



30-005-24099



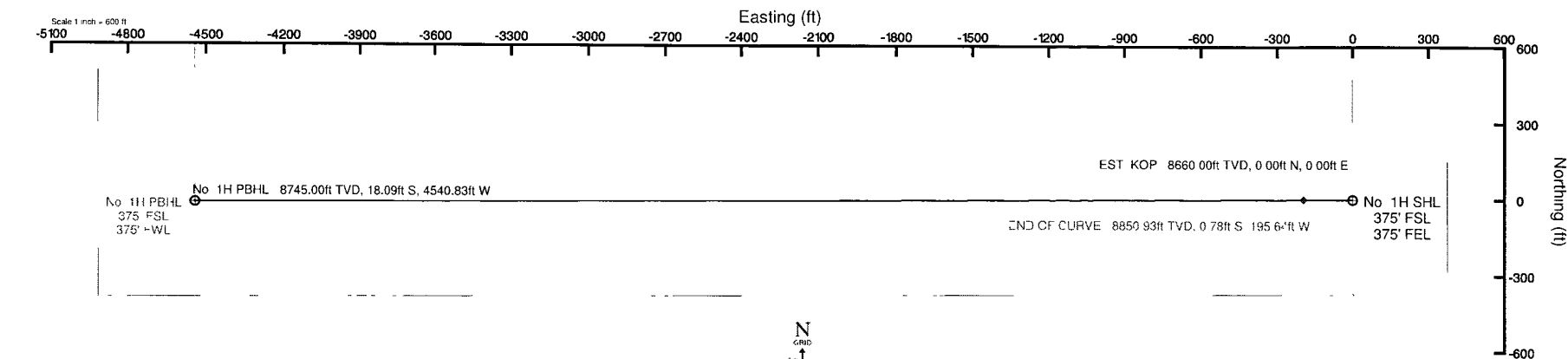
Cimarex Energy Co.

Location Chaves County, NM
Field (Valley) Sec 20, T15S, R31E
Facility Valley Forge 20 State Com #1H

Slot No. 1H SHL
Well No. 1H
Wellbore No. 1H PWB

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	269.772	0.00	0.00	0.00	0.00	0.00
EST. KOP	8660.00	0.000	269.772	8660.00	0.00	0.00	0.00	0.00
END OF CURVE	8964.65	91.396	269.772	8850.93	-0.78	-195.64	30.00	195.64
No. 1H PBHL	13311.18	91.396	269.772	8745.00	-18.09	-4540.83	0.00	4540.87



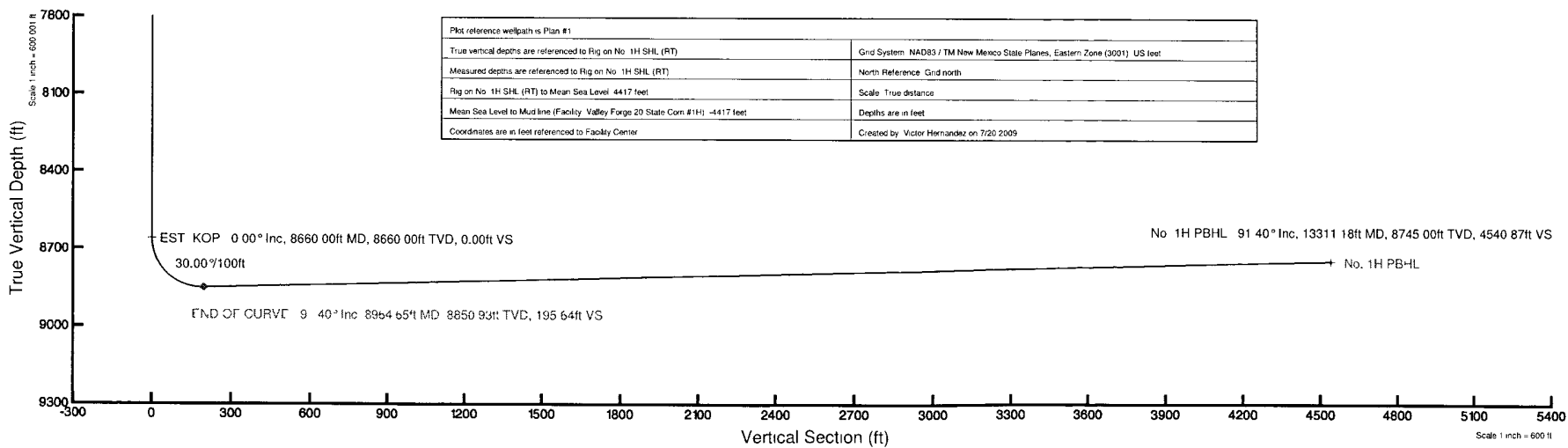
N
GRID

W

E

S

BGGM (1945 0 to 2010 0) Dip: 60.92° Field: 49287.3 nT
Magnetic North is 8.06 degrees East of True North (at 7/20/2009)
Grid North is 0.27 degrees East of True North
To correct azimuth from True to Grid subtract 0.27 degrees
To correct azimuth from Magnetic to Grid add 7.79 degrees
For example if the Magnetic North Azimuth = 90 degs then the Grid North Azimuth = 90 + 7.79 = 97.79





Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 1H PWB
Facility	Valley Forge 20 State Com #1H		

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	0.999936	Report Generated	7/20/2009 at 2:33:16 PM
Convergence at slot	0.27° East	Database/Source file	WA_Midland/No. 1H_PWB.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	693616.10	726126.50	32°59'42.492"N	103°50'11.963"W
Facility Reference Pt			693616.10	726126.50	32°59'42.492"N	103°50'11.963"W
Field Reference Pt			693616.10	726126.50	32°59'42.492"N	103°50'11.963"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 1H SHL (RT) to Mean Sea Level	4417.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	269.77°



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 1H PWB
Facility	Valley Forge 20 State Com #1H		

WELLPATH DATA (50 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00	0.000	269.772	0.00	0.00	0.00	0.00	0.00	Tie On
8660.00	0.000	269.772	8660.00	0.00	0.00	0.00	0.00	EST KOP
8760.00†	30.000	269.772	8755.49	25.59	-0.10	-25.59	30.00	
8860.00†	60.000	269.772	8825.40	95.49	-0.38	-95.49	30.00	
8960.00†	90.000	269.772	8850.99	190.99	-0.76	-190.98	30.00	
8964.65	91.396	269.772	8850.93	195.64	-0.78	-195.64	30.00	END OF CURVE
9060.00†	91.396	269.772	8848.61	290.96	-1.16	-290.95	0.00	
9160.00†	91.396	269.772	8846.17	390.93	-1.56	-390.92	0.00	
9260.00†	91.396	269.772	8843.73	490.90	-1.96	-490.89	0.00	
9360.00†	91.396	269.772	8841.29	590.87	-2.35	-590.86	0.00	
9460.00†	91.396	269.772	8838.86	690.84	-2.75	-690.83	0.00	
9560.00†	91.396	269.772	8836.42	790.81	-3.15	-790.80	0.00	
9660.00†	91.396	269.772	8833.98	890.78	-3.55	-890.77	0.00	
9760.00†	91.396	269.772	8831.55	990.75	-3.95	-990.74	0.00	
9860.00†	91.396	269.772	8829.11	1090.72	-4.35	-1090.71	0.00	
9960.00†	91.396	269.772	8826.67	1190.69	-4.74	-1190.68	0.00	
10060.00†	91.396	269.772	8824.23	1290.66	-5.14	-1290.65	0.00	
10160.00†	91.396	269.772	8821.80	1390.63	-5.54	-1390.62	0.00	
10260.00†	91.396	269.772	8819.36	1490.60	-5.94	-1490.59	0.00	
10360.00†	91.396	269.772	8816.92	1590.57	-6.34	-1590.56	0.00	
10460.00†	91.396	269.772	8814.49	1690.54	-6.74	-1690.53	0.00	
10560.00†	91.396	269.772	8812.05	1790.51	-7.13	-1790.50	0.00	
10660.00†	91.396	269.772	8809.61	1890.48	-7.53	-1890.47	0.00	
10760.00†	91.396	269.772	8807.17	1990.45	-7.93	-1990.44	0.00	
10860.00†	91.396	269.772	8804.74	2090.42	-8.33	-2090.41	0.00	
10960.00†	91.396	269.772	8802.30	2190.39	-8.73	-2190.38	0.00	
11060.00†	91.396	269.772	8799.86	2290.36	-9.12	-2290.34	0.00	
11160.00†	91.396	269.772	8797.43	2390.33	-9.52	-2390.31	0.00	
11260.00†	91.396	269.772	8794.99	2490.30	-9.92	-2490.28	0.00	
11360.00†	91.396	269.772	8792.55	2590.27	-10.32	-2590.25	0.00	



Planned Wellpath Report

Plan #1
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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator **Cimarex Energy Co.**
Area **Chaves County, NM**
Field **(Valley) Sec 20, T15S, R31E**
Facility **Valley Forge 20 State Com #1H**

Slot **No. 1H SHL**
Well **No. 1H**
Wellbore **No. 1H PWB**

WELLPATH DATA (50 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
11460.00†	91.396	269.772	8790.12	2690.24	-10.72	-2690.22	0.00	
11560.00†	91.396	269.772	8787.68	2790.21	-11.12	-2790.19	0.00	
11660.00†	91.396	269.772	8785.24	2890.18	-11.51	-2890.16	0.00	
11760.00†	91.396	269.772	8782.80	2990.16	-11.91	-2990.13	0.00	
11860.00†	91.396	269.772	8780.37	3090.13	-12.31	-3090.10	0.00	
11960.00†	91.396	269.772	8777.93	3190.10	-12.71	-3190.07	0.00	
12060.00†	91.396	269.772	8775.49	3290.07	-13.11	-3290.04	0.00	
12160.00†	91.396	269.772	8773.06	3390.04	-13.51	-3390.01	0.00	
12260.00†	91.396	269.772	8770.62	3490.01	-13.90	-3489.98	0.00	
12360.00†	91.396	269.772	8768.18	3589.98	-14.30	-3589.95	0.00	
12460.00†	91.396	269.772	8765.74	3689.95	-14.70	-3689.92	0.00	
12560.00†	91.396	269.772	8763.31	3789.92	-15.10	-3789.89	0.00	
12660.00†	91.396	269.772	8760.87	3889.89	-15.50	-3889.86	0.00	
12760.00†	91.396	269.772	8758.43	3989.86	-15.90	-3989.83	0.00	
12860.00†	91.396	269.772	8756.00	4089.83	-16.29	-4089.80	0.00	
12960.00†	91.396	269.772	8753.56	4189.80	-16.69	-4189.77	0.00	
13060.00†	91.396	269.772	8751.12	4289.77	-17.09	-4289.74	0.00	
13160.00†	91.396	269.772	8748.68	4389.74	-17.49	-4389.70	0.00	
13260.00†	91.396	269.772	8746.25	4489.71	-17.89	-4489.67	0.00	
13311.18	91.396	269.772	8745.00 [†]	4540.87	-18.09	-4540.83	0.00	No. 1H PBHL



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 1H PWB
Facility	Valley Forge 20 State Com #1H		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 1H PBHL	13311.18	8745.00	-18.09	-4540.83	689075.57	726108.41	32°59'42.522"N	103°51'05.277"W	point

SURVEY PROGRAM Ref Wellbore: No. 1H PWB Ref Wellpath: Plan #1

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	13311.18	NaviTrak (Standard)		No. 1H PWB

PROPOSED WELLPATH REPORT (CSV version)

Prepared by Baker Hughes INTEQ

Software System: WellArchitect@2.0

REFERENCE WELLPATH IDENTIFICATION

Operator Cimarex Energy Co.

Area Chaves County, NM

Field (Valley) Sec 20, T15S, R31E

Facility Valley Forge 20 State Com #1H

Slot No. 1H SHL

Well No. 1H

Wellbore No. 1H PWB

Wellpath Plan #1

Sidetrack (none)

REPORT SETUP INFORMATION

Projection : NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet

North Refe Grid

Scale 0.999936

Convergen 0.27° East

Software S WellArchitect®

User Victor Hernandez

Report Ger 7/20/2009 at 2:33:04 PM

DataBase/! WA_Midland/ev112113.xml

WELLPATH	Local North [ft]	Local East [ft]	Grid East [ft]	Grid North [ft]	Latitude	Longitude
Slot Locati	0	0	693616.1	726126.5	32°59'42.4"	103°50'11.963"W
Facility Ref			693616.1	726126.5	32°59'42.4"	103°50'11.963"W
Field Refer			693616.1	726126.5	32°59'42.4"	103°50'11.963"W

WELLPATH DATUM

Calculation Minimum curvature

Horizontal | Facility Center

Vertical Re Rig on No. 1H SHL (RT)

MD Refere Rig on No. 1H SHL (RT)

Field Vertic Mean Sea Level

Rig on No. 0.00ft

Rig on No. 4417.00ft

Facility Ver 0.00ft

Section Ori 0.00ft

Section Ori 0.00ft

Section Azi 269.77°

WELLPATH DATA Wellbore: No. 1H PWB Wellpath: Plan #1 † = interpolated/extrapolated

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]
0	0	269.772	0	0	0	0	693616.1
8660	0	269.772	8660	0	0	0	693616.1
† 8760	30	269.772	8755.49	25.59	-0.1	-25.59	693590.5

†	8860	60	269.772	8825.4	95.49	-0.38	-95.49	693520.6
†	8960	90	269.772	8850.99	190.99	-0.76	-190.98	693425.1
	8964.65	91.396	269.772	8850.93	195.64	-0.78	-195.64	693420.5
†	9060	91.396	269.772	8848.61	290.96	-1.16	-290.95	693325.2
†	9160	91.396	269.772	8846.17	390.93	-1.56	-390.92	693225.2
†	9260	91.396	269.772	8843.73	490.9	-1.96	-490.89	693125.2
†	9360	91.396	269.772	8841.29	590.87	-2.35	-590.86	693025.3
†	9460	91.396	269.772	8838.86	690.84	-2.75	-690.83	692925.3
†	9560	91.396	269.772	8836.42	790.81	-3.15	-790.8	692825.4
†	9660	91.396	269.772	8833.98	890.78	-3.55	-890.77	692725.4
†	9760	91.396	269.772	8831.55	990.75	-3.95	-990.74	692625.4
†	9860	91.396	269.772	8829.11	1090.72	-4.35	-1090.71	692525.5
†	9960	91.396	269.772	8826.67	1190.69	-4.74	-1190.68	692425.5
†	10060	91.396	269.772	8824.23	1290.66	-5.14	-1290.65	692325.5
†	10160	91.396	269.772	8821.8	1390.63	-5.54	-1390.62	692225.6
†	10260	91.396	269.772	8819.36	1490.6	-5.94	-1490.59	692125.6
†	10360	91.396	269.772	8816.92	1590.57	-6.34	-1590.56	692025.7
†	10460	91.396	269.772	8814.49	1690.54	-6.74	-1690.53	691925.7
†	10560	91.396	269.772	8812.05	1790.51	-7.13	-1790.5	691825.7
†	10660	91.396	269.772	8809.61	1890.48	-7.53	-1890.47	691725.8
†	10760	91.396	269.772	8807.17	1990.45	-7.93	-1990.44	691625.8
†	10860	91.396	269.772	8804.74	2090.42	-8.33	-2090.41	691525.8
†	10960	91.396	269.772	8802.3	2190.39	-8.73	-2190.38	691425.9
†	11060	91.396	269.772	8799.86	2290.36	-9.12	-2290.34	691325.9
†	11160	91.396	269.772	8797.43	2390.33	-9.52	-2390.31	691225.9
†	11260	91.396	269.772	8794.99	2490.3	-9.92	-2490.28	691126
†	11360	91.396	269.772	8792.55	2590.27	-10.32	-2590.25	691026
†	11460	91.396	269.772	8790.12	2690.24	-10.72	-2690.22	690926.1
†	11560	91.396	269.772	8787.68	2790.21	-11.12	-2790.19	690826.1
†	11660	91.396	269.772	8785.24	2890.18	-11.51	-2890.16	690726.1
†	11760	91.396	269.772	8782.8	2990.16	-11.91	-2990.13	690626.2
†	11860	91.396	269.772	8780.37	3090.13	-12.31	-3090.1	690526.2
†	11960	91.396	269.772	8777.93	3190.1	-12.71	-3190.07	690426.2
†	12060	91.396	269.772	8775.49	3290.07	-13.11	-3290.04	690326.3
†	12160	91.396	269.772	8773.06	3390.04	-13.51	-3390.01	690226.3
†	12260	91.396	269.772	8770.62	3490.01	-13.9	-3489.98	690126.4
†	12360	91.396	269.772	8768.18	3589.98	-14.3	-3589.95	690026.4
†	12460	91.396	269.772	8765.74	3689.95	-14.7	-3689.92	689926.4
†	12560	91.396	269.772	8763.31	3789.92	-15.1	-3789.89	689826.5
†	12660	91.396	269.772	8760.87	3889.89	-15.5	-3889.86	689726.5
†	12760	91.396	269.772	8758.43	3989.86	-15.9	-3989.83	689626.5
†	12860	91.396	269.772	8756	4089.83	-16.29	-4089.8	689526.6
†	12960	91.396	269.772	8753.56	4189.8	-16.69	-4189.77	689426.6
†	13060	91.396	269.772	8751.12	4289.77	-17.09	-4289.74	689326.7
†	13160	91.396	269.772	8748.68	4389.74	-17.49	-4389.7	689226.7
†	13260	91.396	269.772	8746.25	4489.71	-17.89	-4489.67	689126.7
	13311.18	91.396	269.772	8745	4540.87	-18.09	-4540.83	689075.6

T A R G E T S

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude
(1) No. 1H	13311.18	8745	-18.09	-4540.83	689075.6	726108.4	32°59'42.5	103°51'05.:

SURVEY PROGRAM Ref Wellbore: No. 1H PWB Ref Wellpath: Plan #1

Start MD End MD Pos Unc M Log Name/ Wellbore

[ft]

[ft]

0 13311.18 NaviTrak (Standard) No. 1H PWB

station		
Grid North	DLS	Comments
[srv ft]	[°/100ft]	
726126.5	0	Tie On
726126.5	0	EST. KOP
726126.4	30	

6

726126.1	30		
726125.7	30		
726125.7	30	END OF CURVE	
726125.3	0		
726124.9	0		
726124.5	0		
726124.2	0		
726123.8	0		
726123.4	0		
726123	0		
726122.6	0		
726122.2	0		
726121.8	0		
726121.4	0		
726121	0		
726120.6	0		
726120.2	0		
726119.8	0		
726119.4	0		
726119	0		
726118.6	0		
726118.2	0		
726117.8	0		
726117.4	0		
726117	0		
726116.6	0		
726116.2	0		
726115.8	0		
726115.4	0		
726115	0		
726114.6	0		
726114.2	0		
726113.8	0		
726113.4	0		
726113	0		
726112.6	0		
726112.2	0		
726111.8	0		
726111.4	0		
726111	0		
726110.6	0		
726110.2	0		
726109.8	0		
726109.4	0		
726109	0		
726108.6	0		
726108.4	0	No. 1H PE	1

Shape Comment Design Comments

point