

Edge Energy LLC

Weld County, Co (NAD 83)

Sec. 10 Twn 4N Rng 63W

70 Ranch-10-11-5 - Slot A5

Hz

UWI:

WL:

Plan: #1

Standard Planning Report

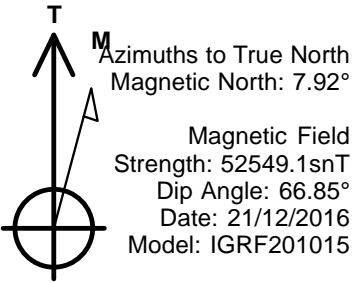
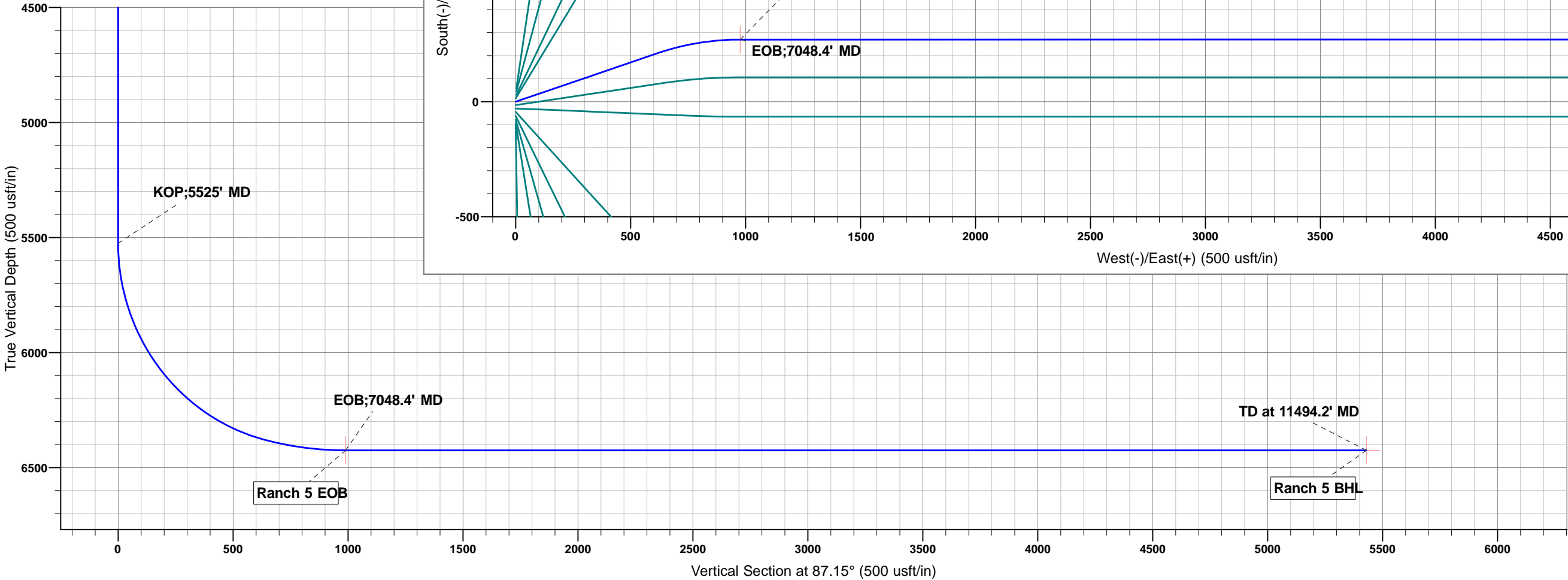
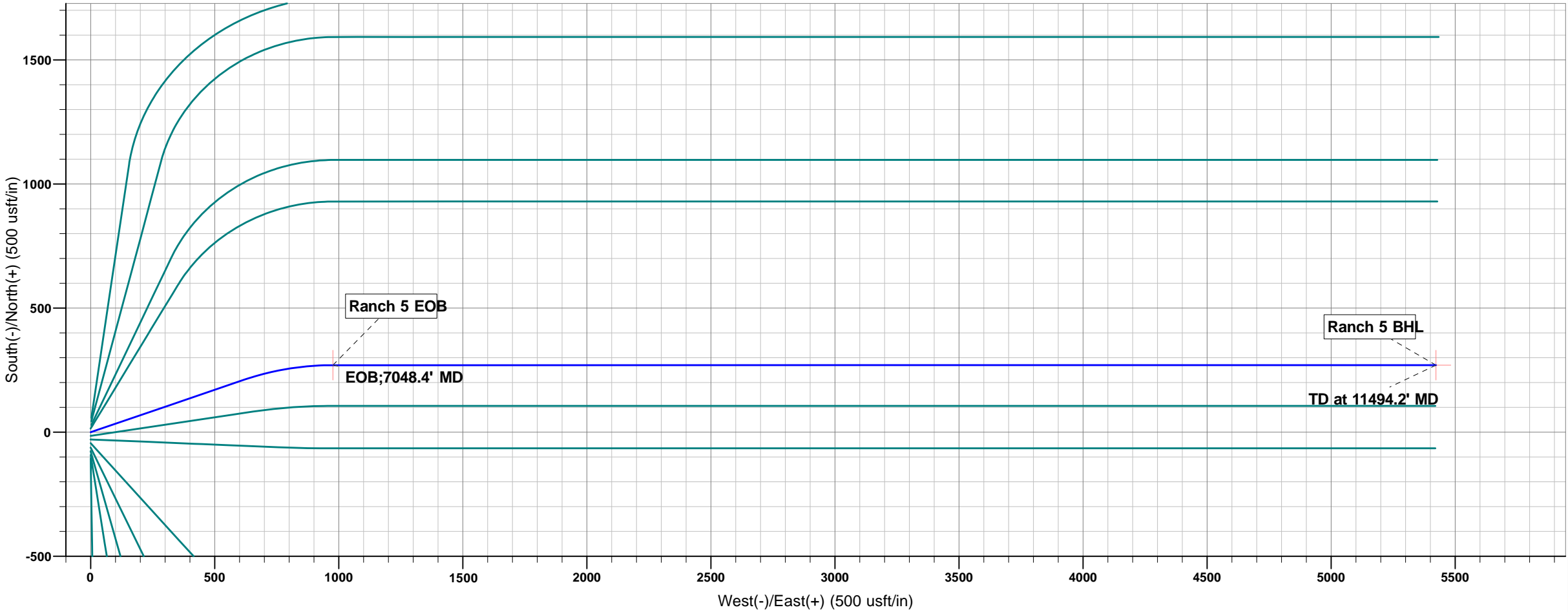
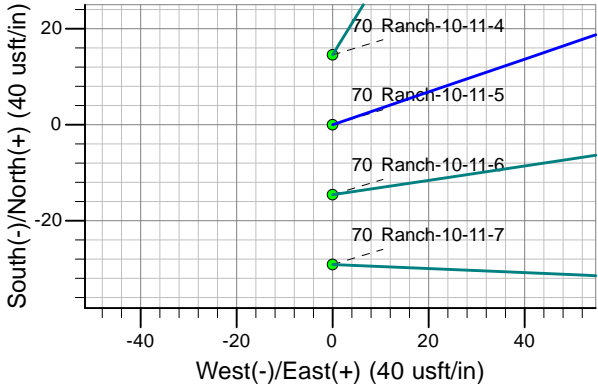
28 December, 2016

Project: Weld County, Co (NAD 83)
Site: Sec. 10 TwN 4N Rng 63W
Well: 70 Ranch-10-11-5
Wellbore: Hz
Plan: #1

Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
Northing: 1363964.01
Easting: 3301961.65
Latitude: 40° 19' 38.71184 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	5525.0	0.00	0.00	5525.0	0.0	0.0	0.00	0.00	0.0	
3	6681.6	75.15	71.14	6377.3	212.0	620.6	6.50	71.14	630.4	
4	7048.4	90.00	90.00	6425.0	270.2	977.0	6.50	53.13	989.2	Ranch 5 EOB
5	11494.2	90.00	90.00	6425.0	270.2	5422.8	0.00	0.00	5429.5	Ranch 5 BHL



Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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-10-11-5 - Slot A5					
Well Position	+N/-S	-58.3 usft	Northing:	1,363,964.01 usft	Latitude:	40° 19' 38.71184 N
	+E/-W	-2.8 usft	Easting:	3,301,961.65 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	87.15

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	
5,525.0	0.00	0.00	5,525.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,681.6	75.15	71.14	6,377.3	212.0	620.6	6.50	6.50	0.00	71.14	
7,048.4	90.00	90.00	6,425.0	270.2	977.0	6.50	4.05	5.14	53.13	Ranch 5 EOB
11,494.2	90.00	90.00	6,425.0	270.2	5,422.8	0.00	0.00	0.00	0.00	Ranch 5 BHL

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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;5525' MD										
5,525.0	0.00	0.00	5,525.0	900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	4.87	71.14	5,599.9	974.9	1.0	3.0	3.1	6.50	6.50	0.00
5,700.0	11.37	71.14	5,698.9	1,073.9	5.6	16.4	16.6	6.50	6.50	0.00
5,800.0	17.87	71.14	5,795.6	1,170.6	13.8	40.3	40.9	6.50	6.50	0.00
5,900.0	24.37	71.14	5,888.8	1,263.8	25.4	74.3	75.5	6.50	6.50	0.00
6,000.0	30.87	71.14	5,977.4	1,352.4	40.4	118.2	120.0	6.50	6.50	0.00
6,100.0	37.36	71.14	6,060.1	1,435.1	58.5	171.2	173.9	6.50	6.50	0.00
6,200.0	43.86	71.14	6,136.0	1,511.0	79.5	232.8	236.5	6.50	6.50	0.00
6,300.0	50.36	71.14	6,204.0	1,579.0	103.2	302.1	306.8	6.50	6.50	0.00
6,400.0	56.86	71.14	6,263.3	1,638.3	129.2	378.2	384.2	6.50	6.50	0.00
6,500.0	63.36	71.14	6,313.1	1,688.1	157.2	460.2	467.5	6.50	6.50	0.00
6,600.0	69.85	71.14	6,352.8	1,727.8	186.9	547.0	555.6	6.50	6.50	0.00
6,681.6	75.15	71.14	6,377.3	1,752.3	212.0	620.6	630.4	6.50	6.50	0.00
6,700.0	75.88	72.13	6,381.9	1,756.9	217.6	637.6	647.6	6.50	3.91	5.36
6,800.0	79.85	77.39	6,402.9	1,777.9	243.3	731.8	743.0	6.50	3.97	5.26
6,900.0	83.90	82.51	6,417.1	1,792.1	260.5	829.3	841.2	6.50	4.05	5.13
7,000.0	88.01	87.57	6,424.1	1,799.1	269.1	928.6	940.8	6.50	4.10	5.05
EOB;7048.4' MD										
7,048.4	90.00	90.00	6,425.0	1,800.0	270.2	977.0	989.2	6.50	4.12	5.03
7,100.0	90.00	90.00	6,425.0	1,800.0	270.2	1,028.6	1,040.7	0.01	0.00	0.00
7,200.0	90.00	90.00	6,425.0	1,800.0	270.2	1,128.6	1,140.6	0.00	0.00	0.00
7,300.0	90.00	90.00	6,425.0	1,800.0	270.2	1,228.6	1,240.5	0.00	0.00	0.00
7,400.0	90.00	90.00	6,425.0	1,800.0	270.2	1,328.6	1,340.4	0.00	0.00	0.00
7,500.0	90.00	90.00	6,425.0	1,800.0	270.2	1,428.6	1,440.2	0.00	0.00	0.00
7,600.0	90.00	90.00	6,425.0	1,800.0	270.2	1,528.6	1,540.1	0.00	0.00	0.00
7,700.0	90.00	90.00	6,425.0	1,800.0	270.2	1,628.6	1,640.0	0.00	0.00	0.00
7,800.0	90.00	90.00	6,425.0	1,800.0	270.2	1,728.6	1,739.9	0.00	0.00	0.00
7,900.0	90.00	90.00	6,425.0	1,800.0	270.2	1,828.6	1,839.7	0.00	0.00	0.00
8,000.0	90.00	90.00	6,425.0	1,800.0	270.2	1,928.6	1,939.6	0.00	0.00	0.00
8,100.0	90.00	90.00	6,425.0	1,800.0	270.2	2,028.6	2,039.5	0.00	0.00	0.00
8,200.0	90.00	90.00	6,425.0	1,800.0	270.2	2,128.6	2,139.4	0.00	0.00	0.00
8,300.0	90.00	90.00	6,425.0	1,800.0	270.2	2,228.6	2,239.2	0.00	0.00	0.00
8,400.0	90.00	90.00	6,425.0	1,800.0	270.2	2,328.6	2,339.1	0.00	0.00	0.00
8,500.0	90.00	90.00	6,425.0	1,800.0	270.2	2,428.6	2,439.0	0.00	0.00	0.00
8,600.0	90.00	90.00	6,425.0	1,800.0	270.2	2,528.6	2,538.9	0.00	0.00	0.00
8,700.0	90.00	90.00	6,425.0	1,800.0	270.2	2,628.6	2,638.7	0.00	0.00	0.00
8,800.0	90.00	90.00	6,425.0	1,800.0	270.2	2,728.6	2,738.6	0.00	0.00	0.00
8,900.0	90.00	90.00	6,425.0	1,800.0	270.2	2,828.6	2,838.5	0.00	0.00	0.00
9,000.0	90.00	90.00	6,425.0	1,800.0	270.2	2,928.6	2,938.4	0.00	0.00	0.00
9,100.0	90.00	90.00	6,425.0	1,800.0	270.2	3,028.6	3,038.2	0.00	0.00	0.00
9,200.0	90.00	90.00	6,425.0	1,800.0	270.2	3,128.6	3,138.1	0.00	0.00	0.00
9,300.0	90.00	90.00	6,425.0	1,800.0	270.2	3,228.6	3,238.0	0.00	0.00	0.00
9,400.0	90.00	90.00	6,425.0	1,800.0	270.2	3,328.6	3,337.9	0.00	0.00	0.00
9,500.0	90.00	90.00	6,425.0	1,800.0	270.2	3,428.6	3,437.8	0.00	0.00	0.00

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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)
9,600.0	90.00	90.00	6,425.0	1,800.0	270.2	3,528.6	3,537.6	0.00	0.00	0.00
9,700.0	90.00	90.00	6,425.0	1,800.0	270.2	3,628.6	3,637.5	0.00	0.00	0.00
9,800.0	90.00	90.00	6,425.0	1,800.0	270.2	3,728.6	3,737.4	0.00	0.00	0.00
9,900.0	90.00	90.00	6,425.0	1,800.0	270.2	3,828.6	3,837.3	0.00	0.00	0.00
10,000.0	90.00	90.00	6,425.0	1,800.0	270.2	3,928.6	3,937.1	0.00	0.00	0.00
10,100.0	90.00	90.00	6,425.0	1,800.0	270.2	4,028.6	4,037.0	0.00	0.00	0.00
10,200.0	90.00	90.00	6,425.0	1,800.0	270.2	4,128.6	4,136.9	0.00	0.00	0.00
10,300.0	90.00	90.00	6,425.0	1,800.0	270.2	4,228.6	4,236.8	0.00	0.00	0.00
10,400.0	90.00	90.00	6,425.0	1,800.0	270.2	4,328.6	4,336.6	0.00	0.00	0.00
10,500.0	90.00	90.00	6,425.0	1,800.0	270.2	4,428.6	4,436.5	0.00	0.00	0.00
10,600.0	90.00	90.00	6,425.0	1,800.0	270.2	4,528.6	4,536.4	0.00	0.00	0.00
10,700.0	90.00	90.00	6,425.0	1,800.0	270.2	4,628.6	4,636.3	0.00	0.00	0.00
10,800.0	90.00	90.00	6,425.0	1,800.0	270.2	4,728.6	4,736.1	0.00	0.00	0.00
10,900.0	90.00	90.00	6,425.0	1,800.0	270.2	4,828.6	4,836.0	0.00	0.00	0.00
11,000.0	90.00	90.00	6,425.0	1,800.0	270.2	4,928.6	4,935.9	0.00	0.00	0.00
11,100.0	90.00	90.00	6,425.0	1,800.0	270.2	5,028.6	5,035.8	0.00	0.00	0.00
11,200.0	90.00	90.00	6,425.0	1,800.0	270.2	5,128.6	5,135.6	0.00	0.00	0.00
11,300.0	90.00	90.00	6,425.0	1,800.0	270.2	5,228.6	5,235.5	0.00	0.00	0.00
11,400.0	90.00	90.00	6,425.0	1,800.0	270.2	5,328.6	5,335.4	0.00	0.00	0.00
TD at 11494.2' MD										
11,494.2	90.00	90.00	6,425.0	1,800.0	270.2	5,422.8	5,429.5	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 5 BHL	0.00	0.00	6,425.0	270.2	5,422.8	1,364,300.40	3,307,380.71	40° 19' 41.37596 N	104° 23' 50.92800 W	
- plan hits target center										
- Point										
Ranch 5 EOB	0.00	0.00	6,425.0	270.2	977.0	1,364,246.10	3,302,935.28	40° 19' 41.38165 N	104° 24' 48.33275 W	
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,525.0	5,525.0	0.0	0.0	KOP;5525' MD	
7,048.4	6,425.0	270.2	977.0	EOB;7048.4' MD	
11,494.2	6,425.0	270.2	5,422.8	TD at 11494.2' MD	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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	11,494.2	#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						Out of range
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	5,200.0	5,200.0	43.8	20.7	1.896	CC, ES, SF
70 Ranch-10-11-3 - Hz - #1	5,623.8	5,622.8	27.8	2.8	1.112	Level 2, CC, ES, SF
70 Ranch-10-11-4 - Hz - #1	5,450.0	5,450.0	14.6	-9.7	0.601	Level 1, CC, ES, SF
70 Ranch-10-11-6 - Hz - #1	5,454.0	5,454.1	14.4	-9.8	0.595	Level 1, CC, ES, SF
70 Ranch-10-11-7 - Hz - #1	5,500.0	5,500.0	29.1	4.7	1.192	Level 2, CC
70 Ranch-10-11-7 - Hz - #1	5,550.0	5,550.0	29.3	4.6	1.186	Level 2, ES, SF
70 Ranch-10-11-8 - Hz - #1	5,500.0	5,500.0	43.7	19.3	1.787	CC
70 Ranch-10-11-8 - Hz - #1	5,550.0	5,550.0	43.8	19.2	1.776	ES, SF
70 Ranch-10-11-9 - Hz - #1						Out of range

Offset Design	Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-2 - 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	3.65	43.7	2.8	43.8	21.6	22.21	1.973	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	3.65	43.7	2.8	43.8	21.4	22.43	1.953	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	3.65	43.7	2.8	43.8	21.1	22.66	1.933	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	3.65	43.7	2.8	43.8	20.9	22.88	1.914	
5,183.3	5,183.3	5,183.3	5,183.3	11.5	11.5	3.65	43.7	2.8	43.8	20.8	23.03	1.902	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	3.65	43.7	2.8	43.8	20.7	23.11	1.896	CC, ES, SF
5,250.0	5,250.0	5,247.1	5,247.1	11.7	11.7	4.04	45.2	3.2	45.4	22.1	23.32	1.947	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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-10-11-3 - 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	5.47	29.1	2.8	29.3	7.1	22.21	1.318	Level 3	
5,050.0	5,050.0	5,050.0	5,050.0	11.2	11.2	5.47	29.1	2.8	29.3	6.8	22.43	1.305	Level 3	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	5.47	29.1	2.8	29.3	6.6	22.66	1.292	Level 3	
5,150.0	5,150.0	5,150.0	5,150.0	11.4	11.4	5.47	29.1	2.8	29.3	6.4	22.88	1.279	Level 3	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	5.47	29.1	2.8	29.3	6.2	23.11	1.267	Level 3	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	5.47	29.1	2.8	29.3	5.9	23.33	1.255	Level 3	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	5.47	29.1	2.8	29.3	5.7	23.56	1.243	Level 2	
5,350.0	5,350.0	5,350.0	5,350.0	11.9	11.9	5.47	29.1	2.8	29.3	5.5	23.78	1.231	Level 2	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	5.47	29.1	2.8	29.3	5.3	24.01	1.219	Level 2	
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	5.47	29.1	2.8	29.3	5.0	24.23	1.208	Level 2	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	5.47	29.1	2.8	29.3	4.8	24.45	1.197	Level 2	
5,550.0	5,550.0	5,550.0	5,550.0	12.3	12.3	-66.32	29.1	2.8	29.1	4.5	24.68	1.180	Level 2	
5,600.0	5,599.9	5,599.9	5,599.9	12.4	12.5	-71.67	29.1	2.8	28.1	3.2	24.89	1.130	Level 2	
5,623.8	5,623.5	5,622.8	5,622.8	12.5	12.5	-75.77	29.5	2.9	27.8	2.8	24.99	1.112	Level 2, CC, ES, SF	
5,650.0	5,649.6	5,648.1	5,648.0	12.5	12.6	-80.78	30.6	3.5	28.2	3.1	25.10	1.124	Level 2	
5,700.0	5,698.9	5,696.2	5,695.9	12.7	12.7	-90.26	35.0	5.6	31.4	6.1	25.32	1.241	Level 2	
5,750.0	5,747.6	5,744.1	5,743.1	12.8	12.8	-97.77	42.2	9.0	37.8	12.3	25.53	1.481	Level 3	
5,800.0	5,795.6	5,791.5	5,789.2	12.9	12.9	-102.70	52.1	13.8	47.0	21.3	25.71	1.829		

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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			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	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	0.650	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	0.631	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	0.625	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	0.619	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
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	0.00	14.6	0.0	14.6	-9.4	24.01	0.607	Level 1
5,433.3	5,433.3	5,433.3	5,433.3	12.1	12.1	0.00	14.6	0.0	14.6	-9.6	24.15	0.603	Level 1
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	0.00	14.6	0.0	14.6	-9.7	24.23	0.601	Level 1, CC, ES, SF
5,500.0	5,500.0	5,499.1	5,499.0	12.2	12.2	3.12	16.0	0.9	16.1	-8.4	24.45	0.657	Level 1
5,550.0	5,550.0	5,547.7	5,547.4	12.3	12.3	-62.15	20.3	3.5	20.5	-4.1	24.67	0.833	Level 1
5,600.0	5,599.9	5,595.8	5,594.8	12.4	12.4	-60.30	27.2	7.7	27.1	2.2	24.86	1.089	Level 2
5,650.0	5,649.6	5,643.2	5,640.9	12.5	12.6	-61.01	36.7	13.5	35.3	10.3	25.05	1.410	Level 3
5,700.0	5,698.9	5,689.8	5,685.3	12.7	12.7	-62.71	48.5	20.7	45.2	20.0	25.23	1.793	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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	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	179.80	-14.6	0.1	14.6	-9.4	24.00	0.607	Level 1				
5,450.0	5,450.0	5,450.1	5,450.0	12.1	12.1	172.56	-14.3	1.9	14.4	-9.8	24.22	0.595	Level 1				
5,454.0	5,454.0	5,454.1	5,454.0	12.1	12.1	171.52	-14.3	2.1	14.4	-9.8	24.23	0.595	Level 1, CC, ES, SF				
5,500.0	5,500.0	5,499.8	5,499.5	12.2	12.2	155.45	-13.6	6.2	15.0	-9.4	24.43	0.614	Level 1				
5,550.0	5,550.0	5,548.9	5,548.2	12.3	12.3	63.79	-12.6	13.0	18.1	-6.6	24.64	0.734	Level 1				
5,600.0	5,599.9	5,597.7	5,596.1	12.4	12.4	50.89	-11.3	22.3	23.1	-1.7	24.81	0.933	Level 1				
5,650.0	5,649.6	5,646.2	5,643.2	12.5	12.5	43.86	-9.5	33.8	29.0	4.1	24.93	1.163	Level 2				
5,700.0	5,698.9	5,694.4	5,689.3	12.7	12.6	40.08	-7.5	47.6	35.2	10.1	25.01	1.406	Level 3				
5,750.0	5,747.6	5,742.3	5,734.4	12.8	12.8	38.15	-5.1	63.6	41.4	16.4	25.03	1.653					
5,800.0	5,795.6	5,790.0	5,778.4	12.9	12.9	37.34	-2.4	81.6	47.6	22.6	25.03	1.903					

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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-10-11-7 - 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	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-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	-180.00	-29.1	0.0	29.1	4.7	24.45	1.192	Level 2, CC
5,511.6	5,511.6	5,511.6	5,511.6	12.3	12.3	108.93	-29.1	0.0	29.2	4.6	24.51	1.190	Level 2
5,550.0	5,550.0	5,550.0	5,550.0	12.3	12.3	109.51	-29.1	0.0	29.3	4.6	24.68	1.186	Level 2, ES, SF
5,600.0	5,599.9	5,599.9	5,599.9	12.4	12.5	114.35	-29.1	0.1	30.3	5.4	24.88	1.219	Level 2
5,650.0	5,649.6	5,650.1	5,650.0	12.5	12.5	118.49	-29.3	2.8	32.6	7.5	25.05	1.301	Level 3
5,700.0	5,698.9	5,700.3	5,699.8	12.7	12.7	119.66	-29.5	9.5	35.8	10.6	25.21	1.420	Level 3
5,750.0	5,747.6	5,750.6	5,748.9	12.8	12.8	118.46	-30.0	20.1	39.8	14.4	25.38	1.569	
5,800.0	5,795.6	5,800.7	5,796.9	12.9	12.9	115.59	-30.6	34.5	44.7	19.1	25.58	1.748	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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		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	-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	180.00	-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	180.00	-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	180.00	-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	180.00	-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	180.00	-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	180.00	-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	180.00	-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	180.00	-43.7	0.0	43.7	19.7	24.01	1.821	
5,450.0	5,450.0	5,450.0	5,450.0	12.1	12.1	180.00	-43.7	0.0	43.7	19.5	24.23	1.804	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	180.00	-43.7	0.0	43.7	19.3	24.45	1.787 CC	
5,511.5	5,511.5	5,511.5	5,511.5	12.3	12.3	108.91	-43.7	0.0	43.7	19.2	24.51	1.784	
5,550.0	5,550.0	5,550.0	5,550.0	12.3	12.3	109.29	-43.7	0.0	43.8	19.2	24.68	1.776 ES, SF	
5,600.0	5,599.9	5,598.1	5,598.1	12.4	12.4	111.49	-44.5	0.7	45.6	20.8	24.87	1.835	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-5 - Slot A5
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-10-11-5	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-10-11-5 - Slot A5
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.70°

