

30-015-45581

RECEIVED

SEP 19 2019

DISTRICT 7-ARTESIA O.C.D.

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

HAMBONE FEDERAL COM 25H

OWB

Design: AWP

Standard Survey Report

18 June, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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

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

Well	HAMBONE FEDERAL COM 25H		
Well Position	+N/-S	0.0 usft	Northing: 382,232.28 usft
	+E/-W	0.0 usft	Easting: 601,211.49 usft
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 3' 1.622 N
		Longitude:	104° 0' 23.979 W
		Ground Level:	2,894.1 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination
			(°)
	WMM2015	1/15/2019	7.00
			Dip Angle (°)
			59.79
			Field Strength (nT)
			47,614.07247278

Design	AWP		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			359.06

Survey Program	Date 6/18/2019		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	9,995.0	GYRO (OWB)	Standard Keeper 104
9,995.0	21,101.0	MWD-CURVE/LAT (OWB)	MWD+IFR1+MS
			Description
			Standard Wireline Keeper ver 1.0.4
			OWSG MWD + IFR1 + Multi-Station Correction

Survey										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate	
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.65	331.22	100.0	0.5	-0.3	0.5	0.65	0.65	0.00	
125.0	0.63	332.88	125.0	0.7	-0.4	0.8	0.11	-0.08	6.64	
150.0	0.70	328.83	150.0	1.0	-0.5	1.0	0.34	0.28	-16.20	
175.0	0.77	321.93	175.0	1.3	-0.7	1.3	0.45	0.28	-27.60	
200.0	0.87	327.55	200.0	1.6	-0.9	1.6	0.51	0.40	22.48	
225.0	1.04	321.26	225.0	1.9	-1.2	1.9	0.80	0.68	-25.16	
250.0	0.98	328.37	250.0	2.2	-1.4	2.3	0.56	-0.24	28.44	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
275.0	0.93	325.68	275.0	2.6	-1.7	2.6	0.27	-0.20	-10.76	
300.0	0.99	324.86	300.0	2.9	-1.9	3.0	0.25	0.24	-3.28	
325.0	1.04	326.74	325.0	3.3	-2.1	3.3	0.24	0.20	7.52	
350.0	1.17	322.58	350.0	3.7	-2.4	3.7	0.61	0.52	-16.64	
375.0	1.19	323.20	375.0	4.1	-2.7	4.2	0.09	0.08	2.48	
400.0	1.27	321.90	400.0	4.5	-3.1	4.6	0.34	0.32	-5.20	
425.0	1.20	314.23	425.0	4.9	-3.4	5.0	0.72	-0.28	-30.68	
450.0	1.19	314.37	449.9	5.3	-3.8	5.4	0.04	-0.04	0.56	
475.0	1.19	311.62	474.9	5.7	-4.2	5.7	0.23	0.00	-11.00	
500.0	1.26	311.81	499.9	6.0	-4.6	6.1	0.28	0.28	0.76	
525.0	1.30	309.09	524.9	6.4	-5.0	6.5	0.29	0.16	-10.88	
550.0	1.38	301.95	549.9	6.7	-5.5	6.8	0.74	0.32	-28.56	
575.0	1.50	306.95	574.9	7.1	-6.0	7.2	0.69	0.48	20.00	
600.0	1.54	302.90	599.9	7.4	-6.5	7.6	0.46	0.16	-16.20	
625.0	1.54	299.47	624.9	7.8	-7.1	7.9	0.37	0.00	-13.72	
650.0	1.75	298.62	649.9	8.1	-7.7	8.3	0.85	0.84	-3.40	
675.0	1.58	295.10	674.9	8.5	-8.4	8.6	0.79	-0.68	-14.08	
700.0	1.77	287.09	699.9	8.7	-9.1	8.9	1.20	0.76	-32.04	
725.0	2.02	283.84	724.8	9.0	-9.9	9.1	1.09	1.00	-13.00	
750.0	2.04	282.32	749.8	9.2	-10.7	9.3	0.23	0.08	-6.08	
775.0	2.07	281.82	774.8	9.3	-11.6	9.5	0.14	0.12	-2.00	
800.0	2.00	284.55	799.8	9.5	-12.5	9.7	0.48	-0.28	10.92	
825.0	2.03	285.33	824.8	9.8	-13.3	10.0	0.16	0.12	3.12	
850.0	2.00	283.33	849.8	10.0	-14.2	10.2	0.31	-0.12	-8.00	
875.0	1.95	280.91	874.8	10.2	-15.0	10.4	0.39	-0.20	-9.68	
900.0	1.97	278.53	899.7	10.3	-15.8	10.6	0.34	0.08	-9.52	
925.0	1.97	280.15	924.7	10.4	-16.7	10.7	0.22	0.00	6.48	
950.0	1.90	280.22	949.7	10.6	-17.5	10.9	0.28	-0.28	0.28	
975.0	1.95	281.04	974.7	10.8	-18.4	11.1	0.23	0.20	3.28	
1,000.0	1.97	280.31	999.7	10.9	-19.2	11.2	0.13	0.08	-2.92	
1,025.0	1.98	280.41	1,024.7	11.1	-20.0	11.4	0.04	0.04	0.40	
1,050.0	2.00	277.61	1,049.7	11.2	-20.9	11.5	0.40	0.08	-11.20	
1,075.0	1.94	279.81	1,074.6	11.3	-21.7	11.7	0.39	-0.24	8.80	
1,100.0	2.01	278.34	1,099.6	11.5	-22.6	11.8	0.35	0.28	-5.88	
1,125.0	2.00	279.28	1,124.6	11.6	-23.5	12.0	0.14	-0.04	3.76	
1,150.0	1.97	277.12	1,149.6	11.7	-24.3	12.1	0.32	-0.12	-8.64	
1,175.0	1.97	276.25	1,174.6	11.8	-25.2	12.2	0.12	0.00	-3.48	
1,200.0	1.92	278.19	1,199.6	11.9	-26.0	12.4	0.33	-0.20	7.76	
1,225.0	1.94	282.08	1,224.6	12.1	-26.8	12.5	0.53	0.08	15.56	
1,250.0	1.85	283.44	1,249.5	12.3	-27.6	12.7	0.40	-0.36	5.44	
1,275.0	1.85	282.19	1,274.5	12.4	-28.4	12.9	0.16	0.00	-5.00	
1,300.0	1.74	286.14	1,299.5	12.6	-29.2	13.1	0.66	-0.44	15.80	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)	
1,325.0	1.74	286.05	1,324.5	12.8	-29.9	13.3	0.01	0.00	-0.36	
1,350.0	1.68	289.75	1,349.5	13.1	-30.6	13.6	0.50	-0.24	14.80	
1,375.0	1.58	289.99	1,374.5	13.3	-31.3	13.8	0.40	-0.40	0.96	
1,400.0	1.54	289.12	1,399.5	13.5	-31.9	14.1	0.19	-0.16	-3.48	
1,425.0	1.60	295.49	1,424.5	13.8	-32.6	14.3	0.74	0.24	25.48	
1,450.0	1.78	300.28	1,449.4	14.1	-33.2	14.7	0.91	0.72	19.16	
1,475.0	1.83	310.38	1,474.4	14.6	-33.9	15.2	1.29	0.20	40.40	
1,500.0	2.11	313.07	1,499.4	15.2	-34.5	15.7	1.18	1.12	10.76	
1,525.0	2.12	310.29	1,524.4	15.8	-35.2	16.4	0.41	0.04	-11.12	
1,550.0	2.27	310.88	1,549.4	16.4	-35.9	17.0	0.61	0.60	2.36	
1,575.0	2.54	315.65	1,574.4	17.1	-36.7	17.7	1.34	1.08	19.08	
1,600.0	3.09	316.79	1,599.3	18.0	-37.5	18.6	2.21	2.20	4.56	
1,625.0	3.16	318.05	1,624.3	19.0	-38.5	19.7	0.39	0.28	5.04	
1,650.0	3.33	320.03	1,649.3	20.1	-39.4	20.7	0.81	0.68	7.92	
1,675.0	3.31	321.06	1,674.2	21.2	-40.3	21.9	0.25	-0.08	4.12	
1,700.0	3.35	321.89	1,699.2	22.3	-41.2	23.0	0.25	0.16	3.32	
1,725.0	3.33	322.64	1,724.1	23.5	-42.1	24.2	0.19	-0.08	3.00	
1,750.0	3.44	324.71	1,749.1	24.7	-43.0	25.4	0.66	0.44	8.28	
1,775.0	3.50	325.08	1,774.0	25.9	-43.8	26.6	0.26	0.24	1.48	
1,800.0	3.50	325.16	1,799.0	27.2	-44.7	27.9	0.02	0.00	0.32	
1,825.0	3.49	323.52	1,823.9	28.4	-45.6	29.2	0.40	-0.04	-6.56	
1,850.0	3.48	324.34	1,848.9	29.6	-46.5	30.4	0.20	-0.04	3.28	
1,875.0	3.49	322.90	1,873.9	30.9	-47.4	31.6	0.35	0.04	-5.76	
1,900.0	3.30	321.93	1,898.8	32.0	-48.3	32.8	0.79	-0.76	-3.88	
1,925.0	3.07	319.94	1,923.8	33.1	-49.2	33.9	1.02	-0.92	-7.96	
1,950.0	2.97	318.40	1,948.7	34.1	-50.0	34.9	0.52	-0.40	-6.16	
1,975.0	2.80	318.23	1,973.7	35.1	-50.9	35.9	0.68	-0.68	-0.68	
2,000.0	2.81	318.69	1,998.7	36.0	-51.7	36.8	0.10	0.04	1.84	
2,025.0	2.96	318.98	2,023.6	36.9	-52.5	37.8	0.60	0.60	1.16	
2,050.0	2.78	322.70	2,048.6	37.9	-53.3	38.8	1.04	-0.72	14.88	
2,075.0	2.68	327.25	2,073.6	38.9	-54.0	39.7	0.95	-0.40	18.20	
2,100.0	2.48	340.55	2,098.6	39.9	-54.5	40.8	2.52	-0.80	53.20	
2,125.0	2.45	352.69	2,123.5	40.9	-54.7	41.8	2.09	-0.12	48.56	
2,150.0	2.55	4.97	2,148.5	42.0	-54.8	42.9	2.18	0.40	49.12	
2,175.0	2.62	15.12	2,173.5	43.1	-54.6	44.0	1.85	0.28	40.60	
2,200.0	2.69	23.53	2,198.5	44.2	-54.2	45.1	1.58	0.28	33.64	
2,225.0	2.77	27.16	2,223.4	45.3	-53.7	46.1	0.76	0.32	14.52	
2,250.0	2.83	30.86	2,248.4	46.3	-53.1	47.2	0.76	0.24	14.80	
2,275.0	2.80	29.58	2,273.4	47.4	-52.5	48.2	0.28	-0.12	-5.12	
2,300.0	2.74	35.50	2,298.3	48.4	-51.8	49.2	1.17	-0.24	23.68	
2,325.0	2.93	42.63	2,323.3	49.4	-51.0	50.2	1.60	0.76	28.52	
2,350.0	2.91	47.10	2,348.3	50.3	-50.1	51.1	0.91	-0.08	17.88	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)	
2,375.0	3.21	56.55	2,373.2	51.1	-49.1	51.9	2.34	1.20	37.80	
2,400.0	3.58	63.06	2,398.2	51.8	-47.8	52.6	2.14	1.48	26.04	
2,425.0	4.09	70.26	2,423.1	52.5	-46.3	53.2	2.80	2.04	28.80	
2,450.0	4.77	75.32	2,448.1	53.0	-44.4	53.8	3.13	2.72	20.24	
2,475.0	5.56	78.39	2,473.0	53.5	-42.2	54.2	3.35	3.16	12.28	
2,500.0	5.97	81.40	2,497.8	54.0	-39.8	54.6	2.04	1.64	12.04	
2,525.0	6.37	82.42	2,522.7	54.4	-37.1	55.0	1.66	1.60	4.08	
2,550.0	6.62	82.38	2,547.5	54.7	-34.3	55.3	1.00	1.00	-0.16	
2,575.0	6.81	82.05	2,572.4	55.1	-31.4	55.6	0.78	0.76	-1.32	
2,600.0	6.78	81.18	2,597.2	55.6	-28.5	56.0	0.43	-0.12	-3.48	
2,625.0	6.78	81.80	2,622.0	56.0	-25.5	56.4	0.29	0.00	2.48	
2,650.0	6.70	80.57	2,646.8	56.4	-22.7	56.8	0.66	-0.32	-4.92	
2,675.0	6.53	79.27	2,671.7	57.0	-19.8	57.3	0.91	-0.68	-5.20	
2,700.0	6.41	77.07	2,696.5	57.5	-17.1	57.8	1.10	-0.48	-8.80	
2,725.0	6.15	76.12	2,721.4	58.2	-14.4	58.4	1.12	-1.04	-3.80	
2,750.0	5.94	75.04	2,746.2	58.8	-11.8	59.0	0.96	-0.84	-4.32	
2,775.0	5.55	71.63	2,771.1	59.5	-9.5	59.7	2.07	-1.56	-13.64	
2,800.0	5.16	65.67	2,796.0	60.4	-7.3	60.5	2.72	-1.56	-23.84	
2,825.0	4.56	61.39	2,820.9	61.3	-5.4	61.4	2.80	-2.40	-17.12	
2,850.0	4.11	59.80	2,845.8	62.2	-3.7	62.3	1.86	-1.80	-6.36	
2,875.0	3.82	62.91	2,870.8	63.1	-2.2	63.1	1.44	-1.16	12.44	
2,900.0	3.24	70.96	2,895.7	63.7	-0.8	63.7	3.05	-2.32	32.20	
2,925.0	2.63	84.33	2,920.7	64.0	0.4	64.0	3.65	-2.44	53.48	
2,950.0	2.41	101.70	2,945.7	63.9	1.5	63.9	3.17	-0.88	69.48	
2,975.0	2.07	103.43	2,970.6	63.7	2.5	63.7	1.39	-1.36	6.92	
3,000.0	2.20	104.09	2,995.6	63.5	3.4	63.4	0.53	0.52	2.64	
3,025.0	2.18	106.10	3,020.6	63.2	4.3	63.2	0.32	-0.08	8.04	
3,050.0	1.89	105.13	3,045.6	63.0	5.1	62.9	1.17	-1.16	-3.88	
3,075.0	1.36	112.46	3,070.6	62.8	5.8	62.7	2.27	-2.12	29.32	
3,100.0	0.68	111.61	3,095.6	62.6	6.2	62.5	2.72	-2.72	-3.40	
3,125.0	0.46	123.52	3,120.6	62.5	6.5	62.4	0.99	-0.88	47.64	
3,150.0	0.61	125.41	3,145.6	62.4	6.6	62.2	0.60	0.60	7.56	
3,175.0	0.55	122.91	3,170.6	62.2	6.9	62.1	0.26	-0.24	-10.00	
3,200.0	0.44	132.49	3,195.6	62.1	7.0	62.0	0.55	-0.44	38.32	
3,225.0	0.45	134.76	3,220.6	62.0	7.2	61.8	0.08	0.04	9.08	
3,250.0	0.45	132.10	3,245.6	61.8	7.3	61.7	0.08	0.00	-10.64	
3,275.0	0.51	127.95	3,270.6	61.7	7.5	61.6	0.28	0.24	-16.60	
3,300.0	0.54	130.31	3,295.6	61.5	7.6	61.4	0.15	0.12	9.44	
3,325.0	0.55	153.58	3,320.6	61.4	7.8	61.2	0.88	0.04	93.08	
3,350.0	0.64	150.60	3,345.6	61.1	7.9	61.0	0.38	0.36	-11.92	
3,375.0	1.52	189.32	3,370.6	60.7	7.9	60.5	4.39	3.52	154.88	
3,400.0	1.91	190.24	3,395.6	59.9	7.8	59.8	1.56	1.56	3.68	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,425.0	1.90	194.51	3,420.5	59.1	7.6	59.0	0.57	-0.04	17.08	
3,450.0	1.87	193.72	3,445.5	58.3	7.4	58.2	0.16	-0.12	-3.16	
3,475.0	1.92	194.45	3,470.5	57.5	7.2	57.4	0.22	0.20	2.92	
3,500.0	1.97	195.75	3,495.5	56.7	7.0	56.6	0.27	0.20	5.20	
3,525.0	1.95	194.99	3,520.5	55.9	6.8	55.8	0.13	-0.08	-3.04	
3,550.0	2.01	194.77	3,545.5	55.1	6.6	54.9	0.24	0.24	-0.88	
3,575.0	2.05	194.48	3,570.5	54.2	6.3	54.1	0.17	0.16	-1.16	
3,600.0	2.14	192.99	3,595.4	53.3	6.1	53.2	0.42	0.36	-5.96	
3,625.0	1.98	190.11	3,620.4	52.4	5.9	52.3	0.76	-0.64	-11.52	
3,650.0	2.01	193.05	3,645.4	51.6	5.8	51.5	0.43	0.12	11.76	
3,675.0	1.95	192.32	3,670.4	50.7	5.6	50.6	0.26	-0.24	-2.92	
3,700.0	2.20	193.62	3,695.4	49.9	5.4	49.8	1.02	1.00	5.20	
3,725.0	2.03	191.40	3,720.4	49.0	5.2	48.9	0.75	-0.68	-8.88	
3,750.0	1.99	194.46	3,745.3	48.1	5.0	48.0	0.46	-0.16	12.24	
3,775.0	1.98	194.05	3,770.3	47.3	4.8	47.2	0.07	-0.04	-1.64	
3,800.0	2.04	193.42	3,795.3	46.4	4.5	46.3	0.26	0.24	-2.52	
3,825.0	1.97	193.50	3,820.3	45.6	4.3	45.5	0.28	-0.28	0.32	
3,850.0	1.97	194.93	3,845.3	44.7	4.1	44.7	0.20	0.00	5.72	
3,875.0	2.03	194.66	3,870.3	43.9	3.9	43.8	0.24	0.24	-1.08	
3,900.0	2.02	196.09	3,895.3	43.0	3.7	43.0	0.21	-0.04	5.72	
3,925.0	1.97	191.45	3,920.2	42.2	3.5	42.1	0.68	-0.20	-18.56	
3,950.0	2.01	195.90	3,945.2	41.3	3.3	41.3	0.64	0.16	17.80	
3,975.0	2.04	196.17	3,970.2	40.5	3.0	40.4	0.13	0.12	1.08	
4,000.0	2.02	191.81	3,995.2	39.6	2.8	39.6	0.62	-0.08	-17.44	
4,025.0	2.06	193.67	4,020.2	38.8	2.6	38.7	0.31	0.16	7.44	
4,050.0	2.13	194.17	4,045.2	37.9	2.4	37.8	0.29	0.28	2.00	
4,075.0	2.09	194.31	4,070.1	37.0	2.2	36.9	0.16	-0.16	0.56	
4,100.0	2.06	198.11	4,095.1	36.1	1.9	36.1	0.56	-0.12	15.20	
4,125.0	2.13	195.80	4,120.1	35.2	1.6	35.2	0.44	0.28	-9.24	
4,150.0	2.11	195.35	4,145.1	34.4	1.4	34.3	0.10	-0.08	-1.80	
4,175.0	2.09	194.21	4,170.1	33.5	1.2	33.4	0.19	-0.08	-4.56	
4,200.0	2.10	193.99	4,195.1	32.6	0.9	32.6	0.05	0.04	-0.88	
4,225.0	2.09	193.02	4,220.0	31.7	0.7	31.7	0.15	-0.04	-3.88	
4,250.0	2.16	188.79	4,245.0	30.8	0.5	30.8	0.69	0.28	-16.92	
4,275.0	2.11	191.85	4,270.0	29.9	0.4	29.9	0.50	-0.20	12.24	
4,300.0	2.15	191.81	4,295.0	29.0	0.2	29.0	0.16	0.16	-0.16	
4,325.0	2.36	188.91	4,320.0	28.0	0.0	28.0	0.96	0.84	-11.60	
4,350.0	2.15	195.77	4,345.0	27.0	-0.2	27.0	1.37	-0.84	27.44	
4,375.0	2.05	194.77	4,369.9	26.1	-0.4	26.2	0.43	-0.40	-4.00	
4,400.0	2.08	194.53	4,394.9	25.3	-0.7	25.3	0.12	0.12	-0.96	
4,425.0	2.12	197.33	4,419.9	24.4	-0.9	24.4	0.44	0.16	11.20	
4,450.0	2.09	193.97	4,444.9	23.5	-1.2	23.5	0.51	-0.12	-13.44	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,475.0	2.10	193.36	4,469.9	22.6	-1.4	22.6	0.10	0.04	-2.44	
4,500.0	2.15	200.54	4,494.9	21.7	-1.6	21.8	1.08	0.20	28.72	
4,525.0	2.10	199.99	4,519.8	20.9	-2.0	20.9	0.22	-0.20	-2.20	
4,550.0	2.17	199.99	4,544.8	20.0	-2.3	20.0	0.28	0.28	0.00	
4,575.0	2.14	200.50	4,569.8	19.1	-2.6	19.2	0.14	-0.12	2.04	
4,600.0	2.15	197.35	4,594.8	18.2	-2.9	18.3	0.47	0.04	-12.60	
4,625.0	2.15	196.55	4,619.8	17.3	-3.2	17.4	0.12	0.00	-3.20	
4,650.0	2.21	195.55	4,644.7	16.4	-3.5	16.5	0.28	0.24	-4.00	
4,675.0	2.12	195.77	4,669.7	15.5	-3.7	15.6	0.36	-0.36	0.88	
4,700.0	2.17	197.38	4,694.7	14.6	-4.0	14.7	0.31	0.20	6.44	
4,725.0	2.16	198.61	4,719.7	13.7	-4.3	13.8	0.19	-0.04	4.92	
4,750.0	2.24	201.69	4,744.7	12.8	-4.6	12.9	0.57	0.32	12.32	
4,775.0	2.16	199.85	4,769.7	11.9	-4.9	12.0	0.43	-0.32	-7.36	
4,800.0	2.15	197.74	4,794.6	11.0	-5.2	11.1	0.32	-0.04	-8.44	
4,825.0	2.21	200.26	4,819.6	10.1	-5.5	10.2	0.45	0.24	10.08	
4,850.0	2.20	197.23	4,844.6	9.2	-5.9	9.3	0.47	-0.04	-12.12	
4,875.0	2.23	198.77	4,869.6	8.3	-6.2	8.4	0.27	0.12	6.16	
4,900.0	2.14	199.44	4,894.6	7.4	-6.5	7.5	0.37	-0.36	2.68	
4,925.0	2.29	200.23	4,919.5	6.5	-6.8	6.6	0.61	0.60	3.16	
4,950.0	2.27	201.74	4,944.5	5.6	-7.2	5.7	0.25	-0.08	6.04	
4,975.0	2.28	201.03	4,969.5	4.6	-7.5	4.8	0.12	0.04	-2.84	
5,000.0	2.25	201.13	4,994.5	3.7	-7.9	3.8	0.12	-0.12	0.40	
5,025.0	2.26	195.57	5,019.5	2.8	-8.2	2.9	0.88	0.04	-22.24	
5,050.0	2.26	198.90	5,044.4	1.8	-8.5	2.0	0.53	0.00	13.32	
5,075.0	2.23	196.27	5,069.4	0.9	-8.8	1.1	0.43	-0.12	-10.52	
5,100.0	2.20	198.13	5,094.4	0.0	-9.1	0.1	0.31	-0.12	7.44	
5,125.0	2.29	200.70	5,119.4	-0.9	-9.4	-0.8	0.54	0.36	10.28	
5,150.0	2.28	196.99	5,144.4	-1.9	-9.7	-1.7	0.59	-0.04	-14.84	
5,175.0	2.23	202.54	5,169.4	-2.8	-10.0	-2.6	0.90	-0.20	22.20	
5,200.0	2.17	202.32	5,194.3	-3.7	-10.4	-3.5	0.24	-0.24	-0.88	
5,225.0	2.20	200.19	5,219.3	-4.6	-10.7	-4.4	0.35	0.12	-8.52	
5,250.0	2.29	197.41	5,244.3	-5.5	-11.1	-5.3	0.57	0.36	-11.12	
5,275.0	2.20	196.06	5,269.3	-6.4	-11.3	-6.3	0.42	-0.36	-5.40	
5,300.0	2.21	202.76	5,294.3	-7.4	-11.7	-7.2	1.03	0.04	26.80	
5,325.0	2.14	198.77	5,319.2	-8.2	-12.0	-8.0	0.67	-0.28	-15.96	
5,350.0	2.12	196.02	5,344.2	-9.1	-12.3	-8.9	0.42	-0.08	-11.00	
5,375.0	2.06	200.75	5,369.2	-10.0	-12.6	-9.8	0.73	-0.24	18.92	
5,400.0	2.07	200.54	5,394.2	-10.8	-12.9	-10.6	0.05	0.04	-0.84	
5,425.0	1.94	199.77	5,419.2	-11.7	-13.2	-11.4	0.53	-0.52	-3.08	
5,450.0	2.02	199.82	5,444.2	-12.5	-13.5	-12.2	0.32	0.32	0.20	
5,475.0	2.06	199.06	5,469.1	-13.3	-13.8	-13.1	0.19	0.16	-3.04	
5,500.0	2.05	196.57	5,494.1	-14.2	-14.0	-13.9	0.36	-0.04	-9.96	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,525.0	2.04	197.76	5,519.1	-15.0	-14.3	-14.8	0.17	-0.04	4.76	
5,550.0	1.91	201.28	5,544.1	-15.8	-14.6	-15.6	0.71	-0.52	14.08	
5,575.0	2.05	196.41	5,569.1	-16.6	-14.9	-16.4	0.88	0.56	-19.48	
5,600.0	2.01	191.78	5,594.1	-17.5	-15.1	-17.2	0.68	-0.16	-18.52	
5,625.0	1.95	196.97	5,619.1	-18.3	-15.3	-18.1	0.76	-0.24	20.76	
5,650.0	2.05	193.00	5,644.0	-19.2	-15.5	-18.9	0.68	0.40	-15.88	
5,675.0	1.98	191.34	5,669.0	-20.0	-15.7	-19.8	0.36	-0.28	-6.64	
5,700.0	1.98	193.97	5,694.0	-20.9	-15.9	-20.6	0.36	0.00	10.52	
5,725.0	1.98	193.34	5,719.0	-21.7	-16.1	-21.5	0.09	0.00	-2.52	
5,750.0	1.89	191.18	5,744.0	-22.5	-16.3	-22.3	0.46	-0.36	-8.64	
5,775.0	1.96	193.69	5,769.0	-23.4	-16.5	-23.1	0.44	0.28	10.04	
5,800.0	1.99	192.98	5,793.9	-24.2	-16.7	-23.9	0.15	0.12	-2.84	
5,825.0	1.96	196.10	5,818.9	-25.0	-16.9	-24.8	0.45	-0.12	12.48	
5,850.0	2.05	193.42	5,843.9	-25.9	-17.1	-25.6	0.52	0.36	-10.72	
5,875.0	2.04	192.07	5,868.9	-26.8	-17.3	-26.5	0.20	-0.04	-5.40	
5,900.0	2.14	191.42	5,893.9	-27.6	-17.5	-27.4	0.41	0.40	-2.60	
5,925.0	2.07	190.79	5,918.9	-28.5	-17.7	-28.3	0.29	-0.28	-2.52	
5,950.0	2.06	192.21	5,943.9	-29.4	-17.8	-29.1	0.21	-0.04	5.68	
5,975.0	2.09	187.31	5,968.8	-30.3	-18.0	-30.0	0.72	0.12	-19.60	
6,000.0	1.97	198.64	5,993.8	-31.2	-18.2	-30.9	1.67	-0.48	45.32	
6,025.0	2.07	192.24	6,018.8	-32.0	-18.4	-31.7	0.99	0.40	-25.60	
6,050.0	2.20	192.07	6,043.8	-32.9	-18.6	-32.6	0.52	0.52	-0.68	
6,075.0	2.09	192.30	6,068.8	-33.9	-18.8	-33.5	0.44	-0.44	0.92	
6,100.0	2.08	191.01	6,093.8	-34.7	-19.0	-34.4	0.19	-0.04	-5.16	
6,125.0	2.17	192.24	6,118.7	-35.6	-19.2	-35.3	0.40	0.36	4.92	
6,150.0	2.12	186.44	6,143.7	-36.6	-19.3	-36.2	0.89	-0.20	-23.20	
6,175.0	2.14	190.53	6,168.7	-37.5	-19.5	-37.2	0.61	0.08	16.36	
6,200.0	2.10	191.91	6,193.7	-38.4	-19.7	-38.1	0.26	-0.16	5.52	
6,225.0	2.11	193.90	6,218.7	-39.3	-19.9	-39.0	0.30	0.04	7.96	
6,250.0	2.17	192.42	6,243.7	-40.2	-20.1	-39.9	0.33	0.24	-5.92	
6,275.0	2.16	193.97	6,268.6	-41.1	-20.3	-40.8	0.24	-0.04	6.20	
6,300.0	2.20	190.57	6,293.6	-42.0	-20.5	-41.7	0.54	0.16	-13.60	
6,325.0	2.12	193.80	6,318.6	-43.0	-20.7	-42.6	0.58	-0.32	12.92	
6,350.0	2.20	193.57	6,343.6	-43.9	-20.9	-43.5	0.32	0.32	-0.92	
6,375.0	2.16	190.67	6,368.6	-44.8	-21.1	-44.5	0.47	-0.16	-11.60	
6,400.0	2.18	190.89	6,393.5	-45.7	-21.3	-45.4	0.09	0.08	0.88	
6,425.0	2.18	193.74	6,418.5	-46.7	-21.5	-46.3	0.43	0.00	11.40	
6,450.0	2.19	191.81	6,443.5	-47.6	-21.7	-47.2	0.30	0.04	-7.72	
6,475.0	2.17	197.92	6,468.5	-48.5	-21.9	-48.2	0.93	-0.08	24.44	
6,500.0	2.23	190.90	6,493.5	-49.4	-22.2	-49.1	1.10	0.24	-28.08	
6,525.0	2.27	200.30	6,518.5	-50.4	-22.4	-50.0	1.48	0.16	37.60	
6,550.0	2.34	199.08	6,543.4	-51.3	-22.8	-51.0	0.34	0.28	-4.88	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,575.0	2.37	202.87	6,568.4	-52.3	-23.2	-51.9	0.63	0.12	15.16	
6,600.0	2.44	205.87	6,593.4	-53.3	-23.6	-52.9	0.58	0.28	12.00	
6,625.0	2.48	206.17	6,618.4	-54.2	-24.1	-53.8	0.17	0.16	1.20	
6,650.0	2.58	207.09	6,643.3	-55.2	-24.6	-54.8	0.43	0.40	3.68	
6,675.0	2.49	212.93	6,668.3	-56.2	-25.1	-55.7	1.09	-0.36	23.36	
6,700.0	2.49	213.37	6,693.3	-57.1	-25.7	-56.6	0.08	0.00	1.76	
6,725.0	2.48	212.89	6,718.3	-58.0	-26.3	-57.5	0.09	-0.04	-1.92	
6,750.0	2.57	216.94	6,743.2	-58.9	-26.9	-58.4	0.80	0.36	16.20	
6,775.0	2.53	217.29	6,768.2	-59.8	-27.6	-59.3	0.17	-0.16	1.40	
6,800.0	2.34	206.73	6,793.2	-60.7	-28.2	-60.2	1.95	-0.76	-42.24	
6,825.0	2.50	219.57	6,818.2	-61.5	-28.7	-61.1	2.26	0.64	51.36	
6,850.0	2.55	220.28	6,843.2	-62.4	-29.4	-61.9	0.24	0.20	2.84	
6,875.0	2.60	223.81	6,868.1	-63.2	-30.2	-62.7	0.67	0.20	14.12	
6,900.0	2.90	228.84	6,893.1	-64.0	-31.1	-63.5	1.54	1.20	20.12	
6,925.0	2.91	226.53	6,918.1	-64.9	-32.0	-64.4	0.47	0.04	-9.24	
6,950.0	2.97	228.88	6,943.0	-65.8	-32.9	-65.2	0.54	0.24	9.40	
6,975.0	3.02	229.52	6,968.0	-66.6	-33.9	-66.0	0.24	0.20	2.56	
7,000.0	3.09	229.41	6,993.0	-67.5	-34.9	-66.9	0.28	0.28	-0.44	
7,025.0	3.09	229.05	7,017.9	-68.4	-36.0	-67.8	0.08	0.00	-1.44	
7,050.0	3.20	225.57	7,042.9	-69.3	-37.0	-68.7	0.88	0.44	-13.92	
7,075.0	3.22	226.60	7,067.8	-70.3	-38.0	-69.6	0.24	0.08	4.12	
7,100.0	3.24	225.08	7,092.8	-71.2	-39.0	-70.6	0.35	0.08	-6.08	
7,125.0	3.28	223.40	7,117.8	-72.3	-40.0	-71.6	0.41	0.16	-6.72	
7,150.0	3.33	225.05	7,142.7	-73.3	-41.0	-72.6	0.43	0.20	6.60	
7,175.0	3.36	223.60	7,167.7	-74.3	-42.0	-73.6	0.36	0.12	-5.80	
7,200.0	3.34	224.31	7,192.6	-75.4	-43.0	-74.7	0.18	-0.08	2.84	
7,225.0	3.30	222.48	7,217.6	-76.4	-44.0	-75.7	0.45	-0.16	-7.32	
7,250.0	3.09	219.58	7,242.6	-77.5	-44.9	-76.7	1.06	-0.84	-11.60	
7,275.0	3.13	220.26	7,267.5	-78.5	-45.8	-77.8	0.22	0.16	2.72	
7,300.0	3.19	218.97	7,292.5	-79.6	-46.7	-78.8	0.37	0.24	-5.16	
7,325.0	3.32	219.74	7,317.4	-80.7	-47.6	-79.9	0.55	0.52	3.08	
7,350.0	3.17	216.09	7,342.4	-81.8	-48.5	-81.0	1.02	-0.60	-14.60	
7,375.0	3.32	214.13	7,367.4	-83.0	-49.3	-82.1	0.75	0.60	-7.84	
7,400.0	3.33	213.59	7,392.3	-84.2	-50.1	-83.3	0.13	0.04	-2.16	
7,425.0	3.38	209.75	7,417.3	-85.4	-50.8	-84.6	0.92	0.20	-15.36	
7,450.0	3.47	206.94	7,442.2	-86.7	-51.5	-85.9	0.76	0.36	-11.24	
7,475.0	3.62	201.80	7,467.2	-88.1	-52.2	-87.3	1.41	0.60	-20.56	
7,500.0	3.76	197.04	7,492.1	-89.6	-52.7	-88.8	1.35	0.56	-19.04	
7,525.0	3.70	195.50	7,517.1	-91.2	-53.2	-90.3	0.47	-0.24	-6.16	
7,550.0	3.69	193.10	7,542.0	-92.8	-53.6	-91.9	0.62	-0.04	-9.60	
7,575.0	3.70	191.84	7,567.0	-94.3	-53.9	-93.4	0.33	0.04	-5.04	
7,600.0	3.65	193.52	7,591.9	-95.9	-54.3	-95.0	0.47	-0.20	6.72	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)	
7,625.0	3.57	191.70	7,616.9	-97.4	-54.6	-96.5	0.56	-0.32	-7.28	
7,650.0	3.49	190.57	7,641.8	-98.9	-54.9	-98.0	0.42	-0.32	-4.52	
7,675.0	3.40	189.61	7,666.8	-100.4	-55.2	-99.5	0.43	-0.36	-3.84	
7,700.0	3.35	186.45	7,691.7	-101.9	-55.4	-101.0	0.77	-0.20	-12.64	
7,725.0	3.26	188.41	7,716.7	-103.3	-55.6	-102.4	0.58	-0.36	7.84	
7,750.0	3.28	186.42	7,741.7	-104.7	-55.8	-103.8	0.46	0.08	-7.96	
7,775.0	3.24	187.94	7,766.6	-106.1	-55.9	-105.2	0.38	-0.16	6.08	
7,800.0	3.32	187.99	7,791.6	-107.6	-56.1	-106.6	0.32	0.32	0.20	
7,825.0	3.34	187.68	7,816.5	-109.0	-56.3	-108.1	0.11	0.08	-1.24	
7,850.0	3.29	190.04	7,841.5	-110.4	-56.5	-109.5	0.58	-0.20	9.44	
7,875.0	3.42	185.87	7,866.5	-111.9	-56.7	-110.9	1.11	0.52	-16.68	
7,900.0	3.39	185.41	7,891.4	-113.3	-56.9	-112.4	0.16	-0.12	-1.84	
7,925.0	3.45	184.47	7,916.4	-114.8	-57.0	-113.9	0.33	0.24	-3.76	
7,950.0	3.69	183.82	7,941.3	-116.4	-57.1	-115.4	0.97	0.96	-2.60	
7,975.0	3.39	188.17	7,966.3	-117.9	-57.3	-117.0	1.61	-1.20	17.40	
8,000.0	3.38	184.66	7,991.2	-119.4	-57.5	-118.4	0.83	-0.04	-14.04	
8,025.0	3.18	184.06	8,016.2	-120.8	-57.6	-119.8	0.81	-0.80	-2.40	
8,050.0	3.09	185.94	8,041.1	-122.2	-57.7	-121.2	0.55	-0.36	7.52	
8,075.0	3.04	185.84	8,066.1	-123.5	-57.8	-122.5	0.20	-0.20	-0.40	
8,100.0	3.24	186.72	8,091.1	-124.9	-58.0	-123.9	0.82	0.80	3.52	
8,125.0	3.16	183.36	8,116.0	-126.3	-58.1	-125.3	0.82	-0.32	-13.44	
8,150.0	3.18	184.80	8,141.0	-127.6	-58.2	-126.7	0.33	0.08	5.76	
8,175.0	3.31	187.10	8,166.0	-129.0	-58.3	-128.1	0.74	0.52	9.20	
8,200.0	3.74	189.44	8,190.9	-130.6	-58.6	-129.6	1.81	1.72	9.36	
8,225.0	3.83	190.64	8,215.9	-132.2	-58.9	-131.2	0.48	0.36	4.80	
8,250.0	3.99	192.12	8,240.8	-133.9	-59.2	-132.9	0.76	0.64	5.92	
8,275.0	4.25	190.80	8,265.7	-135.6	-59.5	-134.6	1.11	1.04	-5.28	
8,300.0	4.40	189.97	8,290.7	-137.5	-59.9	-136.5	0.65	0.60	-3.32	
8,325.0	4.39	190.87	8,315.6	-139.4	-60.2	-138.3	0.28	-0.04	3.60	
8,350.0	4.44	190.66	8,340.5	-141.2	-60.6	-140.2	0.21	0.20	-0.84	
8,375.0	4.41	190.53	8,365.4	-143.1	-60.9	-142.1	0.13	-0.12	-0.52	
8,400.0	4.29	191.21	8,390.4	-145.0	-61.3	-144.0	0.52	-0.48	2.72	
8,425.0	4.23	190.84	8,415.3	-146.8	-61.7	-145.8	0.26	-0.24	-1.48	
8,450.0	4.14	188.10	8,440.2	-148.6	-62.0	-147.6	0.88	-0.36	-10.96	
8,475.0	4.22	190.02	8,465.2	-150.4	-62.2	-149.4	0.64	0.32	7.68	
8,500.0	4.24	190.31	8,490.1	-152.2	-62.6	-151.2	0.12	0.08	1.16	
8,525.0	4.26	189.53	8,515.0	-154.1	-62.9	-153.0	0.24	0.08	-3.12	
8,550.0	4.26	188.97	8,540.0	-155.9	-63.2	-154.8	0.17	0.00	-2.24	
8,575.0	4.28	189.48	8,564.9	-157.7	-63.5	-156.7	0.17	0.08	2.04	
8,600.0	4.31	190.55	8,589.8	-159.6	-63.8	-158.5	0.34	0.12	4.28	
8,625.0	4.42	189.80	8,614.7	-161.5	-64.1	-160.4	0.50	0.44	-3.00	
8,650.0	4.60	191.86	8,639.7	-163.4	-64.5	-162.3	0.97	0.72	8.24	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)	
8,675.0	4.45	190.46	8,664.6	-165.3	-64.9	-164.2	0.75	-0.60	-5.60	
8,700.0	4.38	192.25	8,689.5	-167.2	-65.3	-166.1	0.62	-0.28	7.16	
8,725.0	4.27	194.64	8,714.4	-169.0	-65.7	-167.9	0.84	-0.44	9.56	
8,750.0	4.25	194.39	8,739.4	-170.8	-66.2	-169.7	0.11	-0.08	-1.00	
8,775.0	4.26	196.00	8,764.3	-172.6	-66.7	-171.5	0.48	0.04	6.44	
8,800.0	4.25	196.15	8,789.2	-174.4	-67.2	-173.3	0.06	-0.04	0.60	
8,825.0	4.08	196.99	8,814.2	-176.1	-67.7	-175.0	0.72	-0.68	3.36	
8,850.0	4.10	198.21	8,839.1	-177.8	-68.2	-176.7	0.36	0.08	4.88	
8,875.0	4.07	198.56	8,864.0	-179.5	-68.8	-178.4	0.16	-0.12	1.40	
8,900.0	4.08	199.69	8,889.0	-181.2	-69.4	-180.1	0.32	0.04	4.52	
8,925.0	3.97	199.95	8,913.9	-182.9	-70.0	-181.7	0.45	-0.44	1.04	
8,950.0	3.93	202.67	8,938.9	-184.5	-70.6	-183.3	0.77	-0.16	10.88	
8,975.0	3.86	202.19	8,963.8	-186.0	-71.3	-184.8	0.31	-0.28	-1.92	
9,000.0	3.89	202.74	8,988.7	-187.6	-71.9	-186.4	0.19	0.12	2.20	
9,025.0	3.95	202.59	9,013.7	-189.2	-72.6	-188.0	0.24	0.24	-0.60	
9,050.0	4.00	203.17	9,038.6	-190.8	-73.2	-189.5	0.26	0.20	2.32	
9,075.0	3.97	203.87	9,063.6	-192.4	-73.9	-191.1	0.23	-0.12	2.80	
9,100.0	3.99	204.33	9,088.5	-194.0	-74.6	-192.7	0.15	0.08	1.84	
9,125.0	3.96	204.36	9,113.4	-195.5	-75.3	-194.3	0.12	-0.12	0.12	
9,150.0	3.87	204.20	9,138.4	-197.1	-76.0	-195.8	0.36	-0.36	-0.64	
9,175.0	3.77	205.84	9,163.3	-198.6	-76.8	-197.3	0.59	-0.40	6.56	
9,200.0	3.77	206.73	9,188.3	-200.1	-77.5	-198.8	0.23	0.00	3.56	
9,225.0	3.68	206.81	9,213.2	-201.5	-78.2	-200.2	0.36	-0.36	0.32	
9,250.0	3.67	207.06	9,238.2	-202.9	-78.9	-201.6	0.08	-0.04	1.00	
9,275.0	3.57	207.68	9,263.1	-204.3	-79.7	-203.0	0.43	-0.40	2.48	
9,300.0	3.61	208.21	9,288.1	-205.7	-80.4	-204.4	0.21	0.16	2.12	
9,325.0	3.63	207.58	9,313.0	-207.1	-81.1	-205.8	0.18	0.08	-2.52	
9,350.0	3.65	209.19	9,338.0	-208.5	-81.9	-207.2	0.42	0.08	6.44	
9,375.0	3.64	213.19	9,362.9	-209.9	-82.7	-208.5	1.02	-0.04	16.00	
9,400.0	3.63	211.04	9,387.9	-211.2	-83.6	-209.8	0.55	-0.04	-8.60	
9,425.0	3.55	209.67	9,412.8	-212.6	-84.3	-211.2	0.47	-0.32	-5.48	
9,450.0	3.42	207.72	9,437.8	-213.9	-85.1	-212.5	0.70	-0.52	-7.80	
9,475.0	3.52	208.58	9,462.7	-215.2	-85.8	-213.8	0.45	0.40	3.44	
9,500.0	3.44	208.93	9,487.7	-216.6	-86.5	-215.1	0.33	-0.32	1.40	
9,525.0	3.45	209.64	9,512.6	-217.9	-87.3	-216.4	0.18	0.04	2.84	
9,550.0	3.54	208.54	9,537.6	-219.2	-88.0	-217.7	0.45	0.36	-4.40	
9,575.0	3.64	208.10	9,562.5	-220.6	-88.7	-219.1	0.41	0.40	-1.76	
9,600.0	3.72	207.30	9,587.5	-222.0	-89.5	-220.5	0.38	0.32	-3.20	
9,625.0	3.74	206.78	9,612.4	-223.5	-90.2	-221.9	0.16	0.08	-2.08	
9,650.0	3.75	207.74	9,637.4	-224.9	-91.0	-223.4	0.25	0.04	3.84	
9,675.0	3.66	208.56	9,662.3	-226.3	-91.7	-224.8	0.42	-0.36	3.28	
	3.78	220.31	9,687.3	-227.7	-92.6	-226.1	3.08	0.48	47.00	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)
9,725.0	3.76	207.37	9,712.2	-229.0	-93.6	-227.5	3.40	-0.08	-51.76
9,750.0	3.45	206.48	9,737.2	-230.4	-94.3	-228.8	1.26	-1.24	-3.56
9,775.0	3.44	206.52	9,762.1	-231.8	-94.9	-230.2	0.04	-0.04	0.16
9,800.0	3.41	205.21	9,787.1	-233.1	-95.6	-231.5	0.34	-0.12	-5.24
9,825.0	3.51	203.29	9,812.0	-234.5	-96.2	-232.9	0.61	0.40	-7.68
9,850.0	3.53	201.15	9,837.0	-235.9	-96.8	-234.3	0.53	0.08	-8.56
9,875.0	3.55	197.75	9,861.9	-237.4	-97.3	-235.7	0.84	0.08	-13.60
9,900.0	3.70	194.03	9,886.9	-238.9	-97.7	-237.2	1.12	0.60	-14.88
9,925.0	3.89	191.96	9,911.8	-240.5	-98.1	-238.9	0.94	0.76	-8.28
9,950.0	3.50	186.40	9,936.8	-242.1	-98.4	-240.4	2.12	-1.56	-22.24
9,975.0	4.66	195.95	9,961.7	-243.8	-98.7	-242.2	5.36	4.64	38.20
9,995.0	3.95	186.61	9,981.7	-245.3	-99.0	-243.6	4.98	-3.55	-46.70
TIE ON POINT									
10,182.0	3.29	193.58	10,168.3	-256.9	-101.0	-255.2	0.42	-0.35	3.73
10,245.0	1.70	203.04	10,231.2	-259.5	-101.8	-257.8	2.60	-2.52	15.02
10,276.0	1.83	30.12	10,262.2	-259.5	-101.8	-257.8	11.37	0.42	-557.81
10,308.0	6.30	13.30	10,294.1	-257.4	-101.1	-255.7	14.31	13.97	-52.56
10,338.0	9.83	358.00	10,323.8	-253.2	-100.8	-251.5	13.67	11.77	-51.00
10,370.0	12.28	355.23	10,355.3	-247.1	-101.2	-245.4	7.83	7.66	-8.66
10,401.0	16.80	358.17	10,385.3	-239.3	-101.6	-237.6	14.77	14.58	9.48
10,432.0	18.48	359.11	10,414.8	-229.9	-101.8	-228.2	5.50	5.42	3.03
10,464.0	21.14	358.39	10,444.9	-219.1	-102.1	-217.4	8.35	8.31	-2.25
10,495.0	23.87	357.84	10,473.5	-207.2	-102.5	-205.5	8.83	8.81	-1.77
10,526.0	28.46	356.47	10,501.3	-193.6	-103.2	-191.8	14.93	14.81	-4.42
10,558.0	29.62	357.81	10,529.3	-178.1	-103.9	-176.3	4.16	3.63	4.19
10,588.0	32.95	358.91	10,555.0	-162.5	-104.4	-160.7	11.26	11.10	3.67
10,620.0	35.22	0.01	10,581.5	-144.6	-104.5	-142.8	7.35	7.09	3.44
10,651.0	40.27	2.29	10,606.0	-125.6	-104.1	-123.9	16.90	16.29	7.35
10,682.0	45.07	4.43	10,628.8	-104.6	-102.9	-102.9	16.17	15.48	6.90
10,714.0	47.62	2.91	10,650.8	-81.5	-101.4	-79.8	8.68	7.97	-4.75
10,746.0	49.92	0.95	10,671.9	-57.5	-100.6	-55.8	8.54	7.19	-6.13
10,777.0	52.26	359.46	10,691.4	-33.4	-100.5	-31.7	8.42	7.55	-4.81
10,809.0	54.78	358.19	10,710.4	-7.6	-101.0	-6.0	8.50	7.88	-3.97
10,821.4	55.35	357.90	10,717.5	2.5	-101.4	4.2	5.02	4.63	-2.36
FTP 10821.4'MD / 10717.5'TVD									
10,839.0	56.17	357.49	10,727.4	17.1	-102.0	18.7	5.02	4.64	-2.32
10,871.0	57.98	358.16	10,744.8	43.9	-103.0	45.6	5.92	5.66	2.09
10,902.0	61.20	357.06	10,760.5	70.6	-104.1	72.3	10.83	10.39	-3.55
10,934.0	65.35	356.73	10,774.9	99.1	-105.7	100.9	13.00	12.97	-1.03
10,965.0	69.37	357.99	10,786.8	127.7	-107.0	129.5	13.50	12.97	4.06
10,997.0	73.35	358.14	10,797.1	158.0	-108.0	159.8	12.45	12.44	0.47
11,034.0	77.81	358.60	10,806.3	193.8	-109.0	195.6	12.11	12.05	1.24

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)
11,065.0	80.29	357.99	10,812.2	224.2	-109.9	226.0	8.23	8.00	-1.97
11,127.0	81.96	358.09	10,821.7	285.5	-112.0	287.3	2.70	2.69	0.16
11,159.0	81.79	358.29	10,826.2	317.1	-113.0	318.9	0.82	-0.53	0.63
11,204.0	84.67	0.40	10,831.6	361.8	-113.5	363.6	7.91	6.40	4.69
11,252.0	87.48	2.45	10,834.8	409.7	-112.3	411.5	7.24	5.85	4.27
11,346.0	88.80	1.51	10,837.9	503.6	-109.1	505.3	1.72	1.40	-1.00
11,440.0	88.82	2.08	10,839.8	597.5	-106.1	599.2	0.61	0.02	0.61
11,535.0	88.49	2.59	10,842.1	692.4	-102.3	694.0	0.64	-0.35	0.54
11,629.0	88.54	2.07	10,844.5	786.3	-98.5	787.8	0.56	0.05	-0.55
11,724.0	87.79	1.31	10,847.5	881.2	-95.7	882.6	1.12	-0.79	-0.80
11,817.0	92.49	359.66	10,847.3	974.2	-94.9	975.6	5.36	5.05	-1.77
11,911.0	91.74	358.34	10,843.9	1,068.1	-96.5	1,069.5	1.61	-0.80	-1.40
12,006.0	92.47	357.92	10,840.4	1,163.0	-99.6	1,164.4	0.89	0.77	-0.44
12,099.0	91.46	357.19	10,837.2	1,255.8	-103.6	1,257.3	1.34	-1.09	-0.78
12,194.0	90.08	355.80	10,835.9	1,350.6	-109.4	1,352.2	2.06	-1.45	-1.46
12,288.0	91.46	358.00	10,834.6	1,444.5	-114.5	1,446.2	2.76	1.47	2.34
12,382.0	92.89	358.05	10,831.1	1,538.3	-117.7	1,540.1	1.52	1.52	0.05
12,475.0	93.19	358.64	10,826.1	1,631.2	-120.4	1,632.9	0.71	0.32	0.63
12,569.0	89.89	0.82	10,823.6	1,725.1	-120.8	1,726.9	4.21	-3.51	2.32
12,663.0	90.39	0.13	10,823.4	1,819.1	-120.0	1,820.8	0.91	0.53	-0.73
12,756.0	87.98	2.15	10,824.7	1,912.1	-118.2	1,913.8	3.38	-2.59	2.17
12,850.0	88.04	3.04	10,828.0	2,005.9	-113.9	2,007.5	0.95	0.06	0.95
12,944.0	89.75	3.84	10,829.8	2,099.7	-108.3	2,101.2	2.01	1.82	0.85
13,038.0	90.00	3.28	10,830.0	2,193.6	-102.5	2,194.9	0.65	0.27	-0.60
13,132.0	90.92	2.85	10,829.2	2,287.4	-97.4	2,288.7	1.08	0.98	-0.46
13,223.0	90.34	2.01	10,828.2	2,378.3	-93.6	2,379.5	1.12	-0.64	-0.92
13,318.0	91.18	1.93	10,827.0	2,473.3	-90.3	2,474.4	0.89	0.88	-0.08
13,413.0	91.90	2.34	10,824.4	2,568.2	-86.8	2,569.2	0.87	0.76	0.43
13,507.0	89.83	1.85	10,823.0	2,662.1	-83.3	2,663.1	2.26	-2.20	-0.52
13,601.0	88.80	359.78	10,824.1	2,756.1	-82.0	2,757.0	2.46	-1.10	-2.20
13,696.0	88.43	0.18	10,826.4	2,851.0	-82.0	2,852.0	0.57	-0.39	0.42
13,790.0	89.05	357.75	10,828.5	2,945.0	-83.7	2,946.0	2.67	0.66	-2.59
13,885.0	88.77	356.46	10,830.3	3,039.8	-88.5	3,040.9	1.39	-0.29	-1.36
13,980.0	89.89	356.81	10,831.4	3,134.7	-94.1	3,135.8	1.24	1.18	0.37
14,074.0	91.15	356.06	10,830.5	3,228.5	-100.0	3,229.7	1.56	1.34	-0.80
14,169.0	92.24	356.71	10,827.7	3,323.2	-105.9	3,324.5	1.34	1.15	0.68
14,264.0	92.38	356.64	10,823.9	3,418.0	-111.4	3,419.4	0.16	0.15	-0.07
14,358.0	92.57	356.03	10,819.8	3,511.7	-117.4	3,513.2	0.68	0.20	-0.65
14,451.0	92.58	355.78	10,815.7	3,604.4	-124.1	3,606.0	0.27	0.01	-0.27
14,546.0	92.77	355.20	10,811.2	3,699.0	-131.5	3,700.7	0.64	0.20	-0.61
14,641.0	90.67	356.20	10,808.4	3,793.7	-138.7	3,795.5	2.45	-2.21	1.05
14,735.0	89.75	359.58	10,808.0	3,887.6	-142.1	3,889.4	3.73	-0.98	3.60

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)
14,829.0	88.32	359.85	10,809.6	3,981.6	-142.6	3,983.4	1.55	-1.52	0.29
14,924.0	88.04	0.53	10,812.6	4,076.5	-142.3	4,078.3	0.77	-0.29	0.72
15,017.0	88.29	1.27	10,815.6	4,169.5	-140.8	4,171.2	0.84	0.27	0.80
15,111.0	87.98	1.66	10,818.7	4,263.4	-138.4	4,265.1	0.53	-0.33	0.41
15,205.0	88.77	2.77	10,821.3	4,357.3	-134.8	4,358.9	1.45	0.84	1.18
15,300.0	88.32	3.36	10,823.8	4,452.1	-129.7	4,453.7	0.78	-0.47	0.62
15,394.0	89.55	2.65	10,825.5	4,546.0	-124.8	4,547.4	1.51	1.31	-0.76
15,488.0	90.90	359.74	10,825.1	4,639.9	-122.8	4,641.3	3.41	1.44	-3.10
15,583.0	92.07	357.73	10,822.7	4,734.9	-124.9	4,736.3	2.45	1.23	-2.12
15,677.0	91.62	358.27	10,819.6	4,828.8	-128.2	4,830.2	0.75	-0.48	0.57
15,771.0	91.60	359.53	10,817.0	4,922.7	-130.0	4,924.2	1.34	-0.02	1.34
15,866.0	91.34	358.98	10,814.6	5,017.7	-131.2	5,019.2	0.64	-0.27	-0.58
15,960.0	91.37	359.66	10,812.3	5,111.6	-132.3	5,113.1	0.72	0.03	0.72
16,055.0	91.54	359.82	10,809.9	5,206.6	-132.8	5,208.1	0.25	0.18	0.17
16,149.0	89.22	359.66	10,809.3	5,300.6	-133.2	5,302.1	2.47	-2.47	-0.17
16,244.0	88.46	359.03	10,811.2	5,395.6	-134.3	5,397.1	1.04	-0.80	-0.66
16,337.0	88.77	358.62	10,813.5	5,488.5	-136.2	5,490.0	0.55	0.33	-0.44
16,431.0	89.10	358.21	10,815.2	5,582.5	-138.8	5,584.0	0.56	0.35	-0.44
16,525.0	89.24	357.92	10,816.6	5,676.4	-142.0	5,678.0	0.34	0.15	-0.31
16,619.0	89.36	357.24	10,817.7	5,770.3	-145.9	5,771.9	0.73	0.13	-0.72
16,712.0	90.03	356.57	10,818.2	5,863.2	-151.0	5,864.9	1.02	0.72	-0.72
16,806.0	91.62	358.34	10,816.9	5,957.1	-155.1	5,958.8	2.53	1.69	1.88
16,899.0	92.69	359.45	10,813.4	6,050.0	-156.9	6,051.8	1.66	1.15	1.19
16,993.0	92.86	359.36	10,808.8	6,143.9	-157.9	6,145.6	0.20	0.18	-0.10
17,088.0	91.85	0.42	10,804.9	6,238.8	-158.1	6,240.5	1.54	-1.06	1.12
17,181.0	90.62	0.86	10,802.9	6,331.8	-157.0	6,333.5	1.40	-1.32	0.47
17,275.0	90.95	0.92	10,801.6	6,425.7	-155.6	6,427.4	0.36	0.35	0.06
17,369.0	94.01	2.42	10,797.6	6,519.6	-152.9	6,521.2	3.62	3.26	1.60
17,462.0	93.00	1.86	10,791.9	6,612.4	-149.4	6,613.9	1.24	-1.09	-0.60
17,534.0	89.83	0.98	10,790.1	6,684.3	-147.6	6,685.8	4.57	-4.40	-1.22
17,628.0	88.24	0.93	10,791.7	6,778.3	-146.0	6,779.8	1.69	-1.69	-0.05
17,721.0	88.07	0.98	10,794.7	6,871.2	-144.5	6,872.7	0.19	-0.18	0.05
17,814.0	88.15	0.66	10,797.7	6,964.2	-143.2	6,965.6	0.35	0.09	-0.34
17,908.0	88.29	1.37	10,800.7	7,058.1	-141.5	7,059.5	0.77	0.15	0.76
18,003.0	88.01	1.49	10,803.7	7,153.0	-139.1	7,154.3	0.32	-0.29	0.13
18,098.0	87.53	0.46	10,807.4	7,247.9	-137.5	7,249.2	1.20	-0.51	-1.08
18,192.0	88.24	359.37	10,810.9	7,341.9	-137.6	7,343.1	1.38	0.76	-1.16
18,287.0	88.60	358.31	10,813.5	7,436.8	-139.6	7,438.1	1.18	0.38	-1.12
18,380.0	90.14	358.45	10,814.5	7,529.8	-142.2	7,531.1	1.66	1.66	0.15
18,475.0	90.20	358.23	10,814.3	7,624.7	-144.9	7,626.1	0.24	0.06	-0.23
18,569.0	90.14	359.04	10,814.0	7,718.7	-147.2	7,720.1	0.86	-0.06	0.86
18,663.0	90.00	359.79	10,813.9	7,812.7	-148.1	7,814.1	0.81	-0.15	0.80

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	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)
18,758.0	90.00	359.17	10,813.9	7,907.7	-149.0	7,909.1	0.65	0.00	-0.65
18,851.0	89.94	359.30	10,813.9	8,000.7	-150.3	8,002.1	0.15	-0.06	0.14
18,945.0	89.38	357.48	10,814.5	8,094.6	-152.9	8,096.0	2.03	-0.60	-1.94
19,038.0	91.15	357.76	10,814.0	8,187.5	-156.8	8,189.0	1.93	1.90	0.30
19,133.0	92.27	358.33	10,811.2	8,282.4	-160.0	8,284.0	1.32	1.18	0.60
19,227.0	90.59	358.49	10,808.9	8,376.4	-162.6	8,377.9	1.80	-1.79	0.17
19,321.0	89.97	359.81	10,808.4	8,470.4	-164.0	8,471.9	1.55	-0.66	1.40
19,414.0	90.17	0.97	10,808.3	8,563.4	-163.4	8,564.9	1.27	0.22	1.25
19,509.0	90.03	2.99	10,808.1	8,658.3	-160.1	8,659.8	2.13	-0.15	2.13
19,603.0	89.92	1.18	10,808.2	8,752.2	-156.7	8,753.6	1.93	-0.12	-1.93
19,697.0	92.97	1.20	10,805.8	8,846.2	-154.7	8,847.5	3.24	3.24	0.02
19,792.0	91.04	0.99	10,802.5	8,941.1	-152.9	8,942.4	2.04	-2.03	-0.22
19,885.0	91.20	0.99	10,800.7	9,034.1	-151.3	9,035.3	0.17	0.17	0.00
19,980.0	91.04	359.83	10,798.8	9,129.0	-150.6	9,130.3	1.23	-0.17	-1.22
20,074.0	91.09	1.06	10,797.1	9,223.0	-149.9	9,224.2	1.31	0.05	1.31
20,168.0	88.04	359.92	10,797.8	9,317.0	-149.1	9,318.2	3.46	-3.24	-1.21
20,262.0	92.83	1.86	10,797.1	9,410.9	-147.6	9,412.1	5.50	5.10	2.06
20,356.0	92.89	2.22	10,792.4	9,504.8	-144.3	9,505.9	0.39	0.06	0.38
20,449.0	91.99	1.26	10,788.4	9,597.6	-141.5	9,598.7	1.41	-0.97	-1.03
20,543.0	91.65	1.19	10,785.4	9,691.6	-139.4	9,692.6	0.37	-0.36	-0.07
20,635.0	91.32	1.45	10,783.0	9,783.5	-137.3	9,784.5	0.46	-0.36	0.28
20,729.0	92.07	2.45	10,780.3	9,877.4	-134.1	9,878.3	1.33	0.80	1.06
20,824.0	92.46	3.30	10,776.5	9,972.2	-129.4	9,973.0	0.98	0.41	0.89
20,841.4	92.27	3.18	10,775.8	9,989.6	-128.4	9,990.3	1.31	-1.11	-0.70
LTP 20841.4'MD / 10775.8.7'TVD									
20,917.0	91.43	2.65	10,773.3	10,065.0	-124.5	10,065.7	1.31	-1.11	-0.70
21,011.0	90.48	2.23	10,771.8	10,158.9	-120.5	10,159.6	1.10	-1.01	-0.45
Final MWD Svy									
21,101.0	90.48	2.23	10,771.0	10,248.9	-117.0	10,249.4	0.00	0.00	0.00
PTD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,995.0	9,981.7	-245.3	-99.0	TIE ON POINT
10,821.4	10,717.5	2.5	-101.4	FTP 10821.4'MD / 10717.5'TVD
20,841.4	10,775.8	9,989.6	-128.4	LTP 20841.4'MD / 10775.8.7'TVD
21,011.0	10,771.8	10,158.9	-120.5	Final MWD Svy
21,101.0	10,771.0	10,248.9	-117.0	PTD

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HAMBONE FEDERAL COM 25H
Project:	EDDY COUNTY, NM	TVD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Site:	ATLAS	MD Reference:	RKB = 2894.1' + 30' @ 2924.1usft (Original Well Elev)
Well:	HAMBONE FEDERAL COM 25H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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