



30-005-28102



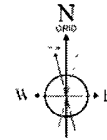
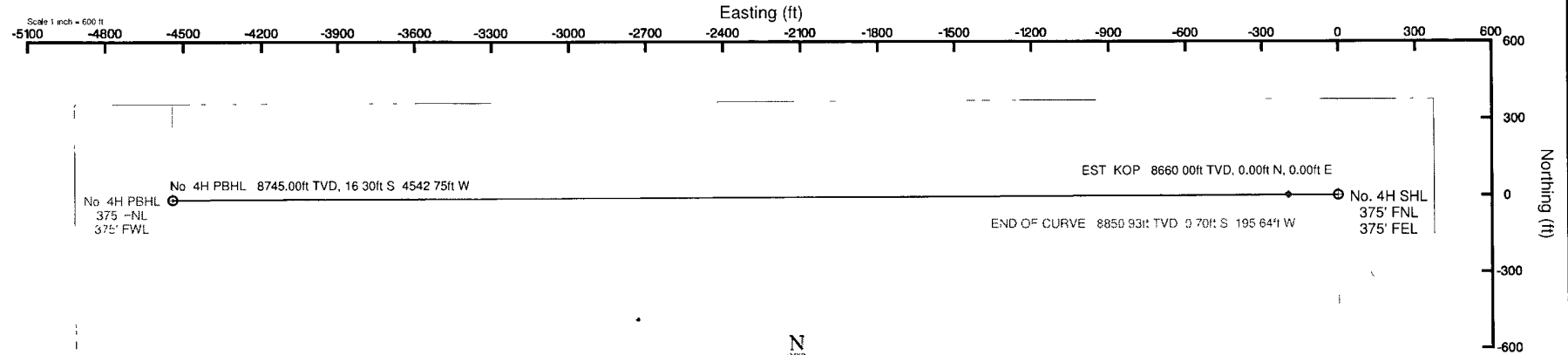
Cimarex Energy Co.

Location: Chaves County, NM
Field: (Valley) Sec 20, T15S, R31E
Facility: Valley Forge 20 State Com #4H

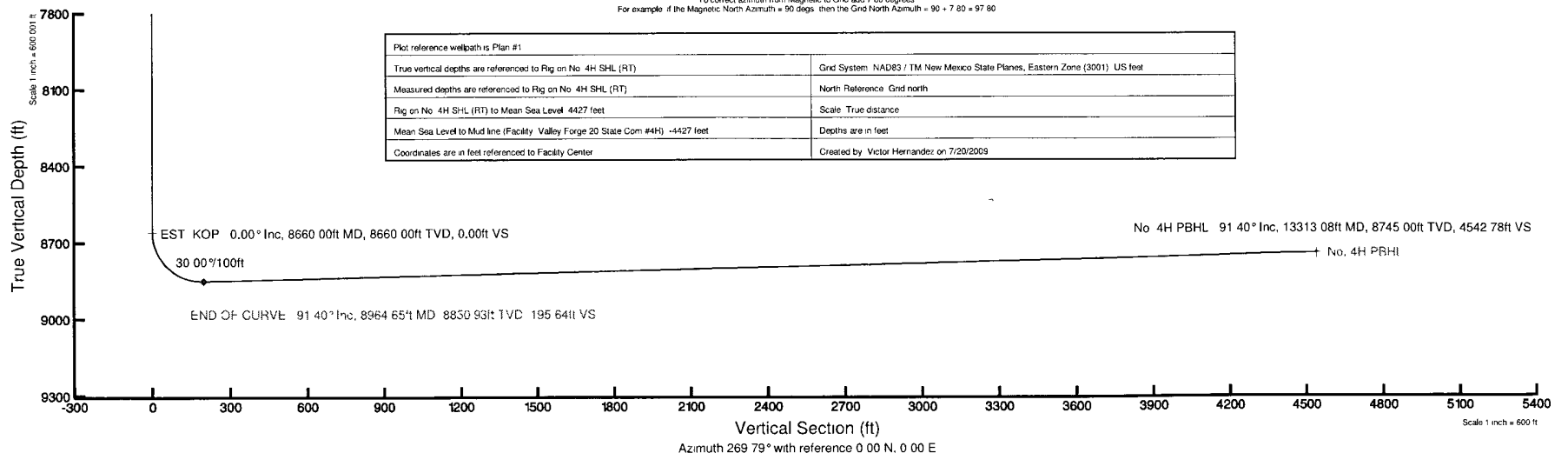
Slot: No. 4H SHL
Well: No. 4H
Wellbore: No. 4H PWB

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	269.794	0 00	0.00	0.00	0 00	0 00
EST. KOP	8660 00	0 000	269.794	8660 00	0 00	0.00	0.00	0.00
END OF CURVE	8964 65	91.396	269.794	8850 93	-0.70	-195.64	30 00	195.64
No. 4H PBHL	13313.08	91.396	269.794	8745 00	-16.30	-4542.75	0 00	4542.78



BGGM (1945.0 to 2010.0) Dip: 60.93° Field: 49294.7 nT
Magnetic North is 8.07 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 7.80 degrees
For example if the Magnetic North Azimuth = 90 degs then the Grid North Azimuth = 90 + 7.80 = 97.80



Plot reference wellpath is Plan #1	
True vertical depths are referenced to Rig on No. 4H SHL (RT)	Grid System: NAD83 / TM New Mexico State Planes, Eastern Zone (3001) US feet
Measured depths are referenced to Rig on No. 4H SHL (RT)	North Reference: Grid north
Rig on No. 4H SHL (RT) to Mean Sea Level: 4427 feet	Scale: True distance
Mean Sea Level to Mud line (Facility: Valley Forge 20 State Com #4H): -4427 feet	Depths are in feet
Coordinates are in feet referenced to Facility Center	Created by: Victor Hernandez on 7/20/2009



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 4H PWB
Facility	Valley Forge 20 State Com #4H		

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 3:13:16 PM
Convergence at slot	0.27° East	Database/Source file	WA_Midland/No. 4H_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	693597.80	730657.00	33°00'27.320"N	103°50'11.927"W
Facility Reference Pt			693597.80	730657.00	33°00'27.320"N	103°50'11.927"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. 4H SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 4H SHL (RT) to Mean Sea Level	4427.00ft
Vertical Reference Pt	Rig on No. 4H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 4H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	269.79°



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 4H PWB
Facility	Valley Forge 20 State Com #4H		

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	269.794	0.00	0.00	0.00	0.00	0.00	Tie On
8660.00	0.000	269.794	8660.00	0.00	0.00	0.00	0.00	EST KOP
8760.00†	30.000	269.794	8755.49	25.59	-0.09	-25.59	30.00	
8860.00†	60.000	269.794	8825.40	95.49	-0.34	-95.49	30.00	
8960.00†	90.000	269.794	8850.99	190.99	-0.69	-190.98	30.00	
8964.65	91.396	269.794	8850.93	195.64	-0.70	-195.64	30.00	END OF CURVE
9060.00†	91.396	269.794	8848.61	290.96	-1.04	-290.96	0.00	
9160.00†	91.396	269.794	8846.17	390.93	-1.40	-390.92	0.00	
9260.00†	91.396	269.794	8843.73	490.90	-1.76	-490.89	0.00	
9360.00†	91.396	269.794	8841.30	590.87	-2.12	-590.86	0.00	
9460.00†	91.396	269.794	8838.86	690.84	-2.48	-690.83	0.00	
9560.00†	91.396	269.794	8836.43	790.81	-2.84	-790.80	0.00	
9660.00†	91.396	269.794	8833.99	890.78	-3.20	-890.77	0.00	
9760.00†	91.396	269.794	8831.55	990.75	-3.56	-990.74	0.00	
9860.00†	91.396	269.794	8829.12	1090.72	-3.91	-1090.71	0.00	
9960.00†	91.396	269.794	8826.68	1190.69	-4.27	-1190.68	0.00	
10060.00†	91.396	269.794	8824.25	1290.66	-4.63	-1290.65	0.00	
10160.00†	91.396	269.794	8821.81	1390.63	-4.99	-1390.62	0.00	
10260.00†	91.396	269.794	8819.37	1490.60	-5.35	-1490.59	0.00	
10360.00†	91.396	269.794	8816.94	1590.57	-5.71	-1590.56	0.00	
10460.00†	91.396	269.794	8814.50	1690.54	-6.07	-1690.53	0.00	
10560.00†	91.396	269.794	8812.07	1790.51	-6.42	-1790.50	0.00	
10660.00†	91.396	269.794	8809.63	1890.48	-6.78	-1890.47	0.00	
10760.00†	91.396	269.794	8807.19	1990.45	-7.14	-1990.44	0.00	
10860.00†	91.396	269.794	8804.76	2090.42	-7.50	-2090.41	0.00	
10960.00†	91.396	269.794	8802.32	2190.39	-7.86	-2190.38	0.00	
11060.00†	91.396	269.794	8799.89	2290.36	-8.22	-2290.35	0.00	
11160.00†	91.396	269.794	8797.45	2390.33	-8.58	-2390.32	0.00	
11260.00†	91.396	269.794	8795.01	2490.30	-8.94	-2490.29	0.00	
11360.00†	91.396	269.794	8792.58	2590.27	-9.29	-2590.26	0.00	



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 4H PWB
Facility	Valley Forge 20 State Com #4H		

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	269.794	8790.14	2690.24	-9.65	-2690.23	0.00	
11560.00†	91.396	269.794	8787.71	2790.22	-10.01	-2790.20	0.00	
11660.00†	91.396	269.794	8785.27	2890.19	-10.37	-2890.17	0.00	
11760.00†	91.396	269.794	8782.83	2990.16	-10.73	-2990.14	0.00	
11860.00†	91.396	269.794	8780.40	3090.13	-11.09	-3090.11	0.00	
11960.00†	91.396	269.794	8777.96	3190.10	-11.45	-3190.08	0.00	
12060.00†	91.396	269.794	8775.53	3290.07	-11.81	-3290.05	0.00	
12160.00†	91.396	269.794	8773.09	3390.04	-12.16	-3390.02	0.00	
12260.00†	91.396	269.794	8770.65	3490.01	-12.52	-3489.99	0.00	
12360.00†	91.396	269.794	8768.22	3589.98	-12.88	-3589.95	0.00	
12460.00†	91.396	269.794	8765.78	3689.95	-13.24	-3689.92	0.00	
12560.00†	91.396	269.794	8763.35	3789.92	-13.60	-3789.89	0.00	
12660.00†	91.396	269.794	8760.91	3889.89	-13.96	-3889.86	0.00	
12760.00†	91.396	269.794	8758.47	3989.86	-14.32	-3989.83	0.00	
12860.00†	91.396	269.794	8756.04	4089.83	-14.68	-4089.80	0.00	
12960.00†	91.396	269.794	8753.60	4189.80	-15.03	-4189.77	0.00	
13060.00†	91.396	269.794	8751.17	4289.77	-15.39	-4289.74	0.00	
13160.00†	91.396	269.794	8748.73	4389.74	-15.75	-4389.71	0.00	
13260.00†	91.396	269.794	8746.29	4489.71	-16.11	-4489.68	0.00	
13313.08	91.396	269.794	8745.00†	4542.78	-16.30	-4542.75	0.00	No. 4H PBHL



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Valley) Sec 20, T15S, R31E	Wellbore	No. 4H PWB
Facility	Valley Forge 20 State Com #4H		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 4H PBHL	13313.08	8745.00	-16.30	-4542.75	689055.35	730640.70	33°00'27.368"N	103°51'05.271"W	point

SURVEY PROGRAM				Ref Wellbore: No. 4H PWB	Ref Wellpath: Plan #1
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	
0.00	13313.08	NaviTrak (Standard)		No. 4H 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 #4H
Slot	No. 4H SHL
Well	No. 4H
Wellbore	No. 4H 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 3:13:10 PM

DataBase/ WA_Midland/ev112113.xml

WELLPATH	Local North [ft]	Local East [ft]	Grid East [ft]	Grid North [ft]	Latitude	Longitude
Slot Location	0	0	693597.8	730657	33°00'27.3	103°50'11.927"W
Facility Ref			693597.8	730657	33°00'27.3	103°50'11.927"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. 4H SHL (RT)

MD Refere Rig on No. 4H SHL (RT)

Field Vertic Mean Sea Level

Rig on No. 0.00ft

Rig on No. 4427.00ft

Facility Ver 0.00ft

Section Ori 0.00ft

Section Ori 0.00ft

Section Az 269.79°

WELLPATH DATA Wellbore: No. 4H 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	269.794	0	0	0	0	693597.8
8660	0	269.794	8660	0	0	0	693597.8
† 8760	30	269.794	8755.49	25.59	-0.09	-25.59	693572.2

†	8860	60	269.794	8825.4	95.49	-0.34	-95.49	693502.3
†	8960	90	269.794	8850.99	190.99	-0.69	-190.98	693406.8
	8964.65	91.396	269.794	8850.93	195.64	-0.7	-195.64	693402.2
†	9060	91.396	269.794	8848.61	290.96	-1.04	-290.96	693306.9
†	9160	91.396	269.794	8846.17	390.93	-1.4	-390.92	693206.9
†	9260	91.396	269.794	8843.73	490.9	-1.76	-490.89	693106.9
†	9360	91.396	269.794	8841.3	590.87	-2.12	-590.86	693007
†	9460	91.396	269.794	8838.86	690.84	-2.48	-690.83	692907
†	9560	91.396	269.794	8836.43	790.81	-2.84	-790.8	692807.1
†	9660	91.396	269.794	8833.99	890.78	-3.2	-890.77	692707.1
†	9760	91.396	269.794	8831.55	990.75	-3.56	-990.74	692607.1
†	9860	91.396	269.794	8829.12	1090.72	-3.91	-1090.71	692507.2
†	9960	91.396	269.794	8826.68	1190.69	-4.27	-1190.68	692407.2
†	10060	91.396	269.794	8824.25	1290.66	-4.63	-1290.65	692307.2
†	10160	91.396	269.794	8821.81	1390.63	-4.99	-1390.62	692207.3
†	10260	91.396	269.794	8819.37	1490.6	-5.35	-1490.59	692107.3
†	10360	91.396	269.794	8816.94	1590.57	-5.71	-1590.56	692007.3
†	10460	91.396	269.794	8814.5	1690.54	-6.07	-1690.53	691907.4
†	10560	91.396	269.794	8812.07	1790.51	-6.42	-1790.5	691807.4
†	10660	91.396	269.794	8809.63	1890.48	-6.78	-1890.47	691707.5
†	10760	91.396	269.794	8807.19	1990.45	-7.14	-1990.44	691607.5
†	10860	91.396	269.794	8804.76	2090.42	-7.5	-2090.41	691507.5
†	10960	91.396	269.794	8802.32	2190.39	-7.86	-2190.38	691407.6
†	11060	91.396	269.794	8799.89	2290.36	-8.22	-2290.35	691307.6
†	11160	91.396	269.794	8797.45	2390.33	-8.58	-2390.32	691207.6
†	11260	91.396	269.794	8795.01	2490.3	-8.94	-2490.29	691107.7
†	11360	91.396	269.794	8792.58	2590.27	-9.29	-2590.26	691007.7
†	11460	91.396	269.794	8790.14	2690.24	-9.65	-2690.23	690907.8
†	11560	91.396	269.794	8787.71	2790.22	-10.01	-2790.2	690807.8
†	11660	91.396	269.794	8785.27	2890.19	-10.37	-2890.17	690707.8
†	11760	91.396	269.794	8782.83	2990.16	-10.73	-2990.14	690607.9
†	11860	91.396	269.794	8780.4	3090.13	-11.09	-3090.11	690507.9
†	11960	91.396	269.794	8777.96	3190.1	-11.45	-3190.08	690407.9
†	12060	91.396	269.794	8775.53	3290.07	-11.81	-3290.05	690308
†	12160	91.396	269.794	8773.09	3390.04	-12.16	-3390.02	690208
†	12260	91.396	269.794	8770.65	3490.01	-12.52	-3489.99	690108.1
†	12360	91.396	269.794	8768.22	3589.98	-12.88	-3589.95	690008.1
†	12460	91.396	269.794	8765.78	3689.95	-13.24	-3689.92	689908.1
†	12560	91.396	269.794	8763.35	3789.92	-13.6	-3789.89	689808.2
†	12660	91.396	269.794	8760.91	3889.89	-13.96	-3889.86	689708.2
†	12760	91.396	269.794	8758.47	3989.86	-14.32	-3989.83	689608.2
†	12860	91.396	269.794	8756.04	4089.83	-14.68	-4089.8	689508.3
†	12960	91.396	269.794	8753.6	4189.8	-15.03	-4189.77	689408.3
†	13060	91.396	269.794	8751.17	4289.77	-15.39	-4289.74	689308.3
†	13160	91.396	269.794	8748.73	4389.74	-15.75	-4389.71	689208.4
†	13260	91.396	269.794	8746.29	4489.71	-16.11	-4489.68	689108.4
	13313.08	91.396	269.794	8745	4542.78	-16.3	-4542.75	689055.4

T A R G E T S

Name	MD	TVD	North	East	Grid East	Grid North	Latitude	Longitude
	[ft]	[ft]	[ft]	[ft]	[srv ft]	[srv ft]		
(1) No. 4H	13313.08	8745	-16.3	-4542.75	689055.4	730640.7	33°00'27.3"	103°51'05.2"

SURVEY PROGRAM Ref Wellbore: No. 4H PWB Ref Wellpath: Plan #1

Start MD	End MD	Pos Unc	M Log Name/ Wellbore
[ft]	[ft]		

0	13313.08	NaviTrak (Standard)	No. 4H PWB
---	----------	---------------------	------------

station		
Grid North	DLS	Comments
[srv ft]	[°/100ft]	
730657	0	Tie On
730657	0	EST. KOP
730656.9	30	

730656.7	30	
730656.3	30	
730656.3	30	END OF CURVE
730656	0	
730655.6	0	
730655.2	0	
730654.9	0	
730654.5	0	
730654.2	0	
730653.8	0	
730653.5	0	
730653.1	0	
730652.7	0	
730652.4	0	
730652	0	
730651.7	0	
730651.3	0	
730650.9	0	
730650.6	0	
730650.2	0	
730649.9	0	
730649.5	0	
730649.1	0	
730648.8	0	
730648.4	0	
730648.1	0	
730647.7	0	
730647.4	0	
730647	0	
730646.6	0	
730646.3	0	
730645.9	0	
730645.6	0	
730645.2	0	
730644.8	0	
730644.5	0	
730644.1	0	
730643.8	0	
730643.4	0	
730643	0	
730642.7	0	
730642.3	0	
730642	0	
730641.6	0	
730641.3	0	
730640.9	0	
730640.7	0	No. 4H PE 1

Shape Comment Design Comments

point