

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

TATANKA FED COM #4H

OWB

Design: AWP

Standard Survey Report

11 December, 2019

HOBBS OCD

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Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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

Site	BULLDOG				
Site Position:		Northing:	398,637.10 usft	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	TATANKA FED COM #4H				
Well Position	+N/-S	0.0 usft	Northing:	383,730.80 usft	Latitude: 32° 3' 3.692 N
	+E/-W	0.0 usft	Easting:	810,641.00 usft	Longitude: 103° 19' 50.575 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usft	Ground Level: 3,027.1 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/11/2019	6.58	59.91	47,633.58422510

Design	AWP				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	356.36	

Survey Program	Date 12/11/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	11,550.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,650.0	22,587.0	MWD-CURVE/LATERAL (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.27	64.18	100.0	0.1	0.2	0.1	0.27	0.27	0.00
125.0	0.30	106.05	125.0	0.1	0.3	0.1	0.82	0.12	167.48
150.0	0.27	81.87	150.0	0.1	0.4	0.1	0.49	-0.12	-96.72
175.0	0.25	76.43	175.0	0.1	0.6	0.1	0.13	-0.08	-21.76
200.0	0.25	69.84	200.0	0.2	0.7	0.1	0.11	0.00	-26.36
225.0	0.23	71.12	225.0	0.2	0.8	0.1	0.08	-0.08	5.12
250.0	0.23	88.99	250.0	0.2	0.9	0.2	0.29	0.00	71.48
275.0	0.21	63.43	275.0	0.2	1.0	0.2	0.40	-0.08	-102.24
300.0	0.20	88.15	300.0	0.2	1.0	0.2	0.35	-0.04	98.88

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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
325.0	0.23	105.04	325.0	0.2	1.1	0.2	0.28	0.12	67.56
350.0	0.17	92.83	350.0	0.2	1.2	0.1	0.29	-0.24	-48.84
375.0	0.20	99.65	375.0	0.2	1.3	0.1	0.15	0.12	27.28
400.0	0.21	92.58	400.0	0.2	1.4	0.1	0.11	0.04	-28.28
425.0	0.25	105.29	425.0	0.2	1.5	0.1	0.26	0.16	50.84
450.0	0.22	95.52	450.0	0.2	1.6	0.1	0.20	-0.12	-39.08
475.0	0.22	87.91	475.0	0.2	1.7	0.1	0.12	0.00	-30.44
500.0	0.24	95.03	500.0	0.2	1.8	0.0	0.14	0.08	28.48
525.0	0.29	97.02	525.0	0.2	1.9	0.0	0.20	0.20	7.96
550.0	0.43	106.52	550.0	0.1	2.0	0.0	0.61	0.56	38.00
575.0	0.43	103.94	575.0	0.1	2.2	-0.1	0.08	0.00	-10.32
600.0	0.44	102.39	600.0	0.0	2.4	-0.1	0.06	0.04	-6.20
625.0	0.47	104.03	625.0	0.0	2.6	-0.2	0.13	0.12	6.56
650.0	0.51	98.07	650.0	-0.1	2.8	-0.2	0.26	0.16	-23.84
675.0	0.60	96.12	675.0	-0.1	3.1	-0.3	0.37	0.36	-7.80
700.0	0.64	94.62	700.0	-0.1	3.3	-0.3	0.17	0.16	-6.00
725.0	0.67	94.49	725.0	-0.1	3.6	-0.4	0.12	0.12	-0.52
750.0	0.69	93.85	750.0	-0.2	3.9	-0.4	0.09	0.08	-2.56
775.0	0.76	90.20	775.0	-0.2	4.2	-0.4	0.34	0.28	-14.60
800.0	0.75	87.71	800.0	-0.2	4.5	-0.5	0.14	-0.04	-9.96
825.0	0.87	89.78	825.0	-0.2	4.9	-0.5	0.49	0.48	8.28
850.0	1.02	93.52	850.0	-0.2	5.3	-0.5	0.65	0.60	14.96
875.0	1.15	97.24	875.0	-0.2	5.8	-0.6	0.59	0.52	14.88
900.0	1.25	95.75	900.0	-0.3	6.3	-0.7	0.42	0.40	-5.96
925.0	1.29	97.98	925.0	-0.3	6.9	-0.8	0.25	0.16	8.92
950.0	1.24	97.37	950.0	-0.4	7.4	-0.9	0.21	-0.20	-2.44
975.0	1.22	97.02	974.9	-0.5	7.9	-1.0	0.09	-0.08	-1.40
1,000.0	1.27	97.79	999.9	-0.6	8.5	-1.1	0.21	0.20	3.08
1,025.0	1.24	95.92	1,024.9	-0.6	9.0	-1.2	0.20	-0.12	-7.48
1,050.0	1.25	95.67	1,049.9	-0.7	9.6	-1.3	0.05	0.04	-1.00
1,075.0	1.27	97.00	1,074.9	-0.7	10.1	-1.4	0.14	0.08	5.32
1,100.0	1.25	97.66	1,099.9	-0.8	10.6	-1.5	0.10	-0.08	2.64
1,125.0	1.25	98.13	1,124.9	-0.9	11.2	-1.6	0.04	0.00	1.88
1,150.0	1.07	101.87	1,149.9	-1.0	11.7	-1.7	0.78	-0.72	14.96
1,175.0	0.67	114.96	1,174.9	-1.1	12.0	-1.8	1.78	-1.60	52.36
1,200.0	0.47	158.17	1,199.9	-1.2	12.2	-2.0	1.84	-0.80	172.84
1,225.0	0.61	183.72	1,224.9	-1.5	12.2	-2.2	1.10	0.56	102.20
1,250.0	0.57	185.84	1,249.9	-1.7	12.2	-2.5	0.18	-0.16	8.48
1,275.0	0.58	187.10	1,274.9	-2.0	12.2	-2.7	0.06	0.04	5.04
1,300.0	0.64	184.87	1,299.9	-2.2	12.2	-3.0	0.26	0.24	-8.92
1,325.0	0.61	183.62	1,324.9	-2.5	12.2	-3.3	0.13	-0.12	-5.00
1,350.0	0.65	182.47	1,349.9	-2.8	12.1	-3.5	0.17	0.16	-4.60
1,375.0	0.61	182.66	1,374.9	-3.1	12.1	-3.8	0.16	-0.16	0.76

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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,400.0	0.65	182.24	1,399.9	-3.3	12.1	-4.1	0.16	0.16	-1.68
1,425.0	0.62	184.70	1,424.9	-3.6	12.1	-4.4	0.16	-0.12	9.84
1,450.0	0.68	190.94	1,449.9	-3.9	12.1	-4.6	0.37	0.24	24.96
1,475.0	1.36	209.62	1,474.9	-4.3	11.9	-5.0	2.99	2.72	74.72
1,500.0	1.69	217.97	1,499.9	-4.8	11.5	-5.6	1.59	1.32	33.40
1,525.0	1.81	218.27	1,524.9	-5.4	11.0	-6.1	0.48	0.48	1.20
1,550.0	1.78	221.06	1,549.9	-6.0	10.5	-6.7	0.37	-0.12	11.16
1,575.0	1.82	218.23	1,574.8	-6.6	10.0	-7.3	0.39	0.16	-11.32
1,600.0	1.77	220.75	1,599.8	-7.2	9.5	-7.8	0.37	-0.20	10.08
1,625.0	1.80	217.73	1,624.8	-7.9	9.0	-8.4	0.39	0.12	-12.08
1,650.0	1.78	217.30	1,649.8	-8.5	8.6	-9.0	0.10	-0.08	-1.72
1,675.0	1.78	213.56	1,674.8	-9.1	8.1	-9.6	0.46	0.00	-14.96
1,700.0	1.63	210.94	1,699.8	-9.7	7.7	-10.2	0.68	-0.60	-10.48
1,725.0	1.56	210.77	1,724.8	-10.3	7.4	-10.8	0.28	-0.28	-0.68
1,750.0	1.54	209.59	1,749.8	-10.9	7.0	-11.3	0.15	-0.08	-4.72
1,775.0	1.41	210.49	1,774.8	-11.5	6.7	-11.9	0.53	-0.52	3.60
1,800.0	1.45	206.54	1,799.7	-12.0	6.4	-12.4	0.43	0.16	-15.80
1,825.0	1.39	209.75	1,824.7	-12.6	6.1	-12.9	0.40	-0.24	12.84
1,850.0	1.39	209.39	1,849.7	-13.1	5.8	-13.4	0.03	0.00	-1.44
1,875.0	1.46	208.49	1,874.7	-13.6	5.5	-14.0	0.29	0.28	-3.60
1,900.0	1.41	210.03	1,899.7	-14.2	5.2	-14.5	0.25	-0.20	6.16
1,925.0	1.45	209.18	1,924.7	-14.7	4.9	-15.0	0.18	0.16	-3.40
1,950.0	1.54	220.90	1,949.7	-15.3	4.5	-15.5	1.27	0.36	46.88
1,975.0	1.56	222.25	1,974.7	-15.8	4.1	-16.0	0.17	0.08	5.40
2,000.0	1.58	221.20	1,999.7	-16.3	3.6	-16.5	0.14	0.08	-4.20
2,025.0	1.62	225.18	2,024.7	-16.8	3.1	-16.9	0.47	0.16	15.92
2,050.0	1.58	223.38	2,049.7	-17.3	2.7	-17.4	0.26	-0.16	-7.20
2,075.0	1.58	224.52	2,074.7	-17.8	2.2	-17.9	0.13	0.00	4.56
2,100.0	1.58	224.54	2,099.6	-18.3	1.7	-18.3	0.00	0.00	0.08
2,125.0	1.66	227.56	2,124.6	-18.8	1.2	-18.8	0.47	0.32	12.08
2,150.0	1.69	235.86	2,149.6	-19.2	0.6	-19.2	0.98	0.12	33.20
2,175.0	1.71	236.78	2,174.6	-19.6	0.0	-19.6	0.14	0.08	3.68
2,200.0	1.71	237.39	2,199.6	-20.0	-0.6	-19.9	0.07	0.00	2.44
2,225.0	1.75	236.65	2,224.6	-20.4	-1.3	-20.3	0.18	0.16	-2.96
2,250.0	1.72	236.57	2,249.6	-20.9	-1.9	-20.7	0.12	-0.12	-0.32
2,275.0	1.67	236.78	2,274.6	-21.3	-2.5	-21.1	0.20	-0.20	0.84
2,300.0	1.70	235.90	2,299.6	-21.7	-3.1	-21.4	0.16	0.12	-3.52
2,325.0	1.59	236.66	2,324.5	-22.1	-3.7	-21.8	0.45	-0.44	3.04
2,350.0	1.47	233.62	2,349.5	-22.4	-4.3	-22.1	0.58	-0.48	-12.16
2,375.0	1.37	227.27	2,374.5	-22.8	-4.7	-22.5	0.75	-0.40	-25.40
2,400.0	1.13	224.60	2,399.5	-23.2	-5.1	-22.8	0.99	-0.96	-10.68
2,425.0	0.99	224.29	2,424.5	-23.5	-5.5	-23.2	0.56	-0.56	-1.24
2,450.0	0.85	216.50	2,449.5	-23.9	-5.7	-23.4	0.75	-0.56	-31.16

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Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,475.0	0.83	217.26	2,474.5	-24.1	-5.9	-23.7	0.09	-0.08	3.04
2,500.0	0.83	215.97	2,499.5	-24.4	-6.2	-24.0	0.07	0.00	-5.16
2,525.0	0.88	208.59	2,524.5	-24.8	-6.4	-24.3	0.48	0.20	-29.52
2,550.0	0.77	234.50	2,549.5	-25.0	-6.6	-24.5	1.54	-0.44	103.64
2,575.0	0.84	230.33	2,574.5	-25.2	-6.9	-24.7	0.36	0.28	-16.68
2,600.0	0.85	236.51	2,599.5	-25.5	-7.2	-24.9	0.37	0.04	24.72
2,625.0	0.84	236.92	2,624.5	-25.7	-7.5	-25.1	0.05	-0.04	1.64
2,650.0	0.79	241.26	2,649.5	-25.8	-7.8	-25.3	0.32	-0.20	17.36
2,675.0	0.47	241.71	2,674.5	-26.0	-8.0	-25.4	1.28	-1.28	1.80
2,700.0	0.26	214.91	2,699.5	-26.1	-8.1	-25.5	1.06	-0.84	-107.20
2,725.0	0.05	268.94	2,724.5	-26.1	-8.2	-25.5	0.94	-0.84	216.12
2,750.0	0.19	54.92	2,749.5	-26.1	-8.2	-25.5	0.93	0.56	583.92
2,775.0	0.23	52.16	2,774.5	-26.0	-8.1	-25.5	0.16	0.16	-11.04
2,800.0	0.30	37.11	2,799.5	-25.9	-8.0	-25.4	0.39	0.28	-60.20
2,825.0	0.38	41.43	2,824.5	-25.8	-7.9	-25.3	0.34	0.32	17.28
2,850.0	0.62	28.67	2,849.5	-25.7	-7.8	-25.1	1.05	0.96	-51.04
2,875.0	0.76	32.77	2,874.5	-25.4	-7.6	-24.9	0.59	0.56	16.40
2,900.0	0.88	32.99	2,899.5	-25.1	-7.4	-24.6	0.48	0.48	0.88
2,925.0	1.12	36.30	2,924.5	-24.7	-7.2	-24.2	0.99	0.96	13.24
2,950.0	1.40	39.38	2,949.5	-24.3	-6.9	-23.8	1.15	1.12	12.32
2,975.0	1.47	40.67	2,974.5	-23.8	-6.4	-23.4	0.31	0.28	5.16
3,000.0	1.56	41.59	2,999.5	-23.3	-6.0	-22.9	0.37	0.36	3.68
3,025.0	1.63	41.96	3,024.4	-22.8	-5.6	-22.4	0.28	0.28	1.48
3,050.0	1.62	42.89	3,049.4	-22.3	-5.1	-21.9	0.11	-0.04	3.72
3,075.0	1.68	44.07	3,074.4	-21.8	-4.6	-21.4	0.28	0.24	4.72
3,100.0	1.74	44.44	3,099.4	-21.2	-4.1	-20.9	0.24	0.24	1.48
3,125.0	1.83	47.91	3,124.4	-20.7	-3.5	-20.4	0.56	0.36	13.88
3,150.0	1.87	47.62	3,149.4	-20.1	-2.9	-19.9	0.16	0.16	-1.16
3,175.0	1.99	46.96	3,174.4	-19.6	-2.3	-19.4	0.49	0.48	-2.64
3,200.0	2.07	47.86	3,199.4	-19.0	-1.6	-18.8	0.34	0.32	3.60
3,225.0	2.10	47.55	3,224.3	-18.4	-1.0	-18.3	0.13	0.12	-1.24
3,250.0	2.04	48.03	3,249.3	-17.8	-0.3	-17.7	0.25	-0.24	1.92
3,275.0	2.15	43.33	3,274.3	-17.1	0.4	-17.1	0.82	0.44	-18.80
3,300.0	2.27	36.72	3,299.3	-16.4	1.0	-16.4	1.13	0.48	-26.44
3,325.0	2.40	33.27	3,324.3	-15.5	1.6	-15.6	0.77	0.52	-13.80
3,350.0	2.43	32.93	3,349.3	-14.7	2.1	-14.8	0.13	0.12	-1.36
3,375.0	2.42	32.76	3,374.2	-13.8	2.7	-13.9	0.05	-0.04	-0.68
3,400.0	2.39	33.50	3,399.2	-12.9	3.3	-13.1	0.17	-0.12	2.96
3,425.0	2.40	34.73	3,424.2	-12.0	3.9	-12.3	0.21	0.04	4.92
3,450.0	2.38	32.52	3,449.2	-11.2	4.5	-11.4	0.38	-0.08	-8.84
3,475.0	2.01	20.48	3,474.1	-10.3	4.9	-10.6	2.36	-1.48	-48.16
3,500.0	1.81	9.46	3,499.1	-9.5	5.1	-9.8	1.67	-0.80	-44.08
3,525.0	1.76	5.99	3,524.1	-8.7	5.2	-9.1	0.48	-0.20	-13.88
3,550.0	1.79	4.36	3,549.1	-8.0	5.3	-8.3	0.23	0.12	-6.52

Survey Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: TATANKA FED COM #4H
Wellbore: OWB
Design: AWP

Local Co-ordinate Reference: Well TATANKA FED COM#4H
TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
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)
3,575.0	1.82	5.12	3,574.1	-7.2	5.3	-7.5	0.15	0.12	3.04
3,600.0	1.79	5.37	3,599.1	-6.4	5.4	-6.7	0.12	-0.12	1.00
3,625.0	1.77	5.46	3,624.1	-5.6	5.5	-6.0	0.08	-0.08	0.36
3,650.0	1.74	4.55	3,649.1	-4.9	5.6	-5.2	0.16	-0.12	-3.64
3,675.0	1.75	3.36	3,674.0	-4.1	5.6	-4.5	0.15	0.04	-4.76
3,700.0	1.68	4.27	3,699.0	-3.4	5.7	-3.7	0.30	-0.28	3.64
3,725.0	1.64	4.35	3,724.0	-2.6	5.7	-3.0	0.16	-0.16	0.32
3,750.0	1.53	355.67	3,749.0	-2.0	5.7	-2.3	1.05	-0.44	-34.72
3,775.0	1.37	345.07	3,774.0	-1.3	5.6	-1.7	1.25	-0.64	-42.40
3,800.0	1.30	344.46	3,799.0	-0.8	5.5	-1.1	0.29	-0.28	-2.44
3,825.0	1.30	343.67	3,824.0	-0.2	5.3	-0.6	0.07	0.00	-3.16
3,850.0	1.24	346.21	3,849.0	0.3	5.2	0.0	0.33	-0.24	10.16
3,875.0	1.23	0.63	3,874.0	0.8	5.1	0.5	1.24	-0.04	57.68
3,900.0	1.19	23.05	3,899.0	1.4	5.2	1.0	1.89	-0.16	89.68
3,925.0	1.26	37.94	3,924.0	1.8	5.5	1.5	1.30	0.28	59.56
3,950.0	1.29	56.59	3,949.0	2.2	5.9	1.8	1.66	0.12	74.60
3,975.0	1.36	70.36	3,974.0	2.4	6.4	2.0	1.30	0.28	55.08
4,000.0	1.47	83.07	3,999.0	2.6	7.0	2.1	1.33	0.44	50.84
4,025.0	1.62	92.05	4,023.9	2.6	7.7	2.1	1.14	0.60	35.92
4,050.0	1.72	96.60	4,048.9	2.5	8.4	2.0	0.66	0.40	18.20
4,075.0	1.95	98.89	4,073.9	2.4	9.2	1.8	0.97	0.92	9.16
4,100.0	2.15	101.02	4,098.9	2.3	10.1	1.6	0.86	0.80	8.52
4,125.0	2.32	99.12	4,123.9	2.1	11.0	1.4	0.74	0.68	-7.60
4,150.0	2.54	95.09	4,148.9	2.0	12.1	1.2	1.11	0.88	-16.12
4,175.0	2.59	95.60	4,173.8	1.9	13.2	1.0	0.22	0.20	2.04
4,200.0	2.37	75.96	4,198.8	1.9	14.2	1.0	3.49	-0.88	-78.56
4,225.0	2.56	94.48	4,223.8	2.0	15.3	1.0	3.26	0.76	74.08
4,250.0	2.25	99.15	4,248.8	1.9	16.3	0.9	1.47	-1.24	18.68
4,275.0	1.94	108.30	4,273.8	1.7	17.2	0.6	1.82	-1.24	36.60
4,300.0	1.85	111.74	4,298.7	1.4	18.0	0.3	0.58	-0.36	13.76
4,325.0	1.48	122.25	4,323.7	1.1	18.7	-0.1	1.91	-1.48	42.04
4,350.0	1.26	127.38	4,348.7	0.8	19.2	-0.5	1.01	-0.88	20.52
4,375.0	1.16	124.38	4,373.7	0.4	19.6	-0.8	0.47	-0.40	-12.00
4,400.0	1.16	112.43	4,398.7	0.2	20.0	-1.1	0.97	0.00	-47.80
4,425.0	1.26	101.42	4,423.7	0.1	20.5	-1.3	1.01	0.40	-44.04
4,450.0	1.45	85.87	4,448.7	0.0	21.1	-1.3	1.65	0.76	-62.20
4,475.0	1.93	73.22	4,473.7	0.2	21.8	-1.2	2.42	1.92	-50.60
4,500.0	2.77	63.25	4,498.7	0.6	22.8	-0.9	3.72	3.36	-39.88
4,525.0	3.01	62.07	4,523.6	1.1	23.9	-0.4	0.99	0.96	-4.72
4,550.0	3.91	59.85	4,548.6	1.9	25.2	0.3	3.64	3.60	-8.88
4,575.0	4.14	61.21	4,573.5	2.7	26.7	1.0	1.00	0.92	5.44
4,600.0	4.48	62.12	4,598.5	3.6	28.4	1.8	1.39	1.36	3.64
4,625.0	4.54	63.99	4,623.4	4.5	30.1	2.6	0.64	0.24	7.48

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,650.0	4.62	63.41	4,648.3	5.4	31.9	3.4	0.37	0.32	-2.32	
4,675.0	4.36	67.72	4,673.2	6.2	33.7	4.1	1.70	-1.04	17.24	
4,700.0	3.69	76.37	4,698.2	6.8	35.4	4.5	3.61	-2.68	34.60	
4,725.0	2.69	87.22	4,723.1	7.0	36.7	4.6	4.66	-4.00	43.40	
4,750.0	1.80	103.32	4,748.1	6.9	37.7	4.5	4.33	-3.56	64.40	
4,775.0	1.53	147.45	4,773.1	6.5	38.3	4.1	5.10	-1.08	176.52	
4,800.0	1.65	170.50	4,798.1	5.9	38.5	3.5	2.58	0.48	92.20	
4,825.0	2.00	191.27	4,823.1	5.1	38.5	2.7	2.97	1.40	83.08	
4,850.0	2.37	199.78	4,848.1	4.2	38.2	1.8	1.96	1.48	34.04	
4,875.0	2.37	202.03	4,873.0	3.2	37.9	0.8	0.37	0.00	9.00	
4,900.0	2.71	208.32	4,898.0	2.2	37.4	-0.1	1.76	1.36	25.16	
4,925.0	3.03	217.56	4,923.0	1.2	36.7	-1.1	2.25	1.28	36.96	
4,950.0	3.12	218.80	4,947.9	0.1	35.9	-2.1	0.45	0.36	4.96	
4,975.0	3.24	219.53	4,972.9	-0.9	35.0	-3.1	0.51	0.48	2.92	
5,000.0	3.14	219.55	4,997.9	-2.0	34.1	-4.2	0.40	-0.40	0.08	
5,025.0	2.98	220.32	5,022.8	-3.0	33.2	-5.1	0.66	-0.64	3.08	
5,050.0	3.06	220.12	5,047.8	-4.0	32.4	-6.1	0.32	0.32	-0.80	
5,075.0	2.96	220.52	5,072.8	-5.0	31.5	-7.0	0.41	-0.40	1.60	
5,100.0	2.87	222.19	5,097.7	-6.0	30.7	-7.9	0.49	-0.36	6.68	
5,125.0	2.75	223.00	5,122.7	-6.9	29.9	-8.8	0.51	-0.48	3.24	
5,150.0	2.78	223.26	5,147.7	-7.8	29.1	-9.6	0.13	0.12	1.04	
5,175.0	2.76	223.83	5,172.6	-8.6	28.2	-10.4	0.14	-0.08	2.28	
5,200.0	2.79	224.82	5,197.6	-9.5	27.4	-11.2	0.23	0.12	3.96	
5,225.0	2.79	226.40	5,222.6	-10.4	26.5	-12.0	0.31	0.00	6.32	
5,250.0	2.68	231.08	5,247.5	-11.1	25.6	-12.8	1.00	-0.44	18.72	
5,275.0	2.75	231.58	5,272.5	-11.9	24.7	-13.4	0.30	0.28	2.00	
5,300.0	2.81	230.96	5,297.5	-12.6	23.7	-14.1	0.27	0.24	-2.48	
5,325.0	2.84	230.97	5,322.5	-13.4	22.8	-14.8	0.12	0.12	0.04	
5,350.0	2.75	232.18	5,347.4	-14.2	21.8	-15.5	0.43	-0.36	4.84	
5,375.0	2.79	231.78	5,372.4	-14.9	20.9	-16.2	0.18	0.16	-1.60	
5,400.0	2.73	231.82	5,397.4	-15.7	19.9	-16.9	0.24	-0.24	0.16	
5,425.0	2.80	231.37	5,422.3	-16.4	19.0	-17.6	0.29	0.28	-1.80	
5,450.0	2.80	232.22	5,447.3	-17.2	18.0	-18.3	0.17	0.00	3.40	
5,475.0	3.10	236.25	5,472.3	-17.9	17.0	-19.0	1.46	1.20	16.12	
5,500.0	3.52	245.23	5,497.2	-18.6	15.7	-19.6	2.66	1.68	35.92	
5,525.0	3.59	247.90	5,522.2	-19.2	14.3	-20.1	0.72	0.28	10.68	
5,550.0	3.55	248.59	5,547.1	-19.8	12.9	-20.6	0.23	-0.16	2.76	
5,575.0	3.63	247.88	5,572.1	-20.4	11.4	-21.1	0.37	0.32	-2.84	
5,600.0	3.57	247.54	5,597.0	-21.0	9.9	-21.6	0.25	-0.24	-1.36	
5,625.0	3.61	247.83	5,622.0	-21.6	8.5	-22.1	0.18	0.16	1.16	
5,650.0	3.69	247.54	5,646.9	-22.2	7.0	-22.6	0.33	0.32	-1.16	
5,675.0	3.64	247.74	5,671.9	-22.8	5.6	-23.1	0.21	-0.20	0.80	
5,700.0	3.58	248.71	5,696.8	-23.4	4.1	-23.6	0.34	-0.24	3.88	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,725.0	3.62	248.00	5,721.8	-24.0	2.6	-24.1	0.24	0.16	-2.84	
5,750.0	3.63	247.91	5,746.7	-24.5	1.2	-24.6	0.05	0.04	-0.36	
5,775.0	3.92	251.15	5,771.7	-25.1	-0.4	-25.0	1.44	1.16	12.96	
5,800.0	4.16	254.40	5,796.6	-25.6	-2.1	-25.5	1.33	0.96	13.00	
5,825.0	4.19	253.85	5,821.6	-26.1	-3.8	-25.8	0.20	0.12	-2.20	
5,850.0	4.14	254.45	5,846.5	-26.6	-5.6	-26.2	0.27	-0.20	2.40	
5,875.0	4.15	254.36	5,871.4	-27.1	-7.3	-26.6	0.05	0.04	-0.36	
5,900.0	4.13	255.01	5,896.4	-27.6	-9.0	-27.0	0.20	-0.08	2.60	
5,925.0	4.02	256.09	5,921.3	-28.0	-10.8	-27.3	0.54	-0.44	4.32	
5,950.0	4.14	254.79	5,946.2	-28.5	-12.5	-27.6	0.61	0.48	-5.20	
5,975.0	4.16	254.88	5,971.2	-29.0	-14.2	-28.0	0.08	0.08	0.36	
6,000.0	4.21	253.71	5,996.1	-29.5	-16.0	-28.4	0.40	0.20	-4.68	
6,025.0	4.19	254.46	6,021.0	-30.0	-17.7	-28.8	0.23	-0.08	3.00	
6,050.0	4.22	254.08	6,046.0	-30.5	-19.5	-29.2	0.16	0.12	-1.52	
6,075.0	4.19	255.32	6,070.9	-30.9	-21.3	-29.5	0.38	-0.12	4.96	
6,100.0	4.19	255.12	6,095.8	-31.4	-23.0	-29.9	0.06	0.00	-0.80	
6,125.0	4.24	255.24	6,120.8	-31.9	-24.8	-30.2	0.20	0.20	0.48	
6,150.0	4.74	259.99	6,145.7	-32.3	-26.7	-30.5	2.49	2.00	19.00	
6,175.0	5.02	263.26	6,170.6	-32.6	-28.8	-30.7	1.58	1.12	13.08	
6,200.0	5.11	263.51	6,195.5	-32.9	-31.0	-30.8	0.37	0.36	1.00	
6,225.0	5.06	263.48	6,220.4	-33.1	-33.2	-30.9	0.20	-0.20	-0.12	
6,250.0	5.15	263.65	6,245.3	-33.4	-35.4	-31.0	0.37	0.36	0.68	
6,275.0	5.12	263.41	6,270.2	-33.6	-37.7	-31.1	0.15	-0.12	-0.96	
6,300.0	5.06	262.75	6,295.1	-33.9	-39.9	-31.3	0.34	-0.24	-2.64	
6,325.0	5.19	262.40	6,320.0	-34.2	-42.1	-31.4	0.53	0.52	-1.40	
6,350.0	5.02	263.04	6,344.9	-34.4	-44.3	-31.6	0.72	-0.68	2.56	
6,375.0	5.06	261.95	6,369.8	-34.7	-46.5	-31.7	0.42	0.16	-4.36	
6,400.0	4.98	261.99	6,394.7	-35.0	-48.6	-31.9	0.32	-0.32	0.16	
6,425.0	4.95	262.30	6,419.6	-35.3	-50.8	-32.0	0.16	-0.12	1.24	
6,450.0	4.81	261.49	6,444.5	-35.6	-52.9	-32.2	0.62	-0.56	-3.24	
6,475.0	4.87	259.61	6,469.4	-36.0	-55.0	-32.4	0.68	0.24	-7.52	
6,500.0	4.87	260.54	6,494.4	-36.3	-57.0	-32.6	0.32	0.00	3.72	
6,525.0	4.76	259.96	6,519.3	-36.7	-59.1	-32.9	0.48	-0.44	-2.32	
6,550.0	4.73	260.49	6,544.2	-37.1	-61.2	-33.1	0.21	-0.12	2.12	
6,575.0	4.76	259.95	6,569.1	-37.4	-63.2	-33.3	0.22	0.12	-2.16	
6,600.0	4.70	260.24	6,594.0	-37.8	-65.2	-33.5	0.26	-0.24	1.16	
6,625.0	4.58	259.97	6,618.9	-38.1	-67.2	-33.8	0.49	-0.48	-1.08	
6,650.0	4.63	259.69	6,643.8	-38.5	-69.2	-34.0	0.22	0.20	-1.12	
6,675.0	4.54	259.82	6,668.8	-38.8	-71.2	-34.2	0.36	-0.36	0.52	
6,700.0	4.46	259.96	6,693.7	-39.2	-73.1	-34.4	0.32	-0.32	0.56	
6,725.0	4.52	259.21	6,718.6	-39.5	-75.0	-34.7	0.34	0.24	-3.00	
6,750.0	4.41	259.34	6,743.5	-39.9	-76.9	-34.9	0.44	-0.44	0.52	
6,775.0	4.31	259.05	6,768.5	-40.2	-78.8	-35.1	0.41	-0.40	-1.16	
6,800.0	4.28	259.22	6,793.4	-40.6	-80.6	-35.4	0.13	-0.12	0.68	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,825.0	4.28	258.72	6,818.3	-40.9	-82.5	-35.6	0.15	0.00	-2.00
6,850.0	4.45	258.05	6,843.3	-41.3	-84.3	-35.9	0.71	0.68	-2.68
6,875.0	4.37	258.40	6,868.2	-41.7	-86.2	-36.2	0.34	-0.32	1.40
6,900.0	4.55	257.50	6,893.1	-42.1	-88.1	-36.4	0.77	0.72	-3.60
6,925.0	4.83	258.01	6,918.0	-42.6	-90.1	-36.7	1.13	1.12	2.04
6,950.0	4.96	258.06	6,942.9	-43.0	-92.2	-37.1	0.52	0.52	0.20
6,975.0	5.10	258.02	6,967.8	-43.5	-94.3	-37.4	0.56	0.56	-0.16
7,000.0	5.46	258.22	6,992.7	-43.9	-96.6	-37.7	1.44	1.44	0.80
7,025.0	5.63	258.12	7,017.6	-44.4	-99.0	-38.0	0.68	0.68	-0.40
7,050.0	5.73	257.91	7,042.5	-44.9	-101.4	-38.4	0.41	0.40	-0.84
7,075.0	5.66	258.03	7,067.4	-45.5	-103.8	-38.8	0.28	-0.28	0.48
7,100.0	5.71	258.01	7,092.2	-46.0	-106.2	-39.1	0.20	0.20	-0.08
7,125.0	5.54	258.59	7,117.1	-46.5	-108.6	-39.5	0.72	-0.68	2.32
7,150.0	5.44	257.93	7,142.0	-46.9	-111.0	-39.8	0.47	-0.40	-2.64
7,175.0	5.31	258.27	7,166.9	-47.4	-113.3	-40.1	0.54	-0.52	1.36
7,200.0	5.09	258.44	7,191.8	-47.9	-115.5	-40.5	0.88	-0.88	0.68
7,225.0	5.00	258.07	7,216.7	-48.3	-117.6	-40.8	0.38	-0.36	-1.48
7,250.0	4.98	257.83	7,241.6	-48.8	-119.8	-41.1	0.12	-0.08	-0.96
7,275.0	4.87	257.88	7,266.5	-49.2	-121.8	-41.4	0.44	-0.44	0.20
7,300.0	4.80	257.79	7,291.4	-49.7	-123.9	-41.7	0.28	-0.28	-0.36
7,325.0	4.85	257.83	7,316.3	-50.1	-126.0	-42.0	0.20	0.20	0.16
7,350.0	4.79	257.72	7,341.2	-50.6	-128.0	-42.3	0.24	-0.24	-0.44
7,375.0	4.67	257.84	7,366.2	-51.0	-130.0	-42.6	0.48	-0.48	0.48
7,400.0	4.57	259.64	7,391.1	-51.4	-132.0	-42.9	0.70	-0.40	7.20
7,425.0	4.54	258.83	7,416.0	-51.8	-134.0	-43.2	0.28	-0.12	-3.24
7,450.0	4.35	260.10	7,440.9	-52.1	-135.9	-43.4	0.86	-0.76	5.08
7,475.0	4.24	259.88	7,465.8	-52.5	-137.7	-43.6	0.44	-0.44	-0.88
7,500.0	4.22	260.01	7,490.8	-52.8	-139.5	-43.8	0.09	-0.08	0.52
7,525.0	4.13	258.76	7,515.7	-53.1	-141.3	-44.0	0.51	-0.36	-5.00
7,550.0	4.04	259.10	7,540.7	-53.5	-143.1	-44.3	0.37	-0.36	1.36
7,575.0	3.94	258.39	7,565.6	-53.8	-144.8	-44.5	0.45	-0.40	-2.84
7,600.0	3.91	257.15	7,590.5	-54.2	-146.4	-44.7	0.36	-0.12	-4.96
7,625.0	3.88	258.29	7,615.5	-54.5	-148.1	-45.0	0.33	-0.12	4.56
7,650.0	3.89	256.91	7,640.4	-54.9	-149.8	-45.3	0.38	0.04	-5.52
7,675.0	4.06	254.74	7,665.4	-55.3	-151.4	-45.6	0.91	0.68	-8.68
7,700.0	4.04	253.64	7,690.3	-55.8	-153.1	-45.9	0.32	-0.08	-4.40
7,725.0	4.05	253.67	7,715.2	-56.3	-154.8	-46.3	0.04	0.04	0.12
7,750.0	4.16	252.86	7,740.2	-56.8	-156.5	-46.7	0.50	0.44	-3.24
7,775.0	4.43	249.61	7,765.1	-57.4	-158.3	-47.2	1.45	1.08	-13.00
7,800.0	4.56	248.75	7,790.0	-58.1	-160.1	-47.8	0.59	0.52	-3.44
7,825.0	4.56	248.95	7,814.9	-58.8	-162.0	-48.4	0.06	0.00	0.80
7,850.0	4.58	248.15	7,839.9	-59.5	-163.8	-49.0	0.27	0.08	-3.20
7,875.0	4.54	247.69	7,864.8	-60.3	-165.7	-49.6	0.22	-0.16	-1.84

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,900.0	4.43	247.59	7,889.7	-61.0	-167.5	-50.3	0.44	-0.44	-0.40
7,925.0	4.27	247.36	7,914.6	-61.8	-169.2	-50.9	0.64	-0.64	-0.92
7,950.0	4.16	246.52	7,939.6	-62.5	-170.9	-51.5	0.50	-0.44	-3.36
7,975.0	4.06	247.09	7,964.5	-63.2	-172.6	-52.1	0.43	-0.40	2.28
8,000.0	4.16	246.53	7,989.4	-63.9	-174.2	-52.7	0.43	0.40	-2.24
8,025.0	4.13	246.94	8,014.4	-64.6	-175.9	-53.3	0.17	-0.12	1.64
8,050.0	4.25	246.17	8,039.3	-65.3	-177.6	-53.9	0.53	0.48	-3.08
8,075.0	4.25	246.47	8,064.2	-66.1	-179.3	-54.6	0.09	0.00	1.20
8,100.0	4.28	246.64	8,089.2	-66.8	-181.0	-55.2	0.13	0.12	0.68
8,125.0	4.37	246.62	8,114.1	-67.6	-182.7	-55.8	0.36	0.36	-0.08
8,150.0	4.47	246.34	8,139.0	-68.3	-184.5	-56.5	0.41	0.40	-1.12
8,175.0	4.43	246.79	8,163.9	-69.1	-186.2	-57.1	0.21	-0.16	1.80
8,200.0	4.42	247.16	8,188.9	-69.9	-188.0	-57.8	0.12	-0.04	1.48
8,225.0	4.49	247.17	8,213.8	-70.6	-189.8	-58.4	0.28	0.28	0.04
8,250.0	4.67	247.35	8,238.7	-71.4	-191.7	-59.1	0.72	0.72	0.72
8,275.0	4.70	246.95	8,263.6	-72.2	-193.5	-59.7	0.18	0.12	-1.60
8,300.0	4.80	247.01	8,288.5	-73.0	-195.4	-60.4	0.40	0.40	0.24
8,325.0	4.76	246.98	8,313.5	-73.8	-197.4	-61.1	0.16	-0.16	-0.12
8,350.0	4.61	247.21	8,338.4	-74.6	-199.2	-61.8	0.60	-0.60	0.92
8,375.0	4.36	246.62	8,363.3	-75.4	-201.0	-62.4	1.02	-1.00	-2.36
8,400.0	4.20	247.39	8,388.2	-76.1	-202.8	-63.1	0.68	-0.64	3.08
8,425.0	4.02	248.48	8,413.2	-76.8	-204.4	-63.6	0.78	-0.72	4.36
8,450.0	3.89	248.09	8,438.1	-77.4	-206.0	-64.2	0.53	-0.52	-1.56
8,475.0	3.85	248.31	8,463.0	-78.0	-207.6	-64.7	0.17	-0.16	0.88
8,500.0	3.95	247.90	8,488.0	-78.7	-209.2	-65.2	0.42	0.40	-1.64
8,525.0	3.89	248.04	8,512.9	-79.3	-210.7	-65.8	0.24	-0.24	0.56
8,550.0	4.00	247.74	8,537.9	-80.0	-212.3	-66.3	0.45	0.44	-1.20
8,575.0	3.83	248.64	8,562.8	-80.6	-213.9	-66.8	0.72	-0.68	3.60
8,600.0	4.03	248.53	8,587.8	-81.2	-215.5	-67.4	0.80	0.80	-0.44
8,625.0	4.39	251.49	8,612.7	-81.8	-217.2	-67.9	1.68	1.44	11.84
8,650.0	4.81	254.19	8,637.6	-82.4	-219.2	-68.3	1.89	1.68	10.80
8,675.0	4.82	254.32	8,662.5	-83.0	-221.2	-68.8	0.06	0.04	0.52
8,700.0	4.89	253.95	8,687.4	-83.6	-223.2	-69.2	0.31	0.28	-1.48
8,725.0	4.92	253.08	8,712.3	-84.2	-225.3	-69.7	0.32	0.12	-3.48
8,750.0	4.85	253.87	8,737.2	-84.8	-227.3	-70.2	0.39	-0.28	3.16
8,775.0	4.49	254.59	8,762.2	-85.3	-229.3	-70.6	1.46	-1.44	2.88
8,800.0	4.14	254.30	8,787.1	-85.8	-231.1	-71.0	1.40	-1.40	-1.16
8,825.0	3.96	254.76	8,812.0	-86.3	-232.8	-71.3	0.73	-0.72	1.84
8,850.0	3.89	254.63	8,837.0	-86.8	-234.4	-71.7	0.28	-0.28	-0.52
8,875.0	3.86	253.82	8,861.9	-87.2	-236.1	-72.0	0.25	-0.12	-3.24
8,900.0	3.89	254.09	8,886.9	-87.7	-237.7	-72.4	0.14	0.12	1.08
8,925.0	3.94	253.89	8,911.8	-88.2	-239.3	-72.8	0.21	0.20	-0.80
8,950.0	3.99	254.08	8,936.7	-88.6	-241.0	-73.1	0.21	0.20	0.76

Survey Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: TATANKA FED COM #4H
Wellbore: OWB
Design: AWP

Local Co-ordinate Reference: Well TATANKA FED COM#4H
TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
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)
8,975.0	4.02	254.55	8,961.7	-89.1	-242.7	-73.5	0.18	0.12	1.88
9,000.0	4.21	255.66	8,986.6	-89.6	-244.4	-73.9	0.82	0.76	4.44
9,025.0	4.22	255.75	9,011.5	-90.0	-246.2	-74.2	0.05	0.04	0.36
9,050.0	4.22	255.57	9,036.5	-90.5	-248.0	-74.5	0.05	0.00	-0.72
9,075.0	4.32	255.46	9,061.4	-90.9	-249.8	-74.9	0.40	0.40	-0.44
9,100.0	4.58	257.89	9,086.3	-91.4	-251.6	-75.2	1.28	1.04	9.72
9,125.0	4.70	258.76	9,111.3	-91.8	-253.6	-75.5	0.56	0.48	3.48
9,150.0	4.78	259.64	9,136.2	-92.2	-255.7	-75.8	0.43	0.32	3.52
9,175.0	4.83	256.88	9,161.1	-92.6	-257.7	-76.1	0.95	0.20	-11.04
9,200.0	5.41	252.54	9,186.0	-93.2	-259.9	-76.5	2.79	2.32	-17.36
9,225.0	5.61	251.11	9,210.9	-94.0	-262.1	-77.1	0.97	0.80	-5.72
9,250.0	5.59	250.75	9,235.7	-94.8	-264.4	-77.8	0.16	-0.08	-1.44
9,275.0	5.62	250.68	9,260.6	-95.6	-266.7	-78.4	0.12	0.12	-0.28
9,300.0	5.56	250.30	9,285.5	-96.4	-269.0	-79.1	0.28	-0.24	-1.52
9,325.0	5.50	250.64	9,310.4	-97.2	-271.3	-79.7	0.27	-0.24	1.36
9,350.0	5.33	249.41	9,335.3	-98.0	-273.5	-80.4	0.82	-0.68	-4.92
9,375.0	5.00	248.28	9,360.2	-98.8	-275.6	-81.1	1.38	-1.32	-4.52
9,400.0	4.98	247.92	9,385.1	-99.6	-277.6	-81.8	0.15	-0.08	-1.44
9,425.0	4.98	247.56	9,410.0	-100.4	-279.7	-82.5	0.13	0.00	-1.44
9,450.0	4.98	247.55	9,434.9	-101.3	-281.7	-83.2	0.00	0.00	-0.04
9,475.0	5.30	245.79	9,459.8	-102.1	-283.7	-83.9	1.43	1.28	-7.04
9,500.0	5.79	243.80	9,484.7	-103.2	-285.9	-84.8	2.11	1.96	-7.96
9,525.0	5.80	243.62	9,509.5	-104.3	-288.2	-85.8	0.08	0.04	-0.72
9,550.0	5.60	243.49	9,534.4	-105.4	-290.4	-86.7	0.80	-0.80	-0.52
9,575.0	5.15	245.98	9,559.3	-106.4	-292.5	-87.6	2.03	-1.80	9.96
9,600.0	4.63	246.96	9,584.2	-107.3	-294.5	-88.3	2.11	-2.08	3.92
9,625.0	4.39	248.34	9,609.1	-108.0	-296.3	-89.0	1.05	-0.96	5.52
9,650.0	4.36	248.52	9,634.1	-108.7	-298.0	-89.5	0.13	-0.12	0.72
9,675.0	4.87	247.76	9,659.0	-109.5	-299.9	-90.2	2.05	2.04	-3.04
9,700.0	4.87	247.98	9,683.9	-110.3	-301.9	-90.8	0.07	0.00	0.88
9,725.0	5.00	247.79	9,708.8	-111.1	-303.9	-91.5	0.52	0.52	-0.76
9,750.0	4.89	248.00	9,733.7	-111.9	-305.9	-92.2	0.45	-0.44	0.84
9,775.0	4.73	248.65	9,758.6	-112.6	-307.8	-92.9	0.68	-0.64	2.60
9,800.0	4.78	248.38	9,783.5	-113.4	-309.7	-93.5	0.22	0.20	-1.08
9,825.0	4.70	248.91	9,808.5	-114.2	-311.7	-94.1	0.36	-0.32	2.12
9,850.0	4.71	249.91	9,833.4	-114.9	-313.6	-94.7	0.33	0.04	4.00
9,875.0	4.95	252.70	9,858.3	-115.6	-315.6	-95.3	1.34	0.96	11.16
9,900.0	5.01	253.28	9,883.2	-116.2	-317.7	-95.8	0.31	0.24	2.32
9,925.0	5.06	252.85	9,908.1	-116.8	-319.8	-96.3	0.25	0.20	-1.72
9,950.0	5.06	253.35	9,933.0	-117.5	-321.9	-96.8	0.18	0.00	2.00
9,975.0	5.17	251.78	9,957.9	-118.1	-324.0	-97.3	0.71	0.44	-6.28
10,000.0	5.26	251.81	9,982.8	-118.8	-326.2	-97.9	0.36	0.36	0.12
10,025.0	5.21	251.92	10,007.7	-119.6	-328.3	-98.4	0.20	-0.20	0.44
10,050.0	4.83	251.82	10,032.6	-120.2	-330.4	-99.0	1.52	-1.52	-0.40

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well TATANKA FED COM#4H
Project:	LEA COUNTY, NM	TVD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Site:	BULLDOG	MD Reference:	KB=25' @ 3052.1usft (Lattshaw 44)
Well:	TATANKA FED COM #4H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,075.0	4.35	251.08	10,057.5	-120.9	-332.3	-99.5	1.93	-1.92	-2.96
10,100.0	4.15	250.58	10,082.4	-121.5	-334.0	-100.0	0.81	-0.80	-2.00
10,125.0	3.96	250.42	10,107.4	-122.1	-335.7	-100.5	0.76	-0.76	-0.64
10,150.0	4.51	254.16	10,132.3	-122.6	-337.5	-100.9	2.46	2.20	14.96
10,175.0	5.04	255.78	10,157.2	-123.2	-339.5	-101.3	2.19	2.12	6.48
10,200.0	5.07	256.34	10,182.1	-123.7	-341.6	-101.7	0.23	0.12	2.24
10,225.0	5.10	255.71	10,207.0	-124.2	-343.8	-102.1	0.25	0.12	-2.52
10,250.0	4.74	257.47	10,231.9	-124.7	-345.9	-102.5	1.56	-1.44	7.04
10,275.0	4.24	259.53	10,256.9	-125.1	-347.8	-102.8	2.10	-2.00	8.24
10,300.0	4.06	260.92	10,281.8	-125.4	-349.6	-103.0	0.82	-0.72	5.56
10,325.0	3.99	260.17	10,306.7	-125.7	-351.3	-103.1	0.35	-0.28	-3.00
10,350.0	4.06	260.16	10,331.7	-126.0	-353.0	-103.3	0.28	0.28	-0.04
10,375.0	3.80	261.82	10,356.6	-126.3	-354.7	-103.5	1.14	-1.04	6.64
10,400.0	3.44	260.81	10,381.6	-126.5	-356.3	-103.6	1.46	-1.44	-4.04
10,425.0	3.38	261.56	10,406.5	-126.8	-357.7	-103.8	0.30	-0.24	3.00
10,450.0	3.39	260.49	10,431.5	-127.0	-359.2	-103.9	0.26	0.04	-4.28
10,475.0	3.31	256.72	10,456.4	-127.3	-360.6	-104.1	0.94	-0.32	-15.08
10,500.0	3.69	238.72	10,481.4	-127.9	-362.0	-104.6	4.63	1.52	-72.00
10,525.0	4.12	232.37	10,506.3	-128.8	-363.4	-105.5	2.44	1.72	-25.40
10,550.0	4.85	231.20	10,531.3	-130.0	-364.9	-106.6	2.94	2.92	-4.68
10,575.0	5.05	231.43	10,556.2	-131.4	-366.6	-107.8	0.80	0.80	0.92
10,600.0	5.03	231.43	10,581.1	-132.8	-368.3	-109.1	0.08	-0.08	0.00
10,625.0	4.68	230.36	10,606.0	-134.1	-370.0	-110.3	1.45	-1.40	-4.28
10,650.0	4.53	229.77	10,630.9	-135.4	-371.5	-111.5	0.63	-0.60	-2.36
10,675.0	4.34	229.82	10,655.8	-136.6	-373.0	-112.6	0.76	-0.76	0.20
10,700.0	4.08	228.53	10,680.8	-137.8	-374.4	-113.7	1.11	-1.04	-5.16
10,725.0	3.55	227.12	10,705.7	-138.9	-375.6	-114.8	2.15	-2.12	-5.64
10,750.0	3.36	227.42	10,730.6	-140.0	-376.7	-115.7	0.76	-0.76	1.20
10,775.0	3.46	226.75	10,755.6	-141.0	-377.8	-116.7	0.43	0.40	-2.68
10,800.0	3.52	225.94	10,780.6	-142.0	-378.9	-117.6	0.31	0.24	-3.24
10,825.0	3.52	226.00	10,805.5	-143.1	-380.0	-118.6	0.01	0.00	0.24
10,850.0	3.85	225.59	10,830.5	-144.2	-381.2	-119.7	1.32	1.32	-1.64
10,875.0	4.02	225.27	10,855.4	-145.4	-382.4	-120.8	0.69	0.68	-1.28
10,900.0	4.11	225.53	10,880.3	-146.7	-383.7	-122.0	0.37	0.36	1.04
10,925.0	4.68	222.93	10,905.3	-148.0	-385.0	-123.3	2.41	2.28	-10.40
10,950.0	5.05	221.98	10,930.2	-149.6	-386.4	-124.7	1.51	1.48	-3.80
10,975.0	5.06	221.12	10,955.1	-151.2	-387.9	-126.3	0.31	0.04	-3.44
11,000.0	4.97	219.41	10,980.0	-152.9	-389.3	-127.9	0.70	-0.36	-6.84
11,025.0	4.75	217.70	11,004.9	-154.6	-390.6	-129.4	1.05	-0.88	-6.84
11,050.0	4.40	214.98	11,029.8	-156.2	-391.8	-131.0	1.65	-1.40	-10.88
11,075.0	4.36	212.91	11,054.7	-157.8	-392.9	-132.5	0.65	-0.16	-8.28
11,100.0	4.44	212.59	11,079.7	-159.4	-393.9	-134.0	0.33	0.32	-1.28
11,125.0	4.83	215.77	11,104.6	-161.0	-395.0	-135.6	1.87	1.56	12.72

Survey Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: TATANKA FED COM #4H
Wellbore: OWB
Design: AWP

Local Co-ordinate Reference: Well TATANKA FED COM#4H
TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
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)
11,150.0	5.57	219.81	11,129.5	-162.8	-396.4	-137.3	3.30	2.96	16.16
11,175.0	5.80	220.44	11,154.4	-164.7	-398.0	-139.1	0.95	0.92	2.52
11,200.0	6.32	223.31	11,179.2	-166.7	-399.8	-140.9	2.41	2.08	11.48
11,225.0	6.68	223.59	11,204.1	-168.7	-401.7	-142.9	1.45	1.44	1.12
11,250.0	6.84	224.07	11,228.9	-170.9	-403.8	-144.8	0.68	0.64	1.92
11,275.0	6.81	224.26	11,253.7	-173.0	-405.9	-146.8	0.15	-0.12	0.76
11,300.0	6.59	222.48	11,278.5	-175.1	-407.9	-148.8	1.21	-0.88	-7.12
11,325.0	6.30	219.61	11,303.4	-177.2	-409.7	-150.8	1.73	-1.16	-11.48
11,350.0	6.13	217.10	11,328.2	-179.3	-411.4	-152.8	1.28	-0.68	-10.04
11,375.0	5.96	214.90	11,353.1	-181.5	-412.9	-154.9	1.15	-0.68	-8.80
11,400.0	5.85	213.83	11,378.0	-183.6	-414.4	-156.9	0.62	-0.44	-4.28
11,425.0	5.47	212.21	11,402.8	-185.7	-415.7	-158.9	1.65	-1.52	-6.48
11,450.0	5.24	211.37	11,427.7	-187.6	-417.0	-160.8	0.97	-0.92	-3.36
11,475.0	5.00	210.56	11,452.6	-189.6	-418.1	-162.6	1.00	-0.96	-3.24
11,500.0	4.65	208.61	11,477.5	-191.4	-419.1	-164.4	1.55	-1.40	-7.80
11,525.0	4.08	208.51	11,502.5	-193.1	-420.1	-166.0	2.28	-2.28	-0.40
11,550.0	3.75	205.19	11,527.4	-194.6	-420.8	-167.4	1.60	-1.32	-13.28
11,650.0	3.07	183.81	11,627.2	-200.2	-422.4	-173.0	1.43	-0.68	-21.38
11,744.0	1.74	202.76	11,721.2	-204.0	-423.1	-176.7	1.63	-1.41	20.16
11,791.0	5.86	333.82	11,768.1	-202.5	-424.4	-175.2	15.16	8.77	278.85
11,838.0	15.09	339.01	11,814.2	-194.7	-427.7	-167.1	19.72	19.64	11.04
11,885.0	16.46	337.62	11,859.5	-182.8	-432.4	-154.9	3.02	2.91	-2.96
11,932.0	19.26	331.49	11,904.2	-169.8	-438.7	-141.6	7.17	5.96	-13.04
11,979.0	26.36	334.05	11,947.5	-153.6	-446.9	-124.9	15.25	15.11	5.45
12,022.6	33.42	337.13	11,985.3	-133.8	-455.9	-104.6	16.56	16.19	7.06
FTP @ 12022.6'MD / 11985.3'TVD									
12,026.0	33.97	337.32	11,988.1	-132.1	-456.6	-102.8	16.56	16.26	5.62
12,073.0	39.83	346.75	12,025.7	-105.3	-465.1	-75.5	17.31	12.47	20.06
12,120.0	42.91	352.18	12,061.0	-74.7	-470.7	-44.7	10.06	6.55	11.55
12,167.0	42.73	352.56	12,095.5	-43.1	-475.0	-12.8	0.67	-0.38	0.81
12,217.0	42.94	349.17	12,132.1	-9.5	-480.4	21.0	4.63	0.42	-6.78
12,264.0	47.22	344.55	12,165.3	22.8	-488.0	53.8	11.46	9.11	-9.83
12,312.0	50.49	345.77	12,196.9	57.8	-497.2	89.3	7.08	6.81	2.54
12,359.0	52.36	349.22	12,226.2	93.7	-505.2	125.6	6.98	3.98	7.34
12,406.0	51.89	349.69	12,255.1	130.1	-512.0	162.4	1.27	-1.00	1.00
12,453.0	54.02	352.47	12,283.4	167.2	-517.8	199.7	6.54	4.53	5.91
12,500.0	60.47	355.73	12,308.8	206.5	-521.8	239.2	14.91	13.72	6.94
12,547.0	66.54	356.54	12,329.8	248.4	-524.6	281.3	13.01	12.91	1.72
12,595.0	68.22	355.83	12,348.2	292.6	-527.6	325.6	3.76	3.50	-1.48
12,642.0	70.66	355.77	12,364.7	336.5	-530.8	369.6	5.19	5.19	-0.13
12,690.0	76.23	352.99	12,378.4	382.3	-535.3	415.5	12.86	11.60	-5.79
12,737.0	82.00	353.23	12,387.3	428.1	-540.8	461.6	12.29	12.28	0.51
12,784.0	87.80	354.86	12,391.5	474.6	-545.7	508.3	12.81	12.34	3.47

Survey Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: TATANKA FED COM #4H
Wellbore: OWB
Design: AWP

Local Co-ordinate Reference: Well TATANKA FED COM#4H
TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
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)
12,879.0	87.00	354.87	12,395.8	569.1	-554.2	603.2	0.84	-0.84	0.01
12,973.0	88.57	355.29	12,399.4	662.7	-562.2	697.1	1.73	1.67	0.45
13,067.0	90.71	354.65	12,400.0	756.3	-570.5	791.1	2.38	2.28	-0.68
13,162.0	91.33	354.66	12,398.3	850.9	-579.3	886.0	0.65	0.65	0.01
13,256.0	93.97	0.77	12,393.9	944.7	-583.1	979.8	7.07	2.81	6.50
13,351.0	92.21	359.91	12,388.8	1,039.5	-582.5	1,074.5	2.06	-1.85	-0.91
13,445.0	95.10	1.20	12,382.8	1,133.3	-581.6	1,168.0	3.37	3.07	1.37
13,540.0	91.86	3.44	12,377.1	1,228.1	-577.8	1,262.3	4.14	-3.41	2.36
13,634.0	92.06	4.85	12,373.9	1,321.8	-571.0	1,355.4	1.51	0.21	1.50
13,729.0	93.02	5.51	12,369.6	1,416.3	-562.4	1,449.2	1.23	1.01	0.69
13,824.0	88.08	1.20	12,368.7	1,511.1	-556.9	1,543.4	6.90	-5.20	-4.54
13,860.0	86.90	359.13	12,370.3	1,547.0	-556.8	1,579.3	6.61	-3.28	-5.75
13,955.0	88.09	358.74	12,374.5	1,641.9	-558.5	1,674.1	1.32	1.25	-0.41
14,049.0	91.60	355.57	12,374.7	1,735.8	-563.2	1,768.1	5.03	3.73	-3.37
14,144.0	92.08	350.55	12,371.7	1,830.0	-574.7	1,862.8	5.31	0.51	-5.28
14,238.0	93.13	353.75	12,367.4	1,923.0	-587.5	1,956.5	3.58	1.12	3.40
14,333.0	93.58	357.55	12,361.8	2,017.6	-594.7	2,051.3	4.02	0.47	4.00
14,427.0	92.99	357.37	12,356.4	2,111.3	-598.8	2,145.1	0.66	-0.63	-0.19
14,522.0	92.79	357.61	12,351.6	2,206.1	-603.0	2,240.0	0.33	-0.21	0.25
14,617.0	95.18	0.62	12,345.0	2,300.8	-604.5	2,334.6	4.04	2.52	3.17
14,712.0	94.14	359.46	12,337.3	2,395.5	-604.4	2,429.1	1.64	-1.09	-1.22
14,806.0	94.02	359.16	12,330.6	2,489.3	-605.5	2,522.7	0.34	-0.13	-0.32
14,901.0	92.30	358.12	12,325.4	2,584.1	-607.8	2,617.5	2.11	-1.81	-1.09
14,995.0	91.29	357.15	12,322.5	2,678.0	-611.6	2,711.4	1.49	-1.07	-1.03
15,090.0	91.14	356.85	12,320.4	2,772.8	-616.6	2,806.4	0.35	-0.16	-0.32
15,184.0	91.13	355.48	12,318.6	2,866.6	-622.9	2,900.4	1.46	-0.01	-1.46
15,279.0	92.65	357.46	12,315.4	2,961.3	-628.7	2,995.3	2.63	1.60	2.08
15,374.0	92.88	358.24	12,310.9	3,056.2	-632.3	3,090.2	0.86	0.24	0.82
15,469.0	93.98	358.44	12,305.2	3,151.0	-635.1	3,184.9	1.18	1.16	0.21
15,564.0	97.31	1.66	12,295.8	3,245.5	-635.0	3,279.3	4.86	3.51	3.39
15,658.0	97.27	2.09	12,283.9	3,338.7	-631.9	3,372.1	0.46	-0.04	0.46
15,752.0	96.13	2.04	12,272.9	3,432.0	-628.6	3,465.0	1.21	-1.21	-0.05
15,846.0	95.98	2.33	12,263.0	3,525.4	-625.0	3,558.0	0.35	-0.16	0.31
15,941.0	95.35	1.90	12,253.6	3,619.8	-621.5	3,652.0	0.80	-0.66	-0.45
16,035.0	93.80	2.42	12,246.2	3,713.5	-618.0	3,745.2	1.74	-1.65	0.55
16,129.0	91.81	1.42	12,241.6	3,807.3	-614.8	3,838.7	2.37	-2.12	-1.06
16,224.0	94.45	3.99	12,236.4	3,902.0	-610.4	3,932.9	3.88	2.78	2.71
16,318.0	95.24	5.06	12,228.4	3,995.4	-603.0	4,025.6	1.41	0.84	1.14
16,413.0	93.28	4.36	12,221.4	4,089.8	-595.2	4,119.4	2.19	-2.06	-0.74
16,504.0	94.94	2.29	12,214.8	4,180.4	-589.9	4,209.5	2.91	1.82	-2.27
16,599.0	91.29	1.35	12,209.7	4,275.2	-586.9	4,303.9	3.97	-3.84	-0.99
16,693.0	89.82	2.04	12,208.8	4,369.2	-584.1	4,397.5	1.73	-1.56	0.73
16,788.0	89.84	1.90	12,209.1	4,464.1	-580.9	4,492.0	0.15	0.02	-0.15
16,882.0	88.65	1.51	12,210.3	4,558.1	-578.1	4,585.6	1.33	-1.27	-0.41

Survey Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Site: BULLDOG
Well: TATANKA FED COM #4H
Wellbore: OWB
Design: AWP

Local Co-ordinate Reference: Well TATANKA FED COM#4H
TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
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)
16,976.0	88.37	1.87	12,212.7	4,652.0	-575.3	4,679.1	0.49	-0.30	0.38
17,071.0	87.35	0.74	12,216.3	4,746.9	-573.1	4,773.7	1.60	-1.07	-1.19
17,166.0	86.88	0.89	12,221.1	4,841.8	-571.8	4,868.3	0.52	-0.49	0.16
17,260.0	86.30	359.58	12,226.7	4,935.6	-571.4	4,961.9	1.52	-0.62	-1.39
17,354.0	88.05	357.37	12,231.3	5,029.4	-573.9	5,055.7	3.00	1.86	-2.35
17,449.0	92.13	355.72	12,231.1	5,124.2	-579.6	5,150.7	4.63	4.29	-1.74
17,543.0	92.53	356.43	12,227.3	5,217.9	-586.1	5,244.6	0.87	0.43	0.76
17,638.0	89.17	357.36	12,225.9	5,312.8	-591.2	5,339.6	3.67	-3.54	0.98
17,724.0	87.81	356.53	12,228.2	5,398.6	-595.8	5,425.6	1.85	-1.58	-0.97
17,818.0	90.11	357.71	12,229.9	5,492.5	-600.5	5,519.5	2.75	2.45	1.26
17,912.0	89.59	357.87	12,230.1	5,586.4	-604.1	5,613.5	0.58	-0.55	0.17
18,006.0	90.14	358.22	12,230.4	5,680.4	-607.3	5,707.5	0.69	0.59	0.37
18,101.0	93.08	359.67	12,227.7	5,775.3	-609.1	5,802.3	3.45	3.09	1.53
18,195.0	91.17	0.17	12,224.2	5,869.2	-609.2	5,896.1	2.10	-2.03	0.53
18,289.0	90.26	359.85	12,223.0	5,963.2	-609.2	5,989.9	1.03	-0.97	-0.34
18,384.0	88.08	359.21	12,224.4	6,058.2	-610.0	6,084.7	2.39	-2.29	-0.67
18,478.0	90.32	358.96	12,225.7	6,152.2	-611.5	6,178.6	2.40	2.38	-0.27
18,572.0	90.34	358.26	12,225.2	6,246.1	-613.8	6,272.5	0.74	0.02	-0.74
18,667.0	92.01	358.50	12,223.2	6,341.1	-616.4	6,367.4	1.78	1.76	0.25
18,762.0	93.90	358.84	12,218.3	6,435.9	-618.6	6,462.2	2.02	1.99	0.36
18,858.0	91.50	357.96	12,213.8	6,531.8	-621.3	6,558.0	2.66	-2.50	-0.92
18,953.0	90.83	357.52	12,211.9	6,626.7	-625.1	6,653.0	0.84	-0.71	-0.46
19,048.0	92.58	358.21	12,209.0	6,721.6	-628.6	6,747.9	1.98	1.84	0.73
19,143.0	93.85	0.11	12,203.7	6,816.4	-630.0	6,842.6	2.40	1.34	2.00
19,238.0	93.83	359.66	12,197.4	6,911.2	-630.2	6,937.3	0.47	-0.02	-0.47
19,333.0	93.83	0.08	12,191.0	7,006.0	-630.4	7,031.9	0.44	0.00	0.44
19,428.0	95.35	0.06	12,183.4	7,100.7	-630.3	7,126.4	1.60	1.60	-0.02
19,522.0	95.34	0.04	12,174.7	7,194.2	-630.2	7,219.8	0.02	-0.01	-0.02
19,623.0	96.69	0.50	12,164.1	7,294.7	-629.7	7,320.0	1.41	1.34	0.46
19,718.0	97.09	0.63	12,152.7	7,389.0	-628.8	7,414.0	0.44	0.42	0.14
19,812.0	95.18	0.83	12,142.6	7,482.4	-627.6	7,507.2	2.04	-2.03	0.21
19,907.0	94.82	0.88	12,134.3	7,577.1	-626.2	7,601.6	0.38	-0.38	0.05
20,002.0	94.27	0.67	12,126.8	7,671.8	-624.9	7,696.0	0.62	-0.58	-0.22
20,096.0	93.96	0.66	12,120.1	7,765.5	-623.8	7,789.5	0.33	-0.33	-0.01
20,191.0	94.23	0.88	12,113.3	7,860.3	-622.6	7,883.9	0.37	0.28	0.23
20,286.0	93.72	0.95	12,106.7	7,955.0	-621.0	7,978.4	0.54	-0.54	0.07
20,375.0	93.51	1.03	12,101.1	8,043.8	-619.5	8,066.9	0.25	-0.24	0.09
20,407.0	93.36	1.24	12,099.2	8,075.8	-618.9	8,098.8	0.81	-0.47	0.66
20,501.0	93.08	0.72	12,093.9	8,169.6	-617.3	8,192.3	0.63	-0.30	-0.55
20,596.0	92.64	0.39	12,089.2	8,264.5	-616.4	8,286.9	0.58	-0.46	-0.35
20,675.0	92.35	0.02	12,085.7	8,343.4	-616.1	8,365.7	0.59	-0.37	-0.47
20,770.0	91.75	359.59	12,082.3	8,438.3	-616.4	8,460.5	0.78	-0.63	-0.45
20,865.0	91.16	359.09	12,079.9	8,533.3	-617.5	8,555.3	0.81	-0.62	-0.53

Survey Report

Company: NORTHERN DELAWARE BASIN	Local Co-ordinate Reference: Well TATANKA FED COM#4H
Project: LEA COUNTY, NM	TVD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
Site: BULLDOG	MD Reference: KB=25' @ 3052.1usft (Lattshaw 44)
Well: TATANKA FED COM #4H	North Reference: Grid
Wellbore: OWB	Survey Calculation Method: Minimum Curvature
Design: AWP	Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,960.0	89.75	358.88	12,079.2	8,628.3	-619.2	8,650.2	1.50	-1.48	-0.22
21,055.0	89.01	358.21	12,080.2	8,723.2	-621.6	8,745.1	1.05	-0.78	-0.71
21,150.0	89.15	358.77	12,081.7	8,818.2	-624.1	8,840.0	0.61	0.15	0.59
21,244.0	90.40	358.97	12,082.1	8,912.2	-625.9	8,933.9	1.35	1.33	0.21
21,340.0	88.43	358.76	12,083.1	9,008.2	-627.8	9,029.8	2.06	-2.05	-0.22
21,434.0	87.32	358.43	12,086.5	9,102.1	-630.1	9,123.7	1.23	-1.18	-0.35
21,529.0	87.41	358.88	12,090.9	9,196.9	-632.4	9,218.5	0.48	0.09	0.47
21,623.0	87.13	358.75	12,095.4	9,290.8	-634.3	9,312.3	0.33	-0.30	-0.14
21,718.0	86.72	358.61	12,100.5	9,385.6	-636.5	9,407.1	0.46	-0.43	-0.15
21,812.0	88.20	359.19	12,104.6	9,479.5	-638.3	9,500.9	1.69	1.57	0.62
21,907.0	88.08	359.25	12,107.7	9,574.5	-639.6	9,595.8	0.14	-0.13	0.06
22,002.0	88.12	359.66	12,110.9	9,669.4	-640.5	9,690.6	0.43	0.04	0.43
22,096.0	88.04	359.86	12,114.0	9,763.4	-640.9	9,784.4	0.23	-0.09	0.21
22,191.0	89.43	359.59	12,116.1	9,858.3	-641.3	9,879.2	1.49	1.46	-0.28
22,286.0	88.63	359.72	12,117.7	9,953.3	-641.9	9,974.0	0.85	-0.84	0.14
22,381.0	89.19	0.40	12,119.5	10,048.3	-641.8	10,068.8	0.93	0.59	0.72
22,475.0	90.60	0.69	12,119.7	10,142.3	-640.9	10,162.5	1.53	1.50	0.31
22,523.0	90.26	0.85	12,119.4	10,190.3	-640.3	10,210.4	0.78	-0.71	0.33
22,566.0	90.26	0.85	12,119.2	10,233.3	-639.6	10,253.2	0.00	0.00	0.00
LTP @ 22566'MD / 12119.2'TVD									
22,587.0	90.26	0.85	12,119.1	10,254.3	-639.3	10,274.2	0.00	0.00	0.00
PTD @ 22587'MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,022.6	11,985.3	-133.8	-455.9	FTP @ 12022.6'MD / 11985.3'TVD
22,566.0	12,119.2	10,233.3	-639.6	LTP @ 22566'MD / 12119.2'TVD
22,587.0	12,119.1	10,254.3	-639.3	PTD @ 22587'MD

Checked By: _____ Approved By: _____ Date: _____