	18.1	-424.8	101.8	1.76	1.48	-6.32
4,675.0	9.41	269.33	4,644.0	18.1	-428.8	102.9	2.57	2.52	-3.12
4,700.0	9.68	269.38	4,668.7	18.1	-432.9	104.1	1.08	1.08	0.20
4,725.0	9.55	269.77	4,693.3	18.0	-437.1	105.3	0.58	-0.52	1.56
4,750.0	9.52	269.65	4,718.0	18.0	-441.2	106.5	0.14	-0.12	-0.48
4,775.0	9.67	269.36	4,742.6	18.0	-445.4	107.7	0.63	0.60	-1.16
4,800.0	9.65	270.67	4,767.3	18.0	-449.6	108.9	0.88	-0.08	5.24
4,825.0	9.83	273.05	4,791.9	18.1	-453.8	109.9	1.76	0.72	9.52
4,850.0	9.85	273.42	4,816.5	18.4	-458.1	110.9	0.27	0.08	1.48
4,875.0	9.90	273.52	4,841.2	18.6	-462.3	111.9	0.21	0.20	0.40
4,900.0	9.67	273.61	4,865.8	18.9	-466.6	112.8	0.92	-0.92	0.36
4,925.0	9.42	273.41	4,890.4	19.1	-470.7	113.7	1.01	-1.00	-0.80
4,950.0	9.27	273.67	4,915.1	19.4	-474.8	114.6	0.62	-0.60	1.04
4,975.0	9.07	273.70	4,939.8	19.6	-478.8	115.5	0.80	-0.80	0.12
5,000.0	8.80	273.82	4,964.5	19.9	-482.6	116.3	1.08	-1.08	0.48
5,025.0	8.69	274.87	4,989.2	20.2	-486.4	117.1	0.78	-0.44	4.20
5,050.0	8.67	275.25	5,013.9	20.5	-490.2	117.8	0.24	-0.08	1.52
5,075.0	8.96	274.40	5,038.6	20.8	-494.0	118.6	1.27	1.16	-3.40
5,100.0	9.93	274.13	5,063.3	21.1	-498.1	119.5	3.88	3.88	-1.08
5,125.0	10.14	274.04	5,087.9	21.5	-502.4	120.4	0.84	0.84	-0.36
5,150.0	10.12	274.01	5,112.5	21.8	-506.8	121.3	0.08	-0.08	-0.12
5,175.0	10.03	273.73	5,137.1	22.1	-511.2	122.3	0.41	-0.36	-1.12
5,200.0	9.94	273.85	5,161.7	22.3	-515.5	123.2	0.37	-0.36	0.48
5,225.0	9.61	273.73	5,186.4	22.6	-519.7	124.1	1.32	-1.32	-0.48
5,250.0	9.37	273.36	5,211.0	22.9	-523.9	125.0	0.99	-0.96	-1.48
5,275.0	9.23	272.94	5,235.7	23.1	-527.9	125.9	0.62	-0.56	-1.68
5,300.0	9.17	272.02	5,260.4	23.3	-531.9	126.9	0.64	-0.24	-3.68
5,325.0	9.21	268.95	5,285.1	23.3	-535.9	128.0	1.97	0.16	-12.28
5,350.0	9.23	267.80	5,309.7	23.2	-539.9	129.2	0.74	0.08	-4.60
5,375.0	9.17	266.65	5,334.4	23.0	-543.9	130.5	0.77	-0.24	-4.60
5,400.0	9.23	266.29	5,359.1	22.8	-547.9	131.9	0.33	0.24	-1.44
5,425.0	9.77	264.32	5,383.8	22.4	-552.0	133.4	2.52	2.16	-7.88
5,450.0	9.81	264.69	5,408.4	22.0	-556.2	134.9	0.30	0.16	1.48
5,475.0	9.84	263.96	5,433.0	21.6	-560.4	136.5	0.51	0.12	-2.92
5,500.0	10.29	265.38	5,457.6	21.2	-564.8	138.1	2.06	1.80	5.68
5,525.0	10.63	265.67	5,482.2	20.8	-569.3	139.7	1.38	1.36	1.16
5,550.0	10.78	266.01	5,506.8	20.5	-573.9	141.4	0.65	0.60	1.36
5,575.0	10.54	265.85	5,531.4	20.2	-578.6	143.0	0.97	-0.96	-0.64
5,600.0	10.29	265.89	5,555.9	19.8	-583.1	144.6	1.00	-1.00	0.16
5,625.0	9.97	266.02	5,580.6	19.5	-587.5	146.1	1.28	-1.28	0.52
5,650.0	9.93	265.63	5,605.2	19.2	-591.8	147.6	0.31	-0.16	-1.56
5,675.0	10.11	266.30	5,629.8	18.9	-596.1	149.1	0.86	0.72	2.68
5,700.0	10.24	268.47	5,654.4	18.7	-600.5	150.5	1.62	0.52	8.68



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
5,725.0	10.12	269.54	5,679.0	18.6	-604.9	151.8	0.90	-0.48	4.28
5,750.0	9.84	269.76	5,703.6	18.6	-609.3	153.1	1.13	-1.12	0.88
5,775.0	9.51	269.73	5,728.3	18.6	-613.5	154.3	1.32	-1.32	-0.12
5,800.0	9.05	269.18	5,752.9	18.5	-617.5	155.5	1.87	-1.84	-2.20
5,825.0	8.23	267.66	5,777.7	18.4	-621.3	156.6	3.40	-3.28	-6.08
5,850.0	7.87	266.95	5,802.4	18.3	-624.7	157.7	1.49	-1.44	-2.84
5,875.0	7.84	267.38	5,827.2	18.1	-628.2	158.9	0.26	-0.12	1.72
5,900.0	7.89	266.76	5,851.9	17.9	-631.6	160.0	0.39	0.20	-2.48
5,925.0	7.83	265.74	5,876.7	17.7	-635.0	161.2	0.61	-0.24	-4.08
5,950.0	7.64	265.49	5,901.5	17.5	-638.3	162.3	0.77	-0.76	-1.00
5,975.0	7.78	265.48	5,926.3	17.2	-641.7	163.5	0.56	0.56	-0.04
6,000.0	7.71	265.69	5,951.0	16.9	-645.0	164.7	0.30	-0.28	0.84
6,025.0	7.38	264.83	5,975.8	16.7	-648.3	165.9	1.40	-1.32	-3.44
6,050.0	7.45	264.61	6,000.6	16.4	-651.5	167.1	0.30	0.28	-0.88
6,075.0	7.79	268.04	6,025.4	16.2	-654.8	168.2	2.27	1.36	13.72
6,100.0	8.02	269.40	6,050.1	16.1	-658.3	169.3	1.19	0.92	5.44
6,125.0	7.96	267.78	6,074.9	16.0	-661.7	170.3	0.93	-0.24	-6.48
6,150.0	8.08	265.52	6,099.7	15.8	-665.2	171.5	1.35	0.48	-9.04
6,175.0	8.46	264.26	6,124.4	15.5	-668.8	172.8	1.68	1.52	-5.04
6,200.0	8.75	263.21	6,149.1	15.1	-672.5	174.2	1.32	1.16	-4.20
6,225.0	8.53	261.08	6,173.8	14.5	-676.2	175.8	1.55	-0.88	-8.52
6,250.0	8.12	259.38	6,198.6	13.9	-679.8	177.4	1.91	-1.64	-6.80
6,275.0	7.62	258.18	6,223.3	13.3	-683.2	178.9	2.11	-2.00	-4.80
6,300.0	7.20	257.20	6,248.1	12.6	-686.3	180.5	1.75	-1.68	-3.92
6,325.0	7.07	257.40	6,272.9	11.9	-689.4	182.0	0.53	-0.52	0.80
6,350.0	7.82	263.53	6,297.7	11.4	-692.5	183.4	4.37	3.00	24.52
6,375.0	8.64	268.49	6,322.5	11.1	-696.1	184.6	4.34	3.28	19.84
6,400.0	9.47	272.33	6,347.2	11.2	-700.0	185.7	4.11	3.32	15.36
6,425.0	10.39	276.41	6,371.8	11.5	-704.3	186.6	4.63	3.68	16.32
6,450.0	10.44	277.24	6,396.4	12.0	-708.8	187.3	0.63	0.20	3.32
6,475.0	10.01	277.31	6,421.0	12.6	-713.2	188.0	1.72	-1.72	0.28
6,500.0	9.36	276.41	6,445.6	13.1	-717.4	188.7	2.67	-2.60	-3.60
6,525.0	8.71	275.74	6,470.3	13.5	-721.3	189.4	2.63	-2.60	-2.68
6,550.0	8.04	275.81	6,495.0	13.9	-724.9	190.1	2.68	-2.68	0.28
6,575.0	7.59	276.07	6,519.8	14.2	-728.3	190.7	1.81	-1.80	1.04
6,600.0	7.32	276.15	6,544.6	14.6	-731.5	191.3	1.08	-1.08	0.32
6,625.0	6.96	277.00	6,569.4	14.9	-734.6	191.8	1.50	-1.44	3.40
6,650.0	6.74	277.72	6,594.2	15.3	-737.6	192.2	0.94	-0.88	2.88
6,675.0	6.41	278.77	6,619.1	15.7	-740.4	192.6	1.40	-1.32	4.20
6,700.0	5.99	279.10	6,643.9	16.2	-743.1	193.0	1.69	-1.68	1.32
6,725.0	5.68	274.86	6,668.8	16.5	-745.6	193.4	2.12	-1.24	-16.96
6,750.0	5.69	262.45	6,693.7	16.4	-748.1	194.1	4.91	0.04	-49.64
6,775.0	5.87	256.58	6,718.5	15.9	-750.5	195.3	2.47	0.72	-23.48
6,800.0	5.53	255.98	6,743.4	15.4	-752.9	196.5	1.38	-1.36	-2.40



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)	
6,825.0	5.00	256.75	6,768.3	14.8	-755.2	197.7	2.14	-2.12	3.08	
6,850.0	4.33	258.98	6,793.2	14.4	-757.2	198.6	2.78	-2.68	8.92	
6,875.0	3.89	261.58	6,818.2	14.1	-758.9	199.4	1.91	-1.76	10.40	
6,900.0	3.61	263.85	6,843.1	13.9	-760.6	200.1	1.27	-1.12	9.08	
6,925.0	3.49	263.61	6,868.1	13.7	-762.1	200.7	0.48	-0.48	-0.96	
6,950.0	3.08	262.89	6,893.0	13.5	-763.5	201.2	1.65	-1.64	-2.88	
6,975.0	2.73	260.25	6,918.0	13.4	-764.8	201.8	1.50	-1.40	-10.56	
7,000.0	2.45	254.07	6,943.0	13.1	-765.9	202.3	1.58	-1.12	-24.72	
7,025.0	2.02	245.74	6,967.9	12.8	-766.8	202.9	2.15	-1.72	-33.32	
7,050.0	1.91	234.70	6,992.9	12.4	-767.5	203.5	1.57	-0.44	-44.16	
7,075.0	1.59	214.80	7,017.9	11.8	-768.1	204.1	2.73	-1.28	-79.60	
7,100.0	1.72	214.04	7,042.9	11.2	-768.5	204.8	0.53	0.52	-3.04	
7,125.0	1.68	212.08	7,067.9	10.6	-768.9	205.5	0.28	-0.16	-7.84	
7,150.0	1.78	197.08	7,092.9	9.9	-769.2	206.3	1.85	0.40	-60.00	
7,175.0	1.49	206.74	7,117.9	9.3	-769.4	207.0	1.60	-1.16	38.64	
7,200.0	1.41	198.08	7,142.9	8.7	-769.7	207.6	0.93	-0.32	-34.64	
7,217.0	1.35	192.96	7,159.9	8.3	-769.8	208.0	0.81	-0.35	-30.12	
7,314.0	2.57	185.62	7,256.8	5.0	-770.3	211.3	1.28	1.26	-7.57	
7,360.0	8.17	211.34	7,302.6	1.2	-772.1	215.5	12.95	12.17	55.91	
7,406.0	11.96	211.72	7,347.9	-5.7	-776.3	223.2	8.24	8.24	0.83	
7,451.0	15.56	208.41	7,391.6	-14.9	-781.6	233.6	8.19	8.00	-7.36	
7,497.0	18.77	209.78	7,435.5	-26.8	-788.2	246.9	7.03	6.98	2.98	
7,544.0	23.52	217.11	7,479.3	-40.8	-797.6	263.0	11.55	10.11	15.60	
7,591.0	28.21	219.83	7,521.6	-56.9	-810.4	282.0	10.29	9.98	5.79	
7,638.0	32.80	216.33	7,562.1	-75.7	-825.1	304.1	10.47	9.77	-7.45	
7,684.0	36.56	217.74	7,599.9	-96.5	-840.9	328.6	8.36	8.17	3.07	
7,730.0	40.66	217.52	7,635.9	-119.3	-858.4	355.3	8.92	8.91	-0.48	
7,746.0	42.07	217.94	7,647.9	-127.6	-864.8	365.2	8.98	8.81	2.63	
7,777.0	45.34	218.05	7,670.3	-144.5	-878.0	385.1	10.55	10.55	0.35	
7,808.0	48.83	219.47	7,691.4	-162.2	-892.2	406.0	11.75	11.26	4.58	
7,840.0	52.27	220.27	7,711.7	-181.2	-908.1	428.7	10.92	10.75	2.50	
7,872.0	54.71	220.66	7,730.8	-200.7	-924.8	452.1	7.69	7.63	1.22	
7,904.0	58.61	219.22	7,748.3	-221.2	-941.9	476.6	12.75	12.19	-4.50	
7,935.0	62.46	218.69	7,763.6	-242.2	-958.9	501.5	12.51	12.42	-1.71	
7,967.0	66.33	217.94	7,777.4	-264.8	-976.8	528.3	12.28	12.09	-2.34	
7,997.0	71.11	216.07	7,788.3	-287.2	-993.6	554.4	16.96	15.93	-6.23	
8,029.0	75.59	215.95	7,797.5	-312.0	-1,011.6	583.3	14.00	14.00	-0.38	
8,059.0	80.11	215.58	7,803.8	-335.8	-1,028.7	610.9	15.11	15.07	-1.23	
8,121.0	86.97	212.38	7,810.8	-386.8	-1,063.1	669.6	12.19	11.06	-5.16	
8,152.0	88.11	211.86	7,812.1	-413.0	-1,079.6	699.4	4.04	3.68	-1.68	
8,246.0	90.43	211.16	7,813.3	-493.2	-1,128.7	790.1	2.58	2.47	-0.74	
8,270.0	91.04	210.88	7,813.0	-513.7	-1,141.1	813.3	2.80	2.54	-1.17	
8,364.0	93.26	210.22	7,809.4	-594.6	-1,188.8	904.3	2.46	2.36	-0.70	



Survey Report

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: CRAIG STATE #13H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well CRAIG STATE #13H
TVD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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)
8,458.0	91.63	209.55	7,805.4	-676.0	-1,235.6	995.6	1.87	-1.73	-0.71
8,551.0	89.17	208.02	7,804.8	-757.5	-1,280.4	1,086.4	3.11	-2.65	-1.65
8,645.0	88.08	204.69	7,807.0	-841.7	-1,322.1	1,178.9	3.73	-1.16	-3.54
8,737.0	87.64	199.88	7,810.5	-926.8	-1,357.0	1,270.3	5.25	-0.48	-5.23
8,830.0	87.47	195.24	7,814.5	-1,015.3	-1,385.0	1,363.2	4.99	-0.18	-4.99
8,924.0	86.90	190.61	7,819.1	-1,106.8	-1,406.0	1,456.9	4.96	-0.61	-4.93
9,017.0	86.97	186.06	7,824.0	-1,198.7	-1,419.5	1,548.8	4.89	0.08	-4.89
9,112.0	88.84	181.10	7,827.5	-1,293.4	-1,425.4	1,641.4	5.58	1.97	-5.22
9,207.0	91.18	177.04	7,827.5	-1,388.4	-1,423.8	1,732.1	4.93	2.46	-4.27
9,302.0	91.60	176.76	7,825.2	-1,483.2	-1,418.7	1,821.7	0.53	0.44	-0.29
9,397.0	90.10	177.07	7,823.8	-1,578.0	-1,413.6	1,911.3	1.61	-1.58	0.33
9,490.0	92.23	177.15	7,821.9	-1,670.9	-1,408.9	1,999.1	2.29	2.29	0.09
9,584.0	90.81	176.69	7,819.4	-1,764.7	-1,403.9	2,087.7	1.59	-1.51	-0.49
9,677.0	91.00	176.73	7,817.9	-1,857.6	-1,398.5	2,175.3	0.21	0.20	0.04
9,770.0	89.41	178.53	7,817.6	-1,950.5	-1,394.7	2,263.4	2.58	-1.71	1.94
9,866.0	89.39	179.24	7,818.6	-2,046.5	-1,392.8	2,355.0	0.74	-0.02	0.74
9,958.0	91.06	178.77	7,818.3	-2,138.4	-1,391.2	2,442.9	1.89	1.82	-0.51
10,052.0	90.66	180.17	7,816.8	-2,232.4	-1,390.3	2,532.8	1.55	-0.43	1.49
10,146.0	88.40	181.74	7,817.6	-2,326.4	-1,391.9	2,623.5	2.93	-2.40	1.67
10,240.0	86.81	182.00	7,821.5	-2,420.3	-1,395.0	2,714.4	1.71	-1.69	0.28
10,333.0	88.19	180.73	7,825.6	-2,513.1	-1,397.2	2,804.2	2.02	1.48	-1.37
10,427.0	89.94	180.15	7,827.1	-2,607.1	-1,397.9	2,894.6	1.96	1.86	-0.62
10,521.0	89.12	179.40	7,827.9	-2,701.1	-1,397.5	2,984.7	1.18	-0.87	-0.80
10,615.0	90.70	178.96	7,828.0	-2,795.1	-1,396.2	3,074.6	1.74	1.68	-0.47
10,709.0	88.80	180.11	7,828.5	-2,889.1	-1,395.4	3,164.6	2.36	-2.02	1.22
10,801.0	89.15	180.38	7,830.1	-2,981.1	-1,395.8	3,253.0	0.48	0.38	0.29
10,894.0	91.30	180.42	7,829.7	-3,074.1	-1,396.5	3,342.4	2.31	2.31	0.04
10,987.0	90.92	180.91	7,827.9	-3,167.0	-1,397.5	3,431.9	0.67	-0.41	0.53
11,080.0	89.05	183.02	7,828.0	-3,260.0	-1,400.7	3,522.0	3.03	-2.01	2.27
11,175.0	88.95	185.96	7,829.6	-3,354.7	-1,408.2	3,615.0	3.10	-0.11	3.09
11,267.0	88.42	184.75	7,831.7	-3,446.2	-1,416.8	3,705.3	1.44	-0.58	-1.32
11,362.0	88.17	182.37	7,834.6	-3,541.0	-1,422.6	3,797.9	2.52	-0.26	-2.51
11,454.0	87.57	181.12	7,838.0	-3,632.9	-1,425.4	3,886.9	1.51	-0.65	-1.36
11,547.0	88.77	181.53	7,840.9	-3,725.8	-1,427.6	3,976.7	1.36	1.29	0.44
11,640.0	89.85	181.36	7,842.1	-3,818.8	-1,429.9	4,066.6	1.18	1.16	-0.18
11,734.0	91.20	181.34	7,841.2	-3,912.7	-1,432.2	4,157.4	1.44	1.44	-0.02
11,826.0	89.80	181.57	7,840.4	-4,004.7	-1,434.5	4,246.3	1.54	-1.52	0.25
11,919.0	89.97	181.68	7,840.6	-4,097.7	-1,437.1	4,336.3	0.22	0.18	0.12
12,011.0	91.57	181.36	7,839.4	-4,189.6	-1,439.6	4,425.3	1.77	1.74	-0.35
12,104.0	90.81	180.80	7,837.4	-4,282.6	-1,441.3	4,515.0	1.02	-0.82	-0.60
12,199.0	89.36	180.38	7,837.3	-4,377.6	-1,442.3	4,606.4	1.59	-1.53	-0.44
12,292.0	90.16	180.05	7,837.7	-4,470.6	-1,442.6	4,695.8	0.93	0.86	-0.35
12,384.0	91.80	179.95	7,836.1	-4,562.6	-1,442.6	4,784.1	1.79	1.78	-0.11



Survey Report

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Local Co-ordinate Reference: Well CRAIG STATE #13H
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MD Reference: RKB=3266+31 @ 3297.0usft (PRECISION 106)
North Reference: Grid
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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)
12,476.0	90.39	179.52	7,834.3	-4,654.5	-1,442.2	4,872.2	1.60	-1.53	-0.47
12,570.0	91.40	179.30	7,832.9	-4,748.5	-1,441.3	4,962.2	1.10	1.07	-0.23
12,594.0	91.95	179.27	7,832.2	-4,772.5	-1,441.0	4,985.1	2.30	2.29	-0.13
12,646.0	91.95	179.27	7,830.4	-4,824.5	-1,440.3	5,034.8	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____