

Edge Energy LLC

Weld County, Co (NAD 83)

Sec. 10 Twn 4N Rng 63W

70 Ranch-10-11-7 - Slot A7

Hz

UWI:

WL:

Plan: #1

Standard Planning Report

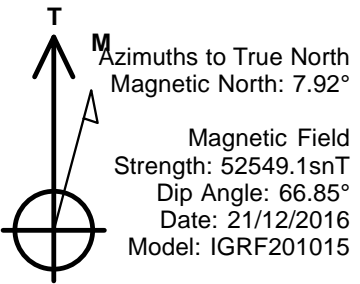
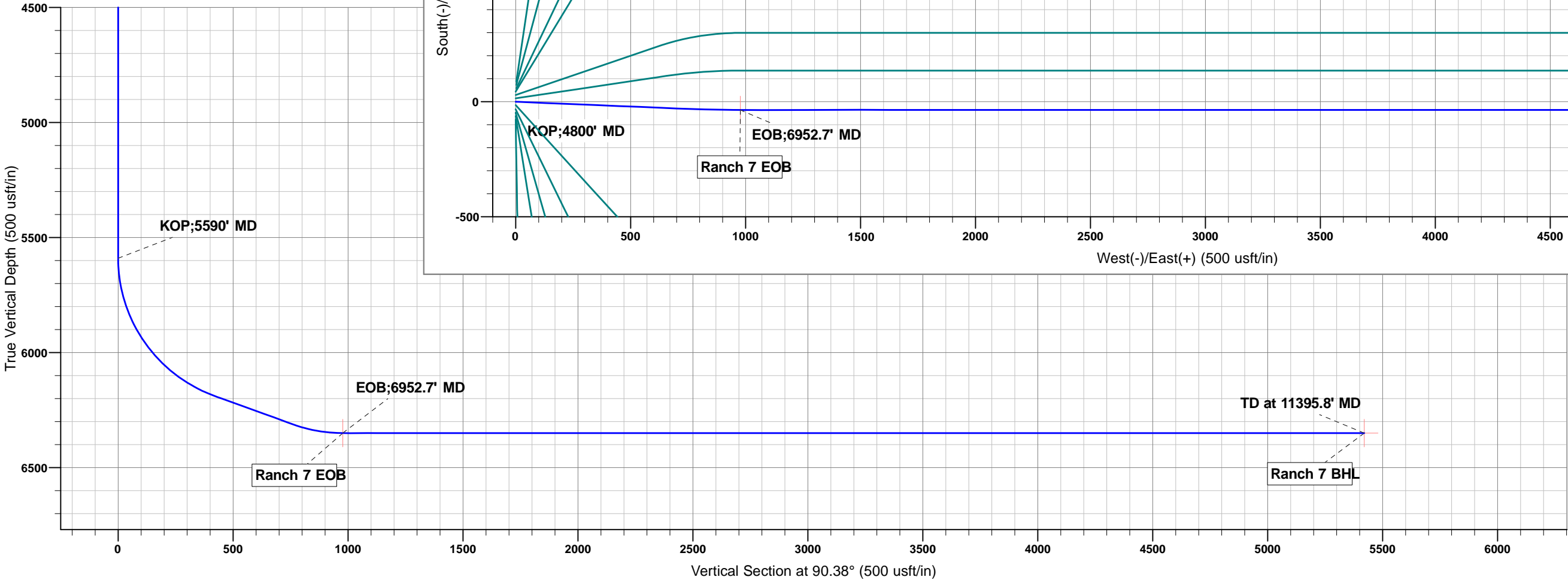
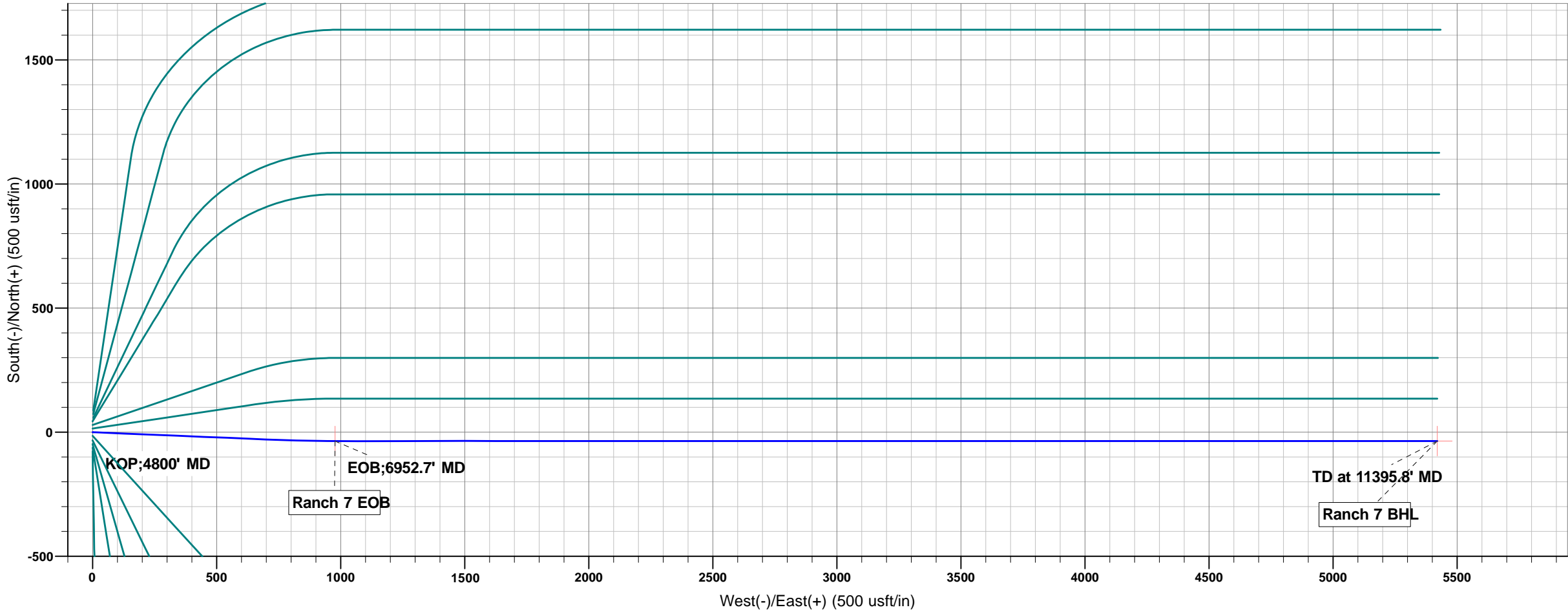
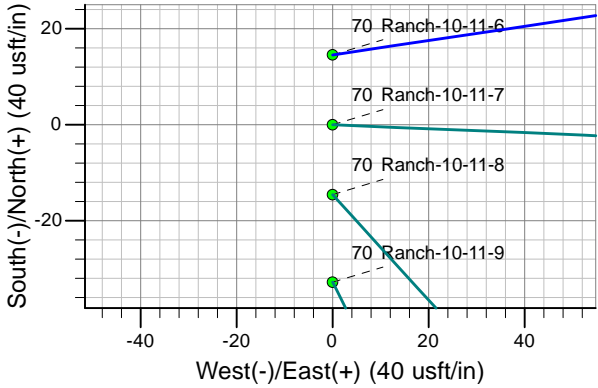
28 December, 2016

Project: Weld County, Co (NAD 83)
Site: Sec. 10 Twn 4N Rng 63W
Well: 70 Ranch-10-11-7
Wellbore: Hz
Plan: #1

Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
Northing: 1363934.87
Easting: 3301962.00
Latitude: 40° 19' 38.42388 N
Longitude: 104° 25' 0.94800 W
Grid Convergence: 0.70° West
Ground Elevation: 4605.0
KB Elevation: RKB @ 4625.0usft (kb;20')

PLAN DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5590.0	0.00	0.00	5590.0	0.0	0.0	0.00	0.00	0.0	
3	6368.6	70.07	92.37	6188.5	-17.4	419.3	9.00	92.37	419.4	
4	6729.8	70.07	92.37	6311.6	-31.4	758.6	0.00	0.00	758.8	
5	6952.7	90.00	90.00	6350.0	-35.8	977.0	9.00	-6.93	977.2	Ranch 7 EOB
6	11395.8	90.00	90.00	6350.0	-35.8	5420.1	0.00	0.00	5420.2	Ranch 7 BHL



Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Company:	Edge Energy LLC	TVD Reference:	RKB @ 4625.0usft (kb;20')
Project:	Weld County, Co (NAD 83)	MD Reference:	RKB @ 4625.0usft (kb;20')
Site:	Sec. 10 Twn 4N Rng 63W	North Reference:	True
Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	#1		

Project	Weld County, Co (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec. 10 Twn 4N Rng 63W			
Site Position:		Northing:	1,364,022.34 usft	Latitude:	40° 19' 39.28800 N
From:	Lat/Long	Easting:	3,301,963.73 usft	Longitude:	104° 25' 0.91200 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.70 °

Well	70 Ranch-10-11-7 - Slot A7					
Well Position	+N/-S	-87.4 usft	Northing:	1,363,934.87 usft	Latitude:	40° 19' 38.42388 N
	+E/-W	-2.8 usft	Easting:	3,301,962.01 usft	Longitude:	104° 25' 0.94800 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,605.0 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF201015	21/12/2016	7.92	66.85	52,549

Design	#1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	90.38

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,590.0	0.00	0.00	5,590.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,368.6	70.07	92.37	6,188.5	-17.4	419.3	9.00	9.00	0.00	92.37	
6,729.8	70.07	92.37	6,311.6	-31.4	758.6	0.00	0.00	0.00	0.00	
6,952.7	90.00	90.00	6,350.0	-35.8	977.0	9.00	8.94	-1.06	-6.93	Ranch 7 EOB
11,395.8	90.00	90.00	6,350.0	-35.8	5,420.1	0.00	0.00	0.00	0.00	Ranch 7 BHL

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Company:	Edge Energy LLC	TVD Reference:	RKB @ 4625.0usft (kb;20')
Project:	Weld County, Co (NAD 83)	MD Reference:	RKB @ 4625.0usft (kb;20')
Site:	Sec. 10 Twn 4N Rng 63W	North Reference:	True
Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	#1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-4,625.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP;5590' MD										
5,590.0	0.00	0.00	5,590.0	965.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.90	92.37	5,600.0	975.0	0.0	0.1	0.1	9.00	9.00	0.00
5,700.0	9.90	92.37	5,699.5	1,074.5	-0.4	9.5	9.5	9.00	9.00	0.00
5,800.0	18.90	92.37	5,796.2	1,171.2	-1.4	34.3	34.3	9.00	9.00	0.00
5,900.0	27.90	92.37	5,887.9	1,262.9	-3.1	73.9	74.0	9.00	9.00	0.00
6,000.0	36.90	92.37	5,972.2	1,347.2	-5.3	127.4	127.4	9.00	9.00	0.00
6,100.0	45.90	92.37	6,047.2	1,422.2	-8.0	193.4	193.5	9.00	9.00	0.00
6,200.0	54.90	92.37	6,110.9	1,485.9	-11.2	270.3	270.4	9.00	9.00	0.00
6,300.0	63.90	92.37	6,161.7	1,536.7	-14.8	356.2	356.3	9.00	9.00	0.00
6,368.6	70.07	92.37	6,188.5	1,563.5	-17.4	419.3	419.4	9.00	9.00	0.00
6,400.0	70.07	92.37	6,199.2	1,574.2	-18.6	448.8	448.9	0.00	0.00	0.00
6,500.0	70.07	92.37	6,233.3	1,608.3	-22.5	542.7	542.9	0.00	0.00	0.00
6,600.0	70.07	92.37	6,267.4	1,642.4	-26.4	636.7	636.8	0.00	0.00	0.00
6,700.0	70.07	92.37	6,301.5	1,676.5	-30.3	730.6	730.8	0.00	0.00	0.00
6,729.8	70.07	92.37	6,311.6	1,686.6	-31.4	758.6	758.8	0.00	0.00	0.00
6,800.0	76.34	91.59	6,331.9	1,706.9	-33.8	825.7	825.9	9.00	8.94	-1.12
6,900.0	85.28	90.54	6,347.8	1,722.8	-35.6	924.3	924.5	9.00	8.94	-1.05
EOB;6952.7' MD										
6,952.7	90.00	90.00	6,350.0	1,725.0	-35.8	977.0	977.2	9.00	8.94	-1.02
7,000.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,024.3	1,024.5	0.01	0.01	0.00
7,100.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,124.3	1,124.5	0.00	0.00	0.00
7,200.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,224.3	1,224.5	0.00	0.00	0.00
7,300.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,324.3	1,324.5	0.00	0.00	0.00
7,400.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,424.3	1,424.5	0.00	0.00	0.00
7,500.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,524.3	1,524.5	0.00	0.00	0.00
7,600.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,624.3	1,624.5	0.00	0.00	0.00
7,700.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,724.3	1,724.5	0.00	0.00	0.00
7,800.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,824.3	1,824.4	0.00	0.00	0.00
7,900.0	90.00	90.00	6,350.0	1,725.0	-35.8	1,924.3	1,924.4	0.00	0.00	0.00
8,000.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,024.3	2,024.4	0.00	0.00	0.00
8,100.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,124.3	2,124.4	0.00	0.00	0.00
8,200.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,224.3	2,224.4	0.00	0.00	0.00
8,300.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,324.3	2,324.4	0.00	0.00	0.00
8,400.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,424.3	2,424.4	0.00	0.00	0.00
8,500.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,524.3	2,524.4	0.00	0.00	0.00
8,600.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,624.3	2,624.4	0.00	0.00	0.00
8,700.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,724.3	2,724.4	0.00	0.00	0.00
8,800.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,824.3	2,824.4	0.00	0.00	0.00
8,900.0	90.00	90.00	6,350.0	1,725.0	-35.8	2,924.3	2,924.4	0.00	0.00	0.00
9,000.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,024.3	3,024.4	0.00	0.00	0.00
9,100.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,124.3	3,124.4	0.00	0.00	0.00
9,200.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,224.3	3,224.4	0.00	0.00	0.00
9,300.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,324.3	3,324.4	0.00	0.00	0.00
9,400.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,424.3	3,424.4	0.00	0.00	0.00

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Company:	Edge Energy LLC	TVD Reference:	RKB @ 4625.0usft (kb;20')
Project:	Weld County, Co (NAD 83)	MD Reference:	RKB @ 4625.0usft (kb;20')
Site:	Sec. 10 Twn 4N Rng 63W	North Reference:	True
Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	#1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,500.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,524.3	3,524.4	0.00	0.00	0.00
9,600.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,624.3	3,624.4	0.00	0.00	0.00
9,700.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,724.3	3,724.4	0.00	0.00	0.00
9,800.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,824.3	3,824.4	0.00	0.00	0.00
9,900.0	90.00	90.00	6,350.0	1,725.0	-35.8	3,924.3	3,924.4	0.00	0.00	0.00
10,000.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,024.3	4,024.4	0.00	0.00	0.00
10,100.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,124.3	4,124.4	0.00	0.00	0.00
10,200.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,224.3	4,224.4	0.00	0.00	0.00
10,300.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,324.3	4,324.4	0.00	0.00	0.00
10,400.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,424.3	4,424.4	0.00	0.00	0.00
10,500.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,524.3	4,524.4	0.00	0.00	0.00
10,600.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,624.3	4,624.4	0.00	0.00	0.00
10,700.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,724.3	4,724.4	0.00	0.00	0.00
10,800.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,824.3	4,824.4	0.00	0.00	0.00
10,900.0	90.00	90.00	6,350.0	1,725.0	-35.8	4,924.3	4,924.4	0.00	0.00	0.00
11,000.0	90.00	90.00	6,350.0	1,725.0	-35.8	5,024.3	5,024.4	0.00	0.00	0.00
11,100.0	90.00	90.00	6,350.0	1,725.0	-35.8	5,124.3	5,124.4	0.00	0.00	0.00
11,200.0	90.00	90.00	6,350.0	1,725.0	-35.8	5,224.3	5,224.4	0.00	0.00	0.00
11,300.0	90.00	90.00	6,350.0	1,725.0	-35.8	5,324.3	5,324.4	0.00	0.00	0.00
TD at 11395.8' MD										
11,395.8	90.00	90.00	6,350.0	1,725.0	-35.8	5,420.1	5,420.2	0.00	0.00	0.00

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
Ranch 7 EOB	0.00	0.00	6,350.0	-35.8	977.0	1,363,910.98	3,302,939.37	40° 19' 38.06964 N	104° 24' 48.33293 W	
- plan hits target center										
- Point										
Ranch 7 BHL	0.00	0.00	6,350.0	-35.8	5,420.1	1,363,965.25	3,307,382.09	40° 19' 38.06396 N	104° 23' 50.96400 W	
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,590.0	5,590.0	0.0	0.0	KOP;5590' MD	
6,952.7	6,350.0	-35.8	977.0	EOB;6952.7' MD	
11,395.8	6,350.0	-35.8	5,420.1	TD at 11395.8' MD	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Reference	#1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.0usft	Error Model:	ISCSWA
Depth Range:	5,000.0 to 99,999.0usft	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 50.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	28/12/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,395.8	#1 (Hz)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec. 10 Twn 4N Rng 63W						
70 Ranch-10-11-1 - Hz - #1						Out of range
70 Ranch-10-11-10 - Hz - #1	5,200.0	5,200.0	47.4	24.3	2.050	CC, ES, SF
70 Ranch-10-11-11 - Hz - #1						Out of range
70 Ranch-10-11-12 - Hz - #1						Out of range
70 Ranch-10-11-2 - Hz - #1						Out of range
70 Ranch-10-11-3 - Hz - #1						Out of range
70 Ranch-10-11-4 - Hz - #1	5,450.0	5,450.0	43.7	19.5	1.804	CC, ES, SF
70 Ranch-10-11-5 - Hz - #1	5,517.2	5,517.2	29.1	4.6	1.188	Level 2, CC
70 Ranch-10-11-5 - Hz - #1	5,550.0	5,549.7	29.3	4.6	1.186	Level 2, ES, SF
70 Ranch-10-11-6 - Hz - #1	5,379.2	5,379.2	14.6	-9.3	0.609	Level 1, CC
70 Ranch-10-11-6 - Hz - #1	5,400.0	5,400.0	14.6	-9.4	0.607	Level 1, ES, SF
70 Ranch-10-11-8 - Hz - #1	5,550.0	5,550.0	14.6	-10.1	0.590	Level 1, CC, ES, SF
70 Ranch-10-11-9 - Hz - #1	5,200.0	5,200.0	32.8	9.7	1.419	Level 3, CC, ES, SF

Offset Design	Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-10 - Hz - #1											Offset Site Error:	0.0 usft
Survey Program:	0-MWD											Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	180.00	-47.4	0.0	47.4	25.2	22.21	2.133	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	180.00	-47.4	0.0	47.4	24.9	22.43	2.111	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	180.00	-47.4	0.0	47.4	24.7	22.66	2.090	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	180.00	-47.4	0.0	47.4	24.5	22.88	2.070	
5,183.3	5,183.3	5,183.3	5,183.3	11.5	11.5	180.00	-47.4	0.0	47.4	24.3	23.03	2.056	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	180.00	-47.4	0.0	47.4	24.3	23.11	2.050	CC, ES, SF
5,250.0	5,250.0	5,246.9	5,246.9	11.7	11.6	179.51	-48.8	0.4	48.9	25.6	23.31	2.099	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-4 - Hz - #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	0.00	43.7	0.0	43.7	21.5	22.21	1.968	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	0.00	43.7	0.0	43.7	21.3	22.43	1.949	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	0.00	43.7	0.0	43.7	21.1	22.66	1.929	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	0.00	43.7	0.0	43.7	20.8	22.88	1.910	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	0.00	43.7	0.0	43.7	20.6	23.11	1.892	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	0.00	43.7	0.0	43.7	20.4	23.33	1.874	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	0.00	43.7	0.0	43.7	20.2	23.56	1.856	
5,350.0	5,350.0	5,350.0	5,350.0	11.9	11.9	0.00	43.7	0.0	43.7	19.9	23.78	1.838	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	0.00	43.7	0.0	43.7	19.7	24.01	1.821	
5,433.3	5,433.3	5,433.3	5,433.3	12.1	12.1	0.00	43.7	0.0	43.7	19.6	24.15	1.810	
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	0.00	43.7	0.0	43.7	19.5	24.23	1.804	CC, ES, SF
5,500.0	5,500.0	5,497.5	5,497.4	12.2	12.2	1.04	45.1	0.8	45.1	20.7	24.45	1.846	
5,550.0	5,550.0	5,544.5	5,544.2	12.3	12.3	3.77	49.0	3.2	49.5	24.8	24.66	2.006	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-5 - Hz - #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	0.00	29.1	0.0	29.1	6.9	22.21	1.312 Level 3	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	0.00	29.1	0.0	29.1	6.7	22.43	1.299 Level 3	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	0.00	29.1	0.0	29.1	6.5	22.66	1.286 Level 3	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	0.00	29.1	0.0	29.1	6.3	22.88	1.274 Level 3	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	0.00	29.1	0.0	29.1	6.0	23.11	1.261 Level 3	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	0.00	29.1	0.0	29.1	5.8	23.33	1.249 Level 2	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	0.00	29.1	0.0	29.1	5.6	23.56	1.237 Level 2	
5,350.0	5,350.0	5,350.0	5,350.0	11.9	11.9	0.00	29.1	0.0	29.1	5.4	23.78	1.225 Level 2	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	0.00	29.1	0.0	29.1	5.1	24.01	1.214 Level 2	
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	0.00	29.1	0.0	29.1	4.9	24.23	1.203 Level 2	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	0.00	29.1	0.0	29.1	4.7	24.45	1.192 Level 2	
5,517.2	5,517.2	5,517.2	5,517.2	12.3	12.3	0.00	29.1	0.0	29.1	4.6	24.53	1.188 Level 2, CC	
5,550.0	5,550.0	5,549.7	5,549.7	12.3	12.3	0.64	29.3	0.3	29.3	4.6	24.68	1.186 Level 2, ES, SF	
5,600.0	5,600.0	5,599.0	5,599.0	12.5	12.4	-86.92	30.1	2.9	30.3	5.4	24.89	1.217 Level 2	
5,650.0	5,649.9	5,648.2	5,647.8	12.5	12.5	-82.65	31.9	8.1	32.5	7.4	25.09	1.297 Level 3	
5,700.0	5,699.5	5,697.1	5,696.0	12.7	12.7	-81.21	34.6	15.8	35.7	10.4	25.29	1.411 Level 3	
5,750.0	5,748.3	5,745.9	5,743.6	12.8	12.8	-82.01	38.0	26.1	39.6	14.1	25.51	1.553	
5,800.0	5,796.2	5,794.6	5,790.4	12.9	12.9	-84.37	42.4	38.7	44.4	18.6	25.74	1.724	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-6 - Hz - #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	0.00	14.6	0.0	14.6	-7.6	22.21	0.656	Level 1	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	0.00	14.6	0.0	14.6	-7.9	22.43	0.649	Level 1	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	0.00	14.6	0.0	14.6	-8.1	22.66	0.643	Level 1	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	0.00	14.6	0.0	14.6	-8.3	22.88	0.637	Level 1	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	0.00	14.6	0.0	14.6	-8.5	23.11	0.630	Level 1	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	0.00	14.6	0.0	14.6	-8.8	23.33	0.624	Level 1	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	0.00	14.6	0.0	14.6	-9.0	23.56	0.618	Level 1	
5,350.0	5,350.0	5,350.0	5,350.0	11.9	11.9	0.00	14.6	0.0	14.6	-9.2	23.78	0.613	Level 1	
5,379.2	5,379.2	5,379.2	5,379.2	12.0	12.0	0.00	14.6	0.0	14.6	-9.3	23.91	0.609	Level 1, CC	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	0.20	14.6	0.1	14.6	-9.4	24.00	0.607	Level 1, ES, SF	
5,450.0	5,450.0	5,449.8	5,449.7	12.1	12.1	7.10	14.8	1.9	15.0	-9.3	24.22	0.618	Level 1	
5,500.0	5,500.0	5,499.3	5,499.0	12.2	12.2	21.74	15.5	6.2	16.7	-7.7	24.43	0.684	Level 1	
5,550.0	5,550.0	5,548.2	5,547.5	12.3	12.3	38.08	16.5	12.9	21.1	-3.5	24.64	0.857	Level 1	
5,600.0	5,600.0	5,596.3	5,594.7	12.5	12.4	-41.48	17.8	21.9	28.7	3.9	24.85	1.156	Level 2	
5,650.0	5,649.9	5,643.9	5,640.9	12.5	12.5	-34.62	19.5	33.2	37.3	12.3	24.99	1.491	Level 3	
5,700.0	5,699.5	5,691.4	5,686.4	12.7	12.6	-31.71	21.5	46.6	45.1	20.1	25.02	1.801		

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-8 - Hz - #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	180.00	-14.6	0.0	14.6	-7.6	22.21	0.656	Level 1
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	180.00	-14.6	0.0	14.6	-7.9	22.43	0.650	Level 1
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	180.00	-14.6	0.0	14.6	-8.1	22.66	0.643	Level 1
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	180.00	-14.6	0.0	14.6	-8.3	22.88	0.637	Level 1
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	180.00	-14.6	0.0	14.6	-8.5	23.11	0.631	Level 1
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	180.00	-14.6	0.0	14.6	-8.8	23.33	0.625	Level 1
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	180.00	-14.6	0.0	14.6	-9.0	23.56	0.619	Level 1
5,350.0	5,350.0	5,350.0	5,350.0	11.9	11.9	180.00	-14.6	0.0	14.6	-9.2	23.78	0.613	Level 1
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	180.00	-14.6	0.0	14.6	-9.4	24.01	0.607	Level 1
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	180.00	-14.6	0.0	14.6	-9.7	24.23	0.601	Level 1
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	180.00	-14.6	0.0	14.6	-9.9	24.45	0.596	Level 1
5,550.0	5,550.0	5,550.0	5,550.0	12.3	12.3	180.00	-14.6	0.0	14.6	-10.1	24.68	0.590	Level 1, CC, ES, SF
5,600.0	5,600.0	5,599.3	5,599.3	12.5	12.4	85.01	-15.4	0.8	15.4	-9.4	24.89	0.621	Level 1
5,650.0	5,649.9	5,648.2	5,648.0	12.5	12.5	83.87	-18.8	3.9	18.9	-6.2	25.08	0.752	Level 1
5,700.0	5,699.5	5,696.7	5,695.8	12.7	12.6	86.59	-24.8	9.3	24.7	-0.6	25.27	0.977	Level 1
5,750.0	5,748.3	5,744.5	5,742.2	12.8	12.7	90.33	-33.1	16.9	33.0	7.6	25.47	1.297	Level 3
5,800.0	5,796.2	5,791.4	5,786.9	12.9	12.8	93.68	-43.7	26.5	44.0	18.3	25.67	1.713	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-9 - Hz - #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-180.00	-32.8	0.0	32.8	10.6	22.21	1.476	Level 3
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	-180.00	-32.8	0.0	32.8	10.4	22.43	1.462	Level 3
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	-180.00	-32.8	0.0	32.8	10.1	22.66	1.447	Level 3
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	-180.00	-32.8	0.0	32.8	9.9	22.88	1.433	Level 3
5,183.3	5,183.3	5,183.3	5,183.3	11.5	11.5	-180.00	-32.8	0.0	32.8	9.8	23.03	1.424	Level 3
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-180.00	-32.8	0.0	32.8	9.7	23.11	1.419	Level 3, CC, ES, SF
5,250.0	5,250.0	5,248.0	5,247.9	11.7	11.6	178.82	-34.2	0.7	34.3	11.0	23.31	1.471	Level 3
5,300.0	5,300.0	5,295.5	5,295.2	11.8	11.7	175.85	-38.5	2.8	38.9	15.4	23.50	1.655	
5,350.0	5,350.0	5,342.2	5,341.2	11.9	11.8	172.26	-45.4	6.2	46.7	23.0	23.69	1.970	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-7 - Slot A7
Project:	Weld County, Co (NAD 83)	TVD Reference:	RKB @ 4625.0usft (kb;20')
Reference Site:	Sec. 10 Twn 4N Rng 63W	MD Reference:	RKB @ 4625.0usft (kb;20')
Site Error:	0.0 usft	North Reference:	True
Reference Well:	70 Ranch-10-11-7	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	WellPlan Services
Reference Design:	#1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB @ 4625.0usft (kb;20')
 Offset Depths are relative to Offset Datum
 Central Meridian is 105° 30' 0.00000 W

Coordinates are relative to: 70 Ranch-10-11-7 - Slot A7
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.70°

