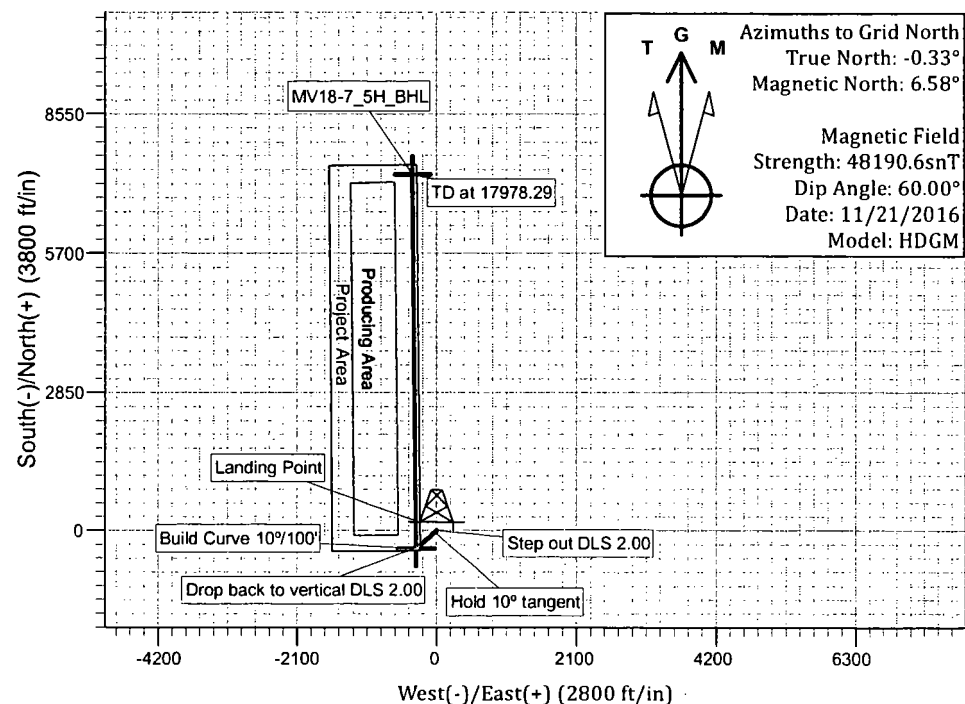
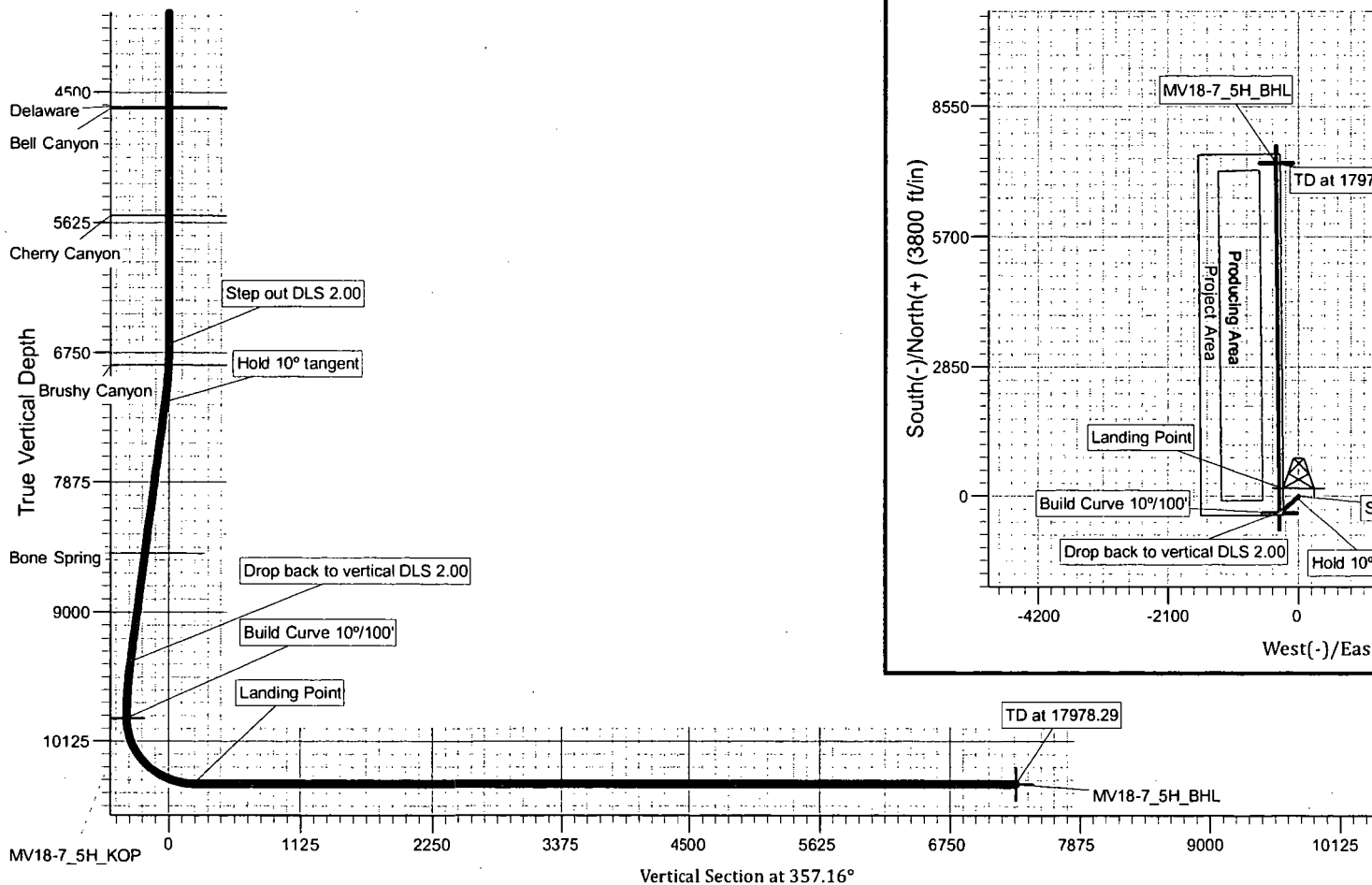




Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
 Site: Mesa Verde 18-7 Fed Com
 Well: Mesa Verde 18-7 Fed Com 5H
 Wellbore: WB00
 Design: Permitting Plan

WELL DETAILS: Mesa Verde 18-7 Fed Com 5H

Ground Level: 3569.80 WELL @ 3596.30ft (Original Well Elev)
 +N/-S +E/-W Northing Easting Latitude Longitude
 0.00 0.00 441172.18 734507.25 32° 12' 40.738691 N 103° 42' 31.499120 W



Azimuths to Grid North
 True North: -0.33°
 Magnetic North: 6.58°
 Magnetic Field
 Strength: 48190.6snT
 Dip Angle: 60.00°
 Date: 11/21/2016
 Model: HDGM

PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone
 System Datum: Mean Sea Level

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
6675.00	6675.00	0.00	0.00	0.00	0.00	0.00	0.00	Step out DLS 2.00
7172.28	7174.81	10.00	219.59	-33.52	-27.71	-32.10	43.49	Hold 10° tangent
9424.76	9462.02	10.00	219.59	-339.48	-280.71	-325.17	440.51	Drop back to vertical DLS 2.00
9922.04	9961.82	0.00	359.60	-373.00	-308.43	-357.28	484.00	Build Curve 10°/100'
10495.00	10861.82	90.00	359.60	199.94	-312.46	215.17	1056.96	Landing Point
10495.00	17978.29	90.00	359.60	7316.24	-362.57	7325.22	8173.42	TD at 17978.29

ENGINEERING DESIGNS

PRD NM DIRECTIONAL PLANS (NAD 1983)

Mesa Verde 18-7 Fed Com

Mesa Verde 18-7 Fed Com 5H

WB00

Plan: Permitting Plan

Standard Planning Report

08 June, 2017

HOBBS OCD
NOV 06 2017
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Oxy Planning Report

Database:	HOPSP	Local Co-ordinate Reference:	Well Mesa Verde 18-7 Fed Com 5H
Company:	ENGINEERING DESIGNS	TVD Reference:	WELL @ 3596.30ft (Original Well Elev)
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	WELL @ 3596.30ft (Original Well Elev)
Site:	Mesa Verde 18-7 Fed Com	North Reference:	Grid
Well:	Mesa Verde 18-7 Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB00		
Design:	Permitting Plan		

Project	PRD NM DIRECTIONAL PLANS (NAD 1983)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site	Mesa Verde 18-7 Fed Com		
Site Position:		Northing:	441,014.48 usft
From:	Map	Easting:	732,669.96 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	32° 12' 39.283315 N
		Longitude:	103° 42' 52.894713 W
		Grid Convergence:	0.33 °

Well	Mesa Verde 18-7 Fed Com 5H		
Well Position	+N/-S	157.71 ft	Northing:
	+E/-W	1,837.38 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,569.80 ft
		Latitude:	32° 12' 40.738691 N
		Longitude:	103° 42' 31.499120 W
		Ground Level:	3,569.80 ft

Wellbore	WB00		
Magnetics	Model Name	Sample Date	Declination
	HDGM	11/21/2016	6.92
			Dip Angle
			60.00
			Field Strength
			48,191

Design	Permitting Plan		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			357.16

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,675.00	0.00	0.00	6,675.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,174.81	10.00	219.59	7,172.28	-33.52	-27.71	2.00	2.00	0.00	219.59	
9,462.02	10.00	219.59	9,424.76	-339.48	-280.71	0.00	0.00	0.00	0.00	
9,961.83	0.00	359.60	9,922.04	-373.00	-308.43	2.00	-2.00	0.00	180.00	MV18-7_5H_KOP
10,861.83	90.00	359.60	10,495.00	199.94	-312.46	10.00	10.00	0.00	-0.40	
17,978.29	90.00	359.60	10,495.00	7,316.24	-362.57	0.00	0.00	0.00	0.00	MV18-7_5H_BHL

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Mesa Verde 18-7 Fed Com 5H
Company:	ENGINEERING DESIGNS	TVD Reference:	WELL @ 3596.30ft (Original Well Elev)
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	WELL @ 3596.30ft (Original Well Elev)
Site:	Mesa Verde 18-7 Fed Com	North Reference:	Grid
Well:	Mesa Verde 18-7 Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB00		
Design:	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,675.00	0.00	0.00	6,675.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	6.50	219.59	6,999.30	-14.19	-11.74	-13.59	2.00	2.00	0.00
7,174.81	10.00	219.59	7,172.28	-33.52	-27.71	-32.10	2.00	2.00	0.00
7,500.00	10.00	219.59	7,492.53	-77.02	-63.68	-73.77	0.00	0.00	0.00
8,000.00	10.00	219.59	7,984.94	-143.90	-118.99	-137.84	0.00	0.00	0.00
8,500.00	10.00	219.59	8,477.35	-210.79	-174.30	-201.91	0.00	0.00	0.00
9,000.00	10.00	219.59	8,969.76	-277.68	-229.61	-265.97	0.00	0.00	0.00
9,462.02	10.00	219.59	9,424.76	-339.48	-280.71	-325.17	0.00	0.00	0.00
9,500.00	9.24	219.59	9,462.21	-344.37	-284.76	-329.86	2.00	-2.00	0.00
9,961.83	0.00	359.60	9,922.04	-373.00	-308.43	-357.28	2.00	-2.00	0.00
10,000.00	3.82	359.60	9,960.19	-371.73	-308.43	-356.01	10.00	10.00	0.00
10,500.00	53.82	359.60	10,384.50	-138.30	-310.08	-122.78	10.00	10.00	0.00
10,861.83	90.00	359.60	10,495.00	199.94	-312.46	215.17	10.00	10.00	0.00
11,000.00	90.00	359.60	10,495.00	338.12	-313.43	353.22	0.00	0.00	0.00
11,500.00	90.00	359.60	10,495.00	838.10	-316.95	852.76	0.00	0.00	0.00
12,000.00	90.00	359.60	10,495.00	1,338.09	-320.47	1,352.31	0.00	0.00	0.00
12,500.00	90.00	359.60	10,495.00	1,838.08	-323.99	1,851.86	0.00	0.00	0.00
13,000.00	90.00	359.60	10,495.00	2,338.07	-327.52	2,351.41	0.00	0.00	0.00
13,500.00	90.00	359.60	10,495.00	2,838.05	-331.04	2,850.96	0.00	0.00	0.00
14,000.00	90.00	359.60	10,495.00	3,338.04	-334.56	3,350.51	0.00	0.00	0.00
14,500.00	90.00	359.60	10,495.00	3,838.03	-338.08	3,850.06	0.00	0.00	0.00
15,000.00	90.00	359.60	10,495.00	4,338.02	-341.60	4,349.61	0.00	0.00	0.00
15,500.00	90.00	359.60	10,495.00	4,838.01	-345.12	4,849.16	0.00	0.00	0.00
16,000.00	90.00	359.60	10,495.00	5,337.99	-348.64	5,348.71	0.00	0.00	0.00
16,500.00	90.00	359.60	10,495.00	5,837.98	-352.16	5,848.26	0.00	0.00	0.00
17,000.00	90.00	359.60	10,495.00	6,337.97	-355.68	6,347.80	0.00	0.00	0.00
17,500.00	90.00	359.60	10,495.00	6,837.96	-359.20	6,847.35	0.00	0.00	0.00
17,978.29	90.00	359.60	10,495.00	7,316.24	-362.57	7,325.22	0.00	0.00	0.00

Oxy Planning Report

Database:	HOPSPP	Local Co-ordinate Reference:	Well Mesa Verde 18-7 Fed Com 5H
Company:	ENGINEERING DESIGNS	TVD Reference:	WELL @ 3596.30ft (Original Well Elev)
Project:	PRD NM DIRECTIONAL PLANS (NAD 1983)	MD Reference:	WELL @ 3596.30ft (Original Well Elev)
Site:	Mesa Verde 18-7 Fed Com	North Reference:	Grid
Well:	Mesa Verde 18-7 Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB00		
Design:	Permitting Plan		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
MV18-7_5H_KOP - hit/miss target - Shape	0.00	0.00	9,922.04	-373.00	-308.43	440,799.20	734,198.84	32° 12' 37.065588 N	103° 42' 35.114024
- plan hits target center - Point									
MV18-7_5H_BHL - plan hits target center - Point	0.00	0.00	10,495.00	7,316.24	-362.57	448,488.05	734,144.70	32° 13' 53.153574 N	103° 42' 35.224861

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,675.00	6,675.00	0.00	0.00	Step out DLS 2.00
7,174.81	7,172.28	-33.52	-27.71	Hold 10° tangent
9,462.02	9,424.76	-339.48	-280.71	Drop back to vertical DLS 2.00
9,961.83	9,922.04	-373.00	-308.43	Build Curve 10°/100'
10,861.83	10,495.00	199.94	-312.46	Landing Point
17,978.29	10,495.00	7,316.24	-362.57	TD at 17978.29