

30-015-41041

Strata Production Company

Eddy County, New Mexico (NAD 27)

Roadrunner Federal

#2H

Wellbore #1 Job #1411093

Survey: Phoenix MWD Surveys

Standard Survey Report

27 August, 2014



Phoenix Technology Services
Survey Report



Company:	Strata Production Company	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3327.00usft (Silver Oak 11)
Site:	Roadrunner Federal	MD Reference:	WELL @ 3327.00usft (Silver Oak 11)
Well:	#2H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1411093	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 11)	Database:	Compass 5000 GCR DB

Project	Eddy County, New Mexico (NAD 27)		
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	Roadrunner Federal		
Site Position:		Northing:	465,844.80 usft
From:	Map	Easting:	652,366.29 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 16' 47.14207 N
		Longitude:	103° 50' 25.15414 W
		Grid Convergence:	0.26 °

Well	#2H		
Well Position	+N-S	0.00 usft	Northing: 465,844.80 usft
	+E-W	0.00 usft	Easting: 652,366.29 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 16' 47.14207 N
		Longitude:	103° 50' 25.15414 W
		Ground Level:	3,310.00 usft

Wellbore	Wellbore #1 Job #1411093				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010_14	07/09/14	7.34	60.12	48,315

Design	Surveys (Silver Oak 11)			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(usft)	(usft)	(usft)	(°)
	7,734.00	0.00	0.00	159.21

Survey Program	Date	08/27/14			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.00	7,125.00	MS Gyro Survey (Wellbore #1 Job #14110	NS-GYRO-MS	North sensing gyrocompassing m/s	
7,152.00	11,450.00	Phoenix MWD Surveys (Wellbore #1 Job #	PHX+MWD+IGRF	PHX+MWD+IGRF v3:standard declination	

Survey										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
7,125.00	1.47	191.00	7,122.57	-41.98	98.02	74.04	0.00	0.00	0.00	
Gyro Tie-in										
7,152.00	1.50	194.80	7,149.56	-42.66	97.86	74.62	0.38	0.11	14.07	
First Phoenix Survey										
7,183.00	2.30	192.10	7,180.54	-43.66	97.63	75.47	2.60	2.58	-8.71	
7,215.00	5.00	188.00	7,212.47	-45.67	97.30	77.23	8.47	8.44	-12.81	
7,247.00	7.30	190.40	7,244.29	-49.05	96.74	80.19	7.23	7.19	7.50	
7,279.00	9.70	198.10	7,275.93	-53.61	95.54	84.03	8.28	7.50	24.06	
7,310.00	12.10	201.00	7,306.37	-59.13	93.56	88.49	7.94	7.74	9.35	

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Wellbore:	Wellbore #1 Job #1411093	Survey Calculation Method:	Minimum Curvature
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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)
7,342.00	14.40	196.50	7,337.52	-66.07	91.23	94.15	7.87	7.19	-14.06
7,373.00	16.90	194.90	7,367.37	-74.13	88.97	100.88	8.18	8.06	-5.16
7,405.00	19.40	192.40	7,397.77	-83.81	86.64	109.11	8.18	7.81	-7.81
7,436.00	21.20	194.60	7,426.85	-94.27	84.12	117.99	6.31	5.81	7.10
7,467.00	23.70	194.30	7,455.50	-105.73	81.17	127.66	8.07	8.06	-0.97
7,499.00	27.10	191.70	7,484.40	-119.10	78.10	139.07	11.18	10.63	-8.13
7,530.00	30.60	189.00	7,511.55	-133.82	75.43	151.88	12.04	11.29	-8.71
7,562.00	34.40	186.60	7,538.53	-150.85	73.12	166.98	12.54	11.88	-7.50
7,593.00	38.70	184.90	7,563.43	-169.21	71.28	183.49	14.25	13.87	-5.48
7,625.00	42.80	182.80	7,587.67	-190.05	69.90	202.48	13.51	12.81	-6.56
7,657.00	47.20	180.50	7,610.29	-212.66	69.26	223.39	14.66	13.75	-7.19
7,688.00	51.30	178.60	7,630.53	-236.13	69.46	245.41	14.02	13.23	-6.13
7,720.00	55.50	177.80	7,649.60	-261.80	70.27	269.70	13.28	13.13	-2.50
7,751.00	59.70	177.80	7,666.21	-287.95	71.27	294.50	13.55	13.55	0.00
7,783.00	63.20	177.90	7,681.50	-316.04	72.33	321.13	10.94	10.94	0.31
7,814.00	68.80	178.60	7,694.10	-344.33	73.19	347.89	18.18	18.06	2.26
7,845.00	73.30	178.90	7,704.17	-373.64	73.83	375.51	14.54	14.52	0.97
7,877.00	78.10	178.90	7,712.07	-404.63	74.42	404.70	15.00	15.00	0.00
7,896.00	81.00	178.60	7,715.52	-423.31	74.83	422.31	15.34	15.26	-1.58
7,907.00	83.30	178.50	7,717.02	-434.20	75.11	432.59	20.93	20.91	-0.91
7,939.00	88.50	178.00	7,719.30	-466.10	76.08	462.75	16.32	16.25	-1.56
7,970.00	88.60	178.90	7,720.09	-497.07	76.92	492.01	2.92	0.32	2.90
8,002.00	88.70	178.60	7,720.84	-529.06	77.62	522.16	0.99	0.31	-0.94
8,033.00	90.10	180.40	7,721.17	-560.05	77.89	551.23	7.36	4.52	5.81
8,065.00	90.60	181.80	7,720.97	-592.04	77.27	580.92	4.65	1.56	4.38
8,097.00	90.20	182.50	7,720.75	-624.02	76.07	610.39	2.52	-1.25	2.19
8,128.00	89.50	182.90	7,720.83	-654.99	74.61	638.82	2.60	-2.26	1.29
8,160.00	89.00	182.40	7,721.25	-686.95	73.13	668.18	2.21	-1.56	-1.56
8,191.00	88.00	182.00	7,722.06	-717.92	71.94	696.70	3.47	-3.23	-1.29
8,223.00	87.40	181.00	7,723.34	-749.88	71.11	726.29	3.64	-1.88	-3.13
8,254.00	86.50	180.10	7,724.99	-780.83	70.81	755.12	4.10	-2.90	-2.90
8,285.00	85.90	179.00	7,727.05	-811.76	71.05	784.12	4.04	-1.94	-3.55
8,317.00	85.40	178.10	7,729.48	-843.66	71.86	814.23	3.21	-1.56	-2.81
8,348.00	84.90	177.30	7,732.10	-874.52	73.10	843.52	3.04	-1.61	-2.58
8,380.00	84.90	176.70	7,734.94	-906.35	74.77	873.87	1.87	0.00	-1.88
8,411.00	85.40	175.80	7,737.56	-937.18	76.79	903.41	3.31	1.61	-2.90
8,443.00	85.70	175.30	7,740.05	-968.98	79.26	934.02	1.82	0.94	-1.56
8,475.00	86.20	174.60	7,742.31	-1,000.78	82.07	964.74	2.68	1.56	-2.19
8,506.00	86.40	173.80	7,744.31	-1,031.56	85.20	994.63	2.65	0.65	-2.58
8,538.00	87.60	173.30	7,745.98	-1,063.31	88.79	1,025.58	4.06	3.75	-1.56
8,569.00	87.90	172.40	7,747.20	-1,094.04	92.64	1,055.69	3.06	0.97	-2.90
8,601.00	87.70	171.40	7,748.43	-1,125.70	97.15	1,086.88	3.18	-0.63	-3.13
8,634.00	87.50	171.30	7,749.81	-1,158.30	102.11	1,119.12	0.68	-0.61	-0.30

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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)
8,665.00	87.80	170.60	7,751.08	-1,188.88	106.98	1,149.44	2.45	0.97	-2.26
8,697.00	88.80	168.80	7,752.03	-1,220.35	112.70	1,180.89	6.43	3.13	-5.63
8,728.00	91.10	167.40	7,752.06	-1,250.68	119.09	1,211.52	8.69	7.42	-4.52
8,760.00	93.40	166.00	7,750.80	-1,281.80	126.45	1,243.21	8.41	7.19	-4.38
8,791.00	94.80	163.40	7,748.58	-1,311.62	134.60	1,273.99	9.51	4.52	-8.39
8,823.00	93.80	160.70	7,746.18	-1,341.97	144.44	1,305.86	8.98	-3.13	-8.44
8,854.00	92.20	158.60	7,744.56	-1,371.00	155.20	1,336.81	8.51	-5.16	-6.77
8,886.00	91.20	157.20	7,743.61	-1,400.63	167.24	1,368.79	5.37	-3.13	-4.38
8,917.00	89.40	155.00	7,743.45	-1,428.97	179.79	1,399.74	9.17	-5.81	-7.10
8,949.00	88.80	153.60	7,743.95	-1,457.80	193.67	1,431.62	4.76	-1.88	-4.38
8,980.00	88.90	153.40	7,744.57	-1,485.54	207.50	1,462.46	0.72	0.32	-0.65
9,012.00	90.10	152.20	7,744.85	-1,514.00	222.12	1,494.25	5.30	3.75	-3.75
9,043.00	90.40	152.20	7,744.72	-1,541.42	236.58	1,525.02	0.97	0.97	0.00
9,075.00	90.80	152.10	7,744.38	-1,569.71	251.53	1,556.78	1.29	1.25	-0.31
9,169.00	91.20	152.10	7,742.74	-1,652.77	295.51	1,650.04	0.43	0.43	0.00
9,263.00	92.80	152.20	7,739.46	-1,735.83	339.39	1,743.27	1.71	1.70	0.11
9,358.00	88.80	150.60	7,738.14	-1,819.21	384.85	1,837.36	4.53	-4.21	-1.68
9,453.00	89.90	150.10	7,739.21	-1,901.76	431.85	1,931.21	1.27	1.16	-0.53
9,547.00	89.60	149.20	7,739.62	-1,982.88	479.34	2,023.91	1.01	-0.32	-0.96
9,642.00	91.30	148.50	7,738.88	-2,064.18	528.48	2,117.35	1.94	1.79	-0.74
9,736.00	88.60	149.10	7,738.96	-2,144.57	577.17	2,209.80	2.94	-2.87	0.64
9,830.00	89.00	148.40	7,740.93	-2,224.92	625.92	2,302.21	0.86	0.43	-0.74
9,925.00	91.00	148.80	7,740.93	-2,306.00	675.42	2,395.58	2.15	2.11	0.42
10,019.00	87.80	148.10	7,741.91	-2,386.09	724.59	2,487.91	3.48	-3.40	-0.74
10,114.00	88.60	147.90	7,744.90	-2,466.61	774.91	2,581.05	0.87	0.84	-0.21
10,208.00	89.10	148.30	7,746.78	-2,546.40	824.57	2,673.27	0.68	0.53	0.43
10,302.00	89.40	148.80	7,748.01	-2,626.59	873.61	2,765.64	0.62	0.32	0.53
10,397.00	89.50	150.20	7,748.93	-2,708.43	921.83	2,859.28	1.48	0.11	1.47
10,491.00	90.20	150.30	7,749.17	-2,790.04	968.47	2,952.13	0.75	0.74	0.11
10,585.00	90.20	149.30	7,748.84	-2,871.28	1,015.75	3,044.86	1.06	0.00	-1.06
10,704.00	91.00	149.30	7,747.60	-2,973.60	1,076.50	3,162.08	0.67	0.67	0.00
10,799.00	90.80	147.40	7,746.10	-3,054.46	1,126.34	3,255.36	2.01	-0.21	-2.00
10,894.00	89.00	147.40	7,746.27	-3,134.49	1,177.52	3,348.35	1.89	-1.89	0.00
10,988.00	88.90	147.30	7,747.99	-3,213.62	1,228.23	3,440.33	0.15	-0.11	-0.11
11,083.00	88.70	147.30	7,749.98	-3,293.55	1,279.54	3,533.26	0.21	-0.21	0.00
11,177.00	87.70	146.50	7,752.94	-3,372.25	1,330.85	3,625.05	1.36	-1.06	-0.85
11,271.00	87.70	146.50	7,756.71	-3,450.57	1,382.69	3,716.68	0.00	0.00	0.00
11,366.00	86.90	146.50	7,761.18	-3,529.70	1,435.06	3,809.24	0.84	-0.84	0.00
Final Phoenix Survey									
11,450.00	86.90	146.50	7,765.73	-3,599.65	1,481.36	3,891.07	0.00	0.00	0.00
Projection to TD									

Phoenix Technology Services
Survey Report



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Site:	Roadrunner Federal	MD Reference:	WELL @ 3327.00usft (Silver Oak 11)
Well:	#2H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1411093	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 11)	Database:	Compass 5000 GCR DB

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,125.00	7,122.57	-41.98	98.02	Gyro Tie-in
7,152.00	7,149.56	-42.66	97.86	First Phoenix Survey
11,366.00	7,761.18	-3,529.70	1,435.06	Final Phoenix Survey
11,450.00	7,765.73	-3,599.65	1,481.36	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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