



Cimarex Energy Company

East Lusk

State

State HH #3H

SUR: D-36-19s-32e, 560/N & 330/W
BHL: A-36-19s-32e, 544/N & 4937/W
API # 30-025-39887

State HH #3H

Survey: Cimarex State HH #3H ST # 2 Survey

30-025-39887

Standard Survey Report

22 March, 2011



Precision Drilling

JUN 14 2011



Precision Drilling Survey Report



Company:	Cimarex Energy Company	Local Co-ordinate Reference:	Well State HH #3H
Project:	East Lusk	TVD Reference:	WELL @ 3592.0usft (RKE)
Site:	State	MD Reference:	WELL @ 3592.0usft (RKE)
Well:	State HH #3H	North Reference:	Grid
Wellbore:	State HH #3H	Survey Calculation Method:	Minimum Curvature
Design:	State HH #3H	Database:	EDM 5000.1 Single User Db

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

Site:	State		
Site Position:		Northing:	590,734.00 usft
From:	Map	Easting:	727,956.80 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 37' 21.054 N
		Longitude:	103° 43' 37.870 W
		Grid Convergence:	0.33 °

Well:	State HH #3H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 37' 21.054 N
		Longitude:	103° 43' 37.870 W
		Ground Level:	3,570.0 usft

Wellbore:	State HH #3H		
Magnetics:	Model Name	Sample Date	Declination (°)
	IGRF200510	3/3/2011	7.71
			Dip Angle (°)
			60.56
			Field Strength (nT)
			48,902

Design:	State HH #3H		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			91.13

Survey Program	Date: 3/22/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
98.3	9,508.3	State HH #3H As Drilled (State HH #3H)	MWD
9,541.0	9,692.0	ST #1 - HZ (State HH #3H)	MWD
			Description
			Fixed:v2 standard declination
			Fixed:v2 standard declination

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)
9,508.3	1.51	295.58	9,506.3	69.4	-96.5	-97.8	0.00	0.00	0.00
9,668.0	1.20	303.40	9,665.9	71.2	-99.8	-101.1	0.23	-0.19	4.90
9,699.0	4.90	79.80	9,696.9	71.6	-98.7	-100.1	18.80	11.94	440.00
9,731.0	14.80	80.20	9,728.4	72.5	-93.3	-94.8	30.94	30.94	1.25
9,762.0	23.20	80.20	9,757.7	74.3	-83.4	-84.9	27.10	27.10	0.00
9,794.0	31.30	85.40	9,786.1	76.0	-68.9	-70.4	26.36	25.31	16.25
9,826.0	37.30	88.20	9,812.5	77.0	-50.9	-52.4	19.38	18.75	8.75
9,857.0	43.50	90.70	9,836.1	77.1	-30.8	-32.3	20.67	20.00	8.06
9,888.0	49.60	99.10	9,857.5	75.1	-8.4	-9.9	27.79	19.68	27.10
9,920.0	57.90	104.80	9,876.4	69.7	16.7	15.4	29.63	25.94	17.81



Precision Drilling

Survey Report



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Site:	State	MD Reference:	WELL @ 3592.0usft (RKE)
Well:	State HH #3H	North Reference:	Grid
Wellbore:	State HH #3H	Survey Calculation Method:	Minimum Curvature
Design:	State HH #3H	Database:	EDM 5000.1 Single User Db

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)
9,952.0	67.60	108.30	9,891.0	61.6	44.0	42.7	31.83	30.31	10.94
9,983.0	76.90	110.00	9,900.5	51.9	71.8	70.8	30.45	30.00	5.48
10,047.0	88.20	115.70	9,908.7	27.3	130.2	129.6	19.73	17.66	8.91
10,079.0	87.60	112.50	9,909.9	14.2	159.4	159.0	10.17	-1.88	-10.00
10,110.0	87.10	110.00	9,911.4	3.0	188.2	188.1	8.22	-1.61	-8.06
10,142.0	89.00	108.60	9,912.4	-7.6	218.4	218.5	7.37	5.94	-4.38
10,236.0	86.20	105.50	9,916.4	-35.1	308.2	308.8	4.44	-2.98	-3.30
10,299.0	86.00	102.20	9,920.7	-50.1	369.2	370.1	5.24	-0.32	-5.24
10,330.0	86.20	101.60	9,922.8	-56.5	399.4	400.5	2.04	0.65	-1.94
10,362.0	87.40	99.50	9,924.6	-62.4	430.9	432.0	7.55	3.75	-6.56
10,393.0	89.00	98.80	9,925.5	-67.3	461.4	462.7	5.63	5.16	-2.26
10,425.0	90.30	98.40	9,925.7	-72.1	493.1	494.4	4.25	4.06	-1.25
10,456.0	91.50	97.70	9,925.2	-76.4	523.8	525.2	4.48	3.87	-2.26
10,488.0	92.20	97.70	9,924.2	-80.7	555.5	556.9	2.19	2.19	0.00
10,520.0	92.70	97.40	9,922.8	-84.9	587.2	588.7	1.82	1.56	-0.94
10,551.0	92.70	99.80	9,921.4	-89.5	617.8	619.4	7.73	0.00	7.74
10,582.0	92.00	99.50	9,920.1	-94.7	648.3	650.1	2.46	-2.26	-0.97
10,614.0	91.80	98.80	9,919.1	-99.8	679.9	681.7	2.27	-0.63	-2.19
10,645.0	91.50	98.80	9,918.2	-104.6	710.5	712.4	0.97	-0.97	0.00
10,677.0	91.10	98.40	9,917.4	-109.3	742.1	744.2	1.77	-1.25	-1.25
10,709.0	90.80	98.10	9,916.9	-113.9	773.8	775.9	1.33	-0.94	-0.94
10,740.0	90.60	97.70	9,916.5	-118.2	804.5	806.7	1.44	-0.65	-1.29
10,772.0	92.40	96.70	9,915.7	-122.2	836.2	838.5	6.43	5.63	-3.13
10,804.0	92.70	96.00	9,914.3	-125.7	868.0	870.3	2.38	0.94	-2.19
10,835.0	92.40	95.60	9,912.9	-128.9	898.8	901.2	1.61	-0.97	-1.29
10,867.0	92.00	95.30	9,911.7	-131.9	930.7	933.1	1.56	-1.25	-0.94
10,898.0	92.00	94.90	9,910.6	-134.7	961.5	964.0	1.29	0.00	-1.29
10,930.0	91.80	94.60	9,909.5	-137.3	993.4	995.9	1.13	-0.63	-0.94
10,961.0	91.70	94.20	9,908.6	-139.7	1,024.3	1,026.8	1.33	-0.32	-1.29
10,993.0	91.50	93.90	9,907.7	-141.9	1,056.2	1,058.8	1.13	-0.63	-0.94
11,088.0	91.10	93.20	9,905.5	-147.8	1,151.0	1,153.7	0.85	-0.42	-0.74
11,183.0	90.60	93.20	9,904.1	-153.1	1,245.8	1,248.6	0.53	-0.53	0.00
11,278.0	91.70	92.10	9,902.2	-157.5	1,340.7	1,343.5	1.64	1.16	-1.16
11,373.0	91.10	92.10	9,899.9	-161.0	1,435.6	1,438.5	0.63	-0.63	0.00
11,467.0	90.80	93.20	9,898.3	-165.3	1,529.5	1,532.5	1.21	-0.32	1.17
11,561.0	90.30	91.40	9,897.4	-169.1	1,623.4	1,626.4	1.99	-0.53	-1.91
11,656.0	90.30	90.30	9,896.9	-170.5	1,718.4	1,721.4	1.16	0.00	-1.16
11,750.0	89.70	90.70	9,896.9	-171.3	1,812.4	1,815.4	0.77	-0.64	0.43
11,845.0	89.90	90.00	9,897.3	-171.9	1,907.4	1,910.4	0.77	0.21	-0.74
11,940.0	89.60	90.00	9,897.7	-171.9	2,002.4	2,005.4	0.32	-0.32	0.00
12,034.0	88.90	89.60	9,898.9	-171.6	2,096.4	2,099.3	0.86	-0.74	-0.43
12,129.0	87.40	89.30	9,902.0	-170.7	2,191.3	2,194.3	1.61	-1.58	-0.32
12,223.0	88.70	88.60	9,905.2	-169.0	2,285.2	2,288.1	1.57	1.38	-0.74



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Site:	State	MD Reference:	WELL @ 3592.0usft (RKE)
Well:	State HH #3H	North Reference:	Grid
Wellbore:	State HH #3H	Survey Calculation Method:	Minimum Curvature
Design:	State HH #3H	Database:	EDM 5000.1 Single User Db

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)
12,318.0	89.70	87.90	9,906.5	-166.1	2,380.2	2,383.0	1.28	1.05	-0.74
12,412.0	90.40	87.50	9,906.4	-162.3	2,474.1	2,476.8	0.86	0.74	-0.43
12,507.0	92.40	88.20	9,904.1	-158.7	2,569.0	2,571.6	2.23	2.11	0.74
12,602.0	89.10	87.50	9,902.8	-155.2	2,663.9	2,666.5	3.55	-3.47	-0.74
12,696.0	87.30	87.20	9,905.8	-150.8	2,757.8	2,760.2	1.94	-1.91	-0.32
12,790.0	88.20	87.50	9,909.5	-146.5	2,851.6	2,853.9	1.01	0.96	0.32
12,884.0	89.40	87.20	9,911.5	-142.1	2,945.5	2,947.7	1.32	1.28	-0.32
12,979.0	90.10	85.40	9,911.9	-136.0	3,040.3	3,042.4	2.03	0.74	-1.89
13,074.0	91.70	84.00	9,910.4	-127.2	3,134.8	3,136.7	2.24	1.68	-1.47
13,168.0	91.10	85.10	9,908.1	-118.3	3,228.4	3,230.1	1.33	-0.64	1.17
13,263.0	89.60	86.10	9,907.5	-111.0	3,323.1	3,324.6	1.90	-1.58	1.05
13,357.9	88.70	85.10	9,908.9	-103.7	3,417.8	3,419.2	1.42	-0.95	-1.05
13,452.0	89.70	86.10	9,910.2	-96.5	3,511.6	3,512.8	1.50	1.06	1.06
13,546.0	89.60	84.70	9,910.8	-89.0	3,605.3	3,606.3	1.49	-0.11	-1.49
13,641.0	87.60	84.70	9,913.1	-80.2	3,699.8	3,700.7	2.11	-2.11	0.00
13,736.0	89.40	86.50	9,915.6	-72.9	3,794.5	3,795.2	2.68	1.89	1.89
13,831.0	90.40	86.10	9,915.8	-66.8	3,889.3	3,889.9	1.13	1.05	-0.42
13,925.0	91.10	85.80	9,914.5	-60.1	3,983.1	3,983.5	0.81	0.74	-0.32
14,020.0	92.40	85.40	9,911.6	-52.9	4,077.7	4,078.0	1.43	1.37	-0.42
14,115.0	91.80	84.00	9,908.2	-44.1	4,172.3	4,172.3	1.60	-0.63	-1.47
14,209.0	92.40	83.30	9,904.7	-33.7	4,265.6	4,265.5	0.98	0.64	-0.74
14,303.0	91.50	82.60	9,901.5	-22.2	4,358.9	4,358.4	1.21	-0.96	-0.74
14,399.0	90.30	81.60	9,900.0	-9.0	4,453.9	4,453.2	1.63	-1.25	-1.04
14,493.0	90.10	80.20	9,899.7	5.9	4,546.7	4,545.7	1.50	-0.21	-1.49
Final Survey: 14493' MD (9899.7' TVD)									
14,545.4	90.27	80.20	9,899.5	14.8	4,598.4	4,597.2	0.33	0.33	0.00
PBHL - State HH #3H									
14,554.0	90.30	80.20	9,899.5	16.3	4,606.9	4,605.6	0.33	0.33	0.00
Projection to TD: 14554' MD (9899.5' TVD)									

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									
PBHL - State HH #3H	0.00	0.00	9,960.0	-91.2	4,616.9	590,642.83	732,573.68	32° 37' 19.889 N	103° 42' 43.894 W
- survey misses target center by 123.4usft at 14545.4usft MD (9899.5 TVD, 14.8 N, 4598.4 E)									
- Point									



Precision Drilling
Survey Report



Company:	Cimarex Energy Company	Local Co-ordinate Reference:	Well State HH #3H
Project:	East Lusk	TVD Reference:	WELL @ 3592.0usft (RKE)
Site:	State	MD Reference:	WELL @ 3592.0usft (RKE)
Well:	State HH #3H	North Reference:	Grid
Wellbore:	State HH #3H	Survey Calculation Method:	Minimum Curvature
Design:	State HH #3H	Database:	EDM:5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,493.0	9,899.7	5.9	4,546.7	Final Survey: 14493' MD (9899.7' TVD)
14,554.0	9,899.5	16.3	4,606.9	Projection to TD: 14554' MD (9899.5' TVD)

Checked By: _____ Approved By: _____ Date: _____



CACTUS DRILLING COMPANY, L.L.C.

REPORT OF PROOF OF APPARENT DEVIATION
NEW MEXICO

OPERATOR CIMAIREX CO OF COLORADO

600 N MARIENFELD ST
MIDLAND, TX 79701

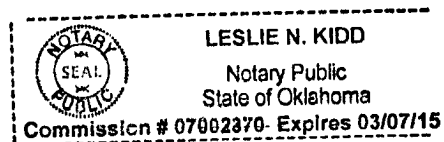
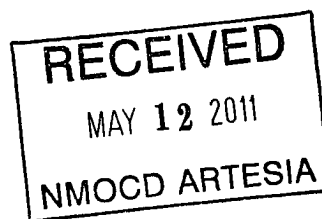
FIELD NAME _____

COUNTY/PARISH LEA

WELL NAME & NO. STATE HH COM 3

LEGAL SEC 36-19S-32E

MEASURED DEPTH (FT)	COURSE LENGTH (HUNDREDS OF FT)	ANGLE OF INCLINATION (DEGREES)	DISPLACEMENT PER HUNDRED FT (SINE OF ANGLE X 100)	COURSE DISPLACEMENT (FEET)	ACCUMULATIVE DISPLACEMENT (FEET)	REMARKS
470	4 70	1 8/9	3.3155	15 58	15 58	
825	3 55	1 3/5	2 7922	9 91	25 50	
1850	10 25	4/5	1 3962	14 31	39 81	
2350	5 00	1 3/7	2 4956	12 48	52 28	
2850	5 00	1 1/7	2 0070	10 03	62 32	
4765	19 15	1	1 7452	33 42	95 74	
5050	2 85	1	1 7452	4 97	100 71	
5338	2 88	1	1 7452	5 03	105 74	
5656	3 18	1	1 7452	5 55	111 29	
6164	5 08	1	1 7452	8 87	120 16	
6445	2 81	1	1 7452	4 90	125 06	
7152	7 07	1	1 7452	12 34	137 40	
7652	5 00	1	1 7452	8 73	146 13	
8152	5 00	1	1 7452	8 73	154 85	
8780	6 28	1	1 7452	10 96	165 81	
9136	3 56	1	1 7452	6 21	172 02	
9636	5 00	1	1 7452	8 73	180 75	



Leslie N. Kidd