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NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

SRO 5 STATE COM #504H

OWB

Design: AWP

Standard Survey Report

19 June, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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

Well	SRO 5 STATE COM #504H, ACTIVE		
Well Position	+N/-S	0.0 usft	Northing: 392,156.20 usft
	+E/-W	0.0 usft	Easting: 571,275.90 usft
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 4' 40.599 N
		Longitude:	104° 6' 11.565 W
		Ground Level:	3,007.4 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	5/30/2019	6.98
			Dip Angle
			(°)
			59.82
			Field Strength
			(nT)
			47,597.97043750

Design	AWP		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			177.16

Survey Program	Date 6/19/2019		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,209.0	GYRO (OWB)	Standard Keeper 104
7,298.0	18,157.0	MWD-CRV/LAT (OWB)	MWD+IFR1+MS
			Description
			Standard Wireline Keeper ver 1.0.4
			OWSG MWD + IFR1 + Multi-Station Correction

Survey										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.11	29.37	100.0	0.1	0.0	-0.1	0.11	0.11	0.00	
125.0	0.19	74.11	125.0	0.1	0.1	-0.1	0.54	0.32	178.96	
150.0	0.14	90.89	150.0	0.1	0.2	-0.1	0.28	-0.20	67.12	
175.0	0.31	104.30	175.0	0.1	0.3	-0.1	0.71	0.68	53.64	
200.0	0.47	97.67	200.0	0.1	0.4	-0.1	0.66	0.64	-26.52	
225.0	0.49	107.69	225.0	0.0	0.6	0.0	0.34	0.08	40.08	
250.0	0.62	113.51	250.0	-0.1	0.9	0.1	0.57	0.52	23.28	

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Well:	SRO 5 STATE COM #504H	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)
275.0	0.69	121.94	275.0	-0.2	1.1	0.2	0.48	0.28	33.72
300.0	0.86	118.11	300.0	-0.4	1.4	0.4	0.71	0.68	-15.32
325.0	0.70	119.72	325.0	-0.5	1.7	0.6	0.65	-0.64	6.44
350.0	0.78	124.25	350.0	-0.7	2.0	0.8	0.40	0.32	18.12
375.0	0.81	130.15	375.0	-0.9	2.3	1.0	0.35	0.12	23.60
400.0	0.83	133.94	400.0	-1.1	2.5	1.3	0.23	0.08	15.16
425.0	0.73	143.26	425.0	-1.4	2.7	1.5	0.64	-0.40	37.28
450.0	0.86	134.17	450.0	-1.7	3.0	1.8	0.72	0.52	-36.36
475.0	0.79	135.99	475.0	-1.9	3.2	2.1	0.30	-0.28	7.28
500.0	1.02	151.63	500.0	-2.2	3.5	2.4	1.34	0.92	62.56
525.0	1.13	155.59	525.0	-2.6	3.7	2.8	0.53	0.44	15.84
550.0	1.34	155.08	550.0	-3.1	3.9	3.3	0.84	0.84	-2.04
575.0	1.46	153.41	575.0	-3.7	4.2	3.9	0.51	0.48	-6.68
600.0	1.59	155.15	599.9	-4.3	4.4	4.5	0.55	0.52	6.96
625.0	1.62	152.81	624.9	-4.9	4.7	5.1	0.29	0.12	-9.36
650.0	1.59	153.48	649.9	-5.5	5.1	5.8	0.14	-0.12	2.68
675.0	1.49	155.86	674.9	-6.1	5.4	6.4	0.47	-0.40	9.52
700.0	1.64	154.91	699.9	-6.8	5.6	7.0	0.61	0.60	-3.80
725.0	1.51	149.01	724.9	-7.4	6.0	7.7	0.83	-0.52	-23.60
750.0	1.61	148.07	749.9	-8.0	6.3	8.3	0.41	0.40	-3.76
775.0	1.57	146.94	774.9	-8.5	6.7	8.9	0.20	-0.16	-4.52
800.0	1.74	139.39	799.9	-9.1	7.1	9.5	1.10	0.68	-30.20
825.0	1.76	140.83	824.9	-9.7	7.6	10.1	0.19	0.08	5.76
850.0	1.72	138.60	849.8	-10.3	8.1	10.7	0.31	-0.16	-8.92
875.0	1.74	140.36	874.8	-10.9	8.6	11.3	0.23	0.08	7.04
900.0	1.92	137.71	899.8	-11.5	9.1	11.9	0.80	0.72	-10.60
925.0	1.91	141.33	924.8	-12.1	9.7	12.6	0.49	-0.04	14.48
950.0	1.89	142.19	949.8	-12.7	10.2	13.2	0.14	-0.08	3.44
975.0	1.87	140.68	974.8	-13.4	10.7	13.9	0.21	-0.08	-6.04
1,000.0	1.74	142.56	999.8	-14.0	11.2	14.5	0.57	-0.52	7.52
1,025.0	1.03	139.97	1,024.8	-14.5	11.5	15.0	2.85	-2.84	-10.36
1,050.0	0.56	132.15	1,049.8	-14.7	11.8	15.3	1.93	-1.88	-31.28
1,075.0	0.15	98.89	1,074.8	-14.8	11.9	15.4	1.77	-1.64	-133.04
1,100.0	0.06	27.43	1,099.8	-14.8	11.9	15.4	0.57	-0.36	-285.84
1,125.0	0.04	22.97	1,124.8	-14.8	12.0	15.4	0.08	-0.08	-17.84
1,150.0	0.07	29.05	1,149.8	-14.8	12.0	15.3	0.12	0.12	24.32
1,175.0	0.15	30.51	1,174.8	-14.7	12.0	15.3	0.32	0.32	5.84
1,200.0	0.14	7.47	1,199.8	-14.7	12.0	15.2	0.23	-0.04	-92.16
1,225.0	0.15	310.60	1,224.8	-14.6	12.0	15.2	0.55	0.04	-227.48
1,250.0	0.18	311.65	1,249.8	-14.6	11.9	15.1	0.12	0.12	4.20
1,275.0	0.11	9.17	1,274.8	-14.5	11.9	15.1	0.61	-0.28	230.08
1,300.0	0.12	31.00	1,299.8	-14.5	11.9	15.0	0.18	0.04	87.32

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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
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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)
1,325.0	0.19	346.33	1,324.8	-14.4	11.9	15.0	0.54	0.28	-178.68
1,350.0	0.19	57.36	1,349.8	-14.3	12.0	14.9	0.88	0.00	284.12
1,375.0	0.15	354.29	1,374.8	-14.3	12.0	14.9	0.72	-0.16	-252.28
1,400.0	0.17	24.65	1,399.8	-14.2	12.0	14.8	0.34	0.08	121.44
1,425.0	0.21	28.12	1,424.8	-14.1	12.0	14.7	0.17	0.16	13.88
1,450.0	0.17	58.55	1,449.8	-14.1	12.1	14.7	0.43	-0.16	121.72
1,475.0	0.21	42.60	1,474.8	-14.0	12.1	14.6	0.26	0.16	-63.80
1,500.0	0.24	60.20	1,499.8	-14.0	12.2	14.6	0.30	0.12	70.40
1,525.0	0.20	29.80	1,524.8	-13.9	12.3	14.5	0.49	-0.16	-121.60
1,550.0	0.21	54.05	1,549.8	-13.8	12.4	14.4	0.35	0.04	97.00
1,575.0	0.26	83.17	1,574.8	-13.8	12.4	14.4	0.51	0.20	116.48
1,600.0	0.23	89.32	1,599.8	-13.8	12.6	14.4	0.16	-0.12	24.60
1,625.0	0.27	78.91	1,624.8	-13.8	12.7	14.4	0.24	0.16	-41.64
1,650.0	0.31	91.00	1,649.8	-13.8	12.8	14.4	0.29	0.16	48.36
1,675.0	0.26	89.87	1,674.8	-13.8	12.9	14.4	0.20	-0.20	-4.52
1,700.0	0.25	80.76	1,699.8	-13.8	13.0	14.4	0.17	-0.04	-36.44
1,725.0	0.51	86.08	1,724.8	-13.8	13.2	14.4	1.05	1.04	21.28
1,750.0	0.65	82.46	1,749.8	-13.7	13.4	14.4	0.58	0.56	-14.48
1,775.0	0.73	75.84	1,774.8	-13.7	13.7	14.3	0.45	0.32	-26.48
1,800.0	0.80	80.39	1,799.7	-13.6	14.1	14.3	0.37	0.28	18.20
1,825.0	0.88	87.04	1,824.7	-13.6	14.4	14.3	0.50	0.32	26.60
1,850.0	0.90	96.65	1,849.7	-13.6	14.8	14.3	0.60	0.08	38.44
1,875.0	0.99	94.48	1,874.7	-13.6	15.2	14.4	0.39	0.36	-8.68
1,900.0	0.97	94.14	1,899.7	-13.7	15.6	14.4	0.08	-0.08	-1.36
1,925.0	0.99	97.46	1,924.7	-13.7	16.1	14.5	0.24	0.08	13.28
1,950.0	1.07	99.90	1,949.7	-13.8	16.5	14.6	0.36	0.32	9.76
1,975.0	1.31	103.45	1,974.7	-13.9	17.0	14.7	1.00	0.96	14.20
2,000.0	1.51	104.77	1,999.7	-14.0	17.6	14.9	0.81	0.80	5.28
2,025.0	1.67	101.64	2,024.7	-14.2	18.3	15.1	0.73	0.64	-12.52
2,050.0	1.79	99.51	2,049.7	-14.3	19.0	15.2	0.54	0.48	-8.52
2,075.0	1.72	100.59	2,074.7	-14.5	19.8	15.4	0.31	-0.28	4.32
2,100.0	1.55	92.87	2,099.7	-14.5	20.5	15.5	1.11	-0.68	-30.88
2,125.0	1.35	85.34	2,124.7	-14.5	21.1	15.6	1.10	-0.80	-30.12
2,150.0	1.17	73.86	2,149.7	-14.4	21.7	15.5	1.24	-0.72	-45.92
2,175.0	1.19	61.99	2,174.7	-14.2	22.1	15.3	0.98	0.08	-47.48
2,200.0	1.25	56.40	2,199.6	-14.0	22.6	15.1	0.53	0.24	-22.36
2,225.0	1.23	59.10	2,224.6	-13.7	23.1	14.8	0.25	-0.08	10.80
2,250.0	1.31	57.41	2,249.6	-13.4	23.5	14.5	0.35	0.32	-6.76
2,275.0	1.28	60.38	2,274.6	-13.1	24.0	14.3	0.29	-0.12	11.88
2,300.0	1.28	54.65	2,299.6	-12.8	24.5	14.0	0.51	0.00	-22.92
2,325.0	1.27	57.96	2,324.6	-12.5	24.9	13.7	0.30	-0.04	13.24
2,350.0	1.26	54.84	2,349.6	-12.2	25.4	13.4	0.28	-0.04	-12.48

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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)	
2,375.0	1.29	59.44	2,374.6	-11.9	25.9	13.2	0.43	0.12	18.40	
2,400.0	1.25	57.32	2,399.6	-11.6	26.3	12.9	0.25	-0.16	-8.48	
2,425.0	1.22	53.32	2,424.6	-11.3	26.8	12.6	0.37	-0.12	-16.00	
2,450.0	1.18	52.95	2,449.6	-11.0	27.2	12.3	0.16	-0.16	-1.48	
2,475.0	1.36	56.20	2,474.6	-10.7	27.7	12.0	0.78	0.72	13.00	
2,500.0	1.31	52.69	2,499.6	-10.3	28.1	11.7	0.38	-0.20	-14.04	
2,525.0	1.32	54.10	2,524.6	-10.0	28.6	11.4	0.14	0.04	5.64	
2,550.0	1.29	61.10	2,549.6	-9.7	29.1	11.1	0.65	-0.12	28.00	
2,575.0	1.20	55.15	2,574.6	-9.4	29.5	10.8	0.63	-0.36	-23.80	
2,600.0	1.26	55.78	2,599.5	-9.1	30.0	10.6	0.25	0.24	2.52	
2,625.0	1.21	49.85	2,624.5	-8.8	30.4	10.2	0.55	-0.20	-23.72	
2,650.0	1.32	58.42	2,649.5	-8.4	30.8	9.9	0.87	0.44	34.28	
2,675.0	1.33	57.16	2,674.5	-8.1	31.3	9.7	0.12	0.04	-5.04	
2,700.0	1.29	56.44	2,699.5	-7.8	31.8	9.4	0.17	-0.16	-2.88	
2,725.0	1.39	55.98	2,724.5	-7.5	32.3	9.1	0.40	0.40	-1.84	
2,750.0	1.25	54.04	2,749.5	-7.2	32.8	8.8	0.59	-0.56	-7.76	
2,775.0	1.25	56.37	2,774.5	-6.8	33.2	8.5	0.20	0.00	9.32	
2,800.0	1.37	53.51	2,799.5	-6.5	33.7	8.2	0.55	0.48	-11.44	
2,825.0	1.34	55.62	2,824.5	-6.2	34.2	7.9	0.23	-0.12	8.44	
2,850.0	1.32	52.68	2,849.5	-5.8	34.6	7.5	0.28	-0.08	-11.76	
2,875.0	1.32	54.98	2,874.5	-5.5	35.1	7.2	0.21	0.00	9.20	
2,900.0	1.30	55.96	2,899.5	-5.2	35.6	6.9	0.12	-0.08	3.92	
2,925.0	1.26	57.81	2,924.5	-4.9	36.0	6.6	0.23	-0.16	7.40	
2,950.0	1.21	61.63	2,949.5	-4.6	36.5	6.4	0.39	-0.20	15.28	
2,975.0	1.25	56.17	2,974.5	-4.3	37.0	6.1	0.50	0.16	-21.84	
3,000.0	1.23	55.69	2,999.4	-4.0	37.4	5.9	0.09	-0.08	-1.92	
3,025.0	1.22	53.83	3,024.4	-3.7	37.9	5.6	0.16	-0.04	-7.44	
3,050.0	1.26	58.89	3,049.4	-3.4	38.3	5.3	0.47	0.16	20.24	
3,075.0	1.36	53.87	3,074.4	-3.1	38.8	5.0	0.61	0.40	-20.08	
3,100.0	1.27	55.43	3,099.4	-2.8	39.2	4.7	0.39	-0.36	6.24	
3,125.0	1.31	55.26	3,124.4	-2.4	39.7	4.4	0.16	0.16	-0.68	
3,150.0	1.30	53.05	3,149.4	-2.1	40.2	4.1	0.21	-0.04	-8.84	
3,175.0	1.36	54.79	3,174.4	-1.8	40.6	3.8	0.29	0.24	6.96	
3,200.0	1.33	56.03	3,199.4	-1.4	41.1	3.5	0.17	-0.12	4.96	
3,225.0	1.37	57.73	3,224.4	-1.1	41.6	3.2	0.23	0.16	6.80	
3,250.0	1.42	57.48	3,249.4	-0.8	42.1	2.9	0.20	0.20	-1.00	
3,275.0	1.27	56.99	3,274.4	-0.5	42.6	2.6	0.60	-0.60	-1.96	
3,300.0	1.23	57.24	3,299.4	-0.2	43.1	2.3	0.16	-0.16	1.00	
3,325.0	1.13	58.38	3,324.4	0.1	43.5	2.0	0.41	-0.40	4.56	
3,350.0	1.19	58.55	3,349.4	0.4	43.9	1.8	0.24	0.24	0.68	
3,375.0	1.19	56.32	3,374.4	0.7	44.4	1.5	0.19	0.00	-8.92	
3,400.0	1.16	55.61	3,399.3	0.9	44.8	1.3	0.13	-0.12	-2.84	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)	
3,425.0	1.38	58.55	3,424.3	1.2	45.3	1.0	0.92	0.88	11.76	
3,450.0	2.07	45.94	3,449.3	1.7	45.9	0.6	3.13	2.76	-50.44	
3,475.0	2.98	46.95	3,474.3	2.5	46.7	-0.2	3.64	3.64	4.04	
3,500.0	3.44	46.20	3,499.3	3.4	47.7	-1.1	1.85	1.84	-3.00	
3,525.0	3.52	45.73	3,524.2	4.5	48.8	-2.1	0.34	0.32	-1.88	
3,550.0	3.51	46.15	3,549.2	5.6	49.9	-3.1	0.11	-0.04	1.68	
3,575.0	3.58	45.69	3,574.1	6.6	51.0	-4.1	0.30	0.28	-1.84	
3,600.0	3.55	47.06	3,599.1	7.7	52.1	-5.1	0.36	-0.12	5.48	
3,625.0	3.62	46.63	3,624.0	8.8	53.2	-6.1	0.30	0.28	-1.72	
3,650.0	3.56	46.19	3,649.0	9.8	54.4	-7.1	0.26	-0.24	-1.76	
3,675.0	3.58	46.15	3,673.9	10.9	55.5	-8.2	0.08	0.08	-0.16	
3,700.0	3.67	44.62	3,698.9	12.0	56.6	-9.2	0.53	0.36	-6.12	
3,725.0	3.59	46.39	3,723.8	13.1	57.7	-10.3	0.55	-0.32	7.08	
3,750.0	3.69	44.98	3,748.8	14.3	58.9	-11.3	0.54	0.40	-5.64	
3,775.0	3.63	45.88	3,773.7	15.4	60.0	-12.4	0.33	-0.24	3.60	
3,800.0	4.10	45.73	3,798.7	16.5	61.2	-13.5	1.88	1.88	-0.60	
3,825.0	4.63	41.36	3,823.6	17.9	62.5	-14.8	2.50	2.12	-17.48	
3,850.0	4.81	40.95	3,848.5	19.5	63.9	-16.3	0.73	0.72	-1.64	
3,875.0	4.77	40.11	3,873.4	21.1	65.2	-17.8	0.32	-0.16	-3.36	
3,900.0	4.83	40.96	3,898.3	22.7	66.6	-19.3	0.37	0.24	3.40	
3,925.0	4.78	40.63	3,923.3	24.2	68.0	-20.8	0.23	-0.20	-1.32	
3,950.0	4.72	42.31	3,948.2	25.8	69.3	-22.3	0.61	-0.24	6.72	
3,975.0	4.66	41.51	3,973.1	27.3	70.7	-23.8	0.36	-0.24	-3.20	
4,000.0	4.54	42.27	3,998.0	28.8	72.0	-25.2	0.54	-0.48	3.04	
4,025.0	4.60	41.04	4,022.9	30.3	73.4	-26.6	0.46	0.24	-4.92	
4,050.0	4.62	41.46	4,047.8	31.8	74.7	-28.1	0.16	0.08	1.68	
4,075.0	4.70	37.11	4,072.8	33.4	76.0	-29.6	1.45	0.32	-17.40	
4,100.0	5.09	32.77	4,097.7	35.1	77.2	-31.3	2.15	1.56	-17.36	
4,125.0	5.16	30.06	4,122.6	37.0	78.4	-33.1	1.01	0.28	-10.84	
4,150.0	5.29	31.92	4,147.5	39.0	79.5	-35.0	0.85	0.52	7.44	
4,175.0	5.21	30.52	4,172.4	40.9	80.7	-36.9	0.60	-0.32	-5.60	
4,200.0	5.23	30.82	4,197.3	42.9	81.9	-38.8	0.14	0.08	1.20	
4,225.0	5.28	30.66	4,222.2	44.9	83.1	-40.7	0.21	0.20	-0.64	
4,250.0	5.31	32.44	4,247.0	46.8	84.3	-42.6	0.67	0.12	7.12	
4,275.0	5.38	30.98	4,271.9	48.8	85.5	-44.5	0.61	0.28	-5.84	
4,300.0	5.33	31.95	4,296.8	50.8	86.7	-46.4	0.41	-0.20	3.88	
4,325.0	5.32	31.20	4,321.7	52.8	87.9	-48.4	0.28	-0.04	-3.00	
4,350.0	5.28	33.36	4,346.6	54.7	89.1	-50.2	0.81	-0.16	8.64	
4,375.0	5.35	32.18	4,371.5	56.7	90.4	-52.1	0.52	0.28	-4.72	
4,400.0	5.17	33.70	4,396.4	58.6	91.6	-54.0	0.91	-0.72	6.08	
4,425.0	5.23	32.34	4,421.3	60.5	92.9	-55.8	0.55	0.24	-5.44	
4,450.0	5.11	34.51	4,446.2	62.4	94.1	-57.6	0.92	-0.48	8.68	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)	
4,475.0	5.14	34.02	4,471.1	64.2	95.4	-59.4	0.21	0.12	-1.96	
4,500.0	5.04	32.73	4,496.0	66.1	96.6	-61.2	0.61	-0.40	-5.16	
4,525.0	4.97	34.33	4,520.9	67.9	97.8	-63.0	0.62	-0.28	6.40	
4,550.0	4.89	34.20	4,545.8	69.7	99.0	-64.7	0.32	-0.32	-0.52	
4,575.0	4.73	36.65	4,570.7	71.4	100.2	-66.3	1.04	-0.64	9.80	
4,600.0	4.67	36.19	4,595.6	73.0	101.4	-67.9	0.28	-0.24	-1.84	
4,625.0	4.49	37.85	4,620.6	74.6	102.6	-69.4	0.89	-0.72	6.64	
4,650.0	4.40	39.10	4,645.5	76.1	103.9	-70.9	0.53	-0.36	5.00	
4,675.0	4.32	39.63	4,670.4	77.6	105.1	-72.3	0.36	-0.32	2.12	
4,700.0	4.07	39.56	4,695.3	79.0	106.2	-73.7	1.00	-1.00	-0.28	
4,725.0	3.95	38.72	4,720.3	80.4	107.3	-75.0	0.53	-0.48	-3.36	
4,750.0	3.90	41.47	4,745.2	81.7	108.4	-76.2	0.78	-0.20	11.00	
4,775.0	3.95	38.37	4,770.2	83.0	109.5	-77.5	0.87	0.20	-12.40	
4,800.0	4.09	29.03	4,795.1	84.4	110.5	-78.9	2.68	0.56	-37.36	
4,825.0	4.27	23.44	4,820.0	86.1	111.3	-80.5	1.78	0.72	-22.36	
4,850.0	4.24	20.65	4,845.0	87.8	112.0	-82.1	0.84	-0.12	-11.16	
4,875.0	4.25	17.80	4,869.9	89.5	112.6	-83.9	0.84	0.04	-11.40	
4,900.0	4.11	19.22	4,894.8	91.3	113.2	-85.6	0.70	-0.56	5.68	
4,925.0	4.12	20.15	4,919.8	93.0	113.8	-87.2	0.27	0.04	3.72	
4,950.0	4.05	20.58	4,944.7	94.6	114.4	-88.9	0.31	-0.28	1.72	
4,975.0	3.93	19.19	4,969.6	96.3	115.0	-90.5	0.62	-0.48	-5.56	
5,000.0	3.91	18.29	4,994.6	97.9	115.5	-92.0	0.26	-0.08	-3.60	
5,025.0	3.82	20.42	5,019.5	99.5	116.1	-93.6	0.68	-0.36	8.52	
5,050.0	3.72	18.99	5,044.5	101.0	116.7	-95.1	0.55	-0.40	-5.72	
5,075.0	3.71	17.23	5,069.4	102.6	117.2	-96.6	0.46	-0.04	-7.04	
5,100.0	3.72	20.03	5,094.4	104.1	117.7	-98.1	0.73	0.04	11.20	
5,125.0	3.50	19.98	5,119.3	105.6	118.2	-99.6	0.88	-0.88	-0.20	
5,150.0	3.55	19.06	5,144.3	107.0	118.7	-101.0	0.30	0.20	-3.68	
5,175.0	3.57	19.01	5,169.2	108.5	119.2	-102.5	0.08	0.08	-0.20	
5,200.0	3.32	19.92	5,194.2	109.9	119.7	-103.8	1.02	-1.00	3.64	
5,225.0	3.35	20.96	5,219.1	111.3	120.2	-105.2	0.27	0.12	4.16	
5,250.0	3.21	19.48	5,244.1	112.6	120.7	-106.5	0.65	-0.56	-5.92	
5,275.0	3.21	21.60	5,269.1	113.9	121.2	-107.8	0.47	0.00	8.48	
5,300.0	3.04	22.20	5,294.0	115.2	121.7	-109.0	0.69	-0.68	2.40	
5,325.0	3.06	23.10	5,319.0	116.4	122.2	-110.2	0.21	0.08	3.60	
5,350.0	2.96	23.13	5,343.9	117.6	122.8	-111.4	0.40	-0.40	0.12	
5,375.0	2.89	24.05	5,368.9	118.8	123.3	-112.5	0.34	-0.28	3.68	
5,400.0	2.88	24.92	5,393.9	119.9	123.8	-113.7	0.18	-0.04	3.48	
5,425.0	2.79	25.15	5,418.9	121.1	124.3	-114.8	0.36	-0.36	0.92	
5,450.0	2.77	22.17	5,443.8	122.2	124.8	-115.8	0.58	-0.08	-11.92	
5,475.0	2.81	28.56	5,468.8	123.3	125.3	-116.9	1.25	0.16	25.56	
5,500.0	2.72	26.23	5,493.8	124.3	125.9	-118.0	0.58	-0.36	-9.32	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)	
5,525.0	2.69	26.81	5,518.7	125.4	126.4	-119.0	0.16	-0.12	2.32	
5,550.0	2.64	29.46	5,543.7	126.4	127.0	-120.0	0.53	-0.20	10.60	
5,575.0	2.60	28.90	5,568.7	127.4	127.5	-120.9	0.19	-0.16	-2.24	
5,600.0	2.63	29.79	5,593.7	128.4	128.1	-121.9	0.20	0.12	3.56	
5,625.0	2.62	28.07	5,618.6	129.4	128.6	-122.9	0.32	-0.04	-6.88	
5,650.0	2.53	30.96	5,643.6	130.4	129.2	-123.8	0.63	-0.36	11.56	
5,675.0	2.58	28.69	5,668.6	131.4	129.7	-124.8	0.45	0.20	-9.08	
5,700.0	2.47	29.11	5,693.6	132.3	130.3	-125.7	0.45	-0.44	1.68	
5,725.0	2.56	29.03	5,718.5	133.3	130.8	-126.6	0.36	0.36	-0.32	
5,750.0	2.43	27.74	5,743.5	134.2	131.3	-127.6	0.57	-0.52	-5.16	
5,775.0	2.73	26.71	5,768.5	135.2	131.8	-128.5	1.21	1.20	-4.12	
5,800.0	3.06	17.80	5,793.5	136.4	132.3	-129.7	2.23	1.32	-35.64	
5,825.0	3.27	17.26	5,818.4	137.7	132.7	-131.0	0.85	0.84	-2.16	
5,850.0	3.28	16.37	5,843.4	139.1	133.1	-132.3	0.21	0.04	-3.56	
5,875.0	3.18	17.37	5,868.3	140.4	133.5	-133.7	0.46	-0.40	4.00	
5,900.0	3.20	15.45	5,893.3	141.8	133.9	-135.0	0.43	0.08	-7.68	
5,925.0	3.12	16.77	5,918.3	143.1	134.3	-136.3	0.43	-0.32	5.28	
5,950.0	2.82	13.96	5,943.2	144.3	134.7	-137.5	1.33	-1.20	-11.24	
5,975.0	2.85	12.57	5,968.2	145.5	134.9	-138.7	0.30	0.12	-5.56	
6,000.0	2.49	11.96	5,993.2	146.7	135.2	-139.8	1.44	-1.44	-2.44	
6,025.0	2.38	11.40	6,018.1	147.7	135.4	-140.8	0.45	-0.44	-2.24	
6,050.0	2.40	4.84	6,043.1	148.8	135.6	-141.9	1.10	0.08	-26.24	
6,075.0	2.25	7.42	6,068.1	149.8	135.7	-142.9	0.73	-0.60	10.32	
6,100.0	2.03	5.44	6,093.1	150.7	135.8	-143.8	0.93	-0.88	-7.92	
6,125.0	1.88	1.97	6,118.1	151.5	135.8	-144.6	0.76	-0.60	-13.88	
6,150.0	1.72	359.99	6,143.1	152.3	135.8	-145.4	0.69	-0.64	-7.92	
6,175.0	1.55	355.51	6,168.0	153.0	135.8	-146.1	0.85	-0.68	-17.92	
6,200.0	1.37	356.01	6,193.0	153.7	135.8	-146.8	0.72	-0.72	2.00	
6,225.0	1.22	2.71	6,218.0	154.2	135.8	-147.3	0.85	-0.60	26.80	
6,250.0	1.64	12.52	6,243.0	154.9	135.8	-147.9	1.94	1.68	39.24	
6,275.0	1.80	21.19	6,268.0	155.6	136.1	-148.6	1.22	0.64	34.68	
6,300.0	1.91	18.74	6,293.0	156.3	136.3	-149.4	0.54	0.44	-9.80	
6,325.0	2.40	18.03	6,318.0	157.2	136.6	-150.3	1.96	1.96	-2.84	
6,350.0	3.00	15.13	6,343.0	158.3	137.0	-151.4	2.46	2.40	-11.60	
6,375.0	3.02	15.76	6,367.9	159.6	137.3	-152.6	0.15	0.08	2.52	
6,400.0	3.01	14.12	6,392.9	160.9	137.7	-153.9	0.35	-0.04	-6.56	
6,425.0	3.05	13.05	6,417.9	162.2	138.0	-155.1	0.28	0.16	-4.28	
6,450.0	2.91	8.73	6,442.8	163.4	138.2	-156.4	1.06	-0.56	-17.28	
6,475.0	2.73	9.24	6,467.8	164.7	138.4	-157.6	0.73	-0.72	2.04	
6,500.0	2.65	5.99	6,492.8	165.8	138.6	-158.8	0.69	-0.32	-13.00	
6,525.0	2.65	6.90	6,517.7	167.0	138.7	-159.9	0.17	0.00	3.64	
6,550.0	2.63	3.82	6,542.7	168.1	138.8	-161.0	0.57	-0.08	-12.32	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)	
6,575.0	2.51	4.02	6,567.7	169.2	138.9	-162.2	0.48	-0.48	0.80	
6,600.0	2.38	6.23	6,592.7	170.3	139.0	-163.2	0.64	-0.52	8.84	
6,625.0	2.21	1.65	6,617.6	171.3	139.0	-164.2	1.00	-0.68	-18.32	
6,650.0	1.99	356.18	6,642.6	172.2	139.0	-165.1	1.19	-0.88	-21.88	
6,675.0	1.83	358.06	6,667.6	173.0	139.0	-165.9	0.69	-0.64	7.52	
6,700.0	1.99	356.25	6,692.6	173.9	138.9	-166.8	0.68	0.64	-7.24	
6,725.0	1.90	351.41	6,717.6	174.7	138.9	-167.6	0.75	-0.36	-19.36	
6,750.0	1.85	351.19	6,742.6	175.5	138.7	-168.4	0.20	-0.20	-0.88	
6,775.0	2.18	349.01	6,767.6	176.4	138.6	-169.3	1.35	1.32	-8.72	
6,800.0	1.91	349.35	6,792.5	177.3	138.4	-170.2	1.08	-1.08	1.36	
6,825.0	1.98	350.65	6,817.5	178.1	138.3	-171.0	0.33	0.28	5.20	
6,850.0	1.87	349.50	6,842.5	178.9	138.1	-171.9	0.47	-0.44	-4.60	
6,875.0	1.81	353.89	6,867.5	179.7	138.0	-172.7	0.61	-0.24	17.56	
6,900.0	1.86	348.02	6,892.5	180.5	137.9	-173.5	0.78	0.20	-23.48	
6,925.0	2.12	348.78	6,917.5	181.4	137.7	-174.3	1.05	1.04	3.04	
6,950.0	2.20	351.67	6,942.4	182.3	137.5	-175.3	0.54	0.32	11.56	
6,975.0	2.38	349.60	6,967.4	183.3	137.4	-176.2	0.79	0.72	-8.28	
7,000.0	2.55	351.94	6,992.4	184.3	137.2	-177.3	0.79	0.68	9.36	
7,025.0	2.54	355.57	7,017.4	185.4	137.1	-178.4	0.65	-0.04	14.52	
7,050.0	2.51	0.94	7,042.4	186.5	137.0	-179.5	0.95	-0.12	21.48	
7,075.0	2.57	5.24	7,067.3	187.6	137.1	-180.6	0.80	0.24	17.20	
7,100.0	2.52	8.26	7,092.3	188.7	137.2	-181.7	0.57	-0.20	12.08	
7,125.0	2.60	10.96	7,117.3	189.8	137.4	-182.8	0.58	0.32	10.80	
7,150.0	2.61	13.01	7,142.3	191.0	137.7	-183.9	0.37	0.04	8.20	
7,175.0	2.74	15.71	7,167.2	192.1	138.0	-185.0	0.72	0.52	10.80	
7,200.0	2.72	19.32	7,192.2	193.2	138.3	-186.1	0.69	-0.08	14.44	
7,209.0	2.82	16.07	7,201.2	193.6	138.4	-186.5	2.07	1.11	-36.11	
TIE ON										
7,298.0	2.82	22.36	7,290.1	197.8	139.9	-190.6	0.35	0.00	7.07	
First MWD Svy @ 7298'MD										
7,328.0	2.49	97.45	7,320.1	198.4	140.8	-191.2	10.82	-1.10	250.30	
7,358.0	4.85	137.71	7,350.0	197.3	142.3	-190.1	11.20	7.87	134.20	
7,388.0	6.71	144.84	7,379.8	195.0	144.2	-187.6	6.63	6.20	23.77	
7,420.0	10.04	146.10	7,411.5	191.1	146.8	-183.6	10.42	10.41	3.94	
7,450.0	13.33	147.88	7,440.9	186.0	150.1	-178.4	11.03	10.97	5.93	
7,477.0	16.55	149.16	7,467.0	180.1	153.7	-172.3	11.99	11.93	4.74	
7,509.0	20.60	149.08	7,497.3	171.3	159.0	-163.3	12.66	12.66	-0.25	
7,539.0	23.56	148.94	7,525.1	161.7	164.8	-153.3	9.87	9.87	-0.47	
7,567.0	25.72	149.23	7,550.5	151.7	170.8	-143.0	7.73	7.71	1.04	
7,599.0	28.72	148.61	7,579.0	139.1	178.3	-130.1	9.42	9.38	-1.94	
7,629.0	31.54	149.63	7,604.9	126.2	186.0	-116.8	9.55	9.40	3.40	
7,657.0	34.31	150.74	7,628.4	113.0	193.6	-103.3	10.12	9.89	3.96	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)
7,688.0	37.86	151.89	7,653.5	97.0	202.4	-86.8	11.66	11.45	3.71
7,718.0	40.77	152.46	7,676.7	80.2	211.2	-69.6	9.77	9.70	1.90
7,745.0	43.50	153.53	7,696.7	64.0	219.5	-53.1	10.45	10.11	3.96
7,777.0	47.04	154.07	7,719.2	43.6	229.5	-32.2	11.13	11.06	1.69
7,807.0	48.42	153.47	7,739.4	23.7	239.3	-11.8	4.83	4.60	-2.00
7,835.0	49.97	151.77	7,757.7	4.9	249.0	7.4	7.19	5.54	-6.07
7,865.0	53.50	150.47	7,776.3	-15.7	260.4	28.6	12.25	11.77	-4.33
7,895.0	55.16	149.92	7,793.8	-36.9	272.5	50.3	5.73	5.53	-1.83
7,924.0	57.71	150.09	7,809.8	-57.8	284.6	71.8	8.81	8.79	0.59
7,954.0	62.30	150.11	7,824.8	-80.3	297.6	94.9	15.30	15.30	0.07
7,984.0	63.95	150.08	7,838.4	-103.5	310.9	118.8	5.50	5.50	-0.10
8,014.0	65.62	150.61	7,851.1	-127.1	324.3	143.0	5.79	5.57	1.77
8,048.0	69.98	151.47	7,864.0	-154.6	339.6	171.2	13.04	12.82	2.53
8,078.0	71.41	151.53	7,873.9	-179.5	353.1	196.8	4.77	4.77	0.20
8,103.0	73.38	151.93	7,881.5	-200.5	364.4	218.3	8.03	7.88	1.60
8,133.0	75.44	152.84	7,889.5	-226.1	377.8	244.5	7.46	6.87	3.03
8,163.0	75.90	152.89	7,896.9	-252.0	391.0	271.0	1.54	1.53	0.17
8,193.0	77.60	152.99	7,903.8	-278.0	404.3	297.6	5.68	5.67	0.33
8,223.0	81.76	154.29	7,909.2	-304.4	417.4	324.7	14.51	13.87	4.33
8,253.0	85.82	155.17	7,912.4	-331.4	430.1	352.3	13.84	13.53	2.93
8,283.0	89.24	156.57	7,913.7	-358.7	442.4	380.2	12.32	11.40	4.67
8,372.0	90.81	160.42	7,913.7	-441.5	475.0	464.5	4.67	1.76	4.33
8,462.0	88.88	165.15	7,913.9	-527.4	501.6	551.6	5.68	-2.14	5.26
8,552.0	88.94	170.21	7,915.6	-615.3	520.8	640.4	5.62	0.07	5.62
8,641.0	90.08	170.03	7,916.4	-703.0	536.1	728.7	1.30	1.28	-0.20
8,731.0	89.33	172.87	7,916.9	-792.0	549.5	818.2	3.26	-0.83	3.16
8,820.0	88.15	177.18	7,918.8	-880.6	557.2	907.1	5.02	-1.33	4.84
8,909.0	87.20	179.85	7,922.4	-969.5	559.5	996.0	3.18	-1.07	3.00
8,999.0	88.38	179.52	7,925.9	-1,059.4	560.0	1,085.9	1.36	1.31	-0.37
9,088.0	89.16	178.47	7,927.8	-1,148.4	561.5	1,174.8	1.47	0.88	-1.18
9,178.0	90.70	178.31	7,927.9	-1,238.4	564.1	1,264.8	1.72	1.71	-0.18
9,267.0	89.52	180.41	7,927.8	-1,327.3	565.1	1,353.7	2.71	-1.33	2.36
9,357.0	89.41	179.73	7,928.6	-1,417.3	565.0	1,443.6	0.77	-0.12	-0.76
9,447.0	91.01	178.75	7,928.3	-1,507.3	566.1	1,533.5	2.08	1.78	-1.09
9,536.0	89.78	181.03	7,927.7	-1,596.3	566.3	1,622.4	2.91	-1.38	2.56
9,626.0	90.62	181.23	7,927.3	-1,686.3	564.5	1,712.2	0.96	0.93	0.22
9,715.0	89.72	180.68	7,927.1	-1,775.3	563.1	1,801.0	1.19	-1.01	-0.62
9,805.0	88.66	179.81	7,928.4	-1,865.3	562.7	1,890.8	1.52	-1.18	-0.97
9,894.0	87.53	181.19	7,931.3	-1,954.2	561.9	1,979.6	2.00	-1.27	1.55
9,983.0	88.32	181.24	7,934.5	-2,043.1	560.0	2,068.4	0.89	0.89	0.06
10,073.0	93.06	180.91	7,933.5	-2,133.1	558.3	2,158.1	5.28	5.27	-0.37
10,091.0	93.70	180.76	7,932.4	-2,151.1	558.1	2,176.1	3.65	3.56	-0.83

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)
10,180.0	88.91	183.18	7,930.4	-2,239.9	555.0	2,264.7	6.03	-5.38	2.72
10,270.0	88.49	183.49	7,932.4	-2,329.8	549.8	2,354.1	0.58	-0.47	0.34
10,359.0	89.08	183.90	7,934.3	-2,418.6	544.0	2,442.5	0.81	0.66	0.46
10,449.0	87.67	184.70	7,936.8	-2,508.3	537.3	2,531.8	1.80	-1.57	0.89
10,538.0	87.93	185.19	7,940.3	-2,596.9	529.6	2,619.9	0.62	0.29	0.55
10,628.0	86.81	184.19	7,944.4	-2,686.5	522.3	2,709.0	1.67	-1.24	-1.11
10,717.0	87.06	183.02	7,949.1	-2,775.2	516.7	2,797.4	1.34	0.28	-1.31
10,806.0	88.15	181.18	7,952.9	-2,864.0	513.4	2,885.9	2.40	1.22	-2.07
10,897.0	89.02	181.82	7,955.1	-2,955.0	511.0	2,976.7	1.19	0.96	0.70
10,987.0	89.44	180.76	7,956.3	-3,044.9	509.0	3,066.4	1.27	0.47	-1.18
11,078.0	90.59	179.73	7,956.3	-3,135.9	508.6	3,157.3	1.70	1.26	-1.13
11,168.0	91.18	179.31	7,954.9	-3,225.9	509.4	3,247.2	0.80	0.66	-0.47
11,260.0	90.90	178.91	7,953.2	-3,317.9	510.8	3,339.1	0.53	-0.30	-0.43
11,349.0	90.36	178.66	7,952.3	-3,406.9	512.7	3,428.1	0.67	-0.61	-0.28
11,439.0	90.90	178.65	7,951.3	-3,496.8	514.8	3,518.0	0.60	0.60	-0.01
11,529.0	91.57	178.83	7,949.3	-3,586.8	516.8	3,608.0	0.77	0.74	0.20
11,619.0	91.04	179.26	7,947.3	-3,676.8	518.3	3,697.9	0.76	-0.59	0.48
11,713.0	91.65	179.22	7,945.1	-3,770.7	519.5	3,791.8	0.65	0.65	-0.04
11,802.0	92.16	179.85	7,942.1	-3,859.7	520.3	3,880.7	0.91	0.57	0.71
11,892.0	92.02	179.17	7,938.8	-3,949.6	521.0	3,970.6	0.77	-0.16	-0.76
11,982.0	89.83	177.52	7,937.4	-4,039.5	523.6	4,060.5	3.05	-2.43	-1.83
12,072.0	88.43	177.19	7,938.8	-4,129.4	527.8	4,150.5	1.60	-1.56	-0.37
12,162.0	89.13	177.07	7,940.7	-4,219.3	532.3	4,240.5	0.79	0.78	-0.13
12,252.0	88.40	178.41	7,942.6	-4,309.2	535.8	4,330.5	1.70	-0.81	1.49
12,341.0	88.65	178.38	7,944.9	-4,398.1	538.3	4,419.4	0.28	0.28	-0.03
12,430.0	89.19	178.63	7,946.6	-4,487.1	540.6	4,508.4	0.67	0.61	0.28
12,520.0	89.89	178.84	7,947.3	-4,577.1	542.6	4,598.3	0.81	0.78	0.23
12,609.0	90.42	179.21	7,947.1	-4,666.1	544.1	4,687.3	0.73	0.60	0.42
12,699.0	90.22	180.05	7,946.6	-4,756.1	544.7	4,777.2	0.96	-0.22	0.93
12,788.0	90.67	179.86	7,945.9	-4,845.1	544.8	4,866.1	0.55	0.51	-0.21
12,877.0	91.54	179.62	7,944.1	-4,934.0	545.2	4,955.0	1.01	0.98	-0.27
12,967.0	91.46	179.71	7,941.8	-5,024.0	545.7	5,044.9	0.13	-0.09	0.10
13,052.0	89.80	181.48	7,940.9	-5,109.0	544.8	5,129.7	2.85	-1.95	2.08
13,141.0	89.92	181.66	7,941.1	-5,198.0	542.4	5,218.4	0.24	0.13	0.20
13,231.0	90.70	181.10	7,940.6	-5,287.9	540.2	5,308.2	1.07	0.87	-0.62
13,320.0	89.38	181.95	7,940.5	-5,376.9	537.9	5,396.9	1.76	-1.48	0.96
13,409.0	89.44	181.37	7,941.4	-5,465.8	535.3	5,485.7	0.66	0.07	-0.65
13,499.0	90.39	181.53	7,941.6	-5,555.8	533.0	5,575.4	1.07	1.06	0.18
13,589.0	88.57	182.33	7,942.4	-5,645.8	530.0	5,665.1	2.21	-2.02	0.89
13,678.0	88.94	181.89	7,944.3	-5,734.7	526.7	5,753.7	0.65	0.42	-0.49
13,767.0	89.47	181.00	7,945.6	-5,823.6	524.5	5,842.5	1.16	0.60	-1.00
13,857.0	90.64	181.15	7,945.5	-5,913.6	522.8	5,932.3	1.31	1.30	0.17

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)	
13,946.0	88.29	180.32	7,946.3	-6,002.6	521.6	6,021.1	2.80	-2.64	-0.93	
14,036.0	88.40	179.76	7,948.9	-6,092.6	521.6	6,110.9	0.63	0.12	-0.62	
14,125.0	90.53	179.22	7,949.7	-6,181.6	522.4	6,199.8	2.47	2.39	-0.61	
14,215.0	91.79	180.01	7,947.9	-6,271.5	523.0	6,289.7	1.65	1.40	-0.88	
14,304.0	91.09	179.95	7,945.7	-6,360.5	523.0	6,378.6	0.79	-0.79	-0.07	
14,393.0	92.02	179.76	7,943.3	-6,449.5	523.2	6,467.5	1.07	1.04	-0.21	
14,483.0	89.50	179.37	7,942.1	-6,539.4	523.9	6,557.4	2.83	-2.80	-0.43	
14,572.0	89.50	178.62	7,942.8	-6,628.4	525.5	6,646.3	0.84	0.00	-0.84	
14,662.0	90.64	178.64	7,942.7	-6,718.4	527.6	6,736.3	1.27	1.27	0.02	
14,751.0	91.74	178.85	7,940.9	-6,807.4	529.6	6,825.2	1.26	1.24	0.24	
14,840.0	93.42	179.44	7,936.9	-6,896.3	530.9	6,914.1	2.00	1.89	0.66	
14,930.0	90.11	181.00	7,934.1	-6,986.2	530.6	7,003.9	4.07	-3.68	1.73	
15,019.0	90.92	180.63	7,933.3	-7,075.2	529.3	7,092.7	1.00	0.91	-0.42	
15,108.0	88.60	180.67	7,933.7	-7,164.2	528.3	7,181.5	2.61	-2.61	0.04	
15,198.0	89.08	180.47	7,935.5	-7,254.2	527.4	7,271.4	0.58	0.53	-0.22	
15,287.0	89.80	180.21	7,936.4	-7,343.1	526.9	7,360.2	0.86	0.81	-0.29	
15,377.0	90.90	180.29	7,935.8	-7,433.1	526.5	7,450.1	1.23	1.22	0.09	
15,466.0	89.24	180.64	7,935.7	-7,522.1	525.7	7,538.9	1.91	-1.87	0.39	
15,556.0	90.08	180.92	7,936.2	-7,612.1	524.5	7,628.8	0.98	0.93	0.31	
15,646.0	89.36	180.91	7,936.7	-7,702.1	523.1	7,718.6	0.80	-0.80	-0.01	
15,735.0	90.39	181.18	7,936.9	-7,791.1	521.5	7,807.4	1.20	1.16	0.30	
15,825.0	89.38	181.46	7,937.1	-7,881.1	519.4	7,897.1	1.16	-1.12	0.31	
15,914.0	90.48	181.75	7,937.2	-7,970.0	516.9	7,985.8	1.28	1.24	0.33	
16,004.0	88.43	180.63	7,938.0	-8,060.0	515.0	8,075.6	2.60	-2.28	-1.24	
16,093.0	89.47	180.99	7,939.7	-8,149.0	513.8	8,164.4	1.24	1.17	0.40	
16,182.0	90.70	180.91	7,939.5	-8,238.0	512.3	8,253.2	1.38	1.38	-0.09	
16,272.0	89.33	180.29	7,939.5	-8,328.0	511.3	8,343.1	1.67	-1.52	-0.69	
16,361.0	91.01	180.54	7,939.2	-8,416.9	510.7	8,431.9	1.91	1.89	0.28	
16,451.0	92.41	180.46	7,936.6	-8,506.9	509.9	8,521.7	1.56	1.56	-0.09	
16,540.0	90.17	179.85	7,934.5	-8,595.9	509.7	8,610.6	2.61	-2.52	-0.69	
16,630.0	88.68	178.91	7,935.5	-8,685.9	510.6	8,700.5	1.96	-1.66	-1.04	
16,720.0	89.30	178.64	7,937.0	-8,775.8	512.6	8,790.4	0.75	0.69	-0.30	
16,809.0	90.73	178.48	7,937.0	-8,864.8	514.8	8,879.4	1.62	1.61	-0.18	
16,899.0	91.99	178.54	7,934.9	-8,954.7	517.1	8,969.4	1.40	1.40	0.07	
16,988.0	90.03	178.41	7,933.3	-9,043.7	519.5	9,058.3	2.21	-2.20	-0.15	
17,077.0	89.16	178.89	7,933.9	-9,132.7	521.6	9,147.3	1.12	-0.98	0.54	
17,167.0	89.47	177.35	7,935.0	-9,222.6	524.6	9,237.3	1.75	0.34	-1.71	
17,257.0	90.78	177.44	7,934.8	-9,312.5	528.7	9,327.3	1.46	1.46	0.10	
17,346.0	89.92	177.74	7,934.3	-9,401.4	532.4	9,416.3	1.02	-0.97	0.34	
17,435.0	88.43	180.35	7,935.6	-9,490.4	533.9	9,505.2	3.38	-1.67	2.93	
17,524.0	89.16	180.87	7,937.4	-9,579.4	532.9	9,594.0	1.01	0.82	0.58	
17,614.0	90.81	180.69	7,937.5	-9,669.4	531.7	9,683.8	1.84	1.83	-0.20	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well SRO 5 STATE COM#504H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Site:	ATLAS	MD Reference:	RKB = 3007.4' + 30' @ 3037.4usft (ENSIGN 777)
Well:	SRO 5 STATE COM #504H	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)
17,703.0	92.07	180.84	7,935.2	-9,758.3	530.5	9,772.6	1.43	1.42	0.17
17,793.0	90.28	181.43	7,933.4	-9,848.3	528.7	9,862.4	2.09	-1.99	0.66
17,882.0	91.26	181.76	7,932.2	-9,937.2	526.3	9,951.1	1.16	1.10	0.37
17,972.0	92.55	181.50	7,929.2	-10,027.1	523.7	10,040.8	1.46	1.43	-0.29
18,061.0	90.84	181.78	7,926.6	-10,116.1	521.2	10,129.5	1.95	-1.92	0.31
18,099.0	91.15	182.07	7,925.9	-10,154.0	519.9	10,167.3	1.12	0.82	0.76
Last MWD Svy @ 18099'MD									
18,107.7	91.15	182.07	7,925.7	-10,162.7	519.6	10,176.0	0.00	0.00	0.00
LTP @ 18107.7'MD / 7925.7'TVD									
18,157.0	91.15	182.07	7,924.7	-10,212.0	517.8	10,225.1	0.00	0.00	0.00
PTB @ 18157'MD / 7924.7'TVD									

Design Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	
LTP-SRO 5 STATE C	- Shape	0.00	0.00	7,926.0	-10,163.8	506.7	381,992.40	571,782.60	32° 3' 0.001 N 104° 6' 5.929 W
- actual wellpath misses target center by 12.9usft at 18107.7usft MD (7925.7 TVD, -10162.7 N, 519.6 E)									
- Point									
PBHL-SRO 5 STATE	- Shape	0.09	0.30	7,930.0	-10,213.8	506.4	381,942.40	571,782.30	32° 2' 59.506 N 104° 6' 5.934 W
- actual wellpath misses target center by 12.7usft at 18157.0usft MD (7924.7 TVD, -10212.0 N, 517.8 E)									
- Rectangle (sides W100.0 H4,925.0 D20.0)									
FTP-SRO 5 STATE C	- Shape	0.00	0.00	7,932.0	214.9	562.3	392,371.10	571,838.20	32° 4' 42.713 N 104° 6' 5.024 W
- actual wellpath misses target center by 407.6usft at 7910.4usft MD (7802.4 TVD, -47.9 N, 278.9 E)									
- Circle (radius 50.0)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,209.0	7,201.2	193.6	138.4	TIE ON
7,298.0	7,290.1	197.8	139.9	First MWD Svy @ 7298'MD
18,099.0	7,925.9	-10,154.0	519.9	Last MWD Svy @ 18099'MD
18,107.7	7,925.7	-10,162.7	519.6	LTP @ 18107.7'MD / 7925.7'TVD
18,157.0	7,924.7	-10,212.0	517.8	PTB @ 18157'MD / 7924.7'TVD

Checked By: _____ Approved By: _____ Date: _____