

Results of Directional Survey

API number:	30-005-29052		
OGRID:		Operator:	CIMAREX ENERGY CO OF COLORADO
		Property:	SARATOGA 30 STATE COM # 2H

surface	ULSTR:	I	30	T 15S	R 31E
				2310 FSL	330 FEL

BH Loc	ULSTR:	L	30	T 15S	R 31E
13193	MD	8702.4	TVD	2167 FSL	4873 FEL

Top Perf/OH	ULSTR:	I	30	T 15S	R 31E
8950	MD	8736.0	TVD	2305 FSL	641 FEL

Bot Perf/OH	ULSTR:	L	30	T 15S	R 31E
13193	MD	8702.4	TVD	2167 FSL	4873 FEL

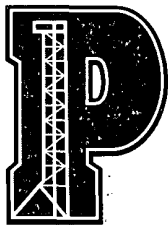
	MD	N/S	E/W	VD
	8943	-3.00	-303.96	8736.12
TOP PERFS/OH	8950	-4.57	-310.78	8736.00
	8975	-10.17	-335.14	8735.59
	13123	-140.14	-4472.92	8701.40
BOT PERFS/OH	13193	-142.59	-4542.85	8702.38
	13143	-140.84	-4492.90	8701.68

NEXT TO LAST	13123	-140.14	-4472.92	8701.40
LAST READING	13143	-140.84	-4492.90	8701.68
TD	13193	-142.59	-4542.85	8702.38

Surface Location	2310 FS	330 FE
Projected BHL	2167 FS	4873 FE
Location of		
Top Perfs/OH	2305 FS	641 FE
Bottom Perfs/OH	2167 FS	4873 FE

SUMMARY of Subsurface Locations

Surface Location	I-30-15S-31E	2310 FS	330 FE	Vert. Depth
Top Perfs/OH	I-30-15S-31E	2305 FS	641 FE	8736.00
Bottom Perfs/OH	L-30-15S-31E	2167 FS	4873 FE	8702.38
Projected TD	L-30-15S-31E	2167 FS	4873 FE	8702.38



PATRIOT DRILLING, LLC

OPERATOR: Cimarex Energy Co.
WELL/LEASE: Saratoga 30 State Com # 2H
COUNTY: Chaves Co., New Mexico
Sec. 30, T15S, R31E

SUR: I-30-15s-31e, 2310/S & 330/E
BHL: L-30-15s-31e, 2167/S & 4873/E
API # 30-005-29052

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
193	1/2	3,772	1
489	1/2	4,062	1
979	1/4	4,311	1
1,487	1/4	4,595	1/2
1,987	1	5,104	1/2
2,279	1	5,612	1/4
2,311	1 3/4	6,151	1
2,407	2	6,690	1 1/2
2,502	2	6,817	1 1/2
2,627	2	7,132	1 3/4
2,765	1 3/4	7,416	1 3/4
2,914	1 3/4	7,705	1 3/4
3,073	1 3/4	8,021	1 3/4
3,230	1	8,337	1 1/2
3,518	1 1/4	8,623	1 3/4

RECEIVED

NOV 10 2010

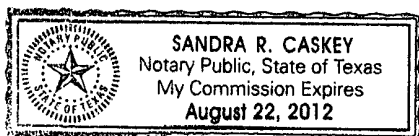
HOBBSOCD

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-
President

The foregoing instrument was acknowledged before me on this 4th day of August, 2010 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 8/22/2012



Sandra R. Caskey
Notary Public for Midland Co., Texas



Cimarex Energy Co.

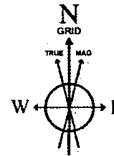
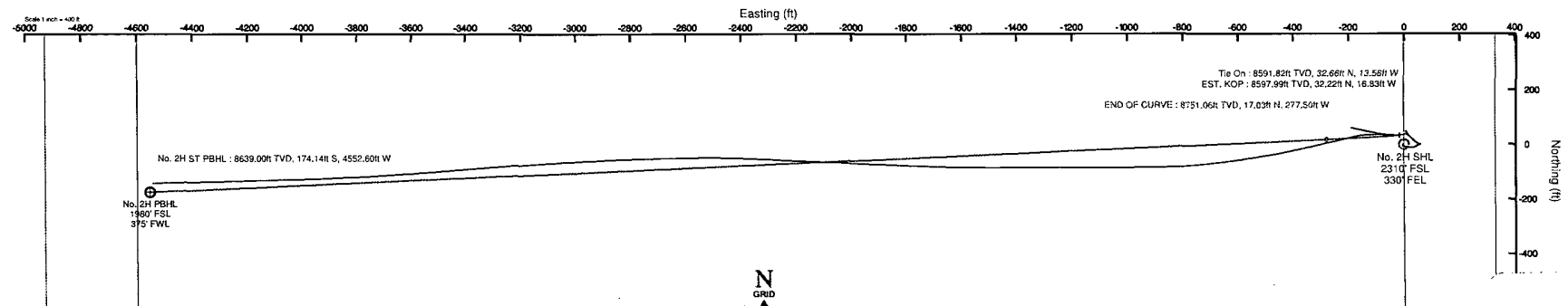
Location: Chaves County, NM
Field: (Saratoga) Sec 30, T15S, R31E
Facility: Saratoga 30 ST COM No. 2H

Slot: No. 2H SHL
Well: No. 2H SHL
Wellbore: No. 2H ST PWB

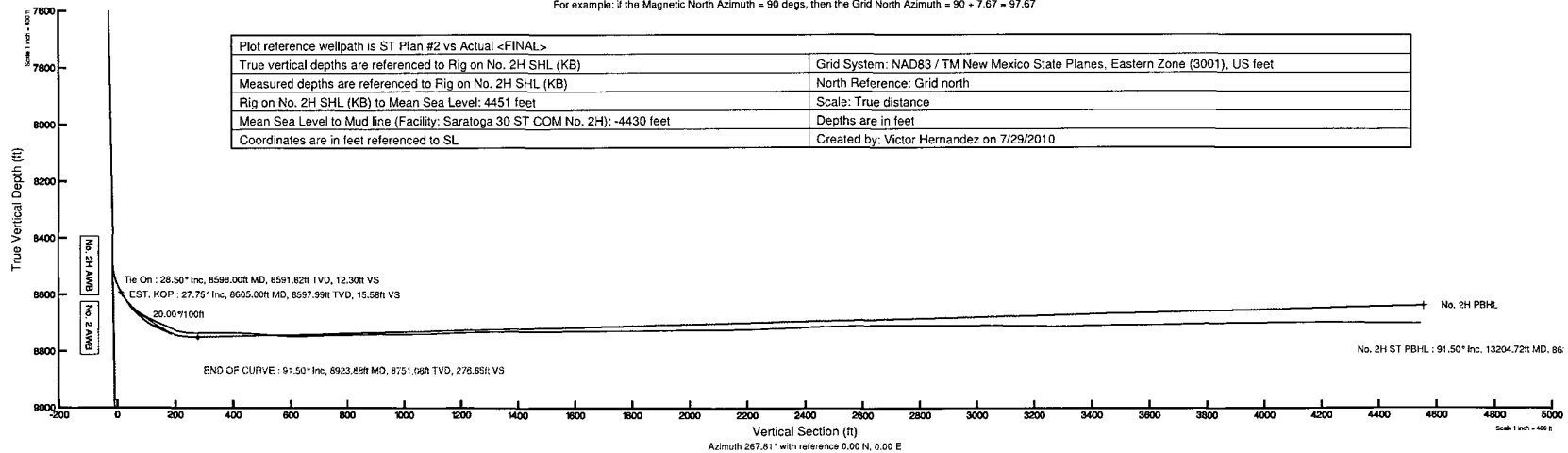


Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	8598.00	28.500	259.500	8591.82	32.66	-13.56	21.95	12.30
EST. KOP	8605.00	27.750	265.000	8597.99	32.22	-16.83	38.54	15.58
END OF CURVE	8923.88	91.500	267.440	8751.06	17.03	-277.50	20.00	276.65
No. 2H ST PBHL	13204.72	91.500	267.440	8639.00	-174.14	-4552.60	0.00	4555.93



BGGM (1945.0 to 2011.0) Dip: 60.89° Field: 49197 nT
Magnetic North is 7.93 degrees East of True North (at 7/9/2010)
Grid North is 0.26 degrees East of True North
To correct azimuth from True to Grid subtract 0.26 degrees
To correct azimuth from Magnetic to Grid add 7.67 degrees
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.67 = 97.67



Plot reference wellpath is ST Plan #2 vs Actual <FINAL>	
True vertical depths are referenced to Rig on No. 2H SHL (KB)	Grid System: NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 2H SHL (KB)	North Reference: Grid north
Rig on No. 2H SHL (KB) to Mean Sea Level: 4451 feet	Scale: True distance
Mean Sea Level to Mud line (Facility: Saratoga 30 ST COM No. 2H): -4430 feet	Depths are in feet
Coordinates are in feet referenced to SL	Created by: Victor Hernandez on 7/29/2010

SUR: L-30-15s-31e, 2310/S & 330/E
BHL: L-30-15s-31e, 2167/S & 4873/E
API # 30-005-29052



Actual Wellpath Report

No. 2H ST AWP

Page 1 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999934	Report Generated	7/29/2010 at 9:07:06 AM
Convergence at slot	0.26° East	Database/Source file	WA_Midland/No. 2H_ST_AWP.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	688386.70	722581.90	32°59'07.660"N	103°51'13.554"W
Facility Reference Pt			688386.70	722581.90	32°59'07.660"N	103°51'13.554"W
Field Reference Pt			688386.70	722581.90	32°59'07.660"N	103°51'13.554"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 2H SHL (KB) to GL	21.00ft
Horizontal Reference Pt	SL	Rig on No. 2H SHL (KB) to Mean Sea Level	4451.00ft
Vertical Reference Pt	Rig on No. 2H SHL (KB)	GL to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 2H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	267.81°



Actual Wellpath Report

No. 2H ST AWP

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Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
0.00	0.000	17.230	0.00	0.00	0.00	0.00	688386.70	722581.90	32°59'07.660"N	103°51'13.554"W	0.00
100.00	0.130	17.230	100.00	-0.04	0.11	0.03	688386.73	722582.01	32°59'07.661"N	103°51'13.554"W	0.13
200.00	0.100	225.130	200.00	-0.01	0.16	0.01	688386.71	722582.06	32°59'07.662"N	103°51'13.554"W	0.22
300.00	0.140	203.050	300.00	0.10	-0.02	-0.10	688386.60	722581.88	32°59'07.660"N	103°51'13.555"W	0.06
400.00	0.280	197.670	400.00	0.24	-0.36	-0.23	688386.47	722581.54	32°59'07.656"N	103°51'13.557"W	0.14
500.00	0.170	206.790	500.00	0.39	-0.73	-0.37	688386.33	722581.17	32°59'07.653"N	103°51'13.559"W	0.12
600.00	0.210	207.810	600.00	0.56	-1.02	-0.52	688386.18	722580.88	32°59'07.650"N	103°51'13.560"W	0.04
743.00	0.180	239.160	743.00	0.89	-1.37	-0.83	688385.87	722580.53	32°59'07.647"N	103°51'13.564"W	0.08
838.10	0.090	190.360	838.10	1.03	-1.52	-0.98	688385.72	722580.38	32°59'07.645"N	103°51'13.566"W	0.15
933.30	0.200	210.370	933.30	1.14	-1.74	-1.07	688385.63	722580.16	32°59'07.643"N	103°51'13.567"W	0.13
1028.40	0.210	229.480	1028.40	1.37	-1.99	-1.29	688385.41	722579.91	32°59'07.640"N	103°51'13.569"W	0.07
1123.60	0.090	339.930	1123.60	1.53	-2.04	-1.45	688385.25	722579.86	32°59'07.640"N	103°51'13.571"W	0.27
1218.70	0.220	228.030	1218.70	1.69	-2.09	-1.61	688385.09	722579.81	32°59'07.639"N	103°51'13.573"W	0.28
1313.80	0.410	222.220	1313.79	2.07	-2.46	-1.97	688384.73	722579.44	32°59'07.636"N	103°51'13.578"W	0.20
1409.00	0.400	200.560	1408.99	2.43	-3.03	-2.32	688384.38	722578.87	32°59'07.630"N	103°51'13.582"W	0.16
1504.20	0.380	197.010	1504.19	2.67	-3.64	-2.53	688384.17	722578.26	32°59'07.624"N	103°51'13.584"W	0.03
1599.30	0.390	186.070	1599.29	2.82	-4.26	-2.66	688384.04	722577.64	32°59'07.618"N	103°51'13.586"W	0.08
1694.50	0.440	168.880	1694.48	2.81	-4.94	-2.62	688384.08	722576.96	32°59'07.611"N	103°51'13.585"W	0.14
1789.60	0.770	133.550	1789.58	2.30	-5.74	-2.09	688384.61	722576.16	32°59'07.603"N	103°51'13.579"W	0.51
1884.80	1.000	122.230	1884.77	1.17	-6.63	-0.92	688385.78	722575.27	32°59'07.595"N	103°51'13.565"W	0.30
1979.90	1.070	117.280	1979.85	-0.29	-7.48	0.57	688387.27	722574.42	32°59'07.586"N	103°51'13.548"W	0.12
2075.10	1.260	112.490	2075.03	-2.01	-8.28	2.33	688389.03	722573.62	32°59'07.578"N	103°51'13.527"W	0.22
2170.20	1.720	104.340	2170.10	-4.33	-9.04	4.68	688391.38	722572.86	32°59'07.570"N	103°51'13.500"W	0.53
2265.30	1.680	103.520	2265.16	-7.04	-9.72	7.42	688394.12	722572.18	32°59'07.564"N	103°51'13.468"W	0.05
2360.50	1.500	104.100	2360.32	-9.58	-10.35	9.98	688396.68	722571.55	32°59'07.557"N	103°51'13.438"W	0.19
2455.70	1.630	101.580	2455.49	-12.09	-10.92	12.52	688399.22	722570.98	32°59'07.551"N	103°51'13.408"W	0.15
2550.80	1.550	97.370	2550.55	-14.67	-11.36	15.12	688401.82	722570.54	32°59'07.547"N	103°51'13.377"W	0.15
2645.90	1.560	96.620	2645.61	-17.22	-11.67	17.68	688404.38	722570.23	32°59'07.544"N	103°51'13.347"W	0.02
2741.10	1.500	94.200	2740.78	-19.74	-11.91	20.21	688406.91	722569.99	32°59'07.541"N	103°51'13.318"W	0.09
2836.30	1.520	92.750	2835.95	-22.23	-12.06	22.71	688409.41	722569.84	32°59'07.540"N	103°51'13.288"W	0.05



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
2931.40	1.390	92.460	2931.02	-24.64	-12.17	25.12	688411.82	722569.73	32°59'07.538"N	103°51'13.260"W	0.14
3026.60	1.410	88.460	3026.19	-26.96	-12.19	27.45	688414.15	722569.71	32°59'07.538"N	103°51'13.233"W	0.10
3121.70	1.390	83.820	3121.26	-29.28	-12.04	29.76	688416.46	722569.86	32°59'07.540"N	103°51'13.205"W	0.12
3216.80	1.250	79.670	3216.34	-31.46	-11.73	31.93	688418.63	722570.17	32°59'07.543"N	103°51'13.180"W	0.18
3312.00	1.150	76.750	3311.51	-33.43	-11.32	33.88	688420.58	722570.58	32°59'07.547"N	103°51'13.157"W	0.12
3407.20	1.080	81.110	3406.70	-35.25	-10.96	35.70	688422.40	722570.94	32°59'07.550"N	103°51'13.136"W	0.12
3502.30	1.290	76.480	3501.78	-37.19	-10.58	37.63	688424.32	722571.33	32°59'07.554"N	103°51'13.113"W	0.24
3597.40	1.210	74.610	3596.85	-39.22	-10.06	39.64	688426.33	722571.84	32°59'07.559"N	103°51'13.089"W	0.09
3692.60	1.070	69.550	3692.03	-41.04	-9.48	41.44	688428.13	722572.42	32°59'07.564"N	103°51'13.068"W	0.18
3787.80	0.950	63.430	3787.22	-42.61	-8.82	42.98	688429.67	722573.08	32°59'07.571"N	103°51'13.050"W	0.17
3882.90	0.950	63.670	3882.31	-44.04	-8.12	44.39	688431.08	722573.78	32°59'07.578"N	103°51'13.034"W	0.00
3978.10	0.900	59.700	3977.49	-45.42	-7.39	45.74	688432.44	722574.51	32°59'07.585"N	103°51'13.018"W	0.09
4073.20	0.890	59.840	4072.58	-46.74	-6.64	47.02	688433.72	722575.26	32°59'07.592"N	103°51'13.003"W	0.01
4168.40	0.810	61.420	4167.77	-47.99	-5.95	48.25	688434.95	722575.95	32°59'07.599"N	103°51'12.988"W	0.09
4263.50	0.770	59.050	4262.86	-49.15	-5.30	49.39	688436.09	722576.60	32°59'07.605"N	103°51'12.975"W	0.05
4358.60	0.640	55.070	4357.96	-50.16	-4.66	50.38	688437.07	722577.24	32°59'07.612"N	103°51'12.963"W	0.15
4453.80	0.600	53.290	4453.15	-51.02	-4.06	51.21	688437.91	722577.84	32°59'07.618"N	103°51'12.953"W	0.05
4548.90	0.550	46.770	4548.25	-51.77	-3.45	51.94	688438.64	722578.45	32°59'07.624"N	103°51'12.945"W	0.09
4644.10	0.600	43.550	4643.44	-52.47	-2.78	52.62	688439.32	722579.12	32°59'07.630"N	103°51'12.937"W	0.06
4739.30	0.620	49.100	4738.64	-53.23	-2.08	53.35	688440.05	722579.82	32°59'07.637"N	103°51'12.928"W	0.07
4834.40	0.600	54.430	4833.73	-54.05	-1.45	54.15	688440.84	722580.45	32°59'07.643"N	103°51'12.919"W	0.06
4929.60	0.580	47.460	4928.92	-54.83	-0.84	54.91	688441.60	722581.06	32°59'07.649"N	103°51'12.910"W	0.08
5024.70	0.560	57.550	5024.02	-55.60	-0.26	55.65	688442.35	722581.64	32°59'07.655"N	103°51'12.901"W	0.11
5119.90	0.440	67.810	5119.22	-56.35	0.13	56.38	688443.08	722582.03	32°59'07.659"N	103°51'12.892"W	0.16
5215.00	0.460	75.760	5214.31	-57.06	0.36	57.09	688443.79	722582.26	32°59'07.661"N	103°51'12.884"W	0.07
5310.10	0.470	91.010	5309.41	-57.83	0.44	57.85	688444.55	722582.34	32°59'07.662"N	103°51'12.875"W	0.13
5405.30	0.440	99.560	5404.61	-58.58	0.38	58.60	688445.30	722582.28	32°59'07.661"N	103°51'12.866"W	0.08
5500.40	0.380	113.900	5499.71	-59.22	0.19	59.25	688445.95	722582.09	32°59'07.659"N	103°51'12.859"W	0.12
5595.60	0.260	118.830	5594.90	-59.68	-0.04	59.73	688446.43	722581.86	32°59'07.657"N	103°51'12.853"W	0.13
5690.80	0.210	138.720	5690.10	-59.98	-0.28	60.03	688446.73	722581.62	32°59'07.655"N	103°51'12.849"W	0.10



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
5785.90	0.080	184.700	5785.20	-60.08	-0.48	60.14	688446.84	722581.42	32°59'07.653"N	103°51'12.848"W	0.17
5881.10	0.210	271.960	5880.40	-59.90	-0.54	59.96	688446.66	722581.36	32°59'07.652"N	103°51'12.850"W	0.23
5976.20	0.440	279.570	5975.50	-59.37	-0.47	59.43	688446.13	722581.43	32°59'07.653"N	103°51'12.857"W	0.25
6071.40	0.610	283.250	6070.70	-58.52	-0.29	58.58	688445.27	722581.61	32°59'07.655"N	103°51'12.867"W	0.18
6166.50	0.770	292.460	6165.79	-57.45	0.07	57.49	688444.19	722581.97	32°59'07.658"N	103°51'12.879"W	0.20
6261.60	0.960	293.630	6260.88	-56.16	0.63	56.17	688442.87	722582.53	32°59'07.664"N	103°51'12.895"W	0.20
6356.80	1.160	292.420	6356.06	-54.56	1.32	54.55	688441.25	722583.22	32°59'07.671"N	103°51'12.914"W	0.21
6451.90	1.330	294.770	6451.14	-52.70	2.15	52.66	688439.36	722584.05	32°59'07.679"N	103°51'12.936"W	0.19
6547.10	1.410	298.070	6546.31	-50.71	3.16	50.62	688437.32	722585.06	32°59'07.689"N	103°51'12.960"W	0.12
6642.30	1.390	298.720	6641.48	-48.70	4.27	48.58	688435.27	722586.17	32°59'07.700"N	103°51'12.984"W	0.03
6737.40	1.470	304.830	6736.55	-46.74	5.52	46.56	688433.26	722587.42	32°59'07.713"N	103°51'13.007"W	0.18
6832.60	1.560	306.200	6831.72	-44.75	6.98	44.51	688431.21	722588.88	32°59'07.727"N	103°51'13.031"W	0.10
6927.70	1.540	308.370	6926.79	-42.76	8.54	42.47	688429.17	722590.44	32°59'07.743"N	103°51'13.055"W	0.07
7022.90	1.520	308.850	7021.95	-40.84	10.13	40.48	688427.18	722592.02	32°59'07.758"N	103°51'13.078"W	0.02
7118.00	1.550	310.670	7117.02	-38.95	11.75	38.52	688425.22	722593.65	32°59'07.775"N	103°51'13.101"W	0.06
7213.10	1.590	311.910	7212.08	-37.06	13.47	36.57	688423.26	722595.37	32°59'07.792"N	103°51'13.124"W	0.06
7308.30	1.560	311.230	7307.25	-35.17	15.21	34.61	688421.31	722597.11	32°59'07.809"N	103°51'13.147"W	0.04
7403.40	1.450	312.570	7402.31	-33.37	16.88	32.75	688419.45	722598.78	32°59'07.826"N	103°51'13.169"W	0.12
7498.60	1.510	312.760	7497.48	-31.63	18.54	30.94	688417.64	722600.44	32°59'07.842"N	103°51'13.190"W	0.06
7593.80	1.430	313.060	7592.65	-29.90	20.21	29.15	688415.85	722602.11	32°59'07.859"N	103°51'13.211"W	0.08
7688.90	1.390	314.990	7687.72	-28.28	21.83	27.47	688414.17	722603.73	32°59'07.875"N	103°51'13.231"W	0.07
7784.10	1.460	314.750	7782.89	-26.67	23.50	25.79	688412.49	722605.40	32°59'07.891"N	103°51'13.250"W	0.07
7879.20	1.440	316.410	7877.96	-25.05	25.22	24.11	688410.81	722607.12	32°59'07.909"N	103°51'13.270"W	0.05
7974.40	1.460	314.790	7973.13	-23.44	26.94	22.42	688409.12	722608.84	32°59'07.926"N	103°51'13.290"W	0.05
8069.50	1.480	313.550	8068.20	-21.75	28.64	20.67	688407.37	722610.54	32°59'07.943"N	103°51'13.310"W	0.04
8164.60	1.470	316.290	8163.27	-20.09	30.37	18.94	688405.64	722612.27	32°59'07.960"N	103°51'13.330"W	0.07
8259.80	1.330	321.850	8258.44	-18.63	32.12	17.41	688404.11	722614.02	32°59'07.977"N	103°51'13.348"W	0.20
8355.00	1.400	323.410	8353.61	-17.32	33.92	16.04	688402.74	722615.82	32°59'07.995"N	103°51'13.364"W	0.08
8450.10	1.440	322.990	8448.68	-15.98	35.81	14.63	688401.32	722617.71	32°59'08.014"N	103°51'13.381"W	0.04
8471.00	1.600	325.900	8469.58	-15.68	36.26	14.30	688401.00	722618.16	32°59'08.018"N	103°51'13.384"W	0.85



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
8503.00	3.500	272.000	8501.55	-14.47	36.67	13.08	688399.78	722618.56	32°59'08.022"N	103°51'13.399"W	8.95
8535.00	12.500	266.200	8533.20	-10.02	36.47	8.64	688395.34	722618.37	32°59'08.021"N	103°51'13.451"W	28.20
8567.00	21.700	259.000	8563.76	-0.70	35.11	-0.65	688386.05	722617.01	32°59'08.007"N	103°51'13.560"W	29.45
8599.00	28.100	262.800	8592.77	12.67	33.03	-13.95	688372.76	722614.93	32°59'07.988"N	103°51'13.716"W	20.61
8630.00	34.600	271.600	8619.25	28.75	32.36	-30.01	688356.69	722614.26	32°59'07.982"N	103°51'13.905"W	25.60
8661.00	44.500	271.200	8643.12	48.43	32.84	-49.72	688336.98	722614.74	32°59'07.987"N	103°51'14.136"W	31.95
8693.00	55.400	273.500	8663.68	72.81	33.88	-74.16	688312.55	722615.78	32°59'07.999"N	103°51'14.423"W	34.50
8722.00	61.400	271.900	8678.87	97.40	35.03	-98.82	688287.89	722616.93	32°59'08.011"N	103°51'14.712"W	21.22
8754.00	64.000	264.500	8693.56	125.81	34.12	-127.21	688259.50	722616.02	32°59'08.003"N	103°51'15.046"W	22.09
8788.00	64.700	260.900	8708.28	156.33	30.22	-157.60	688229.11	722612.12	32°59'07.966"N	103°51'15.403"W	9.76
8819.00	66.600	256.800	8721.07	184.22	24.75	-185.30	688201.41	722606.65	32°59'07.913"N	103°51'15.728"W	13.52
8851.00	76.300	256.600	8731.24	213.95	17.78	-214.79	688171.93	722599.68	32°59'07.846"N	103°51'16.075"W	30.32
8880.00	85.400	256.300	8735.84	241.99	11.08	-242.59	688144.13	722592.98	32°59'07.781"N	103°51'16.402"W	31.40
8911.00	91.000	257.400	8736.82	272.40	4.03	-272.75	688113.97	722585.93	32°59'07.712"N	103°51'16.756"W	18.41
8943.00	91.500	257.200	8736.12	303.85	-3.00	-303.96	688082.76	722578.90	32°59'07.644"N	103°51'17.123"W	1.68
8975.00	90.400	256.900	8735.59	335.29	-10.17	-335.14	688051.58	722571.73	32°59'07.575"N	103°51'17.489"W	3.56
9007.00	88.700	257.500	8735.84	366.74	-17.26	-366.34	688020.38	722564.64	32°59'07.506"N	103°51'17.856"W	5.63
9038.00	88.500	257.300	8736.60	397.22	-24.02	-396.59	687990.14	722557.88	32°59'07.440"N	103°51'18.211"W	0.91
9070.00	87.400	258.700	8737.74	428.73	-30.67	-427.87	687958.86	722551.23	32°59'07.376"N	103°51'18.579"W	5.56
9101.00	87.000	260.300	8739.26	459.36	-36.31	-458.31	687928.42	722545.59	32°59'07.321"N	103°51'18.936"W	5.31
9133.00	86.400	260.100	8741.10	491.03	-41.75	-489.79	687896.94	722540.16	32°59'07.269"N	103°51'19.306"W	1.98
9165.00	85.800	260.600	8743.27	522.69	-47.10	-521.27	687865.47	722534.80	32°59'07.218"N	103°51'19.676"W	2.44
9197.00	86.200	260.600	8745.51	554.36	-52.31	-552.76	687833.98	722529.59	32°59'07.167"N	103°51'20.046"W	1.25
9228.00	87.700	261.700	8747.16	585.10	-57.07	-583.35	687803.39	722524.83	32°59'07.122"N	103°51'20.405"W	6.00
9260.00	89.700	262.700	8747.88	616.94	-61.42	-615.04	687771.70	722520.49	32°59'07.080"N	103°51'20.778"W	6.99
9291.00	91.800	263.400	8747.48	647.83	-65.17	-645.81	687740.94	722516.74	32°59'07.044"N	103°51'21.139"W	7.14
9323.00	92.000	263.700	8746.42	679.72	-68.76	-677.59	687709.16	722513.14	32°59'07.010"N	103°51'21.512"W	1.13
9355.00	91.800	263.500	8745.35	711.62	-72.32	-709.37	687677.38	722509.58	32°59'06.976"N	103°51'21.886"W	0.88
9387.00	91.200	264.300	8744.52	743.53	-75.72	-741.18	687645.57	722506.18	32°59'06.944"N	103°51'22.259"W	3.12
9418.00	91.300	264.800	8743.84	774.47	-78.67	-772.03	687614.72	722503.24	32°59'06.916"N	103°51'22.622"W	1.64



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
9450.00	91.100	266.700	8743.17	806.44	-81.04	-803.93	687582.82	722500.87	32°59'06.894"N	103°51'22.996"W	5.97
9482.00	91.200	267.300	8742.53	838.43	-82.71	-835.88	687550.87	722499.19	32°59'06.879"N	103°51'23.371"W	1.90
9513.00	91.400	269.000	8741.82	869.42	-83.71	-866.86	687519.90	722498.19	32°59'06.871"N	103°51'23.735"W	5.52
9545.00	91.100	269.400	8741.13	901.41	-84.16	-898.85	687487.91	722497.75	32°59'06.868"N	103°51'24.111"W	1.56
9577.00	90.900	269.400	8740.57	933.39	-84.50	-930.84	687455.92	722497.41	32°59'06.866"N	103°51'24.486"W	0.62
9608.00	90.600	269.400	8740.16	964.38	-84.82	-961.84	687424.93	722497.09	32°59'06.864"N	103°51'24.850"W	0.97
9640.00	90.400	269.600	8739.88	996.36	-85.10	-993.83	687392.93	722496.81	32°59'06.863"N	103°51'25.226"W	0.88
9671.00	90.500	269.900	8739.64	1027.34	-85.23	-1024.83	687361.94	722496.67	32°59'06.863"N	103°51'25.590"W	1.02
9735.00	91.600	269.800	8738.47	1091.29	-85.40	-1088.82	687297.95	722496.50	32°59'06.864"N	103°51'26.341"W	1.73
9798.00	91.800	270.200	8736.60	1154.22	-85.40	-1151.79	687234.99	722496.50	32°59'06.867"N	103°51'27.080"W	0.71
9893.00	91.700	270.600	8733.70	1249.07	-84.74	-1246.75	687140.04	722497.17	32°59'06.878"N	103°51'28.195"W	0.43
9989.00	90.700	269.800	8731.69	1344.97	-84.40	-1342.72	687044.07	722497.50	32°59'06.885"N	103°51'29.322"W	1.33
10083.00	90.000	269.700	8731.11	1438.91	-84.81	-1436.72	686950.08	722497.09	32°59'06.885"N	103°51'30.425"W	0.75
10178.00	90.700	270.300	8730.53	1533.84	-84.81	-1531.72	686855.09	722497.09	32°59'06.890"N	103°51'31.540"W	0.97
10273.00	90.200	271.200	8729.79	1628.71	-83.57	-1626.70	686760.11	722498.34	32°59'06.906"N	103°51'32.655"W	1.08
10368.00	90.500	272.400	8729.21	1723.48	-80.59	-1721.65	686665.16	722501.32	32°59'06.940"N	103°51'33.770"W	1.30
10463.00	90.000	272.500	8728.79	1818.16	-76.53	-1816.57	686570.26	722505.38	32°59'06.984"N	103°51'34.884"W	0.54
10558.00	91.000	272.300	8727.96	1912.85	-72.55	-1911.48	686475.35	722509.36	32°59'07.028"N	103°51'35.998"W	1.07
10653.00	91.100	272.300	8726.22	2007.55	-68.74	-2006.38	686380.45	722513.17	32°59'07.070"N	103°51'37.112"W	0.11
10748.00	90.200	272.200	8725.14	2102.25	-65.01	-2101.30	686285.54	722516.90	32°59'07.111"N	103°51'38.226"W	0.95
10843.00	90.500	272.600	8724.56	2196.95	-61.03	-2196.22	686190.63	722520.88	32°59'07.155"N	103°51'39.340"W	0.53
10938.00	92.400	273.400	8722.16	2291.52	-56.06	-2291.05	686095.80	722525.85	32°59'07.208"N	103°51'40.453"W	2.17
11033.00	92.500	272.500	8718.10	2386.05	-51.17	-2385.84	686001.02	722530.73	32°59'07.260"N	103°51'41.565"W	0.95
11129.00	92.100	270.400	8714.25	2481.78	-48.75	-2481.73	685905.14	722533.16	32°59'07.289"N	103°51'42.691"W	2.23
11223.00	91.700	269.200	8711.13	2575.67	-49.08	-2575.67	685811.20	722532.83	32°59'07.290"N	103°51'43.794"W	1.34
11318.00	90.500	268.800	8709.30	2670.63	-50.73	-2670.64	685716.24	722531.17	32°59'07.277"N	103°51'44.909"W	1.33
11414.00	89.300	268.300	8709.47	2766.62	-53.16	-2766.60	685620.28	722528.74	32°59'07.258"N	103°51'46.035"W	1.35
11509.00	89.800	266.900	8710.22	2861.61	-57.14	-2861.52	685525.38	722524.76	32°59'07.222"N	103°51'47.150"W	1.56
11604.00	90.500	267.200	8709.97	2956.60	-62.03	-2956.39	685430.51	722519.88	32°59'07.178"N	103°51'48.264"W	0.80
11699.00	90.100	266.800	8709.47	3051.59	-67.00	-3051.26	685335.65	722514.90	32°59'07.133"N	103°51'49.378"W	0.60



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

WELLPATH DATA (168 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
11794.00	89.100	266.100	8710.14	3146.56	-72.88	-3146.07	685240.84	722509.02	32°59'07.079"N	103°51'50.491"W	1.28
11889.00	89.100	266.100	8711.63	3241.50	-79.34	-3240.84	685146.08	722502.56	32°59'07.020"N	103°51'51.604"W	0.00
11984.00	91.000	265.600	8711.54	3336.44	-86.22	-3335.59	685051.34	722495.69	32°59'06.956"N	103°51'52.717"W	2.07
12048.00	91.200	265.100	8710.32	3400.37	-91.41	-3399.36	684987.57	722490.50	32°59'06.907"N	103°51'53.466"W	0.84
12111.00	91.100	265.200	8709.05	3463.29	-96.73	-3462.12	684924.81	722485.18	32°59'06.857"N	103°51'54.203"W	0.22
12205.00	90.600	265.900	8707.66	3557.21	-104.02	-3555.83	684831.11	722477.88	32°59'06.789"N	103°51'55.303"W	0.92
12269.00	90.800	265.900	8706.88	3621.17	-108.60	-3619.66	684767.29	722473.31	32°59'06.747"N	103°51'56.053"W	0.31
12364.00	90.900	266.500	8705.47	3716.12	-114.89	-3714.44	684672.51	722467.01	32°59'06.689"N	103°51'57.166"W	0.64
12459.00	91.800	267.500	8703.23	3811.08	-119.86	-3809.28	684577.68	722462.04	32°59'06.644"N	103°51'58.279"W	1.42
12554.00	90.600	267.600	8701.24	3906.06	-123.92	-3904.17	684482.79	722457.98	32°59'06.608"N	103°51'59.394"W	1.27
12649.00	90.500	268.300	8700.33	4001.05	-127.32	-3999.11	684387.86	722454.59	32°59'06.578"N	103°52'00.508"W	0.74
12743.00	90.300	268.600	8699.67	4095.04	-129.87	-4093.07	684293.91	722452.04	32°59'06.557"N	103°52'01.611"W	0.38
12839.00	90.100	268.800	8699.34	4191.03	-132.04	-4189.05	684197.94	722449.87	32°59'06.540"N	103°52'02.738"W	0.29
12934.00	89.400	268.400	8699.75	4286.02	-134.36	-4284.02	684102.98	722447.54	32°59'06.521"N	103°52'03.853"W	0.85
13028.00	89.800	268.300	8700.41	4380.01	-137.07	-4377.97	684009.02	722444.84	32°59'06.498"N	103°52'04.956"W	0.44
13123.00	89.000	268.000	8701.40	4475.01	-140.14	-4472.92	683914.09	722441.77	32°59'06.472"N	103°52'06.071"W	0.90
13143.00	89.400	268.000	8701.68	4495.00	-140.84	-4492.90	683894.10	722441.07	32°59'06.466"N	103°52'06.306"W	2.00
13193.00	89.400	268.000	8702.20	4545.00	-142.58	-4542.87	683844.14	722439.33	32°59'06.451"N	103°52'06.892"W	0.00



Actual Wellpath Report

No. 2H ST AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H SHL
Field	(Saratoga) Sec 30, T15S, R31E	Wellbore	No. 2H ST AWP
Facility	Saratoga 30 ST COM No. 2H	Sidetrack from	No. 2H AWP at 8567.00 MD

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 2H PBHL		8639.00	-174.14	-4552.60	683834.41	722407.78	32°59'06.139"N	103°52'07.008"W	point

WELLPATH COMPOSITION					Ref Wellbore: No. 2H ST AWP		Ref Wellpath: No. 2H ST AWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model			Log Name/Comment		Wellbore	
0.00	8450.10	Gyrodatta relative depth - Drop gyro or Multi-shot			GYRO <100 - 9021>		No. 2 AWP	
8450.10	8567.00	NaviTrak (Standard)			MWD <8471 - 8785>		No. 2H AWP	
8567.00	13143.00	NaviTrak (Standard)			MWD <8599 - 13143>		No. 2H ST AWP	
13143.00	13193.00	Blind Drilling (std)			Projection to bit		No. 2H ST AWP	