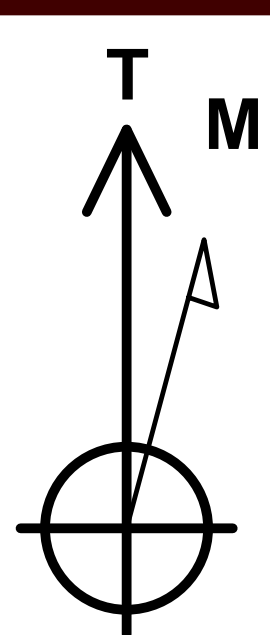




Project: Weld County, CO (NAD83)
Site: Stromberger
Well: 8
Wellbore: OH / Job #60892
Design: Plan 5 03-22-17
Rig: Patterson 346

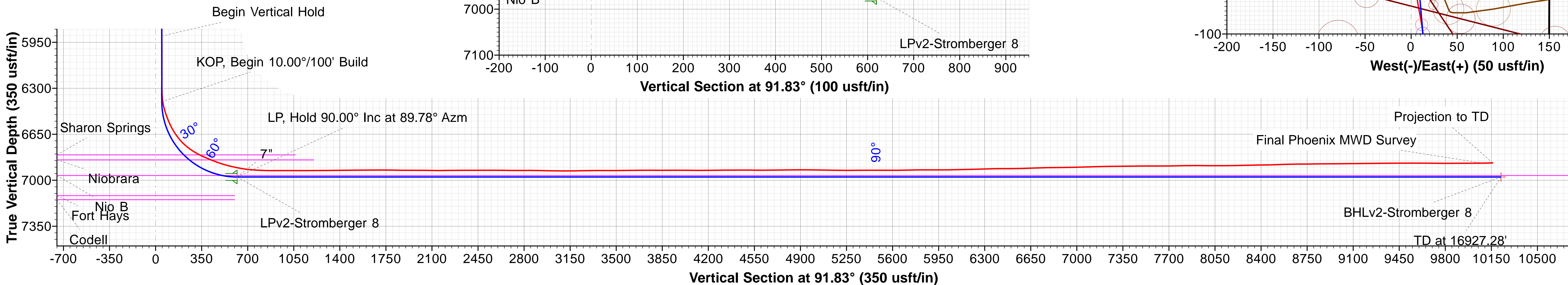
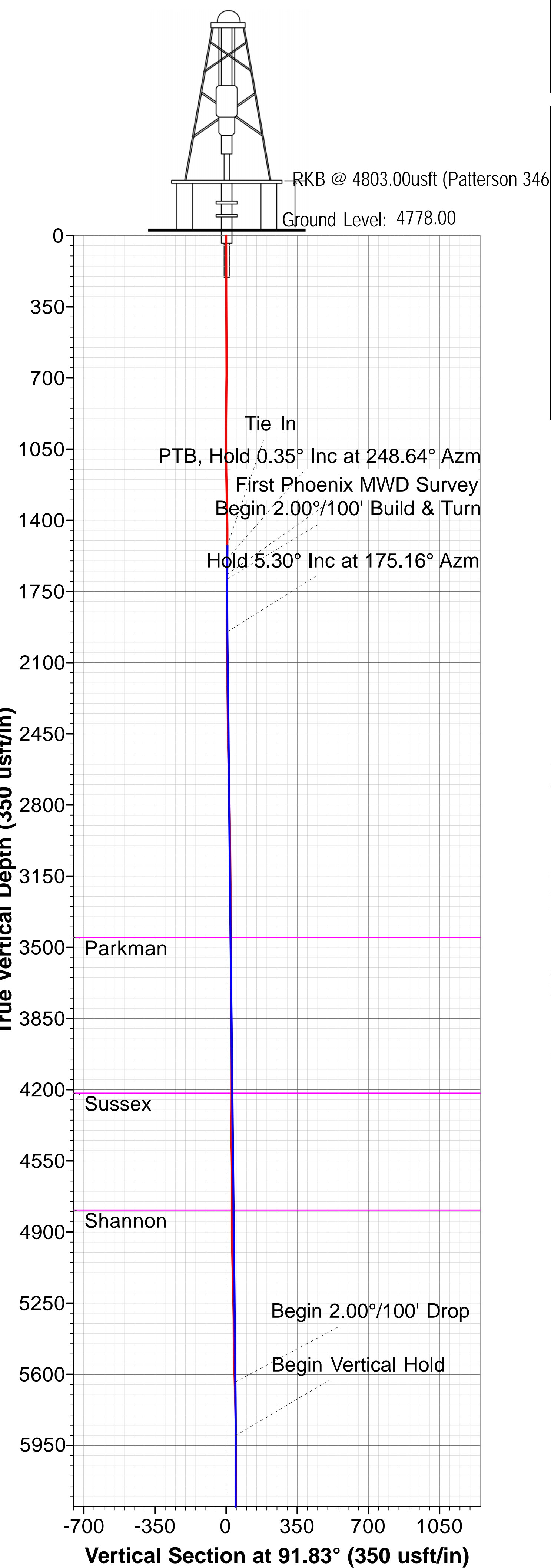


Azimuths to True North
Magnetic North: 8.43°

Magnetic Field
Strength: 52481.1snT
Dip Angle: 66.93°
Date: 3/15/2017
Model: HDGM

LEGEND

- 1, OH / Job #60885, Surveys (Patterson 346) V0
- #22CD, OH, Surveys V0
- 8, OH / Job #60892, Surveys (Patterson 346) V0
- 24-15, OH, Surveys V0
- 3, OH / Job #60887, Surveys (Patterson 346) V0
- 11, OH / Job #61092, Plan 1 04-09-17 V0
- 7, OH / Job #60891, Surveys (Patterson 346) V0
- 24-13, OH, Surveys V0
- 24-14, OH, Surveys V0
- 4, OH / Job #60888, Surveys (Patterson 346) V0
- 23-13, OH, Surveys V0
- 23-12, OH, Surveys V0
- 1, OH, Surveys V0
- 10, OH, Plan 1 V0
- #42-22D, OH, Surveys V0
- 5, OH / Job #60889, Surveys (Patterson 346) V0
- 24-11, OH, Surveys V0
- 2, OH / Job #60886, Surveys (Patterson 346) V0
- 2, ST01 / Job #60886, ST01 / Job #60886 V0
- 6, OH / Job #60890, Surveys (Patterson 346) V0
- 23-15, OH, Surveys V0
- 2, OH, Surveys V0
- #41-22D, OH, Surveys V0
- Plan 5 03-22-17



WELL DETAILS						
			Ground Level:	4778.00		
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	1416161.34	3175028.56	40° 28' 26.616 N	104° 52' 15.103 W	

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSect	Target	Annotation
1	1524.00	0.35	248.64	1523.77	0.49	6.01	0.00	0.00	5.99		Tie In
2	1589.00	0.35	248.64	1588.77	0.34	5.64	0.00	0.00	5.62		PTB, Hold 0.35° Inc at 248.64° Azm
3	1689.00	0.35	248.64	1688.77	0.12	5.07	0.00	0.00	5.06		Begin 2.00°/100' Build & Turn
4	1949.35	5.30	175.16	1948.74	-12.15	5.34	2.00	-77.16	5.73		Hold 5.30° Inc at 175.16° Azm
5	5654.05	5.30	175.16	5637.63	-352.86	34.19	0.00	0.00	45.41		Begin 2.00°/100' Drop
6	5918.84	0.00	0.00	5902.04	-365.04	35.22	2.00	180.00	46.83		Begin Vertical Hold
7	6418.84	0.00	0.00	6402.04	-365.04	35.22	0.00	0.00	46.83		KOP, Begin 10.00°/100' Build
8	7318.84	90.00	89.78	6975.00	-362.83	608.17	10.00	89.78	619.43		LP, Hold 90.00° Inc at 89.78° Azm
9	16928.82	90.00	89.78	6975.00	-325.74	10218.09	0.00	0.00	10223.28	BHLv2-Stromberger 8	TD at 16927.28'

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
BHLv2-Stromberger 8	6975.00	-325.74	10218.09	1415908.10	3185248.70	40° 28' 23.376 N	104° 50' 2.882 W	Point	
LPv2-Stromberger 8	6975.00	-362.83	608.17	1415802.84	3175639.29	40° 28' 23.030 N	104° 52' 7.234 W	Point	

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: Colorado Northern Zone

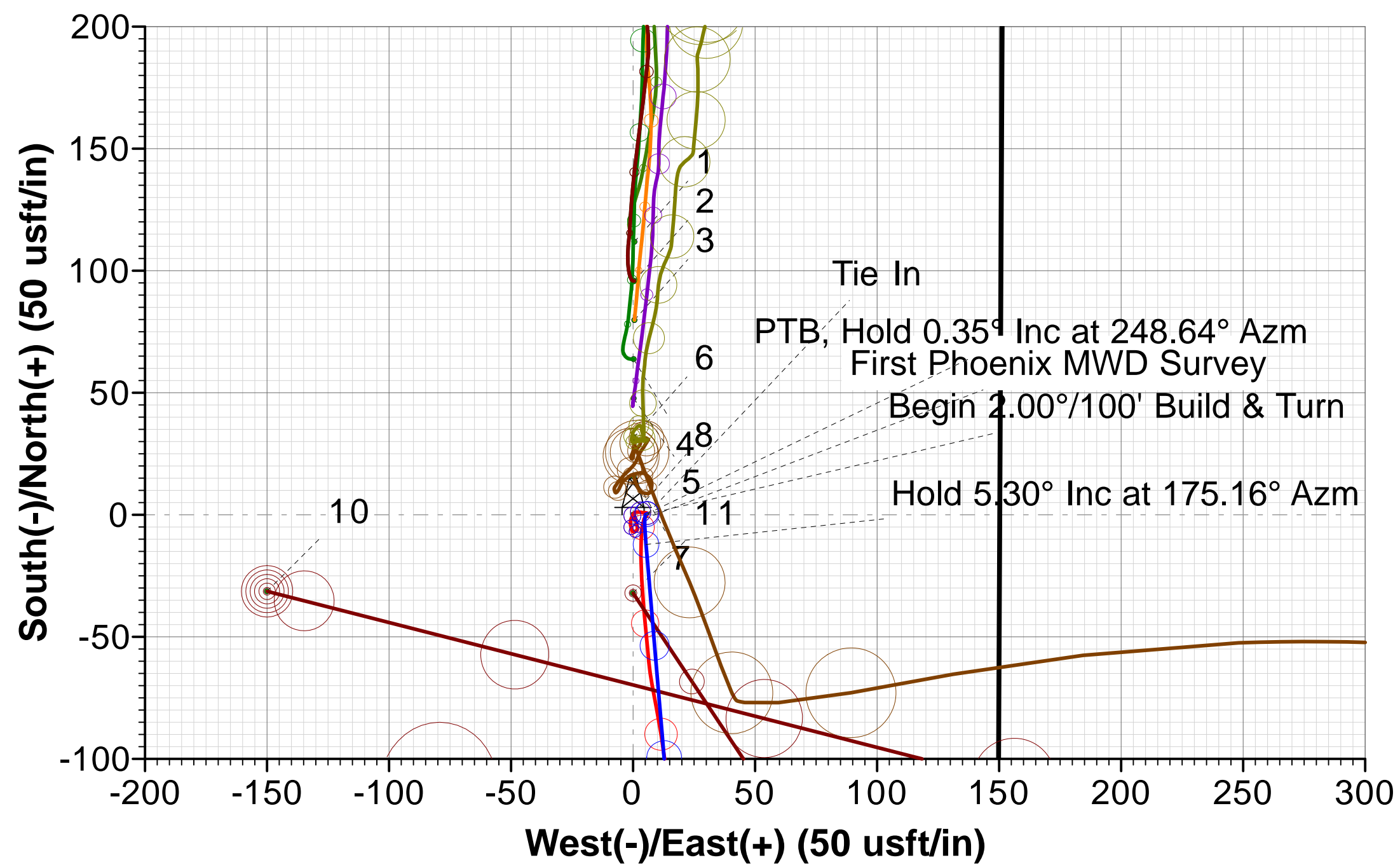
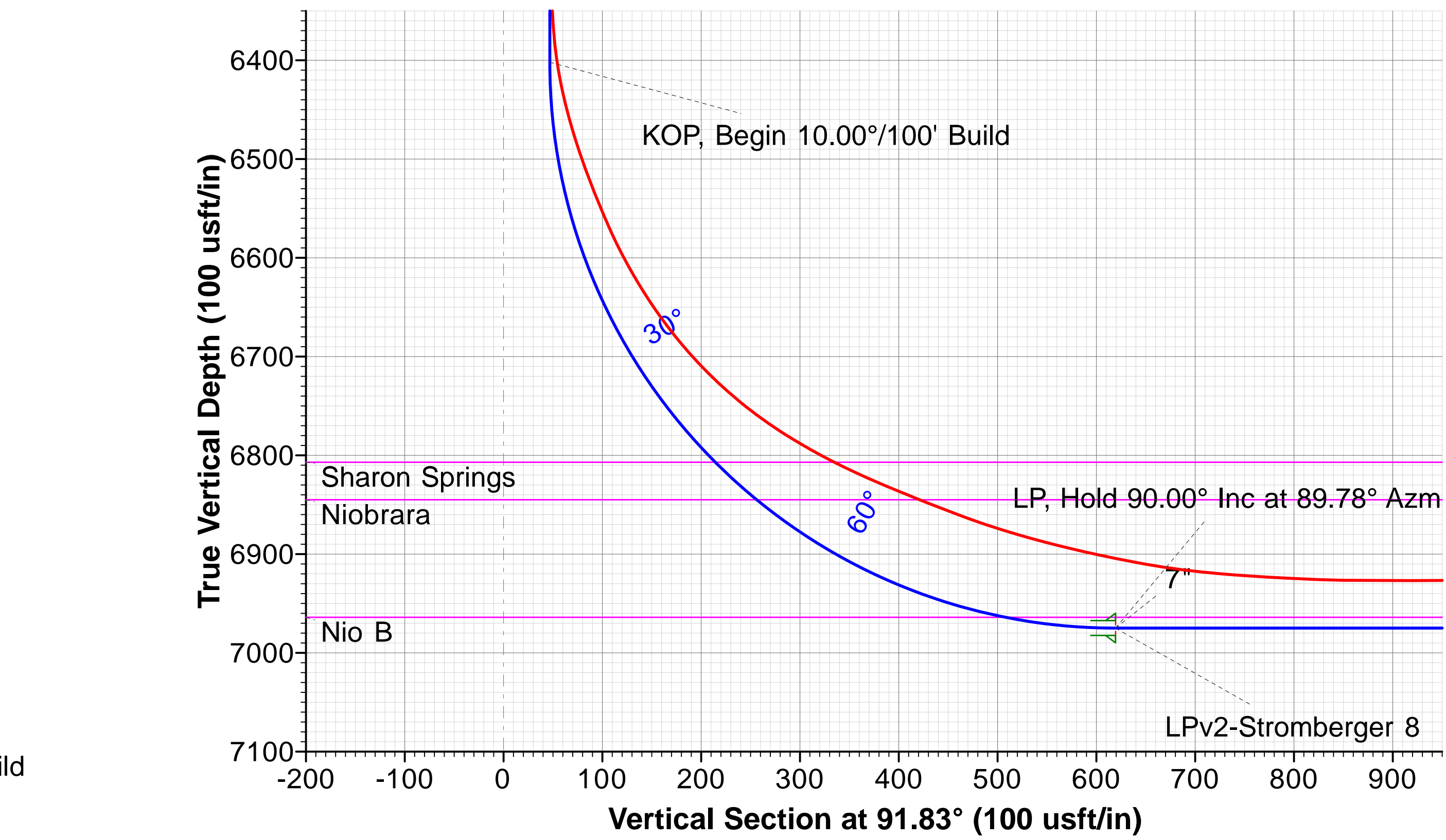
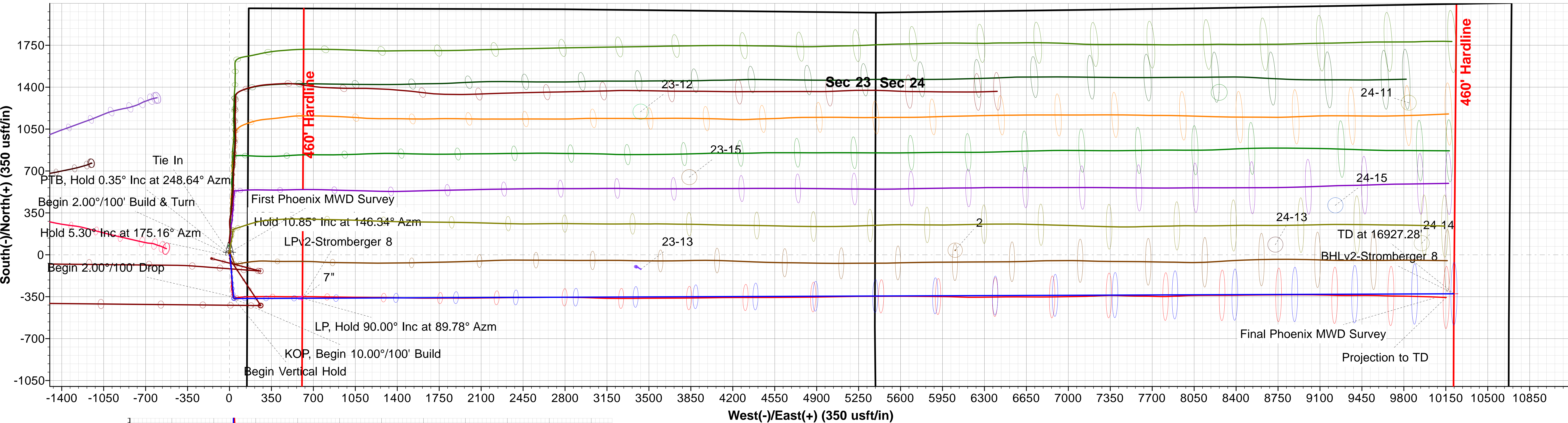
Local Origin: Well 8, True North

Latitude: 40° 28' 26.616 N
Longitude: 104° 52' 15.103 W

Grid East: 3175028.56
Grid North: 1416161.34
Scale Factor: 1.000

Geomagnetic Model: HDGM
Sample Date: 15-Mar-17
Magnetic Declination: 8.43°
Dip Angle from Horizontal: 66.93°
Magnetic Field Strength: 52481

To convert a Magnetic Direction to a Grid Direction, Add 8.03°
To convert a Magnetic Direction to a True Direction, Add 8.43° East
To convert a True Direction to a Grid Direction, Subtract 0.41°



FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
3452.00	3459.05	Parkman	0.00	91.83
4217.00	4227.33	Sussex	0.00	91.83
4792.00	4804.80	Shannon	0.00	91.83
6807.00	6868.58	Sharon Springs	0.00	91.83
6845.00	6925.18	Niobrara	0.00	91.83
6964.00	7206.40	Nio B	0.00	91.83