

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

PICKELHAUBE ST #602H

OWB

Design: AWP

Standard Survey Report

11 December, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Project	LEA COUNTY, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	BULLDOG		
Site Position:		Northing:	398,637.10 usft
From:	Map	Easting:	741,887.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 36.820 N
		Longitude:	103° 33' 8.116 W
		Grid Convergence:	0.42 °

Well	PICKELHAUBE ST #602H		
Well Position	+N/-S	0.0 usft	Northing: 430,460.90 usft
	+E/-W	0.0 usft	Easting: 780,236.50 usft
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 10' 48.759 N
		Longitude:	103° 25' 39.250 W
		Ground Level:	3,410.0 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	9/6/2019	6.64
			Dip Angle (°) 60.02
			Field Strength (nT) 47,698.71515091

Design	AWP		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°) 177.23

Survey Program	Date	12/11/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	11,880.0	GYRO-INTERMEDIATE (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
12,070.0	17,567.0	MWD-CURVE/LATERAL (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	1.68	39.36	100.0	1.1	0.9	-1.1	1.68	1.68	0.00
125.0	1.66	38.44	125.0	1.7	1.4	-1.6	0.13	-0.08	-3.68
150.0	1.69	38.96	150.0	2.3	1.8	-2.2	0.13	0.12	2.08
175.0	1.69	41.90	175.0	2.8	2.3	-2.7	0.35	0.00	11.76
200.0	1.73	40.72	199.9	3.4	2.8	-3.3	0.21	0.16	-4.72
225.0	1.55	43.41	224.9	3.9	3.3	-3.8	0.78	-0.72	10.76
250.0	1.28	40.69	249.9	4.4	3.7	-4.2	1.11	-1.08	-10.88
275.0	1.07	48.52	274.9	4.7	4.1	-4.5	1.06	-0.84	31.32
300.0	0.96	55.47	299.9	5.0	4.4	-4.8	0.66	-0.44	27.80

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Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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	77.04	324.9	5.2	4.8	-4.9	1.41	-0.36	86.28
350.0	0.85	89.98	349.9	5.2	5.1	-5.0	0.78	-0.08	51.76
375.0	0.91	98.86	374.9	5.2	5.5	-4.9	0.60	0.24	35.52
400.0	0.96	99.84	399.9	5.1	5.9	-4.8	0.21	0.20	3.92
425.0	0.85	98.84	424.9	5.1	6.3	-4.8	0.44	-0.44	-4.00
450.0	0.60	97.15	449.9	5.0	6.6	-4.7	1.00	-1.00	-6.76
475.0	0.47	104.63	474.9	5.0	6.9	-4.6	0.59	-0.52	29.92
500.0	0.41	113.22	499.9	4.9	7.0	-4.6	0.36	-0.24	34.36
525.0	0.42	120.08	524.9	4.8	7.2	-4.5	0.20	0.04	27.44
550.0	0.41	137.47	549.9	4.7	7.3	-4.4	0.50	-0.04	69.56
575.0	0.39	133.63	574.9	4.6	7.5	-4.2	0.13	-0.08	-15.36
600.0	0.36	127.17	599.9	4.5	7.6	-4.1	0.21	-0.12	-25.84
625.0	0.41	128.52	624.9	4.4	7.7	-4.0	0.20	0.20	5.40
650.0	0.42	129.50	649.9	4.3	7.9	-3.9	0.05	0.04	3.92
675.0	0.41	126.44	674.9	4.2	8.0	-3.8	0.10	-0.04	-12.24
700.0	0.40	126.99	699.9	4.1	8.1	-3.7	0.04	-0.04	2.20
725.0	0.42	126.87	724.9	3.9	8.3	-3.5	0.08	0.08	-0.48
750.0	0.40	115.80	749.9	3.9	8.4	-3.4	0.33	-0.08	-44.28
775.0	0.43	111.29	774.9	3.8	8.6	-3.4	0.18	0.12	-18.04
800.0	0.49	113.35	799.9	3.7	8.8	-3.3	0.25	0.24	8.24
825.0	0.47	113.21	824.9	3.6	9.0	-3.2	0.08	-0.08	-0.56
850.0	0.49	114.26	849.9	3.5	9.2	-3.1	0.09	0.08	4.20
875.0	0.49	110.39	874.9	3.5	9.4	-3.0	0.13	0.00	-15.48
900.0	0.52	108.67	899.9	3.4	9.6	-2.9	0.13	0.12	-6.88
925.0	0.54	113.62	924.9	3.3	9.8	-2.8	0.20	0.08	19.80
950.0	0.55	110.16	949.9	3.2	10.0	-2.7	0.14	0.04	-13.84
975.0	0.54	109.28	974.9	3.1	10.2	-2.6	0.05	-0.04	-3.52
1,000.0	0.56	109.91	999.9	3.1	10.5	-2.5	0.08	0.08	2.52
1,025.0	0.51	103.93	1,024.9	3.0	10.7	-2.5	0.30	-0.20	-23.92
1,050.0	0.48	104.97	1,049.9	2.9	10.9	-2.4	0.13	-0.12	4.16
1,075.0	0.58	114.48	1,074.9	2.9	11.1	-2.3	0.53	0.40	38.04
1,100.0	0.74	126.36	1,099.9	2.7	11.4	-2.2	0.84	0.64	47.52
1,125.0	0.87	131.45	1,124.9	2.5	11.6	-1.9	0.59	0.52	20.36
1,150.0	0.91	134.52	1,149.9	2.2	11.9	-1.6	0.25	0.16	12.28
1,175.0	0.86	135.23	1,174.9	1.9	12.2	-1.4	0.20	-0.20	2.84
1,200.0	0.93	133.83	1,199.9	1.7	12.5	-1.1	0.29	0.28	-5.60
1,225.0	0.93	136.25	1,224.9	1.4	12.8	-0.8	0.16	0.00	9.68
1,250.0	0.80	140.09	1,249.9	1.1	13.0	-0.5	0.57	-0.52	15.36
1,275.0	0.72	138.89	1,274.9	0.9	13.2	-0.2	0.33	-0.32	-4.80
1,300.0	0.70	142.15	1,299.9	0.6	13.4	0.0	0.18	-0.08	13.04
1,325.0	0.53	138.23	1,324.9	0.4	13.6	0.3	0.70	-0.68	-15.68
1,350.0	0.07	281.76	1,349.9	0.3	13.6	0.3	2.35	-1.84	574.12
1,375.0	1.06	315.98	1,374.9	0.5	13.5	0.2	4.01	3.96	136.88

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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	1.22	316.35	1,399.8	0.9	13.1	-0.2	0.64	0.64	1.48	
1,425.0	1.25	316.50	1,424.8	1.2	12.8	-0.6	0.12	0.12	0.60	
1,450.0	1.27	314.83	1,449.8	1.6	12.4	-1.0	0.17	0.08	-6.68	
1,475.0	1.22	316.16	1,474.8	2.0	12.0	-1.4	0.23	-0.20	5.32	
1,500.0	1.30	313.90	1,499.8	2.4	11.6	-1.8	0.38	0.32	-9.04	
1,525.0	1.27	313.09	1,524.8	2.8	11.2	-2.3	0.14	-0.12	-3.24	
1,550.0	1.23	317.66	1,549.8	3.2	10.8	-2.7	0.43	-0.16	18.28	
1,575.0	1.22	318.22	1,574.8	3.6	10.5	-3.1	0.06	-0.04	2.24	
1,600.0	1.22	317.60	1,599.8	4.0	10.1	-3.5	0.05	0.00	-2.48	
1,625.0	1.19	320.35	1,624.8	4.4	9.8	-3.9	0.26	-0.12	11.00	
1,650.0	1.24	321.69	1,649.8	4.8	9.4	-4.3	0.23	0.20	5.36	
1,675.0	1.22	321.67	1,674.8	5.2	9.1	-4.8	0.08	-0.08	-0.08	
1,700.0	1.22	322.04	1,699.8	5.6	8.8	-5.2	0.03	0.00	1.48	
1,725.0	1.24	324.93	1,724.8	6.1	8.4	-5.6	0.26	0.08	11.56	
1,750.0	1.26	323.96	1,749.8	6.5	8.1	-6.1	0.12	0.08	-3.88	
1,775.0	1.21	325.02	1,774.8	6.9	7.8	-6.6	0.22	-0.20	4.24	
1,800.0	1.17	325.16	1,799.8	7.4	7.5	-7.0	0.16	-0.16	0.56	
1,825.0	1.24	324.10	1,824.7	7.8	7.2	-7.4	0.29	0.28	-4.24	
1,850.0	1.22	325.78	1,849.7	8.2	6.9	-7.9	0.16	-0.08	6.72	
1,875.0	1.12	329.54	1,874.7	8.7	6.6	-8.3	0.50	-0.40	15.04	
1,900.0	1.14	331.13	1,899.7	9.1	6.4	-8.8	0.15	0.08	6.36	
1,925.0	1.15	329.65	1,924.7	9.5	6.1	-9.2	0.12	0.04	-5.92	
1,950.0	1.13	331.23	1,949.7	10.0	5.9	-9.7	0.15	-0.08	6.32	
1,975.0	1.07	331.41	1,974.7	10.4	5.7	-10.1	0.24	-0.24	0.72	
2,000.0	1.19	332.44	1,999.7	10.8	5.4	-10.5	0.49	0.48	4.12	
2,025.0	1.05	336.67	2,024.7	11.3	5.2	-11.0	0.65	-0.56	16.92	
2,050.0	1.09	334.02	2,049.7	11.7	5.0	-11.4	0.25	0.16	-10.60	
2,075.0	1.08	335.32	2,074.7	12.1	4.8	-11.9	0.11	-0.04	5.20	
2,100.0	1.06	334.42	2,099.7	12.5	4.6	-12.3	0.10	-0.08	-3.60	
2,125.0	1.11	334.91	2,124.7	13.0	4.4	-12.7	0.20	0.20	1.96	
2,150.0	1.10	335.76	2,149.7	13.4	4.2	-13.2	0.08	-0.04	3.40	
2,175.0	1.13	336.65	2,174.7	13.8	4.0	-13.6	0.14	0.12	3.56	
2,200.0	0.98	338.24	2,199.7	14.3	3.8	-14.1	0.61	-0.60	6.36	
2,225.0	0.74	348.37	2,224.7	14.6	3.7	-14.4	1.13	-0.96	40.52	
2,250.0	1.12	351.80	2,249.7	15.0	3.7	-14.8	1.54	1.52	13.72	
2,275.0	1.69	15.63	2,274.7	15.6	3.7	-15.4	3.22	2.28	95.32	
2,300.0	2.70	32.10	2,299.6	16.5	4.1	-16.3	4.72	4.04	65.88	
2,325.0	3.32	33.70	2,324.6	17.6	4.9	-17.3	2.50	2.48	6.40	
2,350.0	3.31	34.28	2,349.6	18.8	5.7	-18.5	0.14	-0.04	2.32	
2,375.0	3.38	33.90	2,374.5	20.0	6.5	-19.6	0.29	0.28	-1.52	
2,400.0	3.40	33.87	2,399.5	21.2	7.3	-20.8	0.08	0.08	-0.12	
2,425.0	3.36	34.19	2,424.4	22.4	8.1	-22.0	0.18	-0.16	1.28	
2,450.0	3.45	33.94	2,449.4	23.7	9.0	-23.2	0.36	0.36	-1.00	

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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)	
2,475.0	3.44	34.22	2,474.3	24.9	9.8	-24.4	0.08	-0.04	1.12	
2,500.0	3.46	33.64	2,499.3	26.2	10.6	-25.6	0.16	0.08	-2.32	
2,525.0	3.49	33.92	2,524.3	27.4	11.5	-26.8	0.14	0.12	1.12	
2,550.0	3.41	34.11	2,549.2	28.7	12.3	-28.0	0.32	-0.32	0.76	
2,575.0	3.47	34.22	2,574.2	29.9	13.2	-29.2	0.24	0.24	0.44	
2,600.0	3.44	34.79	2,599.1	31.1	14.0	-30.4	0.18	-0.12	2.28	
2,625.0	3.44	35.23	2,624.1	32.4	14.9	-31.6	0.11	0.00	1.76	
2,650.0	3.46	36.65	2,649.0	33.6	15.8	-32.8	0.35	0.08	5.68	
2,675.0	3.36	38.22	2,674.0	34.8	16.7	-33.9	0.55	-0.40	6.28	
2,700.0	3.42	38.81	2,698.9	35.9	17.6	-35.0	0.28	0.24	2.36	
2,725.0	3.36	39.30	2,723.9	37.1	18.5	-36.1	0.27	-0.24	1.96	
2,750.0	3.38	39.74	2,748.9	38.2	19.5	-37.2	0.13	0.08	1.76	
2,775.0	3.39	41.40	2,773.8	39.3	20.4	-38.3	0.39	0.04	6.64	
2,800.0	3.43	41.38	2,798.8	40.4	21.4	-39.4	0.16	0.16	-0.08	
2,825.0	3.41	43.37	2,823.7	41.5	22.4	-40.4	0.48	-0.08	7.96	
2,850.0	3.42	43.95	2,848.7	42.6	23.4	-41.4	0.14	0.04	2.32	
2,875.0	3.45	44.67	2,873.6	43.7	24.5	-42.5	0.21	0.12	2.88	
2,900.0	3.47	43.34	2,898.6	44.8	25.5	-43.5	0.33	0.08	-5.32	
2,925.0	3.49	45.09	2,923.5	45.9	26.6	-44.5	0.43	0.08	7.00	
2,950.0	3.52	45.16	2,948.5	46.9	27.7	-45.5	0.12	0.12	0.28	
2,975.0	3.53	46.05	2,973.4	48.0	28.8	-46.6	0.22	0.04	3.56	
3,000.0	3.54	46.01	2,998.4	49.1	29.9	-47.6	0.04	0.04	-0.16	
3,025.0	3.54	47.18	3,023.4	50.2	31.0	-48.6	0.29	0.00	4.68	
3,050.0	3.55	47.41	3,048.3	51.2	32.1	-49.6	0.07	0.04	0.92	
3,075.0	3.55	47.13	3,073.3	52.2	33.3	-50.6	0.07	0.00	-1.12	
3,100.0	3.59	46.50	3,098.2	53.3	34.4	-51.6	0.22	0.16	-2.52	
3,125.0	3.55	46.78	3,123.2	54.4	35.5	-52.6	0.17	-0.16	1.12	
3,150.0	3.68	45.49	3,148.1	55.5	36.7	-53.6	0.61	0.52	-5.16	
3,175.0	3.69	44.57	3,173.1	56.6	37.8	-54.7	0.24	0.04	-3.68	
3,200.0	3.67	45.53	3,198.0	57.7	38.9	-55.8	0.26	-0.08	3.84	
3,225.0	3.70	45.52	3,223.0	58.9	40.1	-56.9	0.12	0.12	-0.04	
3,250.0	3.71	45.02	3,247.9	60.0	41.2	-57.9	0.14	0.04	-2.00	
3,275.0	3.69	45.60	3,272.9	61.1	42.4	-59.0	0.17	-0.08	2.32	
3,300.0	3.73	45.90	3,297.8	62.3	43.5	-60.1	0.18	0.16	1.20	
3,325.0	3.75	46.65	3,322.7	63.4	44.7	-61.2	0.21	0.08	3.00	
3,350.0	3.80	47.54	3,347.7	64.5	45.9	-62.2	0.31	0.20	3.56	
3,375.0	3.83	48.17	3,372.6	65.6	47.2	-63.3	0.21	0.12	2.52	
3,400.0	3.90	48.38	3,397.6	66.8	48.4	-64.3	0.29	0.28	0.84	
3,425.0	3.93	48.79	3,422.5	67.9	49.7	-65.4	0.16	0.12	1.64	
3,450.0	3.96	48.91	3,447.5	69.0	51.0	-66.5	0.12	0.12	0.48	
3,475.0	3.96	48.76	3,472.4	70.2	52.3	-67.5	0.04	0.00	-0.60	
3,500.0	3.97	48.33	3,497.3	71.3	53.6	-68.6	0.13	0.04	-1.72	
3,525.0	3.99	48.40	3,522.3	72.5	54.9	-69.7	0.08	0.08	0.28	
3,550.0	3.94	41.91	3,547.2	73.7	56.1	-70.9	1.81	-0.20	-25.96	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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	3.90	35.20	3,572.2	75.0	57.2	-72.1	1.84	-0.16	-26.84
3,600.0	3.84	32.67	3,597.1	76.4	58.1	-73.5	0.72	-0.24	-10.12
3,625.0	3.86	32.13	3,622.1	77.8	59.0	-74.9	0.17	0.08	-2.16
3,650.0	3.94	32.37	3,647.0	79.3	59.9	-76.3	0.33	0.32	0.96
3,675.0	3.93	32.60	3,671.9	80.7	60.8	-77.7	0.07	-0.04	0.92
3,700.0	3.92	32.80	3,696.9	82.1	61.8	-79.1	0.07	-0.04	0.80
3,725.0	3.89	33.80	3,721.8	83.6	62.7	-80.4	0.30	-0.12	4.00
3,750.0	3.83	35.26	3,746.8	85.0	63.7	-81.8	0.46	-0.24	5.84
3,775.0	3.73	37.70	3,771.7	86.3	64.6	-83.0	0.76	-0.40	9.76
3,800.0	3.65	38.54	3,796.7	87.5	65.6	-84.3	0.39	-0.32	3.36
3,825.0	3.63	38.85	3,821.6	88.8	66.6	-85.5	0.11	-0.08	1.24
3,850.0	3.57	39.98	3,846.6	90.0	67.6	-86.6	0.37	-0.24	4.52
3,875.0	3.51	39.71	3,871.5	91.2	68.6	-87.8	0.25	-0.24	-1.08
3,900.0	3.44	39.67	3,896.5	92.3	69.6	-88.9	0.28	-0.28	-0.16
3,925.0	3.45	39.79	3,921.4	93.5	70.5	-90.0	0.05	0.04	0.48
3,950.0	3.21	40.82	3,946.4	94.6	71.5	-91.0	0.99	-0.96	4.12
3,975.0	3.21	39.54	3,971.3	95.7	72.4	-92.1	0.29	0.00	-5.12
4,000.0	3.10	33.22	3,996.3	96.8	73.2	-93.1	1.46	-0.44	-25.28
4,025.0	3.53	17.59	4,021.3	98.1	73.8	-94.4	3.99	1.72	-62.52
4,050.0	3.95	10.50	4,046.2	99.7	74.2	-96.0	2.50	1.68	-28.36
4,075.0	4.04	8.87	4,071.1	101.4	74.5	-97.7	0.58	0.36	-6.52
4,100.0	4.04	9.81	4,096.1	103.1	74.8	-99.4	0.26	0.00	3.76
4,125.0	4.06	9.29	4,121.0	104.9	75.1	-101.1	0.17	0.08	-2.08
4,150.0	4.04	9.37	4,146.0	106.6	75.3	-102.8	0.08	-0.08	0.32
4,175.0	4.08	9.77	4,170.9	108.3	75.6	-104.6	0.20	0.16	1.60
4,200.0	4.15	9.32	4,195.8	110.1	75.9	-106.3	0.31	0.28	-1.80
4,225.0	3.91	8.40	4,220.8	111.9	76.2	-108.0	0.99	-0.96	-3.68
4,250.0	3.83	6.98	4,245.7	113.5	76.4	-109.7	0.50	-0.32	-5.68
4,275.0	3.78	7.18	4,270.7	115.2	76.6	-111.3	0.21	-0.20	0.80
4,300.0	3.74	6.94	4,295.6	116.8	76.8	-112.9	0.17	-0.16	-0.96
4,325.0	3.74	6.43	4,320.5	118.4	77.0	-114.6	0.13	0.00	-2.04
4,350.0	3.76	6.79	4,345.5	120.0	77.2	-116.2	0.12	0.08	1.44
4,375.0	3.78	6.67	4,370.4	121.7	77.4	-117.8	0.09	0.08	-0.48
4,400.0	3.80	5.47	4,395.4	123.3	77.6	-119.4	0.33	0.08	-4.80
4,425.0	3.65	1.97	4,420.3	124.9	77.7	-121.0	1.09	-0.60	-14.00
4,450.0	3.62	358.60	4,445.3	126.5	77.7	-122.6	0.86	-0.12	-13.48
4,475.0	3.64	358.69	4,470.2	128.1	77.7	-124.2	0.08	0.08	0.36
4,500.0	3.53	358.56	4,495.2	129.7	77.6	-125.8	0.44	-0.44	-0.52
4,525.0	3.62	358.58	4,520.1	131.2	77.6	-127.3	0.36	0.36	0.08
4,550.0	3.67	359.22	4,545.1	132.8	77.6	-128.9	0.26	0.20	2.56
4,575.0	3.70	3.30	4,570.0	134.4	77.6	-130.5	1.06	0.12	16.32
4,600.0	4.34	13.95	4,595.0	136.1	77.9	-132.2	3.92	2.56	42.60
4,625.0	4.77	18.05	4,619.9	138.0	78.4	-134.1	2.16	1.72	16.40

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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	4.88	21.26	4,644.8	140.0	79.1	-136.0	1.17	0.44	12.84	
4,675.0	4.98	23.76	4,669.7	142.0	79.9	-138.0	0.95	0.40	10.00	
4,700.0	5.05	25.56	4,694.6	144.0	80.9	-139.9	0.69	0.28	7.20	
4,725.0	4.99	28.31	4,719.5	145.9	81.9	-141.8	0.99	-0.24	11.00	
4,750.0	4.90	30.35	4,744.4	147.8	82.9	-143.6	0.79	-0.36	8.16	
4,775.0	4.87	32.43	4,769.3	149.6	84.0	-145.4	0.72	-0.12	8.32	
4,800.0	4.86	32.38	4,794.2	151.4	85.2	-147.1	0.04	-0.04	-0.20	
4,825.0	4.91	32.54	4,819.2	153.2	86.3	-148.9	0.21	0.20	0.64	
4,850.0	4.88	32.41	4,844.1	155.0	87.4	-150.6	0.13	-0.12	-0.52	
4,875.0	4.90	32.31	4,869.0	156.8	88.6	-152.4	0.09	0.08	-0.40	
4,900.0	4.82	30.74	4,893.9	158.6	89.7	-154.1	0.62	-0.32	-6.28	
4,925.0	4.74	30.38	4,918.8	160.4	90.7	-155.8	0.34	-0.32	-1.44	
4,950.0	4.79	30.70	4,943.7	162.2	91.8	-157.6	0.23	0.20	1.28	
4,975.0	4.68	31.70	4,968.6	164.0	92.9	-159.3	0.55	-0.44	4.00	
5,000.0	4.49	33.85	4,993.5	165.7	94.0	-160.9	1.02	-0.76	8.60	
5,025.0	4.47	36.61	5,018.5	167.3	95.1	-162.5	0.87	-0.08	11.04	
5,050.0	4.38	40.08	5,043.4	168.8	96.3	-163.9	1.13	-0.36	13.88	
5,075.0	4.39	43.92	5,068.3	170.2	97.6	-165.3	1.17	0.04	15.36	
5,100.0	4.40	47.36	5,093.2	171.5	98.9	-166.5	1.06	0.04	13.76	
5,125.0	4.46	49.87	5,118.2	172.8	100.4	-167.7	0.81	0.24	10.04	
5,150.0	4.45	53.31	5,143.1	174.0	101.9	-168.9	1.07	-0.04	13.76	
5,175.0	4.48	56.16	5,168.0	175.1	103.5	-169.9	0.90	0.12	11.40	
5,200.0	4.51	59.11	5,192.9	176.2	105.1	-170.9	0.93	0.12	11.80	
5,225.0	4.58	59.78	5,217.9	177.2	106.8	-171.8	0.35	0.28	2.68	
5,250.0	4.57	60.20	5,242.8	178.2	108.6	-172.7	0.14	-0.04	1.68	
5,275.0	4.58	60.46	5,267.7	179.2	110.3	-173.6	0.09	0.04	1.04	
5,300.0	4.62	60.11	5,292.6	180.2	112.0	-174.5	0.20	0.16	-1.40	
5,325.0	4.64	57.11	5,317.5	181.2	113.8	-175.5	0.97	0.08	-12.00	
5,350.0	4.89	45.96	5,342.5	182.5	115.4	-176.7	3.83	1.00	-44.60	
5,375.0	4.99	41.94	5,367.4	184.1	116.9	-178.2	1.44	0.40	-16.08	
5,400.0	5.04	41.39	5,392.3	185.7	118.3	-179.7	0.28	0.20	-2.20	
5,425.0	5.01	41.40	5,417.2	187.3	119.8	-181.3	0.12	-0.12	0.04	
5,450.0	5.00	40.48	5,442.1	189.0	121.2	-182.9	0.32	-0.04	-3.68	
5,475.0	4.83	40.43	5,467.0	190.6	122.6	-184.5	0.68	-0.68	-0.20	
5,500.0	4.71	39.72	5,491.9	192.2	123.9	-186.0	0.53	-0.48	-2.84	
5,525.0	4.63	38.53	5,516.8	193.8	125.2	-187.5	0.50	-0.32	-4.76	
5,550.0	4.50	37.98	5,541.7	195.3	126.4	-189.0	0.55	-0.52	-2.20	
5,575.0	4.44	36.51	5,566.7	196.9	127.6	-190.5	0.52	-0.24	-5.88	
5,600.0	4.26	35.33	5,591.6	198.4	128.7	-192.0	0.80	-0.72	-4.72	
5,625.0	4.26	35.47	5,616.5	199.9	129.8	-193.4	0.04	0.00	0.56	
5,650.0	4.35	34.97	5,641.4	201.5	130.9	-194.9	0.39	0.36	-2.00	
5,675.0	4.27	35.36	5,666.4	203.0	132.0	-196.4	0.34	-0.32	1.56	
5,700.0	4.32	34.89	5,691.3	204.5	133.1	-197.9	0.24	0.20	-1.88	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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	4.33	34.92	5,716.2	206.1	134.1	-199.4	0.04	0.04	0.12	
5,750.0	4.37	34.42	5,741.2	207.6	135.2	-200.9	0.22	0.16	-2.00	
5,775.0	4.38	34.94	5,766.1	209.2	136.3	-202.4	0.16	0.04	2.08	
5,800.0	4.39	35.01	5,791.0	210.8	137.4	-203.9	0.05	0.04	0.28	
5,825.0	4.37	34.67	5,815.9	212.4	138.5	-205.4	0.13	-0.08	-1.36	
5,850.0	4.30	35.44	5,840.9	213.9	139.6	-206.9	0.36	-0.28	3.08	
5,875.0	4.35	34.95	5,865.8	215.4	140.7	-208.4	0.25	0.20	-1.96	
5,900.0	4.28	34.34	5,890.7	217.0	141.7	-209.9	0.33	-0.28	-2.44	
5,925.0	4.30	34.24	5,915.7	218.5	142.8	-211.4	0.09	0.08	-0.40	
5,950.0	4.34	33.01	5,940.6	220.1	143.8	-212.9	0.40	0.16	-4.92	
5,975.0	4.23	33.95	5,965.5	221.7	144.9	-214.4	0.52	-0.44	3.76	
6,000.0	4.26	33.75	5,990.5	223.2	145.9	-215.9	0.13	0.12	-0.80	
6,025.0	4.22	33.91	6,015.4	224.7	146.9	-217.4	0.17	-0.16	0.64	
6,050.0	4.24	31.82	6,040.3	226.3	147.9	-218.9	0.62	0.08	-8.36	
6,075.0	4.27	31.61	6,065.2	227.9	148.9	-220.4	0.14	0.12	-0.84	
6,100.0	4.27	30.63	6,090.2	229.4	149.8	-221.9	0.29	0.00	-3.92	
6,125.0	4.24	30.48	6,115.1	231.0	150.8	-223.5	0.13	-0.12	-0.60	
6,150.0	4.29	30.08	6,140.0	232.7	151.7	-225.0	0.23	0.20	-1.60	
6,175.0	4.26	28.92	6,165.0	234.3	152.6	-226.6	0.37	-0.12	-4.64	
6,200.0	4.19	27.88	6,189.9	235.9	153.5	-228.2	0.42	-0.28	-4.16	
6,225.0	4.27	26.19	6,214.8	237.5	154.4	-229.8	0.59	0.32	-6.76	
6,250.0	4.15	25.52	6,239.8	239.2	155.2	-231.4	0.52	-0.48	-2.68	
6,275.0	4.22	24.78	6,264.7	240.8	155.9	-233.0	0.35	0.28	-2.96	
6,300.0	4.29	24.12	6,289.6	242.5	156.7	-234.7	0.34	0.28	-2.64	
6,325.0	4.21	24.18	6,314.6	244.2	157.5	-236.3	0.32	-0.32	0.24	
6,350.0	4.25	24.09	6,339.5	245.9	158.2	-238.0	0.16	0.16	-0.36	
6,375.0	4.20	23.37	6,364.4	247.6	159.0	-239.6	0.29	-0.20	-2.88	
6,400.0	4.11	22.87	6,389.4	249.3	159.7	-241.2	0.39	-0.36	-2.00	
6,425.0	4.01	22.20	6,414.3	250.9	160.3	-242.8	0.44	-0.40	-2.68	
6,450.0	3.99	22.35	6,439.2	252.5	161.0	-244.4	0.09	-0.08	0.60	
6,475.0	3.88	21.47	6,464.2	254.1	161.6	-246.0	0.50	-0.44	-3.52	
6,500.0	3.85	20.67	6,489.1	255.7	162.3	-247.5	0.25	-0.12	-3.20	
6,525.0	3.84	20.38	6,514.1	257.2	162.8	-249.1	0.09	-0.04	-1.16	
6,550.0	3.80	20.43	6,539.0	258.8	163.4	-250.6	0.16	-0.16	0.20	
6,575.0	3.83	22.24	6,564.0	260.3	164.0	-252.1	0.50	0.12	7.24	
6,600.0	3.61	28.47	6,588.9	261.8	164.7	-253.5	1.84	-0.88	24.92	
6,625.0	3.51	30.02	6,613.9	263.2	165.5	-254.8	0.56	-0.40	6.20	
6,650.0	3.52	29.69	6,638.8	264.5	166.2	-256.1	0.09	0.04	-1.32	
6,675.0	3.45	31.04	6,663.8	265.8	167.0	-257.4	0.43	-0.28	5.40	
6,700.0	3.37	32.23	6,688.7	267.1	167.8	-258.6	0.43	-0.32	4.76	
6,725.0	3.02	35.12	6,713.7	268.2	168.6	-259.8	1.54	-1.40	11.56	
6,750.0	2.21	43.08	6,738.6	269.1	169.3	-260.6	3.54	-3.24	31.84	
6,775.0	2.01	44.98	6,763.6	269.8	169.9	-261.2	0.85	-0.80	7.60	
6,800.0	1.97	43.67	6,788.6	270.4	170.5	-261.8	0.24	-0.16	-5.24	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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	1.98	43.46	6,813.6	271.0	171.1	-262.4	0.05	0.04	-0.84
6,850.0	1.96	43.70	6,838.6	271.7	171.7	-263.0	0.09	-0.08	0.96
6,875.0	1.96	41.54	6,863.6	272.3	172.3	-263.6	0.30	0.00	-8.64
6,900.0	1.94	41.06	6,888.6	272.9	172.8	-264.2	0.10	-0.08	-1.92
6,925.0	2.00	38.07	6,913.5	273.6	173.4	-264.9	0.48	0.24	-11.96
6,950.0	2.00	38.19	6,938.5	274.3	173.9	-265.5	0.02	0.00	0.48
6,975.0	2.01	37.63	6,963.5	275.0	174.5	-266.2	0.09	0.04	-2.24
7,000.0	1.97	37.95	6,988.5	275.6	175.0	-266.9	0.17	-0.16	1.28
7,025.0	1.97	36.85	7,013.5	276.3	175.5	-267.5	0.15	0.00	-4.40
7,050.0	2.01	36.66	7,038.5	277.0	176.0	-268.2	0.16	0.16	-0.76
7,075.0	1.98	37.01	7,063.5	277.7	176.6	-268.8	0.13	-0.12	1.40
7,100.0	2.00	36.96	7,088.4	278.4	177.1	-269.5	0.08	0.08	-0.20
7,125.0	2.01	37.16	7,113.4	279.1	177.6	-270.2	0.05	0.04	0.80
7,150.0	1.73	44.57	7,138.4	279.7	178.1	-270.8	1.48	-1.12	29.64
7,175.0	1.44	53.10	7,163.4	280.2	178.7	-271.2	1.49	-1.16	34.12
7,200.0	1.32	58.82	7,188.4	280.5	179.2	-271.5	0.73	-0.48	22.88
7,225.0	1.32	60.49	7,213.4	280.8	179.6	-271.8	0.15	0.00	6.68
7,250.0	1.36	61.85	7,238.4	281.1	180.2	-272.0	0.20	0.16	5.44
7,275.0	1.35	62.26	7,263.4	281.4	180.7	-272.3	0.06	-0.04	1.64
7,300.0	1.34	60.40	7,288.4	281.7	181.2	-272.6	0.18	-0.04	-7.44
7,325.0	1.32	63.14	7,313.4	281.9	181.7	-272.8	0.27	-0.08	10.96
7,350.0	1.04	73.84	7,338.4	282.1	182.2	-273.0	1.42	-1.12	42.80
7,375.0	0.93	126.53	7,363.3	282.1	182.6	-272.9	3.52	-0.44	210.76
7,400.0	0.99	132.00	7,388.3	281.8	182.9	-272.6	0.44	0.24	21.88
7,425.0	0.96	131.67	7,413.3	281.5	183.2	-272.3	0.12	-0.12	-1.32
7,450.0	0.97	131.83	7,438.3	281.2	183.5	-272.0	0.04	0.04	0.64
7,475.0	0.95	134.52	7,463.3	281.0	183.8	-271.7	0.20	-0.08	10.76
7,500.0	0.89	131.28	7,488.3	280.7	184.1	-271.4	0.32	-0.24	-12.96
7,525.0	0.90	134.46	7,513.3	280.4	184.4	-271.2	0.20	0.04	12.72
7,550.0	0.91	132.25	7,538.3	280.1	184.7	-270.9	0.15	0.04	-8.84
7,575.0	0.93	134.40	7,563.3	279.9	185.0	-270.6	0.16	0.08	8.60
7,600.0	0.84	139.73	7,588.3	279.6	185.2	-270.3	0.49	-0.36	21.32
7,625.0	0.81	139.77	7,613.3	279.3	185.5	-270.0	0.12	-0.12	0.16
7,650.0	0.77	138.40	7,638.3	279.0	185.7	-269.7	0.18	-0.16	-5.48
7,675.0	0.80	139.29	7,663.3	278.8	185.9	-269.5	0.13	0.12	3.56
7,700.0	0.79	139.84	7,688.3	278.5	186.2	-269.2	0.05	-0.04	2.20
7,725.0	0.81	143.83	7,713.3	278.3	186.4	-268.9	0.24	0.08	15.96
7,750.0	0.87	141.10	7,738.3	278.0	186.6	-268.6	0.29	0.24	-10.92
7,775.0	0.87	141.97	7,763.3	277.7	186.8	-268.3	0.05	0.00	3.48
7,800.0	0.89	143.61	7,788.3	277.4	187.1	-268.0	0.13	0.08	6.56
7,825.0	0.89	140.39	7,813.3	277.1	187.3	-267.7	0.20	0.00	-12.88
7,850.0	0.86	139.07	7,838.3	276.8	187.5	-267.4	0.14	-0.12	-5.28
7,875.0	0.83	136.84	7,863.3	276.5	187.8	-267.1	0.18	-0.12	-8.92

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)	
7,900.0	0.74	131.92	7,888.3	276.2	188.0	-266.8	0.45	-0.36	-19.68	
7,925.0	0.70	134.78	7,913.3	276.0	188.3	-266.6	0.22	-0.16	11.44	
7,950.0	0.65	131.24	7,938.3	275.8	188.5	-266.4	0.26	-0.20	-14.16	
7,975.0	0.60	129.44	7,963.3	275.7	188.7	-266.2	0.21	-0.20	-7.20	
8,000.0	0.49	128.26	7,988.3	275.5	188.9	-266.0	0.44	-0.44	-4.72	
8,025.0	0.48	127.06	8,013.3	275.4	189.0	-265.9	0.06	-0.04	-4.80	
8,050.0	0.46	126.24	8,038.3	275.3	189.2	-265.8	0.08	-0.08	-3.28	
8,075.0	0.41	124.32	8,063.3	275.1	189.4	-265.7	0.21	-0.20	-7.68	
8,100.0	0.44	122.09	8,088.3	275.0	189.5	-265.5	0.14	0.12	-8.92	
8,125.0	0.45	119.32	8,113.3	274.9	189.7	-265.4	0.09	0.04	-11.08	
8,150.0	0.46	121.97	8,138.3	274.8	189.9	-265.3	0.09	0.04	10.60	
8,175.0	0.43	126.59	8,163.3	274.7	190.0	-265.2	0.19	-0.12	18.48	
8,200.0	0.34	125.05	8,188.3	274.6	190.1	-265.1	0.36	-0.36	-6.16	
8,225.0	0.24	115.13	8,213.3	274.6	190.3	-265.0	0.45	-0.40	-39.68	
8,250.0	0.20	115.16	8,238.3	274.5	190.3	-265.0	0.16	-0.16	0.12	
8,275.0	0.20	99.15	8,263.3	274.5	190.4	-265.0	0.22	0.00	-64.04	
8,300.0	0.21	101.41	8,288.3	274.5	190.5	-264.9	0.05	0.04	9.04	
8,325.0	0.19	101.61	8,313.3	274.5	190.6	-264.9	0.08	-0.08	0.80	
8,350.0	0.17	106.21	8,338.3	274.5	190.7	-264.9	0.10	-0.08	18.40	
8,375.0	0.18	107.52	8,363.3	274.4	190.8	-264.9	0.04	0.04	5.24	
8,400.0	0.14	119.11	8,388.3	274.4	190.8	-264.8	0.21	-0.16	46.36	
8,425.0	0.14	114.19	8,413.3	274.4	190.9	-264.8	0.05	0.00	-19.68	
8,450.0	0.14	126.33	8,438.3	274.3	190.9	-264.8	0.12	0.00	48.56	
8,475.0	0.14	115.54	8,463.3	274.3	191.0	-264.7	0.11	0.00	-43.16	
8,500.0	0.08	116.21	8,488.3	274.3	191.0	-264.7	0.24	-0.24	2.68	
8,525.0	0.13	141.43	8,513.3	274.3	191.1	-264.7	0.27	0.20	100.88	
8,550.0	0.16	135.02	8,538.3	274.2	191.1	-264.6	0.14	0.12	-25.64	
8,575.0	0.11	160.52	8,563.3	274.2	191.1	-264.6	0.31	-0.20	102.00	
8,600.0	0.14	173.07	8,588.3	274.1	191.1	-264.5	0.16	0.12	50.20	
8,625.0	0.11	186.62	8,613.3	274.1	191.1	-264.5	0.17	-0.12	54.20	
8,650.0	0.15	225.93	8,638.3	274.0	191.1	-264.4	0.38	0.16	157.24	
8,675.0	0.07	259.22	8,663.3	274.0	191.1	-264.4	0.40	-0.32	133.16	
8,700.0	0.12	275.92	8,688.3	274.0	191.0	-264.4	0.23	0.20	66.80	
8,725.0	0.11	282.43	8,713.3	274.0	191.0	-264.4	0.07	-0.04	26.04	
8,750.0	0.11	262.13	8,738.3	274.0	190.9	-264.4	0.16	0.00	-81.20	
8,775.0	0.11	272.03	8,763.3	274.0	190.9	-264.4	0.08	0.00	39.60	
8,800.0	0.24	290.65	8,788.3	274.0	190.8	-264.5	0.56	0.52	74.48	
8,825.0	0.34	292.18	8,813.3	274.1	190.7	-264.5	0.40	0.40	6.12	
8,850.0	0.47	301.38	8,838.3	274.1	190.5	-264.6	0.58	0.52	36.80	
8,875.0	0.45	300.12	8,863.3	274.2	190.4	-264.7	0.09	-0.08	-5.04	
8,900.0	0.51	300.57	8,888.3	274.4	190.2	-264.8	0.24	0.24	1.80	
8,925.0	0.52	301.50	8,913.3	274.5	190.0	-265.0	0.05	0.04	3.72	
8,950.0	0.56	300.06	8,938.3	274.6	189.8	-265.1	0.17	0.16	-5.76	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)	
8,975.0	0.55	303.73	8,963.3	274.7	189.6	-265.2	0.15	-0.04	14.68	
9,000.0	0.64	306.41	8,988.3	274.9	189.4	-265.4	0.38	0.36	10.72	
9,025.0	0.67	311.92	9,013.3	275.0	189.2	-265.6	0.28	0.12	22.04	
9,050.0	0.76	314.30	9,038.3	275.3	188.9	-265.8	0.38	0.36	9.52	
9,075.0	0.68	311.70	9,063.3	275.5	188.7	-266.0	0.35	-0.32	-10.40	
9,100.0	0.73	314.24	9,088.3	275.7	188.5	-266.2	0.24	0.20	10.16	
9,125.0	0.78	312.96	9,113.3	275.9	188.2	-266.5	0.21	0.20	-5.12	
9,150.0	0.78	310.09	9,138.3	276.1	188.0	-266.7	0.16	0.00	-11.48	
9,175.0	0.83	312.56	9,163.3	276.4	187.7	-267.0	0.24	0.20	9.88	
9,200.0	0.83	314.45	9,188.2	276.6	187.5	-267.2	0.11	0.00	7.56	
9,225.0	0.86	314.33	9,213.2	276.9	187.2	-267.5	0.12	0.12	-0.48	
9,250.0	0.87	313.41	9,238.2	277.1	186.9	-267.8	0.07	0.04	-3.68	
9,275.0	0.88	313.53	9,263.2	277.4	186.6	-268.0	0.04	0.04	0.48	
9,300.0	0.90	312.22	9,288.2	277.7	186.4	-268.3	0.11	0.08	-5.24	
9,325.0	1.01	311.05	9,313.2	277.9	186.0	-268.6	0.45	0.44	-4.68	
9,350.0	1.13	309.24	9,338.2	278.2	185.7	-268.9	0.50	0.48	-7.24	
9,375.0	1.19	309.52	9,363.2	278.6	185.3	-269.3	0.24	0.24	1.12	
9,400.0	1.23	310.72	9,388.2	278.9	184.9	-269.6	0.19	0.16	4.80	
9,425.0	1.31	308.35	9,413.2	279.3	184.5	-270.0	0.38	0.32	-9.48	
9,450.0	1.36	308.74	9,438.2	279.6	184.0	-270.4	0.20	0.20	1.56	
9,475.0	1.43	310.32	9,463.2	280.0	183.5	-270.8	0.32	0.28	6.32	
9,500.0	1.41	308.27	9,488.2	280.4	183.1	-271.2	0.22	-0.08	-8.20	
9,525.0	1.42	308.95	9,513.2	280.8	182.6	-271.6	0.08	0.04	2.72	
9,550.0	1.48	310.80	9,538.2	281.2	182.1	-272.0	0.30	0.24	7.40	
9,575.0	1.56	309.58	9,563.2	281.6	181.6	-272.5	0.35	0.32	-4.88	
9,600.0	1.70	309.38	9,588.2	282.1	181.0	-273.0	0.56	0.56	-0.80	
9,625.0	1.80	307.97	9,613.1	282.5	180.4	-273.5	0.44	0.40	-5.64	
9,650.0	1.93	308.51	9,638.1	283.0	179.8	-274.0	0.52	0.52	2.16	
9,675.0	1.93	307.86	9,663.1	283.6	179.1	-274.6	0.09	0.00	-2.60	
9,700.0	1.92	308.22	9,688.1	284.1	178.5	-275.1	0.06	-0.04	1.44	
9,725.0	1.93	305.74	9,713.1	284.6	177.8	-275.7	0.34	0.04	-9.92	
9,750.0	1.85	303.43	9,738.1	285.1	177.1	-276.2	0.44	-0.32	-9.24	
9,775.0	1.82	303.34	9,763.1	285.5	176.5	-276.6	0.12	-0.12	-0.36	
9,800.0	1.87	303.58	9,788.1	285.9	175.8	-277.1	0.20	0.20	0.96	
9,825.0	1.87	303.33	9,813.0	286.4	175.1	-277.6	0.03	0.00	-1.00	
9,850.0	1.94	303.53	9,838.0	286.9	174.4	-278.1	0.28	0.28	0.80	
9,875.0	2.03	305.05	9,863.0	287.3	173.7	-278.6	0.42	0.36	6.08	
9,900.0	2.14	306.09	9,888.0	287.9	173.0	-279.2	0.47	0.44	4.16	
9,925.0	2.23	303.46	9,913.0	288.4	172.2	-279.7	0.54	0.36	-10.52	
9,950.0	2.36	302.01	9,938.0	289.0	171.3	-280.3	0.57	0.52	-5.80	
9,975.0	2.42	300.59	9,962.9	289.5	170.4	-280.9	0.34	0.24	-5.68	
10,000.0	2.52	299.50	9,987.9	290.0	169.5	-281.5	0.44	0.40	-4.36	
10,025.0	2.55	298.41	10,012.9	290.6	168.5	-282.1	0.23	0.12	-4.36	
10,050.0	2.55	299.36	10,037.9	291.1	167.6	-282.7	0.17	0.00	3.80	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)
10,075.0	2.60	298.76	10,062.8	291.7	166.6	-283.2	0.23	0.20	-2.40
10,100.0	2.44	299.25	10,087.8	292.2	165.6	-283.8	0.65	-0.64	1.96
10,125.0	1.21	294.25	10,112.8	292.6	164.9	-284.2	4.96	-4.92	-20.00
10,150.0	0.67	296.42	10,137.8	292.7	164.6	-284.4	2.16	-2.16	8.68
10,175.0	0.57	294.25	10,162.8	292.8	164.3	-284.5	0.41	-0.40	-8.68
10,200.0	0.52	299.10	10,187.8	292.9	164.1	-284.7	0.27	-0.20	19.40
10,225.0	0.45	304.96	10,212.8	293.1	163.9	-284.8	0.34	-0.28	23.44
10,250.0	0.51	307.61	10,237.8	293.2	163.7	-284.9	0.26	0.24	10.60
10,275.0	0.51	305.99	10,262.8	293.3	163.6	-285.1	0.06	0.00	-6.48
10,300.0	0.39	302.06	10,287.8	293.4	163.4	-285.2	0.50	-0.48	-15.72
10,325.0	0.34	134.17	10,312.8	293.4	163.4	-285.2	2.90	-0.20	-671.56
10,350.0	0.84	134.89	10,337.8	293.2	163.6	-285.0	2.00	2.00	2.88
10,375.0	0.93	137.71	10,362.8	293.0	163.8	-284.7	0.40	0.36	11.28
10,400.0	0.96	144.40	10,387.8	292.6	164.1	-284.4	0.46	0.12	26.76
10,425.0	0.92	155.60	10,412.8	292.3	164.3	-284.0	0.75	-0.16	44.80
10,450.0	0.94	160.04	10,437.8	291.9	164.5	-283.6	0.30	0.08	17.76
10,475.0	1.01	172.29	10,462.8	291.5	164.6	-283.2	0.88	0.28	49.00
10,500.0	1.06	189.92	10,487.8	291.1	164.5	-282.8	1.28	0.20	70.52
10,525.0	1.11	207.87	10,512.8	290.6	164.4	-282.3	1.37	0.20	71.80
10,550.0	1.12	212.27	10,537.8	290.2	164.1	-281.9	0.34	0.04	17.60
10,575.0	1.14	214.16	10,562.8	289.8	163.9	-281.5	0.17	0.08	7.56
10,600.0	1.11	203.42	10,587.7	289.4	163.6	-281.1	0.85	-0.12	-42.96
10,625.0	1.05	193.40	10,612.7	288.9	163.5	-280.7	0.79	-0.24	-40.08
10,650.0	1.03	182.16	10,637.7	288.5	163.4	-280.2	0.82	-0.08	-44.96
10,675.0	0.99	177.94	10,662.7	288.0	163.4	-279.8	0.34	-0.16	-16.88
10,700.0	0.94	160.95	10,687.7	287.6	163.5	-279.4	1.16	-0.20	-67.96
10,725.0	0.95	145.75	10,712.7	287.2	163.7	-279.0	1.00	0.04	-60.80
10,750.0	0.88	138.02	10,737.7	286.9	163.9	-278.7	0.57	-0.28	-30.92
10,775.0	0.86	139.15	10,762.7	286.6	164.2	-278.4	0.11	-0.08	4.52
10,800.0	0.70	138.39	10,787.7	286.4	164.4	-278.1	0.64	-0.64	-3.04
10,825.0	0.45	128.59	10,812.7	286.2	164.6	-277.9	1.07	-1.00	-39.20
10,850.0	0.43	125.94	10,837.7	286.1	164.7	-277.8	0.11	-0.08	-10.60
10,875.0	0.44	125.61	10,862.7	286.0	164.9	-277.7	0.04	0.04	-1.32
10,900.0	0.40	120.34	10,887.7	285.9	165.0	-277.6	0.22	-0.16	-21.08
10,925.0	0.40	126.88	10,912.7	285.8	165.2	-277.5	0.18	0.00	26.16
10,950.0	0.38	137.70	10,937.7	285.7	165.3	-277.3	0.30	-0.08	43.28
10,975.0	0.28	143.85	10,962.7	285.6	165.4	-277.2	0.42	-0.40	24.60
11,000.0	0.21	166.15	10,987.7	285.5	165.5	-277.1	0.47	-0.28	89.20
11,025.0	0.18	213.36	11,012.7	285.4	165.4	-277.1	0.63	-0.12	188.84
11,050.0	0.26	229.92	11,037.7	285.3	165.4	-277.0	0.41	0.32	66.24
11,075.0	0.28	228.02	11,062.7	285.2	165.3	-276.9	0.09	0.08	-7.60
11,100.0	0.37	214.96	11,087.7	285.1	165.2	-276.8	0.46	0.36	-52.24
11,125.0	0.52	227.91	11,112.7	285.0	165.1	-276.7	0.72	0.60	51.80

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)
11,150.0	0.51	232.93	11,137.7	284.9	164.9	-276.5	0.18	-0.04	20.08
11,175.0	0.53	239.25	11,162.7	284.7	164.7	-276.4	0.24	0.08	25.28
11,200.0	0.45	272.50	11,187.7	284.7	164.5	-276.4	1.16	-0.32	133.00
11,225.0	0.51	298.84	11,212.7	284.7	164.3	-276.4	0.91	0.24	105.36
11,250.0	0.50	311.49	11,237.7	284.9	164.1	-276.6	0.45	-0.04	50.60
11,275.0	0.49	327.28	11,262.7	285.0	164.0	-276.8	0.55	-0.04	63.16
11,300.0	0.54	335.94	11,287.7	285.2	163.9	-277.0	0.37	0.20	34.64
11,325.0	0.55	339.98	11,312.7	285.4	163.8	-277.2	0.16	0.04	16.16
11,350.0	0.64	338.18	11,337.7	285.7	163.7	-277.4	0.37	0.36	-7.20
11,375.0	0.39	342.58	11,362.7	285.9	163.6	-277.6	1.01	-1.00	17.60
11,400.0	0.35	341.11	11,387.7	286.0	163.6	-277.8	0.16	-0.16	-5.88
11,425.0	0.03	90.10	11,412.7	286.1	163.6	-277.9	1.44	-1.28	435.96
11,450.0	0.79	133.76	11,437.7	286.0	163.7	-277.7	3.07	3.04	174.64
11,475.0	1.60	129.99	11,462.7	285.7	164.1	-277.4	3.25	3.24	-15.08
11,500.0	2.19	137.75	11,487.7	285.1	164.7	-276.8	2.57	2.36	31.04
11,525.0	2.50	145.54	11,512.7	284.3	165.3	-275.9	1.78	1.24	31.16
11,550.0	2.67	153.33	11,537.6	283.3	165.9	-274.9	1.56	0.68	31.16
11,575.0	2.55	153.95	11,562.6	282.3	166.4	-273.9	0.49	-0.48	2.48
11,600.0	2.67	158.32	11,587.6	281.2	166.8	-272.8	0.93	0.48	17.48
11,625.0	2.68	161.74	11,612.6	280.1	167.2	-271.7	0.64	0.04	13.68
11,650.0	2.79	161.74	11,637.5	279.0	167.6	-270.6	0.44	0.44	0.00
11,675.0	2.92	162.15	11,662.5	277.8	168.0	-269.4	0.53	0.52	1.64
11,700.0	2.93	162.55	11,687.5	276.6	168.4	-268.1	0.09	0.04	1.60
11,725.0	2.94	162.73	11,712.4	275.4	168.8	-266.9	0.05	0.04	0.72
11,750.0	2.82	165.34	11,737.4	274.2	169.1	-265.7	0.71	-0.48	10.44
11,775.0	2.59	167.01	11,762.4	273.0	169.4	-264.5	0.97	-0.92	6.68
11,800.0	2.26	171.86	11,787.3	272.0	169.6	-263.5	1.55	-1.32	19.40
11,825.0	2.02	177.95	11,812.3	271.1	169.7	-262.5	1.32	-0.96	24.36
11,850.0	1.91	177.61	11,837.3	270.2	169.7	-261.7	0.44	-0.44	-1.36
11,875.0	1.92	171.34	11,862.3	269.4	169.8	-260.9	0.84	0.04	-25.08
11,880.0	1.94	169.45	11,867.3	269.2	169.8	-260.7	1.33	0.40	-37.80
12,070.0	1.29	183.93	12,057.2	263.9	170.3	-255.4	0.40	-0.34	7.62
12,102.0	1.77	177.65	12,089.2	263.1	170.3	-254.5	1.59	1.50	-19.63
12,133.0	4.08	164.58	12,120.2	261.5	170.6	-253.0	7.71	7.45	-42.16
12,165.0	8.90	160.95	12,152.0	258.1	171.7	-249.5	15.11	15.06	-11.34
12,197.0	14.49	162.78	12,183.3	251.9	173.7	-243.2	17.51	17.47	5.72
12,228.0	16.38	166.34	12,213.2	244.0	175.9	-235.2	6.82	6.10	11.48
12,260.0	17.78	169.30	12,243.7	234.8	177.8	-225.9	5.15	4.38	9.25
12,280.0	19.49	171.05	12,262.7	228.5	178.9	-219.6	8.97	8.53	8.74
FTP @ 12280.6'MD/ 12262.7'TVD									
12,291.0	20.43	171.89	12,273.0	224.8	179.5	-215.8	8.97	8.59	7.65
12,323.0	22.43	172.31	12,302.8	213.2	181.1	-204.2	6.27	6.25	1.31
12,355.0	25.41	170.98	12,332.1	200.4	183.0	-191.3	9.46	9.31	-4.16

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)
12,386.0	29.53	169.03	12,359.6	186.3	185.5	-177.1	13.60	13.29	-6.29
12,418.0	34.01	167.48	12,386.8	169.8	188.9	-160.5	14.23	14.00	-4.84
12,449.0	38.87	166.37	12,411.7	151.9	193.1	-142.3	15.82	15.68	-3.58
12,480.0	43.36	165.85	12,435.1	132.1	198.0	-122.4	14.53	14.48	-1.68
12,511.0	47.73	167.43	12,456.8	110.6	203.1	-100.6	14.56	14.10	5.10
12,543.0	51.27	171.22	12,477.5	86.7	207.6	-76.5	14.26	11.06	11.84
12,575.0	53.23	175.01	12,497.1	61.5	210.6	-51.3	11.19	6.13	11.84
12,606.0	54.13	175.45	12,515.5	36.7	212.7	-26.3	3.12	2.90	1.42
12,638.0	57.28	175.57	12,533.5	10.3	214.7	0.1	9.85	9.84	0.38
12,670.0	61.87	176.29	12,549.7	-17.2	216.7	27.7	14.47	14.34	2.25
12,701.0	65.18	178.44	12,563.5	-44.9	218.0	55.4	12.35	10.68	6.94
12,733.0	67.87	180.59	12,576.3	-74.3	218.2	84.7	10.42	8.41	6.72
12,765.0	70.19	180.73	12,587.7	-104.1	217.8	114.6	7.26	7.25	0.44
12,797.0	75.13	182.17	12,597.3	-134.7	217.1	145.0	16.02	15.44	4.50
12,829.0	77.34	181.82	12,604.9	-165.7	216.0	176.0	6.99	6.91	-1.09
12,860.0	79.66	181.85	12,611.1	-196.1	215.0	206.3	7.48	7.48	0.10
12,891.0	80.04	181.29	12,616.5	-226.6	214.2	236.7	2.16	1.23	-1.81
12,923.0	82.69	180.51	12,621.3	-258.2	213.7	268.3	8.62	8.28	-2.44
12,954.0	86.71	179.79	12,624.2	-289.1	213.6	299.1	13.17	12.97	-2.32
13,018.0	87.02	178.73	12,627.7	-353.0	214.4	362.9	1.72	0.48	-1.66
13,112.0	87.25	177.56	12,632.4	-446.8	217.5	456.8	1.27	0.24	-1.24
13,206.0	87.31	176.47	12,636.9	-540.6	222.4	550.7	1.16	0.06	-1.16
13,301.0	87.37	177.52	12,641.3	-635.3	227.3	645.6	1.11	0.06	1.11
13,396.0	89.41	180.16	12,643.9	-730.3	229.3	740.5	3.51	2.15	2.78
13,491.0	89.15	179.23	12,645.1	-825.3	229.8	835.4	1.02	-0.27	-0.98
13,586.0	89.78	180.42	12,646.0	-920.3	230.0	930.3	1.42	0.66	1.25
13,682.0	91.02	181.73	12,645.4	-1,016.2	228.2	1,026.1	1.88	1.29	1.36
13,775.0	87.54	181.33	12,646.5	-1,109.2	225.8	1,118.8	3.77	-3.74	-0.43
13,870.0	86.24	181.86	12,651.7	-1,204.0	223.1	1,213.4	1.48	-1.37	0.56
13,965.0	86.90	181.46	12,657.4	-1,298.8	220.4	1,307.9	0.81	0.69	-0.42
14,059.0	86.33	181.00	12,662.9	-1,392.6	218.4	1,401.5	0.78	-0.61	-0.49
14,154.0	89.06	179.16	12,666.7	-1,487.5	218.2	1,496.3	3.46	2.87	-1.94
14,248.0	91.36	179.24	12,666.4	-1,581.5	219.5	1,590.3	2.45	2.45	0.09
14,341.0	91.57	179.11	12,664.0	-1,674.5	220.9	1,683.2	0.27	0.23	-0.14
14,435.0	90.73	178.34	12,662.1	-1,768.4	223.0	1,777.1	1.21	-0.89	-0.82
14,530.0	91.88	178.03	12,660.0	-1,863.3	226.0	1,872.1	1.25	1.21	-0.33
14,624.0	90.39	179.56	12,658.1	-1,957.3	228.0	1,966.0	2.27	-1.59	1.63
14,719.0	91.08	179.13	12,656.9	-2,052.3	229.0	2,061.0	0.86	0.73	-0.45
14,813.0	89.04	181.31	12,656.8	-2,146.3	228.7	2,154.8	3.18	-2.17	2.32
14,908.0	89.75	181.68	12,657.8	-2,241.2	226.2	2,249.6	0.84	0.75	0.39
15,003.0	88.75	181.88	12,659.0	-2,336.2	223.3	2,344.2	1.07	-1.05	0.21
15,097.0	87.80	181.61	12,661.9	-2,430.1	220.4	2,437.9	1.05	-1.01	-0.29
15,192.0	88.08	181.82	12,665.3	-2,525.0	217.6	2,532.6	0.37	0.29	0.22
15,286.0	88.80	180.14	12,667.8	-2,618.9	215.9	2,626.3	1.94	0.77	-1.79

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Well:	PICKELHAUBE ST #602H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	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)
15,381.0	88.32	177.93	12,670.2	-2,713.9	217.5	2,721.2	2.38	-0.51	-2.33
15,474.0	89.44	180.36	12,672.0	-2,806.8	218.9	2,814.2	2.88	1.20	2.61
15,568.0	89.21	179.56	12,673.1	-2,900.8	219.0	2,908.0	0.89	-0.24	-0.85
15,663.0	90.96	179.87	12,673.0	-2,995.8	219.5	3,002.9	1.87	1.84	0.33
15,757.0	90.65	179.54	12,671.7	-3,089.8	220.0	3,096.8	0.48	-0.33	-0.35
15,853.0	91.39	179.58	12,670.0	-3,185.8	220.7	3,192.8	0.77	0.77	0.04
15,948.0	89.15	178.05	12,669.5	-3,280.8	222.7	3,287.7	2.86	-2.36	-1.61
16,043.0	87.02	177.23	12,672.7	-3,375.6	226.6	3,382.6	2.40	-2.24	-0.86
16,137.0	88.52	179.22	12,676.4	-3,469.5	229.5	3,476.6	2.65	1.60	2.12
16,231.0	88.37	181.76	12,678.9	-3,563.5	228.7	3,570.4	2.71	-0.16	2.70
16,326.0	88.40	178.75	12,681.6	-3,658.4	228.2	3,665.2	3.17	0.03	-3.17
16,420.0	88.03	177.97	12,684.5	-3,752.3	230.9	3,759.1	0.92	-0.39	-0.83
16,513.0	90.79	181.94	12,685.5	-3,845.3	231.0	3,852.0	5.20	2.97	4.27
16,607.0	90.21	181.29	12,684.7	-3,939.3	228.4	3,945.7	0.93	-0.62	-0.69
16,702.0	89.98	181.08	12,684.5	-4,034.2	226.4	4,040.5	0.33	-0.24	-0.22
16,796.0	89.87	181.11	12,684.6	-4,128.2	224.6	4,134.3	0.12	-0.12	0.03
16,891.0	89.03	180.70	12,685.5	-4,223.2	223.1	4,229.0	0.98	-0.88	-0.43
16,986.0	89.18	180.51	12,687.0	-4,318.2	222.1	4,323.9	0.25	0.16	-0.20
17,080.0	92.31	183.66	12,685.8	-4,412.1	218.7	4,417.5	4.72	3.33	3.35
17,174.0	92.95	183.80	12,681.5	-4,505.8	212.6	4,510.8	0.70	0.68	0.15
17,269.0	88.98	179.80	12,679.9	-4,600.7	209.6	4,605.4	5.93	-4.18	-4.21
17,363.0	87.97	179.81	12,682.4	-4,694.7	209.9	4,699.3	1.07	-1.07	0.01
17,458.0	88.37	179.08	12,685.4	-4,789.6	210.8	4,794.2	0.88	0.42	-0.77
17,508.0	89.87	182.37	12,686.2	-4,839.6	210.2	4,844.1	7.23	3.00	6.58
LAST MWD @ 17508'MD									
17,512.7	89.87	182.37	12,686.2	-4,844.3	210.0	4,848.8	0.00	0.00	0.00
LTP @ 17512.7'MD / 12686.2'TVD									
17,567.0	89.87	182.37	12,686.3	-4,898.5	207.8	4,902.9	0.00	0.00	0.00
PTD @ 17567'MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,280.0	12,262.7	228.5	178.9	FTP @ 12280.6'MD/ 12262.7'TVD
17,508.0	12,686.2	-4,839.6	210.2	LAST MWD @ 17508'MD
17,512.7	12,686.2	-4,844.3	210.0	LTP @ 17512.7'MD / 12686.2'TVD
17,567.0	12,686.3	-4,898.5	207.8	PTD @ 17567'MD

Checked By: _____ Approved By: _____ Date: _____