



Scientific Drilling



Legend Natural Gas

Eddy County, New Mexico

Bucshot State Com

Buckshot State Com 3H

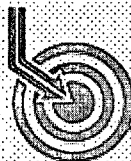
API No.:30-015-41094

Original Wellpath

Plan: Plan #1

Standard Planning Report

11 June, 2013



Scientific Drilling

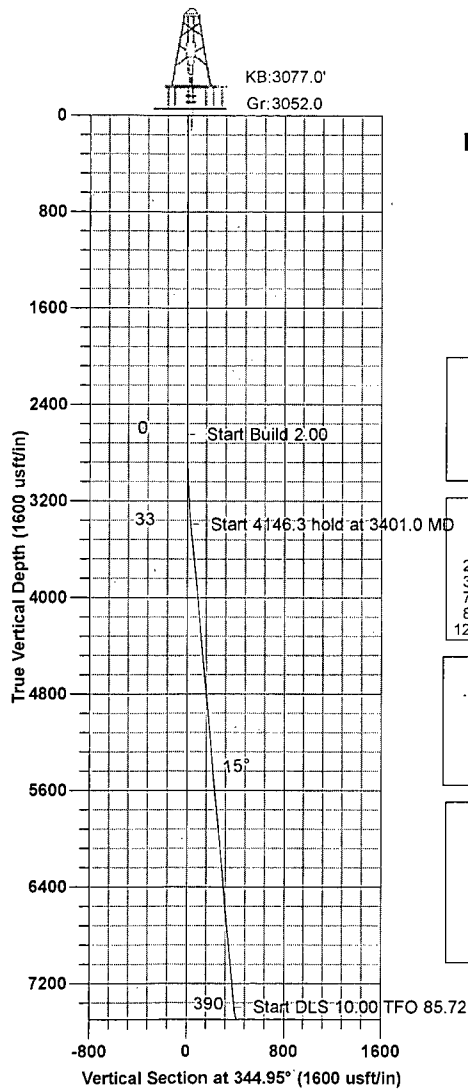
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To convert a Magnetic Direction to a Grid Direction, Add 7.49°
To convert a True Direction to a Grid Direction, Subtract 0.11°

Azimuths to Grid No
True North: -0.1°
Magnetic North: 7.4°

Magnetic Fir
Strength: 48375.8s
Dip Angle: 60.0°
Date: 5/21/20
Model: IGRF2005



Buckshot State Com 3H
Eddy County, New Mexico
Northings: 424485.20
Easting: 604246.30
Plan #1

WELL DETAILS Buckshot State Com 3H

Ground Level: 3052.0
+N/-S 0.0 +E/-W 0.0 Northing 424485.20 Easting 604246.30 Latitude 32° 10' 0.568 N Longitude 104° 7' 48.090 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2651.0	0.00	0.00	2651.0	0.0	0.0	0.00	0.00	0.0	
3401.0	15.00	274.43	3392.5	7.5	-97.3	2.00	274.43	32.5	
7547.3	15.00	274.43	7397.5	90.5	-1167.3	0.00	0.00	390.4	
8435.9	90.00	360.00	7940.0	663.3	-1312.2	10.00	85.72	981.2	
12654.2	90.00	360.00	7940.0	4881.6	-1312.2	0.00	0.00	5054.9	3H BHL

DESIGN TARGET DETAILS

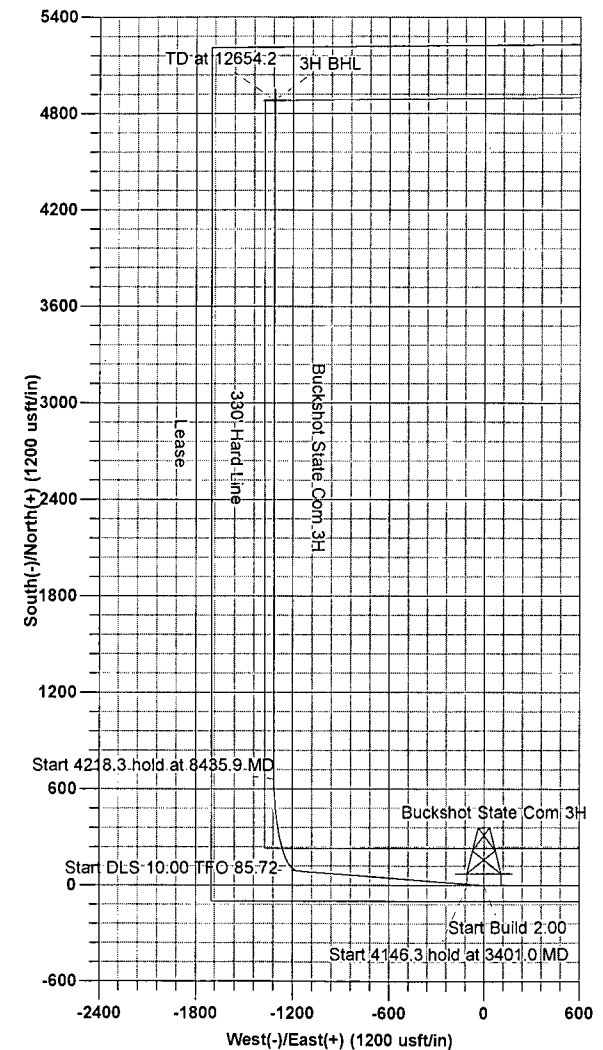
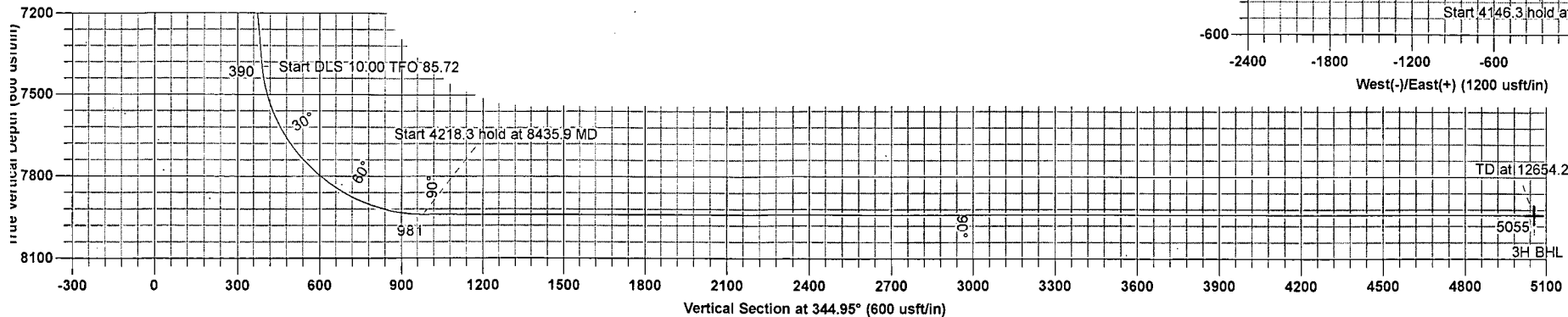
Name	TVD	+N/-S	+E/-W	Northing	Easting
3H BHL	7940.0	4881.6	-1312.2	429366.80	602934.10

SITE DETAILS:

Buckshot State Com
Site Centre Northing: 424485.20
Easting: 604246.30
Positional Uncertainty: 0.0
Convergence: 0.11
Local North: Grid

PROJECT DETAILS:

Eddy County, New Mexico
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level



Jody Barclay
14:44, June 11 2011

Scientific Drilling
2740 N. Highway 28
Decatur, TX 76234

Database:	CompassC	Local Co-ordinate Reference:	Site Bucshot State Com
Company:	Legend Natural Gas	TVD Reference:	KB @ 3077.0usft (Rig)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 3077.0usft (Rig)
Site:	Bucshot State Com	North Reference:	Grid
Well:	Buckshot State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #1		

Project	Eddy County, New Mexico		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Bucshot State Com		
Site Position:		Northing:	424,485.20 usft
From:	Map	Easting:	604,246.30 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 0.568 N
		Longitude:	104° 7' 48.090 W
		Grid Convergence:	0.11 °

Well	Buckshot State Com 3H		
Well Position	+N/-S	0.0 usft	Northing: 424,485.20 usft
	+E/-W	0.0 usft	Easting: 604,246.30 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level: 3,052.0 usft
			Latitude: 32° 10' 0.568 N
			Longitude: 104° 7' 48.090 W

Wellbore	Original Wellpath		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	5/21/2013	7.60
			Dip Angle (°)
			60.02
			Field Strength (nT)
			48,376

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From: (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction (°)
			344.95

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,651.0	0.00	0.00	2,651.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,401.0	15.00	274.43	3,392.5	7.5	-97.3	2.00	2.00	0.00	274.43	
7,547.3	15.00	274.43	7,397.5	90.5	-1,167.3	0.00	0.00	0.00	0.00	
8,435.9	90.00	360.00	7,940.0	663.3	-1,312.2	10.00	8.44	9.63	85.72	
12,654.2	90.00	360.00	7,940.0	4,881.6	-1,312.2	0.00	0.00	0.00	0.00	3H BHL

Database:	CompassC	Local Co-ordinate Reference:	Site Bucshot State Com
Company:	Legend Natural Gas	TVD Reference:	KB @ 3077.0usft (Rig)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 3077.0usft (Rig)
Site:	Bucshot State Com	North Reference:	Grid
Well:	Bucshot State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #1		

Planned 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	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,651.0	0.00	0.00	2,651.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.98	274.43	2,700.0	0.0	-0.4	0.1	2.00	2.00	0.00
2,800.0	2.98	274.43	2,799.9	0.3	-3.9	1.3	2.00	2.00	0.00
2,900.0	4.98	274.43	2,899.7	0.8	-10.8	3.6	2.00	2.00	0.00
3,000.0	6.98	274.43	2,999.1	1.6	-21.2	7.1	2.00	2.00	0.00
3,100.0	8.98	274.43	3,098.2	2.7	-35.0	11.7	2.00	2.00	0.00
3,200.0	10.98	274.43	3,196.6	4.1	-52.3	17.5	2.00	2.00	0.00
3,300.0	12.98	274.43	3,294.5	5.7	-73.0	24.4	2.00	2.00	0.00
3,401.0	15.00	274.43	3,392.5	7.5	-97.3	32.5	2.00	2.00	0.00
3,500.0	15.00	274.43	3,488.1	9.5	-122.9	41.1	0.00	0.00	0.00
3,600.0	15.00	274.43	3,584.7	11.5	-148.7	49.7	0.00	0.00	0.00
3,700.0	15.00	274.43	3,681.3	13.5	-174.5	58.4	0.00	0.00	0.00
3,800.0	15.00	274.43	3,777.9	15.5	-200.3	67.0	0.00	0.00	0.00
3,900.0	15.00	274.43	3,874.5	17.5	-226.1	75.6	0.00	0.00	0.00
4,000.0	15.00	274.43	3,971.1	19.5	-251.9	84.2	0.00	0.00	0.00
4,100.0	15.00	274.43	4,067.6	21.5	-277.7	92.9	0.00	0.00	0.00
4,200.0	15.00	274.43	4,164.2	23.5	-303.5	101.5	0.00	0.00	0.00
4,300.0	15.00	274.43	4,260.8	25.5	-329.3	110.1	0.00	0.00	0.00
4,400.0	15.00	274.43	4,357.4	27.5	-355.1	118.8	0.00	0.00	0.00
4,500.0	15.00	274.43	4,454.0	29.5	-380.9	127.4	0.00	0.00	0.00
4,600.0	15.00	274.43	4,550.6	31.5	-406.7	136.0	0.00	0.00	0.00
4,700.0	15.00	274.43	4,647.2	33.5	-432.5	144.6	0.00	0.00	0.00
4,800.0	15.00	274.43	4,743.8	35.5	-458.3	153.3	0.00	0.00	0.00
4,900.0	15.00	274.43	4,840.4	37.5	-484.1	161.9	0.00	0.00	0.00
5,000.0	15.00	274.43	4,937.0	39.5	-509.9	170.5	0.00	0.00	0.00
5,100.0	15.00	274.43	5,033.6	41.5	-535.7	179.2	0.00	0.00	0.00
5,200.0	15.00	274.43	5,130.2	43.5	-561.6	187.8	0.00	0.00	0.00

Database:	CompassC	Local Co-ordinate Reference:	Site Buckshot State Com
Company:	Legend Natural Gas	TVD Reference:	KB @ 3077.0usft (Rig)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 3077.0usft (Rig)
Site:	Buckshot State Com	North Reference:	Grid
Well:	Buckshot State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #1		

Planned 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)
5,300.0	15.00	274.43	5,226.8	45.5	-587.4	196.4	0.00	0.00	0.00
5,400.0	15.00	274.43	5,323.3	47.5	-613.2	205.1	0.00	0.00	0.00
5,500.0	15.00	274.43	5,419.9	49.5	-639.0	213.7	0.00	0.00	0.00
5,600.0	15.00	274.43	5,516.5	51.5	-664.8	222.3	0.00	0.00	0.00
5,700.0	15.00	274.43	5,613.1	53.5	-690.6	230.9	0.00	0.00	0.00
5,800.0	15.00	274.43	5,709.7	55.5	-716.4	239.6	0.00	0.00	0.00
5,900.0	15.00	274.43	5,806.3	57.5	-742.2	248.2	0.00	0.00	0.00
6,000.0	15.00	274.43	5,902.9	59.5	-768.0	256.8	0.00	0.00	0.00
6,100.0	15.00	274.43	5,999.5	61.5	-793.8	265.5	0.00	0.00	0.00
6,200.0	15.00	274.43	6,096.1	63.5	-819.6	274.1	0.00	0.00	0.00
6,300.0	15.00	274.43	6,192.7	65.5	-845.4	282.7	0.00	0.00	0.00
6,400.0	15.00	274.43	6,289.3	67.5	-871.2	291.4	0.00	0.00	0.00
6,500.0	15.00	274.43	6,385.9	69.5	-897.0	300.0	0.00	0.00	0.00
6,600.0	15.00	274.43	6,482.5	71.5	-922.8	308.6	0.00	0.00	0.00
6,700.0	15.00	274.43	6,579.0	73.5	-948.6	317.2	0.00	0.00	0.00
6,800.0	15.00	274.43	6,675.6	75.5	-974.4	325.9	0.00	0.00	0.00
6,900.0	15.00	274.43	6,772.2	77.5	-1,000.2	334.5	0.00	0.00	0.00
7,000.0	15.00	274.43	6,868.8	79.5	-1,026.0	343.1	0.00	0.00	0.00
7,100.0	15.00	274.43	6,965.4	81.5	-1,051.8	351.8	0.00	0.00	0.00
7,200.0	15.00	274.43	7,062.0	83.5	-1,077.6	360.4	0.00	0.00	0.00
7,300.0	15.00	274.43	7,158.6	85.5	-1,103.4	369.0	0.00	0.00	0.00
7,400.0	15.00	274.43	7,255.2	87.5	-1,129.3	377.7	0.00	0.00	0.00
7,500.0	15.00	274.43	7,351.8	89.5	-1,155.1	386.3	0.00	0.00	0.00
7,547.3	15.00	274.43	7,397.5	90.5	-1,167.3	390.4	0.00	0.00	0.00
7,550.0	15.02	275.45	7,400.1	90.5	-1,168.0	390.6	10.00	0.83	38.48
7,600.0	16.24	293.53	7,448.3	93.9	-1,180.8	397.2	10.00	2.44	36.15
7,650.0	18.73	308.03	7,496.0	101.7	-1,193.6	408.0	10.00	4.98	29.00
7,700.0	22.06	318.77	7,542.8	113.7	-1,206.1	422.9	10.00	6.66	21.49
7,750.0	25.92	326.65	7,588.5	129.9	-1,218.3	441.7	10.00	7.70	15.75
7,800.0	30.09	332.54	7,632.7	150.1	-1,230.1	464.3	10.00	8.34	11.79
7,850.0	34.46	337.09	7,674.9	174.3	-1,241.4	490.6	10.00	8.75	9.10
7,900.0	38.97	340.71	7,715.0	202.2	-1,252.1	520.3	10.00	9.02	7.25
7,950.0	43.57	343.69	7,752.6	233.6	-1,262.1	553.2	10.00	9.20	5.95
8,000.0	48.23	346.20	7,787.4	268.3	-1,271.4	589.1	10.00	9.33	5.02
8,050.0	52.94	348.36	7,819.1	305.9	-1,279.9	627.7	10.00	9.42	4.33
8,100.0	57.69	350.27	7,847.6	346.3	-1,287.5	668.7	10.00	9.49	3.82
8,150.0	62.46	351.99	7,872.5	389.1	-1,294.2	711.7	10.00	9.55	3.44
8,200.0	67.26	353.57	7,893.7	434.0	-1,299.8	756.6	10.00	9.58	3.15
8,250.0	72.06	355.04	7,911.1	480.7	-1,304.5	802.8	10.00	9.61	2.94
8,300.0	76.88	356.43	7,924.5	528.7	-1,308.1	850.1	10.00	9.63	2.78
8,350.0	81.70	357.77	7,933.8	577.7	-1,310.5	898.1	10.00	9.65	2.68
8,400.0	86.53	359.07	7,938.9	627.4	-1,311.9	946.5	10.00	9.66	2.61
8,435.9	90.00	360.00	7,940.0	663.3	-1,312.2	981.2	10.00	9.66	2.58
8,500.0	90.00	360.00	7,940.0	727.4	-1,312.2	1,043.1	0.00	0.00	0.00
8,600.0	90.00	360.00	7,940.0	827.4	-1,312.2	1,139.7	0.00	0.00	0.00
8,700.0	90.00	360.00	7,940.0	927.4	-1,312.2	1,236.3	0.00	0.00	0.00
8,800.0	90.00	360.00	7,940.0	1,027.4	-1,312.2	1,332.8	0.00	0.00	0.00
8,900.0	90.00	360.00	7,940.0	1,127.4	-1,312.2	1,429.4	0.00	0.00	0.00
9,000.0	90.00	360.00	7,940.0	1,227.4	-1,312.2	1,526.0	0.00	0.00	0.00
9,100.0	90.00	360.00	7,940.0	1,327.4	-1,312.2	1,622.5	0.00	0.00	0.00
9,200.0	90.00	360.00	7,940.0	1,427.4	-1,312.2	1,719.1	0.00	0.00	0.00
9,300.0	90.00	360.00	7,940.0	1,527.4	-1,312.2	1,815.7	0.00	0.00	0.00
9,400.0	90.00	360.00	7,940.0	1,627.4	-1,312.2	1,912.3	0.00	0.00	0.00
9,500.0	90.00	360.00	7,940.0	1,727.4	-1,312.2	2,008.8	0.00	0.00	0.00

Database:	CompassC	Local Co-ordinate Reference:	Site Bucshot State Com
Company:	Legend Natural Gas	TVD Reference:	KB @ 3077.0usft (Rig)
Project:	Eddy County, New Mexico	MD Reference:	KB @ 3077.0usft (Rig)
Site:	Bucshot State Com	North Reference:	Grid
Well:	Buckshot State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #1		

Planned 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)
9,600.0	90.00	360.00	7,940.0	1,827.4	-1,312.2	2,105.4	0.00	0.00	0.00
9,700.0	90.00	360.00	7,940.0	1,927.4	-1,312.2	2,202.0	0.00	0.00	0.00
9,800.0	90.00	360.00	7,940.0	2,027.4	-1,312.2	2,298.5	0.00	0.00	0.00
9,900.0	90.00	360.00	7,940.0	2,127.4	-1,312.2	2,395.1	0.00	0.00	0.00
10,000.0	90.00	360.00	7,940.0	2,227.4	-1,312.2	2,491.7	0.00	0.00	0.00
10,100.0	90.00	360.00	7,940.0	2,327.4	-1,312.2	2,588.3	0.00	0.00	0.00
10,200.0	90.00	360.00	7,940.0	2,427.4	-1,312.2	2,684.8	0.00	0.00	0.00
10,300.0	90.00	360.00	7,940.0	2,527.4	-1,312.2	2,781.4	0.00	0.00	0.00
10,400.0	90.00	360.00	7,940.0	2,627.4	-1,312.2	2,878.0	0.00	0.00	0.00
10,500.0	90.00	360.00	7,940.0	2,727.4	-1,312.2	2,974.5	0.00	0.00	0.00
10,600.0	90.00	360.00	7,940.0	2,827.4	-1,312.2	3,071.1	0.00	0.00	0.00
10,700.0	90.00	360.00	7,940.0	2,927.4	-1,312.2	3,167.7	0.00	0.00	0.00
10,800.0	90.00	360.00	7,940.0	3,027.4	-1,312.2	3,264.3	0.00	0.00	0.00
10,900.0	90.00	360.00	7,940.0	3,127.4	-1,312.2	3,360.8	0.00	0.00	0.00
11,000.0	90.00	360.00	7,940.0	3,227.4	-1,312.2	3,457.4	0.00	0.00	0.00
11,100.0	90.00	360.00	7,940.0	3,327.4	-1,312.2	3,554.0	0.00	0.00	0.00
11,200.0	90.00	360.00	7,940.0	3,427.4	-1,312.2	3,650.5	0.00	0.00	0.00
11,300.0	90.00	360.00	7,940.0	3,527.4	-1,312.2	3,747.1	0.00	0.00	0.00
11,400.0	90.00	360.00	7,940.0	3,627.4	-1,312.2	3,843.7	0.00	0.00	0.00
11,500.0	90.00	360.00	7,940.0	3,727.4	-1,312.2	3,940.3	0.00	0.00	0.00
11,600.0	90.00	360.00	7,940.0	3,827.4	-1,312.2	4,036.8	0.00	0.00	0.00
11,700.0	90.00	360.00	7,940.0	3,927.4	-1,312.2	4,133.4	0.00	0.00	0.00
11,800.0	90.00	360.00	7,940.0	4,027.4	-1,312.2	4,230.0	0.00	0.00	0.00
11,900.0	90.00	360.00	7,940.0	4,127.4	-1,312.2	4,326.6	0.00	0.00	0.00
12,000.0	90.00	360.00	7,940.0	4,227.4	-1,312.2	4,423.1	0.00	0.00	0.00
12,100.0	90.00	360.00	7,940.0	4,327.4	-1,312.2	4,519.7	0.00	0.00	0.00
12,200.0	90.00	360.00	7,940.0	4,427.4	-1,312.2	4,616.3	0.00	0.00	0.00
12,300.0	90.00	360.00	7,940.0	4,527.4	-1,312.2	4,712.8	0.00	0.00	0.00
12,400.0	90.00	360.00	7,940.0	4,627.4	-1,312.2	4,809.4	0.00	0.00	0.00
12,500.0	90.00	360.00	7,940.0	4,727.4	-1,312.2	4,906.0	0.00	0.00	0.00
12,600.0	90.00	360.00	7,940.0	4,827.4	-1,312.2	5,002.6	0.00	0.00	0.00
12,654.2	90.00	360.00	7,940.0	4,881.6	-1,312.2	5,054.9	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
hit/miss target									
Shape									
3H BHL	0.00	0.00	7,940.0	4,881.6	-1,312.2	429,366.80	602,934.10	32° 10' 48.901 N	104° 8' 3.252 W
- plan hits target center									
- Point									