



Project: Lea County, NM
Site: Fire Eagle State San Andres Unit
Well: Fire Eagle State San Andres Unit No 2H
Wellbore: Lateral
Plan: Plan #1

SURFACE LOCATION

US State Plane 1927 (Exact solution)
New Mexico East 3001
Elevation: GL 4008' + KB 12' @ 4020.00usft
Northing 897216.00 Easting 839786.00 Latitude 33° 27' 41.150 N Longitude 103° 13' 9.216 W

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Fire Eagle State San Andres Unit No 2H BHL	4915.00	7613.00	-88.00	904829.00	839698.00	33° 28' 56.471 N	103° 13' 9.291 W

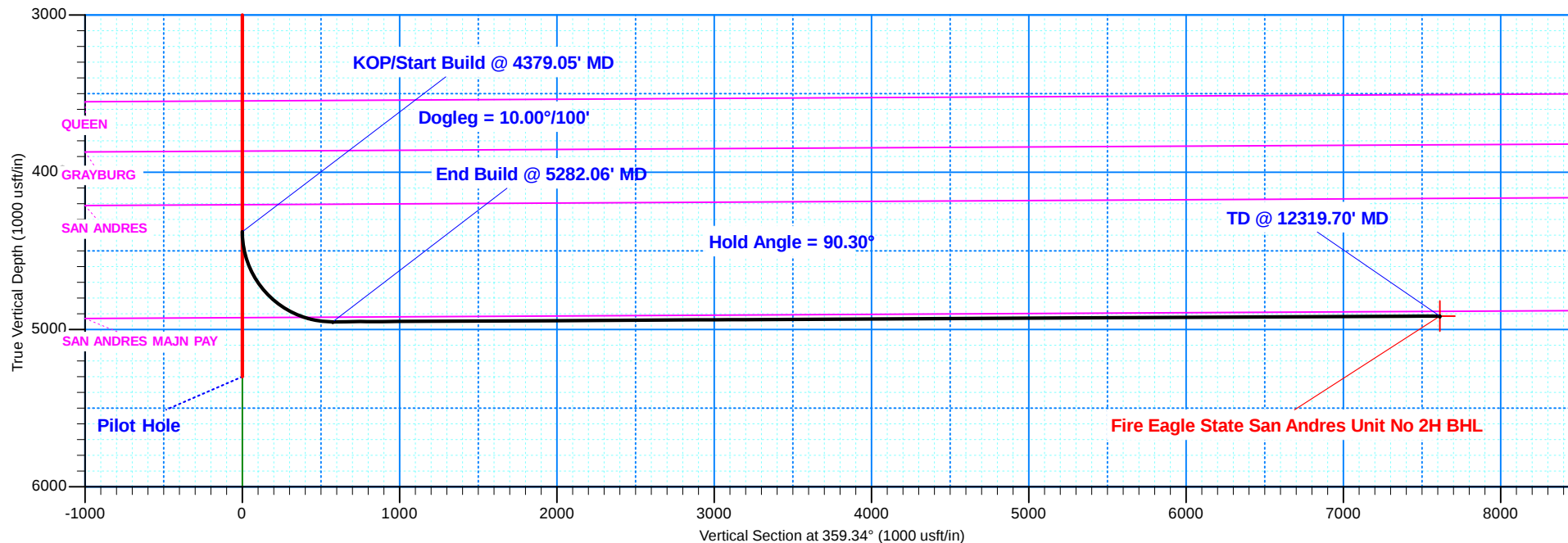
To convert a Magnetic Direction to a Grid Direction, Add 6.36°

Magnetic Model: BGGM2016 Date: 21-Jun-16
Azimuths to Grid North

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
4379.05	0.00	0.00	4379.05	0.00	0.00	0.00	0.00	0.00	KOP/Start Build
5282.06	90.30	359.34	4952.00	575.93	-6.66	10.00	359.34	575.97	End Build
12319.70	90.30	359.34	4915.00	7613.00	-88.00	0.00	0.00	7613.51	TD

OCD – HOBBS
06/23/2016
RECEIVED



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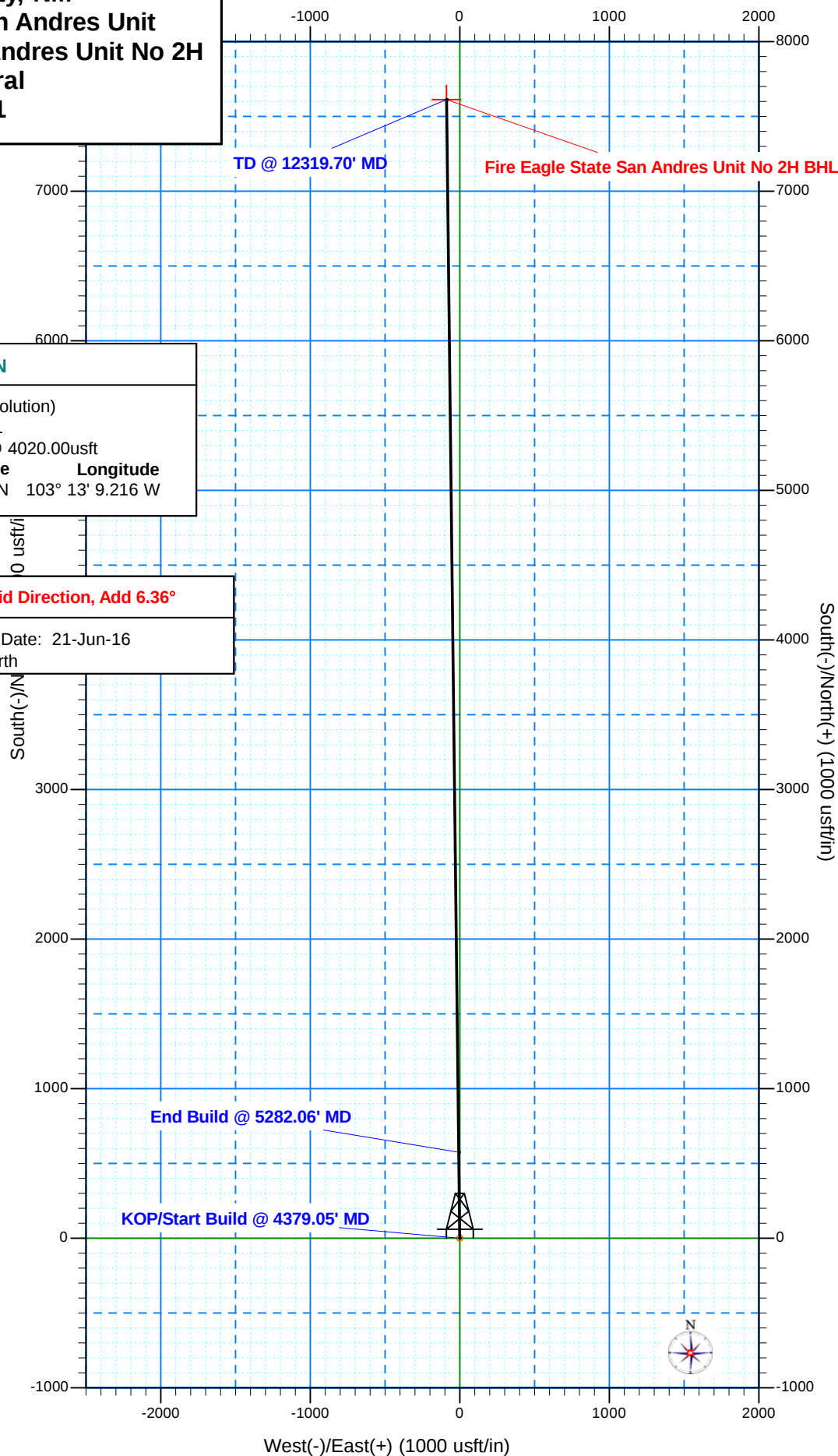
SURFACE LOCATION

US State Plane 1927 (Exact solution)
 New Mexico East 3001
 Elevation: GL 4008' + KB 12' @ 4020.00usft

Northing	Easting	Latitude	Longitude
897216.00	839786.00	33° 27' 41.150 N	103° 13' 9.216 W

To convert a Magnetic Direction to a Grid Direction, Add 6.36°

Magnetic Model: BGGM2016 Date: 21-Jun-16
 Azimuths to Grid North



Apache Corporation

Lea County, NM

Fire Eagle State San Andres Unit

Fire Eagle State San Andres Unit No 2H

Lateral

Plan: Plan #1

Sperry Drilling Services

Proposal Report

21 June, 2016

Well Coordinates: 897,216.00 N, 839,786.00 E (33° 27' 41.15" N, 103° 13' 09.22" W)

Ground Level: 4,008.00 usft

Local Coordinate Origin: Centered on Well Fire Eagle State San Andres Unit N

Viewing Datum: GL 4008' + KB 12' @ 4020.00usft

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet

Version: 5000.1 Build: 81

HALLIBURTON

Plan Report for Fire Eagle State San Andres Unit No 2H - Plan #1

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)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,203.00	0.00	0.00	2,203.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
USTLER										
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,864.00	0.00	0.00	2,864.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YATES										
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,547.00	0.00	0.00	3,547.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
QUEEN										
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,866.00	0.00	0.00	3,866.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRAYBURG										
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,207.00	0.00	0.00	4,207.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN ANDRES										
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,379.05	0.00	0.00	4,379.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP/Start Build @ 4379.05' MD - Dogleg = 10.00°/100'										
4,400.00	2.10	359.34	4,400.00	0.38	0.00	0.38	10.00	10.00	0.00	359.34
4,450.00	7.10	359.34	4,449.82	4.39	-0.05	4.39	10.00	10.00	0.00	0.00

Plan Report for Fire Eagle State San Andres Unit No 2H - Plan #1

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)	Toolface Azimuth (°)
4,500.00	12.10	359.34	4,499.10	12.72	-0.15	12.72	10.00	10.00	0.00	0.00
4,550.00	17.10	359.34	4,547.47	25.31	-0.29	25.31	10.00	10.00	0.00	0.00
4,600.00	22.10	359.34	4,594.56	42.07	-0.49	42.08	10.00	10.00	0.00	0.00
4,650.00	27.10	359.34	4,640.01	62.88	-0.73	62.88	10.00	10.00	0.00	0.00
4,700.00	32.10	359.34	4,683.48	87.56	-1.01	87.57	10.00	10.00	0.00	0.00
4,750.00	37.10	359.34	4,724.62	115.94	-1.34	115.95	10.00	10.00	0.00	0.00
4,800.00	42.10	359.34	4,763.14	147.79	-1.71	147.80	10.00	10.00	0.00	0.00
4,850.00	47.10	359.34	4,798.73	182.88	-2.11	182.90	10.00	10.00	0.00	0.00
4,900.00	52.10	359.34	4,831.13	220.94	-2.55	220.96	10.00	10.00	0.00	0.00
4,950.00	57.10	359.34	4,860.09	261.68	-3.02	261.70	10.00	10.00	0.00	0.00
5,000.00	62.10	359.34	4,885.39	304.79	-3.52	304.81	10.00	10.00	0.00	0.00
5,050.00	67.10	359.34	4,906.83	349.94	-4.04	349.96	10.00	10.00	0.00	0.00
5,095.77	71.67	359.34	4,922.94	392.76	-4.54	392.79	10.00	10.00	0.00	0.00
SAN ANDRES MAJN PAY										
5,100.00	72.10	359.34	4,924.26	396.78	-4.59	396.81	10.00	10.00	0.00	0.00
5,150.00	77.10	359.34	4,937.54	444.97	-5.14	445.00	10.00	10.00	0.00	0.00
5,200.00	82.10	359.34	4,946.56	494.13	-5.71	494.16	10.00	10.00	0.00	0.00
5,250.00	87.10	359.34	4,951.27	543.88	-6.29	543.92	10.00	10.00	0.00	0.00
5,282.06	90.30	359.34	4,952.00	575.93	-6.66	575.97	10.00	10.00	0.00	0.00
End Build @ 5282.06' MD - Hold Angle = 90.30°										
5,300.00	90.30	359.34	4,951.91	593.87	-6.86	593.91	0.00	0.00	0.00	0.00
5,400.00	90.30	359.34	4,951.38	693.86	-8.02	693.91	0.00	0.00	0.00	0.00
5,500.00	90.30	359.34	4,950.85	793.85	-9.18	793.90	0.00	0.00	0.00	0.00
5,600.00	90.30	359.34	4,950.33	893.84	-10.33	893.90	0.00	0.00	0.00	0.00
5,700.00	90.30	359.34	4,949.80	993.84	-11.49	993.90	0.00	0.00	0.00	0.00
5,800.00	90.30	359.34	4,949.28	1,093.83	-12.64	1,093.90	0.00	0.00	0.00	0.00
5,900.00	90.30	359.34	4,948.75	1,193.82	-13.80	1,193.90	0.00	0.00	0.00	0.00
6,000.00	90.30	359.34	4,948.23	1,293.81	-14.96	1,293.90	0.00	0.00	0.00	0.00
6,100.00	90.30	359.34	4,947.70	1,393.80	-16.11	1,393.90	0.00	0.00	0.00	0.00
6,200.00	90.30	359.34	4,947.17	1,493.80	-17.27	1,493.90	0.00	0.00	0.00	0.00
6,300.00	90.30	359.34	4,946.65	1,593.79	-18.42	1,593.89	0.00	0.00	0.00	0.00
6,400.00	90.30	359.34	4,946.12	1,693.78	-19.58	1,693.89	0.00	0.00	0.00	0.00
6,500.00	90.30	359.34	4,945.60	1,793.77	-20.73	1,793.89	0.00	0.00	0.00	0.00
6,600.00	90.30	359.34	4,945.07	1,893.76	-21.89	1,893.89	0.00	0.00	0.00	0.00
6,700.00	90.30	359.34	4,944.55	1,993.75	-23.05	1,993.89	0.00	0.00	0.00	0.00
6,800.00	90.30	359.34	4,944.02	2,093.75	-24.20	2,093.89	0.00	0.00	0.00	0.00
6,900.00	90.30	359.34	4,943.49	2,193.74	-25.36	2,193.89	0.00	0.00	0.00	0.00
7,000.00	90.30	359.34	4,942.97	2,293.73	-26.51	2,293.88	0.00	0.00	0.00	0.00
7,100.00	90.30	359.34	4,942.44	2,393.72	-27.67	2,393.88	0.00	0.00	0.00	0.00
7,200.00	90.30	359.34	4,941.92	2,493.71	-28.83	2,493.88	0.00	0.00	0.00	0.00
7,300.00	90.30	359.34	4,941.39	2,593.71	-29.98	2,593.88	0.00	0.00	0.00	0.00
7,400.00	90.30	359.34	4,940.86	2,693.70	-31.14	2,693.88	0.00	0.00	0.00	0.00
7,500.00	90.30	359.34	4,940.34	2,793.69	-32.29	2,793.88	0.00	0.00	0.00	0.00
7,600.00	90.30	359.34	4,939.81	2,893.68	-33.45	2,893.88	0.00	0.00	0.00	0.00
7,700.00	90.30	359.34	4,939.29	2,993.67	-34.60	2,993.87	0.00	0.00	0.00	0.00
7,800.00	90.30	359.34	4,938.76	3,093.67	-35.76	3,093.87	0.00	0.00	0.00	0.00
7,900.00	90.30	359.34	4,938.24	3,193.66	-36.92	3,193.87	0.00	0.00	0.00	0.00
8,000.00	90.30	359.34	4,937.71	3,293.65	-38.07	3,293.87	0.00	0.00	0.00	0.00
8,100.00	90.30	359.34	4,937.18	3,393.64	-39.23	3,393.87	0.00	0.00	0.00	0.00
8,200.00	90.30	359.34	4,936.66	3,493.63	-40.38	3,493.87	0.00	0.00	0.00	0.00
8,300.00	90.30	359.34	4,936.13	3,593.63	-41.54	3,593.87	0.00	0.00	0.00	0.00
8,400.00	90.30	359.34	4,935.61	3,693.62	-42.70	3,693.86	0.00	0.00	0.00	0.00
8,500.00	90.30	359.34	4,935.08	3,793.61	-43.85	3,793.86	0.00	0.00	0.00	0.00
8,600.00	90.30	359.34	4,934.56	3,893.60	-45.01	3,893.86	0.00	0.00	0.00	0.00
8,700.00	90.30	359.34	4,934.03	3,993.59	-46.16	3,993.86	0.00	0.00	0.00	0.00
8,800.00	90.30	359.34	4,933.50	4,093.59	-47.32	4,093.86	0.00	0.00	0.00	0.00
8,900.00	90.30	359.34	4,932.98	4,193.58	-48.47	4,193.86	0.00	0.00	0.00	0.00
9,000.00	90.30	359.34	4,932.45	4,293.57	-49.63	4,293.86	0.00	0.00	0.00	0.00
9,100.00	90.30	359.34	4,931.93	4,393.56	-50.79	4,393.86	0.00	0.00	0.00	0.00
9,200.00	90.30	359.34	4,931.40	4,493.55	-51.94	4,493.85	0.00	0.00	0.00	0.00

Plan Report for Fire Eagle State San Andres Unit No 2H - Plan #1

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)	Toolface Azimuth (°)
9,300.00	90.30	359.34	4,930.88	4,593.55	-53.10	4,593.85	0.00	0.00	0.00	0.00
9,400.00	90.30	359.34	4,930.35	4,693.54	-54.25	4,693.85	0.00	0.00	0.00	0.00
9,500.00	90.30	359.34	4,929.82	4,793.53	-55.41	4,793.85	0.00	0.00	0.00	0.00
9,600.00	90.30	359.34	4,929.30	4,893.52	-56.57	4,893.85	0.00	0.00	0.00	0.00
9,700.00	90.30	359.34	4,928.77	4,993.51	-57.72	4,993.85	0.00	0.00	0.00	0.00
9,800.00	90.30	359.34	4,928.25	5,093.51	-58.88	5,093.85	0.00	0.00	0.00	0.00
9,900.00	90.30	359.34	4,927.72	5,193.50	-60.03	5,193.84	0.00	0.00	0.00	0.00
10,000.00	90.30	359.34	4,927.20	5,293.49	-61.19	5,293.84	0.00	0.00	0.00	0.00
10,100.00	90.30	359.34	4,926.67	5,393.48	-62.34	5,393.84	0.00	0.00	0.00	0.00
10,200.00	90.30	359.34	4,926.14	5,493.47	-63.50	5,493.84	0.00	0.00	0.00	0.00
10,300.00	90.30	359.34	4,925.62	5,593.46	-64.66	5,593.84	0.00	0.00	0.00	0.00
10,400.00	90.30	359.34	4,925.09	5,693.46	-65.81	5,693.84	0.00	0.00	0.00	0.00
10,500.00	90.30	359.34	4,924.57	5,793.45	-66.97	5,793.84	0.00	0.00	0.00	0.00
10,600.00	90.30	359.34	4,924.04	5,893.44	-68.12	5,893.83	0.00	0.00	0.00	0.00
10,700.00	90.30	359.34	4,923.52	5,993.43	-69.28	5,993.83	0.00	0.00	0.00	0.00
10,800.00	90.30	359.34	4,922.99	6,093.42	-70.43	6,093.83	0.00	0.00	0.00	0.00
10,900.00	90.30	359.34	4,922.46	6,193.42	-71.59	6,193.83	0.00	0.00	0.00	0.00
11,000.00	90.30	359.34	4,921.94	6,293.41	-72.75	6,293.83	0.00	0.00	0.00	0.00
11,100.00	90.30	359.34	4,921.41	6,393.40	-73.90	6,393.83	0.00	0.00	0.00	0.00
11,200.00	90.30	359.34	4,920.89	6,493.39	-75.06	6,493.83	0.00	0.00	0.00	0.00
11,300.00	90.30	359.34	4,920.36	6,593.38	-76.21	6,593.82	0.00	0.00	0.00	0.00
11,400.00	90.30	359.34	4,919.84	6,693.38	-77.37	6,693.82	0.00	0.00	0.00	0.00
11,500.00	90.30	359.34	4,919.31	6,793.37	-78.53	6,793.82	0.00	0.00	0.00	0.00
11,600.00	90.30	359.34	4,918.78	6,893.36	-79.68	6,893.82	0.00	0.00	0.00	0.00
11,700.00	90.30	359.34	4,918.26	6,993.35	-80.84	6,993.82	0.00	0.00	0.00	0.00
11,800.00	90.30	359.34	4,917.73	7,093.34	-81.99	7,093.82	0.00	0.00	0.00	0.00
11,900.00	90.30	359.34	4,917.21	7,193.34	-83.15	7,193.82	0.00	0.00	0.00	0.00
12,000.00	90.30	359.34	4,916.68	7,293.33	-84.30	7,293.81	0.00	0.00	0.00	0.00
12,100.00	90.30	359.34	4,916.16	7,393.32	-85.46	7,393.81	0.00	0.00	0.00	0.00
12,200.00	90.30	359.34	4,915.63	7,493.31	-86.62	7,493.81	0.00	0.00	0.00	0.00
12,300.00	90.30	359.34	4,915.10	7,593.30	-87.77	7,593.81	0.00	0.00	0.00	0.00
12,319.70	90.30	359.34	4,915.00	7,613.00	-88.00	7,613.51	0.00	0.00	0.00	0.00

TD @ 12319.70' MD - Fire Eagle State San Andres Unit No 2H BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
4,379.05	4,379.05	0.00	0.00	KOP/Start Build @ 4379.05' MD
4,379.05	4,379.05	0.00	0.00	Dogleg = 10.00°/100'
5,282.06	4,952.00	575.93	-6.66	End Build @ 5282.06' MD
5,282.06	4,952.00	575.93	-6.66	Hold Angle = 90.30°
12,319.70	4,915.00	7,613.00	-88.00	TD @ 12319.70' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	+E/-W (usft)	Start TVD (usft)
TD	No Target (Freehand)	359.34	Slot	0.00	0.00	0.00
4,379.05	12,319.64	Plan #1			MWD	

Plan Report for Fire Eagle State San Andres Unit No 2H - Plan #1**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,203.00	2,203.00	USTLER		-0.30	359.34
2,864.00	2,864.00	YATES		-0.30	359.34
3,547.00	3,547.00	QUEEN		-0.30	359.34
3,866.00	3,866.00	GRAYBURG		-0.30	359.34
4,207.00	4,207.00	SAN ANDRES		-0.30	359.34
5,095.77	4,925.00	SAN ANDRES MAJN PAY		-0.30	359.34

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Fire Eagle State San Andres Unit No 2H BHL	4,915.00	7,613.00	-88.00	Point

North Reference Sheet for Fire Eagle State San Andres Unit - Fire Eagle State San Andres Unit No 2H - Lateral

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GL 4008' + KB 12' @ 4020.00usft. Northing and Easting are relative to Fire Eagle State San Andres Unit No 2H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 3001 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -104.33°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 0° 0' 0.000 N°

False Easting: 500,000.00usft, False Northing: 0.00usft, Scale Reduction: 1.00004129

Grid Coordinates of Well: 897,216.00 usft N, 839,786.00 usft E

Geographical Coordinates of Well: 33° 27' 41.15" N, 103° 13' 09.22" W

Grid Convergence at Surface is: 0.61°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,319.70usft the Bottom Hole Displacement is 7,613.51usft in the Direction of 359.34° (Grid).

Magnetic Convergence at surface is: -6.36° (21 June 2016, BGGM2016)

