

30-015-44189

PEER OIL CONSERVATION

LOTESIA DISTRICT

MAR 19 2018

COG

SURVEY REPORT

ROADSTER STATE COM #1H

ENSIGN #155

1/2/2018



Scientific Drilling

The **Ultimate Partner** In Wellbore Placement

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.08	11.94	100.00	-0.06	0.06	0.01	0.08	0.07	11.94
125.00	0.14	200.10	125.00	-0.05	0.05	0.01	0.87	0.05	6.97
150.00	0.12	330.21	150.00	-0.04	0.04	-0.02	0.94	0.05	338.53
175.00	0.15	305.72	175.00	-0.08	0.08	-0.06	0.27	0.10	326.17
200.00	0.15	294.57	200.00	-0.12	0.12	-0.11	0.12	0.16	316.15
225.00	0.20	265.74	225.00	-0.13	0.13	-0.19	0.41	0.23	304.41
250.00	0.34	263.49	250.00	-0.11	0.12	-0.30	0.54	0.33	290.87
275.00	0.55	255.18	275.00	-0.07	0.08	-0.49	0.86	0.50	278.90
300.00	0.48	261.27	300.00	-0.02	0.03	-0.71	0.35	0.71	272.50
325.00	0.69	256.59	325.00	0.03	-0.02	-0.96	0.86	0.96	268.84
350.00	0.70	274.49	349.99	0.05	-0.04	-1.26	0.86	1.26	268.08
375.00	0.73	279.58	374.99	0.02	0.00	-1.57	0.29	1.57	269.87
400.00	0.68	281.83	399.99	-0.04	0.05	-1.87	0.23	1.87	271.64
425.00	0.76	276.76	424.99	-0.08	0.10	-2.18	0.40	2.18	272.72
450.00	0.72	275.76	449.99	-0.12	0.14	-2.50	0.16	2.50	273.17
475.00	0.70	284.05	474.98	-0.16	0.19	-2.80	0.42	2.81	273.90
500.00	0.72	283.60	499.98	-0.24	0.27	-3.10	0.09	3.11	274.88
525.00	0.75	287.50	524.98	-0.32	0.35	-3.41	0.24	3.43	275.88
550.00	0.71	288.66	549.98	-0.41	0.45	-3.71	0.16	3.74	276.91
575.00	0.71	295.59	574.98	-0.53	0.57	-4.00	0.34	4.04	278.06
600.00	0.68	296.41	599.97	-0.66	0.70	-4.27	0.14	4.33	279.29
625.00	0.68	300.12	624.97	-0.80	0.84	-4.54	0.18	4.61	280.49
650.00	0.61	303.07	649.97	-0.94	0.99	-4.78	0.31	4.88	281.68
675.00	0.67	316.12	674.97	-1.12	1.16	-4.99	0.62	5.12	283.14
700.00	0.65	306.01	699.97	-1.30	1.35	-5.20	0.47	5.38	284.57
725.00	0.68	311.05	724.97	-1.48	1.53	-5.43	0.27	5.64	285.77
750.00	0.71	312.16	749.96	-1.68	1.74	-5.66	0.12	5.92	287.05
775.00	0.67	312.48	774.96	-1.88	1.94	-5.88	0.16	6.19	288.24
800.00	0.70	315.67	799.96	-2.09	2.15	-6.09	0.18	6.46	289.40
825.00	0.72	316.41	824.96	-2.31	2.37	-6.31	0.11	6.74	290.57
850.00	0.75	318.08	849.96	-2.54	2.60	-6.52	0.13	7.02	291.75

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
875.00	0.71	311.32	874.96	-2.76	2.83	-6.75	0.38	7.32	292.72
900.00	0.63	310.03	899.95	-2.95	3.02	-6.97	0.31	7.59	293.40
925.00	0.55	314.53	924.95	-3.12	3.19	-7.16	0.38	7.84	294.00
950.00	0.46	316.68	949.95	-3.28	3.34	-7.31	0.34	8.04	294.57
975.00	0.40	320.38	974.95	-3.42	3.49	-7.44	0.26	8.22	295.10
1000.00	0.29	307.88	999.95	-3.52	3.59	-7.55	0.54	8.36	295.46
1025.00	0.34	311.48	1024.95	-3.61	3.68	-7.65	0.23	8.49	295.69
1050.00	0.37	317.62	1049.95	-3.72	3.79	-7.76	0.19	8.64	296.03
1075.00	0.40	326.65	1074.95	-3.85	3.92	-7.87	0.26	8.79	296.51
1100.00	0.44	330.16	1099.95	-4.00	4.08	-7.96	0.22	8.95	297.13
1125.00	0.37	320.45	1124.95	-4.15	4.22	-8.06	0.41	9.10	297.66
1150.00	0.39	326.40	1149.95	-4.28	4.36	-8.16	0.18	9.25	298.11
1175.00	0.30	309.72	1174.95	-4.39	4.47	-8.26	0.54	9.39	298.43
1200.00	0.40	295.41	1199.95	-4.47	4.55	-8.38	0.52	9.54	298.48
1225.00	0.35	300.37	1224.95	-4.54	4.62	-8.53	0.24	9.70	298.47
1250.00	0.40	329.64	1249.94	-4.66	4.74	-8.64	0.79	9.85	298.75
1275.00	0.45	331.08	1274.94	-4.82	4.90	-8.73	0.19	10.01	299.31
1300.00	0.41	334.94	1299.94	-4.98	5.07	-8.81	0.19	10.17	299.89
1325.00	0.35	333.06	1324.94	-5.13	5.22	-8.89	0.24	10.30	300.41
1350.00	0.24	341.47	1349.94	-5.25	5.33	-8.94	0.49	10.41	300.83
1375.00	0.24	74.35	1374.94	-5.31	5.40	-8.90	1.39	10.41	301.22
1400.00	0.42	88.96	1399.94	-5.33	5.41	-8.76	0.80	10.30	301.71
1425.00	0.59	85.15	1424.94	-5.35	5.43	-8.54	0.66	10.12	302.43
1450.00	0.86	80.17	1449.94	-5.39	5.47	-8.23	1.14	9.88	303.61
1475.00	1.19	87.78	1474.94	-5.44	5.51	-7.78	1.42	9.54	305.30
1500.00	1.40	91.40	1499.93	-5.45	5.51	-7.22	0.89	9.08	307.38
1525.00	1.47	94.60	1524.92	-5.42	5.48	-6.59	0.44	8.57	309.74
1550.00	1.63	91.29	1549.91	-5.39	5.45	-5.92	0.73	8.04	312.64
1575.00	1.67	93.37	1574.90	-5.37	5.42	-5.19	0.29	7.51	316.20
1600.00	1.63	92.66	1599.89	-5.34	5.38	-4.48	0.19	7.00	320.24
1625.00	1.71	91.48	1624.88	-5.32	5.35	-3.75	0.33	6.53	325.00
1650.00	1.68	90.23	1649.87	-5.31	5.34	-3.01	0.17	6.13	330.61

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS "/100ft	CLOSURE DIST ft	CLOSURE DIR deg
1675.00	1.69	93.39	1674.86	-5.30	5.32	-2.27	0.37	5.78	336.86
1700.00	1.73	92.94	1699.85	-5.26	5.28	-1.53	0.16	5.49	343.84
1725.00	1.78	91.61	1724.84	-5.24	5.25	-0.77	0.26	5.30	351.70
1750.00	1.84	90.74	1749.82	-5.23	5.23	0.02	0.27	5.23	0.25
1775.00	1.94	95.55	1774.81	-5.19	5.19	0.85	0.77	5.25	9.27
1800.00	1.93	93.62	1799.80	-5.13	5.12	1.69	0.27	5.39	18.27
1825.00	1.94	93.70	1824.78	-5.09	5.06	2.53	0.03	5.66	26.58
1850.00	1.95	93.16	1849.77	-5.04	5.01	3.38	0.08	6.05	33.99
1875.00	1.86	94.06	1874.75	-5.00	4.96	4.21	0.35	6.51	40.32
1900.00	1.82	94.46	1899.74	-4.95	4.90	5.01	0.17	7.01	45.65
1925.00	1.99	92.51	1924.73	-4.91	4.85	5.84	0.70	7.59	50.30
1950.00	1.92	88.45	1949.71	-4.91	4.84	6.69	0.61	8.26	54.12
1975.00	1.92	89.36	1974.70	-4.93	4.86	7.53	0.12	8.96	57.17
2000.00	1.80	91.21	1999.68	-4.93	4.86	8.34	0.56	9.65	59.80
2025.00	1.62	90.25	2024.67	-4.93	4.85	9.09	0.73	10.30	61.93
2050.00	1.35	90.58	2049.66	-4.93	4.84	9.73	1.05	10.87	63.56
2075.00	1.13	89.11	2074.66	-4.94	4.84	10.28	0.89	11.36	64.77
2100.00	1.01	90.61	2099.65	-4.94	4.84	10.74	0.50	11.78	65.73
2125.00	0.87	90.45	2124.65	-4.94	4.84	11.15	0.56	12.16	66.54
2150.00	0.85	96.56	2149.65	-4.93	4.82	11.52	0.37	12.49	67.32
2175.00	0.87	92.96	2174.65	-4.90	4.79	11.90	0.24	12.82	68.09
2200.00	0.88	87.72	2199.64	-4.90	4.78	12.28	0.32	13.18	68.71
2225.00	0.86	95.05	2224.64	-4.89	4.78	12.66	0.45	13.53	69.33
2250.00	0.80	100.09	2249.64	-4.85	4.73	13.02	0.37	13.85	70.04
2275.00	0.71	95.87	2274.63	-4.81	4.68	13.34	0.43	14.14	70.66
2300.00	0.69	98.78	2299.63	-4.77	4.64	13.64	0.17	14.41	71.21
2325.00	0.66	97.83	2324.63	-4.73	4.60	13.93	0.11	14.67	71.73
2350.00	0.61	90.00	2349.63	-4.71	4.58	14.21	0.40	14.93	72.13
2375.00	0.70	92.92	2374.63	-4.71	4.57	14.50	0.38	15.20	72.49
2400.00	0.67	84.47	2399.63	-4.72	4.58	14.80	0.42	15.49	72.80
2425.00	0.71	89.68	2424.62	-4.74	4.59	15.10	0.29	15.78	73.07
2450.00	0.73	95.67	2449.62	-4.72	4.58	15.41	0.32	16.07	73.45

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
2475.00	0.70	97.03	2474.62	-4.69	4.54	15.72	0.13	16.36	73.87
2500.00	0.67	92.35	2499.62	-4.67	4.52	16.02	0.26	16.64	74.24
2525.00	0.66	97.54	2524.62	-4.65	4.50	16.31	0.25	16.91	74.59
2550.00	0.71	90.27	2549.62	-4.63	4.48	16.60	0.39	17.20	74.91
2575.00	0.71	90.14	2574.61	-4.63	4.47	16.91	0.02	17.49	75.18
2600.00	0.79	87.86	2599.61	-4.64	4.48	17.24	0.32	17.81	75.43
2625.00	0.71	93.11	2624.61	-4.64	4.48	17.57	0.40	18.13	75.70
2650.00	0.72	90.76	2649.61	-4.64	4.47	17.88	0.12	18.43	75.97
2675.00	0.70	90.98	2674.61	-4.63	4.46	18.19	0.08	18.73	76.21
2700.00	0.72	86.83	2699.60	-4.64	4.47	18.50	0.24	19.03	76.42
2725.00	0.77	87.13	2724.60	-4.66	4.49	18.82	0.20	19.35	76.59
2750.00	0.75	87.38	2749.60	-4.68	4.50	19.15	0.10	19.68	76.77
2775.00	0.73	91.06	2774.60	-4.69	4.51	19.48	0.21	19.99	76.97
2800.00	0.71	97.00	2799.60	-4.67	4.49	19.79	0.31	20.29	77.23
2825.00	0.73	90.14	2824.59	-4.66	4.47	20.10	0.35	20.59	77.47
2850.00	0.73	86.38	2849.59	-4.67	4.48	20.42	0.19	20.90	77.64
2875.00	0.77	91.60	2874.59	-4.68	4.48	20.75	0.31	21.22	77.81
2900.00	0.71	87.43	2899.59	-4.68	4.48	21.07	0.32	21.54	77.99
2925.00	0.72	87.06	2924.58	-4.70	4.50	21.38	0.04	21.85	78.12
2950.00	0.65	91.07	2949.58	-4.71	4.50	21.68	0.35	22.14	78.26
2975.00	0.56	89.54	2974.58	-4.71	4.50	21.94	0.34	22.40	78.40
3000.00	0.54	96.66	2999.58	-4.70	4.49	22.18	0.29	22.63	78.56
3025.00	0.49	74.66	3024.58	-4.71	4.50	22.40	0.81	22.85	78.63
3050.00	0.58	82.59	3049.58	-4.76	4.55	22.63	0.48	23.08	78.63
3075.00	0.63	90.90	3074.58	-4.78	4.56	22.89	0.40	23.34	78.73
3100.00	0.62	87.82	3099.58	-4.78	4.57	23.16	0.14	23.61	78.85
3125.00	0.58	99.00	3124.57	-4.77	4.55	23.43	0.49	23.86	79.01
3150.00	0.52	82.49	3149.57	-4.77	4.55	23.66	0.68	24.10	79.13
3175.00	0.55	90.49	3174.57	-4.78	4.56	23.90	0.32	24.33	79.20
3200.00	0.55	90.10	3199.57	-4.79	4.56	24.14	0.02	24.57	79.31
3225.00	0.60	83.22	3224.57	-4.80	4.57	24.39	0.34	24.81	79.38
3250.00	0.61	89.43	3249.57	-4.82	4.59	24.65	0.26	25.07	79.45

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
3275.00	0.62	92.98	3274.57	-4.82	4.58	24.92	0.16	25.34	79.57
3300.00	0.56	87.26	3299.57	-4.82	4.58	25.18	0.33	25.59	79.68
3325.00	0.54	90.51	3324.56	-4.83	4.59	25.42	0.15	25.83	79.77
3350.00	0.56	86.40	3349.56	-4.84	4.60	25.66	0.18	26.06	79.85
3375.00	0.56	82.89	3374.56	-4.86	4.62	25.90	0.14	26.31	79.89
3400.00	0.63	81.72	3399.56	-4.90	4.65	26.16	0.25	26.57	79.91
3425.00	0.60	85.19	3424.56	-4.93	4.68	26.42	0.18	26.84	79.95
3450.00	0.58	86.38	3449.56	-4.95	4.70	26.68	0.10	27.09	80.00
3475.00	0.56	89.49	3474.56	-4.97	4.71	26.93	0.15	27.34	80.07
3500.00	0.56	81.36	3499.56	-4.99	4.73	27.17	0.32	27.58	80.12
3525.00	0.54	88.47	3524.55	-5.01	4.75	27.41	0.28	27.81	80.16
3550.00	0.55	79.82	3549.55	-5.04	4.78	27.64	0.33	28.05	80.20
3575.00	0.53	86.84	3574.55	-5.07	4.80	27.87	0.27	28.29	80.22
3600.00	0.44	81.75	3599.55	-5.09	4.82	28.08	0.41	28.50	80.25
3625.00	0.54	72.88	3624.55	-5.14	4.87	28.29	0.50	28.71	80.23
3650.00	0.58	75.25	3649.55	-5.21	4.94	28.53	0.20	28.95	80.18
3675.00	0.52	79.60	3674.55	-5.26	4.99	28.76	0.31	29.19	80.15
3700.00	0.50	86.09	3699.55	-5.29	5.02	28.98	0.25	29.41	80.17
3725.00	0.46	81.55	3724.55	-5.32	5.04	29.19	0.22	29.62	80.20
3750.00	0.40	87.16	3749.55	-5.34	5.06	29.37	0.29	29.81	80.22
3775.00	0.41	86.56	3774.54	-5.35	5.07	29.55	0.08	29.98	80.26
3800.00	0.50	80.43	3799.54	-5.37	5.09	29.75	0.41	30.18	80.28
3825.00	0.46	85.77	3824.54	-5.40	5.12	29.96	0.24	30.39	80.30
3850.00	0.49	84.74	3849.54	-5.42	5.14	30.16	0.10	30.60	80.33
3875.00	0.52	85.60	3874.54	-5.44	5.16	30.38	0.12	30.82	80.37
3900.00	0.41	86.09	3899.54	-5.46	5.17	30.58	0.42	31.02	80.40
3925.00	0.32	75.29	3924.54	-5.48	5.19	30.74	0.45	31.18	80.41
3950.00	0.37	80.60	3949.54	-5.52	5.23	30.89	0.23	31.33	80.40
3975.00	0.60	49.63	3974.54	-5.62	5.32	31.07	1.38	31.52	80.28
4000.00	0.42	77.57	3999.54	-5.72	5.43	31.26	1.22	31.73	80.15
4025.00	0.52	67.93	4024.54	-5.79	5.49	31.45	0.49	31.93	80.10
4050.00	0.41	61.30	4049.54	-5.87	5.58	31.63	0.47	32.12	80.00

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
4075.00	0.45	70.28	4074.54	-5.95	5.65	31.81	0.31	32.30	79.92
4100.00	0.45	75.85	4099.53	-6.01	5.71	31.99	0.18	32.50	79.88
4125.00	0.38	76.19	4124.53	-6.06	5.75	32.17	0.28	32.68	79.86
4150.00	0.39	73.49	4149.53	-6.10	5.80	32.33	0.09	32.85	79.83
4175.00	0.38	73.52	4174.53	-6.15	5.85	32.49	0.06	33.02	79.80
4200.00	0.44	66.55	4199.53	-6.22	5.91	32.66	0.33	33.19	79.75
4225.00	0.43	79.02	4224.53	-6.27	5.96	32.84	0.38	33.38	79.71
4250.00	0.35	89.77	4249.53	-6.29	5.98	33.01	0.44	33.55	79.73
4275.00	0.31	68.63	4274.53	-6.32	6.01	33.15	0.52	33.69	79.73
4300.00	0.34	73.37	4299.53	-6.37	6.05	33.29	0.16	33.83	79.69
4325.00	0.34	80.21	4324.53	-6.40	6.09	33.43	0.17	33.98	79.68
4350.00	0.23	75.14	4349.53	-6.43	6.11	33.55	0.48	34.10	79.68
4375.00	0.19	66.71	4374.53	-6.46	6.14	33.64	0.21	34.19	79.65
4400.00	0.16	77.05	4399.53	-6.48	6.17	33.71	0.16	34.27	79.64
4425.00	0.12	37.44	4424.53	-6.51	6.19	33.76	0.41	34.32	79.60
4450.00	0.22	30.10	4449.53	-6.57	6.26	33.80	0.42	34.37	79.51
4475.00	0.09	82.73	4474.53	-6.62	6.30	33.84	0.74	34.42	79.45
4500.00	0.04	351.93	4499.53	-6.63	6.31	33.86	0.38	34.44	79.44
4525.00	0.09	341.01	4524.53	-6.66	6.34	33.85	0.18	34.44	79.39
4550.00	0.13	50.55	4549.53	-6.69	6.37	33.87	0.50	34.46	79.34
4575.00	0.07	118.90	4574.53	-6.70	6.38	33.90	0.48	34.50	79.34
4600.00	0.04	326.30	4599.53	-6.70	6.38	33.91	0.44	34.51	79.34
4625.00	0.09	356.32	4624.53	-6.73	6.41	33.91	0.25	34.51	79.29
4650.00	0.17	14.32	4649.53	-6.79	6.47	33.91	0.34	34.52	79.20
4675.00	0.06	33.87	4674.53	-6.83	6.51	33.93	0.47	34.55	79.13
4700.00	0.05	173.37	4699.53	-6.83	6.51	33.94	0.39	34.56	79.13
4725.00	0.07	357.94	4724.53	-6.84	6.52	33.94	0.48	34.56	79.13
4750.00	0.11	292.63	4749.53	-6.86	6.54	33.92	0.41	34.54	79.08
4775.00	0.08	320.56	4774.53	-6.89	6.57	33.88	0.21	34.51	79.03
4800.00	0.06	245.54	4799.53	-6.89	6.58	33.86	0.35	34.49	79.01
4825.00	0.12	257.40	4824.53	-6.88	6.56	33.82	0.24	34.45	79.02
4850.00	0.09	287.63	4849.53	-6.88	6.56	33.78	0.24	34.41	79.00



MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
4875.00	0.14	258.47	4874.53	-6.88	6.57	33.73	0.29	34.36	78.99
4900.00	0.13	241.21	4899.53	-6.86	6.55	33.67	0.16	34.30	79.00
4925.00	0.08	245.91	4924.53	-6.84	6.52	33.63	0.19	34.26	79.02
4950.00	0.26	221.91	4949.53	-6.79	6.47	33.58	0.76	34.20	79.09
4975.00	0.07	189.29	4974.53	-6.73	6.42	33.54	0.83	34.14	79.17
5000.00	0.27	206.78	4999.53	-6.66	6.35	33.51	0.81	34.10	79.27
5025.00	0.20	217.61	5024.53	-6.57	6.26	33.45	0.32	34.03	79.40
5050.00	0.16	199.68	5049.53	-6.51	6.19	33.41	0.29	33.98	79.50
5075.00	0.35	214.36	5074.53	-6.41	6.10	33.36	0.81	33.91	79.65
5100.00	0.16	226.35	5099.53	-6.32	6.01	33.29	0.79	33.83	79.77
5125.00	0.19	175.37	5124.53	-6.25	5.94	33.27	0.62	33.79	79.88
5150.00	0.22	221.53	5149.53	-6.17	5.86	33.24	0.67	33.75	80.00
5175.00	0.19	213.56	5174.53	-6.10	5.79	33.18	0.18	33.69	80.10
5200.00	0.30	204.19	5199.53	-6.01	5.70	33.13	0.47	33.62	80.24
5225.00	0.25	196.80	5224.53	-5.90	5.59	33.09	0.26	33.56	80.42
5250.00	0.21	220.66	5249.53	-5.81	5.50	33.05	0.40	33.50	80.55
5275.00	0.24	200.28	5274.53	-5.73	5.42	33.00	0.34	33.44	80.68
5300.00	0.34	212.25	5299.53	-5.61	5.30	32.94	0.48	33.36	80.85
5325.00	0.31	200.50	5324.52	-5.49	5.18	32.88	0.30	33.28	81.05
5350.00	0.43	201.27	5349.52	-5.34	5.03	32.82	0.50	33.20	81.29
5375.00	0.40	201.13	5374.52	-5.17	4.86	32.75	0.14	33.11	81.56
5400.00	0.39	188.18	5399.52	-5.00	4.69	32.71	0.36	33.05	81.84
5425.00	0.44	200.81	5424.52	-4.83	4.52	32.66	0.43	32.97	82.12
5450.00	0.47	200.62	5449.52	-4.64	4.33	32.59	0.12	32.88	82.43
5475.00	0.41	195.45	5474.52	-4.45	4.15	32.53	0.30	32.80	82.73
5500.00	0.40	199.22	5499.52	-4.28	3.98	32.48	0.12	32.72	83.02
5525.00	0.39	200.51	5524.52	-4.12	3.82	32.42	0.06	32.64	83.29
5550.00	0.44	198.19	5549.52	-3.95	3.64	32.36	0.23	32.57	83.57
5575.00	0.43	199.67	5574.52	-3.77	3.46	32.30	0.07	32.48	83.88
5600.00	0.49	192.36	5599.52	-3.58	3.27	32.25	0.33	32.41	84.20
5625.00	0.41	210.17	5624.52	-3.40	3.09	32.18	0.64	32.33	84.51
5650.00	0.38	214.64	5649.52	-3.25	2.95	32.09	0.17	32.22	84.75

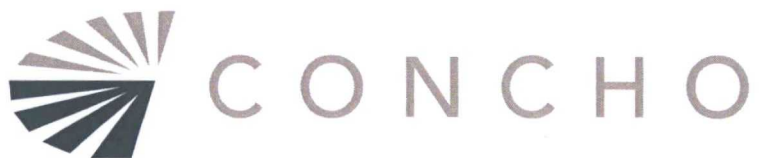
MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
5675.00	0.43	217.29	5674.52	-3.11	2.81	31.98	0.23	32.11	84.99
5700.00	0.39	215.67	5699.51	-2.96	2.66	31.88	0.17	31.99	85.23
5725.00	0.56	218.41	5724.51	-2.80	2.50	31.75	0.68	31.85	85.50
5750.00	0.44	218.36	5749.51	-2.62	2.33	31.61	0.48	31.70	85.79
5775.00	0.51	235.36	5774.51	-2.48	2.19	31.46	0.62	31.54	86.02
5800.00	0.47	246.71	5799.51	-2.38	2.08	31.28	0.42	31.35	86.19
5825.00	0.48	247.51	5824.51	-2.30	2.00	31.09	0.06	31.15	86.31
5850.00	0.52	253.03	5849.51	-2.22	1.93	30.88	0.26	30.94	86.42
5875.00	0.63	254.93	5874.51	-2.15	1.86	30.64	0.43	30.70	86.52
5900.00	0.68	246.81	5899.51	-2.05	1.77	30.38	0.42	30.43	86.67
5925.00	0.66	246.56	5924.50	-1.94	1.65	30.11	0.06	30.15	86.86
5950.00	0.65	249.79	5949.50	-1.83	1.55	29.84	0.16	29.88	87.03
5975.00	0.66	258.41	5974.50	-1.75	1.47	29.57	0.39	29.61	87.16
6000.00	0.53	252.96	5999.50	-1.68	1.41	29.32	0.55	29.35	87.25
6025.00	0.72	248.38	6024.50	-1.59	1.31	29.06	0.78	29.09	87.41
6050.00	0.85	238.25	6049.50	-1.43	1.16	28.76	0.77	28.78	87.69
6075.00	0.98	227.30	6074.49	-1.18	0.92	28.44	0.85	28.46	88.16
6100.00	1.11	221.06	6099.49	-0.85	0.59	28.13	0.72	28.13	88.80
6125.00	1.09	220.18	6124.48	-0.49	0.22	27.81	0.13	27.81	89.54
6150.00	1.22	223.72	6149.48	-0.11	-0.15	27.48	0.62	27.48	90.31
6175.00	1.12	221.72	6174.47	0.27	-0.53	27.13	0.46	27.13	91.11
6200.00	1.11	218.69	6199.47	0.64	-0.90	26.82	0.24	26.83	91.91
6225.00	1.11	216.85	6224.46	1.03	-1.28	26.52	0.14	26.55	92.76
6250.00	1.04	211.77	6249.46	1.42	-1.67	26.25	0.49	26.31	93.63
6275.00	1.11	207.63	6274.46	1.83	-2.07	26.02	0.44	26.10	94.56
6300.00	1.00	204.03	6299.45	2.24	-2.49	25.82	0.54	25.94	95.50
6325.00	0.97	198.56	6324.45	2.64	-2.89	25.66	0.39	25.83	96.42
6350.00	1.01	199.94	6349.44	3.06	-3.30	25.52	0.20	25.73	97.36
6375.00	0.93	192.83	6374.44	3.46	-3.70	25.40	0.60	25.67	98.29
6400.00	0.98	192.49	6399.44	3.87	-4.11	25.31	0.22	25.64	99.22
6425.00	0.93	194.13	6424.43	4.27	-4.51	25.21	0.25	25.61	100.14
6450.00	0.98	193.21	6449.43	4.68	-4.92	25.12	0.23	25.59	101.07

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
6475.00	1.07	195.52	6474.43	5.11	-5.35	25.01	0.38	25.57	102.07
6500.00	0.94	189.09	6499.42	5.54	-5.78	24.91	0.67	25.57	103.05
6525.00	0.99	192.29	6524.42	5.95	-6.19	24.83	0.27	25.59	104.00
6550.00	1.00	196.04	6549.42	6.38	-6.61	24.73	0.26	25.59	104.96
6575.00	1.05	192.02	6574.41	6.81	-7.04	24.62	0.36	25.61	105.96
6600.00	1.03	192.83	6599.41	7.25	-7.49	24.52	0.11	25.64	106.98
6625.00	1.01	191.87	6624.40	7.69	-7.92	24.43	0.11	25.68	107.97
6650.00	1.12	195.87	6649.40	8.14	-8.37	24.31	0.53	25.71	109.00
6675.00	1.07	192.65	6674.39	8.60	-8.83	24.20	0.30	25.76	110.06
6700.00	0.89	181.19	6699.39	9.03	-9.25	24.14	1.09	25.85	110.98
6725.00	0.81	179.78	6724.39	9.40	-9.62	24.14	0.33	25.98	111.74
6750.00	0.73	175.02	6749.39	9.73	-9.96	24.15	0.39	26.12	112.41
6775.00	0.82	175.10	6774.38	10.07	-10.30	24.18	0.34	26.28	113.07
6800.00	0.91	173.29	6799.38	10.44	-10.67	24.22	0.39	26.47	113.78
6825.00	0.84	171.28	6824.38	10.82	-11.05	24.27	0.31	26.67	114.48
6850.00	0.80	170.12	6849.37	11.17	-11.40	24.33	0.19	26.87	115.11
6875.00	0.79	172.74	6874.37	11.51	-11.74	24.38	0.15	27.06	115.72
6900.00	0.65	163.34	6899.37	11.82	-12.05	24.44	0.73	27.25	116.25
6925.00	0.75	166.98	6924.37	12.11	-12.35	24.52	0.44	27.45	116.73
6950.00	0.70	174.56	6949.37	12.42	-12.66	24.57	0.42	27.64	117.25
6975.00	0.77	172.01	6974.36	12.74	-12.98	24.61	0.31	27.82	117.80
7000.00	0.79	171.80	6999.36	13.08	-13.31	24.66	0.05	28.02	118.37
7025.00	0.76	169.39	7024.36	13.41	-13.65	24.71	0.17	28.23	118.91
7050.00	0.86	171.53	7049.36	13.76	-13.99	24.77	0.41	28.45	119.46
7075.00	0.79	171.28	7074.36	14.11	-14.35	24.82	0.27	28.67	120.03
7100.00	0.69	174.20	7099.35	14.43	-14.67	24.86	0.41	28.87	120.54
7125.00	0.73	178.28	7124.35	14.74	-14.98	24.88	0.25	29.04	121.05
7150.00	0.80	178.81	7149.35	15.08	-15.31	24.89	0.29	29.23	121.60
7175.00	0.74	190.27	7174.35	15.41	-15.65	24.87	0.67	29.38	122.18
7200.00	0.68	182.26	7199.34	15.72	-15.96	24.83	0.48	29.52	122.72
7225.00	0.68	201.15	7224.34	16.01	-16.24	24.77	0.89	29.62	123.25
7250.00	0.63	202.52	7249.34	16.27	-16.51	24.67	0.18	29.68	123.79

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
7275.00	0.74	209.78	7274.34	16.54	-16.77	24.53	0.54	29.72	124.36
7300.00	0.69	210.14	7299.34	16.81	-17.05	24.38	0.19	29.75	124.96
7325.00	0.74	211.93	7324.34	17.08	-17.31	24.22	0.22	29.77	125.56
7350.00	0.86	207.83	7349.33	17.39	-17.62	24.04	0.51	29.81	126.23
7375.00	0.92	209.65	7374.33	17.73	-17.96	23.86	0.27	29.86	126.97
7400.00	0.87	213.34	7399.33	18.06	-18.29	23.65	0.31	29.90	127.71
7425.00	0.96	209.94	7424.32	18.40	-18.63	23.45	0.41	29.94	128.47
7450.00	0.97	215.42	7449.32	18.76	-18.98	23.22	0.37	29.99	129.26
7475.00	1.02	214.87	7474.32	19.12	-19.33	22.97	0.20	30.02	130.08
7500.00	0.99	219.26	7499.31	19.47	-19.68	22.71	0.33	30.05	130.92
7525.00	0.98	219.07	7524.31	19.80	-20.01	22.44	0.02	30.07	131.74
7550.00	0.99	219.92	7549.31	20.14	-20.35	22.16	0.06	30.09	132.55
7575.00	0.98	222.65	7574.30	20.46	-20.67	21.88	0.19	30.10	133.37
7600.00	1.08	222.93	7599.30	20.79	-21.00	21.58	0.39	30.11	134.22
7625.00	1.17	221.42	7624.29	21.16	-21.36	21.25	0.38	30.13	135.15
7650.00	1.19	221.96	7649.29	21.55	-21.74	20.91	0.09	30.16	136.13
7675.00	1.08	226.57	7674.28	21.90	-22.10	20.56	0.56	30.18	137.06
7700.00	0.58	241.85	7699.28	22.13	-22.32	20.28	2.18	30.16	137.74
7725.00	1.06	232.85	7724.28	22.33	-22.52	19.98	1.97	30.11	138.42
7750.00	1.09	229.21	7749.27	22.63	-22.81	19.62	0.31	30.09	139.31
7775.00	1.16	229.62	7774.27	22.95	-23.13	19.25	0.26	30.09	140.24
7800.00	1.25	230.49	7799.26	23.29	-23.47	18.84	0.39	30.10	141.24
7825.00	1.21	230.90	7824.26	23.64	-23.81	18.43	0.17	30.11	142.26
7850.00	1.32	232.21	7849.25	23.98	-24.15	18.00	0.44	30.12	143.31
7875.00	1.33	231.38	7874.24	24.34	-24.51	17.54	0.10	30.14	144.41
7900.00	1.32	229.53	7899.24	24.72	-24.88	17.09	0.18	30.19	145.51
7925.00	1.36	228.82	7924.23	25.10	-25.26	16.65	0.17	30.26	146.61
7950.00	1.40	232.47	7949.22	25.49	-25.64	16.19	0.38	30.32	147.74
7975.00	1.37	233.65	7974.22	25.86	-26.01	15.70	0.17	30.38	148.87
8000.00	1.42	234.91	7999.21	26.22	-26.36	15.21	0.23	30.43	150.01
8025.00	1.52	235.55	8024.20	26.59	-26.73	14.68	0.42	30.49	151.21
8050.00	1.62	235.93	8049.19	26.98	-27.11	14.12	0.41	30.57	152.49



MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS %/100ft	CLOSURE DIST ft	CLOSURE DIR deg
8075.00	1.69	235.65	8074.18	27.39	-27.52	13.52	0.27	30.66	153.83
8100.00	1.66	230.51	8099.17	27.83	-27.96	12.94	0.61	30.80	155.17
8125.00	1.64	231.97	8124.16	28.29	-28.41	12.38	0.19	30.99	156.46
8150.00	1.73	230.57	8149.15	28.75	-28.87	11.80	0.38	31.19	157.76
8175.00	1.89	226.65	8174.14	29.28	-29.39	11.22	0.81	31.45	159.11
8200.00	1.89	225.62	8199.12	29.86	-29.96	10.62	0.14	31.78	160.48
8225.00	1.66	229.50	8224.11	30.39	-30.48	10.05	1.05	32.10	161.75
8250.00	1.78	229.35	8249.10	30.88	-30.97	9.48	0.51	32.39	162.98
8275.00	1.97	225.65	8274.09	31.44	-31.52	8.88	0.89	32.75	164.27
8300.00	2.14	222.77	8299.07	32.09	-32.17	8.25	0.79	33.21	165.61
8325.00	2.37	220.76	8324.05	32.83	-32.90	7.60	0.98	33.77	166.99
8350.00	2.33	218.20	8349.03	33.63	-33.69	6.95	0.44	34.40	168.35
8375.00	2.21	216.28	8374.01	34.42	-34.48	6.35	0.58	35.06	169.57
8400.00	2.10	217.38	8398.99	35.18	-35.24	5.78	0.47	35.71	170.68
8425.00	2.21	216.27	8423.97	35.94	-35.99	5.22	0.46	36.36	171.75
8437.00	2.22	217.49	8435.97	36.31	-36.36	4.94	0.41	36.69	172.26



NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

TOMAHAWK

ROADSTER ST COM #1H

OWB

Design: ACTUAL WELLPATH

Survey Report - Geographic

01 February, 2018



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	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		TOMAHAWK			
Site Position:		Northing:	445,736.96 usft	Latitude:	32° 13' 31.222 N
From:	Map	Easting:	551,227.25 usft	Longitude:	104° 10' 3.630 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.09 °

Well	ROADSTER ST COM #1H					
Well Position	+N/-S	0.0 usft	Northing:	455,885.59 usft	Latitude:	32° 15' 11.744 N
	+E/-W	0.0 usft	Easting:	545,131.81 usft	Longitude:	104° 11' 14.430 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usft	Ground Level:	3,188.7 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	3/7/2017	7.29	59.98	47,908.74811844

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	180.50	

Survey Program	Date 1/26/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,437.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
8,582.0	19,230.0	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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	455,885.59	545,131.81	32° 15' 11.744 N	104° 11' 14.430 W	
100.0	0.08	11.94	100.0	0.1	0.0	455,885.66	545,131.83	32° 15' 11.744 N	104° 11' 14.430 W	
125.0	0.14	200.10	125.0	0.1	0.0	455,885.65	545,131.82	32° 15' 11.744 N	104° 11' 14.430 W	
150.0	0.12	330.21	150.0	0.1	0.0	455,885.64	545,131.80	32° 15' 11.744 N	104° 11' 14.430 W	
175.0	0.15	305.72	175.0	0.1	-0.1	455,885.68	545,131.76	32° 15' 11.744 N	104° 11' 14.431 W	
200.0	0.15	294.57	200.0	0.1	-0.1	455,885.72	545,131.70	32° 15' 11.745 N	104° 11' 14.431 W	
225.0	0.20	265.74	225.0	0.1	-0.2	455,885.73	545,131.63	32° 15' 11.745 N	104° 11' 14.432 W	
250.0	0.34	263.49	250.0	0.1	-0.3	455,885.71	545,131.51	32° 15' 11.745 N	104° 11' 14.434 W	
275.0	0.55	255.18	275.0	0.1	-0.5	455,885.68	545,131.32	32° 15' 11.744 N	104° 11' 14.436 W	
300.0	0.48	261.27	300.0	0.0	-0.7	455,885.63	545,131.10	32° 15' 11.744 N	104° 11' 14.438 W	
325.0	0.69	256.59	325.0	0.0	-1.0	455,885.58	545,130.85	32° 15' 11.743 N	104° 11' 14.441 W	



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
350.0	0.70	274.49	350.0	0.0	-1.3	455,885.55	545,130.55	32° 15' 11.743 N	104° 11' 14.445 W
375.0	0.73	279.58	375.0	0.0	-1.6	455,885.59	545,130.24	32° 15' 11.744 N	104° 11' 14.448 W
400.0	0.68	281.83	400.0	0.1	-1.9	455,885.65	545,129.94	32° 15' 11.744 N	104° 11' 14.452 W
425.0	0.76	276.76	425.0	0.1	-2.2	455,885.70	545,129.63	32° 15' 11.745 N	104° 11' 14.456 W
450.0	0.72	275.76	450.0	0.1	-2.5	455,885.74	545,129.31	32° 15' 11.745 N	104° 11' 14.459 W
475.0	0.70	284.05	475.0	0.2	-2.8	455,885.79	545,129.01	32° 15' 11.746 N	104° 11' 14.463 W
500.0	0.72	283.60	500.0	0.3	-3.1	455,885.86	545,128.70	32° 15' 11.746 N	104° 11' 14.466 W
525.0	0.75	287.50	525.0	0.4	-3.4	455,885.95	545,128.40	32° 15' 11.747 N	104° 11' 14.470 W
550.0	0.71	288.66	550.0	0.5	-3.7	455,886.05	545,128.09	32° 15' 11.748 N	104° 11' 14.473 W
575.0	0.71	295.59	575.0	0.6	-4.0	455,886.16	545,127.81	32° 15' 11.749 N	104° 11' 14.477 W
600.0	0.68	296.41	600.0	0.7	-4.3	455,886.30	545,127.53	32° 15' 11.751 N	104° 11' 14.480 W
625.0	0.68	300.12	625.0	0.8	-4.5	455,886.44	545,127.27	32° 15' 11.752 N	104° 11' 14.483 W
650.0	0.61	303.07	650.0	1.0	-4.8	455,886.58	545,127.03	32° 15' 11.753 N	104° 11' 14.486 W
675.0	0.67	316.12	675.0	1.2	-5.0	455,886.76	545,126.82	32° 15' 11.755 N	104° 11' 14.488 W
700.0	0.65	306.01	700.0	1.4	-5.2	455,886.95	545,126.60	32° 15' 11.757 N	104° 11' 14.491 W
725.0	0.68	311.05	725.0	1.5	-5.4	455,887.13	545,126.38	32° 15' 11.759 N	104° 11' 14.493 W
750.0	0.71	312.16	750.0	1.7	-5.7	455,887.33	545,126.15	32° 15' 11.761 N	104° 11' 14.496 W
775.0	0.67	312.48	775.0	1.9	-5.9	455,887.54	545,125.93	32° 15' 11.763 N	104° 11' 14.499 W
800.0	0.70	315.67	800.0	2.2	-6.1	455,887.74	545,125.71	32° 15' 11.765 N	104° 11' 14.501 W
825.0	0.72	316.41	825.0	2.4	-6.3	455,887.97	545,125.50	32° 15' 11.767 N	104° 11' 14.504 W
850.0	0.75	318.08	850.0	2.6	-6.5	455,888.20	545,125.28	32° 15' 11.770 N	104° 11' 14.506 W
875.0	0.71	311.32	875.0	2.8	-6.8	455,888.43	545,125.06	32° 15' 11.772 N	104° 11' 14.509 W
900.0	0.63	310.03	900.0	3.0	-7.0	455,888.62	545,124.83	32° 15' 11.774 N	104° 11' 14.511 W
925.0	0.55	314.53	925.0	3.2	-7.2	455,888.79	545,124.64	32° 15' 11.775 N	104° 11' 14.514 W
950.0	0.46	316.68	950.0	3.4	-7.3	455,888.95	545,124.49	32° 15' 11.777 N	104° 11' 14.515 W
975.0	0.40	320.38	975.0	3.5	-7.4	455,889.09	545,124.36	32° 15' 11.778 N	104° 11' 14.517 W
1,000.0	0.29	307.88	1,000.0	3.6	-7.6	455,889.19	545,124.26	32° 15' 11.779 N	104° 11' 14.518 W
1,025.0	0.34	311.48	1,024.9	3.7	-7.7	455,889.28	545,124.15	32° 15' 11.780 N	104° 11' 14.519 W
1,050.0	0.37	317.62	1,049.9	3.8	-7.8	455,889.39	545,124.04	32° 15' 11.781 N	104° 11' 14.521 W
1,075.0	0.40	326.65	1,074.9	3.9	-7.9	455,889.52	545,123.94	32° 15' 11.783 N	104° 11' 14.522 W
1,100.0	0.44	330.16	1,099.9	4.1	-8.0	455,889.68	545,123.84	32° 15' 11.784 N	104° 11' 14.523 W
1,125.0	0.37	320.45	1,124.9	4.2	-8.1	455,889.82	545,123.75	32° 15' 11.786 N	104° 11' 14.524 W
1,150.0	0.39	326.40	1,149.9	4.4	-8.2	455,889.96	545,123.65	32° 15' 11.787 N	104° 11' 14.525 W
1,175.0	0.30	309.72	1,174.9	4.5	-8.3	455,890.07	545,123.55	32° 15' 11.788 N	104° 11' 14.526 W
1,200.0	0.40	295.41	1,199.9	4.6	-8.4	455,890.15	545,123.42	32° 15' 11.789 N	104° 11' 14.528 W
1,225.0	0.35	300.37	1,224.9	4.6	-8.5	455,890.22	545,123.28	32° 15' 11.790 N	104° 11' 14.530 W
1,250.0	0.40	329.64	1,249.9	4.7	-8.6	455,890.34	545,123.17	32° 15' 11.791 N	104° 11' 14.531 W
1,275.0	0.45	331.08	1,274.9	4.9	-8.7	455,890.50	545,123.07	32° 15' 11.792 N	104° 11' 14.532 W
1,300.0	0.41	334.94	1,299.9	5.1	-8.8	455,890.67	545,122.99	32° 15' 11.794 N	104° 11' 14.533 W
1,325.0	0.35	333.06	1,324.9	5.2	-8.9	455,890.82	545,122.92	32° 15' 11.795 N	104° 11' 14.534 W
1,350.0	0.24	341.47	1,349.9	5.3	-8.9	455,890.93	545,122.87	32° 15' 11.797 N	104° 11' 14.534 W
1,375.0	0.24	74.35	1,374.9	5.4	-8.9	455,891.00	545,122.90	32° 15' 11.797 N	104° 11' 14.534 W
1,400.0	0.42	88.96	1,399.9	5.4	-8.8	455,891.01	545,123.04	32° 15' 11.797 N	104° 11' 14.532 W
1,425.0	0.59	85.15	1,424.9	5.4	-8.6	455,891.03	545,123.26	32° 15' 11.797 N	104° 11' 14.530 W
1,450.0	0.86	80.17	1,449.9	5.5	-8.2	455,891.07	545,123.57	32° 15' 11.798 N	104° 11' 14.526 W
1,475.0	1.19	87.78	1,474.9	5.5	-7.8	455,891.11	545,124.02	32° 15' 11.798 N	104° 11' 14.521 W
1,500.0	1.40	91.40	1,499.9	5.5	-7.2	455,891.11	545,124.58	32° 15' 11.798 N	104° 11' 14.514 W
1,525.0	1.47	94.60	1,524.9	5.5	-6.6	455,891.08	545,125.21	32° 15' 11.798 N	104° 11' 14.507 W
1,550.0	1.63	91.29	1,549.9	5.5	-5.9	455,891.05	545,125.88	32° 15' 11.798 N	104° 11' 14.499 W
1,575.0	1.67	93.37	1,574.9	5.4	-5.2	455,891.02	545,126.60	32° 15' 11.797 N	104° 11' 14.491 W
1,600.0	1.63	92.66	1,599.9	5.4	-4.5	455,890.98	545,127.32	32° 15' 11.797 N	104° 11' 14.482 W
1,625.0	1.71	91.48	1,624.9	5.4	-3.8	455,890.95	545,128.05	32° 15' 11.797 N	104° 11' 14.474 W
1,650.0	1.68	90.23	1,649.9	5.4	-3.0	455,890.94	545,128.79	32° 15' 11.797 N	104° 11' 14.465 W
1,675.0	1.69	93.39	1,674.9	5.3	-2.3	455,890.92	545,129.52	32° 15' 11.796 N	104° 11' 14.457 W
1,700.0	1.73	92.94	1,699.8	5.3	-1.5	455,890.88	545,130.27	32° 15' 11.796 N	104° 11' 14.448 W



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,725.0	1.78	91.61	1,724.8	5.3	-0.8	455,890.85	545,131.03	32° 15' 11.796 N	104° 11' 14.439 W	
1,750.0	1.84	90.74	1,749.8	5.2	0.0	455,890.83	545,131.82	32° 15' 11.795 N	104° 11' 14.430 W	
1,775.0	1.94	95.55	1,774.8	5.2	0.8	455,890.78	545,132.64	32° 15' 11.795 N	104° 11' 14.420 W	
1,800.0	1.93	93.62	1,799.8	5.1	1.7	455,890.72	545,133.49	32° 15' 11.794 N	104° 11' 14.411 W	
1,825.0	1.94	93.70	1,824.8	5.1	2.5	455,890.66	545,134.33	32° 15' 11.794 N	104° 11' 14.401 W	
1,850.0	1.95	93.16	1,849.8	5.0	3.4	455,890.61	545,135.18	32° 15' 11.793 N	104° 11' 14.391 W	
1,875.0	1.86	94.06	1,874.8	5.0	4.2	455,890.56	545,136.00	32° 15' 11.793 N	104° 11' 14.381 W	
1,900.0	1.82	94.46	1,899.7	4.9	5.0	455,890.50	545,136.81	32° 15' 11.792 N	104° 11' 14.372 W	
1,925.0	1.99	92.51	1,924.7	4.9	5.8	455,890.45	545,137.63	32° 15' 11.792 N	104° 11' 14.362 W	
1,950.0	1.92	88.45	1,949.7	4.9	6.7	455,890.44	545,138.49	32° 15' 11.792 N	104° 11' 14.352 W	
1,975.0	1.92	89.36	1,974.7	4.9	7.5	455,890.46	545,139.32	32° 15' 11.792 N	104° 11' 14.343 W	
2,000.0	1.80	91.21	1,999.7	4.9	8.3	455,890.46	545,140.14	32° 15' 11.792 N	104° 11' 14.333 W	
2,025.0	1.62	90.25	2,024.7	4.9	9.1	455,890.45	545,140.88	32° 15' 11.792 N	104° 11' 14.324 W	
2,050.0	1.35	90.58	2,049.7	4.9	9.7	455,890.44	545,141.53	32° 15' 11.791 N	104° 11' 14.317 W	
2,075.0	1.13	89.11	2,074.7	4.9	10.3	455,890.44	545,142.07	32° 15' 11.791 N	104° 11' 14.311 W	
2,100.0	1.01	90.61	2,099.7	4.9	10.7	455,890.44	545,142.54	32° 15' 11.791 N	104° 11' 14.305 W	
2,125.0	0.87	90.45	2,124.7	4.8	11.1	455,890.44	545,142.95	32° 15' 11.791 N	104° 11' 14.300 W	
2,150.0	0.85	96.56	2,149.6	4.8	11.5	455,890.42	545,143.32	32° 15' 11.791 N	104° 11' 14.296 W	
2,175.0	0.87	92.96	2,174.6	4.8	11.9	455,890.39	545,143.70	32° 15' 11.791 N	104° 11' 14.292 W	
2,200.0	0.88	87.72	2,199.6	4.8	12.3	455,890.38	545,144.08	32° 15' 11.791 N	104° 11' 14.287 W	
2,225.0	0.86	95.05	2,224.6	4.8	12.6	455,890.38	545,144.46	32° 15' 11.791 N	104° 11' 14.283 W	
2,250.0	0.80	100.09	2,249.6	4.7	13.0	455,890.33	545,144.81	32° 15' 11.790 N	104° 11' 14.279 W	
2,275.0	0.71	95.87	2,274.6	4.7	13.3	455,890.28	545,145.14	32° 15' 11.790 N	104° 11' 14.275 W	
2,300.0	0.69	98.78	2,299.6	4.7	13.6	455,890.24	545,145.44	32° 15' 11.789 N	104° 11' 14.271 W	
2,325.0	0.66	97.83	2,324.6	4.6	13.9	455,890.20	545,145.73	32° 15' 11.789 N	104° 11' 14.268 W	
2,350.0	0.61	90.00	2,349.6	4.6	14.2	455,890.18	545,146.01	32° 15' 11.789 N	104° 11' 14.265 W	
2,375.0	0.70	92.92	2,374.6	4.6	14.5	455,890.17	545,146.30	32° 15' 11.789 N	104° 11' 14.261 W	
2,400.0	0.67	84.47	2,399.6	4.6	14.8	455,890.18	545,146.59	32° 15' 11.789 N	104° 11' 14.258 W	
2,425.0	0.71	89.68	2,424.6	4.6	15.1	455,890.19	545,146.89	32° 15' 11.789 N	104° 11' 14.254 W	
2,450.0	0.73	95.67	2,449.6	4.6	15.4	455,890.18	545,147.21	32° 15' 11.789 N	104° 11' 14.251 W	
2,475.0	0.70	97.03	2,474.6	4.6	15.7	455,890.14	545,147.52	32° 15' 11.788 N	104° 11' 14.247 W	
2,500.0	0.67	92.35	2,499.6	4.5	16.0	455,890.12	545,147.82	32° 15' 11.788 N	104° 11' 14.244 W	
2,525.0	0.66	97.54	2,524.6	4.5	16.3	455,890.10	545,148.10	32° 15' 11.788 N	104° 11' 14.240 W	
2,550.0	0.71	90.27	2,549.6	4.5	16.6	455,890.08	545,148.40	32° 15' 11.788 N	104° 11' 14.237 W	
2,575.0	0.71	90.14	2,574.6	4.5	16.9	455,890.07	545,148.71	32° 15' 11.788 N	104° 11' 14.233 W	
2,600.0	0.79	87.86	2,599.6	4.5	17.2	455,890.08	545,149.04	32° 15' 11.788 N	104° 11' 14.230 W	
2,625.0	0.71	93.11	2,624.6	4.5	17.6	455,890.08	545,149.37	32° 15' 11.788 N	104° 11' 14.226 W	
2,650.0	0.72	90.76	2,649.6	4.5	17.9	455,890.07	545,149.68	32° 15' 11.788 N	104° 11' 14.222 W	
2,675.0	0.70	90.98	2,674.6	4.5	18.2	455,890.06	545,149.99	32° 15' 11.788 N	104° 11' 14.218 W	
2,700.0	0.72	86.83	2,699.6	4.5	18.5	455,890.07	545,150.30	32° 15' 11.788 N	104° 11' 14.215 W	
2,725.0	0.77	87.13	2,724.6	4.5	18.8	455,890.09	545,150.62	32° 15' 11.788 N	104° 11' 14.211 W	
2,750.0	0.75	87.38	2,749.6	4.5	19.1	455,890.10	545,150.95	32° 15' 11.788 N	104° 11' 14.207 W	
2,775.0	0.73	91.06	2,774.6	4.5	19.5	455,890.11	545,151.27	32° 15' 11.788 N	104° 11' 14.203 W	
2,800.0	0.71	97.00	2,799.6	4.5	19.8	455,890.09	545,151.59	32° 15' 11.788 N	104° 11' 14.200 W	
2,825.0	0.73	90.14	2,824.6	4.5	20.1	455,890.07	545,151.90	32° 15' 11.788 N	104° 11' 14.196 W	
2,850.0	0.73	86.38	2,849.6	4.5	20.4	455,890.08	545,152.22	32° 15' 11.788 N	104° 11' 14.192 W	
2,875.0	0.77	91.60	2,874.6	4.5	20.7	455,890.08	545,152.55	32° 15' 11.788 N	104° 11' 14.189 W	
2,900.0	0.71	87.43	2,899.6	4.5	21.1	455,890.08	545,152.87	32° 15' 11.788 N	104° 11' 14.185 W	
2,925.0	0.72	87.06	2,924.6	4.5	21.4	455,890.10	545,153.18	32° 15' 11.788 N	104° 11' 14.181 W	
2,950.0	0.65	91.07	2,949.6	4.5	21.7	455,890.10	545,153.48	32° 15' 11.788 N	104° 11' 14.178 W	
2,975.0	0.56	89.54	2,974.6	4.5	21.9	455,890.10	545,153.74	32° 15' 11.788 N	104° 11' 14.175 W	
3,000.0	0.54	96.66	2,999.6	4.5	22.2	455,890.09	545,153.98	32° 15' 11.788 N	104° 11' 14.172 W	
3,025.0	0.49	74.66	3,024.6	4.5	22.4	455,890.10	545,154.20	32° 15' 11.788 N	104° 11' 14.169 W	
3,050.0	0.58	82.59	3,049.6	4.6	22.6	455,890.15	545,154.43	32° 15' 11.788 N	104° 11' 14.167 W	
3,075.0	0.63	90.90	3,074.6	4.6	22.9	455,890.16	545,154.69	32° 15' 11.789 N	104° 11' 14.164 W	



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
3,100.0	0.62	87.82	3,099.6	4.6	23.2	455,890.17	545,154.97	32° 15' 11.789 N	104° 11' 14.160 W	
3,125.0	0.58	99.00	3,124.6	4.6	23.4	455,890.15	545,155.23	32° 15' 11.788 N	104° 11' 14.157 W	
3,150.0	0.52	82.49	3,149.6	4.6	23.7	455,890.15	545,155.46	32° 15' 11.788 N	104° 11' 14.155 W	
3,175.0	0.55	90.49	3,174.6	4.6	23.9	455,890.16	545,155.70	32° 15' 11.788 N	104° 11' 14.152 W	
3,200.0	0.55	90.10	3,199.6	4.6	24.1	455,890.16	545,155.94	32° 15' 11.788 N	104° 11' 14.149 W	
3,225.0	0.60	83.22	3,224.6	4.6	24.4	455,890.17	545,156.19	32° 15' 11.789 N	104° 11' 14.146 W	
3,250.0	0.61	89.43	3,249.6	4.6	24.6	455,890.19	545,156.45	32° 15' 11.789 N	104° 11' 14.143 W	
3,275.0	0.62	92.98	3,274.6	4.6	24.9	455,890.18	545,156.72	32° 15' 11.789 N	104° 11' 14.140 W	
3,300.0	0.56	87.26	3,299.6	4.6	25.2	455,890.18	545,156.97	32° 15' 11.789 N	104° 11' 14.137 W	
3,325.0	0.54	90.51	3,324.6	4.6	25.4	455,890.19	545,157.21	32° 15' 11.789 N	104° 11' 14.134 W	
3,350.0	0.56	86.40	3,349.6	4.6	25.6	455,890.20	545,157.45	32° 15' 11.789 N	104° 11' 14.132 W	
3,375.0	0.56	82.89	3,374.6	4.6	25.9	455,890.22	545,157.70	32° 15' 11.789 N	104° 11' 14.129 W	
3,400.0	0.63	81.72	3,399.6	4.7	26.1	455,890.25	545,157.95	32° 15' 11.789 N	104° 11' 14.126 W	
3,425.0	0.60	85.19	3,424.6	4.7	26.4	455,890.28	545,158.22	32° 15' 11.790 N	104° 11' 14.123 W	
3,450.0	0.58	86.38	3,449.6	4.7	26.7	455,890.30	545,158.48	32° 15' 11.790 N	104° 11' 14.120 W	
3,475.0	0.56	89.49	3,474.6	4.7	26.9	455,890.31	545,158.73	32° 15' 11.790 N	104° 11' 14.117 W	
3,500.0	0.56	81.36	3,499.6	4.7	27.2	455,890.33	545,158.97	32° 15' 11.790 N	104° 11' 14.114 W	
3,525.0	0.54	88.47	3,524.6	4.8	27.4	455,890.35	545,159.21	32° 15' 11.790 N	104° 11' 14.111 W	
3,550.0	0.55	79.82	3,549.6	4.8	27.6	455,890.38	545,159.44	32° 15' 11.791 N	104° 11' 14.108 W	
3,575.0	0.53	86.84	3,574.6	4.8	27.9	455,890.40	545,159.68	32° 15' 11.791 N	104° 11' 14.106 W	
3,600.0	0.44	81.75	3,599.6	4.8	28.1	455,890.42	545,159.89	32° 15' 11.791 N	104° 11' 14.103 W	
3,625.0	0.54	72.88	3,624.6	4.9	28.3	455,890.47	545,160.09	32° 15' 11.792 N	104° 11' 14.101 W	
3,650.0	0.58	75.25	3,649.5	4.9	28.5	455,890.54	545,160.33	32° 15' 11.792 N	104° 11' 14.098 W	
3,675.0	0.52	79.60	3,674.5	5.0	28.8	455,890.59	545,160.56	32° 15' 11.793 N	104° 11' 14.095 W	
3,700.0	0.50	86.09	3,699.5	5.0	29.0	455,890.62	545,160.78	32° 15' 11.793 N	104° 11' 14.093 W	
3,725.0	0.46	81.55	3,724.5	5.1	29.2	455,890.64	545,160.99	32° 15' 11.793 N	104° 11' 14.090 W	
3,750.0	0.40	87.16	3,749.5	5.1	29.4	455,890.66	545,161.18	32° 15' 11.793 N	104° 11' 14.088 W	
3,775.0	0.41	86.56	3,774.5	5.1	29.5	455,890.67	545,161.36	32° 15' 11.793 N	104° 11' 14.086 W	
3,800.0	0.50	80.43	3,799.5	5.1	29.7	455,890.70	545,161.55	32° 15' 11.794 N	104° 11' 14.084 W	
3,825.0	0.46	85.77	3,824.5	5.1	29.9	455,890.72	545,161.76	32° 15' 11.794 N	104° 11' 14.081 W	
3,850.0	0.49	84.74	3,849.5	5.1	30.2	455,890.74	545,161.97	32° 15' 11.794 N	104° 11' 14.079 W	
3,875.0	0.52	85.60	3,874.5	5.2	30.4	455,890.76	545,162.19	32° 15' 11.794 N	104° 11' 14.076 W	
3,900.0	0.41	86.09	3,899.5	5.2	30.6	455,890.77	545,162.39	32° 15' 11.794 N	104° 11' 14.074 W	
3,925.0	0.32	75.29	3,924.5	5.2	30.7	455,890.80	545,162.54	32° 15' 11.795 N	104° 11' 14.072 W	
3,950.0	0.37	80.60	3,949.5	5.2	30.9	455,890.83	545,162.69	32° 15' 11.795 N	104° 11' 14.070 W	
3,975.0	0.60	49.63	3,974.5	5.3	31.1	455,890.92	545,162.87	32° 15' 11.796 N	104° 11' 14.068 W	
4,000.0	0.42	77.57	3,999.5	5.4	31.2	455,891.03	545,163.06	32° 15' 11.797 N	104° 11' 14.066 W	
4,025.0	0.52	67.93	4,024.5	5.5	31.4	455,891.09	545,163.26	32° 15' 11.798 N	104° 11' 14.064 W	
4,050.0	0.41	61.30	4,049.5	5.6	31.6	455,891.18	545,163.44	32° 15' 11.798 N	104° 11' 14.062 W	
4,075.0	0.45	70.28	4,074.5	5.7	31.8	455,891.25	545,163.61	32° 15' 11.799 N	104° 11' 14.060 W	
4,100.0	0.45	75.85	4,099.5	5.7	32.0	455,891.31	545,163.80	32° 15' 11.800 N	104° 11' 14.058 W	
4,125.0	0.38	76.19	4,124.5	5.8	32.2	455,891.35	545,163.97	32° 15' 11.800 N	104° 11' 14.056 W	
4,150.0	0.39	73.49	4,149.5	5.8	32.3	455,891.40	545,164.14	32° 15' 11.801 N	104° 11' 14.054 W	
4,175.0	0.38	73.52	4,174.5	5.9	32.5	455,891.45	545,164.30	32° 15' 11.801 N	104° 11' 14.052 W	
4,200.0	0.44	66.55	4,199.5	5.9	32.7	455,891.51	545,164.46	32° 15' 11.802 N	104° 11' 14.050 W	
4,225.0	0.43	79.02	4,224.5	6.0	32.8	455,891.56	545,164.64	32° 15' 11.802 N	104° 11' 14.048 W	
4,250.0	0.35	89.77	4,249.5	6.0	33.0	455,891.58	545,164.81	32° 15' 11.802 N	104° 11' 14.046 W	
4,275.0	0.31	68.63	4,274.5	6.0	33.1	455,891.61	545,164.95	32° 15' 11.803 N	104° 11' 14.044 W	
4,300.0	0.34	73.37	4,299.5	6.1	33.3	455,891.65	545,165.09	32° 15' 11.803 N	104° 11' 14.043 W	
4,325.0	0.34	80.21	4,324.5	6.1	33.4	455,891.69	545,165.23	32° 15' 11.803 N	104° 11' 14.041 W	
4,350.0	0.23	75.14	4,349.5	6.1	33.5	455,891.71	545,165.35	32° 15' 11.804 N	104° 11' 14.040 W	
4,375.0	0.19	66.71	4,374.5	6.2	33.6	455,891.74	545,165.44	32° 15' 11.804 N	104° 11' 14.039 W	
4,400.0	0.16	77.05	4,399.5	6.2	33.7	455,891.76	545,165.51	32° 15' 11.804 N	104° 11' 14.038 W	
4,425.0	0.12	37.44	4,424.5	6.2	33.7	455,891.79	545,165.56	32° 15' 11.805 N	104° 11' 14.037 W	
4,450.0	0.22	30.10	4,449.5	6.3	33.8	455,891.86	545,165.60	32° 15' 11.805 N	104° 11' 14.037 W	



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,475.0	0.09	82.73	4,474.5	6.3	33.8	455,891.90	545,165.64	32° 15' 11.806 N	104° 11' 14.036 W
4,500.0	0.04	351.93	4,499.5	6.3	33.8	455,891.91	545,165.66	32° 15' 11.806 N	104° 11' 14.036 W
4,525.0	0.09	341.01	4,524.5	6.3	33.8	455,891.94	545,165.65	32° 15' 11.806 N	104° 11' 14.036 W
4,550.0	0.13	50.55	4,549.5	6.4	33.9	455,891.97	545,165.67	32° 15' 11.806 N	104° 11' 14.036 W
4,575.0	0.07	118.90	4,574.5	6.4	33.9	455,891.99	545,165.71	32° 15' 11.806 N	104° 11' 14.035 W
4,600.0	0.04	326.30	4,599.5	6.4	33.9	455,891.98	545,165.71	32° 15' 11.806 N	104° 11' 14.035 W
4,625.0	0.09	356.32	4,624.5	6.4	33.9	455,892.01	545,165.71	32° 15' 11.807 N	104° 11' 14.035 W
4,650.0	0.17	14.32	4,649.5	6.5	33.9	455,892.07	545,165.72	32° 15' 11.807 N	104° 11' 14.035 W
4,675.0	0.06	33.87	4,674.5	6.5	33.9	455,892.11	545,165.73	32° 15' 11.808 N	104° 11' 14.035 W
4,700.0	0.05	173.37	4,699.5	6.5	33.9	455,892.11	545,165.74	32° 15' 11.808 N	104° 11' 14.035 W
4,725.0	0.07	357.94	4,724.5	6.5	33.9	455,892.12	545,165.74	32° 15' 11.808 N	104° 11' 14.035 W
4,750.0	0.11	292.63	4,749.5	6.6	33.9	455,892.14	545,165.72	32° 15' 11.808 N	104° 11' 14.035 W
4,775.0	0.08	320.56	4,774.5	6.6	33.9	455,892.17	545,165.69	32° 15' 11.808 N	104° 11' 14.036 W
4,800.0	0.06	245.54	4,799.5	6.6	33.8	455,892.17	545,165.66	32° 15' 11.808 N	104° 11' 14.036 W
4,825.0	0.12	257.40	4,824.5	6.6	33.8	455,892.16	545,165.62	32° 15' 11.808 N	104° 11' 14.036 W
4,850.0	0.09	287.63	4,849.5	6.6	33.8	455,892.16	545,165.58	32° 15' 11.808 N	104° 11' 14.037 W
4,875.0	0.14	258.47	4,874.5	6.6	33.7	455,892.16	545,165.53	32° 15' 11.808 N	104° 11' 14.037 W
4,900.0	0.13	241.21	4,899.5	6.6	33.7	455,892.14	545,165.48	32° 15' 11.808 N	104° 11' 14.038 W
4,925.0	0.08	245.91	4,924.5	6.5	33.6	455,892.12	545,165.44	32° 15' 11.808 N	104° 11' 14.039 W
4,950.0	0.26	221.91	4,949.5	6.5	33.6	455,892.07	545,165.38	32° 15' 11.807 N	104° 11' 14.039 W
4,975.0	0.07	189.29	4,974.5	6.4	33.5	455,892.02	545,165.34	32° 15' 11.807 N	104° 11' 14.040 W
5,000.0	0.27	206.78	4,999.5	6.4	33.5	455,891.95	545,165.31	32° 15' 11.806 N	104° 11' 14.040 W
5,025.0	0.20	217.61	5,024.5	6.3	33.4	455,891.86	545,165.26	32° 15' 11.805 N	104° 11' 14.041 W
5,050.0	0.16	199.68	5,049.5	6.2	33.4	455,891.79	545,165.22	32° 15' 11.805 N	104° 11' 14.041 W
5,075.0	0.35	214.36	5,074.5	6.1	33.4	455,891.70	545,165.17	32° 15' 11.804 N	104° 11' 14.042 W
5,100.0	0.16	226.35	5,099.5	6.0	33.3	455,891.61	545,165.10	32° 15' 11.803 N	104° 11' 14.042 W
5,125.0	0.19	175.37	5,124.5	6.0	33.3	455,891.54	545,165.08	32° 15' 11.802 N	104° 11' 14.043 W
5,150.0	0.22	221.53	5,149.5	5.9	33.2	455,891.47	545,165.05	32° 15' 11.801 N	104° 11' 14.043 W
5,175.0	0.19	213.56	5,174.5	5.8	33.2	455,891.40	545,164.99	32° 15' 11.801 N	104° 11' 14.044 W
5,200.0	0.30	204.19	5,199.5	5.7	33.1	455,891.30	545,164.94	32° 15' 11.800 N	104° 11' 14.044 W
5,225.0	0.25	196.80	5,224.5	5.6	33.1	455,891.19	545,164.90	32° 15' 11.799 N	104° 11' 14.045 W
5,250.0	0.21	220.66	5,249.5	5.5	33.0	455,891.10	545,164.86	32° 15' 11.798 N	104° 11' 14.045 W
5,275.0	0.24	200.28	5,274.5	5.4	33.0	455,891.02	545,164.81	32° 15' 11.797 N	104° 11' 14.046 W
5,300.0	0.34	212.25	5,299.5	5.3	32.9	455,890.91	545,164.75	32° 15' 11.796 N	104° 11' 14.047 W
5,325.0	0.31	200.50	5,324.5	5.2	32.9	455,890.78	545,164.69	32° 15' 11.795 N	104° 11' 14.047 W
5,350.0	0.43	201.27	5,349.5	5.0	32.8	455,890.63	545,164.63	32° 15' 11.793 N	104° 11' 14.048 W
5,375.0	0.40	201.13	5,374.5	4.9	32.8	455,890.46	545,164.56	32° 15' 11.791 N	104° 11' 14.049 W
5,400.0	0.39	188.18	5,399.5	4.7	32.7	455,890.30	545,164.52	32° 15' 11.790 N	104° 11' 14.049 W
5,425.0	0.44	200.81	5,424.5	4.5	32.7	455,890.12	545,164.47	32° 15' 11.788 N	104° 11' 14.050 W
5,450.0	0.47	200.62	5,449.5	4.3	32.6	455,889.94	545,164.40	32° 15' 11.786 N	104° 11' 14.051 W
5,475.0	0.41	195.45	5,474.5	4.2	32.5	455,889.76	545,164.34	32° 15' 11.784 N	104° 11' 14.051 W
5,500.0	0.40	199.22	5,499.5	4.0	32.5	455,889.59	545,164.29	32° 15' 11.783 N	104° 11' 14.052 W
5,525.0	0.39	200.51	5,524.5	3.8	32.4	455,889.42	545,164.23	32° 15' 11.781 N	104° 11' 14.053 W
5,550.0	0.44	198.19	5,549.5	3.7	32.4	455,889.25	545,164.17	32° 15' 11.779 N	104° 11' 14.053 W
5,575.0	0.43	199.67	5,574.5	3.5	32.3	455,889.07	545,164.11	32° 15' 11.778 N	104° 11' 14.054 W
5,600.0	0.49	192.36	5,599.5	3.3	32.2	455,888.88	545,164.06	32° 15' 11.776 N	104° 11' 14.055 W
5,625.0	0.41	210.17	5,624.5	3.1	32.2	455,888.70	545,163.99	32° 15' 11.774 N	104° 11' 14.055 W
5,650.0	0.38	214.64	5,649.5	3.0	32.1	455,888.55	545,163.90	32° 15' 11.772 N	104° 11' 14.057 W
5,675.0	0.43	217.29	5,674.5	2.8	32.0	455,888.41	545,163.79	32° 15' 11.771 N	104° 11' 14.058 W
5,700.0	0.39	215.67	5,699.5	2.7	31.9	455,888.27	545,163.69	32° 15' 11.770 N	104° 11' 14.059 W
5,725.0	0.56	218.41	5,724.5	2.5	31.7	455,888.10	545,163.56	32° 15' 11.768 N	104° 11' 14.060 W
5,750.0	0.44	218.36	5,749.5	2.3	31.6	455,887.93	545,163.42	32° 15' 11.766 N	104° 11' 14.062 W
5,775.0	0.51	235.36	5,774.5	2.2	31.5	455,887.79	545,163.27	32° 15' 11.765 N	104° 11' 14.064 W
5,800.0	0.47	246.71	5,799.5	2.1	31.3	455,887.69	545,163.09	32° 15' 11.764 N	104° 11' 14.066 W
5,825.0	0.48	247.51	5,824.5	2.0	31.1	455,887.61	545,162.90	32° 15' 11.763 N	104° 11' 14.068 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,850.0	0.52	253.03	5,849.5	1.9	30.9	455,887.54	545,162.69	32° 15' 11.762 N	104° 11' 14.071 W
5,875.0	0.63	254.93	5,874.5	1.9	30.6	455,887.47	545,162.45	32° 15' 11.762 N	104° 11' 14.073 W
5,900.0	0.68	246.81	5,899.5	1.8	30.4	455,887.37	545,162.18	32° 15' 11.761 N	104° 11' 14.076 W
5,925.0	0.66	246.56	5,924.5	1.7	30.1	455,887.26	545,161.91	32° 15' 11.760 N	104° 11' 14.080 W
5,950.0	0.65	249.79	5,949.5	1.6	29.8	455,887.15	545,161.65	32° 15' 11.759 N	104° 11' 14.083 W
5,975.0	0.66	258.41	5,974.5	1.5	29.6	455,887.07	545,161.37	32° 15' 11.758 N	104° 11' 14.086 W
6,000.0	0.53	252.96	5,999.5	1.4	29.3	455,887.01	545,161.12	32° 15' 11.757 N	104° 11' 14.089 W
6,025.0	0.72	248.38	6,024.5	1.3	29.1	455,886.92	545,160.87	32° 15' 11.756 N	104° 11' 14.092 W
6,050.0	0.85	238.25	6,049.5	1.2	28.7	455,886.76	545,160.56	32° 15' 11.755 N	104° 11' 14.095 W
6,075.0	0.98	227.30	6,074.5	0.9	28.4	455,886.52	545,160.25	32° 15' 11.752 N	104° 11' 14.099 W
6,100.0	1.11	221.06	6,099.5	0.6	28.1	455,886.19	545,159.93	32° 15' 11.749 N	104° 11' 14.103 W
6,125.0	1.09	220.18	6,124.5	0.2	27.8	455,885.83	545,159.62	32° 15' 11.746 N	104° 11' 14.106 W
6,150.0	1.22	223.72	6,149.5	-0.1	27.5	455,885.45	545,159.28	32° 15' 11.742 N	104° 11' 14.110 W
6,175.0	1.12	221.72	6,174.5	-0.5	27.1	455,885.08	545,158.93	32° 15' 11.738 N	104° 11' 14.114 W
6,200.0	1.11	218.69	6,199.5	-0.9	26.8	455,884.71	545,158.62	32° 15' 11.734 N	104° 11' 14.118 W
6,225.0	1.11	216.85	6,224.5	-1.3	26.5	455,884.33	545,158.32	32° 15' 11.731 N	104° 11' 14.121 W
6,250.0	1.04	211.77	6,249.5	-1.7	26.2	455,883.94	545,158.06	32° 15' 11.727 N	104° 11' 14.125 W
6,275.0	1.11	207.63	6,274.5	-2.1	26.0	455,883.53	545,157.83	32° 15' 11.723 N	104° 11' 14.127 W
6,300.0	1.00	204.03	6,299.5	-2.5	25.8	455,883.12	545,157.63	32° 15' 11.719 N	104° 11' 14.130 W
6,325.0	0.97	198.56	6,324.4	-2.9	25.7	455,882.72	545,157.47	32° 15' 11.715 N	104° 11' 14.131 W
6,350.0	1.01	199.94	6,349.4	-3.3	25.5	455,882.31	545,157.33	32° 15' 11.711 N	104° 11' 14.133 W
6,375.0	0.93	192.83	6,374.4	-3.7	25.4	455,881.91	545,157.21	32° 15' 11.707 N	104° 11' 14.135 W
6,400.0	0.98	192.49	6,399.4	-4.1	25.3	455,881.50	545,157.12	32° 15' 11.703 N	104° 11' 14.136 W
6,425.0	0.93	194.13	6,424.4	-4.5	25.2	455,881.09	545,157.02	32° 15' 11.699 N	104° 11' 14.137 W
6,450.0	0.98	193.21	6,449.4	-4.9	25.1	455,880.69	545,156.92	32° 15' 11.695 N	104° 11' 14.138 W
6,475.0	1.07	195.52	6,474.4	-5.3	25.0	455,880.26	545,156.81	32° 15' 11.690 N	104° 11' 14.139 W
6,500.0	0.94	189.09	6,499.4	-5.8	24.9	455,879.83	545,156.72	32° 15' 11.686 N	104° 11' 14.140 W
6,525.0	0.99	192.29	6,524.4	-6.2	24.8	455,879.41	545,156.64	32° 15' 11.682 N	104° 11' 14.141 W
6,550.0	1.00	196.04	6,549.4	-6.6	24.7	455,878.99	545,156.53	32° 15' 11.678 N	104° 11' 14.142 W
6,575.0	1.05	192.02	6,574.4	-7.0	24.6	455,878.56	545,156.42	32° 15' 11.674 N	104° 11' 14.144 W
6,600.0	1.03	192.83	6,599.4	-7.5	24.5	455,878.12	545,156.33	32° 15' 11.669 N	104° 11' 14.145 W
6,625.0	1.01	191.87	6,624.4	-7.9	24.4	455,877.68	545,156.23	32° 15' 11.665 N	104° 11' 14.146 W
6,650.0	1.12	195.87	6,649.4	-8.4	24.3	455,877.23	545,156.12	32° 15' 11.661 N	104° 11' 14.147 W
6,675.0	1.07	192.65	6,674.4	-8.8	24.2	455,876.77	545,156.00	32° 15' 11.656 N	104° 11' 14.149 W
6,700.0	0.89	181.19	6,699.4	-9.2	24.1	455,876.35	545,155.95	32° 15' 11.652 N	104° 11' 14.149 W
6,725.0	0.81	179.78	6,724.4	-9.6	24.1	455,875.98	545,155.94	32° 15' 11.648 N	104° 11' 14.149 W
6,750.0	0.73	175.02	6,749.4	-9.9	24.1	455,875.64	545,155.96	32° 15' 11.645 N	104° 11' 14.149 W
6,775.0	0.82	175.10	6,774.4	-10.3	24.2	455,875.30	545,155.99	32° 15' 11.641 N	104° 11' 14.149 W
6,800.0	0.91	173.29	6,799.4	-10.7	24.2	455,874.93	545,156.02	32° 15' 11.638 N	104° 11' 14.148 W
6,825.0	0.84	171.28	6,824.4	-11.0	24.3	455,874.55	545,156.08	32° 15' 11.634 N	104° 11' 14.148 W
6,850.0	0.80	170.12	6,849.4	-11.4	24.3	455,874.20	545,156.13	32° 15' 11.630 N	104° 11' 14.147 W
6,875.0	0.79	172.74	6,874.4	-11.7	24.4	455,873.85	545,156.18	32° 15' 11.627 N	104° 11' 14.147 W
6,900.0	0.65	163.34	6,899.4	-12.0	24.4	455,873.55	545,156.25	32° 15' 11.624 N	104° 11' 14.146 W
6,925.0	0.75	166.98	6,924.4	-12.3	24.5	455,873.25	545,156.32	32° 15' 11.621 N	104° 11' 14.145 W
6,950.0	0.70	174.56	6,949.4	-12.6	24.6	455,872.94	545,156.38	32° 15' 11.618 N	104° 11' 14.144 W
6,975.0	0.77	172.01	6,974.4	-13.0	24.6	455,872.62	545,156.41	32° 15' 11.615 N	104° 11' 14.144 W
7,000.0	0.79	171.80	6,999.4	-13.3	24.6	455,872.29	545,156.46	32° 15' 11.612 N	104° 11' 14.143 W
7,025.0	0.76	169.39	7,024.4	-13.6	24.7	455,871.95	545,156.52	32° 15' 11.608 N	104° 11' 14.143 W
7,050.0	0.86	171.53	7,049.4	-14.0	24.8	455,871.60	545,156.57	32° 15' 11.605 N	104° 11' 14.142 W
7,075.0	0.79	171.28	7,074.4	-14.3	24.8	455,871.25	545,156.63	32° 15' 11.601 N	104° 11' 14.141 W
7,100.0	0.69	174.20	7,099.4	-14.7	24.9	455,870.93	545,156.67	32° 15' 11.598 N	104° 11' 14.141 W
7,125.0	0.73	178.28	7,124.4	-15.0	24.9	455,870.62	545,156.69	32° 15' 11.595 N	104° 11' 14.141 W
7,150.0	0.80	178.81	7,149.3	-15.3	24.9	455,870.28	545,156.70	32° 15' 11.592 N	104° 11' 14.141 W
7,175.0	0.74	190.27	7,174.3	-15.6	24.9	455,869.95	545,156.67	32° 15' 11.588 N	104° 11' 14.141 W
7,200.0	0.68	182.26	7,199.3	-15.9	24.8	455,869.64	545,156.64	32° 15' 11.585 N	104° 11' 14.141 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,225.0	0.68	201.15	7,224.3	-16.2	24.8	455,869.36	545,156.58	32° 15' 11.583 N	104° 11' 14.142 W	
7,250.0	0.63	202.52	7,249.3	-16.5	24.7	455,869.09	545,156.47	32° 15' 11.580 N	104° 11' 14.143 W	
7,275.0	0.74	209.78	7,274.3	-16.8	24.5	455,868.82	545,156.34	32° 15' 11.577 N	104° 11' 14.145 W	
7,300.0	0.69	210.14	7,299.3	-17.0	24.4	455,868.55	545,156.18	32° 15' 11.575 N	104° 11' 14.147 W	
7,325.0	0.74	211.93	7,324.3	-17.3	24.2	455,868.29	545,156.02	32° 15' 11.572 N	104° 11' 14.149 W	
7,350.0	0.86	207.83	7,349.3	-17.6	24.0	455,867.98	545,155.85	32° 15' 11.569 N	104° 11' 14.151 W	
7,375.0	0.92	209.65	7,374.3	-17.9	23.9	455,867.64	545,155.66	32° 15' 11.566 N	104° 11' 14.153 W	
7,400.0	0.87	213.34	7,399.3	-18.3	23.6	455,867.31	545,155.46	32° 15' 11.562 N	104° 11' 14.155 W	
7,425.0	0.96	209.94	7,424.3	-18.6	23.4	455,866.97	545,155.25	32° 15' 11.559 N	104° 11' 14.158 W	
7,450.0	0.97	215.42	7,449.3	-19.0	23.2	455,866.62	545,155.02	32° 15' 11.556 N	104° 11' 14.160 W	
7,475.0	1.02	214.87	7,474.3	-19.3	23.0	455,866.26	545,154.77	32° 15' 11.552 N	104° 11' 14.163 W	
7,500.0	0.99	219.26	7,499.3	-19.7	22.7	455,865.91	545,154.51	32° 15' 11.549 N	104° 11' 14.166 W	
7,525.0	0.98	219.07	7,524.3	-20.0	22.4	455,865.58	545,154.24	32° 15' 11.545 N	104° 11' 14.169 W	
7,550.0	0.99	219.92	7,549.3	-20.3	22.2	455,865.25	545,153.97	32° 15' 11.542 N	104° 11' 14.173 W	
7,575.0	0.98	222.65	7,574.3	-20.7	21.9	455,864.92	545,153.68	32° 15' 11.539 N	104° 11' 14.176 W	
7,600.0	1.08	222.93	7,599.3	-21.0	21.6	455,864.59	545,153.38	32° 15' 11.536 N	104° 11' 14.179 W	
7,625.0	1.17	221.42	7,624.3	-21.4	21.2	455,864.23	545,153.05	32° 15' 11.532 N	104° 11' 14.183 W	
7,650.0	1.19	221.96	7,649.3	-21.7	20.9	455,863.85	545,152.70	32° 15' 11.528 N	104° 11' 14.187 W	
7,675.0	1.08	226.57	7,674.3	-22.1	20.5	455,863.49	545,152.36	32° 15' 11.525 N	104° 11' 14.191 W	
7,700.0	0.58	241.85	7,699.3	-22.3	20.3	455,863.27	545,152.08	32° 15' 11.522 N	104° 11' 14.195 W	
7,725.0	1.06	232.85	7,724.3	-22.5	20.0	455,863.07	545,151.78	32° 15' 11.520 N	104° 11' 14.198 W	
7,750.0	1.09	229.21	7,749.3	-22.8	19.6	455,862.78	545,151.42	32° 15' 11.518 N	104° 11' 14.202 W	
7,775.0	1.16	229.62	7,774.3	-23.1	19.2	455,862.46	545,151.04	32° 15' 11.514 N	104° 11' 14.207 W	
7,800.0	1.25	230.49	7,799.3	-23.5	18.8	455,862.12	545,150.64	32° 15' 11.511 N	104° 11' 14.211 W	
7,825.0	1.21	230.90	7,824.3	-23.8	18.4	455,861.78	545,150.23	32° 15' 11.508 N	104° 11' 14.216 W	
7,850.0	1.32	232.21	7,849.3	-24.2	18.0	455,861.44	545,149.79	32° 15' 11.504 N	104° 11' 14.221 W	
7,875.0	1.33	231.38	7,874.2	-24.5	17.5	455,861.08	545,149.34	32° 15' 11.501 N	104° 11' 14.226 W	
7,900.0	1.32	229.53	7,899.2	-24.9	17.1	455,860.71	545,148.89	32° 15' 11.497 N	104° 11' 14.232 W	
7,925.0	1.36	228.82	7,924.2	-25.3	16.6	455,860.33	545,148.45	32° 15' 11.493 N	104° 11' 14.237 W	
7,950.0	1.40	232.47	7,949.2	-25.6	16.2	455,859.95	545,147.99	32° 15' 11.490 N	104° 11' 14.242 W	
7,975.0	1.37	233.65	7,974.2	-26.0	15.7	455,859.58	545,147.50	32° 15' 11.486 N	104° 11' 14.248 W	
8,000.0	1.42	234.91	7,999.2	-26.4	15.2	455,859.23	545,147.01	32° 15' 11.482 N	104° 11' 14.254 W	
8,025.0	1.52	235.55	8,024.2	-26.7	14.7	455,858.86	545,146.48	32° 15' 11.479 N	104° 11' 14.260 W	
8,050.0	1.62	235.93	8,049.2	-27.1	14.1	455,858.48	545,145.92	32° 15' 11.475 N	104° 11' 14.266 W	
8,075.0	1.69	235.65	8,074.2	-27.5	13.5	455,858.07	545,145.32	32° 15' 11.471 N	104° 11' 14.273 W	
8,100.0	1.66	230.51	8,099.2	-28.0	12.9	455,857.63	545,144.73	32° 15' 11.467 N	104° 11' 14.280 W	
8,125.0	1.64	231.97	8,124.2	-28.4	12.4	455,857.18	545,144.17	32° 15' 11.462 N	104° 11' 14.287 W	
8,150.0	1.73	230.57	8,149.1	-28.9	11.8	455,856.72	545,143.60	32° 15' 11.458 N	104° 11' 14.293 W	
8,175.0	1.89	226.65	8,174.1	-29.4	11.2	455,856.20	545,143.01	32° 15' 11.453 N	104° 11' 14.300 W	
8,200.0	1.89	225.62	8,199.1	-30.0	10.6	455,855.63	545,142.41	32° 15' 11.447 N	104° 11' 14.307 W	
8,225.0	1.66	229.50	8,224.1	-30.5	10.0	455,855.10	545,141.84	32° 15' 11.442 N	104° 11' 14.314 W	
8,250.0	1.78	229.35	8,249.1	-31.0	9.5	455,854.62	545,141.27	32° 15' 11.437 N	104° 11' 14.320 W	
8,275.0	1.97	225.65	8,274.1	-31.5	8.9	455,854.06	545,140.67	32° 15' 11.431 N	104° 11' 14.327 W	
8,300.0	2.14	222.77	8,299.1	-32.2	8.2	455,853.42	545,140.05	32° 15' 11.425 N	104° 11' 14.335 W	
8,325.0	2.37	220.76	8,324.1	-32.9	7.6	455,852.69	545,139.39	32° 15' 11.418 N	104° 11' 14.342 W	
8,350.0	2.33	218.20	8,349.0	-33.7	6.9	455,851.90	545,138.74	32° 15' 11.410 N	104° 11' 14.350 W	
8,375.0	2.21	216.28	8,374.0	-34.5	6.3	455,851.11	545,138.14	32° 15' 11.402 N	104° 11' 14.357 W	
8,400.0	2.10	217.38	8,399.0	-35.2	5.8	455,850.35	545,137.58	32° 15' 11.395 N	104° 11' 14.364 W	
8,425.0	2.21	216.27	8,424.0	-36.0	5.2	455,849.60	545,137.02	32° 15' 11.387 N	104° 11' 14.370 W	
8,437.0	2.22	217.49	8,436.0	-36.4	4.9	455,849.23	545,136.74	32° 15' 11.384 N	104° 11' 14.373 W	
8,582.0	2.42	213.29	8,580.8	-41.1	1.5	455,844.44	545,133.35	32° 15' 11.336 N	104° 11' 14.413 W	
8,644.0	2.65	219.61	8,642.8	-43.3	-0.1	455,842.25	545,131.72	32° 15' 11.315 N	104° 11' 14.432 W	
8,706.0	2.57	216.51	8,704.7	-45.6	-1.8	455,840.02	545,129.98	32° 15' 11.293 N	104° 11' 14.452 W	
8,738.0	5.63	196.06	8,736.6	-47.7	-2.7	455,837.94	545,129.11	32° 15' 11.272 N	104° 11' 14.462 W	
8,769.0	10.71	190.29	8,767.3	-52.0	-3.6	455,833.64	545,128.18	32° 15' 11.230 N	104° 11' 14.473 W	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
8,800.0	15.68	188.81	8,797.5	-58.9	-4.8	455,826.66	545,127.02	32° 15' 11.160 N	104° 11' 14.487 W	
8,832.0	20.23	188.63	8,827.9	-68.7	-6.3	455,816.91	545,125.53	32° 15' 11.064 N	104° 11' 14.504 W	
8,863.0	25.03	189.47	8,856.5	-80.5	-8.2	455,805.14	545,123.64	32° 15' 10.948 N	104° 11' 14.527 W	
8,894.0	28.87	189.99	8,884.2	-94.3	-10.5	455,791.29	545,121.27	32° 15' 10.811 N	104° 11' 14.554 W	
8,926.0	31.27	188.43	8,911.8	-110.1	-13.1	455,775.47	545,118.71	32° 15' 10.654 N	104° 11' 14.585 W	
8,973.0	34.40	185.63	8,951.3	-135.4	-16.2	455,750.18	545,115.62	32° 15' 10.404 N	104° 11' 14.621 W	
9,020.0	40.28	183.75	8,988.7	-163.8	-18.5	455,721.78	545,113.32	32° 15' 10.123 N	104° 11' 14.648 W	
9,067.0	45.00	181.14	9,023.3	-195.6	-19.8	455,689.99	545,111.99	32° 15' 9.808 N	104° 11' 14.664 W	
9,115.0	47.10	179.60	9,056.6	-230.2	-20.0	455,655.43	545,111.78	32° 15' 9.466 N	104° 11' 14.667 W	
9,162.0	48.29	177.82	9,088.2	-264.9	-19.2	455,620.69	545,112.57	32° 15' 9.122 N	104° 11' 14.659 W	
9,209.0	53.23	177.73	9,117.9	-301.3	-17.8	455,584.32	545,113.98	32° 15' 8.762 N	104° 11' 14.643 W	
9,256.0	58.38	178.21	9,144.3	-340.1	-16.5	455,545.49	545,115.35	32° 15' 8.378 N	104° 11' 14.627 W	
9,303.0	60.03	178.91	9,168.4	-380.5	-15.4	455,505.13	545,116.36	32° 15' 7.979 N	104° 11' 14.616 W	
9,350.0	63.38	179.75	9,190.7	-421.8	-15.0	455,463.75	545,116.84	32° 15' 7.569 N	104° 11' 14.611 W	
9,397.0	70.06	178.98	9,209.2	-465.0	-14.5	455,420.61	545,117.33	32° 15' 7.142 N	104° 11' 14.606 W	
9,444.0	79.06	177.60	9,221.7	-510.2	-13.1	455,375.37	545,118.69	32° 15' 6.694 N	104° 11' 14.591 W	
9,462.0	82.36	177.24	9,224.6	-528.0	-12.3	455,357.63	545,119.49	32° 15' 6.519 N	104° 11' 14.582 W	
9,556.0	89.30	177.47	9,231.5	-621.6	-8.0	455,264.03	545,123.81	32° 15' 5.593 N	104° 11' 14.533 W	
9,650.0	91.90	177.68	9,230.5	-715.5	-4.0	455,170.13	545,127.79	32° 15' 4.663 N	104° 11' 14.488 W	
9,744.0	92.78	179.38	9,226.6	-809.3	-1.6	455,076.25	545,130.20	32° 15' 3.734 N	104° 11' 14.462 W	
9,839.0	92.92	179.73	9,221.9	-904.2	-0.9	454,981.37	545,130.94	32° 15' 2.795 N	104° 11' 14.455 W	
9,933.0	92.43	181.06	9,217.5	-998.1	-1.5	454,887.47	545,130.29	32° 15' 1.866 N	104° 11' 14.464 W	
10,027.0	92.26	180.21	9,213.7	-1,092.0	-2.6	454,793.56	545,129.25	32° 15' 0.937 N	104° 11' 14.477 W	
10,121.0	92.66	180.63	9,209.7	-1,185.9	-3.3	454,699.65	545,128.56	32° 15' 0.007 N	104° 11' 14.487 W	
10,215.0	93.95	181.41	9,204.2	-1,279.8	-4.9	454,605.82	545,126.89	32° 14' 59.079 N	104° 11' 14.508 W	
10,309.0	93.58	183.11	9,198.1	-1,373.5	-8.6	454,512.10	545,123.19	32° 14' 58.151 N	104° 11' 14.552 W	
10,403.0	92.04	182.75	9,193.5	-1,467.3	-13.4	454,418.34	545,118.39	32° 14' 57.223 N	104° 11' 14.610 W	
10,497.0	91.67	182.51	9,190.4	-1,561.1	-17.7	454,324.49	545,114.08	32° 14' 56.295 N	104° 11' 14.661 W	
10,591.0	91.26	182.77	9,188.0	-1,655.0	-22.1	454,230.62	545,109.75	32° 14' 55.366 N	104° 11' 14.713 W	
10,684.0	91.32	182.76	9,185.9	-1,747.8	-26.5	454,137.75	545,105.27	32° 14' 54.447 N	104° 11' 14.767 W	
10,779.0	91.29	182.71	9,183.7	-1,842.7	-31.1	454,042.88	545,100.74	32° 14' 53.508 N	104° 11' 14.821 W	
10,873.0	91.02	180.47	9,181.9	-1,936.6	-33.7	453,948.95	545,098.13	32° 14' 52.578 N	104° 11' 14.853 W	
10,963.0	90.76	180.05	9,180.5	-2,026.6	-34.1	453,858.96	545,097.72	32° 14' 51.688 N	104° 11' 14.859 W	
11,052.0	90.12	179.99	9,179.8	-2,115.6	-34.1	453,769.96	545,097.69	32° 14' 50.807 N	104° 11' 14.861 W	
11,142.0	90.05	179.50	9,179.6	-2,205.6	-33.7	453,679.96	545,098.09	32° 14' 49.916 N	104° 11' 14.858 W	
11,235.0	91.09	180.79	9,178.7	-2,298.6	-34.0	453,586.97	545,097.85	32° 14' 48.996 N	104° 11' 14.862 W	
11,325.0	90.78	180.33	9,177.2	-2,388.6	-34.8	453,496.99	545,096.97	32° 14' 48.106 N	104° 11' 14.874 W	
11,414.0	90.50	179.66	9,176.3	-2,477.6	-34.8	453,407.99	545,096.98	32° 14' 47.225 N	104° 11' 14.875 W	
11,504.0	91.09	179.79	9,175.0	-2,567.6	-34.4	453,318.00	545,097.41	32° 14' 46.334 N	104° 11' 14.871 W	
11,593.0	91.47	180.04	9,173.0	-2,656.6	-34.3	453,229.03	545,097.55	32° 14' 45.454 N	104° 11' 14.871 W	
11,683.0	91.75	179.97	9,170.5	-2,746.5	-34.3	453,139.06	545,097.54	32° 14' 44.564 N	104° 11' 14.873 W	
11,774.0	91.01	181.27	9,168.3	-2,837.5	-35.3	453,048.09	545,096.55	32° 14' 43.663 N	104° 11' 14.886 W	
11,867.0	91.70	181.18	9,166.1	-2,930.4	-37.2	452,955.14	545,094.57	32° 14' 42.743 N	104° 11' 14.910 W	
11,962.0	90.89	181.95	9,163.9	-3,025.4	-39.8	452,860.20	545,091.97	32° 14' 41.804 N	104° 11' 14.942 W	
12,056.0	91.29	181.88	9,162.2	-3,119.3	-43.0	452,766.27	545,088.83	32° 14' 40.874 N	104° 11' 14.980 W	
12,150.0	90.41	183.03	9,160.8	-3,213.2	-47.0	452,672.37	545,084.81	32° 14' 39.945 N	104° 11' 15.028 W	
12,244.0	87.31	183.32	9,162.6	-3,307.0	-52.2	452,578.55	545,079.60	32° 14' 39.017 N	104° 11' 15.090 W	
12,338.0	85.38	181.67	9,168.6	-3,400.8	-56.3	452,484.84	545,075.52	32° 14' 38.089 N	104° 11' 15.140 W	
12,432.0	87.13	181.00	9,174.8	-3,494.5	-58.5	452,391.07	545,073.33	32° 14' 37.161 N	104° 11' 15.166 W	
12,526.0	88.13	180.23	9,178.7	-3,588.4	-59.5	452,297.15	545,072.32	32° 14' 36.232 N	104° 11' 15.180 W	
12,620.0	88.85	180.22	9,181.1	-3,682.4	-59.9	452,203.19	545,071.95	32° 14' 35.302 N	104° 11' 15.185 W	
12,714.0	88.24	179.64	9,183.5	-3,776.4	-59.7	452,109.22	545,072.07	32° 14' 34.372 N	104° 11' 15.186 W	
12,808.0	88.79	179.61	9,186.0	-3,870.3	-59.1	452,015.25	545,072.68	32° 14' 33.442 N	104° 11' 15.180 W	
12,902.0	89.88	180.52	9,187.0	-3,964.3	-59.2	451,921.26	545,072.58	32° 14' 32.512 N	104° 11' 15.183 W	
12,996.0	90.62	181.91	9,186.6	-4,058.3	-61.2	451,827.29	545,070.58	32° 14' 31.582 N	104° 11' 15.207 W	



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,090.0	88.76	181.70	9,187.1	-4,152.3	-64.2	451,733.34	545,067.62	32° 14' 30.652 N	104° 11' 15.243 W
13,153.0	88.78	181.91	9,188.5	-4,215.2	-66.2	451,670.38	545,065.64	32° 14' 30.029 N	104° 11' 15.267 W
13,184.0	88.87	181.82	9,189.1	-4,246.2	-67.2	451,639.41	545,064.63	32° 14' 29.723 N	104° 11' 15.280 W
13,215.0	89.42	181.12	9,189.6	-4,277.2	-68.0	451,608.42	545,063.84	32° 14' 29.416 N	104° 11' 15.289 W
13,246.0	90.04	180.59	9,189.7	-4,308.2	-68.4	451,577.43	545,063.37	32° 14' 29.110 N	104° 11' 15.295 W
13,278.0	89.98	180.80	9,189.7	-4,340.2	-68.8	451,545.43	545,062.99	32° 14' 28.793 N	104° 11' 15.300 W
13,309.0	90.61	181.20	9,189.6	-4,371.2	-69.4	451,514.43	545,062.44	32° 14' 28.486 N	104° 11' 15.307 W
13,340.0	90.73	180.51	9,189.2	-4,402.2	-69.8	451,483.44	545,061.98	32° 14' 28.179 N	104° 11' 15.313 W
13,371.0	90.44	178.93	9,188.9	-4,433.1	-69.7	451,452.44	545,062.13	32° 14' 27.873 N	104° 11' 15.312 W
13,403.0	90.25	178.44	9,188.7	-4,465.1	-68.9	451,420.45	545,062.87	32° 14' 27.556 N	104° 11' 15.304 W
13,434.0	90.41	178.50	9,188.5	-4,496.1	-68.1	451,389.46	545,063.70	32° 14' 27.249 N	104° 11' 15.294 W
13,465.0	91.70	178.82	9,188.0	-4,527.1	-67.4	451,358.48	545,064.42	32° 14' 26.943 N	104° 11' 15.287 W
13,497.0	93.34	179.38	9,186.5	-4,559.1	-66.9	451,326.51	545,064.92	32° 14' 26.626 N	104° 11' 15.281 W
13,528.0	94.02	179.68	9,184.6	-4,590.0	-66.6	451,295.58	545,065.18	32° 14' 26.320 N	104° 11' 15.279 W
13,559.0	92.07	180.04	9,182.9	-4,621.0	-66.6	451,264.62	545,065.25	32° 14' 26.014 N	104° 11' 15.278 W
13,591.0	90.12	180.24	9,182.3	-4,653.0	-66.6	451,232.63	545,065.17	32° 14' 25.697 N	104° 11' 15.280 W
13,622.0	88.91	180.33	9,182.6	-4,684.0	-66.8	451,201.63	545,065.02	32° 14' 25.391 N	104° 11' 15.282 W
13,653.0	89.35	180.25	9,183.0	-4,715.0	-66.9	451,170.64	545,064.86	32° 14' 25.084 N	104° 11' 15.284 W
13,747.0	89.64	179.81	9,183.9	-4,808.9	-67.0	451,076.64	545,064.81	32° 14' 24.154 N	104° 11' 15.286 W
13,841.0	88.84	178.64	9,185.1	-4,902.9	-65.7	450,982.66	545,066.08	32° 14' 23.224 N	104° 11' 15.273 W
13,935.0	89.98	179.00	9,186.1	-4,996.9	-63.8	450,888.69	545,068.02	32° 14' 22.294 N	104° 11' 15.252 W
14,029.0	91.90	180.38	9,184.5	-5,090.9	-63.3	450,794.71	545,068.53	32° 14' 21.363 N	104° 11' 15.248 W
14,123.0	91.84	180.37	9,181.5	-5,184.8	-63.9	450,700.76	545,067.91	32° 14' 20.434 N	104° 11' 15.256 W
14,217.0	92.17	181.59	9,178.2	-5,278.8	-65.5	450,606.83	545,066.31	32° 14' 19.504 N	104° 11' 15.276 W
14,311.0	90.82	182.53	9,175.7	-5,372.7	-68.9	450,512.93	545,062.93	32° 14' 18.575 N	104° 11' 15.317 W
14,405.0	89.70	181.21	9,175.3	-5,466.6	-72.0	450,418.98	545,059.86	32° 14' 17.645 N	104° 11' 15.354 W
14,499.0	89.85	181.31	9,175.7	-5,560.6	-74.0	450,325.01	545,057.80	32° 14' 16.715 N	104° 11' 15.380 W
14,593.0	88.74	180.82	9,176.8	-5,654.6	-75.8	450,231.03	545,056.05	32° 14' 15.785 N	104° 11' 15.402 W
14,687.0	88.79	180.75	9,178.9	-5,748.5	-77.1	450,137.06	545,054.76	32° 14' 14.855 N	104° 11' 15.418 W
14,781.0	88.64	181.05	9,181.0	-5,842.5	-78.5	450,043.10	545,053.28	32° 14' 13.925 N	104° 11' 15.437 W
14,875.0	89.16	181.04	9,182.8	-5,936.5	-80.2	449,949.13	545,051.57	32° 14' 12.996 N	104° 11' 15.458 W
14,969.0	89.33	180.95	9,184.0	-6,030.4	-81.9	449,855.15	545,049.94	32° 14' 12.066 N	104° 11' 15.479 W
15,063.0	89.41	180.81	9,185.0	-6,124.4	-83.3	449,761.17	545,048.49	32° 14' 11.135 N	104° 11' 15.497 W
15,157.0	89.41	180.20	9,186.0	-6,218.4	-84.1	449,667.18	545,047.67	32° 14' 10.205 N	104° 11' 15.508 W
15,251.0	90.38	180.42	9,186.2	-6,312.4	-84.7	449,573.18	545,047.16	32° 14' 9.275 N	104° 11' 15.516 W
15,346.0	91.27	180.89	9,184.8	-6,407.4	-85.7	449,478.20	545,046.07	32° 14' 8.335 N	104° 11' 15.530 W
15,440.0	92.37	180.87	9,181.8	-6,501.3	-87.2	449,384.26	545,044.63	32° 14' 7.406 N	104° 11' 15.548 W
15,534.0	91.80	180.59	9,178.4	-6,595.3	-88.4	449,290.33	545,043.43	32° 14' 6.476 N	104° 11' 15.564 W
15,629.0	89.67	180.08	9,177.2	-6,690.2	-88.9	449,195.34	545,042.88	32° 14' 5.536 N	104° 11' 15.572 W
15,722.0	90.39	180.29	9,177.1	-6,783.2	-89.2	449,102.35	545,042.58	32° 14' 4.616 N	104° 11' 15.577 W
15,816.0	90.33	179.82	9,176.5	-6,877.2	-89.3	449,008.35	545,042.49	32° 14' 3.685 N	104° 11' 15.579 W
15,911.0	90.18	179.78	9,176.1	-6,972.2	-89.0	448,913.35	545,042.82	32° 14' 2.745 N	104° 11' 15.577 W
16,005.0	89.25	180.36	9,176.6	-7,066.2	-89.1	448,819.35	545,042.70	32° 14' 1.815 N	104° 11' 15.579 W
16,099.0	88.71	180.96	9,178.3	-7,160.2	-90.2	448,725.37	545,041.62	32° 14' 0.885 N	104° 11' 15.594 W
16,193.0	89.31	181.31	9,179.9	-7,254.2	-92.1	448,631.41	545,039.76	32° 13' 59.955 N	104° 11' 15.617 W
16,287.0	89.27	181.34	9,181.1	-7,348.2	-94.2	448,537.44	545,037.59	32° 13' 59.025 N	104° 11' 15.644 W
16,381.0	89.71	181.70	9,181.9	-7,442.1	-96.7	448,443.48	545,035.09	32° 13' 58.095 N	104° 11' 15.674 W
16,474.0	88.13	181.60	9,183.6	-7,535.1	-99.4	448,350.54	545,032.41	32° 13' 57.176 N	104° 11' 15.707 W
16,568.0	88.04	180.92	9,186.8	-7,629.0	-101.5	448,256.61	545,030.35	32° 13' 56.246 N	104° 11' 15.732 W
16,662.0	89.35	180.07	9,188.9	-7,722.9	-102.3	448,162.64	545,029.54	32° 13' 55.316 N	104° 11' 15.743 W
16,757.0	90.56	180.25	9,189.0	-7,817.9	-102.5	448,067.64	545,029.27	32° 13' 54.376 N	104° 11' 15.748 W
16,851.0	91.06	180.69	9,187.7	-7,911.9	-103.3	447,973.66	545,028.50	32° 13' 53.446 N	104° 11' 15.758 W
16,945.0	91.38	181.14	9,185.7	-8,005.9	-104.8	447,879.69	545,027.00	32° 13' 52.516 N	104° 11' 15.777 W
17,040.0	92.21	180.70	9,182.7	-8,100.8	-106.3	447,784.75	545,025.48	32° 13' 51.576 N	104° 11' 15.796 W
17,134.0	92.18	180.59	9,179.1	-8,194.8	-107.4	447,690.83	545,024.42	32° 13' 50.647 N	104° 11' 15.810 W



Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well ROADSTER ST COM #1H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Site:	TOMAHAWK	MD Reference:	RKB=3188.7+24 @ 3212.7usft (ENSIGN 156)
Well:	ROADSTER ST COM #1H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,228.0	92.41	180.31	9,175.3	-8,288.7	-108.1	447,596.90	545,023.68	32° 13' 49.718 N	104° 11' 15.820 W
17,322.0	93.17	179.90	9,170.8	-8,382.6	-108.3	447,503.02	545,023.51	32° 13' 48.788 N	104° 11' 15.824 W
17,416.0	91.93	179.85	9,166.6	-8,476.5	-108.1	447,409.11	545,023.71	32° 13' 47.859 N	104° 11' 15.823 W
17,510.0	90.29	180.34	9,164.7	-8,570.5	-108.3	447,315.13	545,023.56	32° 13' 46.929 N	104° 11' 15.826 W
17,604.0	89.96	180.48	9,164.5	-8,664.5	-108.9	447,221.14	545,022.88	32° 13' 45.999 N	104° 11' 15.835 W
17,699.0	90.29	180.73	9,164.3	-8,759.4	-109.9	447,126.14	545,021.88	32° 13' 45.059 N	104° 11' 15.849 W
17,793.0	91.07	181.04	9,163.2	-8,853.4	-111.4	447,032.16	545,020.43	32° 13' 44.129 N	104° 11' 15.867 W
17,887.0	88.53	180.84	9,163.5	-8,947.4	-112.9	446,938.18	545,018.89	32° 13' 43.199 N	104° 11' 15.886 W
17,982.0	88.47	180.94	9,166.0	-9,042.4	-114.4	446,843.22	545,017.41	32° 13' 42.259 N	104° 11' 15.905 W
18,075.0	87.70	179.60	9,169.1	-9,135.3	-114.8	446,750.28	545,016.97	32° 13' 41.339 N	104° 11' 15.912 W
18,169.0	88.42	179.76	9,172.3	-9,229.3	-114.3	446,656.34	545,017.50	32° 13' 40.409 N	104° 11' 15.907 W
18,263.0	87.54	179.27	9,175.6	-9,323.2	-113.5	446,562.40	545,018.29	32° 13' 39.480 N	104° 11' 15.899 W
18,357.0	89.84	179.64	9,177.8	-9,417.2	-112.6	446,468.43	545,019.19	32° 13' 38.550 N	104° 11' 15.890 W
18,450.0	89.93	179.47	9,178.0	-9,510.2	-111.9	446,375.44	545,019.91	32° 13' 37.630 N	104° 11' 15.883 W
18,545.0	89.70	179.14	9,178.3	-9,605.1	-110.7	446,280.45	545,021.06	32° 13' 36.689 N	104° 11' 15.872 W
18,638.0	89.39	178.69	9,179.0	-9,698.1	-109.0	446,187.47	545,022.82	32° 13' 35.769 N	104° 11' 15.852 W
18,732.0	89.19	177.99	9,180.2	-9,792.1	-106.3	446,093.51	545,025.55	32° 13' 34.839 N	104° 11' 15.822 W
18,825.0	87.53	177.01	9,182.8	-9,884.9	-102.2	446,000.64	545,029.60	32° 13' 33.920 N	104° 11' 15.777 W
18,919.0	88.45	178.94	9,186.1	-9,978.8	-98.9	445,906.77	545,032.92	32° 13' 32.991 N	104° 11' 15.739 W
19,013.0	88.74	178.55	9,188.4	-10,072.8	-96.8	445,812.82	545,034.98	32° 13' 32.061 N	104° 11' 15.717 W
19,107.0	88.25	178.12	9,190.9	-10,166.7	-94.1	445,718.89	545,037.71	32° 13' 31.132 N	104° 11' 15.687 W
19,172.0	88.31	177.95	9,192.9	-10,231.6	-91.9	445,653.96	545,039.94	32° 13' 30.489 N	104° 11' 15.662 W
19,230.0	88.31	177.95	9,194.6	-10,289.6	-89.8	445,596.02	545,042.01	32° 13' 29.916 N	104° 11' 15.638 W

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------