

30-015-40070



Scientific Drilling



OXY

Hackberry North

Smokey Bits 5H

Smokey Bits 5H

Original Wellbore

Design: Original Wellbore

Standard Survey Report

This survey is correct to the best of my knowledge and is supported by actual field data.

Notarized this date 23rd of August, 2012.

Michelle Renee Dunaway
Notary Signature
County of Midland
State of Texas



Company:	OXY	Local Co-ordinate Reference:	Well Smokey Bits 5H
Project:	Hackberry North	TVD Reference:	KB @ 3538.90usft (Rig)
Site:	Smokey Bits 5H	MD Reference:	KB @ 3538.90usft (Rig)
Well:	Smokey Bits 5H	North Reference:	Gnd
Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellbore	Database:	EDM-JodyBarclay-Local

Project	Hackberry North, New Mexico		
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	Smokey Bits 5H				
Site Position:		Northing:	617,673.60 usft	Latitude:	32° 41' 50.793 N
From:	Map	Easting:	623,308.70 usft	Longitude:	103° 55' 56.979 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.22 °

Well		Smokey Bits 5H				
Well Position	+N/-S	0.00 usft	Northing:	617,673.60 usft	Latitude:	32° 41' 50.793 N
	+E/-W	0.00 usft	Easting:	623,308.70 usft	Longitude:	103° 55' 56.979 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,513.90 usft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/22/12	7.67	60.54	48,767

Design	Original Wellbore			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	85.82

Survey Program	Date	06/20/12			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
103.66	444.19	Survey #1 (Original Wellbore)	SDI Keeper Gyro	Scientific Drilling Intl. Standard Wireline Keeper	
524.00	12,945.00	Survey #2 (Original Wellbore)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
103.66	0.92	242.55	103.66	-0.38	-0.74	-0.76	0.89	0.89	0.00	
194.80	1.12	229.89	194.78	-1.29	-2.07	-2.16	0.33	0.22	-13.89	
292.37	0.84	233.66	292.34	-2.33	-3.37	-3.54	0.29	-0.29	3.86	
385.34	0.76	249.01	385.30	-2.96	-4.50	-4.70	0.25	-0.09	16.51	
435.05	0.87	252.29	435.00	-3.19	-5.17	-5.39	0.24	0.22	6.61	
Rustler										
444.19	0.89	252.81	444.14	-3.23	-5.30	-5.52	0.24	0.22	5.64	
524.00	1.02	253.54	523.94	-3.62	-6.57	-6.82	0.16	0.16	0.91	
615.00	1.14	248.19	614.92	-4.18	-8.19	-8.47	0.17	0.13	-5.88	

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Design:	Original Wellbore	Database:	EDM-JodyBarclay-Local

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708.00	1 14	252.23	707.91	-4.81	-9.93	-10.25	0 09	0 00	4 34	
740.10	1.20	248 87	740.00	-5.03	-10.55	-10.89	0.28	0.19	-10 48	
Salado										
799.00	1.32	243.53	798.89	-5.55	-11.73	-12.10	0 28	0 20	-9.06	
892.00	1.32	242.30	891 86	-6 53	-13.64	-14.08	0.03	0 00	-1.32	
986.00	1.32	247.75	985.84	-7.44	-15.60	-16.10	0.13	0 00	5.80	
1,110.00	1.14	236 94	1,109.81	-8.65	-17.95	-18.54	0.24	-0.15	-8.72	
1,204.00	0.88	242.91	1,203.79	-9.49	-19.38	-20 02	0 30	-0.28	6.35	
1,298.00	0 44	268 84	1,297 79	-9.83	-20.38	-21.05	0.55	-0 47	27.59	
1,393.00	1.14	9 47	1,392.78	-8 90	-20.59	-21.19	1.36	0.74	105.93	
1,487.00	1 23	13.69	1,486.76	-7 00	-20 20	-20.66	0.13	0.10	4.49	
1,582.00	1.06	17.03	1,581 74	-5.17	-19.70	-20.03	0.19	-0.18	3.52	
1,676 00	1.23	22 22	1,675.72	-3.41	-19.07	-19.26	0.21	0.18	5 52	
1,770 00	1.23	31 97	1,769.70	-1.62	-18.15	-18.22	0.22	0.00	10.37	
1,865.00	1.49	43.22	1,864 67	0.15	-16.76	-16.71	0.39	0.27	11.84	
1,895.34	1.49	42.28	1,895 00	0 73	-16 23	-16.13	0.08	0.00	-3.09	
B. Salt										
1,956.00	1 49	40.41	1,955 64	1.91	-15.19	-15 01	0.08	0.00	-3 09	
2,035.38	1 42	32.36	2,035.00	3.53	-13.99	-13.70	0 27	-0.09	-10 14	
Y. Yates										
2,053.00	1.41	30.48	2,052.61	3 90	-13 76	-13.44	0 27	-0.06	-10.68	
2,148.00	1.67	25.65	2,147 58	6 16	-12.57	-12.09	0.31	0.27	-5.08	
2,242.00	0 97	28.46	2,241.55	8.09	-11.60	-10 98	0.75	-0 74	2.99	
2,337 00	1.23	22 39	2,336.53	9.74	-10.83	-10.09	0.30	0 27	-6 39	
2,420.48	1 12	58.65	2,420 00	10 99	-9.79	-8.96	0 88	-0 13	43 43	
T. Seven Rivers										
2,431.00	1.14	63.26	2,430 52	11.09	-9 61	-8 77	0.88	0 19	43.84	
2,526.00	0.97	55 27	2,525.50	11.98	-8.10	-7.21	0.24	-0 18	-8.41	
2,620.00	1 06	73.55	2,619.49	12.68	-6.62	-5.67	0.36	0.10	19.45	
2,714.00	1.06	75.39	2,713.47	13.14	-4 94	-3.97	0.04	0.00	1.96	
2,809.00	0.88	70.21	2,808.46	13.61	-3.41	-2.40	0.21	-0 19	-5.45	
2,903.00	0.88	69.86	2,902.44	14.10	-2.05	-1.01	0.01	0.00	-0.37	
2,998.00	0.97	65 99	2,997.43	14 68	-0.63	0.44	0.12	0 09	-4.07	
3,090.58	0.97	62.70	3,090.00	15.36	0 78	1.90	0.06	0.00	-3 55	
T. Queen										
3,092.00	0.97	62.65	3,091.42	15.37	0.80	1 92	0 06	0.00	-3.51	
3,186.00	0.44	109 49	3,185 41	15.62	1.85	2.99	0.79	-0 56	49.83	
3,281.00	0 44	152.47	3,280.41	15 17	2.36	3.46	0 34	0.00	45.24	
3,376.00	0.35	128.48	3,375 41	14.67	2.76	3.82	0 20	-0.09	-25 25	
3,470.00	0.26	174.71	3,469.41	14.28	3.00	4.04	0.27	-0.10	49.18	
3,565.00	0.18	128 83	3,564.41	13.97	3.14	4.15	0.20	-0.08	-48.29	
3,659.00	0 09	132.43	3,658 40	13.83	3.31	4.31	0.10	-0.10	3 83	
3,753.00	0.26	97.10	3,752 40	13.75	3 58	4.57	0 21	0.18	-37.59	
3,848.00	0.26	93.50	3,847.40	13 71	4 01	4.99	0 02	0.00	-3 79	

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Survey										
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3,942.00	0.26	146.06	3,941.40	13.52	4.34	5.31	0.24	0.00	55.91	
3,959.00	0.23	141.39	3,958.40	13.46	4.38	5.35	0.21	-0.18	-27.47	
4,036.00	0.26	97.01	4,035.40	13.32	4.65	5.61	0.24	0.04	-57.64	
4,130.00	0.18	79.35	4,129.40	13.32	5.01	5.96	0.11	-0.09	-18.79	
4,225.00	0.49	20.83	4,224.40	13.73	5.30	6.28	0.45	0.33	-61.60	
4,300.60	0.28	52.31	4,300.00	14.14	5.56	6.58	0.38	-0.27	41.63	
T. Delaware										
4,319.00	0.26	66.16	4,318.40	14.19	5.64	6.66	0.38	-0.13	75.31	
4,413.00	0.35	45.77	4,412.40	14.48	6.04	7.08	0.15	0.10	-21.69	
4,508.00	0.53	69.59	4,507.39	14.83	6.66	7.72	0.27	0.19	25.07	
4,602.00	0.70	47.18	4,601.39	15.37	7.48	8.59	0.31	0.18	-23.84	
4,696.00	1.06	57.53	4,695.38	16.23	8.64	9.80	0.42	0.38	11.01	
4,791.00	0.97	54.74	4,790.36	17.17	10.04	11.26	0.11	-0.09	-2.94	
4,885.00	1.14	66.34	4,884.35	18.00	11.54	12.83	0.29	0.18	12.34	
4,980.00	0.18	166.27	4,979.34	18.23	12.44	13.74	1.25	-1.01	105.19	
5,074.00	0.18	229.46	5,073.34	18.00	12.37	13.65	0.20	0.00	67.22	
5,168.00	0.44	280.44	5,167.34	17.97	11.90	13.18	0.38	0.28	54.23	
5,263.00	0.53	276.22	5,262.34	18.08	11.10	12.39	0.10	0.09	-4.44	
5,357.00	0.18	100.35	5,356.33	18.10	10.82	12.11	0.75	-0.37	-187.10	
5,451.00	0.18	29.51	5,450.33	18.20	11.04	12.33	0.22	0.00	-75.36	
5,546.00	0.35	43.31	5,545.33	18.54	11.31	12.63	0.19	0.18	14.53	
5,640.00	0.35	39.44	5,639.33	18.97	11.69	13.04	0.03	0.00	-4.12	
5,735.00	0.53	252.67	5,734.33	19.07	11.45	12.81	0.89	0.19	-154.49	
5,829.00	0.53	274.82	5,828.33	18.97	10.60	11.96	0.22	0.00	23.56	
5,923.00	0.62	280.88	5,922.32	19.11	9.67	11.04	0.12	0.10	6.45	
5,940.68	0.62	278.63	5,940.00	19.14	9.48	10.85	0.14	-0.01	-12.72	
T. Bone Spring Limestone										
6,018.00	0.62	268.75	6,017.32	19.19	8.65	10.03	0.14	0.00	-12.78	
6,112.00	0.79	287.47	6,111.31	19.37	7.53	8.92	0.30	0.18	19.91	
6,207.00	1.06	274.38	6,206.30	19.64	6.03	7.44	0.36	0.28	-13.78	
6,301.00	1.14	297.84	6,300.28	20.14	4.33	5.79	0.48	0.09	24.96	
6,396.00	1.49	302.77	6,395.25	21.25	2.46	4.00	0.39	0.37	5.19	
6,490.00	0.70	281.76	6,489.24	22.03	0.87	2.47	0.93	-0.84	-22.35	
6,585.00	0.53	211.89	6,584.23	21.78	0.07	1.66	0.76	-0.18	-73.55	
6,679.00	0.53	246.87	6,678.23	21.24	-0.56	0.99	0.34	0.00	37.21	
6,774.00	0.79	280.88	6,773.22	21.19	-1.61	-0.06	0.48	0.27	35.80	
6,868.00	0.44	326.41	6,867.22	21.61	-2.45	-0.86	0.61	-0.37	48.44	
6,962.00	0.41	168.64	6,961.22	21.58	-2.58	-1.00	0.89	-0.03	-167.84	
7,057.00	0.25	206.07	7,056.21	21.06	-2.60	-1.06	0.27	-0.17	39.40	
7,151.00	0.46	267.00	7,150.21	20.86	-3.07	-1.54	0.43	0.22	64.82	
7,185.79	0.55	253.51	7,185.00	20.80	-3.37	-1.84	0.43	0.27	-38.78	
T. BSPG1 Limestone										
7,246.00	0.76	239.36	7,245.21	20.52	-3.99	-2.49	0.43	0.34	-23.50	
7,340.00	0.69	167.61	7,339.20	19.65	-4.41	-2.96	0.91	-0.07	-76.33	

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Survey										
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7,435.00	1.01	118.34	7,434.19	18.69	-3.55	-2.18	0.81	0.34	-51.86	
7,529.00	1.36	141.55	7,528.17	17.42	-2.12	-0.85	0.62	0.37	24.69	
7,610.86	1.76	141.15	7,610.00	15.68	-0.73	0.41	0.49	0.49	-0.48	
T. BSPG 1st Sand										
7,623.00	1.82	141.11	7,622.14	15.39	-0.49	0.63	0.49	0.49	-0.36	
7,718.00	2.11	132.28	7,717.08	13.04	1.75	2.69	0.44	0.31	-9.29	
7,812.00	2.81	115.38	7,810.99	10.88	5.11	5.89	1.06	0.74	-17.98	
7,861.08	3.67	107.92	7,860.00	9.89	7.69	8.39	1.94	1.74	-15.20	
T. BSPG2 Limestone										
7,863.00	3.70	107.70	7,861.91	9.85	7.81	8.50	1.94	1.79	-11.51	
7,893.00	3.89	105.96	7,891.85	9.27	9.71	10.36	0.74	0.63	-5.80	
7,956.00	7.21	86.47	7,954.55	8.93	15.71	16.32	5.99	5.27	-30.94	
7,987.00	9.71	81.31	7,985.21	9.44	20.24	20.87	8.42	8.06	-16.65	
8,019.00	12.66	78.38	8,016.60	10.56	26.34	27.04	9.39	9.22	-9.16	
8,050.00	14.77	76.10	8,046.71	12.19	33.50	34.30	7.02	6.81	-7.35	
8,082.00	16.12	75.57	8,077.56	14.28	41.77	42.70	4.24	4.22	-1.66	
8,113.00	17.59	75.74	8,107.22	16.51	50.47	51.54	4.74	4.74	0.55	
8,145.00	19.79	75.48	8,137.53	19.06	60.41	61.64	6.88	6.88	-0.81	
8,176.00	22.60	76.01	8,166.43	21.81	71.27	72.67	9.09	9.06	1.71	
8,207.00	25.92	79.14	8,194.69	24.53	83.71	85.27	11.48	10.71	10.10	
8,239.00	28.63	83.17	8,223.14	26.76	98.19	99.88	10.24	8.47	12.59	
8,270.00	29.46	86.24	8,250.24	28.14	113.17	114.92	5.50	2.68	9.90	
8,302.00	30.72	87.35	8,277.93	29.04	129.19	130.96	4.30	3.94	3.47	
8,333.00	32.73	87.06	8,304.29	29.83	145.47	147.26	6.50	6.48	-0.94	
8,365.00	34.10	86.38	8,331.00	30.84	163.06	164.88	4.44	4.28	-2.13	
8,396.00	36.67	85.68	8,356.27	32.09	180.97	182.83	8.39	8.29	-2.26	
8,428.00	39.66	84.71	8,381.43	33.75	200.67	202.60	9.53	9.34	-3.03	
8,459.00	41.89	84.00	8,404.90	35.74	220.82	222.84	7.35	7.19	-2.29	
8,491.00	44.14	84.09	8,428.30	38.01	242.53	244.65	7.03	7.03	0.28	
8,522.00	46.25	84.80	8,450.15	40.14	264.42	266.64	7.00	6.81	2.29	
8,553.00	48.06	85.27	8,471.23	42.10	287.06	289.37	5.94	5.84	1.52	
8,585.00	50.33	85.48	8,492.14	44.05	311.20	313.59	7.11	7.09	0.66	
8,616.00	52.65	85.15	8,511.44	46.04	335.38	337.84	7.53	7.48	-1.06	
8,648.00	54.76	85.61	8,530.38	48.11	361.08	363.63	6.69	6.59	1.44	
8,661.52	55.46	85.64	8,538.11	48.96	372.14	374.72	5.20	5.19	0.23	
T. BSPG 2nd Sand										
8,679.00	56.37	85.68	8,547.91	50.05	386.58	389.20	5.20	5.19	0.22	
8,711.00	58.48	85.76	8,565.13	52.06	413.47	416.16	6.60	6.59	0.25	
8,742.00	61.34	85.50	8,580.68	54.11	440.21	442.98	9.25	9.23	-0.84	
8,774.00	64.37	85.41	8,595.27	56.37	468.59	471.45	9.47	9.47	-0.28	
8,805.00	67.45	84.97	8,607.93	58.74	496.79	499.75	10.02	9.94	-1.42	
8,837.00	69.63	84.88	8,619.63	61.37	526.45	529.52	6.82	6.81	-0.28	
8,868.00	71.40	85.24	8,629.97	63.89	555.56	558.74	5.81	5.71	1.16	
8,900.00	73.60	85.68	8,639.59	66.31	585.99	589.26	7.00	6.88	1.38	

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Survey									
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8,931.00	75.50	86.20	8,647.85	68.42	615.79	619.14	6.34	6.13	1.68
8,963.00	78.26	86.47	8,655.11	70.41	646.89	650.30	8.66	8.63	0.84
8,994.00	81.34	86.29	8,660.60	72.34	677.33	680.80	9.95	9.94	-0.58
9,014.43	84.03	85.96	8,663.20	73.71	697.54	701.06	13.28	13.19	-1.60
T. BSPG 2nd Sand Target Depth (Smokey Bits 5H Orig)									
9,026.00	85.56	85.78	8,664.25	74.54	709.04	712.59	13.28	13.19	-1.59
9,088.00	91.85	84.85	8,665.65	79.60	770.79	774.54	10.26	10.15	-1.50
9,182.00	92.56	84.75	8,662.04	88.11	864.33	868.45	0.76	0.76	-0.11
9,276.00	91.92	85.42	8,658.36	96.16	957.91	962.37	0.99	-0.68	0.71
9,371.00	89.73	86.13	8,657.00	103.15	1,052.64	1,057.36	2.42	-2.31	0.75
9,465.00	86.64	86.59	8,659.97	109.12	1,146.39	1,151.29	3.32	-3.29	0.49
9,560.00	89.06	86.06	8,663.54	115.20	1,241.12	1,246.22	2.61	2.55	-0.56
9,654.00	89.19	86.17	8,664.97	121.57	1,334.89	1,340.20	0.18	0.14	0.12
9,749.00	90.10	86.64	8,665.56	127.53	1,429.70	1,435.20	1.08	0.96	0.49
9,843.00	87.48	87.58	8,667.54	132.27	1,523.55	1,529.14	2.96	-2.79	1.00
9,938.00	86.60	87.51	8,672.45	136.33	1,618.34	1,623.97	0.93	-0.93	-0.07
10,032.00	88.49	87.50	8,676.48	140.42	1,712.16	1,717.84	2.01	2.01	-0.01
10,127.00	87.72	87.59	8,679.62	144.49	1,807.02	1,812.74	0.82	-0.81	0.09
10,221.00	89.60	87.04	8,681.82	148.89	1,900.88	1,906.68	2.08	2.00	-0.59
10,315.00	87.34	86.21	8,684.33	154.42	1,994.68	2,000.63	2.56	-2.40	-0.88
10,410.00	90.03	85.07	8,686.51	161.64	2,089.37	2,095.60	3.08	2.83	-1.20
10,505.00	86.54	84.63	8,689.35	170.16	2,183.93	2,190.52	3.70	-3.67	-0.46
10,599.00	86.10	84.55	8,695.38	179.01	2,277.32	2,284.31	0.48	-0.47	-0.09
10,693.00	86.91	83.65	8,701.11	188.65	2,370.64	2,378.09	1.29	0.86	-0.96
10,704.44	86.98	83.63	8,701.72	189.92	2,382.00	2,389.50	0.62	0.60	-0.17
T. BSPG 2nd Sand Target Depth - TGT Line									
10,788.00	87.48	83.49	8,705.76	199.28	2,464.93	2,472.90	0.62	0.60	-0.17
10,882.00	87.88	82.93	8,709.57	210.38	2,558.20	2,566.73	0.73	0.43	-0.60
10,977.00	87.88	84.11	8,713.08	221.09	2,652.52	2,661.58	1.24	0.00	1.24
11,071.00	87.38	85.91	8,716.97	229.26	2,746.08	2,755.49	1.99	-0.53	1.91
11,166.00	88.35	87.52	8,720.51	234.70	2,840.86	2,850.41	1.98	1.02	1.69
11,260.00	88.99	87.72	8,722.69	238.61	2,934.75	2,944.34	0.71	0.68	0.21
11,355.00	90.17	87.93	8,723.39	242.21	3,029.68	3,039.27	1.26	1.24	0.22
11,449.00	90.66	87.70	8,722.71	245.79	3,123.61	3,133.21	0.58	0.52	-0.24
11,544.00	89.02	87.21	8,722.97	250.01	3,218.51	3,228.17	1.80	-1.73	-0.52
11,638.00	89.83	86.63	8,723.91	255.06	3,312.37	3,322.15	1.06	0.86	-0.62
11,732.00	88.89	87.39	8,724.96	259.97	3,406.23	3,416.12	1.29	-1.00	0.81
11,827.00	87.41	87.37	8,728.03	264.31	3,501.08	3,511.03	1.56	-1.56	-0.02
11,921.00	88.19	87.16	8,731.64	268.79	3,594.90	3,604.93	0.86	0.83	-0.22
12,016.00	89.03	86.69	8,733.94	273.88	3,689.74	3,699.89	1.01	0.88	-0.49
12,110.00	89.46	86.64	8,735.18	279.35	3,783.57	3,793.87	0.46	0.46	-0.05
12,205.00	90.07	86.45	8,735.57	285.08	3,878.40	3,888.86	0.67	0.64	-0.20
12,299.00	90.37	86.16	8,735.21	291.13	3,972.20	3,982.85	0.44	0.32	-0.31

Company:	OXY	Local Co-ordinate Reference:	Well Smokey Bits 5H
Project:	Hackberry North	TVD Reference:	KB @ 3538.90usft (Rig)
Site:	Smokey Bits 5H	MD Reference:	KB @ 3538.90usft (Rig)
Well:	Smokey Bits 5H	North Reference:	Gnd
Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellbore	Database:	EDM-JodyBarclay-Local

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)	
12,394.00	89.03	86.65	8,735.71	297.09	4,067.01	4,077.84	1.50	-1.41	0.52	
12,488.00	89.13	85.95	8,737.22	303.16	4,160.80	4,171.83	0.75	0.11	-0.74	
12,582.00	89.23	85.62	8,738.56	310.06	4,254.54	4,265.82	0.37	0.11	-0.35	
12,677.00	88.25	85.35	8,740.65	317.54	4,349.22	4,360.79	1.07	-1.03	-0.28	
12,771.00	88.45	84.91	8,743.36	325.52	4,442.84	4,454.75	0.51	0.21	-0.47	
12,866.00	88.42	84.32	8,745.95	334.43	4,537.38	4,549.69	0.62	-0.03	-0.62	
12,945.00	88.60	83.92	8,748.01	342.52	4,615.94	4,628.63	0.56	0.23	-0.51	
12945.0' MD 8748.01' TVD - 88.60° Inc. 93.92° Az. - 342.52' North 4615.94' East - Closure 4628.63' @ 85.76° Az. - Smokey Bits 5H BHL										

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
12,973.00	5 1/2"		5-1/2	8-1/2

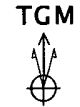
Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
435.05	435.00	Rustler		0.00	
740.10	740.00	Salado		0.00	
1,895.34	1,895.00	B Salt		0.00	
2,035.38	2,035.00	Y Yates		0.00	
2,420.48	2,420.00	T. Seven Rivers		0.00	
3,090.58	3,090.00	T. Queen		0.00	
4,300.60	4,300.00	T. Delaware		0.00	
5,940.68	5,940.00	T Bone Spring Limestone		0.00	
7,185.79	7,185.00	T. BSPG1 Limestone		0.00	
7,610.86	7,610.00	T. BSPG 1st Sand		0.00	
7,861.08	7,860.00	T. BSPG2 Limestone		0.00	
8,661.52	8,538.11	T. BSPG 2nd Sand		1.24	85.82
10,704.44	8,701.72	T BSPG 2nd Sand Target Depth		1.24	85.82
10,704.44	8,701.72	TGT Line		1.24	85.82

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
12,945.00	8,748.01	342.52	4,615.94	12945.0' MD 8748.01' TVD
12,945.00	8,748.01	342.52	4,615.94	88.60° Inc. 93.92° Az
12,945.00	8,748.01	342.52	4,615.94	342.52' North 4615.94' East
12,945.00	8,748.01	342.52	4,615.94	Closure 4628.63' @ 85.76° Az.

Checked By: _____	Approved By: _____	Date: _____
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Project: Hackberry North
Site: Smokey Bits 5H
Well: Smokey Bits 5H
Wellbore: Original Wellbore
Design: Design #4



Azimuths to Grid North
True North - 0 22'
Magnetic North 7 46'

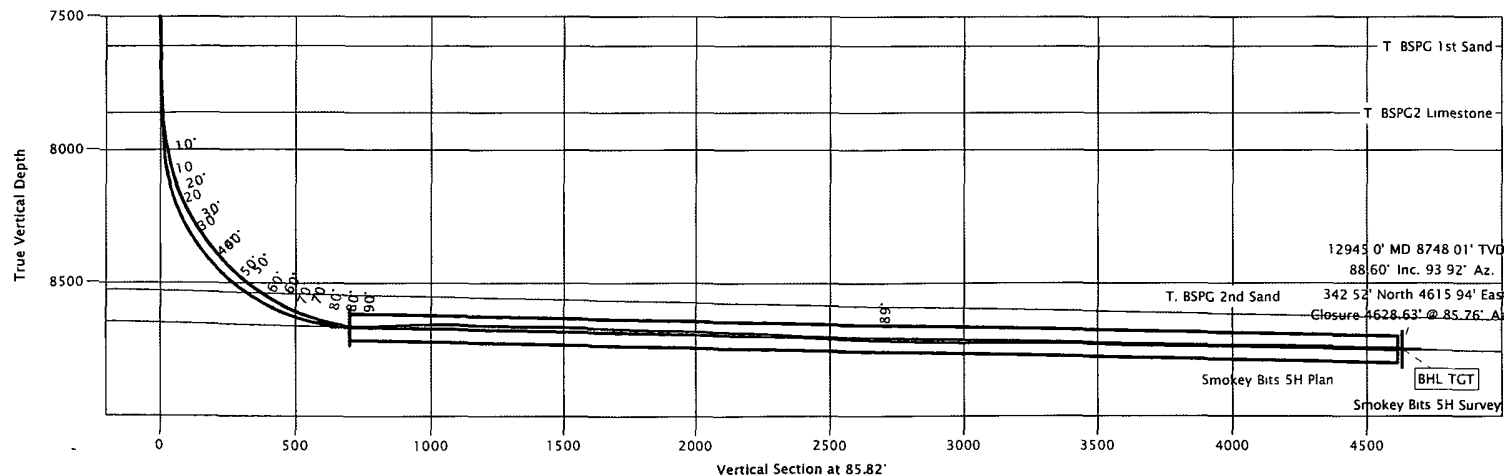
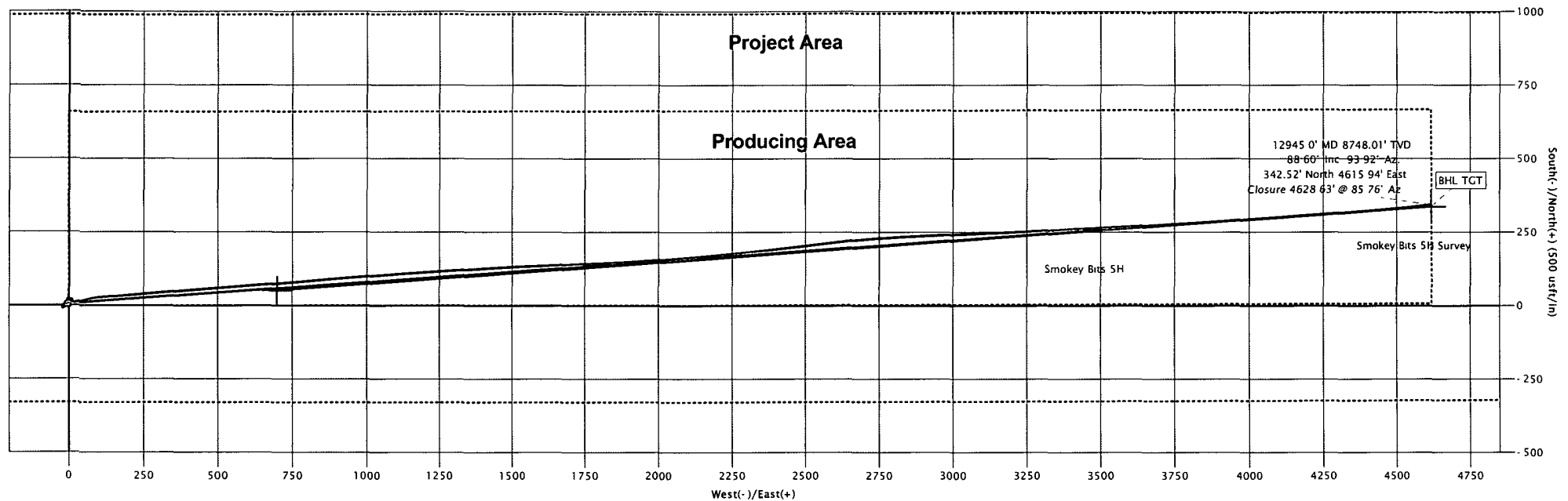
Magnetic Field
Strength 48767.3snT
Dip Angle 60.54'
Date 05/22/2012
Model IGRF2010

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Target
7863.00	3.70	107.70	7861.91	9.85	7.81	0.00	8.50	
7950.47	0.00	0.00	7949.32	8.99	10.50	4.23	11.12	
9060.00	88.76	85.92	8665.35	58.86	709.45	8.00	711.85	
12980.11	88.76	85.92	8750.00	337.80	4618.70	0.00	4631.04	BHL

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Target Line	8665.20	51.11	698.88	617724.71	624007.58	Rectangle
- plan misses target center by 6.98usft at 9048.92usft MD (8665.03 TVD, 58.07 N, 698.40 E)						
Smokey Bits 5H BHL	8750.00	337.80	4618.70	618011.40	627927.40	Point
- plan hits target center						



PROJECT DETAILS: Hackberry North

Geodetic System US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001
System Datum Mean Sea Level

SITE DETAILS: Smokey Bits 5H

Northing. 617673.60
Easting 623308.70
Elevation. 3513.90
KB - KB @ 3538 90usft (Rig)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
435.00	435.05	Rustler
740.00	740.10	Salado
1895.00	1895.34	B. Salt
2035.00	2035.38	Y. Yates
2420.00	2420.48	T. Seven Rivers
3090.00	3090.58	T. Queen
4300.00	4300.60	T. Delaware
5940.00	5940.68	T. Bone Spring Limestone
7185.00	7185.79	T. BSPG1 Limestone
7610.00	7610.86	T. BSPG 1st Sand
7860.00	7861.08	T. BSPG2 Limestone
8538.11	8661.52	T. BSPG 2nd Sand
8701.72	10704.44	T. BSPG 2nd Sand Target Depth
8701.72	10704.44	TGT Line