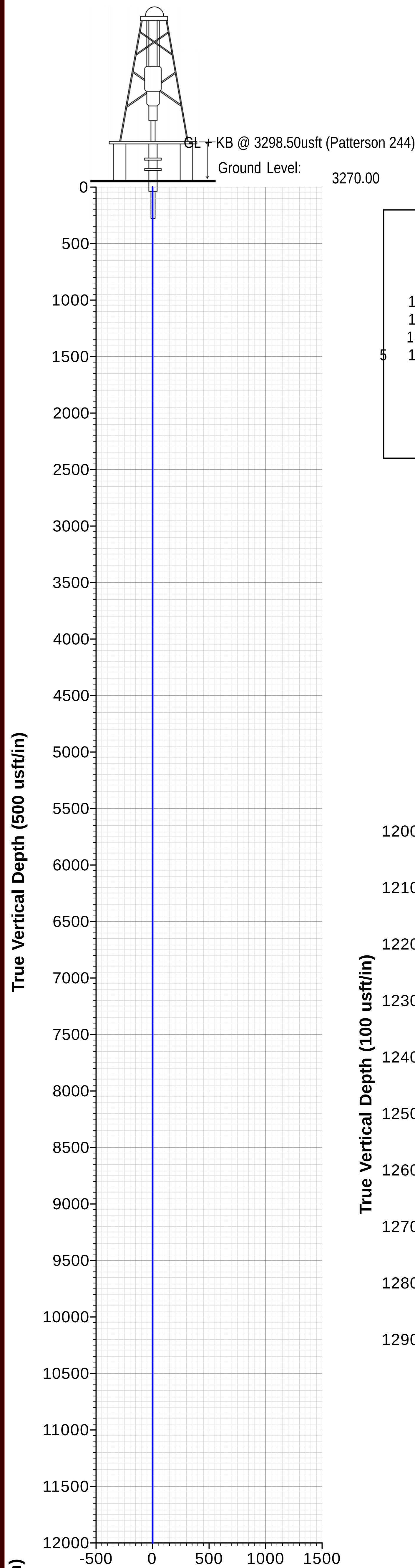
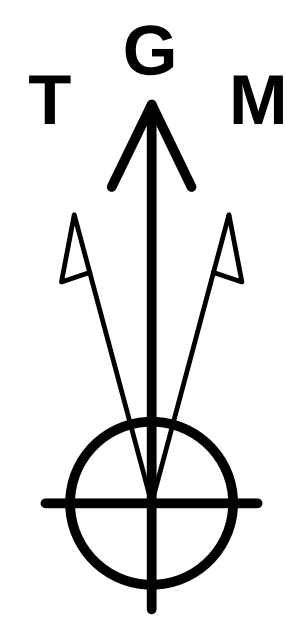
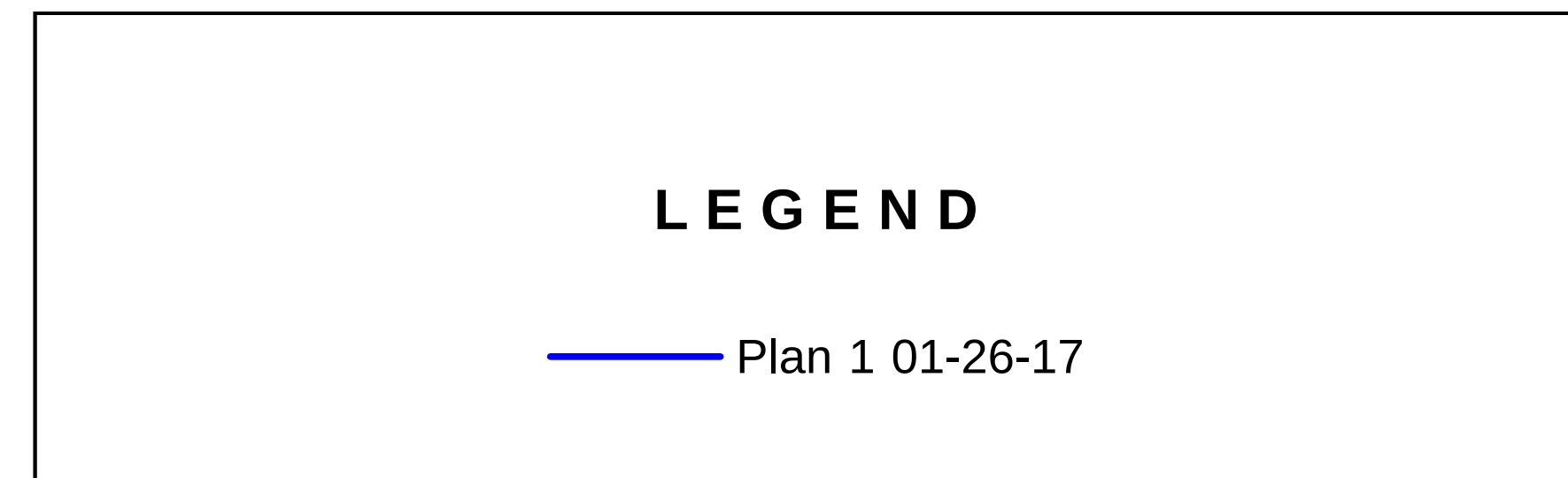




WELL DETAILS						
+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude
0.00	0.00	388806.12	3270.00	790365.00	32° 3' 55.71694 N	103° 23' 45.62755 W

SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12177.04	0.00	0.00	12177.04	0.00	0.00	0.00	0.00	0.00		KOP, Begin 10.00°/100' Build
13077.04	90.00	349.05	12750.00	562.53	-108.83	10.00	349.05	566.56		LP, Hold 90.00° Inc, Begin 2.00°/100' Turn
13595.41	90.00	359.42	12750.00	1077.57	-160.84	2.00	90.00	1083.33		Hold 359.42° Azm
17286.02	90.00	359.42	12750.00	4767.99	-198.37	0.00	0.00	4772.11	BHL - Cave Lion 5 Federal WC 5H	TD at 17286.02

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Cave Lion 5 Federal WC 5H	12750.00	4767.99	-198.37	393574.11	790166.63	32° 4' 42.91466 N	103° 23' 47.45152 W
FTP - Cave Lion 5 Federal WC 5H	12750.00	143.92	-151.41	388950.04	790213.59	32° 3' 57.15408 N	103° 23' 47.37239 W



Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

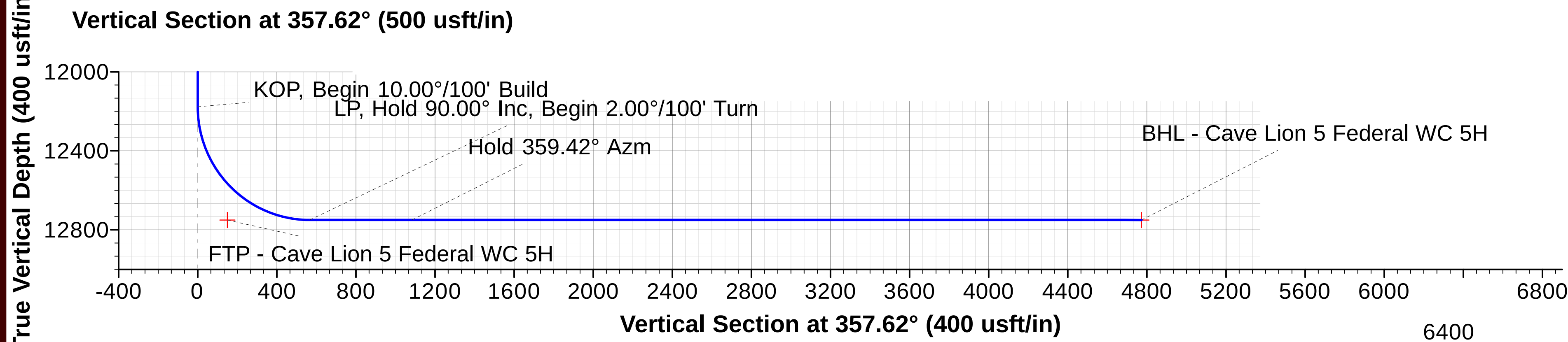
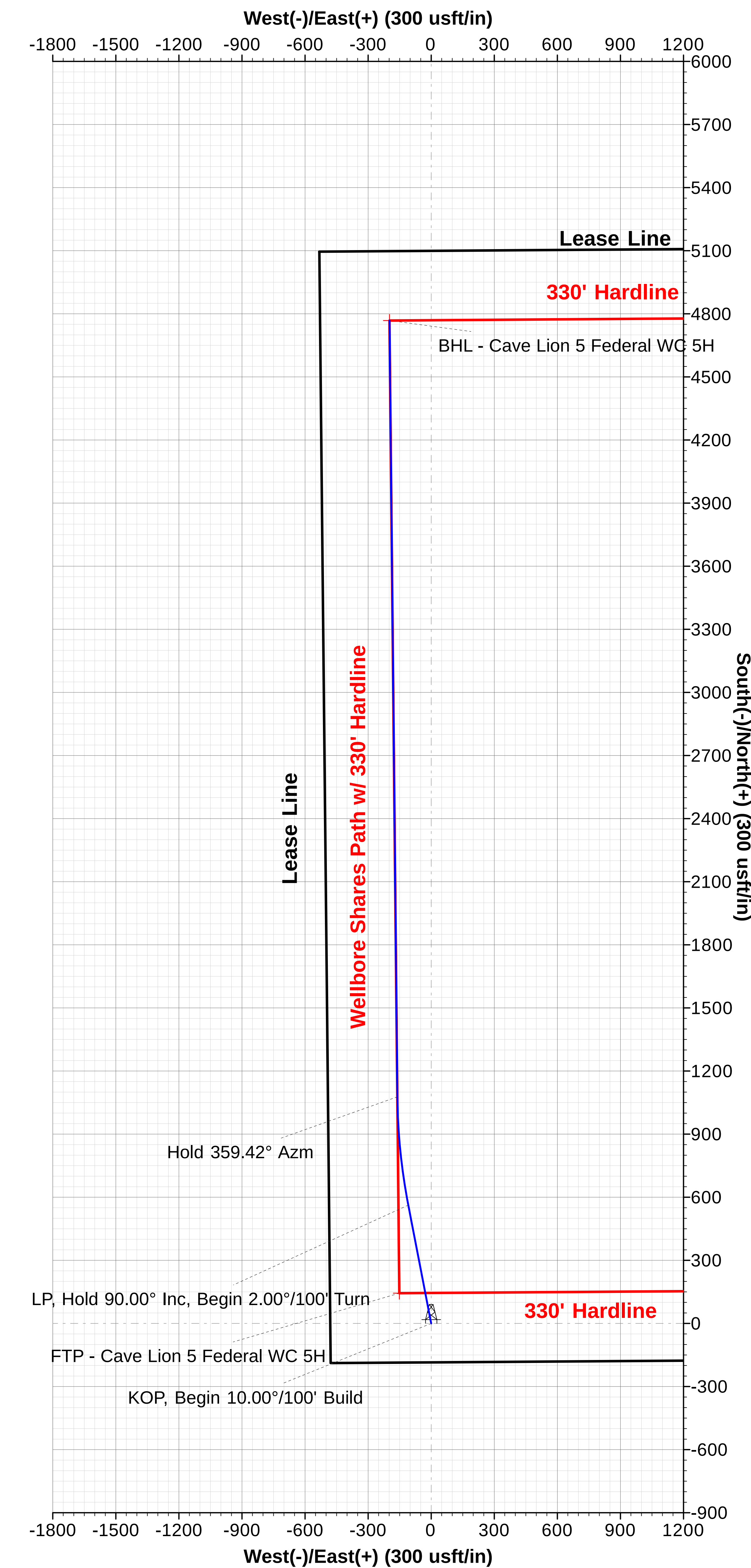
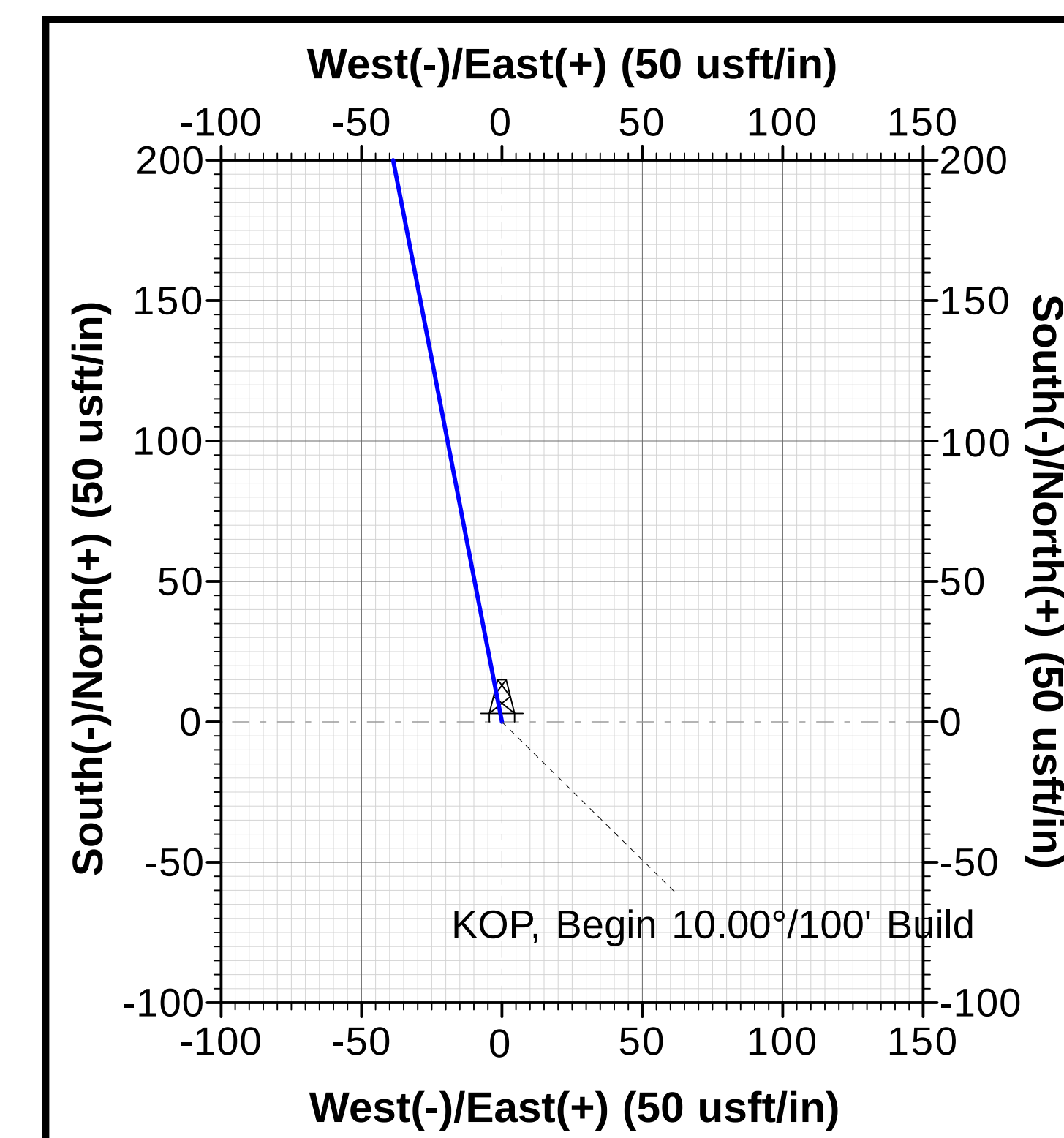
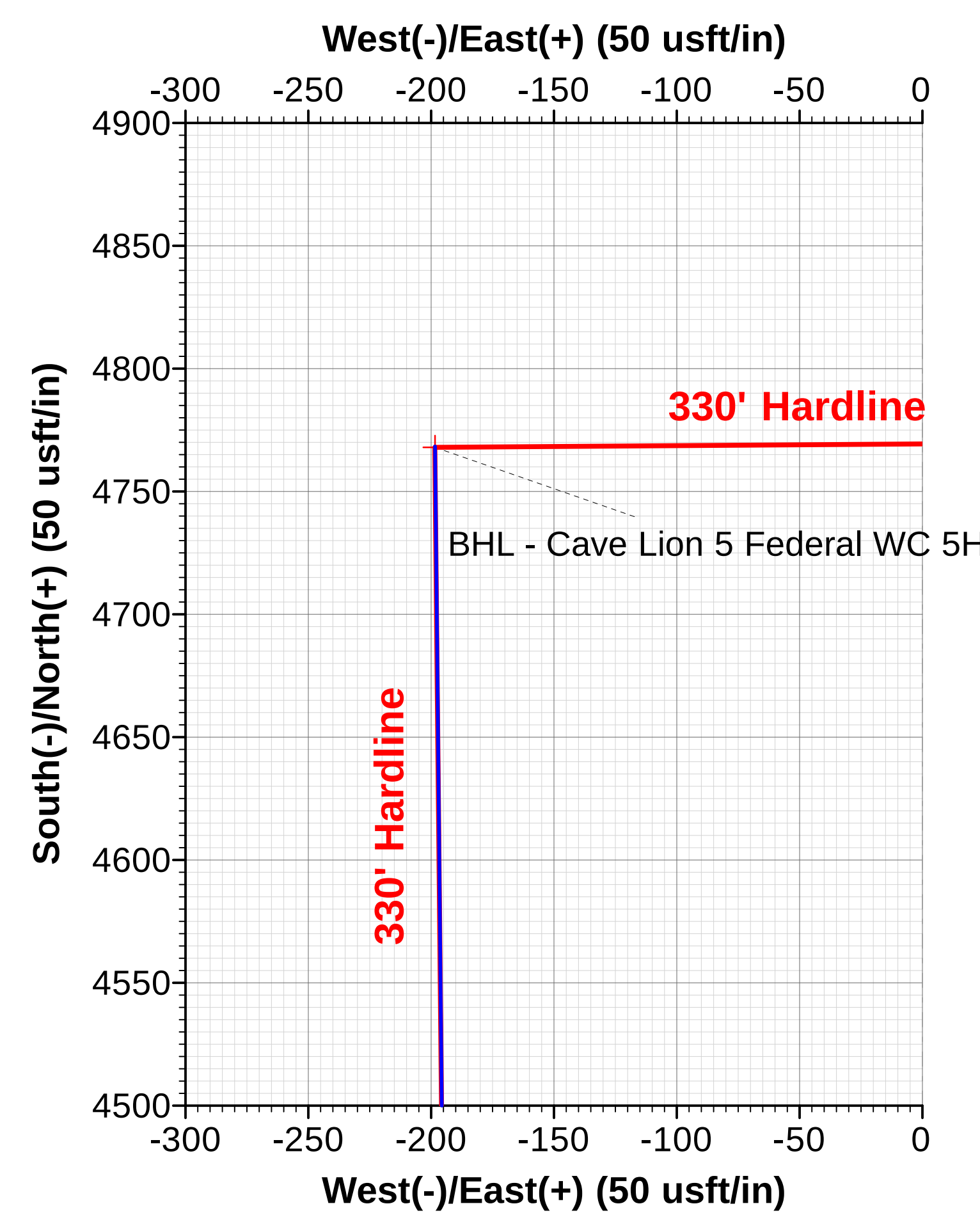
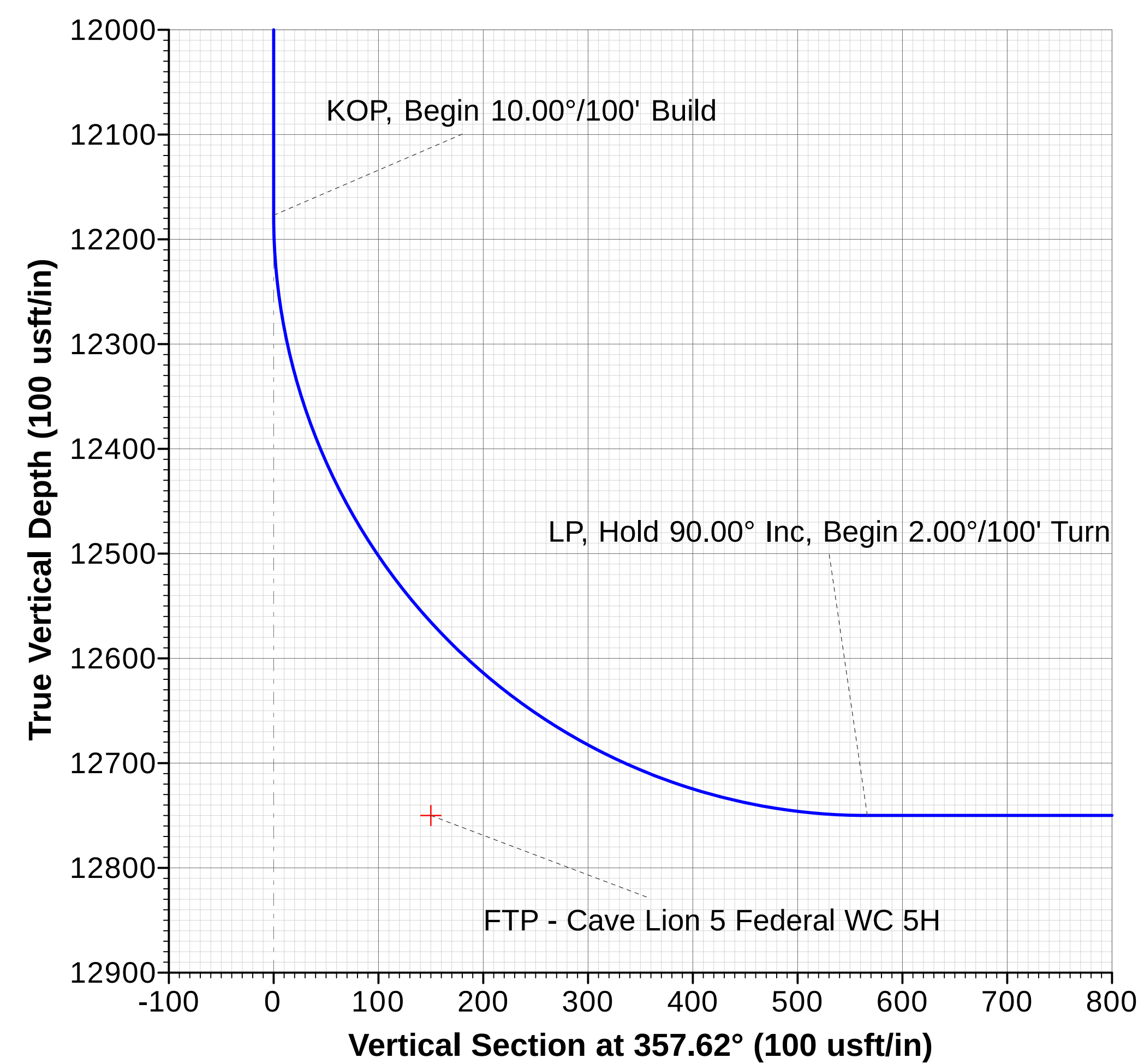
Local Origin: Well 5H, Grid North

Latitude: 32° 3' 55.71694 N
Longitude: 103° 23' 45.62755 W

Grid East: 790365.00
Grid North: 388806.12
Scale Factor: 1.000

Geomagnetic Model: HDGM
Sample Date: 26-Jan-17
Magnetic Declination: 6.80°
Dip Angle from Horizontal: 59.80°
Magnetic Field Strength: 47970

To convert a Magnetic Direction to a Grid Direction, Add 6.30°
To convert a Magnetic Direction to a True Direction, Add 6.80° East
To convert a True Direction to a Grid Direction, Subtract 0.50°



OCD – HOBBS
10/06/2017
RECEIVED



BC Operating, Inc.

Lea County, NM (NAD27 NME)

Cave Lion 5 Federal WC

5H

OH

Plan: Plan 1 01-26-17

Standard Planning Report

26 January, 2017



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 5H
Company:	BC Operating, Inc.	TVD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Site:	Cave Lion 5 Federal WC	North Reference:	Grid
Well:	5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-26-17		

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site		Cave Lion 5 Federal WC			
Site Position:		Northing:	388,806.12 usft	Latitude:	32° 3' 55.71694 N
From:	Map	Easting:	790,365.00 usft	Longitude:	103° 23' 45.62755 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.50 °

Well	5H					
Well Position	+N/-S	0.00 usft	Northing:	388,806.12 usft	Latitude:	32° 3' 55.71694 N
	+E/-W	0.00 usft	Easting:	790,365.00 usft	Longitude:	103° 23' 45.62755 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,270.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/26/2017	6.80	59.80	47,970

Design	Plan 1 01-26-17			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	357.62

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12,177.04	0.00	0.00	12,177.04	0.00	0.00	0.00	0.00	0.00	0.00	
13,077.04	90.00	349.05	12,750.00	562.53	-108.83	10.00	10.00	0.00	349.05	
13,595.41	90.00	359.42	12,750.00	1,077.57	-160.84	2.00	0.00	2.00	90.00	
17,286.02	90.00	359.42	12,750.00	4,767.99	-198.37	0.00	0.00	0.00	0.00	BHL - Cave Lion 5 I

Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 5H
Company:	BC Operating, Inc.	TVD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Site:	Cave Lion 5 Federal WC	North Reference:	Grid
Well:	5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-26-17		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12,177.04	0.00	0.00	12,177.04	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 10.00°/100' Build									
12,200.00	2.30	349.05	12,199.99	0.45	-0.09	0.45	10.00	10.00	0.00
12,300.00	12.30	349.05	12,299.06	12.90	-2.50	13.00	10.00	10.00	0.00
12,400.00	22.30	349.05	12,394.42	42.06	-8.14	42.36	10.00	10.00	0.00
12,500.00	32.30	349.05	12,483.17	87.02	-16.84	87.65	10.00	10.00	0.00
12,600.00	42.30	349.05	12,562.62	146.44	-28.33	147.49	10.00	10.00	0.00
12,700.00	52.30	349.05	12,630.35	218.50	-42.27	220.06	10.00	10.00	0.00
12,800.00	62.30	349.05	12,684.31	301.01	-58.24	303.17	10.00	10.00	0.00
12,900.00	72.30	349.05	12,722.86	391.46	-75.74	394.27	10.00	10.00	0.00
13,000.00	82.30	349.05	12,744.83	487.12	-94.24	490.61	10.00	10.00	0.00
13,077.04	90.00	349.05	12,750.00	562.53	-108.83	566.56	10.00	10.00	0.00
LP, Hold 90.00° Inc, Begin 2.00°/100' Turn									
13,100.00	90.00	349.51	12,750.00	585.09	-113.11	589.28	2.00	0.00	2.00
13,200.00	90.00	351.51	12,750.00	683.71	-129.59	688.51	2.00	0.00	2.00
13,300.00	90.00	353.51	12,750.00	782.85	-142.63	788.11	2.00	0.00	2.00
13,400.00	90.00	355.51	12,750.00	882.39	-152.20	887.95	2.00	0.00	2.00
13,500.00	90.00	357.51	12,750.00	982.20	-158.29	987.93	2.00	0.00	2.00
13,595.41	90.00	359.42	12,750.00	1,077.57	-160.84	1,083.33	2.00	0.00	2.00
Hold 359.42° Azm									
13,600.00	90.00	359.42	12,750.00	1,082.16	-160.89	1,087.91	0.00	0.00	0.00
13,700.00	90.00	359.42	12,750.00	1,182.15	-161.91	1,187.86	0.00	0.00	0.00
13,800.00	90.00	359.42	12,750.00	1,282.15	-162.93	1,287.81	0.00	0.00	0.00
13,900.00	90.00	359.42	12,750.00	1,382.14	-163.94	1,387.76	0.00	0.00	0.00
14,000.00	90.00	359.42	12,750.00	1,482.14	-164.96	1,487.71	0.00	0.00	0.00
14,100.00	90.00	359.42	12,750.00	1,582.13	-165.98	1,587.67	0.00	0.00	0.00
14,200.00	90.00	359.42	12,750.00	1,682.13	-166.99	1,687.62	0.00	0.00	0.00
14,300.00	90.00	359.42	12,750.00	1,782.12	-168.01	1,787.57	0.00	0.00	0.00
14,400.00	90.00	359.42	12,750.00	1,882.12	-169.03	1,887.52	0.00	0.00	0.00
14,500.00	90.00	359.42	12,750.00	1,982.11	-170.04	1,987.47	0.00	0.00	0.00
14,600.00	90.00	359.42	12,750.00	2,082.11	-171.06	2,087.42	0.00	0.00	0.00
14,700.00	90.00	359.42	12,750.00	2,182.10	-172.08	2,187.37	0.00	0.00	0.00
14,800.00	90.00	359.42	12,750.00	2,282.10	-173.09	2,287.32	0.00	0.00	0.00
14,900.00	90.00	359.42	12,750.00	2,382.09	-174.11	2,387.27	0.00	0.00	0.00
15,000.00	90.00	359.42	12,750.00	2,482.09	-175.13	2,487.22	0.00	0.00	0.00
15,100.00	90.00	359.42	12,750.00	2,582.08	-176.14	2,587.17	0.00	0.00	0.00
15,200.00	90.00	359.42	12,750.00	2,682.08	-177.16	2,687.12	0.00	0.00	0.00
15,300.00	90.00	359.42	12,750.00	2,782.07	-178.18	2,787.07	0.00	0.00	0.00
15,400.00	90.00	359.42	12,750.00	2,882.07	-179.19	2,887.02	0.00	0.00	0.00
15,500.00	90.00	359.42	12,750.00	2,982.06	-180.21	2,986.97	0.00	0.00	0.00
15,600.00	90.00	359.42	12,750.00	3,082.06	-181.23	3,086.93	0.00	0.00	0.00
15,700.00	90.00	359.42	12,750.00	3,182.05	-182.24	3,186.88	0.00	0.00	0.00
15,800.00	90.00	359.42	12,750.00	3,282.05	-183.26	3,286.83	0.00	0.00	0.00
15,900.00	90.00	359.42	12,750.00	3,382.04	-184.28	3,386.78	0.00	0.00	0.00
16,000.00	90.00	359.42	12,750.00	3,482.04	-185.29	3,486.73	0.00	0.00	0.00
16,100.00	90.00	359.42	12,750.00	3,582.03	-186.31	3,586.68	0.00	0.00	0.00
16,200.00	90.00	359.42	12,750.00	3,682.03	-187.33	3,686.63	0.00	0.00	0.00
16,300.00	90.00	359.42	12,750.00	3,782.02	-188.34	3,786.58	0.00	0.00	0.00
16,400.00	90.00	359.42	12,750.00	3,882.01	-189.36	3,886.53	0.00	0.00	0.00
16,500.00	90.00	359.42	12,750.00	3,982.01	-190.38	3,986.48	0.00	0.00	0.00
16,600.00	90.00	359.42	12,750.00	4,082.00	-191.39	4,086.43	0.00	0.00	0.00
16,700.00	90.00	359.42	12,750.00	4,182.00	-192.41	4,186.38	0.00	0.00	0.00

Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 5H
Company:	BC Operating, Inc.	TVD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3298.50usft (Patterson 244)
Site:	Cave Lion 5 Federal WC	North Reference:	Grid
Well:	5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-26-17		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,800.00	90.00	359.42	12,750.00	4,281.99	-193.43	4,286.33	0.00	0.00	0.00
16,900.00	90.00	359.42	12,750.00	4,381.99	-194.45	4,386.28	0.00	0.00	0.00
17,000.00	90.00	359.42	12,750.00	4,481.98	-195.46	4,486.24	0.00	0.00	0.00
17,100.00	90.00	359.42	12,750.00	4,581.98	-196.48	4,586.19	0.00	0.00	0.00
17,200.00	90.00	359.42	12,750.00	4,681.97	-197.50	4,686.14	0.00	0.00	0.00
17,286.02	90.00	359.42	12,750.00	4,767.99	-198.37	4,772.11	0.00	0.00	0.00
TD at 17286.02									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL - Cave Lion 5 Fe	0.00	0.00	12,750.00	4,767.99	-198.37	393,574.11	790,166.63	32° 4' 42.91466 N	03° 23' 47.45152 W
- plan hits target center									
- Point									
FTP - Cave Lion 5 Fe	0.00	0.00	12,750.00	143.92	-151.41	388,950.04	790,213.59	32° 3' 57.15408 N	03° 23' 47.37239 W
- plan misses target center by 176.08usft at 12720.51usft MD (12642.60 TVD, 234.64 N, -45.40 E)									
- Point									

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,177.04	12,177.04	0.00	0.00	KOP, Begin 10.00°/100' Build
13,077.04	12,750.00	562.53	-108.83	LP, Hold 90.00° Inc, Begin 2.00°/100' Turn
13,595.41	12,750.00	1,077.57	-160.84	Hold 359.42° Azm
17,286.02	12,750.00	4,767.99	-198.37	TD at 17286.02