

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: BISON RIDGE Y22-741
Facility: SEC.10-T02N-R64W Wellbore: BISON RIDGE Y22-741 PWB

Comments

SURFACE LOCATION: NWSE
40.15182N
104.53560W
API: 05-123-45374

Survey Program

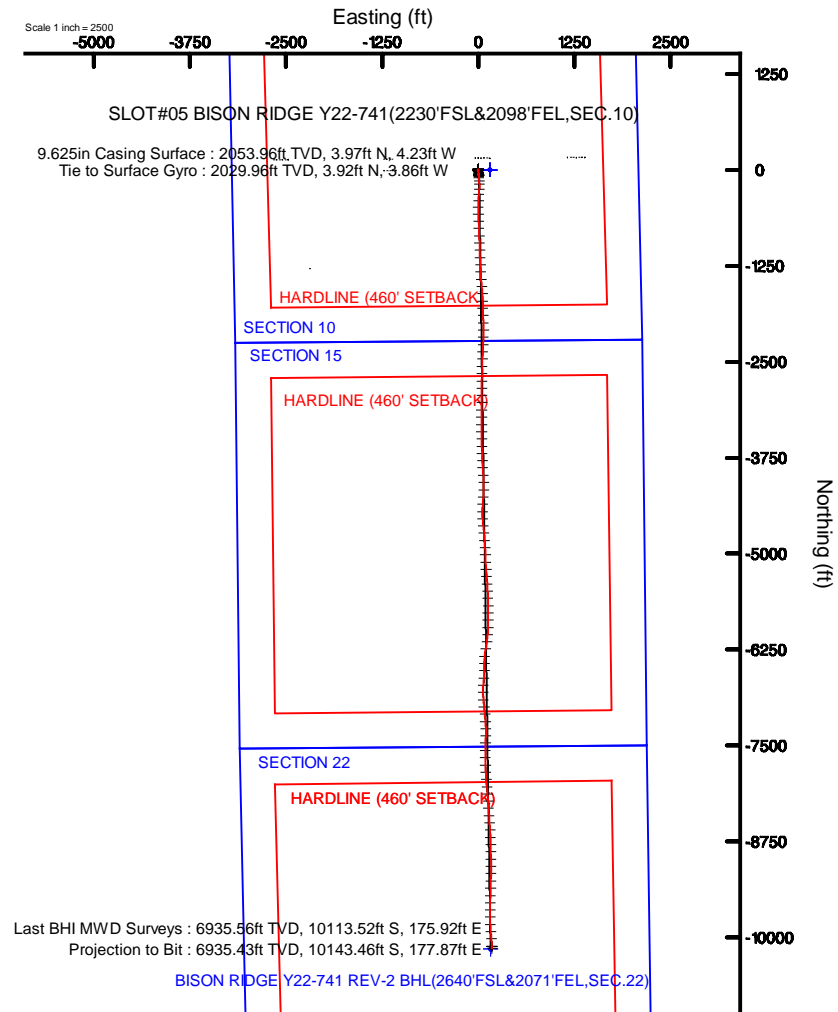
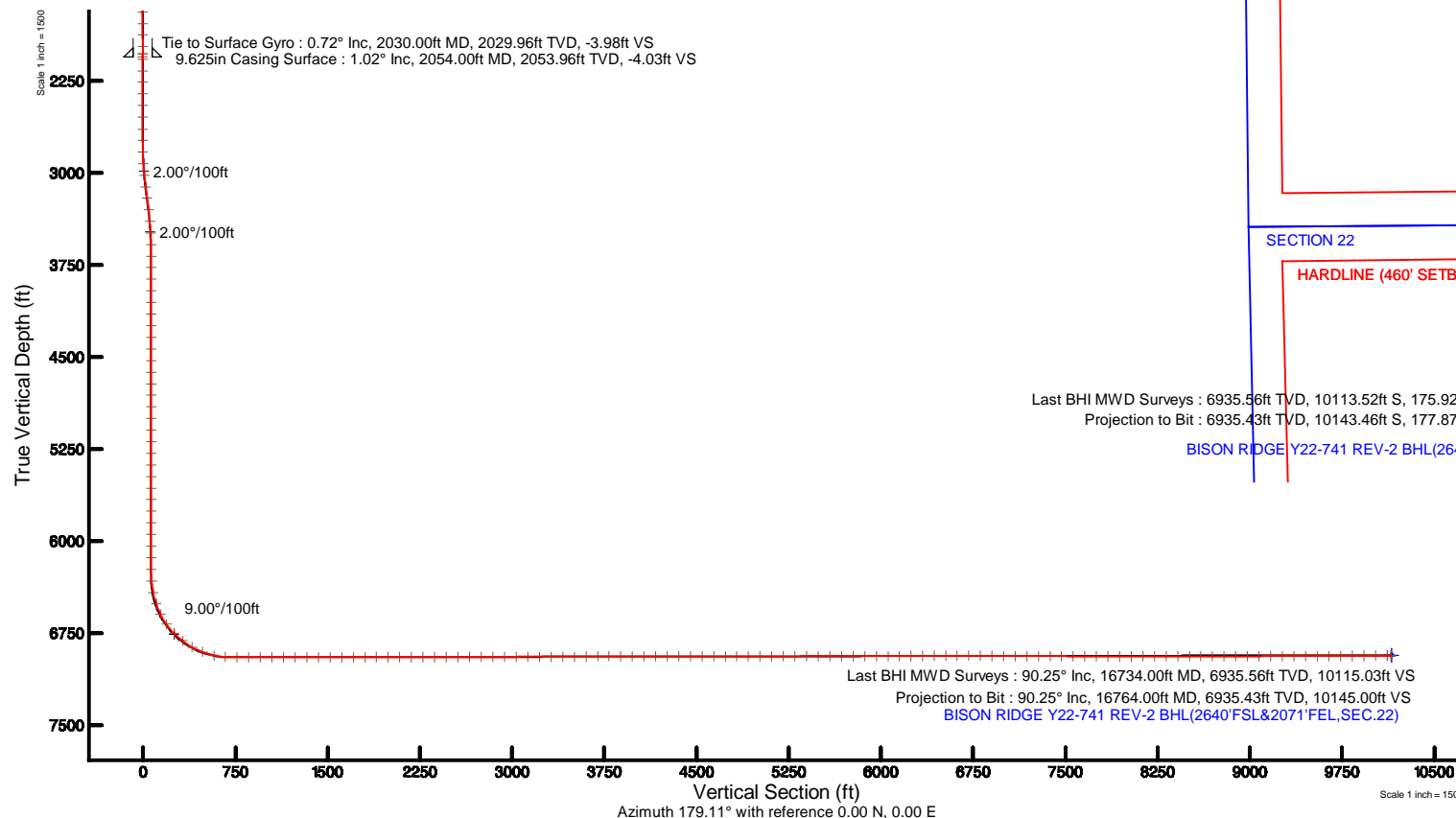
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	16768.00	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		BISON RIDGE Y22-741 PWB



Plus reference wellbore is BISON RIDGE Y22-741 (REV-2) PWB	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (NAD83), US feet
True vertical depths are referenced to RIG (2019B) (RWB)	* = Wellbore was transformed from a different geoidetic datum
Measured depths are referenced to RIG (2019B) (RWB)	North Reference: Grid north
RIG (2019B) (RWB) to Mean Sea Level: 4854 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)) 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: gander on 2018-01-08
	Dataverse: WA, DEN, Denver, Denr

Location Information

Facility Name		Grid East (US F)	Grid North (US F)	Latitude	Longitude
SEC.10-T02N-R64W		3285724.271	1288818.916	40°18'08.552"N	104°32'08.216"W
BH	Local N (F)	Local E (F)	Grid East (US F)	Grid North (US F)	Latitude
SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)	-1.84	-150.84	3285873.333	1288817.274	40°18'08.552"N
RIG (2019B) (RWB) to Ground level (At Slot: SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10))					45541
Mean Sea Level to Ground level (At Slot: SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10))					01
RIG (2019B) (RWB) to Mean Sea Level					45541





Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP

Page 1 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Guenaler
Scale	0.999958	Report Generated	1/8/2018 at 1:21:32 PM
Convergence at slot	0.63° East	Database/Source file	WA_DEN_Denver_Defn/BISON_RIDGE_Y22-741__REV-A.1__PWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-1.64	-150.94	3269573.33	1299617.27	40°09'06.552"N	104°32'08.160"W
Facility Reference Pt			3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W
Field Reference Pt			3000000.00	4454105.15	48°46'34.315"N	105°30'00.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	RIG (30'KB) (RKB) to Facility Vertical Datum	4954.00ft
Horizontal Reference Pt	Slot	RIG (30'KB) (RKB) to Mean Sea Level	4954.00ft
Vertical Reference Pt	RIG (30'KB) (RKB)	RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#05 BISON RIDGE Y22-741 (2230'FSL&2098'FEL,SEC.10))	4954.00ft
MD Reference Pt	RIG (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.11°



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	171.146	0.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
30.00	0.000	171.146	30.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	Tie On
130.00†	0.000	171.146	130.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
230.00†	0.000	171.146	230.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
330.00†	0.000	171.146	330.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
430.00†	0.000	171.146	430.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
530.00†	0.000	171.146	530.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
630.00†	0.000	171.146	630.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
730.00†	0.000	171.146	730.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
830.00†	0.000	171.146	830.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
878.00†	0.000	171.146	878.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	Laramie-Fox Hills Aquifer Base
930.00†	0.000	171.146	930.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
955.00†	0.000	171.146	955.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	Pierre
1030.00†	0.000	171.146	1030.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1044.00†	0.000	171.146	1044.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	Upper Pierre Aquifer Top
1130.00†	0.000	171.146	1130.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1230.00†	0.000	171.146	1230.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1330.00†	0.000	171.146	1330.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1430.00†	0.000	171.146	1430.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1530.00†	0.000	171.146	1530.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1630.00†	0.000	171.146	1630.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1730.00†	0.000	171.146	1730.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1830.00†	0.000	171.146	1830.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
1840.00†	0.000	171.146	1840.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	Upper Pierre Aquifer Base
1930.00†	0.000	171.146	1930.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2030.00†	0.000	171.146	2030.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2130.00†	0.000	171.146	2130.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2230.00†	0.000	171.146	2230.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2330.00†	0.000	171.146	2330.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2430.00†	0.000	171.146	2430.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2530.00†	0.000	171.146	2530.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2630.00†	0.000	171.146	2630.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2730.00†	0.000	171.146	2730.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	
2800.00	0.000	171.146	2800.00	0.00	0.00	0.00	40°09'06.552"N	104°32'08.160"W	0.00	End of Tangent
2830.00†	0.600	171.146	2830.00	0.16	-0.16	0.02	40°09'06.550"N	104°32'08.160"W	2.00	
2930.00†	2.600	171.146	2929.96	2.92	-2.91	0.45	40°09'06.523"N	104°32'08.155"W	2.00	
3030.00†	4.600	171.146	3029.75	9.14	-9.12	1.42	40°09'06.462"N	104°32'08.143"W	2.00	
3130.00†	6.600	171.146	3129.27	18.80	-18.76	2.92	40°09'06.366"N	104°32'08.125"W	2.00	
3175.00	7.500	171.146	3173.93	24.27	-24.22	3.77	40°09'06.312"N	104°32'08.115"W	2.00	End of Build (XS)
3230.00†	7.500	171.146	3228.46	31.38	-31.31	4.88	40°09'06.242"N	104°32'08.102"W	0.00	
3294.35	7.500	171.146	3292.26	39.70	-39.61	6.17	40°09'06.160"N	104°32'08.086"W	0.00	End of Tangent (XS)
3330.00†	6.787	171.146	3327.63	44.09	-43.99	6.85	40°09'06.117"N	104°32'08.078"W	2.00	
3430.00†	4.787	171.146	3427.12	54.08	-53.95	8.40	40°09'06.018"N	104°32'08.059"W	2.00	
3530.00†	2.787	171.146	3526.89	60.62	-60.48	9.42	40°09'05.953"N	104°32'08.047"W	2.00	
3630.00†	0.787	171.146	3626.84	63.71	-63.56	9.90	40°09'05.923"N	104°32'08.041"W	2.00	
3669.35	0.000	179.159	3666.19	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	2.00	Drop (XS)
3730.00†	0.000	179.159	3726.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
3830.00†	0.000	179.159	3826.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
3930.00†	0.000	179.159	3926.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
3932.16†	0.000	179.159	3929.00	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	Parkman
4030.00†	0.000	179.159	4026.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4130.00†	0.000	179.159	4126.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4230.00†	0.000	179.159	4226.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4258.16†	0.000	179.159	4255.00	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	Sussex
4330.00†	0.000	179.159	4326.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4430.00†	0.000	179.159	4426.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4530.00†	0.000	179.159	4526.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4630.00†	0.000	179.159	4626.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4730.00†	0.000	179.159	4726.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
4830.00†	0.000	179.159	4826.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4930.00†	0.000	179.159	4926.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5030.00†	0.000	179.159	5026.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5072.16†	0.000	179.159	5069.00	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	Shannon
5130.00†	0.000	179.159	5126.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5230.00†	0.000	179.159	5226.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5330.00†	0.000	179.159	5326.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5430.00†	0.000	179.159	5426.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5530.00†	0.000	179.159	5526.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5630.00†	0.000	179.159	5626.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5730.00†	0.000	179.159	5726.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5830.00†	0.000	179.159	5826.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
5930.00†	0.000	179.159	5926.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
6030.00†	0.000	179.159	6026.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
6035.16†	0.000	179.159	6032.00	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	Teepee Buttes
6130.00†	0.000	179.159	6126.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
6230.00†	0.000	179.159	6226.84	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	
6315.54	0.000	179.159	6312.38	63.97	-63.83	9.94	40°09'05.920"N	104°32'08.041"W	0.00	End of Tangent (XS)
6330.00†	1.301	179.159	6326.84	64.14	-63.99	9.94	40°09'05.919"N	104°32'08.041"W	9.00	
6430.00†	10.301	179.159	6426.22	74.23	-74.09	10.09	40°09'05.819"N	104°32'08.040"W	9.00	
6530.00†	19.301	179.159	6522.81	99.76	-99.60	10.47	40°09'05.567"N	104°32'08.039"W	9.00	
6630.00†	28.301	179.159	6614.21	140.07	-139.91	11.06	40°09'05.168"N	104°32'08.037"W	9.00	
6730.00†	37.301	179.159	6698.18	194.19	-194.03	11.85	40°09'04.633"N	104°32'08.035"W	9.00	
6771.04†	40.995	179.159	6730.00	220.09	-219.93	12.23	40°09'04.377"N	104°32'08.033"W	9.00	Sharon Springs
6826.18†	45.958	179.159	6770.00	258.02	-257.85	12.79	40°09'04.003"N	104°32'08.031"W	9.00	Top A Chalk, Top A Marl
6830.00†	46.301	179.159	6772.65	260.77	-260.60	12.83	40°09'03.975"N	104°32'08.031"W	9.00	
6867.90†	49.712	179.159	6798.00	288.94	-288.77	13.24	40°09'03.697"N	104°32'08.030"W	9.00	Top B Chalk
6930.00†	55.301	179.159	6835.78	338.19	-338.01	13.97	40°09'03.210"N	104°32'08.028"W	9.00	
6946.50†	56.787	179.159	6845.00	351.88	-351.70	14.17	40°09'03.075"N	104°32'08.027"W	9.00	Top B Marl
7030.00†	64.301	179.159	6886.03	424.53	-424.34	15.23	40°09'02.357"N	104°32'08.023"W	9.00	
7088.66†	69.581	179.159	6909.00	478.49	-478.30	16.02	40°09'01.824"N	104°32'08.021"W	9.00	Top C Chalk



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP

Page 5 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments	
7130.00†	73.301	179.159	6922.15	517.67	-517.47	16.60	40°09'01.437"N	104°32'08.019"W	9.00		
7214.50†	80.907	179.159	6941.00	599.98	-599.77	17.81	40°09'00.623"N	104°32'08.015"W	9.00	Top C Marl	
7230.00†	82.301	179.159	6943.26	615.31	-615.10	18.03	40°09'00.472"N	104°32'08.014"W	9.00		
7316.77	90.110	179.159	6949.00†	701.82	-701.60	19.30	40°08'59.617"N	104°32'08.010"W	9.00	Build/Landing Point	
7330.00†	90.110	179.159	6948.97	715.05	-714.83	19.49	40°08'59.486"N	104°32'08.009"W	0.00		
7430.00†	90.110	179.159	6948.78	815.05	-814.82	20.96	40°08'58.498"N	104°32'08.004"W	0.00		
7530.00†	90.110	179.159	6948.59	915.05	-914.81	22.43	40°08'57.510"N	104°32'07.999"W	0.00		
7630.00†	90.110	179.159	6948.40	1015.05	-1014.80	23.90	40°08'56.522"N	104°32'07.994"W	0.00		
7730.00†	90.110	179.159	6948.21	1115.05	-1114.79	25.36	40°08'55.534"N	104°32'07.990"W	0.00		
7830.00†	90.110	179.159	6948.01	1215.05	-1214.78	26.83	40°08'54.545"N	104°32'07.985"W	0.00		
7930.00†	90.110	179.159	6947.82	1315.05	-1314.77	28.30	40°08'53.557"N	104°32'07.980"W	0.00		
8030.00†	90.110	179.159	6947.63	1415.05	-1414.76	29.76	40°08'52.569"N	104°32'07.975"W	0.00		
8130.00†	90.110	179.159	6947.44	1515.05	-1514.75	31.23	40°08'51.581"N	104°32'07.970"W	0.00		
8230.00†	90.110	179.159	6947.25	1615.05	-1614.73	32.70	40°08'50.593"N	104°32'07.965"W	0.00		
8330.00†	90.110	179.159	6947.05	1715.05	-1714.72	34.16	40°08'49.604"N	104°32'07.960"W	0.00		
8430.00†	90.110	179.159	6946.86	1815.05	-1814.71	35.63	40°08'48.616"N	104°32'07.955"W	0.00		
8530.00†	90.110	179.159	6946.67	1915.05	-1914.70	37.10	40°08'47.628"N	104°32'07.950"W	0.00		
8630.00†	90.110	179.159	6946.48	2015.05	-2014.69	38.57	40°08'46.640"N	104°32'07.946"W	0.00		
8730.00†	90.110	179.159	6946.29	2115.05	-2114.68	40.03	40°08'45.652"N	104°32'07.941"W	0.00		
8830.00†	90.110	179.159	6946.09	2215.05	-2214.67	41.50	40°08'44.663"N	104°32'07.936"W	0.00		
8930.00†	90.110	179.159	6945.90	2315.05	-2314.66	42.97	40°08'43.675"N	104°32'07.931"W	0.00		
9030.00†	90.110	179.159	6945.71	2415.05	-2414.65	44.43	40°08'42.687"N	104°32'07.926"W	0.00		
9130.00†	90.110	179.159	6945.52	2515.05	-2514.64	45.90	40°08'41.699"N	104°32'07.921"W	0.00		
9230.00†	90.110	179.159	6945.33	2615.05	-2614.63	47.37	40°08'40.711"N	104°32'07.916"W	0.00		
9330.00†	90.110	179.159	6945.13	2715.05	-2714.61	48.84	40°08'39.722"N	104°32'07.911"W	0.00		
9430.00†	90.110	179.159	6944.94	2815.05	-2814.60	50.30	40°08'38.734"N	104°32'07.906"W	0.00		
9530.00†	90.110	179.159	6944.75	2915.05	-2914.59	51.77	40°08'37.746"N	104°32'07.902"W	0.00		
9630.00†	90.110	179.159	6944.56	3015.05	-3014.58	53.24	40°08'36.758"N	104°32'07.897"W	0.00		
9730.00†	90.110	179.159	6944.37	3115.04	-3114.57	54.70	40°08'35.770"N	104°32'07.892"W	0.00		
9830.00†	90.110	179.159	6944.17	3215.04	-3214.56	56.17	40°08'34.781"N	104°32'07.887"W	0.00		



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments	
9930.00†	90.110	179.159	6943.98	3315.04	-3314.55	57.64	40°08'33.793"N	104°32'07.882"W	0.00		
10030.00†	90.110	179.159	6943.79	3415.04	-3414.54	59.11	40°08'32.805"N	104°32'07.877"W	0.00		
10130.00†	90.110	179.159	6943.60	3515.04	-3514.53	60.57	40°08'31.817"N	104°32'07.872"W	0.00		
10230.00†	90.110	179.159	6943.41	3615.04	-3614.52	62.04	40°08'30.829"N	104°32'07.867"W	0.00		
10330.00†	90.110	179.159	6943.21	3715.04	-3714.51	63.51	40°08'29.840"N	104°32'07.862"W	0.00		
10430.00†	90.110	179.159	6943.02	3815.04	-3814.49	64.97	40°08'28.852"N	104°32'07.858"W	0.00		
10530.00†	90.110	179.159	6942.83	3915.04	-3914.48	66.44	40°08'27.864"N	104°32'07.853"W	0.00		
10630.00†	90.110	179.159	6942.64	4015.04	-4014.47	67.91	40°08'26.876"N	104°32'07.848"W	0.00		
10730.00†	90.110	179.159	6942.45	4115.04	-4114.46	69.37	40°08'25.888"N	104°32'07.843"W	0.00		
10830.00†	90.110	179.159	6942.25	4215.04	-4214.45	70.84	40°08'24.899"N	104°32'07.838"W	0.00		
10930.00†	90.110	179.159	6942.06	4315.04	-4314.44	72.31	40°08'23.911"N	104°32'07.833"W	0.00		
11030.00†	90.110	179.159	6941.87	4415.04	-4414.43	73.78	40°08'22.923"N	104°32'07.828"W	0.00		
11130.00†	90.110	179.159	6941.68	4515.04	-4514.42	75.24	40°08'21.935"N	104°32'07.823"W	0.00		
11230.00†	90.110	179.159	6941.49	4615.04	-4614.41	76.71	40°08'20.947"N	104°32'07.819"W	0.00		
11330.00†	90.110	179.159	6941.29	4715.04	-4714.40	78.18	40°08'19.958"N	104°32'07.814"W	0.00		
11430.00†	90.110	179.159	6941.10	4815.04	-4814.38	79.64	40°08'18.970"N	104°32'07.809"W	0.00		
11482.60†	90.110	179.159	6941.00	4867.64	-4866.98	80.42	40°08'18.450"N	104°32'07.806"W	0.00	Top C Marl	
11530.00†	90.110	179.159	6940.91	4915.04	-4914.37	81.11	40°08'17.982"N	104°32'07.804"W	0.00		
11630.00†	90.110	179.159	6940.72	5015.04	-5014.36	82.58	40°08'16.994"N	104°32'07.799"W	0.00		
11730.00†	90.110	179.159	6940.52	5115.04	-5114.35	84.05	40°08'16.006"N	104°32'07.794"W	0.00		
11830.00†	90.110	179.159	6940.33	5215.04	-5214.34	85.51	40°08'15.017"N	104°32'07.789"W	0.00		
11930.00†	90.110	179.159	6940.14	5315.04	-5314.33	86.98	40°08'14.029"N	104°32'07.784"W	0.00		
12030.00†	90.110	179.159	6939.95	5415.04	-5414.32	88.45	40°08'13.041"N	104°32'07.779"W	0.00		
12130.00†	90.110	179.159	6939.76	5515.04	-5514.31	89.91	40°08'12.053"N	104°32'07.775"W	0.00		
12230.00†	90.110	179.159	6939.56	5615.04	-5614.30	91.38	40°08'11.065"N	104°32'07.770"W	0.00		
12330.00†	90.110	179.159	6939.37	5715.04	-5714.29	92.85	40°08'10.076"N	104°32'07.765"W	0.00		
12430.00†	90.110	179.159	6939.18	5815.04	-5814.28	94.31	40°08'09.088"N	104°32'07.760"W	0.00		
12530.00†	90.110	179.159	6938.99	5915.04	-5914.26	95.78	40°08'08.100"N	104°32'07.755"W	0.00		
12630.00†	90.110	179.159	6938.80	6015.04	-6014.25	97.25	40°08'07.112"N	104°32'07.750"W	0.00		
12730.00†	90.110	179.159	6938.60	6115.04	-6114.24	98.72	40°08'06.124"N	104°32'07.745"W	0.00		



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12830.00†	90.110	179.159	6938.41	6215.04	-6214.23	100.18	40°08'05.135"N	104°32'07.740"W	0.00	
12930.00†	90.110	179.159	6938.22	6315.04	-6314.22	101.65	40°08'04.147"N	104°32'07.735"W	0.00	
13030.00†	90.110	179.159	6938.03	6415.04	-6414.21	103.12	40°08'03.159"N	104°32'07.731"W	0.00	
13130.00†	90.110	179.159	6937.84	6515.04	-6514.20	104.58	40°08'02.171"N	104°32'07.726"W	0.00	
13230.00†	90.110	179.159	6937.64	6615.04	-6614.19	106.05	40°08'01.183"N	104°32'07.721"W	0.00	
13330.00†	90.110	179.159	6937.45	6715.04	-6714.18	107.52	40°08'00.194"N	104°32'07.716"W	0.00	
13430.00†	90.110	179.159	6937.26	6815.04	-6814.17	108.99	40°07'59.206"N	104°32'07.711"W	0.00	
13530.00†	90.110	179.159	6937.07	6915.04	-6914.15	110.45	40°07'58.218"N	104°32'07.706"W	0.00	
13630.00†	90.110	179.159	6936.88	7015.04	-7014.14	111.92	40°07'57.230"N	104°32'07.701"W	0.00	
13730.00†	90.110	179.159	6936.68	7115.04	-7114.13	113.39	40°07'56.242"N	104°32'07.696"W	0.00	
13830.00†	90.110	179.159	6936.49	7215.04	-7214.12	114.85	40°07'55.253"N	104°32'07.691"W	0.00	
13930.00†	90.110	179.159	6936.30	7315.04	-7314.11	116.32	40°07'54.265"N	104°32'07.687"W	0.00	
14030.00†	90.110	179.159	6936.11	7415.04	-7414.10	117.79	40°07'53.277"N	104°32'07.682"W	0.00	
14130.00†	90.110	179.159	6935.92	7515.04	-7514.09	119.26	40°07'52.289"N	104°32'07.677"W	0.00	
14230.00†	90.110	179.159	6935.72	7615.03	-7614.08	120.72	40°07'51.301"N	104°32'07.672"W	0.00	
14330.00†	90.110	179.159	6935.53	7715.03	-7714.07	122.19	40°07'50.312"N	104°32'07.667"W	0.00	
14430.00†	90.110	179.159	6935.34	7815.03	-7814.06	123.66	40°07'49.324"N	104°32'07.662"W	0.00	
14530.00†	90.110	179.159	6935.15	7915.03	-7914.05	125.12	40°07'48.336"N	104°32'07.657"W	0.00	
14630.00†	90.110	179.159	6934.96	8015.03	-8014.03	126.59	40°07'47.348"N	104°32'07.652"W	0.00	
14730.00†	90.110	179.159	6934.76	8115.03	-8114.02	128.06	40°07'46.360"N	104°32'07.648"W	0.00	
14830.00†	90.110	179.159	6934.57	8215.03	-8214.01	129.52	40°07'45.371"N	104°32'07.643"W	0.00	
14930.00†	90.110	179.159	6934.38	8315.03	-8314.00	130.99	40°07'44.383"N	104°32'07.638"W	0.00	
15030.00†	90.110	179.159	6934.19	8415.03	-8413.99	132.46	40°07'43.395"N	104°32'07.633"W	0.00	
15130.00†	90.110	179.159	6934.00	8515.03	-8513.98	133.93	40°07'42.407"N	104°32'07.628"W	0.00	
15230.00†	90.110	179.159	6933.80	8615.03	-8613.97	135.39	40°07'41.419"N	104°32'07.623"W	0.00	
15330.00†	90.110	179.159	6933.61	8715.03	-8713.96	136.86	40°07'40.430"N	104°32'07.618"W	0.00	
15430.00†	90.110	179.159	6933.42	8815.03	-8813.95	138.33	40°07'39.442"N	104°32'07.613"W	0.00	
15530.00†	90.110	179.159	6933.23	8915.03	-8913.94	139.79	40°07'38.454"N	104°32'07.608"W	0.00	
15630.00†	90.110	179.159	6933.04	9015.03	-9013.92	141.26	40°07'37.466"N	104°32'07.604"W	0.00	
15730.00†	90.110	179.159	6932.84	9115.03	-9113.91	142.73	40°07'36.478"N	104°32'07.599"W	0.00	



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH DATA (191 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
15830.00†	90.110	179.159	6932.65	9215.03	-9213.90	144.20	40°07'35.489"N	104°32'07.594"W	0.00	
15930.00†	90.110	179.159	6932.46	9315.03	-9313.89	145.66	40°07'34.501"N	104°32'07.589"W	0.00	
16030.00†	90.110	179.159	6932.27	9415.03	-9413.88	147.13	40°07'33.513"N	104°32'07.584"W	0.00	
16130.00†	90.110	179.159	6932.08	9515.03	-9513.87	148.60	40°07'32.525"N	104°32'07.579"W	0.00	
16230.00†	90.110	179.159	6931.88	9615.03	-9613.86	150.06	40°07'31.537"N	104°32'07.574"W	0.00	
16330.00†	90.110	179.159	6931.69	9715.03	-9713.85	151.53	40°07'30.548"N	104°32'07.569"W	0.00	
16430.00†	90.110	179.159	6931.50	9815.03	-9813.84	153.00	40°07'29.560"N	104°32'07.565"W	0.00	
16530.00†	90.110	179.159	6931.31	9915.03	-9913.83	154.46	40°07'28.572"N	104°32'07.560"W	0.00	
16630.00†	90.110	179.159	6931.12	10015.03	-10013.82	155.93	40°07'27.584"N	104°32'07.555"W	0.00	
16730.00†	90.110	179.159	6930.92	10115.03	-10113.80	157.40	40°07'26.596"N	104°32'07.550"W	0.00	
16768.00	90.110	179.159	6930.85 ²	10153.03	-10151.80	157.96	40°07'26.220"N	104°32'07.548"W	0.00	Tangent/BHL

HOLE & CASING SECTIONS - Ref Wellbore: BISON RIDGE Y22-741 PWB Ref Wellpath: BISON RIDGE Y22-741 (REV-A.1) PWP

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
9.625in Open Hole	30.00	1900.00	1870.00	30.00	1900.00	0.00	0.00	0.00	0.00
8.5in Open Hole	1900.00	16768.00	14868.00	1900.00	6930.85	0.00	0.00	-10151.80	157.96



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP

Page 9 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
BISON RIDGE Y22-711 SECTION 10		1.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon
BISON RIDGE Y22-711 SECTION 15		1.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon
BISON RIDGE Y22-711 SECTION 22		1.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon
BISON RIDGE Y22-741 REV-1 BHL(2640'FSL&1577'FEL,SEC.22)		6930.85	-10151.80	157.96	3269731.28	1289465.91	40°07'26.220"N	104°32'07.548"W	point
2) BISON RIDGE Y22-741 REV-2 BHL(2640'FSL&2071'FEL,SEC.22)	16768.00	6930.85	-10151.80	157.96	3269731.28	1289465.91	40°07'26.220"N	104°32'07.548"W	point
1) BISON RIDGE Y22-741 LANDING POINT	7316.77	6949.00	-701.60	19.30	3269592.63	1298915.70	40°08'59.617"N	104°32'08.010"W	point
BISON RIDGE Y22-711 SECTION 10 HARDLINE (460' SETBACK)		7101.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon
BISON RIDGE Y22-711 SECTION 15 HARDLINE (460' SETBACK)		7101.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon
BISON RIDGE Y22-711 SECTION 22 HARDLINE (460' SETBACK)		7101.00	1.64	150.94	3269724.27	1299618.92	40°09'06.552"N	104°32'06.216"W	polygon

SURVEY PROGRAM - Ref Wellbore: BISON RIDGE Y22-741 PWB Ref Wellpath: BISON RIDGE Y22-741 (REV-A.1) PWP			
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment
30.00	16768.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BISON RIDGE Y22-741 PWB



Planned Wellpath Report
BISON RIDGE Y22-741 (REV-A.1) PWP
Page 10 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
878.00	0.000	171.146	878.00	Laramie-Fox Hills Aquifer Base
955.00	0.000	171.146	955.00	Pierre
1044.00	0.000	171.146	1044.00	Upper Pierre Aquifer Top
1840.00	0.000	171.146	1840.00	Upper Pierre Aquifer Base
3932.16	0.000	179.159	3929.00	Parkman
4258.16	0.000	179.159	4255.00	Sussex
5072.16	0.000	179.159	5069.00	Shannon
6035.16	0.000	179.159	6032.00	Teepee Buttes
6771.04	40.995	179.159	6730.00	Sharon Springs
6826.18	45.958	179.159	6770.00	Top A Chalk, Top A Marl
6867.90	49.712	179.159	6798.00	Top B Chalk
6946.50	56.787	179.159	6845.00	Top B Marl
7088.66	69.581	179.159	6909.00	Top C Chalk
7214.50	80.907	179.159	6941.00	Top C Marl
11482.60	90.110	179.159	6941.00	Top C Marl

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
30.00	0.000	171.146	30.00	Tie On
2800.00	0.000	171.146	2800.00	End of Tangent
3175.00	7.500	171.146	3173.93	End of Build (XS)
3294.35	7.500	171.146	3292.26	End of Tangent (XS)
3669.35	0.000	179.159	3666.19	Drop (XS)
6315.54	0.000	179.159	6312.38	End of Tangent (XS)
7316.77	90.110	179.159	6949.00	Build/Landing Point
16768.00	90.110	179.159	6930.85	Tangent/BHL



Planned Wellpath Report

BISON RIDGE Y22-741 (REV-A.1) PWP

Page 11 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#05 BISON RIDGE Y22-741(2230'FSL&2098'FEL,SEC.10)
Area	COLORADO	Well	BISON RIDGE Y22-741
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	BISON RIDGE Y22-741 PWB
Facility	SEC.10-T02N-R64W		

COMMENTS
<div>Wellpath general comments</div> <div>SURFACE LOCATION: NWSE</div> <div>40.15182N</div> <div>104.53560W</div> <div>API: 05-123-45374</div>