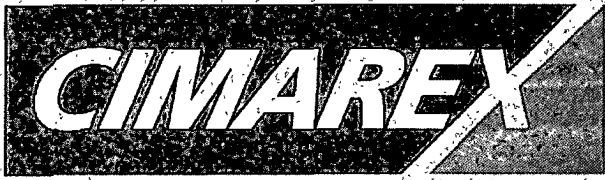


30-015-38597



Cimarex Energy

Eddy County, NM (NAD83 NME)

Oracle 21 Federal #4H (Bone Spring)

Oracle 21 Federal #4H (400' FNL & 1980' FWL)

OH - Job #32D0711623

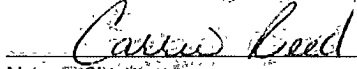
Survey: MWD Survey

SDI Standard Survey Report

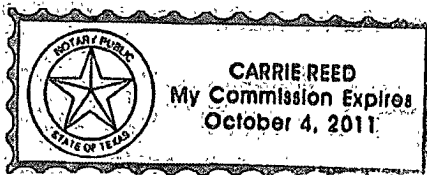
This survey is correct to the best of my knowledge and is supported by actual field data.



Notarized this date 22nd of September, 2011.



Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Oracle 21 Federal #4H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Site:	Oracle 21 Federal #4H (Bone Spring)	MD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0711623	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project:	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Oracle 21 Federal #4H (Bone Spring)				
Site Position:		Northings:	408,062.66 usft	Latitude:	32° 7' 18.620 N
From:	Lat/Long	Easting:	551,684.27 usft	Longitude:	104° 17' 59.680 W
Position Uncertainty:	0.0 usft	Spot Radius:	13-3/16"	Grid Convergence:	0.02 °

Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)					
Well Position	+N-S	0.0 usft	Northings:	408,062.66 usft	Latitude:	32° 7' 18.620 N
	+E-W	0.0 usft	Easting:	551,684.27 usft	Longitude:	104° 17' 59.680 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,402.0 usft

Wellbore		OH - Job #32D0711623			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/12/2011	7.90°	59.96°	48,465

Design:	Actual				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/S	+E/W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	180.28	

Survey Program		Date: 9/21/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
109.2	7,335.7	Gyro Survey (OH - Job #32D0711623)	Keeper	Standard Wireline Keeper ver 1.0.2
7,335.7	7,953.0	MWD Survey (OH - Job #32D0711623)	MWD	MWD - Standard
7,953.0	12,105.0	MWD ST Survey (OH - Job #32D0711623)	MWD	MWD - Standard

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
400' FNL & 1980' FWL							
109.2	0.90	303.84	109.2	0.5	-0.7	303.84	0.9
169.9	0.92	306.67	169.9	1.0	-1.5	304.60	1.8
231.4	0.91	303.09	231.4	1.6	-2.3	304.70	2.8
292.9	1.00	323.42	292.9	2.3	-3.0	307.09	3.8
354.4	1.16	338.24	354.4	3.3	-3.6	312.66	4.9
415.9	1.30	345.40	415.8	4.6	-4.0	318.78	6.1
477.4	1.21	346.88	477.3	5.9	-4.3	323.66	7.3
539.0	1.06	359.71	538.9	7.1	-4.5	327.72	8.4



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company: Cimarex Energy
Project: Eddy County, NM (NAD83/NM)
Site: Oracle 21 Federal #4H (Bone Spring)
Well: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
Wellbore: OH - Job #32D0711623
Design: Actual

Local Co-ordinate Reference: Site Oracle 21 Federal #4H (Bone Spring)
TVD Reference: KB Elev (17) @ 3419.0usft (Key #880)
MD Reference: KB Elev (17) @ 3419.0usft (Key #880)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
600.5	0.89	11.17	600.4	8.1	-4.4	331.64	9.2
662.0	0.78	17.49	661.9	9.0	-4.2	335.14	9.9
723.4	0.72	16.30	723.3	9.7	-3.9	338.07	10.5
785.0	0.64	15.35	784.9	10.4	-3.7	340.38	11.1
846.5	0.49	19.67	846.4	11.0	-3.5	342.18	11.6
908.0	0.21	21.26	907.9	11.4	-3.4	343.29	11.9
969.5	0.05	152.76	969.4	11.5	-3.4	343.65	11.9
1,030.9	0.49	105.80	1,030.8	11.4	-3.1	344.76	11.8
1,092.5	1.25	89.15	1,092.4	11.3	-2.2	349.13	11.5
1,157.6	1.95	84.83	1,157.5	11.4	-0.4	358.21	11.4
1,218.5	2.59	81.64	1,218.3	11.7	-2.0	9.87	11.9
1,279.3	2.56	82.21	1,279.0	12.1	4.7	21.41	13.0
1,340.2	2.46	84.34	1,339.9	12.4	7.4	30.79	14.4
1,401.1	2.74	79.17	1,400.7	12.8	10.1	38.32	16.3
1,433.7	2.93	78.19	1,433.3	13.1	11.7	41.73	17.6
1,497.6	3.20	81.10	1,497.1	13.7	15.1	47.65	20.4
1,561.0	3.45	84.80	1,560.4	14.2	18.7	52.85	23.5
1,624.4	3.49	85.42	1,623.7	14.5	22.5	57.23	26.8
1,687.9	2.62	89.39	1,687.1	14.7	25.9	60.48	29.8
1,751.3	1.69	87.33	1,750.4	14.7	28.3	62.49	31.9
1,814.7	1.22	90.68	1,813.8	14.8	29.9	63.72	33.3
1,878.2	1.07	87.36	1,877.3	14.8	31.2	64.62	34.5
1,941.6	0.94	85.19	1,940.7	14.9	32.3	65.28	35.5
2,005.0	0.84	84.47	2,004.1	14.9	33.3	65.80	36.5
2,068.4	0.71	84.21	2,067.5	15.0	34.1	66.22	37.3
2,131.9	0.64	84.90	2,131.0	15.1	34.9	66.58	38.0
2,195.3	0.59	95.05	2,194.4	15.1	35.5	66.97	38.6
2,258.7	0.55	105.15	2,257.8	15.0	36.2	67.47	39.1
2,322.2	0.54	113.52	2,321.3	14.8	36.7	68.05	39.6
2,385.6	0.58	122.72	2,384.7	14.5	37.3	68.73	40.0
2,449.0	0.63	134.96	2,448.1	14.1	37.8	69.56	40.3
2,512.5	0.67	146.35	2,511.6	13.5	38.2	70.51	40.6
2,575.9	0.64	146.04	2,575.0	12.9	38.6	71.50	40.7
2,639.3	0.62	148.73	2,638.3	12.3	39.0	72.45	40.9
2,702.7	0.59	151.71	2,701.7	11.8	39.3	73.36	41.1
2,766.2	0.64	154.93	2,765.2	11.2	39.7	74.29	41.2
2,829.6	0.60	155.73	2,828.6	10.5	39.9	75.23	41.3
2,893.0	0.55	156.87	2,892.0	9.9	40.2	76.10	41.4
2,956.5	0.55	153.79	2,955.5	9.4	40.5	76.93	41.5
3,019.9	0.54	151.35	3,018.9	8.9	40.7	77.73	41.7
3,083.3	0.51	158.80	3,082.3	8.3	41.0	78.51	41.8
3,146.8	0.45	168.76	3,145.8	7.8	41.1	79.23	41.9
3,210.2	0.39	176.93	3,209.2	7.4	41.2	79.86	41.9
3,273.6	0.34	185.03	3,272.6	7.0	41.2	80.41	41.8



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company: Cimarex Energy
Project: Eddy County, NM (NAD83-NME)
Site: Oracle 21 Federal #4H (Bone Spring)
Well: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
Wellbore: OH - Job #32D0711623
Design: Actual

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Site Oracle 21 Federal #4H (Bone Spring)
KB Elev (17) @ 3419.0usft (Key #880)
KB Elev (17) @ 3419.0usft (Key #880)
Grid
Minimum Curvature
EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
3,337.1	0.36	197.60	3,336.1	6.6	41.1	80.90	41.6
3,400.5	0.40	213.12	3,399.5	6.2	40.9	81.37	41.4
3,463.9	0.41	219.52	3,462.9	5.8	40.7	81.82	41.1
3,527.3	0.49	218.04	3,526.3	5.5	40.4	82.29	40.7
3,590.8	0.44	216.83	3,589.8	5.1	40.0	82.81	40.4
3,654.2	0.49	214.08	3,653.2	4.6	39.7	83.35	40.0
3,717.6	0.60	215.19	3,716.6	4.1	39.4	84.01	39.6
3,781.1	0.68	217.38	3,780.1	3.6	39.0	84.77	39.1
3,844.5	0.70	219.28	3,843.5	3.0	38.5	85.59	38.6
3,907.9	0.74	225.07	3,906.9	2.4	38.0	86.42	38.1
3,971.3	0.73	224.70	3,970.3	1.8	37.4	87.24	37.4
4,034.8	0.68	222.51	4,033.8	1.2	36.9	88.08	36.9
4,098.2	0.56	225.87	4,097.2	0.7	36.4	88.83	36.4
4,161.6	0.49	230.38	4,160.6	0.4	36.0	89.43	36.0
4,225.1	0.50	228.63	4,224.1	0.0	35.5	90.00	35.5
4,288.5	0.49	227.99	4,287.5	-0.4	35.1	90.60	35.1
4,351.9	0.60	216.29	4,350.9	-0.8	34.7	91.34	34.7
4,415.4	0.63	217.51	4,414.4	-1.4	34.3	92.27	34.4
4,478.8	0.67	215.78	4,477.8	-1.9	33.9	93.27	34.0
4,542.2	0.77	213.32	4,541.2	-2.6	33.4	94.43	33.5
4,607.6	0.76	206.95	4,606.5	-3.3	33.0	95.79	33.2
4,671.0	0.75	206.75	4,669.9	-4.1	32.6	97.15	32.9
4,734.4	0.71	201.07	4,733.3	-4.8	32.3	98.50	32.7
4,797.8	0.67	195.76	4,796.7	-5.6	32.1	99.83	32.5
4,861.2	0.64	193.90	4,860.1	-6.3	31.9	101.10	32.5
4,924.6	0.68	194.37	4,923.5	-7.0	31.7	102.39	32.5
4,988.0	0.66	189.21	4,986.9	-7.7	31.5	103.69	32.5
5,051.4	0.72	193.67	5,050.3	-8.4	31.4	105.04	32.5
5,114.8	0.75	200.39	5,113.7	-9.2	31.2	106.47	32.5
5,178.2	0.92	208.86	5,177.1	-10.0	30.8	108.08	32.4
5,241.6	0.99	197.58	5,240.5	-11.0	30.4	109.94	32.3
5,305.0	1.03	190.75	5,303.9	-12.1	30.1	111.90	32.4
5,368.4	1.17	190.69	5,367.3	-13.3	29.9	114.00	32.7
5,431.8	1.32	196.75	5,430.7	-14.6	29.5	116.35	32.9
5,495.2	1.35	205.30	5,494.0	-16.0	29.0	118.89	33.1
5,558.6	1.25	198.04	5,557.4	-17.3	28.5	121.34	33.3
5,622.0	1.10	189.35	5,620.8	-18.6	28.1	123.45	33.7
5,685.4	1.24	207.70	5,684.2	-19.8	27.7	125.53	34.1
5,748.8	1.37	215.11	5,747.6	-21.0	27.0	127.94	34.2
5,812.2	1.20	217.87	5,811.0	-22.2	26.1	130.31	34.3
5,875.6	1.12	218.12	5,874.4	-23.2	25.3	132.45	34.3
5,939.0	1.23	194.99	5,937.7	-24.3	24.8	134.47	34.7
6,002.4	1.88	185.03	6,001.1	-26.0	24.5	136.71	35.7
6,063.8	2.13	185.88	6,062.5	-28.9	24.2	139.97	37.7



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Oracle 21 Federal #4H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Site:	Oracle 21 Federal #4H (Bone Spring)	MD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0711623	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM Regulatory

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
6,129.2	2.04	187.09	6,127.8	-30.5	24.1	141.73	38.8
6,192.6	2.01	188.99	6,191.2	-32.7	23.7	144.03	40.4
6,256.0	2.09	187.19	6,254.6	-35.0	23.4	146.18	42.1
6,319.4	2.01	190.81	6,317.9	-37.2	23.1	148.19	43.8
6,382.8	1.56	192.98	6,381.3	-39.1	22.7	149.92	45.2
6,446.2	1.23	193.46	6,444.7	-40.6	22.3	151.22	46.4
6,509.6	1.14	200.61	6,508.1	-41.9	21.9	152.36	47.3
6,573.0	1.09	207.54	6,571.4	-43.0	21.4	153.51	48.1
6,636.4	1.13	217.77	6,634.8	-44.0	20.8	154.75	48.7
6,699.8	1.13	211.42	6,698.2	-45.1	20.1	156.00	49.3
6,763.2	1.37	212.28	6,761.6	-46.2	19.3	157.31	50.1
6,826.6	1.57	222.45	6,825.0	-47.5	18.3	158.89	50.9
6,890.0	1.17	227.47	6,888.4	-48.6	17.3	160.43	51.6
6,953.4	0.92	235.59	6,951.8	-49.3	16.4	161.63	52.0
7,019.1	1.33	232.85	7,017.4	-50.1	15.3	162.97	52.4
7,082.5	1.50	225.43	7,080.8	-51.1	14.2	164.51	53.0
7,145.8	1.49	219.37	7,144.1	-52.3	13.1	166.00	53.9
7,209.1	1.77	229.35	7,207.4	-53.6	11.8	167.60	54.9
7,272.4	1.55	234.36	7,270.6	-54.7	10.3	169.29	55.7
7,335.7	0.75	258.53	7,333.9	-55.3	9.2	170.51	56.1
7,399.1	1.23	309.21	7,397.3	-55.0	8.3	171.40	55.6
7,462.4	1.40	314.68	7,460.6	-54.0	7.2	172.37	54.5
7,525.7	0.95	341.70	7,523.9	-53.0	6.5	172.98	53.4
7,589.0	0.35	356.17	7,587.2	-52.3	6.3	173.08	52.6
7,652.3	0.04	227.40	7,650.5	-52.1	6.3	173.09	52.5
7,715.7	0.34	222.43	7,713.9	-52.2	6.2	173.26	52.6
7,779.0	0.81	207.11	7,777.2	-52.8	5.8	173.68	53.1
7,842.3	1.06	200.66	7,840.5	-53.7	5.4	174.23	54.0
7,905.6	1.06	196.79	7,903.8	-54.8	5.1	174.73	55.1
7,968.9	1.16	200.07	7,967.1	-56.0	4.7	175.24	56.2
8,032.3	1.37	203.64	8,030.4	-57.3	4.1	175.86	57.4
8,095.6	1.54	202.50	8,093.7	-58.8	3.5	176.58	58.9

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N-S (usft)	E-W (usft)	
0.0	0.0	0.0	0.0	400' FNL & 1980' FWL
8,150.0				Pilot Hole



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Oracle 21 Federal #4H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Site:	Oracle 21 Federal #4H (Bone Spring)	MD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0711623	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project:	Eddy County, NM (NAD83 NME)	System Datum:	Mean Sea Level
Map System:	US State Plane 1983		
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Oracle 21 Federal #4H (Bone Spring)		
Site Position:		Northings:	408,082.66 usft
From:	Lat/Long	Eastings:	551,684.27 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 7' 18.620 N
		Longitude:	104° 17' 59.680 W
		Grid Convergence:	0.02 °

Well	Oracle 21 Federal #4H (400' FNL & 1980' FWL)					
Well Position	+N/-S	0.0 usft	Northings:	408,082.66 usft	Latitude:	32° 7' 18.620 N
	+E/-W	0.0 usft	Eastings:	551,684.27 usft	Longitude:	104° 17' 59.680 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,402.0 usft

Wellbore:		OH - Job #32D0711623			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/12/2011	7.90	59.96	48,465

Design	Actual				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	180.28	

Survey Program	Date:	9/21/2011		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
109.2	7,335.7	Gyro Survey (OH - Job #32D0711623)	Keeper	Standard Wireline Keeper ver 1.0.2
7,335.7	7,953.0	MWD Survey (OH - Job #32D0711623)	MWD	MWD - Standard
7,953.0	12,105.0	MWD ST Survey (OH - Job #32D0711623)	MWD	MWD - Standard

Survey								
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance	
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)	
7,335.7	0.75	258.53	7,333.9	-55.3	9.2	170.51	56.1	
Gyro Tie-In								
7,357.0	5.22	193.59	7,355.2	-56.3	8.9	171.03	57.0	
7,389.0	10.10	182.65	7,386.9	-60.5	8.4	172.09	61.1	
7,421.0	14.97	181.13	7,418.1	-67.4	8.2	173.07	67.9	
7,452.0	19.51	185.45	7,447.7	-76.6	7.6	174.31	77.0	
7,484.0	24.71	184.76	7,477.4	-88.6	6.6	175.76	88.8	
7,516.0	30.19	180.79	7,505.8	-103.3	5.9	176.73	103.5	
7,548.0	35.87	180.72	7,532.6	-120.8	5.7	177.31	120.9	
7,579.0	41.13	182.13	7,556.8	-140.0	5.2	177.88	140.1	



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company: Cimarex Energy
Project: Eddy County, NM (NAD83 NME)
Site: Oracle 21 Federal #4H (Bone Spring)
Well: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
Wellbore: OH - Job #32D0711623
Design: Actual

Local Co-ordinate Reference: Site Oracle 21 Federal #4H (Bone Spring)
TVD Reference: KB Elev (17) @ 3419.0usft (Key #880)
MD Reference: KB Elev (17) @ 3419.0usft (Key #880)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
7,611.0	47.32	181.39	7,579.8	-162.3	-4.5	178.41	162.4
7,643.0	53.60	180.96	7,600.1	-187.0	-4.0	178.78	187.0
7,674.0	59.52	179.45	7,617.2	-212.9	-3.9	178.95	212.9
7,708.0	66.49	179.95	7,631.7	-241.4	-4.1	179.04	241.4
7,738.0	72.56	183.31	7,642.9	-271.3	-3.2	179.33	271.3
7,761.0	77.47	183.36	7,648.8	-293.5	-1.9	179.63	293.5
7,826.0	85.83	181.45	7,658.3	-357.7	-0.8	180.13	357.7
7,857.0	85.07	181.01	7,660.7	-388.6	-1.4	180.21	388.6
7,889.0	84.66	181.41	7,663.6	-420.4	-2.1	180.29	420.4
7,953.0	85.81	180.50	7,668.9	-484.2	-3.2	180.38	484.2
7,985.0	86.47	179.52	7,671.1	-516.1	-3.2	180.35	516.1
8,016.0	87.48	179.46	7,672.7	-547.1	-2.9	180.31	547.1
8,048.0	88.72	178.29	7,673.8	-579.1	-2.3	180.23	579.1
8,080.0	89.90	177.20	7,674.2	-611.0	-1.0	180.10	611.0
8,111.0	91.14	176.63	7,673.9	-642.0	0.6	179.94	642.0
8,175.0	91.22	176.88	7,672.6	-705.9	4.3	179.65	705.9
8,238.0	91.41	178.26	7,671.1	-768.8	6.9	179.48	768.8
8,302.0	91.24	179.61	7,669.6	-832.8	8.1	179.44	832.8
8,366.0	91.58	180.99	7,668.1	-896.7	7.8	179.50	896.8
8,429.0	91.31	182.15	7,666.5	-959.7	6.1	179.64	959.7
8,493.0	90.84	182.40	7,665.3	-1,023.6	3.5	179.80	1,023.6
8,556.0	90.71	182.37	7,664.4	-1,086.6	0.9	179.95	1,086.6
8,619.0	90.71	182.37	7,663.6	-1,149.5	-1.7	180.08	1,149.5
8,683.0	89.87	181.57	7,663.3	-1,213.5	-3.9	180.18	1,213.5
8,714.0	89.93	181.71	7,663.4	-1,244.5	-4.8	180.22	1,244.5
8,746.0	89.73	180.42	7,663.5	-1,276.5	-5.4	180.24	1,276.5
8,778.0	89.97	180.19	7,663.5	-1,308.4	-5.6	180.24	1,308.5
8,810.0	89.66	179.98	7,663.6	-1,340.4	-5.6	180.24	1,340.5
8,841.0	90.20	179.28	7,663.7	-1,371.4	-5.4	180.23	1,371.5
8,905.0	91.34	179.03	7,662.8	-1,435.4	-4.5	180.18	1,435.4
8,968.0	92.25	179.26	7,660.8	-1,498.4	-3.5	180.13	1,498.4
9,031.0	93.40	180.61	7,657.7	-1,561.3	-3.4	180.13	1,561.3
9,094.0	93.97	180.29	7,653.7	-1,624.2	-3.9	180.14	1,624.2
9,158.0	93.72	178.87	7,649.4	-1,688.0	-3.5	180.12	1,688.0
9,222.0	93.60	179.62	7,645.3	-1,751.9	-2.6	180.09	1,751.9
9,285.0	93.87	179.09	7,641.2	-1,814.8	-1.9	180.06	1,814.8
9,348.0	93.15	178.57	7,637.4	-1,877.6	-0.6	180.02	1,877.6
9,380.0	93.16	179.41	7,635.6	-1,909.6	-0.1	180.00	1,909.6
9,410.0	93.40	179.93	7,633.9	-1,939.5	0.1	180.00	1,939.5
9,474.0	93.26	179.81	7,630.2	-2,003.4	0.2	179.99	2,003.4
9,537.0	93.36	180.02	7,626.5	-2,066.3	0.3	179.99	2,066.3
9,601.0	93.12	180.24	7,622.9	-2,130.2	0.2	179.99	2,130.2

Old Hole



Scientific Drilling International, Inc.

SDJ Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Oracle 21 Federal #4H (Bone Spring)
Project:	Eddy County, NM (NAD83-NME)	TVD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Site:	Oracle 21 Federal #4H (Bone Spring)	MD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0711623	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project:	Eddy County, NM (NAD83-NME)	System Datum:	Mean Sea Level
Map System:	US State Plane 1983		
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Oracle 21 Federal #4H (Bone Spring)		
Site Position:		Northings:	408,062.66 usft
From:	Lat/Long	Easting:	551,684.27 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13'3/16"
		Grid Convergence:	0.02 °

Well	Oracle 21 Federal #4H (400' FNL & 1980' FWL)					
Well Position	+N-S	0.0 usft	Northings:	408,062.66 usft	Latitude:	32° 7' 18.620 N
	+E-W	0.0 usft	Easting:	551,684.27 usft	Longitude:	104° 17' 59.680 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,402.0 usft

Wellbore		OH - Job #32D0711623			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/12/2011	7.90	59.96	48,465

Design:	Actual				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	180.28	

Survey Program		Date - 9/21/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
109.2	7,335.7	Gyro Survey (OH - Job #32D0711623)	Keeper	Standard Wireline Keeper ver 1.0.2
7,335.7	7,953.0	MWD Survey (OH - Job #32D0711623)	MWD	MWD - Standard
7,953.0	12,105.0	MWD-ST Survey (OH - Job #32D0711623)	MWD	MWD - Standard

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
7,953.0	85.81	180.50	7,668.9	-484.2	-3.2	180.38	484.2	
MWD Tie-In								
7,985.0	86.47	179.52	7,671.1	-516.1	-3.2	180.35	516.1	
8,016.0	87.48	179.46	7,672.7	-547.1	-2.9	180.31	547.1	
8,048.0	84.89	180.48	7,674.8	-579.0	-2.9	180.29	579.0	
8,080.0	85.63	181.34	7,677.5	-610.9	-3.4	180.32	610.9	
8,111.0	87.88	181.82	7,679.2	-641.8	-4.3	180.38	641.8	
8,143.0	89.53	182.63	7,680.0	-673.8	-5.5	180.47	673.8	
8,175.0	90.24	182.96	7,680.0	-705.8	-7.1	180.57	705.8	
8,206.0	90.57	183.34	7,679.8	-736.7	-8.8	180.68	736.8	



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company: Cimarex Energy
Project: Eddy County, NM (NAD83 NME)
Site: Oracle 21 Federal #4H (Bone Spring)
Well: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
Wellbore: OH - Job #32D0711623
Design: Actual

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Site Oracle 21 Federal #4H (Bone Spring)
KB Elev (17) @ 3419.0usft (Key #880)
KB Elev (17) @ 3419.0usft (Key #880)
Grid
Minimum Curvature
EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
8,270.0	91.31	183.33	7,678.8	-800.6	-12.5	180.89	800.7
8,334.0	89.50	182.38	7,678.3	-864.5	-15.7	181.04	864.6
8,397.0	89.10	180.93	7,679.1	-927.5	-17.5	181.08	927.6
8,461.0	90.57	181.81	7,679.3	-991.5	-19.0	181.10	991.6
8,524.0	90.24	180.79	7,678.8	-1,054.4	-20.5	181.11	1,054.6
8,588.0	90.48	181.21	7,678.4	-1,118.4	-21.6	181.10	1,118.6
8,651.0	90.37	180.44	7,677.9	-1,181.4	-22.5	181.09	1,181.6
8,714.0	89.46	179.39	7,678.0	-1,244.4	-22.4	181.03	1,244.6
8,778.0	89.30	178.03	7,678.7	-1,308.4	-20.9	180.92	1,308.6
8,841.0	88.66	178.74	7,679.8	-1,371.4	-19.2	180.80	1,371.5
8,905.0	89.53	178.27	7,680.9	-1,435.3	-17.5	180.70	1,435.4
8,967.0	88.73	179.28	7,681.8	-1,497.3	-16.2	180.62	1,497.4
9,031.0	87.85	179.41	7,683.7	-1,561.3	-15.4	180.57	1,561.3
9,094.0	88.46	178.89	7,685.7	-1,624.2	-14.5	180.51	1,624.3
9,158.0	88.32	178.59	7,687.5	-1,688.2	-13.1	180.44	1,688.2
9,221.0	89.50	178.77	7,688.7	-1,751.2	-11.6	180.38	1,751.2
9,285.0	89.83	179.02	7,689.1	-1,815.1	-10.4	180.33	1,815.2
9,348.0	90.74	178.25	7,688.8	-1,878.1	-8.9	180.27	1,878.1
9,411.0	91.61	178.12	7,687.5	-1,941.1	-6.9	180.20	1,941.1
9,474.0	92.42	177.62	7,685.3	-2,004.0	-4.6	180.13	2,004.0
9,537.0	92.59	177.16	7,682.5	-2,066.9	-1.7	180.05	2,066.9
9,601.0	92.66	177.31	7,679.6	-2,130.7	1.4	179.96	2,130.7
9,632.0	91.68	177.26	7,678.4	-2,161.7	2.8	179.92	2,161.7
9,664.0	91.38	176.54	7,677.6	-2,193.6	4.6	179.88	2,193.6
9,728.0	90.50	177.04	7,676.5	-2,257.5	8.2	179.79	2,257.5
9,791.0	89.93	176.79	7,676.3	-2,320.4	11.5	179.71	2,320.4
9,855.0	89.93	176.94	7,678.4	-2,384.3	15.0	179.64	2,384.4
9,918.0	89.80	176.91	7,676.5	-2,447.2	18.4	179.57	2,447.3
9,981.0	89.36	177.24	7,677.0	-2,510.1	21.6	179.51	2,510.2
10,045.0	90.37	177.26	7,677.1	-2,574.1	24.7	179.45	2,574.2
10,108.0	90.57	177.17	7,676.6	-2,637.0	27.8	179.40	2,637.1
10,172.0	90.60	177.29	7,676.0	-2,700.9	30.9	179.35	2,701.1
10,235.0	90.50	177.33	7,675.4	-2,763.8	33.8	179.30	2,764.0
10,299.0	90.47	177.41	7,674.8	-2,827.8	36.8	179.26	2,828.0
10,362.0	89.87	178.17	7,674.6	-2,890.7	39.2	179.22	2,891.0
10,426.0	89.60	178.64	7,674.9	-2,954.7	41.0	179.21	2,955.0
10,489.0	89.50	178.52	7,675.4	-3,017.7	42.5	179.19	3,018.0
10,553.0	89.56	178.26	7,675.9	-3,081.6	44.3	179.18	3,082.0
10,616.0	89.66	178.39	7,676.4	-3,144.6	46.2	179.16	3,145.0
10,680.0	89.73	178.98	7,676.7	-3,208.6	47.6	179.15	3,209.0
10,743.0	89.46	178.60	7,677.2	-3,271.6	49.0	179.14	3,271.9
10,807.0	89.76	178.30	7,677.6	-3,335.6	50.7	179.13	3,335.9
10,870.0	89.97	178.70	7,677.7	-3,398.5	52.3	179.12	3,398.9
10,934.0	89.73	178.57	7,677.9	-3,462.5	53.9	179.11	3,462.9



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Oracle 21 Federal #4H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Site:	Oracle 21 Federal #4H (Bone Spring)	MD Reference:	KB Elev (17) @ 3419.0usft (Key #880)
Well:	Oracle 21 Federal #4H (400' FNL & 1980' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0711623	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
10,997.0	89.93	178.64	7,678.1	-3,525.5	55.4	179.10	3,525.9	
11,061.0	89.90	178.02	7,678.2	-3,589.5	57.3	179.09	3,589.9	
11,124.0	90.44	178.13	7,678.0	-3,652.4	59.4	179.07	3,652.9	
11,187.0	90.87	177.54	7,677.3	-3,715.4	61.8	179.05	3,715.9	
11,251.0	90.64	178.08	7,676.4	-3,779.3	64.2	179.03	3,779.9	
11,314.0	91.24	177.05	7,675.4	-3,842.3	66.9	179.00	3,842.8	
11,378.0	91.55	177.40	7,673.8	-3,906.2	70.0	178.97	3,906.8	
11,441.0	91.74	177.57	7,672.0	-3,969.1	72.7	178.95	3,969.8	
11,504.0	91.54	177.61	7,670.2	-4,032.0	75.4	178.93	4,032.7	
11,568.0	91.54	177.32	7,668.5	-4,095.9	78.2	178.91	4,096.7	
11,631.0	91.41	177.33	7,666.9	-4,158.8	81.2	178.88	4,159.6	
11,694.0	91.65	177.46	7,665.2	-4,221.7	84.0	178.86	4,222.6	
11,758.0	91.58	177.07	7,663.4	-4,285.6	87.1	178.84	4,286.5	
11,821.0	92.08	176.69	7,661.4	-4,348.5	90.5	178.81	4,349.5	
11,884.0	92.25	176.94	7,659.0	-4,411.4	94.0	178.78	4,412.4	
11,947.0	92.02	176.99	7,656.7	-4,474.2	97.3	178.75	4,475.3	
12,011.0	91.92	177.46	7,654.5	-4,538.1	100.4	178.73	4,539.2	
12,043.0	92.24	177.61	7,653.3	-4,570.1	101.8	178.72	4,571.2	
Last MWD Survey								
12,105.0	92.24	177.61	7,650.9	-4,632.0	104.4	178.71	4,633.2	
Projection to Bit								

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,953.0	7,668.9	-484.2	-3.2	MWD Tie-in
12,043.0	7,653.3	-4,570.1	101.8	Last MWD Survey
12,105.0	7,650.9	-4,632.0	104.4	Projection to Bit



Scientific Drilling
Directional Drilling Operations

Project: Eddy County, NM (NAD83 NME)
Oracle 21 Federal #4H (Bone Spring)
Well: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
re: OH - Job #32D0711623
In: Actual

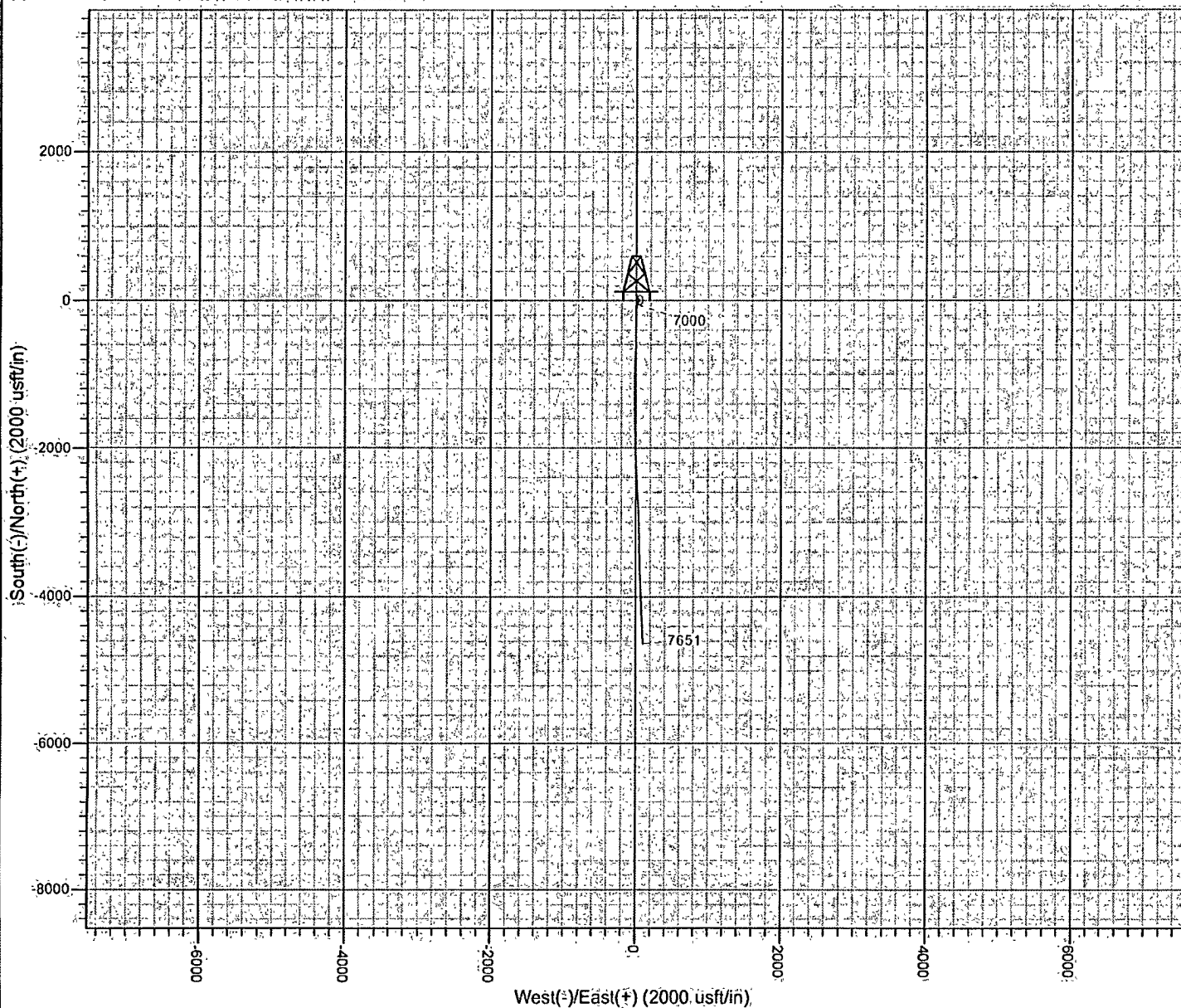


Azimuths to Grid North
True North: 0.02°
Magnetic North: 7.86°

Magnetic Field
Strength: 48464.7 nT
Dip Angle: 59.96°
Date: 7/12/2011
Model: IGRF2010

WELL DETAILS: Oracle 21 Federal #4H (400' FNL & 1980' FWL)
KB Elev (17') @ 3419.0usft (Key #880)
Ground Level: 3402.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	408062.66	551684.27	32° 7' 18.620 N	104° 17' 59.680 W	



PROJECT DETAILS: Eddy County, NM (NAD83 NME)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

SITE DETAILS: Oracle 21 Federal #4H (Bone Spring)
Site Centre Latitude: 32° 7' 18.620 N
Longitude: 104° 17' 59.680 W
Positional Uncertainty: 0.0
Convergence: 0.02
Local North: Grid