

Cimarex Energy

30.015.38657

Eddy County, NM (NAD83 NME)

Pintail "23" Federal Com #8H (Bone Spring)

Pintail "23" Federal Com #8H (250' FSL & 800' FWL)

OH - Job #32D0811817

Survey: MWD Survey

SDI Standard Survey Report

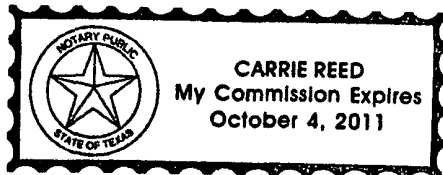
This survey is correct to the best of my knowledge and is supported by actual field data.

Richardson

Notarized this date 4th of October, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas





Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Pintail "23" Federal Com #8H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800' FWL)	North Reference:	Grid
Wellbore:	OH - Job #32D0811817	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	Pintail "23" Federal Com #8H (Bone Spring)		
Site Position:		Northing:	403,301 90 usft
From:	Map	Easting:	561,136 90 usft
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 6' 31 464 N
		Longitude:	104° 16' 9 791 W
		Grid Convergence:	0 03 °

Well	Pintail "23" Federal Com #8H (250' FSL & 800' FWL)		
Well Position	+N/-S	0 0 usft	Northing:
	+E/-W	0 0 usft	Easting:
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 6' 31 464 N
		Longitude:	104° 16' 9 791 W
		Ground Level:	3,254 0 usft

Wellbore	OH - Job #32D0811817				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2011	7 87	59 95	48,449

Design	Actual			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth:
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	354 95

Survey Program	Date 9/7/2011				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
91 0	7,383 2	Gyro Survey (OH - Job #32D0811817)	Keeper	Standard Wireline Keeper ver 1 0 2	
7,414 0	12,292 0	MWD Survey (OH - Job #32D0811817)	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
91 0	0 32	138 99	91 0	-0 2	0 2	138 99	0 3
122 6	0 31	213 91	122 6	-0 3	0 2	151 74	0 4
184 5	0 60	233 78	184 5	-0 7	-0 2	195 09	0 7
246 3	0 79	233 10	246 3	-1 1	-0 8	215 16	1 4
308 2	0 85	242 34	308 2	-1 6	-1 5	224 10	2 2
370 1	0 83	245 34	370 1	-2 0	-2 3	229 83	3 1
432 0	0 84	245 60	432 0	-2 4	-3 2	233 37	3 9
494 6	0 89	243 37	494 6	-2 8	-4 0	235 51	4 9
556 3	0 98	243 90	556 3	-3 2	-4 9	236 90	5 9
618 0	1 16	245 03	617 9	-3 7	-6 0	238 14	7 0



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Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800'	North Reference:	Grid
Wellbore:	EWL Job #32D0811817	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)
679.8	0.94	251.65	679.7	-4.1	-7.0	239.51	8.1
741.8	0.96	260.95	741.7	-4.4	-8.0	241.37	9.1
806.0	0.71	278.37	805.9	-4.4	-8.9	243.79	9.9
867.8	0.44	339.68	867.7	-4.1	-9.4	246.32	10.2
929.6	0.37	9.55	929.5	-3.7	-9.4	248.61	10.1
990.9	0.57	47.22	990.8	-3.3	-9.2	250.26	9.8
1,051.5	1.15	75.27	1,051.4	-2.9	-8.4	250.68	8.9
1,113.4	1.58	80.00	1,113.3	-2.6	-6.9	249.23	7.4
1,175.3	1.95	80.76	1,175.2	-2.3	-5.0	245.41	5.6
1,237.2	1.67	87.64	1,237.0	-2.1	-3.1	235.90	3.8
1,299.1	1.53	107.62	1,298.9	-2.3	-1.4	211.49	2.7
1,354.0	2.12	99.49	1,353.8	-2.7	0.3	174.08	2.7
1,417.6	2.53	95.80	1,417.3	-3.0	2.8	136.99	4.2
1,481.1	2.82	92.82	1,480.8	-3.3	5.8	119.38	6.6
1,544.7	3.12	85.43	1,544.3	-3.2	9.1	109.41	9.6
1,608.2	3.09	83.85	1,607.7	-2.9	12.5	102.96	12.8
1,671.8	2.27	87.69	1,671.2	-2.6	15.5	99.70	15.7
1,735.3	1.52	100.69	1,734.7	-2.7	17.6	98.90	17.8
1,798.8	0.89	138.36	1,798.2	-3.3	18.7	99.93	19.0
1,862.4	0.73	139.11	1,861.8	-3.9	19.3	101.56	19.7
1,926.0	0.58	135.52	1,925.3	-4.5	19.8	102.77	20.3
1,989.5	0.42	135.73	1,988.8	-4.9	20.2	103.60	20.8
2,052.7	0.34	128.01	2,052.0	-5.2	20.5	104.14	21.1
2,116.4	0.31	123.63	2,115.7	-5.4	20.8	104.50	21.5
2,180.4	0.15	126.19	2,179.7	-5.5	21.0	104.73	21.7
2,243.7	0.13	66.50	2,243.0	-5.5	21.1	104.69	21.8
2,307.0	0.07	61.74	2,306.3	-5.5	21.2	104.51	21.9
2,370.3	0.09	8.32	2,369.6	-5.4	21.3	104.31	21.9
2,435.1	0.15	307.05	2,434.4	-5.3	21.2	104.09	21.9
2,498.5	0.26	285.01	2,497.8	-5.2	21.0	104.00	21.6
2,562.0	0.31	285.30	2,561.3	-5.2	20.7	103.98	21.3
2,625.4	0.46	281.45	2,624.7	-5.1	20.3	104.00	20.9
2,688.8	0.56	278.38	2,688.1	-5.0	19.7	104.12	20.3
2,752.3	0.51	276.56	2,751.6	-4.9	19.1	104.32	19.8
2,815.7	0.57	274.19	2,815.0	-4.8	18.5	104.60	19.2
2,879.2	0.60	274.63	2,878.5	-4.8	17.9	104.95	18.5
2,942.6	0.57	279.39	2,941.9	-4.7	17.3	105.24	17.9
3,067.7	0.41	285.45	3,067.0	-4.5	16.2	105.45	16.8
3,131.4	0.26	286.00	3,130.7	-4.4	15.8	105.45	16.4
3,195.2	0.18	289.90	3,194.5	-4.3	15.6	105.42	16.2
3,258.9	0.19	285.10	3,258.2	-4.2	15.4	105.39	16.0
3,322.6	0.18	296.50	3,321.9	-4.2	15.2	105.32	15.8
3,386.3	0.16	291.06	3,385.6	-4.1	15.1	105.22	15.6
3,450.0	0.20	285.96	3,449.3	-4.0	14.9	105.18	15.4



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Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800'	North Reference:	Grid
Wellbore:	OWL Job #32D0811817	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)
3,513 7	0 33	287 97	3,513 0	-3 9	14 6	105 14	15 1
3,577 5	0 35	283 81	3,576 8	-3 8	14 2	105 12	14 7
3,641 2	0 31	268 36	3,640 5	-3 8	13 9	105 34	14 4
3,704 5	0 26	252 15	3,703 8	-3 9	13 6	105 86	14 1
3,767 9	0 21	261 13	3,767 2	-3 9	13 3	106 39	13 9
3,831 4	0 18	271 24	3,830 7	-3 9	13 1	106 71	13 7
3,892 1	0 19	278 97	3,891 4	-3 9	12 9	106 88	13 5
3,955 7	0 18	281 25	3,955 0	-3 9	12 7	106 98	13 3
4,019 3	0 22	271 91	4,018 6	-3 9	12 5	107 16	13 0
4,082 9	0 30	270 69	4,082 2	-3 8	12 2	107 52	12 8
4,146 5	0 42	272 60	4,145 8	-3 8	11 8	108 02	12 4
4,210 1	0 45	258 16	4,209 4	-3 9	11 3	108 92	11 9
4,273 7	0 32	243 63	4,273 0	-4 0	10 9	110 17	11 6
4,337 3	0 26	227 19	4,336 6	-4 2	10 6	111 46	11 4
4,400 9	0 25	217 01	4,400 2	-4 4	10 4	112 79	11 3
4,464 5	0 29	217 69	4,463 8	-4 6	10 3	114 27	11 3
4,528 1	0 25	203 48	4,527 4	-4 9	10 1	115 78	11 2
4,591 7	0 32	198 01	4,591 0	-5 2	10 0	117 38	11 3
4,655 3	0 35	194 98	4,654 6	-5 5	9 9	119 22	11 3
4,718 4	0 39	183 79	4,717 7	-5 9	9 8	121 12	11 5
4,781 9	0 37	174 70	4,781 2	-6 4	9 8	122 87	11 7
4,845 4	0 43	169 08	4,844 7	-6 8	9 9	124 46	12 0
4,908 9	0 50	164 05	4,908 2	-7 3	10 0	126 05	12 4
4,972 4	0 78	159 02	4,971 7	-8 0	10 3	127 84	13 0
5,044 2	0 92	157 11	5,043 5	-9 0	10 7	130 04	13 9
5,107 0	0 90	153 27	5,106 3	-9 9	11 1	131 68	14 8
5,169 9	0 77	164 47	5,169 2	-10 7	11 4	133 19	15 6
5,232 7	0 85	172 68	5,232 0	-11 6	11 6	134 99	16 4
5,295 6	0 76	163 42	5,294 9	-12 4	11 8	136 61	17 1
5,358 4	0 52	164 94	5,357 7	-13 1	11 9	137 65	17 7
5,421 3	0 44	177 06	5,420 6	-13 6	12 0	138 55	18 2
5,484 1	0 24	241 27	5,483 4	-13 9	11 9	139 42	18 3
5,547 0	0 36	273 11	5,546 3	-14 0	11 6	140 28	18 2
5,609 8	0 46	295 57	5,609 0	-13 9	11 2	141 08	17 8
5,735 5	0 49	289 43	5,734 7	-13 5	10 2	142 77	16 9
5,798 4	0 34	223 10	5,797 6	-13 5	9 9	143 91	16 7
5,861 2	0 49	197 07	5,860 4	-13 9	9 6	145 26	16 9
5,924 1	0 95	238 33	5,923 3	-14 4	9 1	147 71	17 1
5,986 9	2 66	231 05	5,986 1	-15 6	7 5	154 22	17 4
6,049 8	4 09	229 96	6,048 9	-18 0	4 7	165 38	18 6
6,118 0	4 00	233 07	6,116 9	-21 0	0 9	177 46	21 0
6,181 3	3 77	237 26	6,180 1	-23 4	-2 6	186 29	23 6
6,244 5	3 35	245 91	6,243 2	-25 3	-6 0	193 37	26 0
6,307 8	3 17	256 38	6,306 4	-26 5	-9 4	199 56	28 1
6,371 0	2 70	262 31	6,369 5	-27 1	-12 6	204 91	29 9



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Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800'	North Reference:	Grid
Wellbore:	OWL Job #32D0811817	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)
6,434.3	2.21	271.96	6,432.7	-27.2	-15.3	209.28	31.2
6,497.6	1.76	284.66	6,496.0	-27.0	-17.4	212.89	32.1
6,560.8	1.68	293.98	6,559.1	-26.3	-19.2	216.12	32.6
6,624.1	1.83	305.08	6,622.4	-25.4	-20.9	219.47	32.9
6,687.4	2.19	297.60	6,685.7	-24.2	-22.8	223.24	33.3
6,750.6	2.31	304.96	6,748.8	-23.0	-24.9	227.35	33.9
6,813.9	2.18	328.00	6,812.1	-21.2	-26.6	231.44	34.0
6,877.1	2.23	334.95	6,875.2	-19.1	-27.8	235.51	33.7
6,940.4	1.94	327.31	6,938.5	-17.0	-28.9	239.42	33.5
7,003.6	1.09	319.64	7,001.7	-15.7	-29.8	242.25	33.7
7,066.9	0.81	288.41	7,065.0	-15.1	-30.6	243.78	34.1
7,130.2	1.12	257.88	7,128.3	-15.1	-31.7	244.54	35.1
7,193.4	0.93	264.64	7,191.4	-15.3	-32.8	245.04	36.2
7,256.7	1.36	268.16	7,254.7	-15.3	-34.0	245.76	37.3
7,319.9	2.03	260.71	7,317.9	-15.5	-35.9	246.60	39.1
7,383.2	1.93	259.96	7,381.2	-15.9	-38.1	247.32	41.2



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Wellbore:	OH - Job #32D0811817	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		
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		Grid Convergence:	0 03 °

Well	Pintail "23" Federal Com #8H (250' FSL & 800' FWL)		
Well Position	+N/-S	0 0 usft	Northing:
	+E/-W	0 0 usft	Easting:
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 6' 31 464 N
		Longitude:	104° 16' 9 791 W
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Wellbore	OH - Job #32D0811817				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2011	7 87	59.95	48,449

Design	Actual			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0.0	0 0	354 95

Survey Program	Date 10/24/2011				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
91 0	7,383 2	Gyro Survey (OH - Job #32D0811817)	Keeper	Standard Wireline Keeper ver 1 0 2	
7,414 0	12,292 0	MWD Survey (OH - Job #32D0811817)	MWD	MWD - Standard	

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
7,383 2	1 93	259 96	7,381 2	-15 9	-38 1	247 32	41 2
Gyro Tie-in							
7,414 0	2 18	267 39	7,411 9	-16 0	-39 1	247 75	42 3
7,445 0	4 38	332 95	7,442 9	-15 0	-40 3	249 59	43 0
7,477 0	10 56	352 10	7,474 6	-11 0	-41 2	255 07	42 7
7,509 0	17 00	355 09	7,505 7	-3 4	-42 0	265 35	42 2
7,541 0	23 25	355 69	7,535 7	7 6	-42 9	279 98	43 6
7,572 0	29 29	356 39	7,563 5	21 2	-43 9	295 83	48 7
7,604 0	35 49	357 00	7,590 5	38 3	-44 8	310 53	59 0
7,636 0	42 06	356 14	7,615 4	58.3	-46 0	321 71	74 3
7,668 0	49 16	354 90	7,637 8	81 1	-47 8	329 47	94 2



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Wellbore:	EWL Job #32D0811817	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)
7,700 0	57 51	354 53	7,656 9	106 6	-50 2	334 79	117 9
7,730 0	65 39	355 76	7,671 2	132 9	-52 4	338 47	142 9
7,762 0	69 45	355 70	7,683 5	162 3	-54 6	341 40	171 3
7,794 0	72 39	355 82	7,694 0	192 5	-56 9	343 54	200 7
7,825 0	74 89	355 81	7,702 7	222 2	-59 0	345 12	229 9
7,857 0	76 93	355 65	7,710 5	253 1	-61 3	346 38	260 4
7,888 0	77 88	355 68	7,717 3	283 3	-63 6	347 34	290 3
7,920 0	79 93	355 46	7,723 4	314 6	-66 1	348 14	321 4
7,952 0	81 78	355 48	7,728 5	346 1	-68 6	348 80	352 8
7,984 0	83 54	355 42	7,732 6	377 7	-71 1	349 34	384 3
8,015 0	85 46	355 04	7,735 6	408 5	-73 6	349 78	415 0
8,047 0	86 94	354 50	7,737 7	440 3	-76 5	350 14	446 9
8,079 0	88 79	354 26	7,738 9	472 1	-79 7	350 42	478 8
8,111 0	90 17	353 93	7,739 2	503 9	-83 0	350 65	510 7
8,141 0	91 21	353 93	7,738 8	533 7	-86 1	350 83	540 6
8,174 0	91 14	355 05	7,738 1	566 6	-89 3	351 04	573 6
8,206 0	91 44	355 35	7,737 4	598 5	-92 0	351 26	605 5
8,237 0	90 23	356 21	7,737 0	629 4	-94 3	351 48	636 4
8,269 0	90 03	356 40	7,736 9	661 3	-96 3	351 71	668 3
8,333 0	90 61	356 22	7,736 5	725 2	-100 4	352 11	732 1
8,396 0	89 26	355 72	7,736 6	788 0	-104 9	352 42	795 0
8,459 0	89 16	354 50	7,737 5	850 8	-110 2	352 62	857 9
8,523 0	90 13	354 80	7,737 9	914 5	-116 2	352 76	921 8
8,586 0	90 87	353 88	7,737 3	977 2	-122 4	352 86	984 8
8,650 0	90 10	355 02	7,736 8	1,040 9	-128 6	352 96	1,048 8
8,713 0	90 30	355 35	7,736 5	1,103 7	-133 9	353 08	1,111 8
8,777 0	91 34	354 96	7,735 6	1,167 4	-139 3	353 20	1,175 7
8,840 0	90 54	355 48	7,734 6	1,230 2	-144 6	353 30	1,238 7
8,904 0	90 60	355 59	7,734 0	1,294 0	-149 5	353 41	1,302 6
8,967 0	90 60	355 90	7,733 3	1,356 8	-154 2	353 52	1,365 6
9,031 0	89 36	356 45	7,733 3	1,420 7	-158 5	353 63	1,429 5
9,094 0	89 50	356 65	7,733 9	1,483 6	-162 3	353 76	1,492 4
9,157 0	90 30	356 53	7,734 1	1,546 4	-166 0	353 87	1,555 3
9,221 0	89 56	355 89	7,734 1	1,610 3	-170 3	353 96	1,619 3
9,284 0	90 03	355 99	7,734 4	1,673 1	-174 7	354 04	1,682 2
9,348 0	88 52	355 61	7,735 2	1,737 0	-179 4	354 10	1,746 2
9,412 0	88 76	355 00	7,736 7	1,800 7	-184 6	354 15	1,810 2
9,474 0	89 80	354 60	7,737 5	1,862 5	-190 3	354 17	1,872 2
9,538 0	90 81	354 43	7,737 1	1,926 2	-196 4	354 18	1,936 2
9,601 0	90 37	355 19	7,736 5	1,988 9	-202 1	354 20	1,999 2
9,665 0	90 30	355 11	7,736 1	2,052 7	-207 5	354 23	2,063 1
9,728 0	91 14	354 56	7,735 3	2,115 4	-213 2	354 25	2,126 1
9,792 0	90 34	354 24	7,734 5	2,179 1	-219 4	354 25	2,190 1
9,856 0	89 06	354 47	7,734 8	2,242 8	-225 7	354 25	2,254 1
9,919 0	89 23	354 38	7,735 8	2,305 5	-231 8	354 26	2,317 1



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Pintail "23" Federal Com #8H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800'	North Reference:	Grid
Wellbore:	EWL) Job #32D0811817	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)
9,983 0	89 60	354 60	7,736 4	2,369 2	-238 0	354 26	2,381 1
10,046 0	89 36	354 89	7,737 0	2,431 9	-243 7	354 28	2,444.1
10,109 0	89 63	355 05	7,737 5	2,494 7	-249 2	354 29	2,507 1
10,173 0	90 07	354 88	7,737 7	2,558 4	-254 9	354 31	2,571 1
10,236 0	90 47	354 86	7,737 4	2,621 2	-260 5	354 32	2,634 1
10,300 0	91 07	354 46	7,736 6	2,684 9	-266 5	354 33	2,698 1
10,363 0	90 87	354 37	7,735.5	2,747 6	-272 6	354 33	2,761 1
10,427 0	91 24	354 37	7,734 3	2,811 3	-278 9	354 34	2,825 1
10,491 0	90 54	354 82	7,733 3	2,875 0	-284 9	354 34	2,889 1
10,554 0	90 34	354 86	7,732 8	2,937 7	-290 6	354 35	2,952 1
10,618 0	91 14	354 38	7,732 0	3,001 4	-296 6	354 36	3,016 0
10,681 0	91 08	354 86	7,730 8	3,064 1	-302 5	354 36	3,079 0
10,745 0	91 24	354 52	7,729 5	3,127 9	-308 4	354 37	3,143 0
10,808 0	91 85	354 57	7,727 8	3,190 5	-314 4	354 37	3,206 0
10,872 0	90 74	353 97	7,726.3	3,254 2	-320 8	354 37	3,270 0
10,935 0	90 94	353 24	7,725 4	3,316 8	-327 8	354 36	3,333 0
10,999 0	90 61	355 10	7,724 6	3,380 5	-334 3	354 35	3,397 0
11,062 0	91 28	354 62	7,723 5	3,443 2	-339 9	354 36	3,459 9
11,126 0	90 97	355 54	7,722 3	3,507 0	-345 4	354 37	3,523 9
11,189 0	91 41	355 94	7,721 0	3,569 8	-350 1	354 40	3,586 9
11,252 0	91 98	355 42	7,719 1	3,632 6	-354 8	354 42	3,649 9
11,316 0	91 85	355 77	7,716 9	3,696 3	-359 7	354 44	3,713 8
11,380 0	90 55	355 77	7,715 6	3,760 2	-364 5	354 46	3,777 8
11,444 0	91 97	355 55	7,714 2	3,823 9	-369 3	354 48	3,841 7
11,507 0	91 38	355 30	7,712 4	3,886 7	-374 3	354 50	3,904 7
11,577 0	92 12	355 04	7,710 2	3,956 4	-380 2	354 51	3,974 7
11,634 0	91 04	355 54	7,708 7	4,013 2	-384 9	354 52	4,031 6
11,698 0	90 64	356 28	7,707 7	4,077 1	-389 5	354 54	4,095 6
11,761 0	91 11	356 30	7,706 8	4,139 9	-393 5	354 57	4,158 6
11,825 0	91 55	356 25	7,705 3	4,203 8	-397 7	354 60	4,222 5
11,888 0	89 56	356 38	7,704 7	4,266 6	-401 7	354 62	4,285 5
11,952 0	89 70	356 38	7,705 1	4,330 5	-405 8	354 65	4,349 5
12,015 0	90 30	356 16	7,705 1	4,393 4	-409 9	354 67	4,412 4
12,079 0	90 67	355 63	7,704 5	4,457 2	-414 5	354 69	4,476 4
12,143 0	91 28	355 56	7,703 4	4,521 0	-419 4	354 70	4,540 4
12,206 0	91 34	355 07	7,702 0	4,583 8	-424 5	354 71	4,603 4
12,244 0	91 41	354 81	7,701 1	4,621 6	-427 9	354 71	4,641 4
Last MWD Survey							
12,292 0	91 41	355 07	7,699 9	4,669 4	-432 1	354 71	4,689 4
Projection to Bit							



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	Cimarex Energy	Local Co-ordinate Reference:	Site Pintail "23" Federal Com #8H (Bone Spring)
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Site:	Pintail "23" Federal Com #8H (Bone Spring)	MD Reference:	KB Elev (20') @ 3274 0usft (Key #880)
Well:	Pintail "23" Federal Com #8H (250' FSL & 800'	North Reference:	Grid
Wellbore:	OWL Job #32D0811817	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,383 2	7,381 2	-15 9	-38 1	Gyro Tie-in
12,244 0	7,701 1	4,621 6	-427 9	Last MWD Survey
12,292 0	7,699 9	4,669 4	-432 1	Projection to Bit



Project: Eddy County, NM (NAD83 NME)
 Site: Pintail "23" Federal Com #8H (Bone Spring)
 Well: Pintail "23" Federal Com #8H (250' FSL & 800'
 Wellbore: OH - Job #32D0811817
 Design: Plan #3 - 8-3/4" Hole



Azimuths to Grid North
 True North -0 03°
 Magnetic North 7 83°
 Magnetic Field
 Strength 48448 9snT
 Dip Angle 59 95°
 Date 8/27/2011
 Model IGRF2010

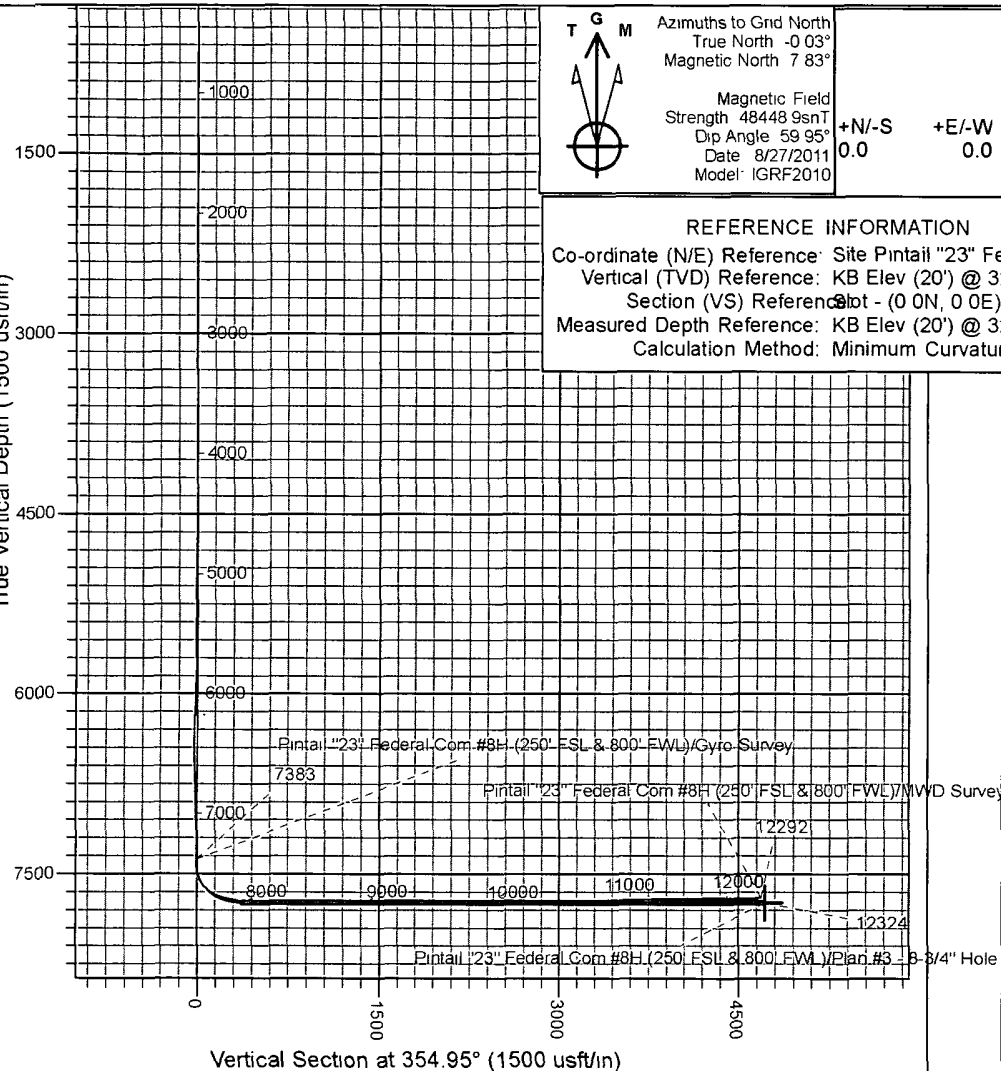
WELL DETAILS: Pintail "23" Federal Com #8H (250' FSL & 800' FWL)
 KB Elev (20') @ 3274 0usft (Key #880)

Ground Level:	3254 0				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	403301.90	561136.90	32° 6' 31.464 N	104° 16' 9.791 W

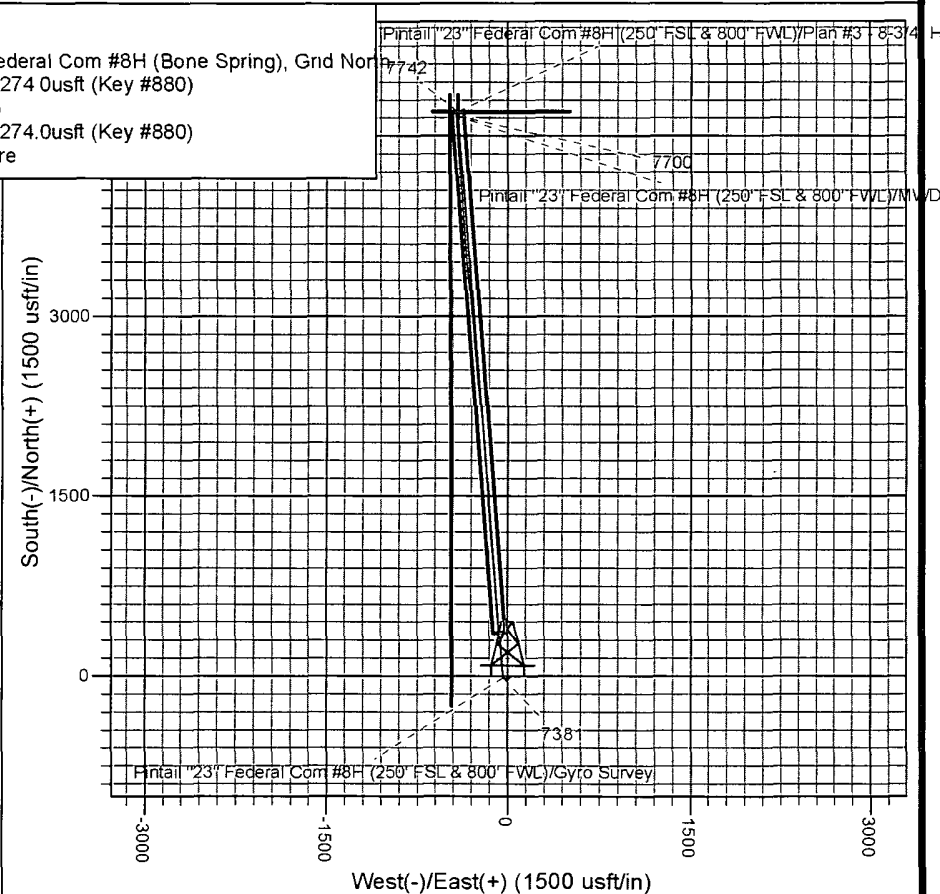
REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site Pintail "23" Federal Com #8H (Bone Spring), Grd Nor
 Vertical (TVD) Reference: KB Elev (20') @ 3274 0usft (Key #880)
 Section (VS) Reference: Plot - (0 0N, 0 0E)
 Measured Depth Reference: KB Elev (20') @ 3274.0usft (Key #880)
 Calculation Method: Minimum Curvature

True Vertical Depth (1500 usft/in)



South(-)/North(+) (1500 usft/in)



COMPANY DETAILS: Cimarex Energy
 Calculation Method: Minimum Curvature
 Error System: ISCWSA
 Scan Method: Closest Approach 3D
 Error Surface: Elliptical Conic
 Warning Method: Error Ratio

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: Pintail "23" Federal Com #8H (Bone Spring)
 Site Centre Latitude: 32° 6' 31.464 N
 Longitude: 104° 16' 9.791 W
 Positional Uncertainty: 0.0
 Convergence: 0.03
 Local North: Grid