

WELL LOGS

K Z

API number:	30-025-38488		
OGRID:		Operator:	CIMAREX ENERGY CO
		Property:	SHERMAN 13 FEE # 3

surface	ULSTR:	A	13	T	15S	R	37E
			430	FNL	430	FEL	

BH Loc	ULSTR:	H	13	T	15S	R	37E
			2271	FNL	419	FEL	

Ground Level:	3776	DF:	3796	KB:	3797	
Datum:	KB			TD:	11224	

Land: FEE

Completion Date: (1)

Date Logs Received:

12/8/2008

Date Logs Due in: (2)

Confidential:	NO			Date out:		
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Confidential period: 90 Days for State & Fee, 1 Year for federal

Date Due In: (1) is equal to Completion Date (1) + 20 days

Logs	Depth interval		
TD LD CN/GR	200	9810	Three Detector Litho-Density
HRLA	4531	9775	High Resolution Laterolog

K Z

OCD TOPS

Rustler	2171	Strawn		
Tansill		Atoka		
Yates	3166	Morrow		
7 rvs	3351			
		Austin		
		Chester		
Queen	3954	Miss Lime		
Penrose				
Grayburg	4449			
San Andres	4687			
Glorieta	6768			
Paddock				
Blinbry				
Tubb	7568			
Drinkard	7827			
Abo	8283			
Wolfcamp	9469			

OPERATOR: Cimarex Energy Co.
WELL/LEASE: Sherman 13 Fee #3
COUNTY: Lea County, NM
SEC 13 T15S R38E

SUR: A-13-15s-37e, 430/N & 430/E
BHL: H-13-15s-37e, 2271/N & 419/E
API # 30-025-38488

STATE OF NEW MEXICO
DEVIATION REPORT

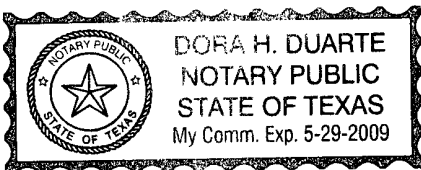
<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
235	1 1/2	6,356	0
576	3/4	6,746	3/4
1,007	3/4	7,190	1 3/4
1,441	1/2	7,506	1
1,878	3/4	7,916	1
2,320	1 1/2	8,359	1
2,794	1	8,803	1 3/4
3,237	1/2	9,245	0
3,680	1 1/2	9,274	2
4,122	1		
4,561	1		
4,912	1		
5,411	1		
5,860	1		

Patriot Drilling, LLC


M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 14th day of November, 2007 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 5/29/2009




Dora H. Duarte
Notary Public for Midland Co., Texas

K-2

Cimarex Energy Company

Lea County, NM
Sherman 13 Fee
3H
30-025-38488
Lateral #1

SUR: A-13-15s-37e, 430/N & 430/E
BHL: H-13-15s-37e, 2271/N & 419/E
API # 30-025-38488

Design: Lateral #1 Suveys

Sperry Drilling Services Combo Report

19 November, 2007

Surface UWI : 30-025-38488

Well Coordinates: 738,097.50 N, 905,121.21 E (33° 01' 24.18" N, 103° 08' 47.24" W)
Ground Level: 3,776.00 ft

Local Coordinate Origin:	Centered on Well 3H
Viewing Datum:	3776' GL + __' KB @ 3776.00ft (T&B #33)
TVDs to System:	N
North Reference:	Grid
Unit System:	API - U.S. Survey Feet

Version: 2003.16 Build: 42B

HALLIBURTON

HALLIBURTON**Design Report for 3H - Lateral #1 Suveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
0.00	0.00	0.00	-3,776.00	0.00	0.00 N	0.00 E	738,097.50	905,121.21	0.00	0.00
100.00	0.63	316.17	-3,676.00	100.00	0.40 N	0.38 W	738,097.90	905,120.83	0.63	-0.40
200.00	0.67	317.39	-3,576.01	199.99	1.22 N	1.16 W	738,098.72	905,120.06	0.04	-1.22
300.00	0.71	311.11	-3,476.02	299.98	2.06 N	2.02 W	738,099.56	905,119.19	0.09	-2.06
400.00	0.76	308.77	-3,376.02	399.98	2.88 N	3.00 W	738,100.38	905,118.21	0.06	-2.88
500.00	0.72	306.30	-3,276.03	499.97	3.67 N	4.03 W	738,101.17	905,117.19	0.05	-3.67
600.00	0.70	294.67	-3,176.04	599.96	4.30 N	5.09 W	738,101.80	905,116.13	0.15	-4.30
700.00	0.69	292.00	-3,076.05	699.95	4.78 N	6.20 W	738,102.28	905,115.01	0.03	-4.78
800.00	0.64	280.14	-2,976.05	799.95	5.10 N	7.31 W	738,102.60	905,113.90	0.15	-5.10
900.00	0.51	268.69	-2,876.06	899.94	5.19 N	8.30 W	738,102.69	905,112.91	0.17	-5.19
1,000.00	0.47	264.31	-2,776.06	999.94	5.14 N	9.16 W	738,102.64	905,112.06	0.05	-5.14
1,100.00	0.37	270.30	-2,676.07	1,099.93	5.10 N	9.89 W	738,102.60	905,111.33	0.11	-5.10
1,200.00	0.35	274.83	-2,576.07	1,199.93	5.13 N	10.52 W	738,102.63	905,110.70	0.03	-5.13
1,300.00	0.39	276.74	-2,476.07	1,299.93	5.19 N	11.16 W	738,102.69	905,110.06	0.04	-5.19
1,400.00	0.40	281.53	-2,376.07	1,399.93	5.30 N	11.84 W	738,102.80	905,109.38	0.03	-5.30
1,500.00	0.47	307.54	-2,276.07	1,499.93	5.62 N	12.51 W	738,103.12	905,108.71	0.21	-5.62
1,600.00	0.39	310.16	-2,176.08	1,599.92	6.09 N	13.09 W	738,103.59	905,108.12	0.08	-6.09
1,700.00	0.40	313.97	-2,076.08	1,699.92	6.55 N	13.60 W	738,104.06	905,107.61	0.03	-6.55
1,800.00	0.40	312.36	-1,976.08	1,799.92	7.03 N	14.11 W	738,104.53	905,107.10	0.01	-7.03
1,900.00	0.30	307.66	-1,876.08	1,899.92	7.43 N	14.58 W	738,104.93	905,106.64	0.10	-7.43
2,000.00	0.30	330.65	-1,776.09	1,999.91	7.82 N	14.91 W	738,105.32	905,106.30	0.12	-7.82
2,100.00	0.35	330.66	-1,676.09	2,099.91	8.31 N	15.19 W	738,105.81	905,106.02	0.05	-8.31
2,200.00	0.44	322.85	-1,576.09	2,199.91	8.88 N	15.57 W	738,106.38	905,105.64	0.10	-8.88
2,300.00	0.47	314.89	-1,476.09	2,299.91	9.48 N	16.09 W	738,106.98	905,105.12	0.07	-9.48
2,400.00	0.43	307.70	-1,376.10	2,399.90	10.00 N	16.68 W	738,107.50	905,104.53	0.07	-10.00
2,500.00	0.25	300.65	-1,276.10	2,499.90	10.34 N	17.17 W	738,107.84	905,104.05	0.18	-10.34
2,600.00	0.22	301.11	-1,176.10	2,599.90	10.55 N	17.52 W	738,108.05	905,103.70	0.03	-10.55
2,700.00	0.23	305.33	-1,076.10	2,699.90	10.76 N	17.85 W	738,108.26	905,103.37	0.02	-10.76
2,800.00	0.17	322.43	-976.10	2,799.90	11.00 N	18.10 W	738,108.50	905,103.11	0.08	-11.00
2,900.00	0.14	7.11	-876.10	2,899.90	11.24 N	18.18 W	738,108.74	905,103.04	0.12	-11.24
3,000.00	0.19	49.72	-776.10	2,999.90	11.46 N	18.03 W	738,108.96	905,103.18	0.13	-11.46
3,100.00	0.18	62.26	-676.10	3,099.90	11.64 N	17.77 W	738,109.15	905,103.45	0.04	-11.64
3,200.00	0.03	47.44	-576.10	3,199.90	11.73 N	17.61 W	738,109.24	905,103.60	0.15	-11.73
3,300.00	0.06	217.29	-476.10	3,299.90	11.71 N	17.62 W	738,109.21	905,103.59	0.09	-11.71
3,400.00	0.09	184.09	-376.10	3,399.90	11.59 N	17.66 W	738,109.09	905,103.55	0.05	-11.59
3,500.00	0.44	83.57	-276.10	3,499.90	11.56 N	17.28 W	738,109.06	905,103.93	0.46	-11.56
3,600.00	0.57	86.64	-176.11	3,599.89	11.63 N	16.41 W	738,109.13	905,104.81	0.13	-11.63
3,700.00	0.60	88.05	-76.11	3,699.89	11.67 N	15.39 W	738,109.18	905,105.83	0.03	-11.67
3,800.00	0.80	101.43	23.88	3,799.88	11.55 N	14.18 W	738,109.06	905,107.04	0.26	-11.55
3,900.00	1.06	105.04	123.87	3,899.87	11.18 N	12.60 W	738,108.68	905,108.61	0.27	-11.18
4,000.00	1.24	97.20	223.85	3,999.85	10.80 N	10.63 W	738,108.30	905,110.58	0.24	-10.80
4,100.00	1.28	84.82	323.82	4,099.82	10.77 N	8.45 W	738,108.27	905,112.77	0.27	-10.77
4,200.00	1.34	82.77	423.80	4,199.80	11.01 N	6.18 W	738,108.51	905,115.04	0.08	-11.01
4,300.00	1.30	76.49	523.77	4,299.77	11.43 N	3.91 W	738,108.93	905,117.30	0.15	-11.43
4,400.00	0.77	74.68	623.75	4,399.75	11.87 N	2.16 W	738,109.37	905,119.05	0.53	-11.87

HALLIBURTON**Design Report for 3H - Lateral #1 Suveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
4,500.00	0.57	84.01	723.75	4,499.75	12.10 N	1.02 W	738,109.60	905,120.19	0.23	-12.10
4,600.00	0.64	88.14	823.74	4,599.74	12.17 N	0.03 E	738,109.67	905,121.25	0.08	-12.17
4,700.00	0.69	89.31	923.74	4,699.74	12.19 N	1.19 E	738,109.69	905,122.41	0.05	-12.19
4,800.00	0.61	82.91	1,023.73	4,799.73	12.27 N	2.32 E	738,109.77	905,123.54	0.11	-12.27
4,900.00	0.65	77.20	1,123.72	4,899.72	12.46 N	3.41 E	738,109.96	905,124.62	0.07	-12.46
5,000.00	0.68	63.78	1,223.72	4,999.72	12.85 N	4.49 E	738,110.35	905,125.70	0.16	-12.85
5,100.00	0.69	56.96	1,323.71	5,099.71	13.44 N	5.53 E	738,110.94	905,126.74	0.08	-13.44
5,200.00	0.68	52.47	1,423.70	5,199.70	14.13 N	6.50 E	738,111.63	905,127.72	0.05	-14.13
5,300.00	0.70	55.24	1,523.69	5,299.69	14.84 N	7.48 E	738,112.34	905,128.69	0.04	-14.84
5,400.00	0.70	44.07	1,623.69	5,399.69	15.62 N	8.40 E	738,113.12	905,129.62	0.14	-15.62
5,500.00	0.65	15.71	1,723.68	5,499.68	16.61 N	8.98 E	738,114.11	905,130.19	0.33	-16.61
5,600.00	0.46	5.29	1,823.68	5,599.68	17.55 N	9.17 E	738,115.05	905,130.39	0.21	-17.55
5,700.00	0.36	18.48	1,923.67	5,699.67	18.25 N	9.31 E	738,115.75	905,130.52	0.14	-18.25
5,800.00	0.33	11.47	2,023.67	5,799.67	18.83 N	9.46 E	738,116.33	905,130.68	0.05	-18.83
5,900.00	0.35	4.11	2,123.67	5,899.67	19.42 N	9.54 E	738,116.92	905,130.76	0.05	-19.42
6,000.00	0.35	33.04	2,223.67	5,999.67	19.98 N	9.73 E	738,117.48	905,130.95	0.17	-19.98
6,100.00	0.46	35.60	2,323.67	6,099.67	20.56 N	10.13 E	738,118.06	905,131.35	0.11	-20.56
6,200.00	0.37	27.83	2,423.66	6,199.66	21.17 N	10.52 E	738,118.67	905,131.73	0.11	-21.17
6,300.00	0.44	90.11	2,523.66	6,299.66	21.46 N	11.05 E	738,118.96	905,132.27	0.42	-21.46
6,400.00	0.51	85.93	2,623.66	6,399.66	21.49 N	11.88 E	738,118.99	905,133.09	0.08	-21.49
6,500.00	0.40	79.41	2,723.65	6,499.65	21.58 N	12.67 E	738,119.09	905,133.88	0.12	-21.58
6,600.00	0.45	51.75	2,823.65	6,599.65	21.89 N	13.32 E	738,119.39	905,134.53	0.21	-21.89
6,700.00	0.60	33.67	2,923.65	6,699.65	22.57 N	13.92 E	738,120.07	905,135.13	0.22	-22.57
6,800.00	0.89	25.80	3,023.64	6,799.64	23.71 N	14.55 E	738,121.21	905,135.76	0.31	-23.71
6,900.00	1.00	22.35	3,123.63	6,899.63	25.21 N	15.21 E	738,122.71	905,136.43	0.12	-25.21
7,000.00	1.10	13.34	3,223.61	6,999.61	26.95 N	15.77 E	738,124.45	905,136.98	0.19	-26.95
7,100.00	1.07	5.48	3,323.59	7,099.59	28.82 N	16.08 E	738,126.32	905,137.29	0.15	-28.82
7,200.00	1.13	9.48	3,423.57	7,199.57	30.72 N	16.33 E	738,128.22	905,137.54	0.10	-30.72
7,300.00	1.11	7.19	3,523.55	7,299.55	32.65 N	16.61 E	738,130.15	905,137.83	0.05	-32.65
7,400.00	1.14	8.82	3,623.53	7,399.53	34.60 N	16.89 E	738,132.10	905,138.10	0.04	-34.60
7,500.00	1.02	354.11	3,723.52	7,499.52	36.46 N	16.95 E	738,133.96	905,138.16	0.30	-36.46
7,600.00	1.02	357.69	3,823.50	7,599.50	38.24 N	16.82 E	738,135.74	905,138.04	0.06	-38.24
7,700.00	1.16	345.39	3,923.48	7,699.48	40.11 N	16.53 E	738,137.61	905,137.74	0.27	-40.11
7,800.00	1.13	338.38	4,023.46	7,799.46	42.00 N	15.91 E	738,139.50	905,137.13	0.14	-42.00
7,900.00	1.27	334.93	4,123.44	7,899.44	43.92 N	15.08 E	738,141.43	905,136.29	0.16	-43.92
8,000.00	1.06	336.52	4,223.42	7,999.42	45.78 N	14.24 E	738,143.28	905,135.45	0.21	-45.78
8,100.00	1.11	341.80	4,323.40	8,099.40	47.54 N	13.57 E	738,145.05	905,134.78	0.11	-47.54
8,200.00	1.14	338.34	4,423.38	8,199.38	49.39 N	12.90 E	738,146.89	905,134.11	0.07	-49.39
8,300.00	1.29	342.50	4,523.36	8,299.36	51.39 N	12.19 E	738,148.89	905,133.41	0.17	-51.39
8,400.00	1.64	341.99	4,623.33	8,399.33	53.82 N	11.41 E	738,151.32	905,132.63	0.35	-53.82
8,500.00	1.74	342.49	4,723.28	8,499.28	56.63 N	10.51 E	738,154.13	905,131.73	0.10	-56.63
8,600.00	1.94	338.55	4,823.23	8,599.23	59.65 N	9.44 E	738,157.16	905,130.65	0.24	-59.65
8,700.00	1.69	331.63	4,923.18	8,699.18	62.53 N	8.12 E	738,160.03	905,129.33	0.33	-62.53
8,800.00	1.92	334.78	5,023.13	8,799.13	65.34 N	6.70 E	738,162.84	905,127.92	0.25	-65.34
8,900.00	1.60	326.78	5,123.09	8,899.09	68.02 N	5.23 E	738,165.52	905,126.44	0.40	-68.02

HALLIBURTON**Design Report for 3H - Lateral #1 Suveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
9,000.00	1.57	312.65	5,223.05	8,999.05	70.12 N	3.45 E	738,167.62	905,124.67	0.39	-70.12
9,100.00	1.45	312.15	5,323.01	9,099.01	71.90 N	1.51 E	738,169.40	905,122.72	0.12	-71.90
9,199.00	1.66	180.00	5,422.00	9,198.00	71.30 N	0.58 E	738,168.80	905,121.79	2.87	-71.30
9,235.00	10.96	188.81	5,457.74	9,233.74	67.39 N	0.05 E	738,164.89	905,121.27	25.90	-67.39
9,251.00	15.36	186.84	5,473.32	9,249.32	63.78 N	0.43 W	738,161.28	905,120.78	27.64	-63.78
9,267.00	19.94	184.96	5,488.56	9,264.56	58.96 N	0.92 W	738,156.46	905,120.29	28.84	-58.96
9,283.00	24.46	183.57	5,503.37	9,279.37	52.93 N	1.36 W	738,150.43	905,119.85	28.44	-52.93
9,299.00	29.47	182.45	5,517.62	9,293.62	45.69 N	1.74 W	738,143.19	905,119.48	31.47	-45.69
9,315.00	34.14	182.17	5,531.22	9,307.22	37.26 N	2.08 W	738,134.77	905,119.14	29.20	-37.26
9,331.00	38.95	180.95	5,544.07	9,320.07	27.74 N	2.33 W	738,125.24	905,118.88	30.40	-27.74
9,347.00	43.10	179.12	5,556.14	9,332.14	17.24 N	2.33 W	738,114.75	905,118.89	27.00	-17.24
9,363.00	47.93	178.12	5,567.35	9,343.35	5.84 N	2.05 W	738,103.34	905,119.16	30.51	-5.84
9,379.00	52.41	178.03	5,577.59	9,353.59	6.44 S	1.64 W	738,091.06	905,119.58	28.00	6.44
9,395.00	57.04	177.64	5,586.83	9,362.83	19.49 S	1.14 W	738,078.01	905,120.07	29.01	19.49
9,411.00	61.57	177.51	5,594.99	9,370.99	33.23 S	0.56 W	738,064.27	905,120.65	28.32	33.23
9,427.00	66.50	177.60	5,602.00	9,378.00	47.60 S	0.05 E	738,049.90	905,121.27	30.82	47.60
9,443.00	71.94	178.04	5,607.67	9,383.67	62.54 S	0.62 E	738,034.96	905,121.83	34.10	62.54
9,458.00	75.74	178.66	5,611.85	9,387.85	76.94 S	1.03 E	738,020.56	905,122.25	25.64	76.94
9,474.00	80.29	179.75	5,615.17	9,391.17	92.59 S	1.25 E	738,004.91	905,122.46	29.21	92.59
9,489.00	81.55	180.53	5,617.53	9,393.53	107.40 S	1.21 E	737,990.10	905,122.43	9.85	107.40
9,505.00	83.07	181.36	5,619.68	9,395.68	123.25 S	0.95 E	737,974.25	905,122.17	10.80	123.25
9,520.00	84.56	181.70	5,621.29	9,397.29	138.16 S	0.55 E	737,959.34	905,121.77	10.19	138.16
9,536.00	86.00	181.57	5,622.61	9,398.61	154.10 S	0.10 E	737,943.40	905,121.31	9.04	154.10
9,551.00	87.42	181.54	5,623.47	9,399.47	169.07 S	0.31 W	737,928.43	905,120.91	9.47	169.07
9,567.00	88.99	181.85	5,623.97	9,399.97	185.05 S	0.78 W	737,912.45	905,120.43	10.00	185.05
9,583.00	90.49	181.86	5,624.04	9,400.04	201.04 S	1.30 W	737,896.46	905,119.92	9.38	201.04
9,599.00	90.71	182.10	5,623.88	9,399.88	217.03 S	1.85 W	737,880.47	905,119.36	2.03	217.03
9,615.00	90.98	181.68	5,623.64	9,399.64	233.02 S	2.38 W	737,864.48	905,118.84	3.12	233.02
9,647.00	91.14	182.06	5,623.05	9,399.05	265.00 S	3.42 W	737,832.50	905,117.79	1.29	265.00
9,678.00	90.03	182.26	5,622.73	9,398.73	295.97 S	4.59 W	737,801.53	905,116.62	3.64	295.97
9,710.00	90.28	182.23	5,622.64	9,398.64	327.95 S	5.84 W	737,769.55	905,115.37	0.79	327.95
9,742.00	89.94	181.57	5,622.58	9,398.58	359.93 S	6.90 W	737,737.57	905,114.31	2.32	359.93
9,773.00	90.19	181.50	5,622.55	9,398.55	390.92 S	7.74 W	737,706.58	905,113.48	0.84	390.92
9,804.00	90.46	180.96	5,622.37	9,398.37	421.91 S	8.40 W	737,675.59	905,112.81	1.95	421.91
9,835.00	90.59	180.60	5,622.09	9,398.09	452.91 S	8.82 W	737,644.59	905,112.39	1.23	452.91
9,866.00	91.02	181.39	5,621.65	9,397.65	483.90 S	9.36 W	737,613.60	905,111.85	2.90	483.90
9,898.00	91.17	180.93	5,621.04	9,397.04	515.89 S	10.01 W	737,581.61	905,111.21	1.51	515.89
9,929.00	90.22	180.39	5,620.67	9,396.67	546.88 S	10.37 W	737,550.62	905,110.85	3.52	546.88
9,961.00	90.31	179.71	5,620.52	9,396.52	578.88 S	10.39 W	737,518.62	905,110.82	2.14	578.88
9,992.00	90.31	179.29	5,620.35	9,396.35	609.88 S	10.12 W	737,487.62	905,111.09	1.35	609.88
10,023.00	91.08	179.60	5,619.97	9,395.97	640.88 S	9.82 W	737,456.62	905,111.39	2.68	640.88
10,055.00	90.62	179.96	5,619.50	9,395.50	672.87 S	9.70 W	737,424.63	905,111.51	1.83	672.87
10,087.00	90.03	179.47	5,619.32	9,395.32	704.87 S	9.54 W	737,392.63	905,111.67	2.40	704.87
10,118.00	89.66	179.06	5,619.40	9,395.40	735.87 S	9.14 W	737,361.63	905,112.07	1.78	735.87
10,149.00	89.75	179.25	5,619.56	9,395.56	766.87 S	8.69 W	737,330.64	905,112.53	0.68	766.87

HALLIBURTON**Design Report for 3H - Lateral #1 Suveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
10,180.00	89.69	178.74	5,619.71	9,395.71	797.86 S	8.14 W	737,299.64	905,113.07	1.66	797.86
10,212.00	90.12	180.03	5,619.77	9,395.77	829.86 S	7.80 W	737,267.64	905,113.42	4.25	829.86
10,243.00	90.71	180.39	5,619.54	9,395.54	860.86 S	7.91 W	737,236.64	905,113.30	2.23	860.86
10,274.00	90.49	179.91	5,619.22	9,395.22	891.85 S	7.99 W	737,205.65	905,113.22	1.70	891.85
10,306.00	89.48	178.73	5,619.22	9,395.22	923.85 S	7.61 W	737,173.65	905,113.60	4.85	923.85
10,337.00	88.64	179.26	5,619.73	9,395.73	954.84 S	7.07 W	737,142.66	905,114.14	3.20	954.84
10,368.00	88.83	178.63	5,620.42	9,396.42	985.83 S	6.50 W	737,111.67	905,114.71	2.12	985.83
10,400.00	89.08	178.28	5,621.00	9,397.00	1,017.81 S	5.64 W	737,079.69	905,115.58	1.34	1,017.81
10,432.00	88.95	178.01	5,621.55	9,397.55	1,049.79 S	4.60 W	737,047.71	905,116.61	0.94	1,049.79
10,463.00	88.92	178.06	5,622.13	9,398.13	1,080.77 S	3.54 W	737,016.73	905,117.68	0.19	1,080.77
10,495.00	88.95	178.78	5,622.72	9,398.72	1,112.75 S	2.66 W	736,984.75	905,118.56	2.25	1,112.75
10,526.00	88.98	178.63	5,623.28	9,399.28	1,143.74 S	1.96 W	736,953.77	905,119.26	0.49	1,143.74
10,557.00	89.41	178.55	5,623.72	9,399.72	1,174.72 S	1.19 W	736,922.78	905,120.02	1.41	1,174.72
10,588.00	89.35	178.88	5,624.05	9,400.05	1,205.71 S	0.50 W	736,891.79	905,120.72	1.08	1,205.71
10,620.00	88.98	179.03	5,624.52	9,400.52	1,237.70 S	0.09 E	736,859.80	905,121.30	1.25	1,237.70
10,651.00	88.71	178.50	5,625.14	9,401.14	1,268.69 S	0.75 E	736,828.81	905,121.97	1.92	1,268.69
10,683.00	89.29	178.59	5,625.70	9,401.70	1,300.68 S	1.57 E	736,796.83	905,122.78	1.83	1,300.68
10,714.00	89.60	178.43	5,626.00	9,402.00	1,331.66 S	2.37 E	736,765.84	905,123.59	1.13	1,331.66
10,746.00	90.22	178.16	5,626.05	9,402.05	1,363.65 S	3.32 E	736,733.85	905,124.54	2.11	1,363.65
10,777.00	89.69	179.56	5,626.08	9,402.08	1,394.64 S	3.94 E	736,702.86	905,125.15	4.83	1,394.64
10,808.00	89.72	180.07	5,626.24	9,402.24	1,425.64 S	4.04 E	736,671.86	905,125.25	1.65	1,425.64
10,840.00	90.28	180.51	5,626.24	9,402.24	1,457.64 S	3.88 E	736,639.86	905,125.09	2.23	1,457.64
10,871.00	90.56	180.18	5,626.01	9,402.01	1,488.64 S	3.69 E	736,608.86	905,124.91	1.40	1,488.64
10,903.00	91.26	181.65	5,625.50	9,401.50	1,520.63 S	3.18 E	736,576.87	905,124.40	5.09	1,520.63
10,935.00	91.23	181.25	5,624.81	9,400.81	1,552.61 S	2.37 E	736,544.89	905,123.59	1.25	1,552.61
10,967.00	91.57	181.60	5,624.02	9,400.02	1,584.59 S	1.58 E	736,512.91	905,122.79	1.52	1,584.59
10,998.00	90.65	180.20	5,623.42	9,399.42	1,615.58 S	1.09 E	736,481.92	905,122.30	5.40	1,615.58
11,030.00	90.28	178.95	5,623.16	9,399.16	1,647.58 S	1.33 E	736,449.92	905,122.54	4.07	1,647.58
11,062.00	89.57	178.57	5,623.21	9,399.21	1,679.57 S	2.02 E	736,417.93	905,123.23	2.52	1,679.57
11,094.00	90.12	177.39	5,623.29	9,399.29	1,711.55 S	3.15 E	736,385.95	905,124.36	4.07	1,711.55
11,125.00	90.80	176.97	5,623.04	9,399.04	1,742.51 S	4.67 E	736,354.99	905,125.89	2.58	1,742.51
11,156.00	90.80	176.68	5,622.61	9,398.61	1,773.46 S	6.39 E	736,324.04	905,127.60	0.94	1,773.46
11,188.00	90.71	175.73	5,622.19	9,398.19	1,805.39 S	8.51 E	736,292.11	905,129.72	2.98	1,805.39
Last MWD										
11,224.00	90.71	175.73	5,621.74	9,397.74	1,841.29 S	11.19 E	736,256.22	905,132.40	0.00	1,841.29
TD @ 11224' MD										

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/_W (ft)	
Target	PBHL (P1)	180.00	Slot	0.00	0.00	0.00

HALLIBURTON**Design Report for 3H - Lateral #1 Suveys**

9,199.00	11,188.00	Sperry MWD Survey	MWD
11,224.00	11,224.00	Projection to TD	MWD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL (P1)	0.00	0.00	9,396.00	-1,879.90	0.00	736,217.60	905,121.21	33° 1' 5.582 N	103° 8' 47.487 W
- actual wellpath misses by 40.24ft at 11224 00ft MD (9397.74 TVD, -1841.29 N, 11.19 E)									
- Point									

HALLIBURTON**North Reference Sheet for Sherman 13 Fee - 3H - Lateral #1**

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

Vertical Depths are relative to 3776' GL + ___' KB @ 3776.00ft (T&B #33). Northing and Easting are relative to 3H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 104° 20' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 0° 0' 0.000 N°

False Easting: 541,337.50ft, False Northing: 0.00ft, Scale Reduction: 1.00006062

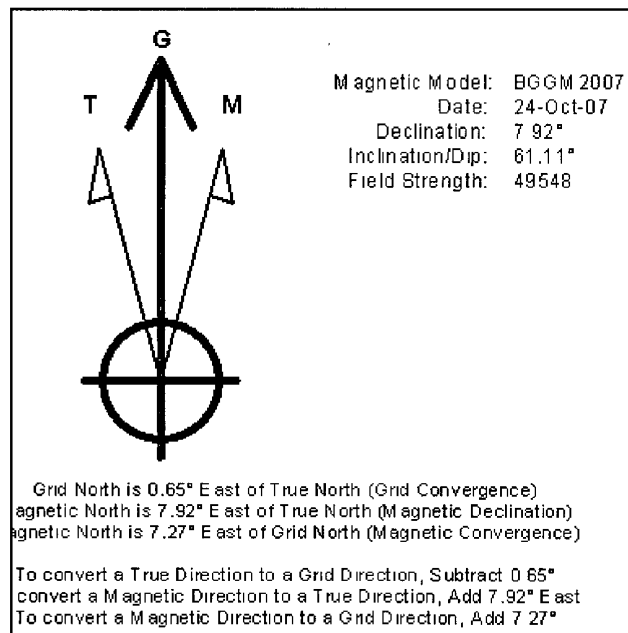
Grid Coordinates of Well: 738,097.50 ft N, 905,121.21 ft E

Geographical Coordinates of Well: 33° 01' 24.18" N, 103° 08' 47.24" W

Grid Convergence at Surface is: 0.65°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,224.00ft the Bottom Hole Displacement is 1,841.32ft in the Direction of 179.65° (Grid).

Magnetic Convergence at surface is: -7.27° (24 October 2007, , BGGM2007)



Cimarex Energy Company

HALLIBURTON

Sperry Drilling Services

Project: Lea County, NM

Site: Sherman 13 Fee

Well: 3H

Wellbore: Lateral #1

Design: Lateral #1 Suveys (3H/Lateral #1)

Rig: T&B #33

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (P1)	9396.00	-1879.90	0.00	736217.60	905121.21	Point

Surface Location:

US State Plane 1983
New Mexico Eastern Zone
Elevation. 3776' GL + ___' KB @ 3776.00ft (T&B #33)

Northing	Easting	Latitude	Longitude
738097.50	905121.21	33° 1' 24.180 N	103° 8' 47.238 W

BOTTOM HOLE LOCATION

MD = 11,224.00' INC. = 90.71° AZIMUTH = 175.73°
TVD = 9397.74' VS = 1841.29'
NORTH = -1841.29' WEST = 11.19'
Y = 736,256.21' X = 905132.40'

To convert a Magnetic Direction to a Grid Direction, Add 7.27°

Magnetic Model: BGGM2007 Date: 24-Oct-07
Azimuths to Grid North

