

RECEIVED

FEB 14 2020

EMNRD-OGD ARTESIA

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

QUIEN SABE FED COM #801H

OWB

Design: AWP

Standard Survey Report

31 October, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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	QUIEN SABE FED COM #801H		
Well Position	+N/-S	0.0 usft	Northing: 439,517.78 usft
	+E/-W	0.0 usft	Easting: 559,072.59 usft
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 12' 29.546 N
		Longitude:	104° 8' 32.426 W
		Ground Level:	3,123.3 usft

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	WMM2015	5/13/2019	7.04
			Dip Angle (°) 59.91
			Field Strength (nT) 47,657.27564886

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)
	0.0	0.0	0.0
			Direction (°) 168.58

Survey Program	Date	10/24/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,560.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
8,739.0	19,268.0	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	0.11	216.80	100.0	-0.1	-0.1	0.1	0.11	0.11	0.00
125.0	0.12	196.63	125.0	-0.1	-0.1	0.1	0.17	0.04	-80.68
150.0	0.15	209.60	150.0	-0.2	-0.1	0.2	0.17	0.12	51.88
175.0	0.07	205.52	175.0	-0.2	-0.1	0.2	0.32	-0.32	-16.32
200.0	0.12	255.07	200.0	-0.2	-0.2	0.2	0.37	0.20	198.20
225.0	0.12	244.47	225.0	-0.3	-0.2	0.2	0.09	0.00	-42.40
250.0	0.07	241.79	250.0	-0.3	-0.2	0.2	0.20	-0.20	-10.72
275.0	0.10	307.90	275.0	-0.3	-0.3	0.2	0.38	0.12	264.44
300.0	0.17	319.26	300.0	-0.2	-0.3	0.2	0.30	0.28	45.44

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)
325.0	0.25	350.28	325.0	-0.1	-0.3	0.1	0.54	0.32	124.08
350.0	0.58	359.30	350.0	0.0	-0.4	-0.1	1.34	1.32	36.08
375.0	0.61	5.29	375.0	0.3	-0.3	-0.4	0.28	0.12	23.96
400.0	0.84	1.62	400.0	0.6	-0.3	-0.7	0.94	0.92	-14.68
425.0	1.01	5.60	425.0	1.0	-0.3	-1.1	0.73	0.68	15.92
450.0	1.12	5.79	450.0	1.5	-0.3	-1.5	0.44	0.44	0.76
475.0	1.14	2.16	475.0	2.0	-0.2	-2.0	0.30	0.08	-14.52
500.0	1.20	5.50	500.0	2.5	-0.2	-2.5	0.36	0.24	13.36
525.0	1.25	11.00	525.0	3.0	-0.1	-3.0	0.51	0.20	22.00
550.0	1.31	11.40	550.0	3.6	0.0	-3.5	0.24	0.24	1.60
575.0	1.30	15.16	575.0	4.1	0.1	-4.0	0.34	-0.04	15.04
600.0	1.37	13.87	600.0	4.7	0.3	-4.5	0.30	0.28	-5.16
625.0	1.13	23.94	624.9	5.2	0.4	-5.0	1.30	-0.96	40.28
650.0	1.00	32.03	649.9	5.6	0.7	-5.4	0.79	-0.52	32.36
675.0	0.83	34.26	674.9	5.9	0.9	-5.6	0.69	-0.68	8.92
700.0	0.67	68.05	699.9	6.1	1.1	-5.8	1.85	-0.64	135.16
725.0	0.69	82.77	724.9	6.2	1.4	-5.8	0.70	0.08	58.88
750.0	0.69	88.07	749.9	6.2	1.7	-5.8	0.26	0.00	21.20
775.0	0.72	88.65	774.9	6.2	2.0	-5.7	0.12	0.12	2.32
800.0	0.90	100.91	799.9	6.2	2.4	-5.6	1.00	0.72	49.04
825.0	1.01	104.31	824.9	6.1	2.8	-5.4	0.49	0.44	13.60
850.0	1.21	113.45	849.9	6.0	3.2	-5.2	1.07	0.80	36.56
875.0	1.33	117.06	874.9	5.7	3.7	-4.9	0.58	0.48	14.44
900.0	1.53	127.17	899.9	5.4	4.2	-4.4	1.28	0.80	40.44
925.0	1.75	133.67	924.9	4.9	4.8	-3.9	1.15	0.88	26.00
950.0	1.98	143.08	949.9	4.3	5.3	-3.2	1.53	0.92	37.64
975.0	2.31	147.15	974.9	3.5	5.9	-2.3	1.45	1.32	16.28
1,000.0	2.49	154.03	999.8	2.6	6.4	-1.3	1.36	0.72	27.52
1,025.0	2.65	156.46	1,024.8	1.6	6.8	-0.2	0.77	0.64	9.72
1,050.0	2.68	158.58	1,049.8	0.5	7.3	0.9	0.41	0.12	8.48
1,075.0	2.74	159.86	1,074.8	-0.6	7.7	2.1	0.34	0.24	5.12
1,100.0	2.75	163.64	1,099.7	-1.7	8.1	3.3	0.73	0.04	15.12
1,125.0	2.72	165.85	1,124.7	-2.9	8.4	4.5	0.44	-0.12	8.84
1,150.0	2.81	168.98	1,149.7	-4.0	8.6	5.7	0.70	0.36	12.52
1,175.0	2.67	171.68	1,174.6	-5.2	8.8	6.9	0.76	-0.56	10.80
1,200.0	2.57	175.75	1,199.6	-6.3	9.0	8.0	0.84	-0.40	16.28
1,225.0	2.53	178.13	1,224.6	-7.5	9.0	9.1	0.45	-0.16	9.52
1,250.0	2.64	178.31	1,249.6	-8.6	9.1	10.2	0.44	0.44	0.72
1,275.0	2.51	180.96	1,274.5	-9.7	9.1	11.3	0.70	-0.52	10.60
1,300.0	2.39	183.93	1,299.5	-10.8	9.0	12.3	0.70	-0.48	11.88
1,325.0	2.41	183.88	1,324.5	-11.8	9.0	13.4	0.08	0.08	-0.20
1,350.0	2.34	184.50	1,349.5	-12.8	8.9	14.4	0.30	-0.28	2.48
1,375.0	2.33	183.93	1,374.5	-13.9	8.8	15.3	0.10	-0.04	-2.28

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)	
1,400.0	2.27	182.62	1,399.4	-14.9	8.8	16.3	0.32	-0.24	-5.24	
1,425.0	2.14	186.23	1,424.4	-15.8	8.7	17.2	0.76	-0.52	14.44	
1,450.0	1.89	190.52	1,449.4	-16.7	8.6	18.1	1.17	-1.00	17.16	
1,475.0	1.83	190.04	1,474.4	-17.5	8.4	18.8	0.25	-0.24	-1.92	
1,500.0	1.80	190.55	1,499.4	-18.3	8.3	19.5	0.14	-0.12	2.04	
1,525.0	1.87	185.56	1,524.4	-19.1	8.2	20.3	0.70	0.28	-19.96	
1,550.0	1.70	186.14	1,549.4	-19.8	8.1	21.0	0.68	-0.68	2.32	
1,575.0	1.49	188.37	1,574.3	-20.5	8.0	21.7	0.88	-0.84	8.92	
1,600.0	1.52	188.28	1,599.3	-21.2	7.9	22.3	0.12	0.12	-0.36	
1,625.0	1.53	185.79	1,624.3	-21.8	7.8	23.0	0.27	0.04	-9.96	
1,650.0	1.49	185.06	1,649.3	-22.5	7.8	23.6	0.18	-0.16	-2.92	
1,675.0	1.57	166.88	1,674.3	-23.2	7.8	24.2	1.96	0.32	-72.72	
1,700.0	1.67	160.24	1,699.3	-23.8	8.0	24.9	0.85	0.40	-26.56	
1,725.0	1.78	152.69	1,724.3	-24.5	8.3	25.7	1.01	0.44	-30.20	
1,750.0	1.98	148.37	1,749.3	-25.2	8.7	26.5	0.98	0.80	-17.28	
1,775.0	1.94	144.52	1,774.3	-25.9	9.2	27.2	0.55	-0.16	-15.40	
1,800.0	2.07	142.85	1,799.2	-26.6	9.7	28.0	0.57	0.52	-6.68	
1,825.0	2.26	140.46	1,824.2	-27.4	10.3	28.9	0.84	0.76	-9.56	
1,850.0	2.27	143.36	1,849.2	-28.2	10.9	29.8	0.46	0.04	11.60	
1,875.0	2.27	141.58	1,874.2	-28.9	11.5	30.6	0.28	0.00	-7.12	
1,900.0	2.20	140.70	1,899.2	-29.7	12.1	31.5	0.31	-0.28	-3.52	
1,925.0	2.27	139.89	1,924.2	-30.5	12.7	32.4	0.31	0.28	-3.24	
1,950.0	2.21	139.68	1,949.1	-31.2	13.4	33.2	0.24	-0.24	-0.84	
1,975.0	2.19	140.18	1,974.1	-31.9	14.0	34.1	0.11	-0.08	2.00	
2,000.0	2.36	137.55	1,999.1	-32.7	14.6	34.9	0.80	0.68	-10.52	
2,025.0	2.76	134.83	2,024.1	-33.5	15.4	35.9	1.67	1.60	-10.88	
2,050.0	3.08	131.91	2,049.0	-34.4	16.3	36.9	1.41	1.28	-11.68	
2,075.0	3.38	132.25	2,074.0	-35.3	17.4	38.0	1.20	1.20	1.36	
2,100.0	3.70	127.49	2,098.9	-36.3	18.6	39.2	1.74	1.28	-19.04	
2,125.0	3.97	127.94	2,123.9	-37.3	19.9	40.5	1.09	1.08	1.80	
2,150.0	4.41	125.83	2,148.8	-38.4	21.3	41.9	1.86	1.76	-8.44	
2,175.0	4.74	123.84	2,173.7	-39.5	23.0	43.3	1.46	1.32	-7.96	
2,200.0	4.78	122.90	2,198.7	-40.7	24.7	44.8	0.35	0.16	-3.76	
2,225.0	4.92	123.06	2,223.6	-41.8	26.5	46.3	0.56	0.56	0.64	
2,250.0	4.97	122.60	2,248.5	-43.0	28.3	47.8	0.26	0.20	-1.84	
2,275.0	4.90	122.66	2,273.4	-44.2	30.1	49.3	0.28	-0.28	0.24	
2,300.0	4.86	121.01	2,298.3	-45.3	31.9	50.7	0.58	-0.16	-6.60	
2,325.0	4.81	118.87	2,323.2	-46.3	33.7	52.1	0.75	-0.20	-8.56	
2,350.0	4.86	117.54	2,348.1	-47.3	35.6	53.4	0.49	0.20	-5.32	
2,375.0	4.65	116.19	2,373.0	-48.3	37.5	54.7	0.95	-0.84	-5.40	
2,400.0	4.62	113.66	2,397.9	-49.1	39.3	55.9	0.83	-0.12	-10.12	
2,425.0	4.54	110.97	2,422.9	-49.9	41.1	57.0	0.92	-0.32	-10.76	
2,450.0	4.57	110.10	2,447.8	-50.6	43.0	58.1	0.30	0.12	-3.48	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)
2,475.0	4.53	107.49	2,472.7	-51.2	44.9	59.1	0.84	-0.16	-10.44
2,500.0	4.59	104.37	2,497.6	-51.8	46.8	60.0	1.02	0.24	-12.48
2,525.0	4.69	103.52	2,522.6	-52.2	48.7	60.9	0.49	0.40	-3.40
2,550.0	4.71	101.07	2,547.5	-52.7	50.7	61.7	0.81	0.08	-9.80
2,575.0	4.67	99.86	2,572.4	-53.1	52.7	62.5	0.43	-0.16	-4.84
2,600.0	4.88	97.59	2,597.3	-53.4	54.8	63.2	1.13	0.84	-9.08
2,625.0	5.16	94.39	2,622.2	-53.6	57.0	63.8	1.58	1.12	-12.80
2,650.0	5.27	91.05	2,647.1	-53.7	59.2	64.4	1.29	0.44	-13.36
2,675.0	5.41	88.29	2,672.0	-53.7	61.6	64.8	1.17	0.56	-11.04
2,700.0	5.50	85.04	2,696.9	-53.6	63.9	65.2	1.29	0.36	-13.00
2,725.0	5.79	82.28	2,721.8	-53.3	66.4	65.4	1.59	1.16	-11.04
2,750.0	6.15	79.74	2,746.6	-52.9	69.0	65.5	1.79	1.44	-10.16
2,775.0	6.25	78.59	2,771.5	-52.4	71.6	65.5	0.64	0.40	-4.60
2,800.0	6.63	77.01	2,796.3	-51.8	74.3	65.5	1.68	1.52	-6.32
2,825.0	6.70	77.05	2,821.1	-51.1	77.2	65.4	0.28	0.28	0.16
2,850.0	6.78	77.08	2,846.0	-50.5	80.0	65.3	0.32	0.32	0.12
2,875.0	6.96	76.35	2,870.8	-49.8	82.9	65.2	0.80	0.72	-2.92
2,900.0	7.01	76.14	2,895.6	-49.1	85.9	65.1	0.22	0.20	-0.84
2,925.0	7.37	76.26	2,920.4	-48.3	88.9	65.0	1.44	1.44	0.48
2,950.0	7.59	75.72	2,945.2	-47.5	92.1	64.8	0.92	0.88	-2.16
2,975.0	7.78	76.51	2,970.0	-46.7	95.3	64.7	0.87	0.76	3.16
3,000.0	8.00	75.94	2,994.7	-45.9	98.7	64.5	0.93	0.88	-2.28
3,025.0	8.00	75.87	3,019.5	-45.1	102.0	64.4	0.04	0.00	-0.28
3,050.0	8.19	75.65	3,044.2	-44.2	105.5	64.2	0.77	0.76	-0.88
3,075.0	8.23	75.59	3,069.0	-43.3	108.9	64.0	0.16	0.16	-0.24
3,100.0	8.13	75.88	3,093.7	-42.4	112.4	63.8	0.43	-0.40	1.16
3,125.0	8.22	75.54	3,118.5	-41.5	115.8	63.7	0.41	0.36	-1.36
3,150.0	8.31	75.81	3,143.2	-40.7	119.3	63.5	0.39	0.36	1.08
3,175.0	8.24	75.09	3,168.0	-39.8	122.8	63.3	0.50	-0.28	-2.88
3,200.0	8.19	74.76	3,192.7	-38.8	126.2	63.0	0.27	-0.20	-1.32
3,225.0	8.18	74.40	3,217.4	-37.9	129.7	62.8	0.21	-0.04	-1.44
3,250.0	8.11	74.65	3,242.2	-36.9	133.1	62.5	0.31	-0.28	1.00
3,275.0	8.07	74.53	3,266.9	-36.0	136.5	62.3	0.17	-0.16	-0.48
3,300.0	8.17	74.16	3,291.7	-35.0	139.9	62.0	0.45	0.40	-1.48
3,325.0	8.20	73.60	3,316.4	-34.1	143.3	61.8	0.34	0.12	-2.24
3,350.0	8.05	73.57	3,341.2	-33.1	146.7	61.4	0.60	-0.60	-0.12
3,375.0	8.22	73.41	3,365.9	-32.1	150.1	61.1	0.69	0.68	-0.64
3,400.0	8.17	73.33	3,390.7	-31.0	153.5	60.8	0.21	-0.20	-0.32
3,425.0	8.23	73.04	3,415.4	-30.0	156.9	60.5	0.29	0.24	-1.16
3,450.0	8.20	72.72	3,440.2	-28.9	160.3	60.1	0.22	-0.12	-1.28
3,475.0	8.24	72.39	3,464.9	-27.9	163.7	59.7	0.25	0.16	-1.32
3,500.0	8.16	72.51	3,489.7	-26.8	167.1	59.4	0.33	-0.32	0.48
3,525.0	8.14	72.20	3,514.4	-25.7	170.5	59.0	0.19	-0.08	-1.24
3,550.0	8.22	71.83	3,539.2	-24.6	173.9	58.6	0.38	0.32	-1.48

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)
3,575.0	8.19	71.88	3,563.9	-23.5	177.3	58.2	0.12	-0.12	0.20
3,600.0	8.33	71.67	3,588.6	-22.4	180.7	57.7	0.57	0.56	-0.84
3,625.0	8.38	72.22	3,613.4	-21.3	184.1	57.3	0.38	0.20	2.20
3,650.0	8.29	72.15	3,638.1	-20.2	187.6	56.9	0.36	-0.36	-0.28
3,675.0	8.16	72.06	3,662.9	-19.1	191.0	56.5	0.52	-0.52	-0.36
3,700.0	8.24	71.57	3,687.6	-17.9	194.4	56.1	0.42	0.32	-1.96
3,725.0	8.21	71.98	3,712.3	-16.8	197.8	55.7	0.26	-0.12	1.64
3,750.0	8.09	71.97	3,737.1	-15.7	201.1	55.2	0.48	-0.48	-0.04
3,775.0	8.30	71.73	3,761.8	-14.6	204.5	54.8	0.85	0.84	-0.96
3,800.0	8.20	71.89	3,786.6	-13.5	207.9	54.4	0.41	-0.40	0.64
3,825.0	8.21	71.52	3,811.3	-12.4	211.3	54.0	0.21	0.04	-1.48
3,850.0	8.33	72.14	3,836.1	-11.3	214.7	53.6	0.60	0.48	2.48
3,875.0	8.34	71.72	3,860.8	-10.1	218.2	53.1	0.25	0.04	-1.68
3,900.0	8.29	71.90	3,885.5	-9.0	221.6	52.7	0.23	-0.20	0.72
3,925.0	8.29	71.91	3,910.3	-7.9	225.0	52.3	0.01	0.00	0.04
3,950.0	8.33	72.39	3,935.0	-6.8	228.5	51.9	0.32	0.16	1.92
3,975.0	8.52	72.00	3,959.7	-5.7	232.0	51.5	0.79	0.76	-1.56
4,000.0	8.74	73.24	3,984.5	-4.5	235.6	51.1	1.15	0.88	4.96
4,025.0	8.87	73.25	4,009.2	-3.4	239.2	50.7	0.52	0.52	0.04
4,050.0	8.98	73.67	4,033.9	-2.3	242.9	50.4	0.51	0.44	1.68
4,075.0	9.26	73.47	4,058.5	-1.2	246.7	50.0	1.13	1.12	-0.80
4,100.0	9.55	74.59	4,083.2	-0.1	250.7	49.7	1.37	1.16	4.48
4,125.0	9.70	74.46	4,107.9	1.0	254.7	49.4	0.61	0.60	-0.52
4,150.0	9.83	75.10	4,132.5	2.1	258.8	49.1	0.68	0.52	2.56
4,175.0	10.01	75.16	4,157.1	3.2	262.9	48.9	0.72	0.72	0.24
4,200.0	10.04	75.37	4,181.7	4.4	267.2	48.6	0.19	0.12	0.84
4,225.0	10.31	74.40	4,206.3	5.5	271.4	48.3	1.28	1.08	-3.88
4,250.0	10.58	74.80	4,230.9	6.7	275.8	48.0	1.12	1.08	1.60
4,275.0	10.67	75.17	4,255.5	7.9	280.2	47.7	0.45	0.36	1.48
4,300.0	10.91	74.79	4,280.1	9.1	284.8	47.5	1.00	0.96	-1.52
4,325.0	10.98	74.19	4,304.6	10.4	289.3	47.1	0.53	0.28	-2.40
4,350.0	11.09	73.98	4,329.1	11.7	293.9	46.7	0.47	0.44	-0.84
4,375.0	11.23	74.15	4,353.7	13.0	298.6	46.4	0.58	0.56	0.68
4,400.0	11.26	74.41	4,378.2	14.3	303.3	46.0	0.24	0.12	1.04
4,425.0	11.29	74.38	4,402.7	15.7	308.0	45.6	0.12	0.12	-0.12
4,450.0	11.25	74.76	4,427.2	17.0	312.7	45.3	0.34	-0.16	1.52
4,475.0	11.27	74.47	4,451.7	18.3	317.4	45.0	0.24	0.08	-1.16
4,500.0	11.25	74.35	4,476.3	19.6	322.1	44.6	0.12	-0.08	-0.48
4,525.0	11.28	73.76	4,500.8	20.9	326.8	44.2	0.48	0.12	-2.36
4,550.0	11.15	73.40	4,525.3	22.3	331.5	43.8	0.59	-0.52	-1.44
4,575.0	11.07	72.46	4,549.8	23.7	336.1	43.3	0.79	-0.32	-3.76
4,600.0	10.95	71.83	4,574.4	25.2	340.6	42.8	0.68	-0.48	-2.52
4,625.0	10.76	72.09	4,598.9	26.6	345.1	42.2	0.78	-0.76	1.04

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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	11.01	71.60	4,623.5	28.1	349.6	41.7	1.07	1.00	-1.96
4,675.0	10.84	71.68	4,648.0	29.6	354.1	41.1	0.68	-0.68	0.32
4,700.0	10.66	71.73	4,672.6	31.0	358.5	40.6	0.72	-0.72	0.20
4,725.0	10.47	71.51	4,697.2	32.5	362.9	40.0	0.78	-0.76	-0.88
4,750.0	10.19	71.61	4,721.8	33.9	367.1	39.5	1.12	-1.12	0.40
4,775.0	10.14	71.20	4,746.4	35.3	371.3	38.9	0.35	-0.20	-1.64
4,800.0	9.68	71.63	4,771.0	36.7	375.4	38.4	1.86	-1.84	1.72
4,825.0	9.48	71.39	4,795.6	38.0	379.3	37.9	0.82	-0.80	-0.96
4,850.0	9.55	71.47	4,820.3	39.3	383.2	37.3	0.28	0.28	0.32
4,875.0	9.52	72.00	4,844.9	40.6	387.2	36.8	0.37	-0.12	2.12
4,900.0	9.51	71.53	4,869.6	41.9	391.1	36.4	0.31	-0.04	-1.88
4,925.0	9.53	72.15	4,894.3	43.2	395.0	35.9	0.42	0.08	2.48
4,950.0	9.22	73.79	4,918.9	44.4	398.9	35.5	1.64	-1.24	6.56
4,975.0	9.16	74.50	4,943.6	45.5	402.7	35.2	0.51	-0.24	2.84
5,000.0	9.11	75.24	4,968.3	46.5	406.6	34.9	0.51	-0.20	2.96
5,025.0	9.23	75.51	4,993.0	47.5	410.4	34.7	0.51	0.48	1.08
5,050.0	9.01	75.99	5,017.7	48.5	414.3	34.5	0.93	-0.88	1.92
5,075.0	8.73	77.43	5,042.4	49.4	418.0	34.4	1.43	-1.12	5.76
5,100.0	8.65	77.75	5,067.1	50.2	421.7	34.3	0.37	-0.32	1.28
5,125.0	8.62	78.60	5,091.8	51.0	425.4	34.3	0.52	-0.12	3.40
5,150.0	8.64	79.05	5,116.5	51.7	429.1	34.3	0.28	0.08	1.80
5,175.0	8.73	78.95	5,141.2	52.4	432.8	34.3	0.37	0.36	-0.40
5,200.0	8.57	79.88	5,165.9	53.1	436.5	34.4	0.85	-0.64	3.72
5,225.0	8.71	78.53	5,190.6	53.8	440.2	34.4	0.99	0.56	-5.40
5,250.0	8.75	78.60	5,215.4	54.6	443.9	34.4	0.17	0.16	0.28
5,275.0	8.79	78.56	5,240.1	55.3	447.6	34.4	0.16	0.16	-0.16
5,300.0	8.91	78.65	5,264.8	56.1	451.4	34.4	0.48	0.48	0.36
5,325.0	8.80	78.66	5,289.5	56.8	455.2	34.4	0.44	-0.44	0.04
5,350.0	8.93	78.69	5,314.2	57.6	458.9	34.4	0.52	0.52	0.12
5,375.0	8.87	78.96	5,338.9	58.3	462.7	34.4	0.29	-0.24	1.08
5,400.0	8.82	78.98	5,363.6	59.1	466.5	34.5	0.20	-0.20	0.08
5,425.0	8.88	79.20	5,388.3	59.8	470.3	34.5	0.28	0.24	0.88
5,450.0	8.91	79.12	5,413.0	60.5	474.1	34.5	0.13	0.12	-0.32
5,475.0	9.04	79.08	5,437.7	61.3	477.9	34.6	0.52	0.52	-0.16
5,500.0	9.10	78.79	5,462.4	62.0	481.8	34.6	0.30	0.24	-1.16
5,525.0	9.13	79.30	5,487.0	62.8	485.7	34.6	0.34	0.12	2.04
5,550.0	9.05	79.51	5,511.7	63.5	489.5	34.7	0.35	-0.32	0.84
5,575.0	9.22	80.56	5,536.4	64.2	493.5	34.8	0.95	0.68	4.20
5,600.0	9.35	80.94	5,561.1	64.8	497.4	34.9	0.57	0.52	1.52
5,625.0	9.54	81.49	5,585.7	65.5	501.5	35.1	0.84	0.76	2.20
5,650.0	9.65	81.59	5,610.4	66.1	505.6	35.3	0.45	0.44	0.40
5,675.0	9.64	81.93	5,635.0	66.7	509.8	35.6	0.23	-0.04	1.36
5,700.0	9.86	82.69	5,659.7	67.2	514.0	35.9	1.02	0.88	3.04

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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	9.97	82.76	5,684.3	67.8	518.2	36.2	0.44	0.44	0.28
5,750.0	10.01	82.68	5,708.9	68.3	522.5	36.5	0.17	0.16	-0.32
5,775.0	10.05	82.81	5,733.5	68.9	526.8	36.8	0.18	0.16	0.52
5,800.0	9.97	82.89	5,758.2	69.4	531.2	37.1	0.32	-0.32	0.32
5,825.0	10.06	83.15	5,782.8	70.0	535.5	37.5	0.40	0.36	1.04
5,850.0	10.10	82.76	5,807.4	70.5	539.8	37.8	0.32	0.16	-1.56
5,875.0	10.17	82.61	5,832.0	71.1	544.2	38.1	0.30	0.28	-0.60
5,900.0	10.24	82.49	5,856.6	71.6	548.6	38.4	0.29	0.28	-0.48
5,925.0	10.31	82.89	5,881.2	72.2	553.0	38.7	0.40	0.28	1.60
5,950.0	10.34	82.90	5,905.8	72.8	557.4	39.1	0.12	0.12	0.04
5,975.0	10.11	83.07	5,930.4	73.3	561.8	39.4	0.93	-0.92	0.68
6,000.0	9.97	82.60	5,955.0	73.8	566.2	39.7	0.65	-0.56	-1.88
6,025.0	9.90	82.50	5,979.7	74.4	570.4	40.0	0.29	-0.28	-0.40
6,050.0	9.77	82.41	6,004.3	75.0	574.7	40.3	0.52	-0.52	-0.36
6,075.0	9.52	82.64	6,028.9	75.5	578.8	40.6	1.01	-1.00	0.92
6,100.0	9.24	82.64	6,053.6	76.0	582.9	40.9	1.12	-1.12	0.00
6,125.0	9.06	82.66	6,078.3	76.5	586.8	41.2	0.72	-0.72	0.08
6,150.0	8.88	82.22	6,103.0	77.0	590.7	41.4	0.77	-0.72	-1.76
6,175.0	8.33	82.21	6,127.7	77.6	594.4	41.7	2.20	-2.20	-0.04
6,200.0	7.99	81.59	6,152.4	78.1	597.9	41.9	1.40	-1.36	-2.48
6,225.0	7.79	82.08	6,177.2	78.5	601.3	42.1	0.84	-0.80	1.96
6,250.0	7.66	82.53	6,202.0	79.0	604.6	42.3	0.57	-0.52	1.80
6,275.0	7.45	84.15	6,226.8	79.4	607.9	42.6	1.20	-0.84	6.48
6,300.0	7.45	84.73	6,251.5	79.7	611.1	42.9	0.30	0.00	2.32
6,325.0	7.52	85.55	6,276.3	80.0	614.4	43.3	0.51	0.28	3.28
6,350.0	7.55	85.59	6,301.1	80.2	617.6	43.7	0.12	0.12	0.16
6,375.0	7.64	85.48	6,325.9	80.5	620.9	44.1	0.36	0.36	-0.44
6,400.0	7.59	85.26	6,350.7	80.7	624.2	44.5	0.23	-0.20	-0.88
6,425.0	7.62	84.91	6,375.5	81.0	627.5	44.8	0.22	0.12	-1.40
6,450.0	7.46	83.59	6,400.2	81.4	630.8	45.2	0.94	-0.64	-5.28
6,475.0	7.29	83.68	6,425.0	81.7	634.0	45.4	0.68	-0.68	0.36
6,500.0	7.23	83.19	6,449.8	82.1	637.1	45.7	0.34	-0.24	-1.96
6,525.0	7.33	81.02	6,474.6	82.5	640.2	45.9	1.17	0.40	-8.68
6,550.0	7.36	78.89	6,499.4	83.1	643.4	46.0	1.10	0.12	-8.52
6,575.0	7.51	77.84	6,524.2	83.7	646.6	46.0	0.81	0.60	-4.20
6,600.0	7.54	77.05	6,549.0	84.4	649.8	45.9	0.43	0.12	-3.16
6,625.0	7.58	77.21	6,573.8	85.2	653.0	45.8	0.18	0.16	0.64
6,650.0	7.72	76.76	6,598.6	85.9	656.2	45.7	0.61	0.56	-1.80
6,675.0	7.73	76.29	6,623.3	86.7	659.5	45.6	0.26	0.04	-1.88
6,700.0	7.87	75.59	6,648.1	87.5	662.8	45.5	0.68	0.56	-2.80
6,725.0	7.89	75.44	6,672.9	88.4	666.1	45.3	0.11	0.08	-0.60
6,750.0	8.06	75.11	6,697.6	89.3	669.4	45.1	0.70	0.68	-1.32
6,775.0	8.06	75.10	6,722.4	90.2	672.8	44.9	0.01	0.00	-0.04
6,800.0	8.08	75.11	6,747.1	91.1	676.2	44.6	0.08	0.08	0.04

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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	8.26	75.02	6,771.9	92.0	679.7	44.4	0.72	0.72	-0.36
6,850.0	8.30	75.42	6,796.6	92.9	683.1	44.2	0.28	0.16	1.60
6,875.0	8.57	74.87	6,821.3	93.8	686.7	44.0	1.13	1.08	-2.20
6,900.0	8.94	74.87	6,846.1	94.8	690.4	43.7	1.48	1.48	0.00
6,925.0	9.13	75.08	6,870.7	95.8	694.1	43.5	0.77	0.76	0.84
6,950.0	9.37	75.25	6,895.4	96.9	698.0	43.3	0.97	0.96	0.68
6,975.0	9.57	75.15	6,920.1	97.9	702.0	43.0	0.80	0.80	-0.40
7,000.0	9.80	75.25	6,944.7	99.0	706.1	42.8	0.92	0.92	0.40
7,025.0	10.14	75.06	6,969.3	100.1	710.3	42.5	1.37	1.36	-0.76
7,050.0	10.22	75.15	6,994.0	101.2	714.5	42.2	0.33	0.32	0.36
7,075.0	10.32	74.92	7,018.6	102.4	718.8	42.0	0.43	0.40	-0.92
7,100.0	10.45	74.87	7,043.1	103.6	723.2	41.7	0.52	0.52	-0.20
7,125.0	10.56	74.91	7,067.7	104.8	727.6	41.4	0.44	0.44	0.16
7,150.0	10.70	74.96	7,092.3	106.0	732.0	41.1	0.56	0.56	0.20
7,175.0	10.65	74.36	7,116.9	107.2	736.5	40.8	0.49	-0.20	-2.40
7,200.0	10.36	73.27	7,141.4	108.5	740.9	40.4	1.41	-1.16	-4.36
7,225.0	10.09	73.10	7,166.0	109.7	745.1	40.0	1.09	-1.08	-0.68
7,250.0	10.19	72.53	7,190.7	111.0	749.3	39.5	0.57	0.40	-2.28
7,275.0	10.18	72.86	7,215.3	112.4	753.6	39.1	0.24	-0.04	1.32
7,300.0	10.35	72.72	7,239.9	113.7	757.8	38.6	0.69	0.68	-0.56
7,325.0	10.53	72.34	7,264.4	115.0	762.1	38.2	0.77	0.72	-1.52
7,350.0	10.47	72.07	7,289.0	116.4	766.5	37.7	0.31	-0.24	-1.08
7,375.0	10.49	71.65	7,313.6	117.8	770.8	37.1	0.32	0.08	-1.68
7,400.0	10.45	70.77	7,338.2	119.3	775.1	36.5	0.66	-0.16	-3.52
7,425.0	10.54	71.59	7,362.8	120.8	779.4	36.0	0.70	0.36	3.28
7,450.0	10.60	71.49	7,387.4	122.2	783.7	35.4	0.25	0.24	-0.40
7,475.0	10.65	72.24	7,411.9	123.7	788.1	34.9	0.59	0.20	3.00
7,500.0	10.77	72.30	7,436.5	125.1	792.6	34.3	0.48	0.48	0.24
7,525.0	10.86	73.17	7,461.0	126.5	797.0	33.9	0.75	0.36	3.48
7,550.0	10.91	73.40	7,485.6	127.8	801.6	33.4	0.26	0.20	0.92
7,575.0	11.00	73.92	7,510.1	129.2	806.1	33.0	0.53	0.36	2.08
7,600.0	11.14	74.10	7,534.7	130.5	810.7	32.6	0.58	0.56	0.72
7,625.0	11.39	75.40	7,559.2	131.8	815.4	32.3	1.43	1.00	5.20
7,650.0	11.64	77.34	7,583.7	132.9	820.3	32.1	1.84	1.00	7.76
7,675.0	12.03	78.46	7,608.2	134.0	825.3	32.1	1.81	1.56	4.48
7,700.0	12.13	78.92	7,632.6	135.0	830.4	32.1	0.56	0.40	1.84
7,725.0	12.24	79.79	7,657.0	136.0	835.6	32.1	0.86	0.44	3.48
7,750.0	12.17	80.62	7,681.5	136.9	840.8	32.3	0.76	-0.28	3.32
7,775.0	12.17	81.36	7,705.9	137.7	846.0	32.5	0.62	0.00	2.96
7,800.0	12.01	82.26	7,730.4	138.5	851.2	32.8	0.99	-0.64	3.60
7,825.0	11.93	82.89	7,754.8	139.2	856.4	33.2	0.61	-0.32	2.52
7,850.0	11.90	83.68	7,779.3	139.8	861.5	33.6	0.66	-0.12	3.16
7,875.0	11.83	84.28	7,803.7	140.3	866.6	34.1	0.57	-0.28	2.40

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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	11.54	84.65	7,828.2	140.8	871.6	34.6	1.20	-1.16	1.48
7,925.0	11.42	85.52	7,852.7	141.2	876.6	35.2	0.84	-0.48	3.48
7,950.0	11.09	85.26	7,877.2	141.6	881.5	35.7	1.34	-1.32	-1.04
7,975.0	10.78	85.21	7,901.8	142.0	886.2	36.3	1.24	-1.24	-0.20
8,000.0	10.43	85.06	7,926.4	142.4	890.8	36.8	1.40	-1.40	-0.60
8,025.0	10.24	84.49	7,951.0	142.8	895.2	37.3	0.86	-0.76	-2.28
8,050.0	10.08	83.94	7,975.6	143.2	899.6	37.7	0.75	-0.64	-2.20
8,075.0	10.08	83.53	8,000.2	143.7	904.0	38.1	0.29	0.00	-1.64
8,100.0	10.16	83.48	8,024.8	144.2	908.3	38.5	0.32	0.32	-0.20
8,125.0	10.16	82.16	8,049.4	144.8	912.7	38.8	0.93	0.00	-5.28
8,150.0	10.06	82.15	8,074.0	145.4	917.1	39.1	0.40	-0.40	-0.04
8,175.0	10.17	81.58	8,098.6	146.0	921.4	39.4	0.59	0.44	-2.28
8,200.0	10.12	81.32	8,123.2	146.6	925.8	39.6	0.27	-0.20	-1.04
8,225.0	10.33	81.03	8,147.8	147.3	930.1	39.8	0.86	0.84	-1.16
8,250.0	10.36	81.23	8,172.4	148.0	934.6	40.0	0.19	0.12	0.80
8,275.0	10.58	80.90	8,197.0	148.7	939.1	40.2	0.91	0.88	-1.32
8,300.0	10.71	81.00	8,221.6	149.4	943.6	40.4	0.53	0.52	0.40
8,325.0	10.77	80.11	8,246.1	150.2	948.2	40.5	0.71	0.24	-3.56
8,350.0	10.84	80.13	8,270.7	151.0	952.8	40.7	0.28	0.28	0.08
8,375.0	11.17	79.04	8,295.2	151.9	957.5	40.7	1.56	1.32	-4.36
8,400.0	11.29	78.54	8,319.8	152.8	962.3	40.8	0.62	0.48	-2.00
8,425.0	11.60	78.68	8,344.3	153.8	967.2	40.8	1.24	1.24	0.56
8,450.0	11.82	78.06	8,368.7	154.8	972.1	40.7	1.01	0.88	-2.48
8,475.0	11.94	78.04	8,393.2	155.9	977.2	40.7	0.48	0.48	-0.08
8,500.0	12.18	77.95	8,417.7	157.0	982.3	40.6	0.96	0.96	-0.36
8,525.0	12.32	77.71	8,442.1	158.1	987.5	40.6	0.60	0.56	-0.96
8,550.0	12.79	76.78	8,466.5	159.3	992.8	40.4	2.05	1.88	-3.72
8,560.0	12.46	77.19	8,476.2	159.8	994.9	40.4	3.42	-3.30	4.10
8,739.0	11.48	75.75	8,651.4	168.5	1,031.0	39.0	0.57	-0.55	-0.80
8,770.0	11.21	74.50	8,681.7	170.0	1,036.9	38.7	1.18	-0.87	-4.03
8,802.0	10.65	72.64	8,713.2	171.7	1,042.7	38.1	2.07	-1.75	-5.81
8,834.0	12.05	78.59	8,744.5	173.3	1,048.8	37.8	5.70	4.38	18.59
8,865.0	14.80	88.30	8,774.7	174.0	1,055.9	38.5	11.44	8.87	31.32
8,896.0	16.81	96.93	8,804.5	173.6	1,064.3	40.6	9.96	6.48	27.84
8,928.0	19.06	101.95	8,835.0	172.0	1,074.1	44.1	8.52	7.03	15.69
8,959.0	20.70	103.20	8,864.1	169.7	1,084.3	48.4	5.46	5.29	4.03
8,990.0	22.48	105.70	8,892.9	166.8	1,095.4	53.4	6.46	5.74	8.06
9,021.0	24.66	109.69	8,921.4	163.0	1,107.2	59.4	8.71	7.03	12.87
9,053.0	26.15	113.89	8,950.3	157.9	1,119.9	67.0	7.30	4.66	13.13
9,085.0	28.18	117.58	8,978.7	151.6	1,133.1	75.8	8.24	6.34	11.53
9,116.0	31.45	120.22	9,005.6	144.1	1,146.5	85.8	11.36	10.55	8.52
9,147.0	33.76	123.83	9,031.7	135.2	1,160.7	97.3	9.74	7.45	11.65
9,179.0	37.07	126.98	9,057.8	124.5	1,175.8	110.8	11.81	10.34	9.84

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)
9,210.0	40.24	129.34	9,082.0	112.5	1,191.0	125.5	11.28	10.23	7.61
9,241.0	43.43	131.02	9,105.1	99.2	1,206.8	141.8	10.91	10.29	5.42
9,272.0	47.70	132.45	9,126.8	84.4	1,223.3	159.5	14.16	13.77	4.61
9,304.0	52.04	133.86	9,147.4	67.7	1,241.1	179.4	13.97	13.56	4.41
9,335.0	56.27	134.62	9,165.6	50.2	1,259.1	200.2	13.79	13.65	2.45
9,366.0	60.10	137.81	9,181.9	31.1	1,277.3	222.4	15.13	12.35	10.29
9,397.0	63.93	139.58	9,196.5	10.6	1,295.4	246.1	13.34	12.35	5.71
9,427.0	66.93	139.96	9,209.0	-10.2	1,313.0	270.0	10.07	10.00	1.27
9,458.0	69.39	142.04	9,220.5	-32.6	1,331.1	295.5	10.09	7.94	6.71
9,489.0	71.75	144.22	9,230.8	-56.0	1,348.6	321.9	10.10	7.61	7.03
9,520.0	73.37	145.75	9,240.1	-80.2	1,365.6	349.0	7.03	5.23	4.94
9,551.0	74.85	147.01	9,248.6	-105.0	1,382.1	376.6	6.17	4.77	4.06
9,582.0	77.36	148.34	9,256.0	-130.5	1,398.2	404.8	9.10	8.10	4.29
9,613.0	80.23	149.66	9,262.0	-156.5	1,413.9	433.4	10.16	9.26	4.26
9,645.0	82.66	150.24	9,266.8	-183.9	1,429.7	463.4	7.80	7.59	1.81
9,677.0	84.11	150.40	9,270.5	-211.5	1,445.4	493.6	4.56	4.53	0.50
9,707.0	85.79	150.78	9,273.1	-237.6	1,460.1	522.0	5.74	5.60	1.27
9,739.0	87.43	150.64	9,275.0	-265.4	1,475.8	552.4	5.14	5.13	-0.44
9,770.0	87.44	150.00	9,276.4	-292.3	1,491.1	581.8	2.06	0.03	-2.06
9,801.0	87.20	149.59	9,277.9	-319.1	1,506.7	611.1	1.53	-0.77	-1.32
9,896.0	89.99	150.03	9,280.2	-401.2	1,554.4	701.0	2.97	2.94	0.46
9,989.0	90.21	148.96	9,280.0	-481.3	1,601.6	788.9	1.17	0.24	-1.15
10,083.0	90.34	151.17	9,279.6	-562.8	1,648.5	878.0	2.36	0.14	2.35
10,177.0	90.52	152.27	9,278.9	-645.5	1,693.1	968.0	1.19	0.19	1.17
10,271.0	91.48	155.38	9,277.2	-729.9	1,734.5	1,058.9	3.46	1.02	3.31
10,365.0	89.26	157.07	9,276.6	-815.9	1,772.4	1,150.7	2.97	-2.36	1.80
10,459.0	88.92	159.51	9,278.1	-903.2	1,807.2	1,243.2	2.62	-0.36	2.60
10,554.0	89.30	163.83	9,279.6	-993.3	1,837.0	1,337.4	4.56	0.40	4.55
10,648.0	87.55	163.54	9,282.2	-1,083.5	1,863.4	1,431.1	1.89	-1.86	-0.31
10,742.0	87.25	164.82	9,286.4	-1,173.9	1,889.0	1,524.7	1.40	-0.32	1.36
10,836.0	89.43	167.06	9,289.2	-1,265.0	1,911.9	1,618.5	3.32	2.32	2.38
10,930.0	91.76	169.68	9,288.2	-1,357.1	1,930.8	1,712.5	3.73	2.48	2.79
11,022.0	89.88	172.36	9,286.9	-1,447.9	1,945.2	1,804.4	3.56	-2.04	2.91
11,117.0	93.33	175.32	9,284.2	-1,542.3	1,955.3	1,898.9	4.78	3.63	3.12
11,211.0	93.46	178.57	9,278.6	-1,636.0	1,960.3	1,991.8	3.45	0.14	3.46
11,306.0	93.02	179.32	9,273.3	-1,730.8	1,962.1	2,085.1	0.91	-0.46	0.79
11,400.0	87.50	178.38	9,272.8	-1,824.8	1,964.0	2,177.5	5.96	-5.87	-1.00
11,494.0	87.91	180.47	9,276.6	-1,918.7	1,964.9	2,269.8	2.26	0.44	2.22
11,588.0	89.53	180.75	9,278.7	-2,012.6	1,963.9	2,361.7	1.75	1.72	0.30
11,682.0	89.14	179.68	9,279.8	-2,106.6	1,963.6	2,453.7	1.21	-0.41	-1.14
11,776.0	88.73	180.88	9,281.6	-2,200.6	1,963.1	2,545.8	1.35	-0.44	1.28
11,870.0	89.69	183.48	9,282.8	-2,294.5	1,959.5	2,637.1	2.95	1.02	2.77
11,965.0	90.96	184.24	9,282.3	-2,389.3	1,953.1	2,728.7	1.56	1.34	0.80
12,060.0	90.30	183.77	9,281.3	-2,484.1	1,946.5	2,820.3	0.85	-0.69	-0.49

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)
12,154.0	89.21	182.76	9,281.7	-2,577.9	1,941.1	2,911.2	1.58	-1.16	-1.07
12,248.0	87.84	181.70	9,284.1	-2,671.8	1,937.5	3,002.6	1.84	-1.46	-1.13
12,342.0	87.42	180.97	9,288.0	-2,765.7	1,935.3	3,094.2	0.90	-0.45	-0.78
12,436.0	89.28	179.80	9,290.7	-2,859.7	1,934.7	3,186.1	2.34	1.98	-1.24
12,530.0	89.20	178.53	9,291.9	-2,953.6	1,936.0	3,278.5	1.35	-0.09	-1.35
12,624.0	89.12	179.98	9,293.3	-3,047.6	1,937.3	3,370.9	1.54	-0.09	1.54
12,717.0	89.35	179.66	9,294.5	-3,140.6	1,937.6	3,462.1	0.42	0.25	-0.34
12,812.0	89.20	180.31	9,295.7	-3,235.6	1,937.6	3,555.2	0.70	-0.16	0.68
12,906.0	89.26	180.24	9,297.0	-3,329.6	1,937.1	3,647.2	0.10	0.06	-0.07
13,000.0	89.14	179.74	9,298.3	-3,423.6	1,937.1	3,739.4	0.55	-0.13	-0.53
13,096.0	89.18	179.20	9,299.7	-3,519.6	1,938.0	3,833.6	0.56	0.04	-0.56
13,189.0	88.85	179.77	9,301.3	-3,612.5	1,938.9	3,924.9	0.71	-0.35	0.61
13,284.0	88.96	179.65	9,303.1	-3,707.5	1,939.4	4,018.1	0.17	0.12	-0.13
13,378.0	90.13	181.24	9,303.9	-3,801.5	1,938.6	4,110.1	2.10	1.24	1.69
13,472.0	90.28	181.28	9,303.6	-3,895.5	1,936.6	4,201.8	0.17	0.16	0.04
13,566.0	90.25	181.26	9,303.1	-3,989.5	1,934.5	4,293.5	0.04	-0.03	-0.02
13,660.0	90.20	181.10	9,302.8	-4,083.4	1,932.5	4,385.3	0.18	-0.05	-0.17
13,754.0	90.00	181.19	9,302.6	-4,177.4	1,930.7	4,477.0	0.23	-0.21	0.10
13,848.0	89.93	178.18	9,302.6	-4,271.4	1,931.2	4,569.2	3.20	-0.07	-3.20
13,943.0	88.35	172.03	9,304.1	-4,366.0	1,939.3	4,663.6	6.68	-1.66	-6.47
14,037.0	90.00	173.04	9,305.4	-4,459.2	1,951.5	4,757.3	2.06	1.76	1.07
14,131.0	90.86	174.13	9,304.7	-4,552.6	1,962.0	4,851.0	1.48	0.91	1.16
14,225.0	90.05	180.45	9,304.0	-4,646.4	1,966.4	4,943.8	6.78	-0.86	6.72
14,319.0	90.18	180.24	9,303.8	-4,740.4	1,965.9	5,035.8	0.26	0.14	-0.22
14,413.0	90.12	180.56	9,303.5	-4,834.4	1,965.2	5,127.9	0.35	-0.06	0.34
14,507.0	90.02	180.90	9,303.4	-4,928.4	1,964.0	5,219.7	0.38	-0.11	0.36
14,601.0	90.25	180.81	9,303.2	-5,022.4	1,962.6	5,311.6	0.26	0.24	-0.10
14,695.0	90.12	181.11	9,302.9	-5,116.4	1,961.0	5,403.4	0.35	-0.14	0.32
14,789.0	90.11	180.72	9,302.7	-5,210.4	1,959.5	5,495.2	0.42	-0.01	-0.41
14,884.0	90.29	180.78	9,302.4	-5,305.4	1,958.3	5,588.1	0.20	0.19	0.06
14,978.0	90.24	180.80	9,301.9	-5,399.4	1,957.0	5,680.0	0.06	-0.05	0.02
15,071.0	90.07	181.21	9,301.7	-5,492.4	1,955.4	5,770.8	0.48	-0.18	0.44
15,166.0	90.20	181.08	9,301.5	-5,587.3	1,953.5	5,863.5	0.19	0.14	-0.14
15,260.0	89.88	181.01	9,301.4	-5,681.3	1,951.7	5,955.3	0.35	-0.34	-0.07
15,355.0	89.48	181.00	9,301.9	-5,776.3	1,950.1	6,048.1	0.42	-0.42	-0.01
15,449.0	90.52	180.60	9,301.9	-5,870.3	1,948.8	6,139.9	1.19	1.11	-0.43
15,543.0	90.17	181.18	9,301.4	-5,964.3	1,947.3	6,231.8	0.72	-0.37	0.62
15,637.0	90.29	180.97	9,301.0	-6,058.3	1,945.5	6,323.6	0.26	0.13	-0.22
15,731.0	89.40	180.76	9,301.2	-6,152.3	1,944.1	6,415.4	0.97	-0.95	-0.22
15,826.0	89.05	179.35	9,302.5	-6,247.2	1,944.0	6,508.5	1.53	-0.37	-1.48
15,919.0	89.12	178.77	9,304.0	-6,340.2	1,945.6	6,599.9	0.63	0.08	-0.62
16,014.0	89.21	179.81	9,305.4	-6,435.2	1,946.7	6,693.3	1.10	0.09	1.09
16,108.0	88.70	179.65	9,307.1	-6,529.2	1,947.2	6,785.5	0.57	-0.54	-0.17

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	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)	
16,201.0	89.23	180.38	9,308.8	-6,622.2	1,947.2	6,876.6	0.97	0.57	0.78	
16,295.0	89.23	180.26	9,310.1	-6,716.2	1,946.6	6,968.6	0.13	0.00	-0.13	
16,389.0	89.53	179.81	9,311.1	-6,810.2	1,946.6	7,060.8	0.58	0.32	-0.48	
16,483.0	89.25	180.37	9,312.1	-6,904.2	1,946.4	7,152.9	0.67	-0.30	0.60	
16,577.0	90.33	179.93	9,312.4	-6,998.1	1,946.2	7,244.9	1.24	1.15	-0.47	
16,672.0	89.96	181.14	9,312.2	-7,093.1	1,945.3	7,337.9	1.33	-0.39	1.27	
16,765.0	90.24	181.24	9,312.0	-7,186.1	1,943.4	7,428.6	0.32	0.30	0.11	
16,859.0	90.12	180.56	9,311.7	-7,280.1	1,941.9	7,520.5	0.73	-0.13	-0.72	
16,954.0	90.20	180.32	9,311.5	-7,375.1	1,941.2	7,613.4	0.27	0.08	-0.25	
17,048.0	90.18	179.89	9,311.1	-7,469.1	1,941.0	7,705.6	0.46	-0.02	-0.46	
17,142.0	90.19	179.56	9,310.8	-7,563.1	1,941.4	7,797.8	0.35	0.01	-0.35	
17,236.0	90.21	177.23	9,310.5	-7,657.1	1,944.1	7,890.4	2.48	0.02	-2.48	
17,330.0	90.16	179.14	9,310.2	-7,751.0	1,947.0	7,983.1	2.03	-0.05	2.03	
17,424.0	89.14	178.81	9,310.8	-7,845.0	1,948.7	8,075.5	1.14	-1.09	-0.35	
17,517.0	90.26	179.56	9,311.3	-7,938.0	1,950.0	8,166.9	1.45	1.20	0.81	
17,612.0	90.15	179.38	9,310.9	-8,033.0	1,950.9	8,260.2	0.22	-0.12	-0.19	
17,706.0	90.26	179.40	9,310.6	-8,127.0	1,951.9	8,352.6	0.12	0.12	0.02	
17,800.0	90.15	179.14	9,310.3	-8,221.0	1,953.1	8,444.9	0.30	-0.12	-0.28	
17,894.0	90.15	178.98	9,310.0	-8,314.9	1,954.7	8,537.4	0.17	0.00	-0.17	
17,987.0	90.25	179.52	9,309.7	-8,407.9	1,955.9	8,628.7	0.59	0.11	0.58	
18,081.0	90.05	179.20	9,309.4	-8,501.9	1,956.9	8,721.1	0.40	-0.21	-0.34	
18,175.0	90.23	179.72	9,309.2	-8,595.9	1,957.8	8,813.4	0.59	0.19	0.55	
18,270.0	90.40	179.54	9,308.7	-8,690.9	1,958.4	8,906.6	0.26	0.18	-0.19	
18,364.0	90.10	179.11	9,308.3	-8,784.9	1,959.5	8,999.0	0.56	-0.32	-0.46	
18,458.0	89.09	178.85	9,308.9	-8,878.9	1,961.2	9,091.4	1.11	-1.07	-0.28	
18,553.0	89.18	178.80	9,310.4	-8,973.9	1,963.2	9,184.9	0.11	0.09	-0.05	
18,647.0	90.16	179.39	9,310.9	-9,067.8	1,964.6	9,277.3	1.22	1.04	0.63	
18,741.0	87.14	177.24	9,313.1	-9,161.8	1,967.4	9,369.9	3.94	-3.21	-2.29	
18,836.0	90.39	178.97	9,315.2	-9,256.7	1,970.5	9,463.6	3.88	3.42	1.82	
18,929.0	90.47	178.45	9,314.5	-9,349.6	1,972.6	9,555.1	0.57	0.09	-0.56	
19,023.0	90.30	178.67	9,313.8	-9,443.6	1,975.0	9,647.7	0.30	-0.18	0.23	
19,118.0	90.21	178.91	9,313.4	-9,538.6	1,977.0	9,741.2	0.27	-0.09	0.25	
19,139.0	90.21	178.86	9,313.4	-9,559.6	1,977.4	9,761.9	0.24	0.00	-0.24	
LTP @ 19139'MD / 9313.4'TVD										
19,212.0	90.19	178.68	9,313.1	-9,632.6	1,979.0	9,833.7	0.25	-0.03	-0.25	
19,241.0	90.20	178.54	9,313.0	-9,661.6	1,979.7	9,862.3	0.48	0.03	-0.48	
Final PHX MWD SVY										
19,268.0	90.20	178.54	9,312.9	-9,688.6	1,980.4	9,888.9	0.00	0.00	0.00	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well QUIEN SABE FED COM #801H
Project:	EDDY COUNTY, NM	TVD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Site:	ATLAS	MD Reference:	KB-24' @ 3147.3usft (Ensign 155)
Well:	QUIEN SABE FED COM #801H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
19,139.0	9,313.4	-9,559.6	1,977.4	LTP @ 19139'MD / 9313.4'TVD
19,241.0	9,313.0	-9,661.6	1,979.7	Final PHX MWD SVY
19,268.0	9,312.9	-9,688.6	1,980.4	PTD @ 19268'MD

Checked By: _____ Approved By: _____ Date: _____