

COG

SURVEY REPORT

VAST STATE #25H

NORAM #23

4/26/2017

SS OGD
SEP 25 2017
RECEIVED



The **Ultimate Partner** In Wellbore Placement

CUSTOMER COG
PROJECT Vast State #25H
FIELD Vast State #25H

SDI JOB NO. OP.000910
SDI DISTRICT Midland
SDI KIT/UNIT

SITE INFORMATION

Site Name Vast State #25H
Lat/Long 32.036711° N, 103.591836° W
Northing 377,870 ft
Easting 729,771.4 ft

Section
Township
Range

MAP INFORMATION

North Reference Grid North
Grid Correction -0.40 deg
System US State Plane 1927
Datum North American Datum 1927 (Clarke 1866)
Map Zone New Mexico East: 3001



WELL INFORMATION

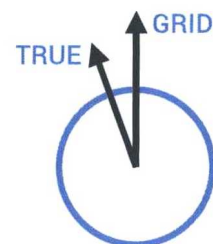
Lat/Long 32.036711° N, 103.591836° W
Northing 377,870 ft
Easting 729,771.4 ft
UWI 30-025-43546

DEPTH AND ELEVATION REFERENCE

Ground Level 3262 ft above Mean Sea Level
Reference Datum RKB
Reference Height 30 ft above G.L.
Reference Elevation 3292 ft

VERTICAL SECTION REFERENCE

+N/-S 0 ft
+E/-W 0 ft
Proposal Direction 209.15°
Calculation Method Minimum Curvature



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity 998.498 mG [computed]
True to Grid subtract 0.4°

WELL NOTES

Keeper Gyro Wireline Survey in 4 1/2 DP to 11645'

OPERATORS

Nathan Yerby

SDI Operator Name (Printed)

SIGNATURE

DATE

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	0.43	168.24	100.00	0.28	-0.36	0.08	0.43	0.37	168.24
125.00	0.51	170.30	125.00	0.44	-0.57	0.11	0.36	0.58	168.64
150.00	0.51	170.46	150.00	0.61	-0.79	0.15	0.01	0.80	169.13
175.00	0.49	165.85	175.00	0.78	-1.00	0.20	0.18	1.02	168.93
200.00	0.53	156.43	200.00	0.93	-1.21	0.27	0.37	1.24	167.50
225.00	0.47	162.85	224.99	1.07	-1.42	0.35	0.34	1.46	166.30
250.00	0.49	172.88	249.99	1.22	-1.62	0.39	0.34	1.66	166.50
275.00	0.44	143.59	274.99	1.35	-1.80	0.46	0.95	1.86	165.70
300.00	0.44	105.56	299.99	1.37	-1.91	0.61	1.16	2.00	162.25
325.00	0.75	71.28	324.99	1.22	-1.88	0.86	1.84	2.07	155.42
350.00	0.80	63.85	349.99	0.96	-1.75	1.17	0.45	2.11	146.14
375.00	0.88	66.17	374.99	0.66	-1.59	1.51	0.33	2.19	136.60
400.00	0.93	67.54	399.98	0.34	-1.44	1.87	0.22	2.36	127.55
425.00	0.88	66.64	424.98	0.03	-1.28	2.23	0.23	2.58	119.90
450.00	0.95	64.68	449.98	-0.29	-1.12	2.60	0.34	2.83	113.32
475.00	0.85	62.48	474.97	-0.61	-0.94	2.95	0.44	3.10	107.76
500.00	0.60	56.36	499.97	-0.88	-0.79	3.22	1.04	3.32	103.72
525.00	0.40	45.80	524.97	-1.08	-0.65	3.39	0.88	3.46	100.89
550.00	0.25	35.69	549.97	-1.22	-0.55	3.49	0.63	3.53	98.92
575.00	0.21	20.61	574.97	-1.32	-0.46	3.54	0.30	3.57	97.40
600.00	0.10	3.26	599.97	-1.39	-0.39	3.56	0.47	3.58	96.32
625.00	0.15	355.87	624.97	-1.44	-0.34	3.55	0.21	3.57	95.43
650.00	0.14	328.18	649.97	-1.48	-0.28	3.54	0.29	3.55	94.50
675.00	0.17	341.25	674.97	-1.52	-0.22	3.51	0.19	3.51	93.52
700.00	0.11	356.47	699.97	-1.57	-0.16	3.49	0.29	3.50	92.56
725.00	0.15	323.34	724.97	-1.60	-0.11	3.47	0.32	3.47	91.75
750.00	0.16	323.22	749.97	-1.63	-0.05	3.43	0.04	3.43	90.89
775.00	0.13	343.40	774.97	-1.66	0.00	3.40	0.23	3.40	89.99
800.00	0.07	352.83	799.97	-1.69	0.04	3.39	0.25	3.40	89.31
825.00	0.06	40.49	824.97	-1.71	0.06	3.40	0.20	3.40	88.91
850.00	0.08	51.81	849.97	-1.74	0.09	3.42	0.12	3.42	88.57

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	0.14	53.17	874.97	-1.79	0.11	3.46	0.21	3.46	88.11
900.00	0.15	59.15	899.97	-1.84	0.15	3.51	0.08	3.52	87.58
925.00	0.16	109.14	924.97	-1.88	0.15	3.57	0.52	3.58	87.53
950.00	0.20	101.44	949.97	-1.89	0.13	3.65	0.18	3.65	87.89
975.00	0.13	103.04	974.97	-1.92	0.12	3.72	0.26	3.72	88.16
1000.00	0.13	89.28	999.97	-1.94	0.11	3.77	0.12	3.77	88.28
1025.00	0.14	84.51	1024.97	-1.97	0.12	3.83	0.08	3.83	88.25
1050.00	0.08	83.21	1049.97	-2.00	0.12	3.88	0.25	3.88	88.20
1075.00	0.13	101.98	1074.97	-2.02	0.12	3.93	0.24	3.93	88.28
1100.00	0.19	103.55	1099.97	-2.04	0.10	3.99	0.24	4.00	88.53
1125.00	0.19	101.49	1124.97	-2.06	0.08	4.08	0.03	4.08	88.81
1150.00	0.17	108.32	1149.97	-2.08	0.06	4.15	0.11	4.15	89.11
1175.00	0.14	115.45	1174.97	-2.09	0.04	4.21	0.16	4.21	89.45
1200.00	0.16	116.89	1199.97	-2.09	0.01	4.27	0.12	4.27	89.85
1225.00	0.18	120.85	1224.97	-2.09	-0.03	4.34	0.07	4.34	90.33
1250.00	0.28	107.22	1249.97	-2.10	-0.06	4.43	0.45	4.43	90.81
1275.00	0.28	110.17	1274.97	-2.12	-0.10	4.54	0.06	4.54	91.28
1300.00	0.25	115.93	1299.97	-2.14	-0.15	4.65	0.15	4.65	91.81
1325.00	0.23	101.91	1324.97	-2.15	-0.18	4.75	0.25	4.75	92.18
1350.00	0.18	120.58	1349.97	-2.17	-0.21	4.83	0.33	4.84	92.51
1375.00	0.24	102.68	1374.97	-2.18	-0.24	4.92	0.35	4.92	92.83
1400.00	0.28	111.59	1399.97	-2.21	-0.28	5.02	0.23	5.03	93.16
1425.00	0.32	102.57	1424.97	-2.23	-0.32	5.15	0.24	5.16	93.50
1450.00	0.20	103.65	1449.97	-2.26	-0.34	5.26	0.47	5.27	93.71
1475.00	0.12	146.12	1474.97	-2.27	-0.37	5.32	0.56	5.33	94.00
1500.00	0.19	125.38	1499.97	-2.25	-0.42	5.37	0.38	5.38	94.45
1525.00	0.23	117.93	1524.96	-2.25	-0.47	5.44	0.19	5.46	94.89
1550.00	0.26	108.58	1549.96	-2.26	-0.51	5.54	0.19	5.57	95.23
1575.00	0.22	112.70	1574.96	-2.27	-0.54	5.64	0.16	5.67	95.50
1600.00	0.19	111.19	1599.96	-2.28	-0.58	5.72	0.13	5.75	95.76
1625.00	0.18	120.29	1624.96	-2.29	-0.61	5.80	0.12	5.83	96.03
1650.00	0.17	143.33	1649.96	-2.27	-0.66	5.85	0.29	5.89	96.46

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	0.17	154.16	1674.96	-2.24	-0.73	5.89	0.13	5.94	97.03
1700.00	0.18	153.92	1699.96	-2.19	-0.80	5.93	0.02	5.98	97.65
1725.00	0.16	121.89	1724.96	-2.17	-0.85	5.97	0.38	6.03	98.09
1750.00	0.21	110.57	1749.96	-2.17	-0.88	6.04	0.26	6.11	98.32
1775.00	0.10	164.44	1774.96	-2.16	-0.92	6.09	0.69	6.16	98.59
1800.00	0.19	134.57	1799.96	-2.14	-0.97	6.13	0.47	6.20	99.00
1825.00	0.24	131.53	1824.96	-2.11	-1.04	6.20	0.19	6.28	99.48
1850.00	0.22	154.84	1849.96	-2.08	-1.11	6.26	0.38	6.35	100.09
1875.00	0.29	174.78	1874.96	-1.99	-1.22	6.28	0.44	6.40	100.99
1900.00	0.35	185.96	1899.96	-1.87	-1.36	6.28	0.33	6.43	102.20
1925.00	0.33	184.19	1924.96	-1.74	-1.50	6.27	0.09	6.45	103.49
1950.00	0.36	183.65	1949.96	-1.60	-1.65	6.26	0.13	6.47	104.80
1975.00	0.41	183.65	1974.96	-1.45	-1.82	6.25	0.21	6.51	106.25
2000.00	0.45	178.39	1999.96	-1.29	-2.01	6.24	0.21	6.56	107.82
2025.00	0.47	180.56	2024.96	-1.12	-2.21	6.25	0.12	6.62	109.46
2050.00	0.48	195.66	2049.96	-0.92	-2.41	6.22	0.50	6.67	111.19
2075.00	0.47	193.62	2074.96	-0.72	-2.61	6.16	0.08	6.69	112.95
2100.00	0.48	190.72	2099.96	-0.52	-2.81	6.12	0.11	6.74	114.68
2125.00	0.41	188.41	2124.96	-0.34	-3.00	6.09	0.32	6.79	116.26
2150.00	0.21	212.33	2149.96	-0.21	-3.13	6.05	0.93	6.81	117.35
2175.00	0.10	222.24	2174.96	-0.15	-3.18	6.01	0.42	6.80	117.91
2200.00	0.17	241.42	2199.96	-0.10	-3.22	5.96	0.31	6.78	118.35
2225.00	0.20	236.68	2224.96	-0.03	-3.26	5.90	0.13	6.74	118.93
2250.00	0.15	237.16	2249.96	0.04	-3.30	5.83	0.20	6.70	119.49
2275.00	0.12	236.05	2274.96	0.09	-3.33	5.79	0.11	6.68	119.93
2300.00	0.19	249.35	2299.96	0.15	-3.36	5.73	0.31	6.64	120.41
2325.00	0.20	246.55	2324.96	0.21	-3.39	5.65	0.04	6.59	120.99
2350.00	0.19	232.80	2349.96	0.28	-3.43	5.58	0.19	6.55	121.64
2375.00	0.21	232.92	2374.95	0.36	-3.49	5.51	0.08	6.52	122.36
2400.00	0.14	220.53	2399.95	0.44	-3.54	5.45	0.33	6.50	123.00
2425.00	0.15	241.78	2424.95	0.49	-3.58	5.40	0.21	6.48	123.51
2450.00	0.19	244.17	2449.95	0.55	-3.61	5.34	0.18	6.44	124.08

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
2475.00	0.28	217.48	2474.95	0.65	-3.68	5.26	0.54	6.42	124.94
2500.00	0.31	218.12	2499.95	0.77	-3.78	5.18	0.13	6.41	126.07
2525.00	0.32	223.54	2524.95	0.91	-3.88	5.09	0.14	6.40	127.30
2550.00	0.36	224.66	2549.95	1.05	-3.99	4.99	0.16	6.39	128.63
2575.00	0.32	232.33	2574.95	1.19	-4.09	4.88	0.26	6.36	129.94
2600.00	0.38	227.42	2599.95	1.33	-4.18	4.76	0.27	6.34	131.29
2625.00	0.30	230.55	2624.95	1.47	-4.28	4.65	0.30	6.32	132.63
2650.00	0.29	222.95	2649.95	1.60	-4.37	4.56	0.16	6.31	133.80
2675.00	0.28	214.18	2674.95	1.72	-4.47	4.48	0.18	6.33	134.94
2700.00	0.28	219.91	2699.95	1.84	-4.57	4.40	0.11	6.34	136.05
2725.00	0.28	229.17	2724.95	1.96	-4.65	4.32	0.18	6.35	137.14
2750.00	0.31	218.59	2749.95	2.08	-4.75	4.23	0.26	6.36	138.29
2775.00	0.27	217.83	2774.95	2.21	-4.85	4.15	0.15	6.38	139.41
2800.00	0.35	215.89	2799.95	2.35	-4.96	4.07	0.31	6.41	140.60
2825.00	0.35	209.44	2824.95	2.50	-5.08	3.99	0.16	6.46	141.89
2850.00	0.36	214.67	2849.95	2.65	-5.22	3.91	0.14	6.52	143.17
2875.00	0.51	192.82	2874.95	2.84	-5.39	3.84	0.88	6.62	144.56
2900.00	0.46	204.47	2899.95	3.05	-5.59	3.77	0.44	6.74	146.01
2925.00	0.53	215.05	2924.95	3.26	-5.78	3.66	0.44	6.84	147.63
2950.00	0.53	207.45	2949.95	3.49	-5.97	3.54	0.28	6.94	149.33
2975.00	0.53	207.75	2974.94	3.72	-6.18	3.43	0.03	7.07	150.93
3000.00	0.60	206.98	2999.94	3.97	-6.40	3.32	0.27	7.21	152.57
3025.00	0.70	201.50	3024.94	4.25	-6.66	3.21	0.48	7.39	154.29
3050.00	0.69	208.15	3049.94	4.56	-6.93	3.08	0.33	7.59	156.06
3075.00	0.70	211.72	3074.94	4.86	-7.20	2.93	0.18	7.77	157.86
3100.00	0.72	205.66	3099.94	5.17	-7.47	2.78	0.31	7.97	159.59
3125.00	0.70	212.37	3124.93	5.48	-7.74	2.63	0.34	8.17	161.24
3150.00	0.70	217.48	3149.93	5.78	-7.99	2.45	0.25	8.36	162.93
3175.00	0.62	249.56	3174.93	6.04	-8.16	2.23	1.49	8.46	164.69
3200.00	0.54	266.66	3199.93	6.20	-8.21	1.99	0.76	8.45	166.38
3225.00	0.54	272.89	3224.93	6.32	-8.21	1.76	0.23	8.40	167.94
3250.00	0.73	273.35	3249.93	6.44	-8.20	1.48	0.78	8.33	169.78

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	0.98	267.26	3274.92	6.62	-8.20	1.11	1.05	8.27	172.32
3300.00	0.71	272.75	3299.92	6.80	-8.20	0.74	1.14	8.23	174.86
3325.00	0.58	275.87	3324.92	6.92	-8.18	0.46	0.52	8.19	176.80
3350.00	0.45	282.13	3349.92	7.00	-8.15	0.24	0.56	8.15	178.34
3375.00	0.21	331.12	3374.92	7.01	-8.09	0.12	1.41	8.09	179.17
3400.00	0.36	42.92	3399.92	6.91	-7.99	0.15	1.41	7.99	178.93
3425.00	0.43	52.34	3424.92	6.74	-7.88	0.28	0.40	7.88	177.99
3450.00	0.62	58.23	3449.92	6.54	-7.75	0.47	0.76	7.76	176.56
3475.00	0.77	64.42	3474.91	6.28	-7.60	0.73	0.70	7.64	174.50
3500.00	0.76	66.15	3499.91	6.01	-7.46	1.04	0.11	7.54	172.09
3525.00	0.97	63.35	3524.91	5.71	-7.30	1.38	0.88	7.43	169.31
3550.00	1.13	57.90	3549.90	5.31	-7.08	1.78	0.74	7.29	165.90
3575.00	1.14	58.82	3574.90	4.88	-6.82	2.20	0.08	7.16	162.12
3600.00	1.25	56.74	3599.89	4.42	-6.54	2.64	0.47	7.05	158.01
3625.00	1.36	57.02	3624.89	3.92	-6.23	3.12	0.44	6.96	153.41
3650.00	1.54	59.51	3649.88	3.37	-5.89	3.65	0.77	6.94	148.20
3675.00	1.90	61.01	3674.87	2.72	-5.52	4.31	1.47	7.00	142.04
3700.00	1.48	56.30	3699.86	2.08	-5.14	4.94	1.80	7.13	136.15
3725.00	1.33	48.88	3724.85	1.52	-4.77	5.43	0.94	7.23	131.34
3750.00	1.22	38.09	3749.84	0.99	-4.37	5.81	1.05	7.27	126.97
3775.00	1.21	29.68	3774.84	0.46	-3.93	6.10	0.72	7.26	122.78
3800.00	1.20	30.56	3799.83	-0.07	-3.48	6.37	0.09	7.26	118.63
3825.00	1.26	32.25	3824.83	-0.60	-3.02	6.65	0.29	7.30	114.42
3850.00	1.24	30.48	3849.82	-1.15	-2.55	6.93	0.17	7.39	110.21
3875.00	1.23	29.85	3874.82	-1.69	-2.09	7.20	0.08	7.50	106.14
3900.00	1.19	27.10	3899.81	-2.22	-1.62	7.46	0.28	7.63	102.27
3925.00	1.07	14.17	3924.80	-2.70	-1.17	7.63	1.13	7.72	98.68
3950.00	0.97	355.98	3949.80	-3.10	-0.73	7.67	1.34	7.71	95.43
3975.00	0.94	351.12	3974.80	-3.44	-0.32	7.63	0.34	7.63	92.37
4000.00	1.00	346.76	3999.79	-3.76	0.10	7.55	0.36	7.55	89.24
4025.00	1.05	341.62	4024.79	-4.08	0.53	7.42	0.42	7.44	85.93
4050.00	0.97	341.39	4049.79	-4.37	0.95	7.28	0.30	7.34	82.60

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	0.97	341.41	4074.78	-4.66	1.35	7.15	0.01	7.27	79.32
4100.00	0.87	327.47	4099.78	-4.89	1.71	6.98	0.98	7.18	76.24
4125.00	0.72	287.11	4124.78	-4.95	1.92	6.73	2.27	6.99	74.10
4150.00	0.93	266.27	4149.77	-4.81	1.95	6.37	1.46	6.66	72.99
4175.00	0.93	270.08	4174.77	-4.60	1.94	5.97	0.25	6.27	72.02
4200.00	0.81	263.28	4199.77	-4.40	1.92	5.59	0.64	5.91	71.08
4225.00	0.84	253.85	4224.77	-4.16	1.84	5.24	0.56	5.55	70.60
4250.00	0.70	240.49	4249.76	-3.90	1.72	4.93	0.91	5.22	70.78
4275.00	0.45	228.01	4274.76	-3.68	1.58	4.72	1.11	4.98	71.53
4300.00	0.44	192.34	4299.76	-3.49	1.42	4.63	1.09	4.84	72.98
4325.00	0.57	177.70	4324.76	-3.29	1.20	4.61	0.72	4.77	75.44
4350.00	0.53	181.74	4349.76	-3.09	0.96	4.62	0.23	4.71	78.26
4375.00	0.58	170.14	4374.76	-2.89	0.72	4.63	0.49	4.69	81.17
4400.00	0.58	172.22	4399.76	-2.69	0.47	4.67	0.08	4.70	84.24
4425.00	0.44	189.61	4424.76	-2.50	0.25	4.67	0.83	4.68	86.91
4450.00	0.51	217.54	4449.76	-2.30	0.07	4.59	0.97	4.59	89.13
4475.00	0.51	221.10	4474.75	-2.08	-0.10	4.45	0.13	4.45	91.34
4500.00	0.50	213.18	4499.75	-1.86	-0.28	4.31	0.28	4.32	93.71
4525.00	0.50	213.81	4524.75	-1.64	-0.46	4.19	0.02	4.22	96.30
4550.00	0.59	204.34	4549.75	-1.40	-0.67	4.08	0.50	4.13	99.35
4575.00	0.50	204.83	4574.75	-1.16	-0.89	3.98	0.35	4.08	102.58
4600.00	0.38	213.95	4599.75	-0.97	-1.06	3.89	0.55	4.03	105.21
4625.00	0.38	203.62	4624.75	-0.81	-1.20	3.81	0.28	3.99	107.52
4650.00	0.36	203.37	4649.75	-0.64	-1.35	3.74	0.05	3.98	109.83
4675.00	0.33	214.73	4674.75	-0.49	-1.48	3.67	0.31	3.96	111.99
4700.00	0.37	211.89	4699.75	-0.34	-1.61	3.59	0.17	3.93	114.17
4725.00	0.45	198.42	4724.75	-0.17	-1.77	3.51	0.49	3.93	116.74
4750.00	0.44	208.95	4749.75	0.03	-1.95	3.44	0.33	3.95	119.52
4775.00	0.45	211.31	4774.74	0.22	-2.11	3.34	0.10	3.95	122.33
4800.00	0.44	211.80	4799.74	0.41	-2.28	3.24	0.06	3.96	125.14
4825.00	0.49	207.87	4824.74	0.62	-2.45	3.14	0.26	3.98	128.05
4850.00	0.52	220.01	4849.74	0.83	-2.64	3.01	0.44	4.00	131.18

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
4875.00	0.43	222.54	4874.74	1.04	-2.79	2.88	0.37	4.01	134.11
4900.00	0.42	215.26	4899.74	1.22	-2.93	2.76	0.22	4.03	136.73
4925.00	0.46	226.88	4924.74	1.41	-3.08	2.64	0.40	4.05	139.45
4950.00	0.54	226.90	4949.74	1.61	-3.23	2.48	0.30	4.07	142.53
4975.00	0.56	219.33	4974.74	1.85	-3.41	2.31	0.31	4.12	145.84
5000.00	0.65	214.81	4999.74	2.11	-3.62	2.15	0.38	4.21	149.24
5025.00	0.53	229.80	5024.74	2.36	-3.81	1.98	0.76	4.29	152.49
5050.00	0.53	227.92	5049.73	2.58	-3.96	1.81	0.07	4.35	155.47
5075.00	0.57	235.43	5074.73	2.80	-4.11	1.62	0.33	4.42	158.50
5100.00	0.60	238.01	5099.73	3.03	-4.25	1.40	0.16	4.48	161.72
5125.00	0.56	246.93	5124.73	3.24	-4.37	1.18	0.40	4.52	164.87
5150.00	0.56	244.32	5149.73	3.43	-4.47	0.96	0.10	4.57	167.89
5175.00	0.51	249.28	5174.73	3.62	-4.56	0.75	0.27	4.62	170.72
5200.00	0.48	248.03	5199.73	3.79	-4.64	0.54	0.12	4.67	173.30
5225.00	0.57	263.43	5224.73	3.94	-4.69	0.32	0.66	4.70	176.04
5250.00	0.56	314.63	5249.73	3.98	-4.62	0.12	1.94	4.62	178.57
5275.00	0.62	340.88	5274.72	3.86	-4.41	-0.02	1.09	4.41	180.20
5300.00	0.58	345.23	5299.72	3.67	-4.16	-0.09	0.22	4.16	181.27
5325.00	0.88	332.05	5324.72	3.48	-3.86	-0.21	1.36	3.87	183.18
5350.00	1.18	320.42	5349.72	3.28	-3.50	-0.47	1.43	3.53	187.63
5375.00	0.86	336.03	5374.71	3.08	-3.13	-0.71	1.66	3.21	192.76
5400.00	0.71	341.66	5399.71	2.86	-2.81	-0.83	0.67	2.93	196.53
5425.00	0.73	337.32	5424.71	2.66	-2.51	-0.94	0.23	2.69	200.56
5450.00	0.80	335.88	5449.71	2.45	-2.21	-1.08	0.30	2.46	205.96
5475.00	0.74	342.76	5474.70	2.24	-1.90	-1.19	0.43	2.24	212.23
5500.00	0.98	325.97	5499.70	2.03	-1.56	-1.36	1.37	2.07	221.06
5525.00	0.91	333.35	5524.70	1.82	-1.21	-1.57	0.56	1.98	232.39
5550.00	0.92	333.80	5549.69	1.60	-0.85	-1.75	0.05	1.94	243.98
5575.00	0.86	335.10	5574.69	1.37	-0.50	-1.92	0.23	1.98	255.29
5600.00	0.85	335.33	5599.69	1.15	-0.16	-2.07	0.07	2.08	265.46
5625.00	0.85	332.74	5624.69	0.94	0.17	-2.23	0.15	2.24	274.28
5650.00	0.83	331.13	5649.68	0.74	0.49	-2.40	0.12	2.45	281.51

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	0.79	336.77	5674.68	0.54	0.81	-2.56	0.35	2.68	287.50
5700.00	0.83	335.75	5699.68	0.33	1.13	-2.70	0.16	2.93	292.72
5725.00	0.87	335.63	5724.68	0.11	1.47	-2.86	0.17	3.21	297.25
5750.00	0.87	333.81	5749.67	-0.11	1.82	-3.02	0.11	3.52	301.02
5775.00	0.80	332.74	5774.67	-0.32	2.14	-3.18	0.28	3.84	303.94
5800.00	0.89	332.16	5799.67	-0.52	2.47	-3.35	0.33	4.16	306.36
5825.00	0.84	334.06	5824.66	-0.73	2.81	-3.52	0.21	4.50	308.52
5850.00	0.92	335.82	5849.66	-0.96	3.15	-3.69	0.33	4.85	310.54
5875.00	0.87	334.07	5874.66	-1.19	3.51	-3.85	0.24	5.21	312.31
5900.00	0.74	338.34	5899.66	-1.40	3.83	-3.99	0.54	5.53	313.77
5925.00	0.69	340.93	5924.65	-1.60	4.12	-4.10	0.26	5.81	315.11
5950.00	0.71	336.91	5949.65	-1.79	4.40	-4.21	0.21	6.09	316.26
5975.00	0.62	333.35	5974.65	-1.96	4.66	-4.33	0.39	6.37	317.11
6000.00	0.43	285.89	5999.65	-2.02	4.81	-4.48	1.82	6.58	317.01
6025.00	0.61	242.52	6024.65	-1.88	4.77	-4.69	1.68	6.69	315.49
6050.00	0.78	224.54	6049.65	-1.61	4.59	-4.93	1.10	6.74	312.95
6075.00	0.94	216.79	6074.64	-1.24	4.30	-5.17	0.78	6.73	309.75
6100.00	0.97	217.60	6099.64	-0.83	3.97	-5.43	0.13	6.73	306.21
6125.00	0.84	220.41	6124.64	-0.44	3.67	-5.67	0.56	6.76	302.87
6150.00	0.85	223.18	6149.63	-0.08	3.39	-5.92	0.17	6.82	299.82
6175.00	0.70	213.63	6174.63	0.25	3.13	-6.13	0.79	6.88	297.05
6200.00	0.75	172.14	6199.63	0.54	2.84	-6.19	2.06	6.81	294.64
6225.00	0.84	157.62	6224.63	0.78	2.51	-6.10	0.88	6.60	292.36
6250.00	0.85	158.74	6249.63	1.01	2.17	-5.96	0.08	6.34	289.97
6275.00	0.83	159.54	6274.62	1.25	1.82	-5.83	0.10	6.11	287.36
6300.00	0.86	161.15	6299.62	1.49	1.48	-5.71	0.16	5.90	284.49
6325.00	0.90	157.73	6324.62	1.74	1.12	-5.57	0.25	5.68	281.33
6350.00	0.87	155.14	6349.61	1.97	0.76	-5.42	0.19	5.47	278.01
6375.00	0.95	155.17	6374.61	2.21	0.40	-5.25	0.29	5.27	274.38
6400.00	0.97	153.65	6399.61	2.45	0.03	-5.07	0.14	5.07	270.29
6425.00	0.93	154.63	6424.60	2.69	-0.35	-4.89	0.16	4.90	265.93
6450.00	0.82	158.73	6449.60	2.92	-0.70	-4.74	0.53	4.79	261.62

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS "/100ft	CLOSURE DIST ft	CLOSURE DIR deg
6475.00	1.02	151.05	6474.60	3.15	-1.06	-4.57	0.95	4.69	256.95
6500.00	0.97	152.16	6499.59	3.38	-1.44	-4.36	0.24	4.59	251.72
6525.00	1.04	150.66	6524.59	3.61	-1.82	-4.15	0.32	4.53	246.28
6550.00	0.99	152.34	6549.59	3.85	-2.21	-3.94	0.24	4.52	240.68
6575.00	0.97	152.80	6574.58	4.09	-2.59	-3.74	0.08	4.55	235.30
6600.00	1.02	150.86	6599.58	4.32	-2.97	-3.54	0.24	4.62	229.94
6625.00	1.01	148.63	6624.57	4.55	-3.36	-3.31	0.17	4.72	224.65
6650.00	1.02	145.25	6649.57	4.75	-3.73	-3.07	0.24	4.83	219.53
6675.00	1.10	141.50	6674.57	4.94	-4.10	-2.80	0.44	4.96	214.34
6700.00	1.07	142.65	6699.56	5.12	-4.47	-2.51	0.16	5.12	209.29
6725.00	0.97	146.05	6724.56	5.31	-4.83	-2.25	0.46	5.33	204.95
6750.00	0.90	143.16	6749.55	5.49	-5.16	-2.01	0.34	5.54	201.27
6775.00	0.90	142.90	6774.55	5.65	-5.48	-1.77	0.02	5.76	197.94
6800.00	0.98	143.82	6799.55	5.82	-5.81	-1.53	0.31	6.01	194.74
6825.00	1.01	143.60	6824.54	6.00	-6.16	-1.27	0.11	6.29	191.67
6850.00	1.07	140.34	6849.54	6.17	-6.51	-0.99	0.33	6.59	188.67
6875.00	0.98	143.39	6874.54	6.34	-6.86	-0.72	0.42	6.90	185.97
6900.00	0.99	140.91	6899.53	6.51	-7.20	-0.45	0.19	7.22	183.61
6925.00	1.03	141.38	6924.53	6.68	-7.55	-0.18	0.14	7.55	181.35
6950.00	0.99	140.59	6949.53	6.84	-7.89	0.10	0.17	7.89	179.29
6975.00	0.88	137.67	6974.52	6.98	-8.19	0.36	0.47	8.20	177.46
7000.00	0.76	140.32	6999.52	7.10	-8.46	0.60	0.50	8.48	175.96
7025.00	0.64	135.58	7024.52	7.20	-8.69	0.80	0.52	8.73	174.73
7050.00	0.61	103.64	7049.52	7.20	-8.82	1.03	1.38	8.88	173.34
7075.00	0.61	89.39	7074.51	7.10	-8.85	1.29	0.61	8.95	171.69
7100.00	0.62	88.87	7099.51	6.97	-8.85	1.56	0.07	8.98	169.99
7125.00	0.47	87.93	7124.51	6.84	-8.84	1.80	0.63	9.02	168.49
7150.00	0.12	70.89	7149.51	6.77	-8.83	1.93	1.42	9.04	167.69
7175.00	0.09	321.58	7174.51	6.75	-8.81	1.94	0.67	9.02	167.58
7200.00	0.10	333.34	7199.51	6.73	-8.77	1.92	0.08	8.98	167.67
7225.00	0.08	27.13	7224.51	6.70	-8.74	1.92	0.33	8.95	167.62
7250.00	0.11	325.12	7249.51	6.67	-8.70	1.91	0.41	8.91	167.61

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS "/100ft	CLOSURE DIST ft	CLOSURE DIR deg
7275.00	0.26	308.52	7274.51	6.65	-8.65	1.85	0.62	8.84	167.90
7300.00	0.22	329.77	7299.51	6.62	-8.57	1.79	0.39	8.75	168.23
7325.00	0.20	305.06	7324.51	6.59	-8.50	1.73	0.36	8.68	168.53
7350.00	0.16	314.60	7349.51	6.57	-8.45	1.66	0.20	8.62	168.86
7375.00	0.15	327.23	7374.51	6.55	-8.40	1.62	0.15	8.56	169.08
7400.00	0.17	316.66	7399.51	6.52	-8.35	1.58	0.15	8.50	169.29
7425.00	0.16	317.88	7424.51	6.50	-8.30	1.53	0.05	8.44	169.55
7450.00	0.11	332.76	7449.51	6.47	-8.25	1.50	0.23	8.38	169.72
7475.00	0.05	300.72	7474.51	6.46	-8.22	1.47	0.29	8.35	169.83
7500.00	0.05	344.34	7499.51	6.45	-8.20	1.46	0.15	8.33	169.90
7525.00	0.06	88.59	7524.51	6.44	-8.19	1.47	0.36	8.32	169.81
7550.00	0.05	142.05	7549.51	6.44	-8.20	1.49	0.21	8.34	169.68
7575.00	0.08	123.73	7574.51	6.44	-8.22	1.51	0.15	8.36	169.56
7600.00	0.08	127.00	7599.51	6.44	-8.24	1.54	0.02	8.38	169.39
7625.00	0.09	138.48	7624.51	6.45	-8.27	1.57	0.07	8.41	169.24
7650.00	0.14	148.14	7649.51	6.47	-8.31	1.60	0.22	8.46	169.10
7675.00	0.09	145.34	7674.51	6.50	-8.35	1.63	0.18	8.51	168.97
7700.00	0.16	140.76	7699.51	6.52	-8.39	1.66	0.26	8.56	168.80
7725.00	0.08	157.38	7724.51	6.54	-8.44	1.69	0.33	8.60	168.67
7750.00	0.10	145.79	7749.51	6.56	-8.47	1.71	0.09	8.64	168.59
7775.00	0.13	172.19	7774.51	6.60	-8.52	1.72	0.25	8.69	168.55
7800.00	0.13	158.42	7799.51	6.64	-8.57	1.74	0.13	8.75	168.53
7825.00	0.21	149.35	7824.51	6.68	-8.64	1.77	0.34	8.82	168.39
7850.00	0.22	139.57	7849.51	6.72	-8.72	1.83	0.15	8.91	168.15
7875.00	0.20	139.88	7874.51	6.75	-8.79	1.89	0.09	8.99	167.86
7900.00	0.32	157.45	7899.51	6.81	-8.89	1.95	0.58	9.10	167.65
7925.00	0.34	148.18	7924.51	6.89	-9.02	2.01	0.23	9.24	167.42
7950.00	0.22	127.60	7949.51	6.94	-9.11	2.09	0.64	9.34	167.09
7975.00	0.24	134.61	7974.51	6.96	-9.17	2.16	0.14	9.42	166.73
8000.00	0.30	135.24	7999.51	6.99	-9.26	2.25	0.26	9.52	166.36
8025.00	0.22	144.14	8024.51	7.03	-9.34	2.32	0.36	9.63	166.05
8050.00	0.32	127.14	8049.51	7.06	-9.42	2.40	0.50	9.73	165.68

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
8075.00	0.38	124.76	8074.51	7.08	-9.51	2.53	0.24	9.84	165.12
8100.00	0.39	126.84	8099.51	7.10	-9.61	2.66	0.08	9.97	164.51
8125.00	0.43	132.43	8124.51	7.13	-9.72	2.80	0.22	10.12	163.93
8150.00	0.46	126.64	8149.51	7.16	-9.85	2.95	0.22	10.28	163.32
8175.00	0.42	129.78	8174.50	7.19	-9.97	3.10	0.18	10.44	162.71
8200.00	0.44	124.49	8199.50	7.22	-10.08	3.25	0.18	10.59	162.12
8225.00	0.45	127.79	8224.50	7.24	-10.19	3.41	0.11	10.75	161.51
8250.00	0.41	119.49	8249.50	7.26	-10.30	3.56	0.29	10.90	160.91
8275.00	0.25	93.46	8274.50	7.23	-10.35	3.70	0.86	10.99	160.34
8300.00	0.23	89.55	8299.50	7.19	-10.35	3.80	0.11	11.02	159.84
8325.00	0.27	72.10	8324.50	7.12	-10.33	3.90	0.34	11.04	159.30
8350.00	0.23	69.26	8349.50	7.04	-10.29	4.01	0.15	11.05	158.74
8375.00	0.24	79.46	8374.50	6.97	-10.27	4.10	0.17	11.06	158.21
8400.00	0.30	73.36	8399.50	6.89	-10.24	4.22	0.26	11.07	157.61
8425.00	0.22	85.12	8424.50	6.81	-10.22	4.33	0.37	11.10	157.03
8450.00	0.20	358.63	8449.50	6.75	-10.17	4.38	1.16	11.07	156.71
8475.00	0.21	343.67	8474.50	6.68	-10.08	4.36	0.22	10.98	156.59
8500.00	0.24	327.70	8499.50	6.62	-9.99	4.32	0.27	10.89	156.61
8525.00	0.31	337.49	8524.50	6.55	-9.89	4.27	0.35	10.77	156.64
8550.00	0.25	338.68	8549.50	6.48	-9.77	4.22	0.25	10.65	156.63
8575.00	0.28	328.63	8574.50	6.41	-9.67	4.17	0.23	10.53	156.66
8600.00	0.26	309.12	8599.50	6.37	-9.58	4.10	0.38	10.42	156.85
8625.00	0.33	307.01	8624.50	6.35	-9.50	4.00	0.29	10.31	157.19
8650.00	0.31	306.11	8649.50	6.34	-9.42	3.89	0.07	10.19	157.59
8675.00	0.29	305.81	8674.50	6.32	-9.34	3.78	0.07	10.08	157.98
8700.00	0.33	289.34	8699.50	6.33	-9.28	3.66	0.38	9.98	158.48
8725.00	0.41	289.91	8724.50	6.35	-9.23	3.51	0.35	9.87	159.19
8750.00	0.41	290.69	8749.50	6.38	-9.17	3.34	0.03	9.76	159.98
8775.00	0.42	277.48	8774.50	6.43	-9.12	3.17	0.38	9.66	160.86
8800.00	0.42	275.20	8799.49	6.50	-9.10	2.99	0.07	9.58	161.84
8825.00	0.42	271.22	8824.49	6.58	-9.09	2.80	0.12	9.52	162.87
8850.00	0.34	282.58	8849.49	6.64	-9.08	2.64	0.44	9.45	163.79

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
8875.00	0.31	280.44	8874.49	6.68	-9.05	2.50	0.13	9.39	164.56
8900.00	0.43	260.55	8899.49	6.76	-9.05	2.34	0.69	9.35	165.51
8925.00	0.50	257.58	8924.49	6.90	-9.09	2.14	0.29	9.34	166.76
8950.00	0.52	254.85	8949.49	7.05	-9.14	1.92	0.12	9.34	168.11
8975.00	0.54	255.79	8974.49	7.21	-9.20	1.70	0.12	9.36	169.53
9000.00	0.49	250.90	8999.49	7.37	-9.26	1.48	0.29	9.38	170.90
9025.00	0.52	253.72	9024.49	7.53	-9.33	1.28	0.15	9.42	172.22
9050.00	0.50	254.49	9049.49	7.69	-9.39	1.06	0.07	9.45	173.55
9075.00	0.50	253.61	9074.49	7.84	-9.45	0.85	0.04	9.49	174.85
9100.00	0.40	257.63	9099.49	7.97	-9.50	0.66	0.42	9.52	176.00
9125.00	0.47	276.21	9124.48	8.07	-9.51	0.48	0.64	9.52	177.13
9150.00	0.38	280.18	9149.48	8.14	-9.48	0.29	0.38	9.49	178.23
9175.00	0.38	286.58	9174.48	8.18	-9.44	0.13	0.17	9.45	179.20
9200.00	0.42	284.41	9199.48	8.22	-9.40	-0.04	0.16	9.40	180.21
9225.00	0.40	291.06	9224.48	8.26	-9.34	-0.20	0.20	9.35	181.25
9250.00	0.45	282.76	9249.48	8.30	-9.29	-0.38	0.30	9.30	182.35
9275.00	0.50	290.37	9274.48	8.34	-9.23	-0.58	0.32	9.25	183.58
9300.00	0.54	292.60	9299.48	8.37	-9.15	-0.79	0.19	9.18	184.92
9325.00	0.59	290.28	9324.48	8.41	-9.06	-1.02	0.23	9.12	186.40
9350.00	0.58	283.71	9349.48	8.46	-8.98	-1.26	0.27	9.07	187.99
9375.00	0.60	281.24	9374.48	8.53	-8.93	-1.51	0.12	9.06	189.62
9400.00	0.57	279.63	9399.47	8.62	-8.88	-1.76	0.12	9.06	191.24
9425.00	0.52	282.69	9424.47	8.69	-8.84	-2.00	0.23	9.06	192.75
9450.00	0.57	282.14	9449.47	8.76	-8.79	-2.23	0.19	9.06	194.26
9475.00	0.58	277.66	9474.47	8.84	-8.74	-2.48	0.18	9.09	195.83
9500.00	0.56	275.09	9499.47	8.94	-8.71	-2.72	0.13	9.13	197.36
9525.00	0.50	275.69	9524.47	9.03	-8.69	-2.95	0.24	9.18	198.77
9550.00	0.41	264.53	9549.47	9.12	-8.69	-3.15	0.50	9.24	199.93
9575.00	0.23	254.90	9574.47	9.21	-8.71	-3.29	0.76	9.31	200.68
9600.00	0.04	154.61	9599.47	9.25	-8.73	-3.33	0.95	9.35	200.88
9625.00	0.25	123.04	9624.47	9.26	-8.77	-3.28	0.88	9.36	200.52
9650.00	0.19	106.98	9649.47	9.25	-8.81	-3.20	0.35	9.37	199.94

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
9675.00	0.15	107.86	9674.47	9.24	-8.83	-3.13	0.15	9.37	199.49
9700.00	0.10	115.41	9699.47	9.23	-8.85	-3.08	0.21	9.37	199.16
9725.00	0.19	95.20	9724.47	9.21	-8.87	-3.02	0.40	9.37	198.78
9750.00	0.27	96.53	9749.47	9.17	-8.88	-2.92	0.35	9.34	198.18
9775.00	0.32	99.40	9774.47	9.13	-8.90	-2.79	0.20	9.32	197.39
9800.00	0.30	87.73	9799.47	9.07	-8.90	-2.65	0.27	9.29	196.59
9825.00	0.27	80.24	9824.47	9.00	-8.89	-2.53	0.18	9.24	195.87
9850.00	0.29	95.90	9849.47	8.93	-8.89	-2.41	0.31	9.21	195.15
9875.00	0.36	112.81	9874.46	8.90	-8.92	-2.27	0.46	9.21	194.29
9900.00	0.37	125.73	9899.46	8.90	-9.00	-2.14	0.33	9.25	193.35
9925.00	0.45	130.15	9924.46	8.93	-9.11	-2.00	0.35	9.33	192.36
9950.00	0.58	135.77	9949.46	8.98	-9.26	-1.83	0.55	9.44	191.20
9975.00	0.57	139.14	9974.46	9.06	-9.45	-1.67	0.14	9.59	190.00
10000.00	0.64	142.18	9999.46	9.16	-9.65	-1.50	0.31	9.77	188.83
10025.00	0.71	138.96	10024.46	9.27	-9.88	-1.31	0.32	9.96	187.57
10050.00	0.68	139.58	10049.46	9.37	-10.11	-1.12	0.13	10.17	186.30
10075.00	0.73	145.39	10074.45	9.49	-10.35	-0.93	0.36	10.39	185.13
10100.00	0.74	150.46	10099.45	9.65	-10.62	-0.76	0.26	10.65	184.09
10125.00	0.91	152.60	10124.45	9.84	-10.94	-0.59	0.69	10.95	183.09
10150.00	0.92	150.93	10149.45	10.05	-11.29	-0.40	0.11	11.29	182.04
10175.00	0.93	150.73	10174.44	10.26	-11.64	-0.21	0.05	11.64	181.01
10200.00	0.88	151.98	10199.44	10.48	-11.99	-0.02	0.20	11.99	180.07
10225.00	0.78	141.41	10224.44	10.64	-12.29	0.18	0.73	12.29	179.15
10250.00	0.60	110.82	10249.44	10.69	-12.47	0.41	1.62	12.48	178.12
10275.00	0.59	79.51	10274.43	10.59	-12.49	0.66	1.28	12.51	176.99
10300.00	0.64	78.88	10299.43	10.42	-12.44	0.92	0.21	12.48	175.77
10325.00	0.64	80.23	10324.43	10.24	-12.39	1.19	0.06	12.45	174.50
10350.00	0.60	77.18	10349.43	10.07	-12.34	1.46	0.19	12.43	173.26
10375.00	0.62	78.31	10374.43	9.89	-12.28	1.72	0.10	12.40	172.03
10400.00	0.60	80.40	10399.43	9.72	-12.23	1.98	0.13	12.39	170.80
10425.00	0.63	80.03	10424.43	9.55	-12.19	2.25	0.12	12.39	169.56
10450.00	0.64	77.61	10449.42	9.37	-12.13	2.52	0.12	12.39	168.27

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
10475.00	0.64	78.95	10474.42	9.19	-12.08	2.79	0.06	12.40	166.98
10500.00	0.66	86.97	10499.42	9.02	-12.04	3.07	0.37	12.43	165.68
10525.00	0.71	88.72	10524.42	8.86	-12.03	3.37	0.20	12.49	164.34
10550.00	0.75	92.48	10549.42	8.71	-12.03	3.69	0.26	12.59	162.96
10575.00	0.74	88.17	10574.42	8.56	-12.04	4.01	0.23	12.69	161.55
10600.00	0.76	84.76	10599.41	8.38	-12.02	4.34	0.19	12.78	160.14
10625.00	0.64	61.50	10624.41	8.17	-11.93	4.63	1.22	12.80	158.80
10650.00	0.65	43.06	10649.41	7.91	-11.77	4.85	0.83	12.72	157.61
10675.00	0.68	33.89	10674.41	7.63	-11.54	5.03	0.45	12.59	156.46
10700.00	0.76	28.40	10699.41	7.31	-11.27	5.19	0.41	12.41	155.27
10725.00	0.66	22.17	10724.40	7.00	-10.99	5.32	0.49	12.21	154.15
10750.00	0.59	13.34	10749.40	6.74	-10.73	5.41	0.48	12.01	153.25
10775.00	0.63	1.30	10774.40	6.49	-10.46	5.44	0.54	11.79	152.53
10800.00	0.63	352.65	10799.40	6.25	-10.19	5.43	0.38	11.54	151.96
10825.00	0.64	346.73	10824.40	6.04	-9.92	5.38	0.26	11.28	151.54
10850.00	0.58	341.22	10849.40	5.85	-9.66	5.30	0.34	11.02	151.24
10875.00	0.61	331.72	10874.40	5.70	-9.43	5.20	0.42	10.76	151.11
10900.00	0.65	322.67	10899.39	5.57	-9.19	5.05	0.42	10.49	151.22
10925.00	0.66	312.10	10924.39	5.48	-8.99	4.86	0.48	10.22	151.60
10950.00	0.72	301.08	10949.39	5.44	-8.81	4.62	0.59	9.95	152.34
10975.00	0.81	293.86	10974.39	5.45	-8.66	4.32	0.52	9.67	153.47
11000.00	0.81	296.83	10999.39	5.48	-8.50	4.00	0.17	9.40	154.80
11025.00	0.86	291.25	11024.38	5.51	-8.36	3.67	0.39	9.13	156.30
11050.00	0.90	289.93	11049.38	5.57	-8.22	3.31	0.17	8.86	158.08
11075.00	0.94	278.76	11074.38	5.67	-8.12	2.92	0.74	8.63	160.23
11100.00	0.90	273.31	11099.37	5.83	-8.08	2.52	0.39	8.46	162.67
11125.00	0.94	267.73	11124.37	6.02	-8.08	2.12	0.38	8.35	165.29
11150.00	0.93	266.60	11149.37	6.24	-8.10	1.72	0.08	8.28	168.04
11175.00	1.01	260.78	11174.36	6.48	-8.14	1.30	0.51	8.25	170.95
11200.00	1.01	253.72	11199.36	6.77	-8.24	0.87	0.50	8.29	173.99
11225.00	0.99	259.73	11224.36	7.07	-8.34	0.44	0.43	8.35	176.96
11250.00	1.02	259.38	11249.35	7.35	-8.42	0.01	0.14	8.42	179.93

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
11275.00	0.98	260.22	11274.35	7.63	-8.50	-0.42	0.20	8.51	182.82
11300.00	1.06	256.22	11299.34	7.92	-8.59	-0.85	0.43	8.63	185.67
11325.00	1.10	254.84	11324.34	8.24	-8.71	-1.31	0.21	8.81	188.56
11350.00	1.21	255.49	11349.34	8.59	-8.84	-1.80	0.41	9.02	191.49
11375.00	1.25	257.69	11374.33	8.96	-8.96	-2.32	0.27	9.26	194.51
11400.00	1.20	257.45	11399.32	9.31	-9.08	-2.84	0.23	9.51	197.38
11425.00	1.10	259.75	11424.32	9.64	-9.18	-3.33	0.43	9.76	199.95
11450.00	1.07	263.35	11449.31	9.93	-9.25	-3.80	0.29	10.00	202.34
11475.00	1.08	256.35	11474.31	10.22	-9.33	-4.26	0.53	10.26	204.55
11500.00	0.97	252.14	11499.31	10.54	-9.45	-4.69	0.53	10.55	206.41
11525.00	0.92	252.86	11524.30	10.84	-9.57	-5.09	0.20	10.84	207.98
11545.00	0.90	254.13	11544.30	11.07	-9.66	-5.39	0.15	11.07	209.15



NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

VAST STATE #25H

OWB

Design: ACTUAL WELLPATH

Survey Report - Geographic

11 September, 2017

HOBBS OCD
SEP 25 2017
RECEIVED

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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

Site	BULLDOG		
Site Position:		Northing:	398,637.10 usft
From:	Map	Easting:	741,887.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 36.820 N
		Longitude:	103° 35' 8.116 W
		Grid Convergence:	0.42 °

Well	VAST STATE #25H		
Well Position	+N/-S	0.0 usft	Northing: 377,870.00 usft
	+E/-W	0.0 usft	Easting: 729,771.40 usft
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 2' 12.160 N
		Longitude:	103° 35' 30.610 W
		Ground Level:	3,262.0 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	WMM2015	1/10/2017	7.01
			Dip Angle (°) 59.88
			Field Strength (nT) 47,859.88027143

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)
	0.0	0.0	0.0
			Direction (°) 68.73

Survey Program	Date 6/1/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.0	11,545.0	GYRO (OWB)	Standard Keeper 104
11,699.0	16,996.0	MWD 2 - CURVE/LATERAL (OWB)	MWD+IFR1+MS
			Description
			Standard Wireline Keeper ver 1.0.4
			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	377,870.00	729,771.40	32° 2' 12.160 N	103° 35' 30.610 W
100.0	0.43	168.24	100.0	-0.4	0.1	377,869.63	729,771.47	32° 2' 12.156 N	103° 35' 30.609 W
125.0	0.51	170.30	125.0	-0.6	0.1	377,869.43	729,771.51	32° 2' 12.154 N	103° 35' 30.609 W
150.0	0.51	170.46	150.0	-0.8	0.2	377,869.21	729,771.55	32° 2' 12.152 N	103° 35' 30.608 W
175.0	0.49	165.85	175.0	-1.0	0.2	377,869.00	729,771.59	32° 2' 12.150 N	103° 35' 30.608 W
200.0	0.53	156.43	200.0	-1.2	0.3	377,868.79	729,771.66	32° 2' 12.148 N	103° 35' 30.607 W
225.0	0.47	162.85	225.0	-1.4	0.3	377,868.58	729,771.74	32° 2' 12.146 N	103° 35' 30.606 W
250.0	0.49	172.88	250.0	-1.6	0.4	377,868.38	729,771.78	32° 2' 12.144 N	103° 35' 30.606 W
275.0	0.44	143.59	275.0	-1.8	0.5	377,868.20	729,771.85	32° 2' 12.142 N	103° 35' 30.605 W
300.0	0.44	105.56	300.0	-1.9	0.6	377,868.09	729,772.00	32° 2' 12.141 N	103° 35' 30.603 W
325.0	0.75	71.28	325.0	-1.9	0.9	377,868.12	729,772.25	32° 2' 12.141 N	103° 35' 30.600 W



COG Operating LLC
Survey Report - Geographic

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.80	63.85	350.0	-1.7	1.2	377,868.25	729,772.56	32° 2' 12.142 N	103° 35' 30.596 W
375.0	0.88	66.17	375.0	-1.6	1.5	377,868.40	729,772.90	32° 2' 12.144 N	103° 35' 30.593 W
400.0	0.93	67.54	400.0	-1.4	1.9	377,868.56	729,773.26	32° 2' 12.145 N	103° 35' 30.588 W
425.0	0.88	66.64	425.0	-1.3	2.2	377,868.71	729,773.62	32° 2' 12.147 N	103° 35' 30.584 W
450.0	0.95	64.68	450.0	-1.1	2.6	377,868.88	729,773.99	32° 2' 12.148 N	103° 35' 30.580 W
475.0	0.85	62.48	475.0	-0.9	2.9	377,869.05	729,774.34	32° 2' 12.150 N	103° 35' 30.576 W
500.0	0.60	56.36	500.0	-0.8	3.2	377,869.21	729,774.61	32° 2' 12.152 N	103° 35' 30.573 W
525.0	0.40	45.80	525.0	-0.7	3.4	377,869.34	729,774.78	32° 2' 12.153 N	103° 35' 30.571 W
550.0	0.25	35.69	550.0	-0.6	3.5	377,869.45	729,774.88	32° 2' 12.154 N	103° 35' 30.570 W
575.0	0.21	20.61	575.0	-0.5	3.5	377,869.54	729,774.93	32° 2' 12.155 N	103° 35' 30.569 W
600.0	0.10	3.26	600.0	-0.4	3.5	377,869.60	729,774.94	32° 2' 12.156 N	103° 35' 30.569 W
625.0	0.15	355.87	625.0	-0.3	3.5	377,869.65	729,774.94	32° 2' 12.156 N	103° 35' 30.569 W
650.0	0.14	328.18	650.0	-0.3	3.5	377,869.71	729,774.92	32° 2' 12.157 N	103° 35' 30.569 W
675.0	0.17	341.25	675.0	-0.2	3.5	377,869.77	729,774.90	32° 2' 12.157 N	103° 35' 30.569 W
700.0	0.11	356.47	700.0	-0.2	3.5	377,869.83	729,774.88	32° 2' 12.158 N	103° 35' 30.569 W
725.0	0.15	323.34	725.0	-0.1	3.5	377,869.88	729,774.86	32° 2' 12.158 N	103° 35' 30.570 W
750.0	0.16	323.22	750.0	-0.1	3.4	377,869.94	729,774.82	32° 2' 12.159 N	103° 35' 30.570 W
775.0	0.13	343.40	775.0	0.0	3.4	377,869.99	729,774.79	32° 2' 12.159 N	103° 35' 30.570 W
800.0	0.07	352.83	800.0	0.0	3.4	377,870.03	729,774.78	32° 2' 12.160 N	103° 35' 30.571 W
825.0	0.06	40.49	825.0	0.1	3.4	377,870.06	729,774.79	32° 2' 12.160 N	103° 35' 30.570 W
850.0	0.08	51.81	850.0	0.1	3.4	377,870.08	729,774.81	32° 2' 12.160 N	103° 35' 30.570 W
875.0	0.14	53.17	875.0	0.1	3.5	377,870.11	729,774.85	32° 2' 12.161 N	103° 35' 30.570 W
900.0	0.15	59.15	900.0	0.1	3.5	377,870.14	729,774.90	32° 2' 12.161 N	103° 35' 30.569 W
925.0	0.16	109.14	925.0	0.2	3.6	377,870.15	729,774.96	32° 2' 12.161 N	103° 35' 30.568 W
950.0	0.20	101.44	950.0	0.1	3.6	377,870.13	729,775.04	32° 2' 12.161 N	103° 35' 30.568 W
975.0	0.13	103.04	975.0	0.1	3.7	377,870.12	729,775.11	32° 2' 12.161 N	103° 35' 30.567 W
1,000.0	0.13	89.28	1,000.0	0.1	3.8	377,870.11	729,775.16	32° 2' 12.161 N	103° 35' 30.566 W
1,025.0	0.14	84.51	1,025.0	0.1	3.8	377,870.11	729,775.22	32° 2' 12.161 N	103° 35' 30.565 W
1,050.0	0.08	83.21	1,050.0	0.1	3.9	377,870.12	729,775.27	32° 2' 12.161 N	103° 35' 30.565 W
1,075.0	0.13	101.98	1,075.0	0.1	3.9	377,870.11	729,775.32	32° 2' 12.161 N	103° 35' 30.564 W
1,100.0	0.19	103.55	1,100.0	0.1	4.0	377,870.10	729,775.38	32° 2' 12.160 N	103° 35' 30.564 W
1,125.0	0.19	101.49	1,125.0	0.1	4.1	377,870.08	729,775.46	32° 2' 12.160 N	103° 35' 30.563 W
1,150.0	0.17	108.32	1,150.0	0.1	4.1	377,870.06	729,775.54	32° 2' 12.160 N	103° 35' 30.562 W
1,175.0	0.14	115.45	1,175.0	0.0	4.2	377,870.04	729,775.60	32° 2' 12.160 N	103° 35' 30.561 W
1,200.0	0.16	116.89	1,200.0	0.0	4.3	377,870.01	729,775.66	32° 2' 12.160 N	103° 35' 30.560 W
1,225.0	0.18	120.85	1,225.0	0.0	4.3	377,869.97	729,775.73	32° 2' 12.159 N	103° 35' 30.560 W
1,250.0	0.28	107.22	1,250.0	-0.1	4.4	377,869.93	729,775.82	32° 2' 12.159 N	103° 35' 30.559 W
1,275.0	0.28	110.17	1,275.0	-0.1	4.5	377,869.89	729,775.93	32° 2' 12.158 N	103° 35' 30.557 W
1,300.0	0.25	115.93	1,300.0	-0.2	4.6	377,869.85	729,776.04	32° 2' 12.158 N	103° 35' 30.556 W
1,325.0	0.23	101.91	1,325.0	-0.2	4.7	377,869.81	729,776.14	32° 2' 12.158 N	103° 35' 30.555 W
1,350.0	0.18	120.58	1,350.0	-0.2	4.8	377,869.78	729,776.22	32° 2' 12.157 N	103° 35' 30.554 W
1,375.0	0.24	102.68	1,375.0	-0.2	4.9	377,869.75	729,776.31	32° 2' 12.157 N	103° 35' 30.553 W
1,400.0	0.28	111.59	1,400.0	-0.3	5.0	377,869.72	729,776.41	32° 2' 12.157 N	103° 35' 30.552 W
1,425.0	0.32	102.57	1,425.0	-0.3	5.1	377,869.68	729,776.54	32° 2' 12.156 N	103° 35' 30.550 W
1,450.0	0.20	103.65	1,450.0	-0.3	5.3	377,869.65	729,776.65	32° 2' 12.156 N	103° 35' 30.549 W
1,475.0	0.12	146.12	1,475.0	-0.4	5.3	377,869.62	729,776.71	32° 2' 12.156 N	103° 35' 30.548 W
1,500.0	0.19	125.38	1,500.0	-0.4	5.4	377,869.58	729,776.76	32° 2' 12.155 N	103° 35' 30.548 W
1,525.0	0.23	117.93	1,525.0	-0.5	5.4	377,869.53	729,776.83	32° 2' 12.155 N	103° 35' 30.547 W
1,550.0	0.26	108.58	1,550.0	-0.5	5.5	377,869.49	729,776.93	32° 2' 12.154 N	103° 35' 30.546 W
1,575.0	0.22	112.70	1,575.0	-0.5	5.6	377,869.45	729,777.03	32° 2' 12.154 N	103° 35' 30.545 W
1,600.0	0.19	111.19	1,600.0	-0.6	5.7	377,869.42	729,777.11	32° 2' 12.154 N	103° 35' 30.544 W
1,625.0	0.18	120.29	1,625.0	-0.6	5.8	377,869.38	729,777.19	32° 2' 12.153 N	103° 35' 30.543 W
1,650.0	0.17	143.33	1,650.0	-0.7	5.8	377,869.33	729,777.24	32° 2' 12.153 N	103° 35' 30.542 W
1,675.0	0.17	154.16	1,675.0	-0.7	5.9	377,869.27	729,777.28	32° 2' 12.152 N	103° 35' 30.542 W
1,700.0	0.18	153.92	1,700.0	-0.8	5.9	377,869.20	729,777.31	32° 2' 12.151 N	103° 35' 30.541 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.16	121.89	1,725.0	-0.9	6.0	377,869.15	729,777.36	32° 2' 12.151 N	103° 35' 30.541 W
1,750.0	0.21	110.57	1,750.0	-0.9	6.0	377,869.11	729,777.43	32° 2' 12.151 N	103° 35' 30.540 W
1,775.0	0.10	164.44	1,775.0	-0.9	6.1	377,869.08	729,777.48	32° 2' 12.150 N	103° 35' 30.539 W
1,800.0	0.19	134.57	1,800.0	-1.0	6.1	377,869.03	729,777.52	32° 2' 12.150 N	103° 35' 30.539 W
1,825.0	0.24	131.53	1,825.0	-1.0	6.2	377,868.96	729,777.59	32° 2' 12.149 N	103° 35' 30.538 W
1,850.0	0.22	154.84	1,850.0	-1.1	6.2	377,868.88	729,777.64	32° 2' 12.148 N	103° 35' 30.537 W
1,875.0	0.29	174.78	1,875.0	-1.2	6.3	377,868.78	729,777.67	32° 2' 12.147 N	103° 35' 30.537 W
1,900.0	0.35	185.96	1,900.0	-1.4	6.3	377,868.64	729,777.67	32° 2' 12.146 N	103° 35' 30.537 W
1,925.0	0.33	184.19	1,925.0	-1.5	6.3	377,868.49	729,777.66	32° 2' 12.144 N	103° 35' 30.537 W
1,950.0	0.36	183.65	1,950.0	-1.7	6.2	377,868.34	729,777.65	32° 2' 12.143 N	103° 35' 30.537 W
1,975.0	0.41	183.65	1,975.0	-1.8	6.2	377,868.17	729,777.63	32° 2' 12.141 N	103° 35' 30.538 W
2,000.0	0.45	178.39	2,000.0	-2.0	6.2	377,867.99	729,777.63	32° 2' 12.139 N	103° 35' 30.538 W
2,025.0	0.47	180.56	2,025.0	-2.2	6.2	377,867.79	729,777.63	32° 2' 12.137 N	103° 35' 30.538 W
2,050.0	0.48	195.66	2,050.0	-2.4	6.2	377,867.58	729,777.60	32° 2' 12.135 N	103° 35' 30.538 W
2,075.0	0.47	193.62	2,075.0	-2.6	6.2	377,867.38	729,777.55	32° 2' 12.133 N	103° 35' 30.539 W
2,100.0	0.48	190.72	2,100.0	-2.8	6.1	377,867.18	729,777.51	32° 2' 12.131 N	103° 35' 30.539 W
2,125.0	0.41	188.41	2,125.0	-3.0	6.1	377,866.99	729,777.48	32° 2' 12.130 N	103° 35' 30.540 W
2,150.0	0.21	212.33	2,150.0	-3.1	6.0	377,866.86	729,777.44	32° 2' 12.128 N	103° 35' 30.540 W
2,175.0	0.10	222.24	2,175.0	-3.2	6.0	377,866.81	729,777.40	32° 2' 12.128 N	103° 35' 30.540 W
2,200.0	0.17	241.42	2,200.0	-3.2	6.0	377,866.77	729,777.35	32° 2' 12.127 N	103° 35' 30.541 W
2,225.0	0.20	236.68	2,225.0	-3.3	5.9	377,866.73	729,777.28	32° 2' 12.127 N	103° 35' 30.542 W
2,250.0	0.15	237.16	2,250.0	-3.3	5.8	377,866.69	729,777.22	32° 2' 12.127 N	103° 35' 30.543 W
2,275.0	0.12	236.05	2,275.0	-3.3	5.8	377,866.66	729,777.17	32° 2' 12.126 N	103° 35' 30.543 W
2,300.0	0.19	249.35	2,300.0	-3.4	5.7	377,866.63	729,777.11	32° 2' 12.126 N	103° 35' 30.544 W
2,325.0	0.20	246.55	2,325.0	-3.4	5.6	377,866.59	729,777.03	32° 2' 12.126 N	103° 35' 30.545 W
2,350.0	0.19	232.80	2,350.0	-3.4	5.6	377,866.55	729,776.96	32° 2' 12.125 N	103° 35' 30.546 W
2,375.0	0.21	232.92	2,375.0	-3.5	5.5	377,866.50	729,776.89	32° 2' 12.125 N	103° 35' 30.546 W
2,400.0	0.14	220.53	2,400.0	-3.5	5.4	377,866.45	729,776.83	32° 2' 12.124 N	103° 35' 30.547 W
2,425.0	0.15	241.78	2,425.0	-3.6	5.4	377,866.41	729,776.78	32° 2' 12.124 N	103° 35' 30.548 W
2,450.0	0.19	244.17	2,450.0	-3.6	5.3	377,866.38	729,776.72	32° 2' 12.124 N	103° 35' 30.548 W
2,475.0	0.28	217.48	2,475.0	-3.7	5.2	377,866.31	729,776.64	32° 2' 12.123 N	103° 35' 30.549 W
2,500.0	0.31	218.12	2,500.0	-3.8	5.2	377,866.21	729,776.56	32° 2' 12.122 N	103° 35' 30.550 W
2,525.0	0.32	223.54	2,525.0	-3.9	5.1	377,866.10	729,776.47	32° 2' 12.121 N	103° 35' 30.551 W
2,550.0	0.36	224.66	2,550.0	-4.0	5.0	377,866.00	729,776.37	32° 2' 12.120 N	103° 35' 30.552 W
2,575.0	0.32	232.33	2,575.0	-4.1	4.9	377,865.90	729,776.26	32° 2' 12.119 N	103° 35' 30.554 W
2,600.0	0.38	227.42	2,600.0	-4.2	4.7	377,865.80	729,776.14	32° 2' 12.118 N	103° 35' 30.555 W
2,625.0	0.30	230.55	2,625.0	-4.3	4.6	377,865.70	729,776.03	32° 2' 12.117 N	103° 35' 30.556 W
2,650.0	0.29	222.95	2,650.0	-4.4	4.5	377,865.62	729,775.94	32° 2' 12.116 N	103° 35' 30.557 W
2,675.0	0.28	214.18	2,675.0	-4.5	4.5	377,865.52	729,775.86	32° 2' 12.115 N	103° 35' 30.558 W
2,700.0	0.28	219.91	2,700.0	-4.6	4.4	377,865.42	729,775.79	32° 2' 12.114 N	103° 35' 30.559 W
2,725.0	0.28	229.17	2,725.0	-4.7	4.3	377,865.33	729,775.70	32° 2' 12.113 N	103° 35' 30.560 W
2,750.0	0.31	218.59	2,750.0	-4.8	4.2	377,865.24	729,775.61	32° 2' 12.112 N	103° 35' 30.561 W
2,775.0	0.27	217.83	2,774.9	-4.9	4.1	377,865.14	729,775.53	32° 2' 12.111 N	103° 35' 30.562 W
2,800.0	0.35	215.89	2,799.9	-5.0	4.1	377,865.03	729,775.45	32° 2' 12.110 N	103° 35' 30.563 W
2,825.0	0.35	209.44	2,824.9	-5.1	4.0	377,864.91	729,775.37	32° 2' 12.109 N	103° 35' 30.564 W
2,850.0	0.36	214.67	2,849.9	-5.2	3.9	377,864.77	729,775.29	32° 2' 12.108 N	103° 35' 30.565 W
2,875.0	0.51	192.82	2,874.9	-5.4	3.8	377,864.60	729,775.22	32° 2' 12.106 N	103° 35' 30.566 W
2,900.0	0.46	204.47	2,899.9	-5.6	3.8	377,864.40	729,775.15	32° 2' 12.104 N	103° 35' 30.567 W
2,925.0	0.53	215.05	2,924.9	-5.8	3.6	377,864.22	729,775.05	32° 2' 12.102 N	103° 35' 30.568 W
2,950.0	0.53	207.45	2,949.9	-6.0	3.5	377,864.02	729,774.93	32° 2' 12.100 N	103° 35' 30.569 W
2,975.0	0.53	207.75	2,974.9	-6.2	3.4	377,863.81	729,774.82	32° 2' 12.098 N	103° 35' 30.571 W
3,000.0	0.60	206.98	2,999.9	-6.4	3.3	377,863.59	729,774.71	32° 2' 12.096 N	103° 35' 30.572 W
3,025.0	0.70	201.50	3,024.9	-6.7	3.2	377,863.34	729,774.59	32° 2' 12.094 N	103° 35' 30.573 W
3,050.0	0.69	208.15	3,049.9	-6.9	3.1	377,863.06	729,774.46	32° 2' 12.091 N	103° 35' 30.575 W
3,075.0	0.70	211.72	3,074.9	-7.2	2.9	377,862.80	729,774.31	32° 2' 12.088 N	103° 35' 30.577 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.72	205.66	3,099.9	-7.5	2.8	377,862.53	729,774.16	32° 2' 12.086 N	103° 35' 30.578 W
3,125.0	0.70	212.37	3,124.9	-7.7	2.6	377,862.26	729,774.01	32° 2' 12.083 N	103° 35' 30.580 W
3,150.0	0.70	217.48	3,149.9	-8.0	2.4	377,862.01	729,773.84	32° 2' 12.080 N	103° 35' 30.582 W
3,175.0	0.62	249.56	3,174.9	-8.2	2.2	377,861.84	729,773.62	32° 2' 12.079 N	103° 35' 30.585 W
3,200.0	0.54	266.66	3,199.9	-8.2	2.0	377,861.78	729,773.38	32° 2' 12.078 N	103° 35' 30.588 W
3,225.0	0.54	272.89	3,224.9	-8.2	1.7	377,861.78	729,773.14	32° 2' 12.078 N	103° 35' 30.590 W
3,250.0	0.73	273.35	3,249.9	-8.2	1.5	377,861.80	729,772.86	32° 2' 12.078 N	103° 35' 30.594 W
3,275.0	0.98	267.26	3,274.9	-8.2	1.1	377,861.80	729,772.49	32° 2' 12.078 N	103° 35' 30.598 W
3,300.0	0.71	272.75	3,299.9	-8.2	0.7	377,861.79	729,772.12	32° 2' 12.078 N	103° 35' 30.602 W
3,325.0	0.58	275.87	3,324.9	-8.2	0.4	377,861.81	729,771.84	32° 2' 12.079 N	103° 35' 30.605 W
3,350.0	0.45	282.13	3,349.9	-8.2	0.2	377,861.85	729,771.62	32° 2' 12.079 N	103° 35' 30.608 W
3,375.0	0.21	331.12	3,374.9	-8.1	0.1	377,861.91	729,771.50	32° 2' 12.080 N	103° 35' 30.609 W
3,400.0	0.36	42.92	3,399.9	-8.0	0.1	377,862.01	729,771.53	32° 2' 12.081 N	103° 35' 30.609 W
3,425.0	0.43	52.34	3,424.9	-7.9	0.3	377,862.12	729,771.66	32° 2' 12.082 N	103° 35' 30.607 W
3,450.0	0.62	58.23	3,449.9	-7.7	0.5	377,862.25	729,771.85	32° 2' 12.083 N	103° 35' 30.605 W
3,475.0	0.77	64.42	3,474.9	-7.6	0.7	377,862.39	729,772.12	32° 2' 12.084 N	103° 35' 30.602 W
3,500.0	0.76	66.15	3,499.9	-7.5	1.0	377,862.53	729,772.42	32° 2' 12.086 N	103° 35' 30.599 W
3,525.0	0.97	63.35	3,524.9	-7.3	1.4	377,862.69	729,772.76	32° 2' 12.087 N	103° 35' 30.595 W
3,550.0	1.13	57.90	3,549.9	-7.1	1.8	377,862.92	729,773.16	32° 2' 12.090 N	103° 35' 30.590 W
3,575.0	1.14	58.82	3,574.9	-6.8	2.2	377,863.18	729,773.58	32° 2' 12.092 N	103° 35' 30.585 W
3,600.0	1.25	56.74	3,599.9	-6.5	2.6	377,863.46	729,774.02	32° 2' 12.095 N	103° 35' 30.580 W
3,625.0	1.36	57.02	3,624.9	-6.2	3.1	377,863.77	729,774.50	32° 2' 12.098 N	103° 35' 30.574 W
3,650.0	1.54	59.51	3,649.9	-5.9	3.6	377,864.10	729,775.04	32° 2' 12.101 N	103° 35' 30.568 W
3,675.0	1.90	61.01	3,674.9	-5.5	4.3	377,864.47	729,775.69	32° 2' 12.105 N	103° 35' 30.560 W
3,700.0	1.48	56.30	3,699.9	-5.1	4.9	377,864.85	729,776.32	32° 2' 12.108 N	103° 35' 30.553 W
3,725.0	1.33	48.88	3,724.9	-4.8	5.4	377,865.22	729,776.81	32° 2' 12.112 N	103° 35' 30.547 W
3,750.0	1.22	38.09	3,749.8	-4.4	5.8	377,865.62	729,777.19	32° 2' 12.116 N	103° 35' 30.543 W
3,775.0	1.21	29.68	3,774.8	-3.9	6.1	377,866.06	729,777.48	32° 2' 12.120 N	103° 35' 30.539 W
3,800.0	1.20	30.56	3,799.8	-3.5	6.4	377,866.52	729,777.75	32° 2' 12.125 N	103° 35' 30.536 W
3,825.0	1.26	32.25	3,824.8	-3.0	6.6	377,866.97	729,778.03	32° 2' 12.129 N	103° 35' 30.533 W
3,850.0	1.24	30.48	3,849.8	-2.6	6.9	377,867.44	729,778.31	32° 2' 12.134 N	103° 35' 30.530 W
3,875.0	1.23	29.85	3,874.8	-2.1	7.2	377,867.91	729,778.58	32° 2' 12.139 N	103° 35' 30.527 W
3,900.0	1.19	27.10	3,899.8	-1.6	7.4	377,868.37	729,778.83	32° 2' 12.143 N	103° 35' 30.524 W
3,925.0	1.07	14.17	3,924.8	-1.2	7.6	377,868.83	729,779.01	32° 2' 12.148 N	103° 35' 30.522 W
3,950.0	0.97	355.98	3,949.8	-0.7	7.7	377,869.26	729,779.05	32° 2' 12.152 N	103° 35' 30.521 W
3,975.0	0.94	351.12	3,974.8	-0.3	7.6	377,869.68	729,779.01	32° 2' 12.156 N	103° 35' 30.522 W
4,000.0	1.00	346.76	3,999.8	0.1	7.5	377,870.09	729,778.92	32° 2' 12.160 N	103° 35' 30.522 W
4,025.0	1.05	341.62	4,024.8	0.5	7.4	377,870.52	729,778.80	32° 2' 12.164 N	103° 35' 30.524 W
4,050.0	0.97	341.39	4,049.8	0.9	7.3	377,870.94	729,778.66	32° 2' 12.169 N	103° 35' 30.525 W
4,075.0	0.97	341.41	4,074.8	1.3	7.1	377,871.34	729,778.53	32° 2' 12.173 N	103° 35' 30.527 W
4,100.0	0.87	327.47	4,099.8	1.7	7.0	377,871.70	729,778.36	32° 2' 12.176 N	103° 35' 30.529 W
4,125.0	0.72	287.11	4,124.8	1.9	6.7	377,871.91	729,778.11	32° 2' 12.178 N	103° 35' 30.532 W
4,150.0	0.93	266.27	4,149.8	1.9	6.4	377,871.94	729,777.75	32° 2' 12.179 N	103° 35' 30.536 W
4,175.0	0.93	270.08	4,174.8	1.9	6.0	377,871.93	729,777.35	32° 2' 12.178 N	103° 35' 30.541 W
4,200.0	0.81	263.28	4,199.8	1.9	5.6	377,871.91	729,776.97	32° 2' 12.178 N	103° 35' 30.545 W
4,225.0	0.84	253.85	4,224.8	1.8	5.2	377,871.84	729,776.62	32° 2' 12.178 N	103° 35' 30.549 W
4,250.0	0.70	240.49	4,249.8	1.7	4.9	377,871.71	729,776.31	32° 2' 12.176 N	103° 35' 30.553 W
4,275.0	0.45	228.01	4,274.8	1.6	4.7	377,871.57	729,776.10	32° 2' 12.175 N	103° 35' 30.555 W
4,300.0	0.44	192.34	4,299.8	1.4	4.6	377,871.41	729,776.01	32° 2' 12.173 N	103° 35' 30.556 W
4,325.0	0.57	177.70	4,324.8	1.2	4.6	377,871.19	729,775.99	32° 2' 12.171 N	103° 35' 30.556 W
4,350.0	0.53	181.74	4,349.8	1.0	4.6	377,870.95	729,776.00	32° 2' 12.169 N	103° 35' 30.556 W
4,375.0	0.58	170.14	4,374.8	0.7	4.6	377,870.71	729,776.01	32° 2' 12.166 N	103° 35' 30.556 W
4,400.0	0.58	172.22	4,399.8	0.5	4.7	377,870.46	729,776.05	32° 2' 12.164 N	103° 35' 30.556 W
4,425.0	0.44	189.61	4,424.8	0.2	4.7	377,870.24	729,776.05	32° 2' 12.162 N	103° 35' 30.556 W
4,450.0	0.51	217.54	4,449.8	0.1	4.6	377,870.06	729,775.97	32° 2' 12.160 N	103° 35' 30.557 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.51	221.10	4,474.8	-0.1	4.4	377,869.89	729,775.83	32° 2' 12.158 N	103° 35' 30.558 W
4,500.0	0.50	213.18	4,499.8	-0.3	4.3	377,869.71	729,775.70	32° 2' 12.157 N	103° 35' 30.560 W
4,525.0	0.50	213.81	4,524.8	-0.5	4.2	377,869.53	729,775.58	32° 2' 12.155 N	103° 35' 30.561 W
4,550.0	0.59	204.34	4,549.8	-0.7	4.1	377,869.32	729,775.46	32° 2' 12.153 N	103° 35' 30.563 W
4,575.0	0.50	204.83	4,574.8	-0.9	4.0	377,869.11	729,775.36	32° 2' 12.151 N	103° 35' 30.564 W
4,600.0	0.38	213.95	4,599.7	-1.1	3.9	377,868.94	729,775.27	32° 2' 12.149 N	103° 35' 30.565 W
4,625.0	0.38	203.62	4,624.7	-1.2	3.8	377,868.79	729,775.19	32° 2' 12.148 N	103° 35' 30.566 W
4,650.0	0.36	203.37	4,649.7	-1.4	3.7	377,868.65	729,775.13	32° 2' 12.146 N	103° 35' 30.567 W
4,675.0	0.33	214.73	4,674.7	-1.5	3.7	377,868.51	729,775.05	32° 2' 12.145 N	103° 35' 30.568 W
4,700.0	0.37	211.89	4,699.7	-1.6	3.6	377,868.39	729,774.97	32° 2' 12.144 N	103° 35' 30.569 W
4,725.0	0.45	198.42	4,724.7	-1.8	3.5	377,868.22	729,774.90	32° 2' 12.142 N	103° 35' 30.569 W
4,750.0	0.44	208.95	4,749.7	-2.0	3.4	377,868.05	729,774.82	32° 2' 12.140 N	103° 35' 30.570 W
4,775.0	0.45	211.31	4,774.7	-2.1	3.3	377,867.88	729,774.72	32° 2' 12.139 N	103° 35' 30.571 W
4,800.0	0.44	211.80	4,799.7	-2.3	3.2	377,867.71	729,774.62	32° 2' 12.137 N	103° 35' 30.573 W
4,825.0	0.49	207.87	4,824.7	-2.5	3.1	377,867.54	729,774.52	32° 2' 12.135 N	103° 35' 30.574 W
4,850.0	0.52	220.01	4,849.7	-2.6	3.0	377,867.36	729,774.40	32° 2' 12.133 N	103° 35' 30.575 W
4,875.0	0.43	222.54	4,874.7	-2.8	2.9	377,867.20	729,774.26	32° 2' 12.132 N	103° 35' 30.577 W
4,900.0	0.42	215.26	4,899.7	-2.9	2.7	377,867.06	729,774.14	32° 2' 12.130 N	103° 35' 30.578 W
4,925.0	0.46	226.88	4,924.7	-3.1	2.6	377,866.91	729,774.02	32° 2' 12.129 N	103° 35' 30.580 W
4,950.0	0.54	226.90	4,949.7	-3.2	2.5	377,866.76	729,773.86	32° 2' 12.128 N	103° 35' 30.582 W
4,975.0	0.56	219.33	4,974.7	-3.4	2.3	377,866.59	729,773.70	32° 2' 12.126 N	103° 35' 30.583 W
5,000.0	0.65	214.81	4,999.7	-3.6	2.1	377,866.38	729,773.54	32° 2' 12.124 N	103° 35' 30.585 W
5,025.0	0.53	229.80	5,024.7	-3.8	2.0	377,866.19	729,773.37	32° 2' 12.122 N	103° 35' 30.587 W
5,050.0	0.53	227.92	5,049.7	-4.0	1.8	377,866.04	729,773.19	32° 2' 12.120 N	103° 35' 30.589 W
5,075.0	0.57	235.43	5,074.7	-4.1	1.6	377,865.89	729,773.01	32° 2' 12.119 N	103° 35' 30.592 W
5,100.0	0.60	238.01	5,099.7	-4.3	1.4	377,865.75	729,772.79	32° 2' 12.118 N	103° 35' 30.594 W
5,125.0	0.56	246.93	5,124.7	-4.4	1.2	377,865.63	729,772.57	32° 2' 12.116 N	103° 35' 30.597 W
5,150.0	0.56	244.32	5,149.7	-4.5	0.9	377,865.53	729,772.35	32° 2' 12.115 N	103° 35' 30.599 W
5,175.0	0.51	249.28	5,174.7	-4.6	0.7	377,865.44	729,772.13	32° 2' 12.115 N	103° 35' 30.602 W
5,200.0	0.48	248.03	5,199.7	-4.6	0.5	377,865.36	729,771.93	32° 2' 12.114 N	103° 35' 30.604 W
5,225.0	0.57	263.43	5,224.7	-4.7	0.3	377,865.31	729,771.71	32° 2' 12.113 N	103° 35' 30.607 W
5,250.0	0.56	314.63	5,249.7	-4.6	0.1	377,865.38	729,771.50	32° 2' 12.114 N	103° 35' 30.609 W
5,275.0	0.62	340.88	5,274.7	-4.4	0.0	377,865.59	729,771.37	32° 2' 12.116 N	103° 35' 30.611 W
5,300.0	0.58	345.23	5,299.7	-4.2	-0.1	377,865.84	729,771.29	32° 2' 12.119 N	103° 35' 30.611 W
5,325.0	0.88	332.05	5,324.7	-3.9	-0.2	377,866.13	729,771.17	32° 2' 12.121 N	103° 35' 30.613 W
5,350.0	1.18	320.42	5,349.7	-3.5	-0.5	377,866.50	729,770.92	32° 2' 12.125 N	103° 35' 30.616 W
5,375.0	0.86	336.03	5,374.7	-3.1	-0.7	377,866.87	729,770.68	32° 2' 12.129 N	103° 35' 30.619 W
5,400.0	0.71	341.66	5,399.7	-2.8	-0.8	377,867.19	729,770.55	32° 2' 12.132 N	103° 35' 30.620 W
5,425.0	0.73	337.32	5,424.7	-2.5	-1.0	377,867.48	729,770.44	32° 2' 12.135 N	103° 35' 30.621 W
5,450.0	0.80	335.88	5,449.7	-2.2	-1.1	377,867.79	729,770.31	32° 2' 12.138 N	103° 35' 30.623 W
5,475.0	0.74	342.76	5,474.7	-1.9	-1.2	377,868.10	729,770.19	32° 2' 12.141 N	103° 35' 30.624 W
5,500.0	0.98	325.97	5,499.7	-1.6	-1.4	377,868.43	729,770.02	32° 2' 12.144 N	103° 35' 30.626 W
5,525.0	0.91	333.35	5,524.7	-1.2	-1.6	377,868.79	729,769.81	32° 2' 12.148 N	103° 35' 30.628 W
5,550.0	0.92	333.80	5,549.7	-0.9	-1.8	377,869.15	729,769.63	32° 2' 12.151 N	103° 35' 30.630 W
5,575.0	0.86	335.10	5,574.7	-0.5	-1.9	377,869.50	729,769.47	32° 2' 12.155 N	103° 35' 30.632 W
5,600.0	0.85	335.33	5,599.7	-0.2	-2.1	377,869.83	729,769.31	32° 2' 12.158 N	103° 35' 30.634 W
5,625.0	0.85	332.74	5,624.7	0.2	-2.2	377,870.17	729,769.15	32° 2' 12.162 N	103° 35' 30.636 W
5,650.0	0.83	331.13	5,649.7	0.5	-2.4	377,870.49	729,768.98	32° 2' 12.165 N	103° 35' 30.638 W
5,675.0	0.79	336.77	5,674.7	0.8	-2.6	377,870.81	729,768.82	32° 2' 12.168 N	103° 35' 30.640 W
5,700.0	0.83	335.75	5,699.7	1.1	-2.7	377,871.13	729,768.68	32° 2' 12.171 N	103° 35' 30.641 W
5,725.0	0.87	335.63	5,724.7	1.5	-2.9	377,871.47	729,768.53	32° 2' 12.174 N	103° 35' 30.643 W
5,750.0	0.87	333.81	5,749.7	1.8	-3.0	377,871.81	729,768.36	32° 2' 12.178 N	103° 35' 30.645 W
5,775.0	0.80	332.74	5,774.7	2.1	-3.2	377,872.14	729,768.20	32° 2' 12.181 N	103° 35' 30.647 W
5,800.0	0.89	332.16	5,799.7	2.5	-3.4	377,872.47	729,768.03	32° 2' 12.184 N	103° 35' 30.649 W
5,825.0	0.84	334.06	5,824.7	2.8	-3.5	377,872.80	729,767.86	32° 2' 12.188 N	103° 35' 30.651 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.92	335.82	5,849.7	3.2	-3.7	377,873.15	729,767.70	32° 2' 12.191 N	103° 35' 30.653 W
5,875.0	0.87	334.07	5,874.7	3.5	-3.9	377,873.50	729,767.53	32° 2' 12.195 N	103° 35' 30.655 W
5,900.0	0.74	338.34	5,899.7	3.8	-4.0	377,873.82	729,767.39	32° 2' 12.198 N	103° 35' 30.656 W
5,925.0	0.69	340.93	5,924.7	4.1	-4.1	377,874.12	729,767.28	32° 2' 12.201 N	103° 35' 30.657 W
5,950.0	0.71	336.91	5,949.7	4.4	-4.2	377,874.40	729,767.17	32° 2' 12.204 N	103° 35' 30.659 W
5,975.0	0.62	333.35	5,974.7	4.7	-4.3	377,874.66	729,767.05	32° 2' 12.206 N	103° 35' 30.660 W
6,000.0	0.43	285.89	5,999.6	4.8	-4.5	377,874.81	729,766.90	32° 2' 12.208 N	103° 35' 30.662 W
6,025.0	0.61	242.52	6,024.6	4.8	-4.7	377,874.78	729,766.69	32° 2' 12.207 N	103° 35' 30.664 W
6,050.0	0.78	224.54	6,049.6	4.6	-4.9	377,874.59	729,766.45	32° 2' 12.206 N	103° 35' 30.667 W
6,075.0	0.94	216.79	6,074.6	4.3	-5.2	377,874.31	729,766.21	32° 2' 12.203 N	103° 35' 30.670 W
6,100.0	0.97	217.60	6,099.6	4.0	-5.4	377,873.98	729,765.96	32° 2' 12.199 N	103° 35' 30.673 W
6,125.0	0.84	220.41	6,124.6	3.7	-5.7	377,873.67	729,765.71	32° 2' 12.196 N	103° 35' 30.676 W
6,150.0	0.85	223.18	6,149.6	3.4	-5.9	377,873.39	729,765.46	32° 2' 12.194 N	103° 35' 30.679 W
6,175.0	0.70	213.63	6,174.6	3.1	-6.1	377,873.13	729,765.25	32° 2' 12.191 N	103° 35' 30.681 W
6,200.0	0.75	172.14	6,199.6	2.8	-6.2	377,872.84	729,765.19	32° 2' 12.188 N	103° 35' 30.682 W
6,225.0	0.84	157.62	6,224.6	2.5	-6.1	377,872.51	729,765.28	32° 2' 12.185 N	103° 35' 30.681 W
6,250.0	0.85	158.74	6,249.6	2.2	-6.0	377,872.17	729,765.42	32° 2' 12.182 N	103° 35' 30.679 W
6,275.0	0.83	159.54	6,274.6	1.8	-5.8	377,871.83	729,765.55	32° 2' 12.178 N	103° 35' 30.678 W
6,300.0	0.86	161.15	6,299.6	1.5	-5.7	377,871.48	729,765.67	32° 2' 12.175 N	103° 35' 30.676 W
6,325.0	0.90	157.73	6,324.6	1.1	-5.6	377,871.12	729,765.81	32° 2' 12.171 N	103° 35' 30.675 W
6,350.0	0.87	155.14	6,349.6	0.8	-5.4	377,870.77	729,765.96	32° 2' 12.168 N	103° 35' 30.673 W
6,375.0	0.95	155.17	6,374.6	0.4	-5.3	377,870.41	729,766.13	32° 2' 12.164 N	103° 35' 30.671 W
6,400.0	0.97	153.65	6,399.6	0.0	-5.1	377,870.03	729,766.31	32° 2' 12.160 N	103° 35' 30.669 W
6,425.0	0.93	154.63	6,424.6	-0.3	-4.9	377,869.65	729,766.49	32° 2' 12.157 N	103° 35' 30.667 W
6,450.0	0.82	158.73	6,449.6	-0.7	-4.8	377,869.30	729,766.64	32° 2' 12.153 N	103° 35' 30.665 W
6,475.0	1.02	151.05	6,474.6	-1.1	-4.6	377,868.94	729,766.82	32° 2' 12.150 N	103° 35' 30.663 W
6,500.0	0.97	152.16	6,499.6	-1.4	-4.4	377,868.56	729,767.02	32° 2' 12.146 N	103° 35' 30.661 W
6,525.0	1.04	150.66	6,524.6	-1.8	-4.2	377,868.18	729,767.23	32° 2' 12.142 N	103° 35' 30.658 W
6,550.0	0.99	152.34	6,549.6	-2.2	-4.0	377,867.79	729,767.44	32° 2' 12.138 N	103° 35' 30.656 W
6,575.0	0.97	152.80	6,574.6	-2.6	-3.8	377,867.41	729,767.64	32° 2' 12.134 N	103° 35' 30.654 W
6,600.0	1.02	150.86	6,599.6	-3.0	-3.6	377,867.03	729,767.85	32° 2' 12.131 N	103° 35' 30.651 W
6,625.0	1.01	148.63	6,624.6	-3.4	-3.3	377,866.64	729,768.07	32° 2' 12.127 N	103° 35' 30.649 W
6,650.0	1.02	145.25	6,649.6	-3.7	-3.1	377,866.27	729,768.31	32° 2' 12.123 N	103° 35' 30.646 W
6,675.0	1.10	141.50	6,674.6	-4.1	-2.8	377,865.90	729,768.59	32° 2' 12.119 N	103° 35' 30.643 W
6,700.0	1.07	142.65	6,699.6	-4.5	-2.5	377,865.53	729,768.88	32° 2' 12.116 N	103° 35' 30.640 W
6,725.0	0.97	146.05	6,724.6	-4.8	-2.3	377,865.17	729,769.14	32° 2' 12.112 N	103° 35' 30.637 W
6,750.0	0.90	143.16	6,749.6	-5.2	-2.0	377,864.83	729,769.37	32° 2' 12.109 N	103° 35' 30.634 W
6,775.0	0.90	142.90	6,774.6	-5.5	-1.8	377,864.52	729,769.61	32° 2' 12.106 N	103° 35' 30.631 W
6,800.0	0.98	143.82	6,799.5	-5.8	-1.5	377,864.19	729,769.85	32° 2' 12.102 N	103° 35' 30.628 W
6,825.0	1.01	143.60	6,824.5	-6.2	-1.3	377,863.84	729,770.11	32° 2' 12.099 N	103° 35' 30.625 W
6,850.0	1.07	140.34	6,849.5	-6.5	-1.0	377,863.48	729,770.39	32° 2' 12.095 N	103° 35' 30.622 W
6,875.0	0.98	143.39	6,874.5	-6.9	-0.7	377,863.13	729,770.67	32° 2' 12.092 N	103° 35' 30.619 W
6,900.0	0.99	140.91	6,899.5	-7.2	-0.5	377,862.79	729,770.93	32° 2' 12.088 N	103° 35' 30.616 W
6,925.0	1.03	141.38	6,924.5	-7.5	-0.2	377,862.45	729,771.21	32° 2' 12.085 N	103° 35' 30.613 W
6,950.0	0.99	140.59	6,949.5	-7.9	0.1	377,862.11	729,771.48	32° 2' 12.082 N	103° 35' 30.610 W
6,975.0	0.88	137.67	6,974.5	-8.2	0.4	377,861.80	729,771.75	32° 2' 12.079 N	103° 35' 30.606 W
7,000.0	0.76	140.32	6,999.5	-8.5	0.6	377,861.53	729,771.99	32° 2' 12.076 N	103° 35' 30.604 W
7,025.0	0.64	135.58	7,024.5	-8.7	0.8	377,861.30	729,772.19	32° 2' 12.074 N	103° 35' 30.601 W
7,050.0	0.61	103.64	7,049.5	-8.8	1.0	377,861.17	729,772.42	32° 2' 12.072 N	103° 35' 30.599 W
7,075.0	0.61	89.39	7,074.5	-8.9	1.3	377,861.14	729,772.68	32° 2' 12.072 N	103° 35' 30.596 W
7,100.0	0.62	88.87	7,099.5	-8.9	1.6	377,861.15	729,772.95	32° 2' 12.072 N	103° 35' 30.593 W
7,125.0	0.47	87.93	7,124.5	-8.8	1.8	377,861.15	729,773.19	32° 2' 12.072 N	103° 35' 30.590 W
7,150.0	0.12	70.89	7,149.5	-8.8	1.9	377,861.16	729,773.31	32° 2' 12.072 N	103° 35' 30.588 W
7,175.0	0.09	321.58	7,174.5	-8.8	1.9	377,861.19	729,773.33	32° 2' 12.072 N	103° 35' 30.588 W
7,200.0	0.10	333.34	7,199.5	-8.8	1.9	377,861.22	729,773.30	32° 2' 12.073 N	103° 35' 30.588 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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	0.08	27.13	7,224.5	-8.7	1.9	377,861.26	729,773.30	32° 2' 12.073 N	103° 35' 30.588 W
7,250.0	0.11	325.12	7,249.5	-8.7	1.9	377,861.29	729,773.30	32° 2' 12.073 N	103° 35' 30.589 W
7,275.0	0.26	308.52	7,274.5	-8.7	1.8	377,861.35	729,773.24	32° 2' 12.074 N	103° 35' 30.589 W
7,300.0	0.22	329.77	7,299.5	-8.6	1.8	377,861.42	729,773.17	32° 2' 12.075 N	103° 35' 30.590 W
7,325.0	0.20	305.06	7,324.5	-8.5	1.7	377,861.49	729,773.11	32° 2' 12.075 N	103° 35' 30.591 W
7,350.0	0.16	314.60	7,349.5	-8.5	1.7	377,861.54	729,773.05	32° 2' 12.076 N	103° 35' 30.591 W
7,375.0	0.15	327.23	7,374.5	-8.4	1.6	377,861.59	729,773.01	32° 2' 12.076 N	103° 35' 30.592 W
7,400.0	0.17	316.66	7,399.5	-8.4	1.6	377,861.65	729,772.96	32° 2' 12.077 N	103° 35' 30.592 W
7,425.0	0.16	317.88	7,424.5	-8.3	1.5	377,861.70	729,772.91	32° 2' 12.078 N	103° 35' 30.593 W
7,450.0	0.11	332.76	7,449.5	-8.3	1.5	377,861.75	729,772.88	32° 2' 12.078 N	103° 35' 30.593 W
7,475.0	0.05	300.72	7,474.5	-8.2	1.5	377,861.77	729,772.86	32° 2' 12.078 N	103° 35' 30.594 W
7,500.0	0.05	344.34	7,499.5	-8.2	1.5	377,861.79	729,772.85	32° 2' 12.078 N	103° 35' 30.594 W
7,525.0	0.06	88.59	7,524.5	-8.2	1.5	377,861.80	729,772.86	32° 2' 12.079 N	103° 35' 30.594 W
7,550.0	0.05	142.05	7,549.5	-8.2	1.5	377,861.79	729,772.88	32° 2' 12.078 N	103° 35' 30.593 W
7,575.0	0.08	123.73	7,574.5	-8.2	1.5	377,861.77	729,772.90	32° 2' 12.078 N	103° 35' 30.593 W
7,600.0	0.08	127.00	7,599.5	-8.2	1.5	377,861.75	729,772.93	32° 2' 12.078 N	103° 35' 30.593 W
7,625.0	0.09	138.48	7,624.5	-8.3	1.6	377,861.73	729,772.95	32° 2' 12.078 N	103° 35' 30.592 W
7,650.0	0.14	148.14	7,649.5	-8.3	1.6	377,861.69	729,772.98	32° 2' 12.077 N	103° 35' 30.592 W
7,675.0	0.09	145.34	7,674.5	-8.4	1.6	377,861.65	729,773.01	32° 2' 12.077 N	103° 35' 30.592 W
7,700.0	0.16	140.76	7,699.5	-8.4	1.6	377,861.60	729,773.04	32° 2' 12.077 N	103° 35' 30.591 W
7,725.0	0.08	157.38	7,724.5	-8.4	1.7	377,861.56	729,773.07	32° 2' 12.076 N	103° 35' 30.591 W
7,750.0	0.10	145.79	7,749.5	-8.5	1.7	377,861.53	729,773.09	32° 2' 12.076 N	103° 35' 30.591 W
7,775.0	0.13	172.19	7,774.5	-8.5	1.7	377,861.48	729,773.11	32° 2' 12.075 N	103° 35' 30.591 W
7,800.0	0.13	158.42	7,799.5	-8.6	1.7	377,861.43	729,773.12	32° 2' 12.075 N	103° 35' 30.591 W
7,825.0	0.21	149.35	7,824.5	-8.6	1.8	377,861.36	729,773.16	32° 2' 12.074 N	103° 35' 30.590 W
7,850.0	0.22	139.57	7,849.5	-8.7	1.8	377,861.28	729,773.21	32° 2' 12.073 N	103° 35' 30.590 W
7,875.0	0.20	139.88	7,874.5	-8.8	1.9	377,861.21	729,773.27	32° 2' 12.073 N	103° 35' 30.589 W
7,900.0	0.32	157.45	7,899.5	-8.9	1.9	377,861.12	729,773.32	32° 2' 12.072 N	103° 35' 30.588 W
7,925.0	0.34	148.18	7,924.5	-9.0	2.0	377,860.99	729,773.39	32° 2' 12.070 N	103° 35' 30.587 W
7,950.0	0.22	127.60	7,949.5	-9.1	2.1	377,860.90	729,773.47	32° 2' 12.070 N	103° 35' 30.587 W
7,975.0	0.24	134.61	7,974.5	-9.2	2.1	377,860.83	729,773.54	32° 2' 12.069 N	103° 35' 30.586 W
8,000.0	0.30	135.24	7,999.5	-9.3	2.2	377,860.75	729,773.63	32° 2' 12.068 N	103° 35' 30.585 W
8,025.0	0.22	144.14	8,024.5	-9.3	2.3	377,860.66	729,773.70	32° 2' 12.067 N	103° 35' 30.584 W
8,050.0	0.32	127.14	8,049.5	-9.4	2.4	377,860.58	729,773.78	32° 2' 12.066 N	103° 35' 30.583 W
8,075.0	0.38	124.76	8,074.5	-9.5	2.5	377,860.49	729,773.91	32° 2' 12.065 N	103° 35' 30.581 W
8,100.0	0.39	126.84	8,099.5	-9.6	2.6	377,860.39	729,774.04	32° 2' 12.064 N	103° 35' 30.580 W
8,125.0	0.43	132.43	8,124.5	-9.7	2.8	377,860.28	729,774.18	32° 2' 12.063 N	103° 35' 30.578 W
8,150.0	0.46	126.64	8,149.5	-9.8	2.9	377,860.16	729,774.33	32° 2' 12.062 N	103° 35' 30.577 W
8,175.0	0.42	129.78	8,174.5	-10.0	3.1	377,860.04	729,774.48	32° 2' 12.061 N	103° 35' 30.575 W
8,200.0	0.44	124.49	8,199.5	-10.1	3.2	377,859.92	729,774.63	32° 2' 12.060 N	103° 35' 30.573 W
8,225.0	0.45	127.79	8,224.5	-10.2	3.4	377,859.81	729,774.79	32° 2' 12.059 N	103° 35' 30.571 W
8,250.0	0.41	119.49	8,249.5	-10.3	3.5	377,859.71	729,774.94	32° 2' 12.058 N	103° 35' 30.570 W
8,275.0	0.25	93.46	8,274.5	-10.3	3.7	377,859.66	729,775.08	32° 2' 12.057 N	103° 35' 30.568 W
8,300.0	0.23	89.55	8,299.5	-10.3	3.8	377,859.65	729,775.18	32° 2' 12.057 N	103° 35' 30.567 W
8,325.0	0.27	72.10	8,324.5	-10.3	3.9	377,859.67	729,775.29	32° 2' 12.057 N	103° 35' 30.566 W
8,350.0	0.23	69.26	8,349.5	-10.3	4.0	377,859.71	729,775.39	32° 2' 12.058 N	103° 35' 30.564 W
8,375.0	0.24	79.46	8,374.5	-10.3	4.1	377,859.74	729,775.49	32° 2' 12.058 N	103° 35' 30.563 W
8,400.0	0.30	73.36	8,399.5	-10.2	4.2	377,859.76	729,775.60	32° 2' 12.058 N	103° 35' 30.562 W
8,425.0	0.22	85.12	8,424.5	-10.2	4.3	377,859.79	729,775.71	32° 2' 12.058 N	103° 35' 30.561 W
8,450.0	0.20	358.63	8,449.5	-10.2	4.4	377,859.84	729,775.76	32° 2' 12.059 N	103° 35' 30.560 W
8,475.0	0.21	343.67	8,474.5	-10.1	4.3	377,859.92	729,775.75	32° 2' 12.060 N	103° 35' 30.560 W
8,500.0	0.24	327.70	8,499.5	-10.0	4.3	377,860.01	729,775.70	32° 2' 12.061 N	103° 35' 30.561 W
8,525.0	0.31	337.49	8,524.5	-9.9	4.3	377,860.12	729,775.65	32° 2' 12.062 N	103° 35' 30.561 W
8,550.0	0.25	338.68	8,549.5	-9.8	4.2	377,860.23	729,775.60	32° 2' 12.063 N	103° 35' 30.562 W
8,575.0	0.28	328.63	8,574.5	-9.7	4.2	377,860.33	729,775.55	32° 2' 12.064 N	103° 35' 30.562 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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
8,600.0	0.26	309.12	8,599.5	-9.6	4.1	377,860.42	729,775.48	32° 2' 12.065 N	103° 35' 30.563 W
8,625.0	0.33	307.01	8,624.5	-9.5	4.0	377,860.50	729,775.38	32° 2' 12.065 N	103° 35' 30.564 W
8,650.0	0.31	306.11	8,649.5	-9.4	3.9	377,860.58	729,775.26	32° 2' 12.066 N	103° 35' 30.566 W
8,675.0	0.29	305.81	8,674.5	-9.3	3.8	377,860.66	729,775.16	32° 2' 12.067 N	103° 35' 30.567 W
8,700.0	0.33	289.34	8,699.5	-9.3	3.6	377,860.72	729,775.04	32° 2' 12.068 N	103° 35' 30.568 W
8,725.0	0.41	289.91	8,724.5	-9.2	3.5	377,860.78	729,774.89	32° 2' 12.068 N	103° 35' 30.570 W
8,750.0	0.41	290.69	8,749.5	-9.2	3.3	377,860.84	729,774.72	32° 2' 12.069 N	103° 35' 30.572 W
8,775.0	0.42	277.48	8,774.5	-9.1	3.1	377,860.88	729,774.54	32° 2' 12.069 N	103° 35' 30.574 W
8,800.0	0.42	275.20	8,799.5	-9.1	3.0	377,860.90	729,774.36	32° 2' 12.070 N	103° 35' 30.576 W
8,825.0	0.42	271.22	8,824.5	-9.1	2.8	377,860.91	729,774.18	32° 2' 12.070 N	103° 35' 30.578 W
8,850.0	0.34	282.58	8,849.5	-9.1	2.6	377,860.93	729,774.02	32° 2' 12.070 N	103° 35' 30.580 W
8,875.0	0.31	280.44	8,874.5	-9.0	2.5	377,860.96	729,773.88	32° 2' 12.070 N	103° 35' 30.582 W
8,900.0	0.43	260.55	8,899.5	-9.0	2.3	377,860.96	729,773.72	32° 2' 12.070 N	103° 35' 30.584 W
8,925.0	0.50	257.58	8,924.5	-9.1	2.1	377,860.92	729,773.52	32° 2' 12.070 N	103° 35' 30.586 W
8,950.0	0.52	254.85	8,949.5	-9.1	1.9	377,860.86	729,773.30	32° 2' 12.069 N	103° 35' 30.588 W
8,975.0	0.54	255.79	8,974.5	-9.2	1.7	377,860.81	729,773.08	32° 2' 12.069 N	103° 35' 30.591 W
9,000.0	0.49	250.90	8,999.5	-9.3	1.5	377,860.74	729,772.86	32° 2' 12.068 N	103° 35' 30.594 W
9,025.0	0.52	253.72	9,024.5	-9.3	1.3	377,860.67	729,772.65	32° 2' 12.067 N	103° 35' 30.596 W
9,050.0	0.50	254.49	9,049.5	-9.4	1.0	377,860.61	729,772.44	32° 2' 12.067 N	103° 35' 30.599 W
9,075.0	0.50	253.61	9,074.5	-9.4	0.8	377,860.55	729,772.23	32° 2' 12.066 N	103° 35' 30.601 W
9,100.0	0.40	257.63	9,099.5	-9.5	0.6	377,860.50	729,772.04	32° 2' 12.066 N	103° 35' 30.603 W
9,125.0	0.47	276.21	9,124.5	-9.5	0.5	377,860.50	729,771.85	32° 2' 12.066 N	103° 35' 30.605 W
9,150.0	0.38	280.18	9,149.5	-9.5	0.3	377,860.52	729,771.67	32° 2' 12.066 N	103° 35' 30.607 W
9,175.0	0.38	286.58	9,174.5	-9.4	0.1	377,860.56	729,771.51	32° 2' 12.066 N	103° 35' 30.609 W
9,200.0	0.42	284.41	9,199.5	-9.4	-0.1	377,860.61	729,771.34	32° 2' 12.067 N	103° 35' 30.611 W
9,225.0	0.40	291.06	9,224.5	-9.3	-0.2	377,860.66	729,771.17	32° 2' 12.067 N	103° 35' 30.613 W
9,250.0	0.45	282.76	9,249.5	-9.3	-0.4	377,860.71	729,770.99	32° 2' 12.068 N	103° 35' 30.615 W
9,275.0	0.50	290.37	9,274.5	-9.2	-0.6	377,860.77	729,770.79	32° 2' 12.068 N	103° 35' 30.618 W
9,300.0	0.54	292.60	9,299.5	-9.1	-0.8	377,860.86	729,770.58	32° 2' 12.069 N	103° 35' 30.620 W
9,325.0	0.59	290.28	9,324.5	-9.1	-1.0	377,860.95	729,770.35	32° 2' 12.070 N	103° 35' 30.623 W
9,350.0	0.58	283.71	9,349.5	-9.0	-1.3	377,861.02	729,770.11	32° 2' 12.071 N	103° 35' 30.626 W
9,375.0	0.60	281.24	9,374.5	-8.9	-1.5	377,861.08	729,769.86	32° 2' 12.072 N	103° 35' 30.628 W
9,400.0	0.57	279.63	9,399.5	-8.9	-1.8	377,861.12	729,769.61	32° 2' 12.072 N	103° 35' 30.631 W
9,425.0	0.52	282.69	9,424.5	-8.8	-2.0	377,861.17	729,769.37	32° 2' 12.072 N	103° 35' 30.634 W
9,450.0	0.57	282.14	9,449.5	-8.8	-2.3	377,861.22	729,769.14	32° 2' 12.073 N	103° 35' 30.637 W
9,475.0	0.58	277.66	9,474.5	-8.7	-2.5	377,861.26	729,768.90	32° 2' 12.073 N	103° 35' 30.640 W
9,500.0	0.56	275.09	9,499.5	-8.7	-2.7	377,861.29	729,768.65	32° 2' 12.074 N	103° 35' 30.643 W
9,525.0	0.50	275.69	9,524.5	-8.7	-3.0	377,861.31	729,768.42	32° 2' 12.074 N	103° 35' 30.645 W
9,550.0	0.41	264.53	9,549.5	-8.7	-3.2	377,861.32	729,768.22	32° 2' 12.074 N	103° 35' 30.647 W
9,575.0	0.23	254.90	9,574.5	-8.7	-3.3	377,861.29	729,768.08	32° 2' 12.074 N	103° 35' 30.649 W
9,600.0	0.04	154.61	9,599.5	-8.7	-3.4	377,861.27	729,768.04	32° 2' 12.074 N	103° 35' 30.650 W
9,625.0	0.25	123.04	9,624.5	-8.8	-3.3	377,861.23	729,768.09	32° 2' 12.073 N	103° 35' 30.649 W
9,650.0	0.19	106.98	9,649.5	-8.8	-3.2	377,861.19	729,768.17	32° 2' 12.073 N	103° 35' 30.648 W
9,675.0	0.15	107.86	9,674.5	-8.8	-3.2	377,861.17	729,768.24	32° 2' 12.073 N	103° 35' 30.647 W
9,700.0	0.10	115.41	9,699.5	-8.8	-3.1	377,861.15	729,768.29	32° 2' 12.072 N	103° 35' 30.647 W
9,725.0	0.19	95.20	9,724.5	-8.9	-3.0	377,861.14	729,768.36	32° 2' 12.072 N	103° 35' 30.646 W
9,750.0	0.27	96.53	9,749.5	-8.9	-2.9	377,861.13	729,768.46	32° 2' 12.072 N	103° 35' 30.645 W
9,775.0	0.32	99.40	9,774.5	-8.9	-2.8	377,861.11	729,768.58	32° 2' 12.072 N	103° 35' 30.643 W
9,800.0	0.30	87.73	9,799.5	-8.9	-2.7	377,861.10	729,768.72	32° 2' 12.072 N	103° 35' 30.642 W
9,825.0	0.27	80.24	9,824.5	-8.9	-2.6	377,861.11	729,768.84	32° 2' 12.072 N	103° 35' 30.640 W
9,850.0	0.29	95.90	9,849.5	-8.9	-2.4	377,861.12	729,768.96	32° 2' 12.072 N	103° 35' 30.639 W
9,875.0	0.36	112.81	9,874.5	-8.9	-2.3	377,861.08	729,769.10	32° 2' 12.072 N	103° 35' 30.637 W
9,900.0	0.37	125.73	9,899.5	-9.0	-2.2	377,861.00	729,769.23	32° 2' 12.071 N	103° 35' 30.636 W
9,925.0	0.45	130.15	9,924.5	-9.1	-2.0	377,860.89	729,769.38	32° 2' 12.070 N	103° 35' 30.634 W
9,950.0	0.58	135.77	9,949.5	-9.3	-1.9	377,860.74	729,769.54	32° 2' 12.068 N	103° 35' 30.632 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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
9,975.0	0.57	139.14	9,974.5	-9.4	-1.7	377,860.55	729,769.71	32° 2' 12.066 N	103° 35' 30.630 W
10,000.0	0.64	142.18	9,999.5	-9.6	-1.5	377,860.35	729,769.88	32° 2' 12.064 N	103° 35' 30.628 W
10,025.0	0.71	138.96	10,024.5	-9.9	-1.3	377,860.12	729,770.06	32° 2' 12.062 N	103° 35' 30.626 W
10,050.0	0.68	139.58	10,049.5	-10.1	-1.1	377,859.89	729,770.26	32° 2' 12.060 N	103° 35' 30.624 W
10,075.0	0.73	145.39	10,074.5	-10.4	-0.9	377,859.65	729,770.45	32° 2' 12.057 N	103° 35' 30.622 W
10,100.0	0.74	150.46	10,099.5	-10.6	-0.8	377,859.38	729,770.62	32° 2' 12.055 N	103° 35' 30.620 W
10,125.0	0.91	152.60	10,124.4	-10.9	-0.6	377,859.06	729,770.79	32° 2' 12.052 N	103° 35' 30.618 W
10,150.0	0.92	150.93	10,149.4	-11.3	-0.4	377,858.71	729,770.98	32° 2' 12.048 N	103° 35' 30.616 W
10,175.0	0.93	150.73	10,174.4	-11.6	-0.2	377,858.36	729,771.17	32° 2' 12.045 N	103° 35' 30.613 W
10,200.0	0.88	151.98	10,199.4	-12.0	0.0	377,858.01	729,771.36	32° 2' 12.041 N	103° 35' 30.611 W
10,225.0	0.78	141.41	10,224.4	-12.3	0.2	377,857.71	729,771.56	32° 2' 12.038 N	103° 35' 30.609 W
10,250.0	0.60	110.82	10,249.4	-12.5	0.4	377,857.53	729,771.79	32° 2' 12.036 N	103° 35' 30.606 W
10,275.0	0.59	79.51	10,274.4	-12.5	0.6	377,857.50	729,772.04	32° 2' 12.036 N	103° 35' 30.603 W
10,300.0	0.64	78.88	10,299.4	-12.4	0.9	377,857.55	729,772.30	32° 2' 12.037 N	103° 35' 30.600 W
10,325.0	0.64	80.23	10,324.4	-12.4	1.2	377,857.61	729,772.57	32° 2' 12.037 N	103° 35' 30.597 W
10,350.0	0.60	77.18	10,349.4	-12.3	1.4	377,857.66	729,772.84	32° 2' 12.038 N	103° 35' 30.594 W
10,375.0	0.62	78.31	10,374.4	-12.3	1.7	377,857.71	729,773.10	32° 2' 12.038 N	103° 35' 30.591 W
10,400.0	0.60	80.40	10,399.4	-12.2	2.0	377,857.76	729,773.36	32° 2' 12.039 N	103° 35' 30.588 W
10,425.0	0.63	80.03	10,424.4	-12.2	2.2	377,857.81	729,773.63	32° 2' 12.039 N	103° 35' 30.585 W
10,450.0	0.64	77.61	10,449.4	-12.1	2.5	377,857.86	729,773.90	32° 2' 12.039 N	103° 35' 30.582 W
10,475.0	0.64	78.95	10,474.4	-12.1	2.8	377,857.92	729,774.17	32° 2' 12.040 N	103° 35' 30.579 W
10,500.0	0.66	86.97	10,499.4	-12.0	3.1	377,857.95	729,774.45	32° 2' 12.040 N	103° 35' 30.575 W
10,525.0	0.71	88.72	10,524.4	-12.0	3.4	377,857.97	729,774.75	32° 2' 12.040 N	103° 35' 30.572 W
10,550.0	0.75	92.48	10,549.4	-12.0	3.7	377,857.96	729,775.07	32° 2' 12.040 N	103° 35' 30.568 W
10,575.0	0.74	88.17	10,574.4	-12.0	4.0	377,857.96	729,775.39	32° 2' 12.040 N	103° 35' 30.564 W
10,600.0	0.76	84.76	10,599.4	-12.0	4.3	377,857.98	729,775.72	32° 2' 12.041 N	103° 35' 30.561 W
10,625.0	0.64	61.50	10,624.4	-11.9	4.6	377,858.06	729,776.01	32° 2' 12.041 N	103° 35' 30.557 W
10,650.0	0.65	43.06	10,649.4	-11.8	4.8	377,858.23	729,776.23	32° 2' 12.043 N	103° 35' 30.555 W
10,675.0	0.68	33.89	10,674.4	-11.5	5.0	377,858.46	729,776.41	32° 2' 12.045 N	103° 35' 30.553 W
10,700.0	0.76	28.40	10,699.4	-11.3	5.2	377,858.73	729,776.57	32° 2' 12.048 N	103° 35' 30.551 W
10,725.0	0.66	22.17	10,724.4	-11.0	5.3	377,859.01	729,776.70	32° 2' 12.051 N	103° 35' 30.549 W
10,750.0	0.59	13.34	10,749.4	-10.7	5.4	377,859.27	729,776.79	32° 2' 12.053 N	103° 35' 30.548 W
10,775.0	0.63	1.30	10,774.4	-10.5	5.4	377,859.53	729,776.82	32° 2' 12.056 N	103° 35' 30.548 W
10,800.0	0.63	352.65	10,799.4	-10.2	5.4	377,859.80	729,776.80	32° 2' 12.058 N	103° 35' 30.548 W
10,825.0	0.64	346.73	10,824.4	-9.9	5.4	377,860.07	729,776.75	32° 2' 12.061 N	103° 35' 30.548 W
10,850.0	0.58	341.22	10,849.4	-9.7	5.3	377,860.33	729,776.68	32° 2' 12.064 N	103° 35' 30.549 W
10,875.0	0.61	331.72	10,874.4	-9.4	5.2	377,860.57	729,776.58	32° 2' 12.066 N	103° 35' 30.550 W
10,900.0	0.65	322.67	10,899.4	-9.2	5.0	377,860.80	729,776.43	32° 2' 12.068 N	103° 35' 30.552 W
10,925.0	0.66	312.10	10,924.4	-9.0	4.8	377,861.01	729,776.24	32° 2' 12.070 N	103° 35' 30.554 W
10,950.0	0.72	301.08	10,949.4	-8.8	4.6	377,861.18	729,775.99	32° 2' 12.072 N	103° 35' 30.557 W
10,975.0	0.81	293.86	10,974.4	-8.7	4.3	377,861.34	729,775.70	32° 2' 12.074 N	103° 35' 30.561 W
11,000.0	0.81	296.83	10,999.4	-8.5	4.0	377,861.49	729,775.38	32° 2' 12.075 N	103° 35' 30.564 W
11,025.0	0.86	291.25	11,024.4	-8.4	3.7	377,861.64	729,775.05	32° 2' 12.077 N	103° 35' 30.568 W
11,050.0	0.90	289.93	11,049.4	-8.2	3.3	377,861.77	729,774.69	32° 2' 12.078 N	103° 35' 30.572 W
11,075.0	0.94	278.76	11,074.4	-8.1	2.9	377,861.87	729,774.30	32° 2' 12.079 N	103° 35' 30.577 W
11,100.0	0.90	273.31	11,099.4	-8.1	2.5	377,861.91	729,773.90	32° 2' 12.080 N	103° 35' 30.581 W
11,125.0	0.94	267.73	11,124.4	-8.1	2.1	377,861.91	729,773.50	32° 2' 12.080 N	103° 35' 30.586 W
11,150.0	0.93	266.60	11,149.4	-8.1	1.7	377,861.89	729,773.09	32° 2' 12.079 N	103° 35' 30.591 W
11,175.0	1.01	260.78	11,174.4	-8.2	1.3	377,861.85	729,772.67	32° 2' 12.079 N	103° 35' 30.596 W
11,200.0	1.01	253.72	11,199.4	-8.2	0.8	377,861.75	729,772.24	32° 2' 12.078 N	103° 35' 30.601 W
11,225.0	0.99	259.73	11,224.4	-8.3	0.4	377,861.65	729,771.82	32° 2' 12.077 N	103° 35' 30.606 W
11,250.0	1.02	259.38	11,249.4	-8.4	0.0	377,861.57	729,771.39	32° 2' 12.076 N	103° 35' 30.611 W
11,275.0	0.98	260.22	11,274.3	-8.5	-0.4	377,861.49	729,770.96	32° 2' 12.076 N	103° 35' 30.616 W
11,300.0	1.06	256.22	11,299.3	-8.6	-0.9	377,861.40	729,770.52	32° 2' 12.075 N	103° 35' 30.621 W
11,325.0	1.10	254.84	11,324.3	-8.7	-1.3	377,861.28	729,770.07	32° 2' 12.074 N	103° 35' 30.626 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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
11,350.0	1.21	255.49	11,349.3	-8.8	-1.8	377,861.15	729,769.58	32° 2' 12.072 N	103° 35' 30.632 W
11,375.0	1.25	257.69	11,374.3	-9.0	-2.3	377,861.03	729,769.06	32° 2' 12.071 N	103° 35' 30.638 W
11,400.0	1.20	257.45	11,399.3	-9.1	-2.9	377,860.92	729,768.54	32° 2' 12.070 N	103° 35' 30.644 W
11,425.0	1.10	259.75	11,424.3	-9.2	-3.4	377,860.82	729,768.05	32° 2' 12.069 N	103° 35' 30.650 W
11,450.0	1.07	263.35	11,449.3	-9.3	-3.8	377,860.75	729,767.58	32° 2' 12.068 N	103° 35' 30.655 W
11,475.0	1.08	256.35	11,474.3	-9.3	-4.3	377,860.66	729,767.12	32° 2' 12.068 N	103° 35' 30.660 W
11,500.0	0.97	252.14	11,499.3	-9.5	-4.7	377,860.54	729,766.69	32° 2' 12.066 N	103° 35' 30.665 W
11,525.0	0.92	252.86	11,524.3	-9.6	-5.1	377,860.42	729,766.29	32° 2' 12.065 N	103° 35' 30.670 W
11,545.0	0.90	254.13	11,544.3	-9.7	-5.4	377,860.33	729,765.99	32° 2' 12.064 N	103° 35' 30.673 W
11,699.0	1.13	311.12	11,698.3	-9.0	-7.7	377,861.00	729,763.68	32° 2' 12.071 N	103° 35' 30.700 W
11,746.0	1.35	320.95	11,745.3	-8.3	-8.4	377,861.73	729,762.98	32° 2' 12.078 N	103° 35' 30.708 W
11,793.0	3.74	342.37	11,792.2	-6.4	-9.2	377,863.62	729,762.17	32° 2' 12.097 N	103° 35' 30.718 W
11,840.0	9.02	348.40	11,838.9	-1.3	-10.4	377,868.70	729,760.96	32° 2' 12.148 N	103° 35' 30.731 W
11,887.0	13.04	354.62	11,885.0	7.6	-11.7	377,877.59	729,759.73	32° 2' 12.236 N	103° 35' 30.745 W
11,934.0	16.01	351.95	11,930.5	19.3	-13.1	377,889.29	729,758.32	32° 2' 12.351 N	103° 35' 30.760 W
11,981.0	19.88	348.87	11,975.2	33.6	-15.5	377,903.55	729,755.87	32° 2' 12.493 N	103° 35' 30.788 W
12,028.0	24.18	348.39	12,018.8	50.8	-19.0	377,920.83	729,752.39	32° 2' 12.664 N	103° 35' 30.827 W
12,075.0	27.84	352.26	12,061.0	71.1	-22.4	377,941.14	729,748.97	32° 2' 12.865 N	103° 35' 30.865 W
12,125.0	32.95	357.43	12,104.1	96.3	-24.6	377,966.31	729,746.79	32° 2' 13.115 N	103° 35' 30.888 W
12,172.0	37.24	355.80	12,142.6	123.3	-26.2	377,993.28	729,745.17	32° 2' 13.381 N	103° 35' 30.905 W
12,220.0	41.83	358.16	12,179.6	153.8	-27.8	378,023.78	729,743.59	32° 2' 13.683 N	103° 35' 30.921 W
12,266.0	48.23	359.53	12,212.1	186.3	-28.4	378,056.30	729,742.96	32° 2' 14.005 N	103° 35' 30.925 W
12,313.0	55.31	0.24	12,241.2	223.2	-28.5	378,093.20	729,742.90	32° 2' 14.370 N	103° 35' 30.923 W
12,360.0	59.65	0.93	12,266.4	262.8	-28.1	378,132.81	729,743.31	32° 2' 14.762 N	103° 35' 30.915 W
12,407.0	64.13	1.26	12,288.6	304.3	-27.3	378,174.25	729,744.10	32° 2' 15.172 N	103° 35' 30.903 W
12,454.0	71.52	2.34	12,306.3	347.7	-25.9	378,217.72	729,745.48	32° 2' 15.603 N	103° 35' 30.883 W
12,501.0	79.78	1.97	12,317.9	393.2	-24.2	378,263.18	729,747.19	32° 2' 16.052 N	103° 35' 30.860 W
12,548.0	86.76	1.43	12,323.4	439.8	-22.8	378,309.81	729,748.57	32° 2' 16.514 N	103° 35' 30.840 W
12,594.0	94.63	0.86	12,322.9	485.8	-21.9	378,355.76	729,749.49	32° 2' 16.968 N	103° 35' 30.826 W
12,689.0	93.70	2.34	12,316.0	580.5	-19.3	378,450.47	729,752.13	32° 2' 17.905 N	103° 35' 30.787 W
12,783.0	91.46	1.77	12,311.8	674.3	-15.9	378,544.31	729,755.50	32° 2' 18.834 N	103° 35' 30.741 W
12,877.0	90.97	1.66	12,309.8	768.2	-13.1	378,638.25	729,758.31	32° 2' 19.763 N	103° 35' 30.701 W
12,971.0	90.50	2.05	12,308.6	862.2	-10.0	378,732.19	729,761.36	32° 2' 20.693 N	103° 35' 30.658 W
13,066.0	91.04	3.17	12,307.3	957.1	-5.7	378,827.08	729,765.68	32° 2' 21.631 N	103° 35' 30.600 W
13,160.0	91.51	4.52	12,305.2	1,050.8	0.6	378,920.84	729,771.98	32° 2' 22.559 N	103° 35' 30.519 W
13,255.0	90.61	3.73	12,303.4	1,145.6	7.4	379,015.58	729,778.81	32° 2' 23.496 N	103° 35' 30.432 W
13,348.0	90.78	2.78	12,302.3	1,238.4	12.7	379,108.42	729,784.09	32° 2' 24.414 N	103° 35' 30.364 W
13,443.0	92.86	3.92	12,299.3	1,333.2	18.2	379,203.20	729,789.64	32° 2' 25.352 N	103° 35' 30.292 W
13,537.0	91.34	3.65	12,295.8	1,426.9	24.4	379,296.93	729,795.84	32° 2' 26.279 N	103° 35' 30.212 W
13,631.0	91.09	4.83	12,293.8	1,520.7	31.4	379,390.65	729,802.79	32° 2' 27.206 N	103° 35' 30.124 W
13,725.0	89.10	4.24	12,293.7	1,614.4	38.8	379,484.35	729,810.22	32° 2' 28.132 N	103° 35' 30.030 W
13,819.0	88.09	1.71	12,296.0	1,708.2	43.7	379,578.19	729,815.10	32° 2' 29.061 N	103° 35' 29.966 W
13,913.0	88.35	359.37	12,298.9	1,802.1	44.6	379,672.13	729,815.99	32° 2' 29.990 N	103° 35' 29.948 W
14,007.0	89.71	359.26	12,300.5	1,896.1	43.5	379,766.11	729,814.86	32° 2' 30.920 N	103° 35' 29.954 W
14,101.0	92.49	356.79	12,298.7	1,990.0	40.2	379,860.02	729,811.62	32° 2' 31.850 N	103° 35' 29.984 W
14,195.0	92.88	354.15	12,294.3	2,083.6	32.8	379,953.62	729,804.21	32° 2' 32.777 N	103° 35' 30.062 W
14,289.0	94.66	354.67	12,288.1	2,177.0	23.7	380,046.96	729,795.07	32° 2' 33.701 N	103° 35' 30.161 W
14,383.0	95.98	357.47	12,279.4	2,270.3	17.3	380,140.33	729,788.66	32° 2' 34.625 N	103° 35' 30.228 W
14,478.0	95.57	0.29	12,269.8	2,364.8	15.4	380,234.82	729,786.81	32° 2' 35.561 N	103° 35' 30.242 W
14,572.0	91.98	0.50	12,263.6	2,458.6	16.1	380,328.59	729,787.46	32° 2' 36.489 N	103° 35' 30.227 W
14,666.0	90.12	358.61	12,261.9	2,552.6	15.3	380,422.57	729,786.73	32° 2' 37.419 N	103° 35' 30.228 W
14,761.0	92.47	359.44	12,259.8	2,647.5	13.7	380,517.52	729,785.11	32° 2' 38.358 N	103° 35' 30.239 W
14,855.0	92.42	359.61	12,255.8	2,741.4	12.9	380,611.43	729,784.33	32° 2' 39.288 N	103° 35' 30.241 W
14,950.0	92.46	359.94	12,251.7	2,836.3	12.6	380,706.35	729,783.96	32° 2' 40.227 N	103° 35' 30.238 W
15,044.0	92.30	0.70	12,247.8	2,930.3	13.1	380,800.26	729,784.48	32° 2' 41.156 N	103° 35' 30.224 W

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well VAST STATE #25H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3262+28 @ 3290.0usft (NORAM 23)
Well:	VAST STATE #25H	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
15,138.0	90.55	1.71	12,245.5	3,024.2	15.1	380,894.21	729,786.46	32° 2' 42.086 N	103° 35' 30.194 W
15,233.0	93.33	0.72	12,242.3	3,119.1	17.1	380,989.12	729,788.47	32° 2' 43.025 N	103° 35' 30.163 W
15,327.0	92.04	1.65	12,237.9	3,213.0	19.0	381,082.99	729,790.42	32° 2' 43.954 N	103° 35' 30.133 W
15,421.0	91.92	1.93	12,234.6	3,306.9	22.0	381,176.89	729,793.35	32° 2' 44.883 N	103° 35' 30.091 W
15,516.0	90.66	1.81	12,232.5	3,401.8	25.1	381,271.82	729,796.45	32° 2' 45.822 N	103° 35' 30.047 W
15,610.0	89.43	2.55	12,232.4	3,495.7	28.6	381,365.75	729,800.02	32° 2' 46.751 N	103° 35' 29.998 W
15,705.0	87.20	1.64	12,235.2	3,590.6	32.1	381,460.63	729,803.50	32° 2' 47.690 N	103° 35' 29.951 W
15,799.0	87.60	358.62	12,239.5	3,684.5	32.3	381,554.53	729,803.71	32° 2' 48.619 N	103° 35' 29.941 W
15,893.0	89.37	356.06	12,241.9	3,778.4	28.0	381,648.38	729,799.35	32° 2' 49.548 N	103° 35' 29.984 W
15,987.0	89.77	353.36	12,242.7	3,872.0	19.3	381,741.97	729,790.68	32° 2' 50.475 N	103° 35' 30.077 W
16,082.0	94.13	354.78	12,239.4	3,966.4	9.5	381,836.38	729,780.87	32° 2' 51.410 N	103° 35' 30.183 W
16,176.0	95.87	358.00	12,231.2	4,059.8	3.6	381,929.82	729,774.98	32° 2' 52.335 N	103° 35' 30.244 W
16,271.0	96.47	359.99	12,221.0	4,154.3	1.9	382,024.25	729,773.32	32° 2' 53.269 N	103° 35' 30.256 W
16,365.0	96.07	0.94	12,210.7	4,247.7	2.7	382,117.68	729,774.08	32° 2' 54.194 N	103° 35' 30.240 W
16,459.0	95.68	2.47	12,201.1	4,341.1	5.5	382,211.15	729,776.86	32° 2' 55.119 N	103° 35' 30.200 W
16,553.0	92.89	4.35	12,194.1	4,434.7	11.0	382,304.70	729,782.44	32° 2' 56.044 N	103° 35' 30.128 W
16,648.0	91.46	4.58	12,190.5	4,529.3	18.4	382,399.34	729,789.83	32° 2' 56.980 N	103° 35' 30.034 W
16,742.0	89.85	4.83	12,189.4	4,623.0	26.1	382,493.02	729,797.54	32° 2' 57.907 N	103° 35' 29.937 W
16,836.0	90.31	5.17	12,189.3	4,716.7	34.3	382,586.66	729,805.73	32° 2' 58.833 N	103° 35' 29.835 W
16,996.0	90.74	5.21	12,187.8	4,876.0	48.8	382,746.00	729,820.20	32° 3' 0.408 N	103° 35' 29.654 W

Checked By: _____	Approved By: _____	Date: _____
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