

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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	Latitude:	32° 5' 36.820 N
From:	Map	Easting:	741,887.40 usft	Longitude:	103° 33' 8.116 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.42 °

Well	GETTYSBURG STATE COM #14H					
Well Position	+N/-S	0.0 usft	Northing:	477,942.60 usft	Latitude:	32° 18' 39.899 N
	+E/-W	0.0 usft	Easting:	764,217.30 usft	Longitude:	103° 28' 41.227 W
Position Uncertainty	3.0 usft		Wellhead Elevation:	usft	Ground Level:	3,424.7 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	11/30/2017	6.89	60.14	47,940.35181103

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	181.31	

Survey Program	Date	5/23/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	10,544.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
10,597.0	18,700.0	MWD - CURVE/LATERAL (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.91	262.96	100.0	-0.1	-0.8	0.1	0.91	0.91	0.00	
125.0	0.89	251.62	125.0	-0.2	-1.2	0.2	0.72	-0.08	-45.36	
150.0	0.84	243.15	150.0	-0.3	-1.5	0.4	0.55	-0.20	-33.88	
175.0	0.79	245.02	175.0	-0.5	-1.8	0.5	0.23	-0.20	7.48	
200.0	0.78	252.04	200.0	-0.6	-2.2	0.7	0.39	-0.04	28.08	
225.0	0.86	247.20	225.0	-0.7	-2.5	0.8	0.42	0.32	-19.36	
250.0	0.77	249.22	250.0	-0.9	-2.8	0.9	0.38	-0.36	8.08	

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Well:	GETTYSBURG STATE COM #14H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
275.0	0.83	249.49	275.0	-1.0	-3.1	1.1	0.24	0.24	1.08
300.0	0.74	250.24	300.0	-1.1	-3.5	1.2	0.36	-0.36	3.00
325.0	0.64	256.17	325.0	-1.2	-3.8	1.3	0.49	-0.40	23.72
350.0	0.47	250.73	350.0	-1.3	-4.0	1.4	0.71	-0.68	-21.76
375.0	0.45	249.20	375.0	-1.3	-4.2	1.4	0.09	-0.08	-6.12
400.0	0.35	244.18	400.0	-1.4	-4.3	1.5	0.42	-0.40	-20.08
425.0	0.34	242.50	425.0	-1.5	-4.5	1.6	0.06	-0.04	-6.72
450.0	0.38	247.97	450.0	-1.5	-4.6	1.6	0.21	0.16	21.88
475.0	0.46	256.49	475.0	-1.6	-4.8	1.7	0.41	0.32	34.08
500.0	0.36	256.57	500.0	-1.6	-5.0	1.7	0.40	-0.40	0.32
525.0	0.36	254.25	525.0	-1.7	-5.1	1.8	0.06	0.00	-9.28
550.0	0.23	283.94	550.0	-1.7	-5.2	1.8	0.79	-0.52	118.76
575.0	0.17	271.02	575.0	-1.7	-5.3	1.8	0.30	-0.24	-51.68
600.0	0.13	3.40	600.0	-1.6	-5.4	1.8	0.87	-0.16	369.52
625.0	0.28	30.13	625.0	-1.6	-5.3	1.7	0.70	0.60	106.92
650.0	0.29	33.25	650.0	-1.4	-5.3	1.6	0.07	0.04	12.48
675.0	0.46	41.66	675.0	-1.3	-5.2	1.4	0.71	0.68	33.64
700.0	0.74	50.21	700.0	-1.1	-5.0	1.3	1.17	1.12	34.20
725.0	1.11	53.96	725.0	-0.9	-4.7	1.0	1.50	1.48	15.00
750.0	1.19	55.49	750.0	-0.6	-4.2	0.7	0.34	0.32	6.12
775.0	1.35	56.97	775.0	-0.3	-3.8	0.4	0.65	0.64	5.92
800.0	1.55	60.34	799.9	0.0	-3.2	0.0	0.87	0.80	13.48
825.0	1.46	62.16	824.9	0.3	-2.7	-0.3	0.41	-0.36	7.28
850.0	1.71	65.65	849.9	0.6	-2.0	-0.6	1.07	1.00	13.96
875.0	1.68	64.09	874.9	1.0	-1.4	-0.9	0.22	-0.12	-6.24
900.0	1.63	62.09	899.9	1.3	-0.7	-1.3	0.31	-0.20	-8.00
925.0	1.26	62.60	924.9	1.6	-0.2	-1.6	1.48	-1.48	2.04
950.0	0.93	57.74	949.9	1.8	0.2	-1.8	1.37	-1.32	-19.44
975.0	0.38	37.09	974.9	2.0	0.5	-2.0	2.36	-2.20	-82.60
1,000.0	0.27	350.94	999.9	2.1	0.5	-2.1	1.10	-0.44	-184.60
1,025.0	0.35	337.34	1,024.9	2.2	0.5	-2.3	0.43	0.32	-54.40
1,050.0	0.33	336.17	1,049.9	2.4	0.4	-2.4	0.08	-0.08	-4.68
1,075.0	0.30	339.10	1,074.9	2.5	0.4	-2.5	0.14	-0.12	11.72
1,100.0	0.26	331.34	1,099.9	2.6	0.3	-2.6	0.22	-0.16	-31.04
1,125.0	0.36	3.80	1,124.9	2.7	0.3	-2.8	0.79	0.40	129.84
1,150.0	0.30	31.54	1,149.9	2.9	0.3	-2.9	0.67	-0.24	110.96
1,175.0	0.36	42.58	1,174.9	3.0	0.4	-3.0	0.35	0.24	44.16
1,200.0	0.27	33.09	1,199.9	3.1	0.5	-3.1	0.41	-0.36	-37.96
1,225.0	0.38	21.84	1,224.9	3.2	0.6	-3.2	0.51	0.44	-45.00
1,250.0	0.33	11.20	1,249.9	3.4	0.6	-3.4	0.33	-0.20	-42.56
1,275.0	0.40	17.29	1,274.9	3.5	0.6	-3.5	0.32	0.28	24.36
1,300.0	0.46	25.96	1,299.9	3.7	0.7	-3.7	0.35	0.24	34.68

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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,325.0	0.66	19.70	1,324.9	3.9	0.8	-3.9	0.84	0.80	-25.04	
1,350.0	0.64	35.24	1,349.9	4.2	0.9	-4.2	0.71	-0.08	62.16	
1,375.0	0.61	40.57	1,374.9	4.4	1.1	-4.4	0.26	-0.12	21.32	
1,400.0	0.57	42.97	1,399.9	4.6	1.3	-4.6	0.19	-0.16	9.60	
1,425.0	0.52	41.07	1,424.9	4.8	1.4	-4.8	0.21	-0.20	-7.60	
1,450.0	0.45	37.05	1,449.9	4.9	1.6	-5.0	0.31	-0.28	-16.08	
1,475.0	0.54	36.95	1,474.9	5.1	1.7	-5.1	0.36	0.36	-0.40	
1,500.0	0.63	22.22	1,499.9	5.3	1.8	-5.4	0.70	0.36	-58.92	
1,525.0	0.79	14.24	1,524.9	5.6	1.9	-5.7	0.75	0.64	-31.92	
1,550.0	1.18	352.21	1,549.9	6.0	1.9	-6.1	2.15	1.56	-88.12	
1,575.0	1.70	336.32	1,574.9	6.6	1.7	-6.7	2.60	2.08	-63.56	
1,600.0	1.94	332.15	1,599.8	7.3	1.4	-7.4	1.10	0.96	-16.68	
1,625.0	2.21	324.05	1,624.8	8.1	0.9	-8.1	1.59	1.08	-32.40	
1,650.0	2.87	316.00	1,649.8	8.9	0.2	-9.0	2.99	2.64	-32.20	
1,675.0	3.24	311.91	1,674.8	9.9	-0.8	-9.9	1.72	1.48	-16.36	
1,700.0	3.44	310.99	1,699.7	10.8	-1.9	-10.8	0.83	0.80	-3.68	
1,725.0	3.55	310.67	1,724.7	11.8	-3.0	-11.8	0.45	0.44	-1.28	
1,750.0	3.40	311.75	1,749.6	12.8	-4.2	-12.7	0.65	-0.60	4.32	
1,775.0	3.37	311.34	1,774.6	13.8	-5.3	-13.7	0.15	-0.12	-1.64	
1,800.0	3.40	311.68	1,799.5	14.8	-6.4	-14.6	0.14	0.12	1.36	
1,825.0	3.44	311.66	1,824.5	15.8	-7.5	-15.6	0.16	0.16	-0.08	
1,850.0	3.32	312.04	1,849.5	16.8	-8.6	-16.6	0.49	-0.48	1.52	
1,875.0	3.33	311.08	1,874.4	17.7	-9.7	-17.5	0.23	0.04	-3.84	
1,900.0	3.44	311.61	1,899.4	18.7	-10.8	-18.4	0.46	0.44	2.12	
1,925.0	3.36	311.24	1,924.3	19.7	-11.9	-19.4	0.33	-0.32	-1.48	
1,950.0	3.38	310.32	1,949.3	20.6	-13.0	-20.3	0.23	0.08	-3.68	
1,975.0	3.35	310.53	1,974.2	21.6	-14.1	-21.3	0.13	-0.12	0.84	
2,000.0	3.17	310.83	1,999.2	22.5	-15.2	-22.2	0.72	-0.72	1.20	
2,025.0	3.30	310.60	2,024.2	23.4	-16.3	-23.1	0.52	0.52	-0.92	
2,050.0	3.25	311.00	2,049.1	24.4	-17.3	-24.0	0.22	-0.20	1.60	
2,075.0	3.35	310.05	2,074.1	25.3	-18.4	-24.9	0.46	0.40	-3.80	
2,100.0	3.25	309.40	2,099.0	26.2	-19.5	-25.8	0.43	-0.40	-2.60	
2,125.0	3.30	309.53	2,124.0	27.1	-20.6	-26.7	0.20	0.20	0.52	
2,150.0	3.22	310.89	2,149.0	28.1	-21.7	-27.5	0.45	-0.32	5.44	
2,175.0	3.18	311.64	2,173.9	29.0	-22.8	-28.4	0.23	-0.16	3.00	
2,200.0	3.28	310.32	2,198.9	29.9	-23.8	-29.3	0.50	0.40	-5.28	
2,225.0	3.03	311.96	2,223.8	30.8	-24.9	-30.2	1.06	-1.00	6.56	
2,250.0	3.10	311.65	2,248.8	31.7	-25.9	-31.1	0.29	0.28	-1.24	
2,275.0	3.20	312.47	2,273.8	32.6	-26.9	-32.0	0.44	0.40	3.28	
2,300.0	3.24	312.58	2,298.7	33.6	-27.9	-32.9	0.16	0.16	0.44	
2,325.0	3.19	313.75	2,323.7	34.5	-28.9	-33.8	0.33	-0.20	4.68	
2,350.0	3.14	313.36	2,348.7	35.5	-30.0	-34.8	0.22	-0.20	-1.56	

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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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
2,375.0	3.01	314.09	2,373.6	36.4	-30.9	-35.7	0.54	-0.52	2.92	
2,400.0	3.03	315.94	2,398.6	37.3	-31.9	-36.6	0.40	0.08	7.40	
2,425.0	3.05	313.88	2,423.5	38.3	-32.8	-37.5	0.44	0.08	-8.24	
2,450.0	3.07	316.88	2,448.5	39.2	-33.7	-38.4	0.65	0.08	12.00	
2,475.0	2.98	319.55	2,473.5	40.2	-34.6	-39.4	0.67	-0.36	10.68	
2,500.0	2.88	320.85	2,498.4	41.2	-35.4	-40.4	0.48	-0.40	5.20	
2,525.0	2.98	320.29	2,523.4	42.2	-36.2	-41.3	0.42	0.40	-2.24	
2,550.0	2.97	321.32	2,548.4	43.2	-37.1	-42.3	0.22	-0.04	4.12	
2,575.0	2.99	321.76	2,573.3	44.2	-37.9	-43.3	0.12	0.08	1.76	
2,600.0	3.11	320.78	2,598.3	45.2	-38.7	-44.3	0.52	0.48	-3.92	
2,625.0	3.25	319.83	2,623.3	46.3	-39.6	-45.4	0.60	0.56	-3.80	
2,650.0	3.33	318.70	2,648.2	47.4	-40.5	-46.4	0.41	0.32	-4.52	
2,675.0	3.40	319.27	2,673.2	48.5	-41.5	-47.5	0.31	0.28	2.28	
2,700.0	3.44	318.16	2,698.1	49.6	-42.5	-48.6	0.31	0.16	-4.44	
2,725.0	3.22	320.82	2,723.1	50.7	-43.4	-49.7	1.08	-0.88	10.64	
2,750.0	3.21	325.20	2,748.1	51.8	-44.3	-50.8	0.98	-0.04	17.52	
2,775.0	2.95	330.12	2,773.0	53.0	-45.0	-51.9	1.48	-1.04	19.68	
2,800.0	2.93	334.16	2,798.0	54.1	-45.6	-53.0	0.83	-0.08	16.16	
2,825.0	3.23	335.68	2,823.0	55.3	-46.1	-54.2	1.24	1.20	6.08	
2,850.0	3.43	334.79	2,847.9	56.6	-46.7	-55.5	0.83	0.80	-3.56	
2,875.0	3.60	332.29	2,872.9	58.0	-47.4	-56.9	0.92	0.68	-10.00	
2,900.0	3.58	331.93	2,897.8	59.4	-48.2	-58.3	0.12	-0.08	-1.44	
2,925.0	3.54	326.80	2,922.8	60.7	-49.0	-59.6	1.28	-0.16	-20.52	
2,950.0	3.30	312.74	2,947.7	61.9	-49.9	-60.7	3.48	-0.96	-56.24	
2,975.0	3.47	305.72	2,972.7	62.8	-51.0	-61.6	1.79	0.68	-28.08	
3,000.0	3.50	303.76	2,997.6	63.7	-52.3	-62.4	0.49	0.12	-7.84	
3,025.0	3.72	301.20	3,022.6	64.5	-53.6	-63.3	1.09	0.88	-10.24	
3,050.0	3.72	299.32	3,047.5	65.3	-55.0	-64.0	0.49	0.00	-7.52	
3,075.0	3.66	299.34	3,072.5	66.1	-56.4	-64.8	0.24	-0.24	0.08	
3,100.0	3.72	300.48	3,097.4	66.9	-57.8	-65.6	0.38	0.24	4.56	
3,125.0	3.72	300.76	3,122.4	67.7	-59.2	-66.4	0.07	0.00	1.12	
3,150.0	3.72	302.10	3,147.3	68.6	-60.6	-67.2	0.35	0.00	5.36	
3,175.0	3.61	302.62	3,172.3	69.4	-62.0	-68.0	0.46	-0.44	2.08	
3,200.0	3.59	303.32	3,197.2	70.3	-63.3	-68.8	0.19	-0.08	2.80	
3,225.0	3.73	303.56	3,222.2	71.2	-64.6	-69.7	0.56	0.56	0.96	
3,250.0	3.78	303.90	3,247.1	72.1	-66.0	-70.5	0.22	0.20	1.36	
3,275.0	3.78	305.07	3,272.1	73.0	-67.3	-71.4	0.31	0.00	4.68	
3,300.0	3.63	305.22	3,297.0	73.9	-68.6	-72.3	0.60	-0.60	0.60	
3,325.0	3.15	305.42	3,322.0	74.8	-69.8	-73.2	1.92	-1.92	0.80	
3,350.0	3.12	306.59	3,346.9	75.6	-71.0	-74.0	0.28	-0.12	4.68	
3,375.0	3.23	306.48	3,371.9	76.4	-72.1	-74.8	0.44	0.44	-0.44	
3,400.0	3.37	305.40	3,396.8	77.3	-73.2	-75.6	0.61	0.56	-4.32	

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Design:	ACTUAL WELLPATH	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,425.0	4.13	305.49	3,421.8	78.2	-74.6	-76.5	3.04	3.04	0.36	
3,450.0	4.34	303.23	3,446.7	79.3	-76.1	-77.5	1.07	0.84	-9.04	
3,475.0	4.88	300.77	3,471.6	80.3	-77.8	-78.5	2.30	2.16	-9.84	
3,500.0	5.19	302.31	3,496.5	81.5	-79.7	-79.6	1.35	1.24	6.16	
3,525.0	5.20	301.45	3,521.4	82.7	-81.6	-80.8	0.31	0.04	-3.44	
3,550.0	5.22	300.44	3,546.3	83.8	-83.5	-81.9	0.38	0.08	-4.04	
3,575.0	5.06	301.72	3,571.2	85.0	-85.4	-83.0	0.79	-0.64	5.12	
3,600.0	4.85	303.41	3,596.1	86.1	-87.3	-84.1	1.02	-0.84	6.76	
3,625.0	4.73	304.43	3,621.1	87.3	-89.0	-85.3	0.59	-0.48	4.08	
3,650.0	4.86	305.33	3,646.0	88.5	-90.7	-86.4	0.60	0.52	3.60	
3,675.0	5.35	301.10	3,670.9	89.7	-92.6	-87.6	2.47	1.96	-16.92	
3,700.0	6.15	299.51	3,695.7	91.0	-94.7	-88.8	3.26	3.20	-6.36	
3,725.0	6.34	295.91	3,720.6	92.2	-97.1	-90.0	1.74	0.76	-14.40	
3,750.0	6.36	294.86	3,745.4	93.4	-99.6	-91.1	0.47	0.08	-4.20	
3,775.0	6.31	296.03	3,770.3	94.6	-102.1	-92.3	0.55	-0.20	4.68	
3,800.0	6.36	295.18	3,795.1	95.8	-104.6	-93.4	0.43	0.20	-3.40	
3,825.0	6.33	294.84	3,820.0	97.0	-107.1	-94.5	0.19	-0.12	-1.36	
3,850.0	6.31	294.32	3,844.8	98.1	-109.6	-95.6	0.24	-0.08	-2.08	
3,875.0	6.21	293.76	3,869.7	99.2	-112.1	-96.6	0.47	-0.40	-2.24	
3,900.0	6.34	294.48	3,894.5	100.3	-114.6	-97.7	0.61	0.52	2.88	
3,925.0	6.21	293.70	3,919.4	101.5	-117.1	-98.8	0.62	-0.52	-3.12	
3,950.0	5.90	293.00	3,944.2	102.5	-119.5	-99.7	1.27	-1.24	-2.80	
3,975.0	5.42	291.70	3,969.1	103.4	-121.8	-100.6	1.99	-1.92	-5.20	
4,000.0	5.15	290.14	3,994.0	104.3	-124.0	-101.4	1.22	-1.08	-6.24	
4,025.0	5.27	290.41	4,018.9	105.1	-126.1	-102.1	0.49	0.48	1.08	
4,050.0	5.05	288.70	4,043.8	105.8	-128.2	-102.9	1.07	-0.88	-6.84	
4,075.0	4.98	286.63	4,068.7	106.5	-130.3	-103.5	0.78	-0.28	-8.28	
4,100.0	5.06	283.91	4,093.6	107.0	-132.4	-104.0	1.00	0.32	-10.88	
4,125.0	5.10	281.95	4,118.5	107.5	-134.6	-104.4	0.71	0.16	-7.84	
4,150.0	5.05	280.60	4,143.4	108.0	-136.7	-104.8	0.52	-0.20	-5.40	
4,175.0	5.00	278.80	4,168.3	108.3	-138.9	-105.1	0.66	-0.20	-7.20	
4,200.0	4.91	277.88	4,193.2	108.7	-141.0	-105.4	0.48	-0.36	-3.68	
4,225.0	4.75	278.37	4,218.2	109.0	-143.1	-105.7	0.66	-0.64	1.96	
4,250.0	4.67	278.43	4,243.1	109.3	-145.1	-105.9	0.32	-0.32	0.24	
4,275.0	4.46	279.36	4,268.0	109.6	-147.1	-106.2	0.89	-0.84	3.72	
4,300.0	4.24	282.44	4,292.9	109.9	-149.0	-106.5	1.28	-0.88	12.32	
4,325.0	4.13	284.91	4,317.8	110.3	-150.7	-106.9	0.84	-0.44	9.88	
4,350.0	3.92	287.09	4,342.8	110.8	-152.4	-107.3	1.04	-0.84	8.72	
4,375.0	3.94	289.04	4,367.7	111.4	-154.1	-107.8	0.54	0.08	7.80	
4,400.0	3.87	289.54	4,392.7	111.9	-155.7	-108.3	0.31	-0.28	2.00	
4,425.0	3.80	288.93	4,417.6	112.5	-157.2	-108.9	0.32	-0.28	-2.44	
4,450.0	3.82	290.18	4,442.6	113.0	-158.8	-109.4	0.34	0.08	5.00	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,475.0	3.81	288.62	4,467.5	113.6	-160.4	-109.9	0.42	-0.04	-6.24	
4,500.0	3.86	288.86	4,492.4	114.1	-162.0	-110.4	0.21	0.20	0.96	
4,525.0	3.66	287.17	4,517.4	114.6	-163.5	-110.9	0.91	-0.80	-6.76	
4,550.0	3.62	287.68	4,542.3	115.1	-165.0	-111.3	0.21	-0.16	2.04	
4,575.0	3.72	287.18	4,567.3	115.6	-166.6	-111.7	0.42	0.40	-2.00	
4,600.0	3.48	287.30	4,592.2	116.0	-168.1	-112.2	0.96	-0.96	0.48	
4,625.0	3.48	285.77	4,617.2	116.5	-169.5	-112.6	0.37	0.00	-6.12	
4,650.0	3.49	286.52	4,642.2	116.9	-171.0	-113.0	0.19	0.04	3.00	
4,675.0	3.41	284.70	4,667.1	117.3	-172.4	-113.3	0.54	-0.32	-7.28	
4,700.0	3.32	285.86	4,692.1	117.7	-173.8	-113.7	0.45	-0.36	4.64	
4,725.0	3.41	284.49	4,717.0	118.1	-175.2	-114.0	0.48	0.36	-5.48	
4,750.0	3.47	284.00	4,742.0	118.4	-176.7	-114.4	0.27	0.24	-1.96	
4,775.0	3.35	284.08	4,766.9	118.8	-178.1	-114.7	0.48	-0.48	0.32	
4,800.0	3.35	284.36	4,791.9	119.2	-179.6	-115.0	0.07	0.00	1.12	
4,825.0	3.43	284.10	4,816.8	119.5	-181.0	-115.4	0.33	0.32	-1.04	
4,850.0	3.52	283.63	4,841.8	119.9	-182.5	-115.7	0.38	0.36	-1.88	
4,875.0	3.36	283.61	4,866.8	120.2	-183.9	-116.0	0.64	-0.64	-0.08	
4,900.0	3.35	283.31	4,891.7	120.6	-185.3	-116.3	0.08	-0.04	-1.20	
4,925.0	3.23	282.23	4,916.7	120.9	-186.7	-116.6	0.54	-0.48	-4.32	
4,950.0	3.29	283.36	4,941.6	121.2	-188.1	-116.9	0.35	0.24	4.52	
4,975.0	3.27	282.76	4,966.6	121.5	-189.5	-117.2	0.16	-0.08	-2.40	
5,000.0	3.28	283.27	4,991.5	121.9	-190.9	-117.5	0.12	0.04	2.04	
5,025.0	3.06	282.28	5,016.5	122.2	-192.3	-117.7	0.91	-0.88	-3.96	
5,050.0	2.86	284.25	5,041.5	122.5	-193.5	-118.0	0.90	-0.80	7.88	
5,075.0	3.01	283.41	5,066.4	122.8	-194.8	-118.3	0.62	0.60	-3.36	
5,100.0	3.07	284.35	5,091.4	123.1	-196.0	-118.6	0.31	0.24	3.76	
5,125.0	2.70	283.40	5,116.4	123.4	-197.3	-118.9	1.49	-1.48	-3.80	
5,150.0	2.18	285.04	5,141.4	123.7	-198.3	-119.1	2.10	-2.08	6.56	
5,175.0	1.37	278.03	5,166.3	123.8	-199.1	-119.2	3.35	-3.24	-28.04	
5,200.0	1.31	279.42	5,191.3	123.9	-199.6	-119.3	0.27	-0.24	5.56	
5,225.0	1.23	271.23	5,216.3	124.0	-200.2	-119.4	0.79	-0.32	-32.76	
5,250.0	1.20	275.43	5,241.3	124.0	-200.7	-119.4	0.38	-0.12	16.80	
5,275.0	1.24	280.08	5,266.3	124.1	-201.2	-119.4	0.43	0.16	18.60	
5,300.0	1.26	277.62	5,291.3	124.1	-201.8	-119.5	0.23	0.08	-9.84	
5,325.0	1.18	274.88	5,316.3	124.2	-202.3	-119.6	0.40	-0.32	-10.96	
5,350.0	1.17	279.92	5,341.3	124.3	-202.8	-119.6	0.42	-0.04	20.16	
5,375.0	1.15	278.35	5,366.3	124.3	-203.3	-119.7	0.15	-0.08	-6.28	
5,400.0	1.13	276.67	5,391.3	124.4	-203.8	-119.7	0.16	-0.08	-6.72	
5,425.0	1.17	285.27	5,416.3	124.5	-204.3	-119.8	0.71	0.16	34.40	
5,450.0	1.06	280.63	5,441.3	124.6	-204.8	-119.9	0.57	-0.44	-18.56	
5,475.0	1.11	281.73	5,466.3	124.7	-205.2	-120.0	0.22	0.20	4.40	
5,500.0	1.03	283.58	5,491.3	124.8	-205.7	-120.1	0.35	-0.32	7.40	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,525.0	1.23	277.43	5,516.3	124.9	-206.2	-120.2	0.93	0.80	-24.60	
5,550.0	1.02	281.90	5,541.3	125.0	-206.7	-120.2	0.91	-0.84	17.88	
5,575.0	1.10	275.76	5,566.3	125.1	-207.1	-120.3	0.56	0.32	-24.56	
5,600.0	1.11	281.46	5,591.3	125.1	-207.6	-120.4	0.44	0.04	22.80	
5,625.0	1.14	278.89	5,616.2	125.2	-208.1	-120.4	0.23	0.12	-10.28	
5,650.0	1.12	277.84	5,641.2	125.3	-208.6	-120.5	0.12	-0.08	-4.20	
5,675.0	1.12	277.72	5,666.2	125.3	-209.1	-120.5	0.01	0.00	-0.48	
5,700.0	1.02	281.01	5,691.2	125.4	-209.5	-120.6	0.47	-0.40	13.16	
5,725.0	0.90	281.08	5,716.2	125.5	-209.9	-120.7	0.48	-0.48	0.28	
5,750.0	0.95	283.19	5,741.2	125.6	-210.3	-120.8	0.24	0.20	8.44	
5,775.0	0.65	282.53	5,766.2	125.7	-210.7	-120.8	1.20	-1.20	-2.64	
5,800.0	0.78	266.60	5,791.2	125.7	-211.0	-120.8	0.95	0.52	-63.72	
5,825.0	0.78	273.20	5,816.2	125.7	-211.3	-120.8	0.36	0.00	26.40	
5,850.0	0.70	283.07	5,841.2	125.7	-211.6	-120.9	0.60	-0.32	39.48	
5,875.0	0.71	276.54	5,866.2	125.8	-211.9	-120.9	0.32	0.04	-26.12	
5,900.0	0.72	272.45	5,891.2	125.8	-212.2	-120.9	0.21	0.04	-16.36	
5,925.0	0.74	283.77	5,916.2	125.9	-212.6	-121.0	0.58	0.08	45.28	
5,950.0	0.59	281.09	5,941.2	125.9	-212.8	-121.0	0.61	-0.60	-10.72	
5,975.0	0.66	273.82	5,966.2	126.0	-213.1	-121.1	0.42	0.28	-29.08	
6,000.0	0.57	286.75	5,991.2	126.0	-213.4	-121.1	0.66	-0.36	51.72	
6,025.0	0.57	276.60	6,016.2	126.0	-213.6	-121.1	0.40	0.00	-40.60	
6,050.0	0.49	269.83	6,041.2	126.1	-213.8	-121.1	0.41	-0.32	-27.08	
6,075.0	0.54	259.35	6,066.2	126.0	-214.1	-121.1	0.43	0.20	-41.92	
6,100.0	0.61	268.97	6,091.2	126.0	-214.3	-121.1	0.48	0.28	38.48	
6,125.0	0.60	277.51	6,116.2	126.0	-214.6	-121.1	0.36	-0.04	34.16	
6,150.0	0.54	272.84	6,141.2	126.1	-214.8	-121.1	0.30	-0.24	-18.68	
6,175.0	0.52	279.27	6,166.2	126.1	-215.1	-121.1	0.25	-0.08	25.72	
6,200.0	0.41	277.41	6,191.2	126.1	-215.3	-121.2	0.44	-0.44	-7.44	
6,225.0	0.52	268.60	6,216.2	126.1	-215.5	-121.2	0.52	0.44	-35.24	
6,250.0	0.51	278.49	6,241.2	126.1	-215.7	-121.2	0.36	-0.04	39.56	
6,275.0	0.43	274.79	6,266.2	126.2	-215.9	-121.2	0.34	-0.32	-14.80	
6,300.0	0.41	280.59	6,291.2	126.2	-216.1	-121.2	0.19	-0.08	23.20	
6,325.0	0.35	270.39	6,316.2	126.2	-216.2	-121.2	0.36	-0.24	-40.80	
6,350.0	0.39	254.88	6,341.2	126.2	-216.4	-121.2	0.43	0.16	-62.04	
6,375.0	0.46	245.02	6,366.2	126.1	-216.6	-121.1	0.40	0.28	-39.44	
6,400.0	0.37	282.24	6,391.2	126.1	-216.7	-121.1	1.11	-0.36	148.88	
6,425.0	0.35	283.02	6,416.2	126.1	-216.9	-121.1	0.08	-0.08	3.12	
6,450.0	0.27	276.09	6,441.2	126.1	-217.0	-121.2	0.35	-0.32	-27.72	
6,475.0	0.30	258.21	6,466.2	126.1	-217.1	-121.1	0.37	0.12	-71.52	
6,500.0	0.27	267.26	6,491.2	126.1	-217.3	-121.1	0.22	-0.12	36.20	
6,525.0	0.42	269.15	6,516.2	126.1	-217.4	-121.1	0.60	0.60	7.56	
6,550.0	0.39	271.13	6,541.2	126.1	-217.6	-121.1	0.13	-0.12	7.92	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,575.0	0.27	251.19	6,566.2	126.1	-217.7	-121.1	0.66	-0.48	-79.76	
6,600.0	0.38	254.00	6,591.2	126.1	-217.9	-121.0	0.44	0.44	11.24	
6,625.0	0.22	237.05	6,616.2	126.0	-218.0	-121.0	0.73	-0.64	-67.80	
6,650.0	0.23	257.24	6,641.2	126.0	-218.1	-121.0	0.32	0.04	80.76	
6,675.0	0.43	234.11	6,666.2	125.9	-218.2	-120.9	0.95	0.80	-92.52	
6,700.0	0.32	259.24	6,691.2	125.8	-218.3	-120.8	0.78	-0.44	100.52	
6,725.0	0.27	246.09	6,716.2	125.8	-218.5	-120.8	0.34	-0.20	-52.60	
6,750.0	0.36	225.53	6,741.2	125.7	-218.6	-120.7	0.57	0.36	-82.24	
6,775.0	0.43	252.79	6,766.2	125.6	-218.7	-120.6	0.79	0.28	109.04	
6,800.0	0.39	257.75	6,791.2	125.6	-218.9	-120.6	0.21	-0.16	19.84	
6,825.0	0.35	250.01	6,816.2	125.5	-219.0	-120.5	0.26	-0.16	-30.96	
6,850.0	0.34	237.93	6,841.2	125.5	-219.2	-120.4	0.29	-0.04	-48.32	
6,875.0	0.31	232.59	6,866.2	125.4	-219.3	-120.4	0.17	-0.12	-21.36	
6,900.0	0.49	226.14	6,891.2	125.3	-219.4	-120.2	0.74	0.72	-25.80	
6,925.0	0.61	245.83	6,916.2	125.2	-219.6	-120.1	0.89	0.48	78.76	
6,950.0	0.58	242.14	6,941.2	125.0	-219.9	-120.0	0.19	-0.12	-14.76	
6,975.0	0.59	237.44	6,966.2	124.9	-220.1	-119.9	0.20	0.04	-18.80	
7,000.0	0.52	235.39	6,991.2	124.8	-220.3	-119.7	0.29	-0.28	-8.20	
7,025.0	0.46	254.89	7,016.2	124.7	-220.5	-119.6	0.70	-0.24	78.00	
7,050.0	0.30	256.15	7,041.2	124.6	-220.6	-119.6	0.64	-0.64	5.04	
7,075.0	0.49	341.05	7,066.2	124.7	-220.7	-119.7	2.21	0.76	339.60	
7,100.0	0.84	348.73	7,091.2	125.0	-220.8	-119.9	1.44	1.40	30.72	
7,125.0	0.95	343.84	7,116.2	125.4	-220.9	-120.3	0.54	0.44	-19.56	
7,150.0	0.85	345.50	7,141.2	125.8	-221.0	-120.7	0.41	-0.40	6.64	
7,175.0	0.97	351.41	7,166.2	126.2	-221.1	-121.1	0.61	0.48	23.64	
7,200.0	0.84	350.03	7,191.2	126.5	-221.1	-121.5	0.53	-0.52	-5.52	
7,225.0	0.80	341.89	7,216.2	126.9	-221.2	-121.8	0.49	-0.16	-32.56	
7,250.0	0.78	341.56	7,241.2	127.2	-221.3	-122.1	0.08	-0.08	-1.32	
7,275.0	0.89	337.44	7,266.2	127.6	-221.5	-122.5	0.50	0.44	-16.48	
7,300.0	0.79	342.88	7,291.2	127.9	-221.6	-122.8	0.51	-0.40	21.76	
7,325.0	0.77	333.50	7,316.1	128.2	-221.7	-123.1	0.52	-0.08	-37.52	
7,350.0	0.84	336.16	7,341.1	128.5	-221.9	-123.4	0.32	0.28	10.64	
7,375.0	0.78	334.10	7,366.1	128.9	-222.0	-123.8	0.27	-0.24	-8.24	
7,400.0	0.30	16.47	7,391.1	129.1	-222.1	-124.0	2.38	-1.92	169.48	
7,425.0	0.37	357.78	7,416.1	129.2	-222.1	-124.1	0.52	0.28	-74.76	
7,450.0	0.30	6.58	7,441.1	129.4	-222.0	-124.3	0.35	-0.28	35.20	
7,475.0	0.38	355.79	7,466.1	129.5	-222.0	-124.4	0.41	0.32	-43.16	
7,500.0	0.55	73.79	7,491.1	129.6	-221.9	-124.5	2.40	0.68	312.00	
7,525.0	1.55	83.40	7,516.1	129.7	-221.5	-124.6	4.05	4.00	38.44	
7,550.0	2.51	87.70	7,541.1	129.8	-220.6	-124.7	3.89	3.84	17.20	
7,575.0	2.65	89.09	7,566.1	129.8	-219.5	-124.7	0.61	0.56	5.56	
7,600.0	2.68	89.37	7,591.1	129.8	-218.3	-124.8	0.13	0.12	1.12	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,625.0	2.51	87.28	7,616.0	129.8	-217.2	-124.8	0.78	-0.68	-8.36
7,650.0	2.57	87.09	7,641.0	129.9	-216.1	-124.9	0.24	0.24	-0.76
7,675.0	2.43	86.02	7,666.0	130.0	-215.0	-125.0	0.59	-0.56	-4.28
7,700.0	1.42	98.22	7,691.0	130.0	-214.2	-125.0	4.34	-4.04	48.80
7,725.0	0.93	119.56	7,716.0	129.8	-213.7	-124.9	2.60	-1.96	85.36
7,750.0	0.93	136.77	7,741.0	129.6	-213.4	-124.7	1.11	0.00	68.84
7,775.0	0.89	140.70	7,766.0	129.3	-213.1	-124.4	0.30	-0.16	15.72
7,800.0	0.91	126.92	7,791.0	129.0	-212.8	-124.1	0.87	0.08	-55.12
7,825.0	0.93	136.56	7,816.0	128.7	-212.5	-123.8	0.62	0.08	38.56
7,850.0	0.75	134.92	7,841.0	128.5	-212.3	-123.6	0.73	-0.72	-6.56
7,875.0	0.81	131.56	7,866.0	128.2	-212.0	-123.4	0.30	0.24	-13.44
7,900.0	0.91	138.83	7,891.0	128.0	-211.7	-123.1	0.59	0.40	29.08
7,925.0	0.84	145.64	7,916.0	127.7	-211.5	-122.8	0.50	-0.28	27.24
7,950.0	0.80	138.39	7,940.9	127.4	-211.3	-122.5	0.44	-0.16	-29.00
7,975.0	0.93	153.76	7,965.9	127.1	-211.1	-122.2	1.06	0.52	61.48
8,000.0	0.71	153.62	7,990.9	126.7	-210.9	-121.9	0.88	-0.88	-0.56
8,025.0	0.76	154.50	8,015.9	126.5	-210.8	-121.6	0.21	0.20	3.52
8,050.0	0.79	157.19	8,040.9	126.2	-210.7	-121.3	0.19	0.12	10.76
8,075.0	0.80	148.92	8,065.9	125.8	-210.5	-121.0	0.46	0.04	-33.08
8,100.0	0.54	151.18	8,090.9	125.6	-210.3	-120.8	1.05	-1.04	9.04
8,125.0	0.64	152.17	8,115.9	125.4	-210.2	-120.5	0.40	0.40	3.96
8,150.0	0.59	143.24	8,140.9	125.1	-210.1	-120.3	0.43	-0.20	-35.72
8,175.0	0.60	140.91	8,165.9	124.9	-209.9	-120.1	0.10	0.04	-9.32
8,200.0	0.58	145.70	8,190.9	124.7	-209.8	-119.9	0.21	-0.08	19.16
8,225.0	0.57	146.93	8,215.9	124.5	-209.6	-119.7	0.06	-0.04	4.92
8,250.0	0.60	141.90	8,240.9	124.3	-209.5	-119.5	0.24	0.12	-20.12
8,275.0	0.51	138.28	8,265.9	124.1	-209.3	-119.3	0.39	-0.36	-14.48
8,300.0	0.38	147.40	8,290.9	124.0	-209.2	-119.2	0.59	-0.52	36.48
8,325.0	0.28	129.01	8,315.9	123.9	-209.1	-119.1	0.58	-0.40	-73.56
8,350.0	0.36	135.72	8,340.9	123.8	-209.0	-119.0	0.35	0.32	26.84
8,375.0	0.34	156.40	8,365.9	123.6	-208.9	-118.8	0.51	-0.08	82.72
8,400.0	0.28	146.80	8,390.9	123.5	-208.9	-118.7	0.32	-0.24	-38.40
8,425.0	0.13	139.64	8,415.9	123.5	-208.8	-118.7	0.61	-0.60	-28.64
8,450.0	0.11	102.43	8,440.9	123.4	-208.8	-118.6	0.32	-0.08	-148.84
8,475.0	0.08	137.04	8,465.9	123.4	-208.7	-118.6	0.25	-0.12	138.44
8,500.0	0.12	207.78	8,490.9	123.4	-208.7	-118.6	0.48	0.16	282.96
8,525.0	0.10	137.51	8,515.9	123.3	-208.7	-118.5	0.51	-0.08	-281.08
8,550.0	0.06	30.68	8,540.9	123.3	-208.7	-118.5	0.52	-0.16	-427.32
8,575.0	0.01	345.73	8,565.9	123.3	-208.7	-118.5	0.21	-0.20	-179.80
8,600.0	0.19	270.72	8,590.9	123.3	-208.8	-118.5	0.75	0.72	-300.04
8,625.0	0.29	287.00	8,615.9	123.4	-208.9	-118.6	0.48	0.40	65.12
8,650.0	0.20	318.33	8,640.9	123.4	-208.9	-118.6	0.63	-0.36	125.32

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,675.0	0.13	315.32	8,665.9	123.5	-209.0	-118.7	0.28	-0.28	-12.04
8,700.0	0.28	312.82	8,690.9	123.5	-209.1	-118.7	0.60	0.60	-10.00
8,725.0	0.35	296.60	8,715.9	123.6	-209.2	-118.8	0.45	0.28	-64.88
8,750.0	0.40	262.62	8,740.9	123.6	-209.3	-118.8	0.90	0.20	-135.92
8,775.0	0.42	257.48	8,765.9	123.6	-209.5	-118.8	0.17	0.08	-20.56
8,800.0	0.60	245.03	8,790.9	123.5	-209.7	-118.7	0.84	0.72	-49.80
8,825.0	0.71	259.76	8,815.9	123.4	-210.0	-118.6	0.80	0.44	58.92
8,850.0	0.69	256.58	8,840.9	123.4	-210.3	-118.5	0.17	-0.08	-12.72
8,875.0	0.62	264.83	8,865.9	123.3	-210.6	-118.5	0.47	-0.28	33.00
8,900.0	0.58	257.99	8,890.9	123.3	-210.8	-118.4	0.33	-0.16	-27.36
8,925.0	0.61	240.83	8,915.9	123.2	-211.1	-118.3	0.72	0.12	-68.64
8,950.0	0.58	241.55	8,940.9	123.1	-211.3	-118.2	0.12	-0.12	2.88
8,975.0	0.50	264.34	8,965.9	123.0	-211.5	-118.1	0.91	-0.32	91.16
9,000.0	0.19	261.68	8,990.9	123.0	-211.7	-118.1	1.24	-1.24	-10.64
9,025.0	0.16	263.18	9,015.9	123.0	-211.7	-118.1	0.12	-0.12	6.00
9,050.0	0.46	325.63	9,040.9	123.1	-211.8	-118.2	1.64	1.20	249.80
9,075.0	0.38	341.99	9,065.9	123.2	-211.9	-118.3	0.57	-0.32	65.44
9,100.0	0.43	336.48	9,090.9	123.4	-212.0	-118.5	0.25	0.20	-22.04
9,125.0	0.61	343.04	9,115.9	123.6	-212.0	-118.7	0.76	0.72	26.24
9,150.0	0.67	352.33	9,140.9	123.9	-212.1	-119.0	0.48	0.24	37.16
9,175.0	0.66	356.51	9,165.9	124.2	-212.1	-119.3	0.20	-0.04	16.72
9,200.0	0.70	8.88	9,190.9	124.5	-212.1	-119.6	0.61	0.16	49.48
9,225.0	0.77	17.12	9,215.9	124.8	-212.0	-119.9	0.51	0.28	32.96
9,250.0	1.01	28.06	9,240.9	125.1	-211.9	-120.2	1.17	0.96	43.76
9,275.0	1.11	19.37	9,265.9	125.5	-211.7	-120.7	0.76	0.40	-34.76
9,300.0	1.33	23.33	9,290.9	126.0	-211.5	-121.2	0.94	0.88	15.84
9,325.0	1.51	20.61	9,315.9	126.6	-211.3	-121.8	0.77	0.72	-10.88
9,350.0	1.72	19.92	9,340.9	127.3	-211.0	-122.4	0.84	0.84	-2.76
9,375.0	1.72	23.99	9,365.9	128.0	-210.8	-123.1	0.49	0.00	16.28
9,400.0	1.81	25.21	9,390.8	128.7	-210.4	-123.8	0.39	0.36	4.88
9,425.0	1.77	27.80	9,415.8	129.4	-210.1	-124.5	0.36	-0.16	10.36
9,450.0	1.71	23.13	9,440.8	130.0	-209.8	-125.2	0.62	-0.24	-18.68
9,475.0	1.79	25.06	9,465.8	130.7	-209.4	-125.9	0.40	0.32	7.72
9,500.0	1.76	25.74	9,490.8	131.4	-209.1	-126.6	0.15	-0.12	2.72
9,525.0	1.83	27.55	9,515.8	132.1	-208.8	-127.3	0.36	0.28	7.24
9,550.0	1.78	26.53	9,540.8	132.8	-208.4	-128.1	0.24	-0.20	-4.08
9,575.0	1.16	40.32	9,565.8	133.4	-208.1	-128.6	2.84	-2.48	55.16
9,600.0	1.67	23.32	9,590.8	133.9	-207.8	-129.1	2.62	2.04	-68.00
9,625.0	1.57	22.09	9,615.7	134.6	-207.5	-129.8	0.42	-0.40	-4.92
9,650.0	1.60	26.19	9,640.7	135.2	-207.2	-130.4	0.47	0.12	16.40
9,675.0	1.65	21.00	9,665.7	135.8	-206.9	-131.1	0.62	0.20	-20.76
9,700.0	1.62	23.31	9,690.7	136.5	-206.7	-131.8	0.29	-0.12	9.24

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: GETTYSBURG STATE COM #14H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well GETTYSBURG STATE COM #14H
TVD Reference: RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
MD Reference: RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,725.0	1.69	21.29	9,715.7	137.2	-206.4	-132.4	0.36	0.28	-8.08
9,750.0	1.60	12.95	9,740.7	137.9	-206.2	-133.1	1.02	-0.36	-33.36
9,775.0	1.50	14.61	9,765.7	138.5	-206.0	-133.8	0.44	-0.40	6.64
9,800.0	1.50	10.16	9,790.7	139.2	-205.9	-134.4	0.47	0.00	-17.80
9,825.0	1.52	12.81	9,815.7	139.8	-205.7	-135.1	0.29	0.08	10.60
9,850.0	1.41	15.90	9,840.7	140.4	-205.6	-135.7	0.54	-0.44	12.36
9,875.0	1.14	7.90	9,865.7	141.0	-205.5	-136.2	1.29	-1.08	-32.00
9,900.0	0.92	358.81	9,890.7	141.4	-205.4	-136.7	1.09	-0.88	-36.36
9,925.0	0.72	352.43	9,915.6	141.8	-205.5	-137.0	0.88	-0.80	-25.52
9,950.0	0.77	358.71	9,940.6	142.1	-205.5	-137.4	0.38	0.20	25.12
9,975.0	0.87	4.61	9,965.6	142.4	-205.5	-137.7	0.52	0.40	23.60
10,000.0	0.90	4.68	9,990.6	142.8	-205.4	-138.1	0.12	0.12	0.28
10,025.0	0.84	356.45	10,015.6	143.2	-205.4	-138.5	0.55	-0.24	-32.92
10,050.0	1.10	2.09	10,040.6	143.6	-205.4	-138.9	1.11	1.04	22.56
10,075.0	1.26	357.96	10,065.6	144.1	-205.4	-139.4	0.72	0.64	-16.52
10,100.0	1.56	354.83	10,090.6	144.8	-205.5	-140.0	1.24	1.20	-12.52
10,125.0	1.41	358.81	10,115.6	145.4	-205.5	-140.7	0.73	-0.60	15.92
10,150.0	1.55	355.63	10,140.6	146.0	-205.5	-141.3	0.65	0.56	-12.72
10,175.0	1.33	358.25	10,165.6	146.7	-205.6	-141.9	0.92	-0.88	10.48
10,200.0	1.41	357.54	10,190.6	147.3	-205.6	-142.5	0.33	0.32	-2.84
10,225.0	1.49	354.26	10,215.6	147.9	-205.6	-143.2	0.46	0.32	-13.12
10,250.0	1.79	355.73	10,240.6	148.6	-205.7	-143.9	1.21	1.20	5.88
10,275.0	1.89	357.34	10,265.6	149.4	-205.8	-144.7	0.45	0.40	6.44
10,300.0	2.03	356.28	10,290.5	150.3	-205.8	-145.5	0.58	0.56	-4.24
10,325.0	2.09	353.79	10,315.5	151.2	-205.9	-146.4	0.43	0.24	-9.96
10,350.0	1.97	353.41	10,340.5	152.0	-206.0	-147.3	0.48	-0.48	-1.52
10,375.0	1.93	348.57	10,365.5	152.9	-206.1	-148.1	0.68	-0.16	-19.36
10,400.0	1.89	348.32	10,390.5	153.7	-206.3	-149.0	0.16	-0.16	-1.00
10,425.0	1.88	348.35	10,415.5	154.5	-206.4	-149.8	0.04	-0.04	0.12
10,450.0	1.88	346.96	10,440.5	155.3	-206.6	-150.6	0.18	0.00	-5.56
10,475.0	1.79	347.53	10,465.4	156.1	-206.8	-151.3	0.37	-0.36	2.28
10,500.0	1.77	345.67	10,490.4	156.8	-207.0	-152.1	0.24	-0.08	-7.44
10,525.0	1.77	342.10	10,515.4	157.6	-207.2	-152.8	0.44	0.00	-14.28
10,544.0	2.00	341.36	10,534.4	158.2	-207.4	-153.4	1.22	1.21	-3.89
10,597.0	0.84	54.01	10,587.4	159.3	-207.4	-154.5	3.63	-2.19	137.08
10,660.0	2.32	281.37	10,650.4	159.8	-208.2	-155.0	4.69	2.35	-210.54
10,691.0	5.16	203.44	10,681.3	158.7	-209.4	-153.8	16.76	9.16	-251.39
10,723.0	10.42	189.86	10,713.0	154.5	-210.5	-149.6	17.30	16.44	-42.44
10,754.0	13.20	174.88	10,743.4	148.2	-210.7	-143.3	13.28	8.97	-48.32
10,786.0	13.92	168.63	10,774.5	140.8	-209.6	-136.0	5.10	2.25	-19.53
10,880.0	20.41	154.76	10,864.3	114.8	-200.3	-110.2	8.12	6.90	-14.76
10,912.0	23.58	148.66	10,894.0	104.3	-194.6	-99.8	12.20	9.91	-19.06

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,975.0	24.96	144.69	10,951.4	82.7	-180.4	-78.6	3.39	2.19	-6.30	
11,037.0	32.19	156.21	11,005.8	56.9	-166.1	-53.0	14.62	11.66	18.58	
11,068.0	35.80	160.51	11,031.5	40.7	-159.8	-37.1	13.99	11.65	13.87	
11,100.0	37.48	163.21	11,057.2	22.6	-153.8	-19.1	7.27	5.25	8.44	
11,131.0	38.54	164.33	11,081.6	4.3	-148.5	-0.9	4.08	3.42	3.61	
11,163.0	39.36	165.31	11,106.5	-15.1	-143.2	18.4	3.21	2.56	3.06	
11,194.0	42.39	168.58	11,130.0	-34.9	-138.7	38.1	11.96	9.77	10.55	
11,226.0	45.88	172.73	11,152.9	-56.9	-135.1	60.0	14.16	10.91	12.97	
11,257.0	49.02	177.11	11,173.9	-79.6	-133.1	82.6	14.52	10.13	14.13	
11,288.0	51.95	182.68	11,193.6	-103.5	-133.1	106.5	16.77	9.45	17.97	
11,320.0	53.37	187.31	11,213.1	-128.8	-135.3	131.9	12.33	4.44	14.47	
11,351.0	55.60	188.72	11,231.1	-153.8	-138.8	157.0	8.09	7.19	4.55	
11,382.0	59.13	188.16	11,247.8	-179.6	-142.6	182.9	11.49	11.39	-1.81	
11,414.0	60.80	186.93	11,263.8	-207.1	-146.3	210.4	6.19	5.22	-3.84	
11,445.0	61.80	186.30	11,278.7	-234.1	-149.4	237.5	3.69	3.23	-2.03	
11,479.0	62.28	185.99	11,294.6	-264.0	-152.6	267.4	1.63	1.41	-0.91	
11,508.0	64.92	185.15	11,307.5	-289.8	-155.1	293.3	9.47	9.10	-2.90	
11,539.0	68.54	184.45	11,319.8	-318.2	-157.5	321.7	11.86	11.68	-2.26	
11,571.0	70.48	184.14	11,331.0	-348.1	-159.8	351.6	6.13	6.06	-0.97	
11,602.0	71.82	183.21	11,341.0	-377.4	-161.6	381.0	5.17	4.32	-3.00	
11,634.0	73.93	182.23	11,350.4	-407.9	-163.1	411.5	7.21	6.59	-3.06	
11,665.0	75.70	181.57	11,358.5	-437.8	-164.1	441.4	6.07	5.71	-2.13	
11,697.0	76.04	181.71	11,366.3	-468.8	-165.0	472.5	1.14	1.06	0.44	
11,728.0	76.08	181.06	11,373.8	-498.9	-165.7	502.6	2.04	0.13	-2.10	
11,759.0	76.27	180.99	11,381.2	-529.0	-166.2	532.7	0.65	0.61	-0.23	
11,791.0	76.54	180.80	11,388.7	-560.1	-166.7	563.8	1.02	0.84	-0.59	
11,822.0	76.91	180.78	11,395.8	-590.3	-167.1	593.9	1.20	1.19	-0.06	
11,854.0	78.62	180.95	11,402.6	-621.5	-167.6	625.2	5.37	5.34	0.53	
11,885.0	80.18	183.09	11,408.3	-652.0	-168.7	655.7	8.45	5.03	6.90	
11,917.0	81.21	183.71	11,413.5	-683.5	-170.6	687.2	3.74	3.22	1.94	
12,011.0	83.47	182.53	11,426.0	-776.5	-175.6	780.3	2.71	2.40	-1.26	
12,109.0	83.66	182.34	11,437.0	-873.8	-179.8	877.7	0.27	0.19	-0.19	
12,203.0	86.62	181.51	11,445.0	-967.4	-182.9	971.3	3.27	3.15	-0.88	
12,298.0	87.28	180.73	11,450.0	-1,062.3	-184.8	1,066.2	1.07	0.69	-0.82	
12,392.0	88.56	180.02	11,453.4	-1,156.2	-185.4	1,160.1	1.56	1.36	-0.76	
12,486.0	88.53	180.66	11,455.8	-1,250.2	-185.9	1,254.1	0.68	-0.03	0.68	
12,580.0	89.86	182.65	11,457.2	-1,344.1	-188.7	1,348.1	2.55	1.41	2.12	
12,674.0	90.90	182.95	11,456.5	-1,438.0	-193.2	1,442.0	1.15	1.11	0.32	
12,769.0	89.87	183.09	11,455.9	-1,532.9	-198.2	1,537.0	1.09	-1.08	0.15	
12,863.0	90.21	182.20	11,455.8	-1,626.8	-202.6	1,631.0	1.01	0.36	-0.95	
12,958.0	88.65	181.32	11,456.8	-1,721.7	-205.5	1,726.0	1.89	-1.64	-0.93	
13,052.0	87.93	179.36	11,459.6	-1,815.7	-206.1	1,819.9	2.22	-0.77	-2.09	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,146.0	87.68	179.35	11,463.2	-1,909.6	-205.0	1,913.8	0.27	-0.27	-0.01	
13,241.0	89.33	178.99	11,465.7	-2,004.5	-203.6	2,008.7	1.78	1.74	-0.38	
13,335.0	89.80	178.28	11,466.4	-2,098.5	-201.4	2,102.6	0.91	0.50	-0.76	
13,429.0	90.80	178.50	11,465.9	-2,192.5	-198.7	2,196.4	1.09	1.06	0.23	
13,524.0	89.25	179.60	11,465.8	-2,287.5	-197.2	2,291.4	2.00	-1.63	1.16	
13,618.0	89.47	179.13	11,466.9	-2,381.4	-196.1	2,385.3	0.55	0.23	-0.50	
13,713.0	90.18	179.33	11,467.2	-2,476.4	-194.9	2,480.2	0.78	0.75	0.21	
13,807.0	89.91	179.27	11,467.1	-2,570.4	-193.7	2,574.2	0.29	-0.29	-0.06	
13,901.0	90.00	179.71	11,467.2	-2,664.4	-192.9	2,668.1	0.48	0.10	0.47	
13,995.0	90.05	179.86	11,467.1	-2,758.4	-192.5	2,762.1	0.17	0.05	0.16	
14,090.0	87.87	180.91	11,468.9	-2,853.4	-193.2	2,857.1	2.55	-2.29	1.11	
14,184.0	88.30	181.20	11,472.0	-2,947.3	-194.9	2,951.0	0.55	0.46	0.31	
14,279.0	89.96	181.00	11,473.4	-3,042.3	-196.7	3,046.0	1.76	1.75	-0.21	
14,386.0	89.68	180.64	11,473.8	-3,149.3	-198.2	3,153.0	0.43	-0.26	-0.34	
14,480.0	88.74	179.21	11,475.1	-3,243.3	-198.1	3,246.9	1.82	-1.00	-1.52	
14,575.0	89.37	180.09	11,476.6	-3,338.3	-197.5	3,341.9	1.14	0.66	0.93	
14,669.0	87.53	179.86	11,479.2	-3,432.2	-197.5	3,435.8	1.97	-1.96	-0.24	
14,763.0	88.26	178.69	11,482.6	-3,526.1	-196.3	3,529.7	1.47	0.78	-1.24	
14,858.0	88.87	178.36	11,485.0	-3,621.1	-193.9	3,624.6	0.73	0.64	-0.35	
14,952.0	89.97	178.58	11,486.0	-3,715.0	-191.4	3,718.4	1.19	1.17	0.23	
15,034.0	89.00	178.13	11,486.7	-3,797.0	-189.0	3,800.3	1.30	-1.18	-0.55	
15,129.0	89.49	178.15	11,488.0	-3,891.9	-185.9	3,895.2	0.52	0.52	0.02	
15,223.0	90.80	178.43	11,487.7	-3,985.9	-183.1	3,989.0	1.43	1.39	0.30	
15,318.0	91.37	177.91	11,485.9	-4,080.8	-180.1	4,083.9	0.81	0.60	-0.55	
15,412.0	90.35	177.53	11,484.5	-4,174.7	-176.3	4,177.7	1.16	-1.09	-0.40	
15,506.0	90.01	178.24	11,484.2	-4,268.7	-172.9	4,271.5	0.84	-0.36	0.76	
15,600.0	88.75	178.91	11,485.2	-4,362.6	-170.5	4,365.4	1.52	-1.34	0.71	
15,695.0	89.33	179.25	11,486.8	-4,457.6	-169.0	4,460.3	0.71	0.61	0.36	
15,789.0	88.37	179.29	11,488.7	-4,551.6	-167.8	4,554.2	1.02	-1.02	0.04	
15,883.0	89.01	179.52	11,490.9	-4,645.6	-166.8	4,648.2	0.72	0.68	0.24	
15,977.0	87.05	179.89	11,494.1	-4,739.5	-166.3	4,742.1	2.12	-2.09	0.39	
16,072.0	88.02	180.03	11,498.2	-4,834.4	-166.3	4,836.9	1.03	1.02	0.15	
16,166.0	87.83	179.86	11,501.6	-4,928.3	-166.2	4,930.9	0.27	-0.20	-0.18	
16,261.0	88.75	179.59	11,504.4	-5,023.3	-165.7	5,025.8	1.01	0.97	-0.28	
16,355.0	90.22	179.74	11,505.3	-5,117.3	-165.2	5,119.7	1.57	1.56	0.16	
16,449.0	91.11	179.15	11,504.2	-5,211.3	-164.3	5,213.7	1.14	0.95	-0.63	
16,544.0	88.64	179.19	11,504.4	-5,306.3	-162.9	5,308.6	2.60	-2.60	0.04	
16,638.0	87.82	179.00	11,507.3	-5,400.2	-161.4	5,402.5	0.90	-0.87	-0.20	
16,732.0	88.24	179.69	11,510.5	-5,494.1	-160.3	5,496.4	0.86	0.45	0.73	
16,826.0	87.91	179.89	11,513.7	-5,588.1	-160.0	5,590.3	0.41	-0.35	0.21	
16,920.0	88.47	179.93	11,516.6	-5,682.0	-159.9	5,684.2	0.60	0.60	0.04	
17,014.0	87.53	180.26	11,519.9	-5,776.0	-160.0	5,778.1	1.06	-1.00	0.35	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well GETTYSBURG STATE COM #14H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Site:	BULLDOG	MD Reference:	RKB=3424.7+30 @ 3454.7usft (SCANDRILL QUEST)
Well:	GETTYSBURG STATE COM #14H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,109.0	88.32	179.88	11,523.4	-5,870.9	-160.1	5,873.0	0.92	0.83	-0.40
17,203.0	89.46	179.94	11,525.2	-5,964.9	-160.0	5,967.0	1.21	1.21	0.06
17,297.0	90.00	180.12	11,525.6	-6,058.9	-160.0	6,061.0	0.61	0.57	0.19
17,392.0	88.47	180.04	11,526.9	-6,153.9	-160.2	6,155.9	1.61	-1.61	-0.08
17,486.0	87.87	179.66	11,529.9	-6,247.8	-159.9	6,249.9	0.76	-0.64	-0.40
17,581.0	88.76	179.54	11,532.7	-6,342.8	-159.2	6,344.8	0.95	0.94	-0.13
17,675.0	89.32	179.51	11,534.3	-6,436.8	-158.5	6,438.7	0.60	0.60	-0.03
17,767.0	89.52	179.69	11,535.2	-6,528.8	-157.8	6,530.7	0.29	0.22	0.20
17,862.0	89.29	180.48	11,536.2	-6,623.8	-158.0	6,625.6	0.87	-0.24	0.83
17,956.0	90.21	180.77	11,536.6	-6,717.8	-159.0	6,719.6	1.03	0.98	0.31
18,050.0	90.50	181.18	11,536.0	-6,811.7	-160.6	6,813.6	0.53	0.31	0.44
18,144.0	90.40	180.81	11,535.3	-6,905.7	-162.2	6,907.6	0.41	-0.11	-0.39
18,239.0	87.89	180.51	11,536.7	-7,000.7	-163.3	7,002.6	2.66	-2.64	-0.32
18,333.0	87.58	180.72	11,540.4	-7,094.6	-164.3	7,096.5	0.40	-0.33	0.22
18,427.0	88.30	180.90	11,543.8	-7,188.6	-165.7	7,190.5	0.79	0.77	0.19
18,521.0	88.04	180.83	11,546.8	-7,282.5	-167.1	7,284.4	0.29	-0.28	-0.07
18,616.0	88.32	181.06	11,549.8	-7,377.4	-168.6	7,379.4	0.38	0.29	0.24
18,641.0	88.45	181.25	11,550.5	-7,402.4	-169.1	7,404.3	0.92	0.52	0.76
18,700.0	88.45	181.25	11,552.1	-7,461.4	-170.4	7,463.3	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____