

Edge Energy LLC

Weld County, Co (NAD 83)

Sec. 10 Twn 4N Rng 63W

70 Ranch-10-11-10 - Slot A10

Hz

UWI:

WL:

Plan: #1

Standard Planning Report

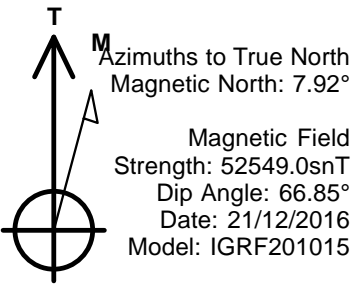
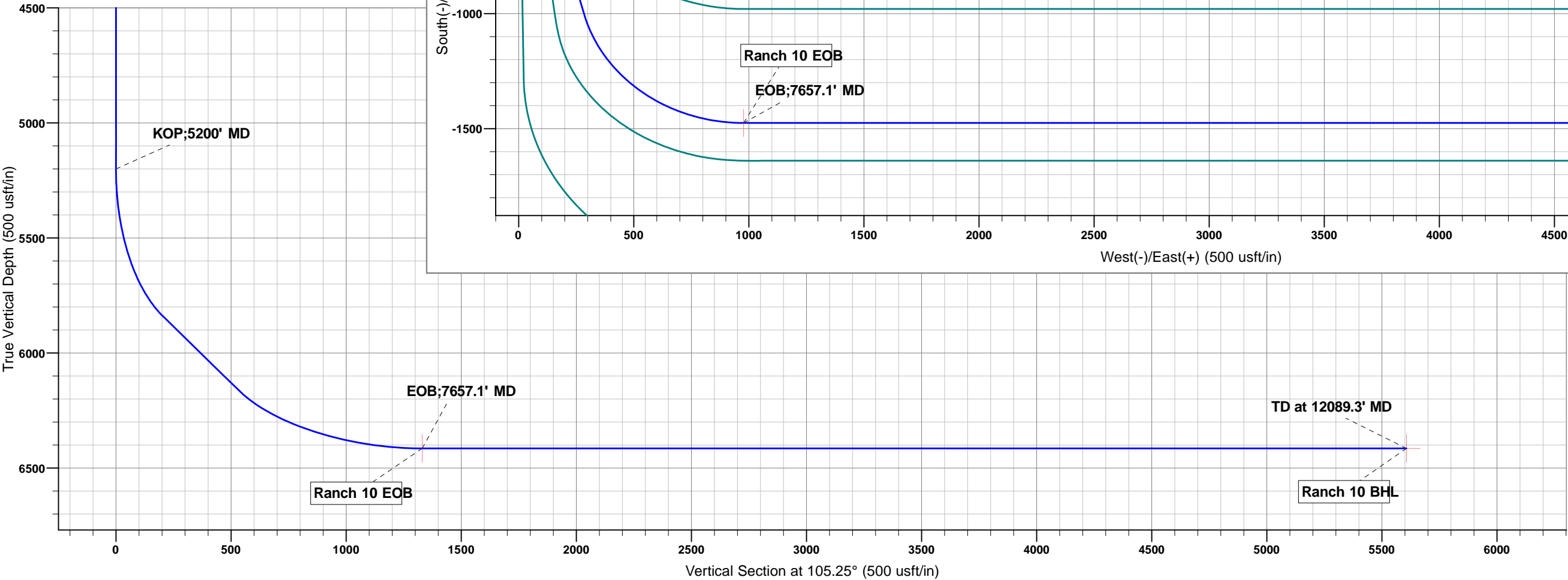
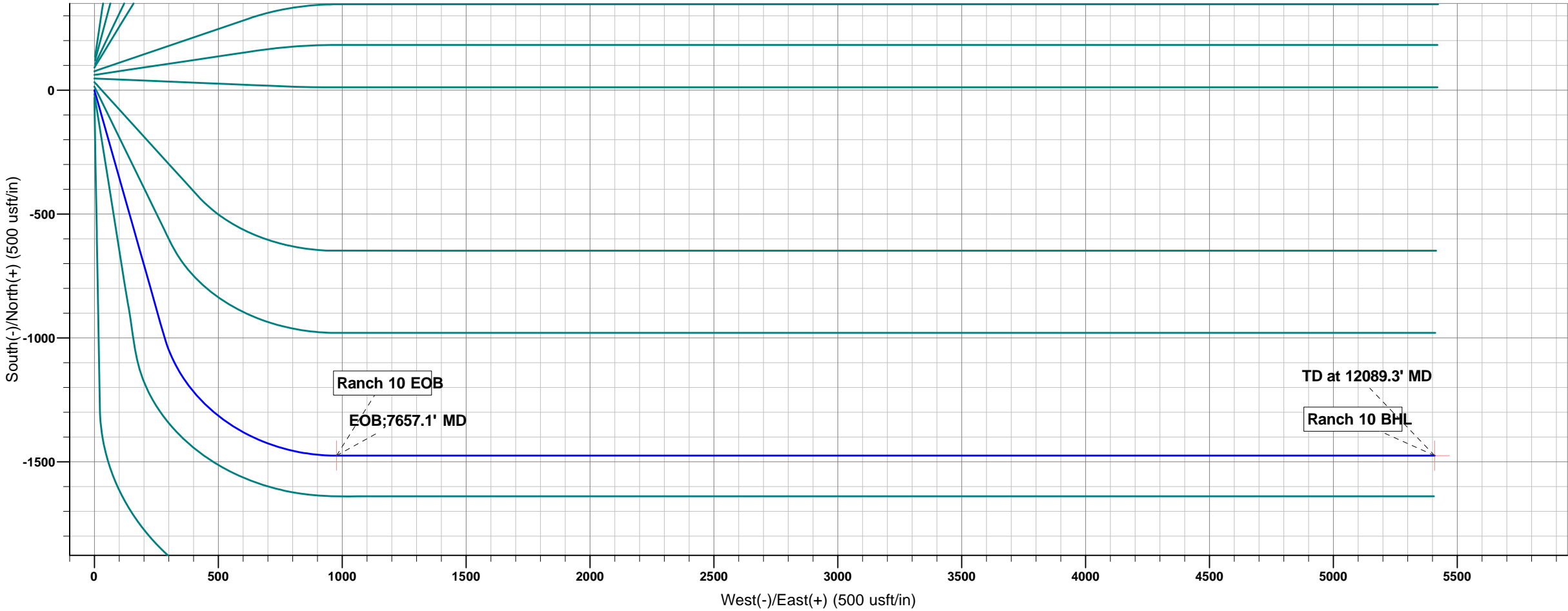
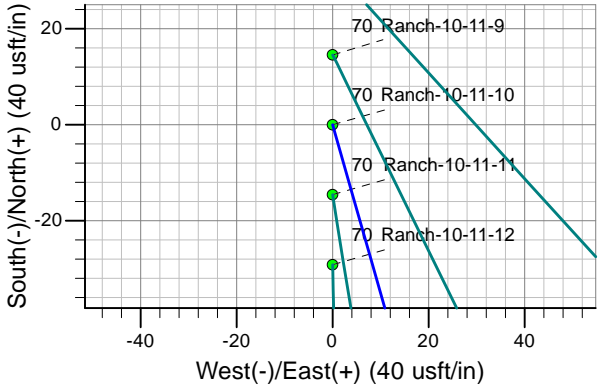
28 December, 2016

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

Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
Northing: 1363887.52
Easting: 3301962.58
Latitude: 40° 19' 37.95588 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	5200.0	0.00	0.00	5200.0	0.0	0.0	0.00	0.00	0.0	
3	5990.0	63.20	164.16	5839.3	-378.3	107.4	8.00	164.16	203.1	
4	6708.4	63.20	164.16	6163.2	-995.2	282.4	0.00	0.00	534.2	
5	7657.1	90.00	90.00	6415.0	-1474.8	977.0	8.00	-82.71	1330.5	Ranch 10 EOB
6	12089.3	90.00	90.00	6415.0	-1474.8	5409.2	0.00	0.00	5606.7	Ranch 10 BHL



Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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-10-11-10 - Slot A10					
Well Position	+N/-S	-134.8 usft	Northing:	1,363,887.52 usft	Latitude:	40° 19' 37.95588 N
	+E/-W	-2.8 usft	Easting:	3,301,962.58 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	105.25

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	
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,990.0	63.20	164.16	5,839.3	-378.3	107.4	8.00	8.00	0.00	164.16	
6,708.4	63.20	164.16	6,163.2	-995.2	282.4	0.00	0.00	0.00	0.00	
7,657.1	90.00	90.00	6,415.0	-1,474.8	977.0	8.00	2.82	-7.82	-82.71	Ranch 10 EOB
12,089.3	90.00	90.00	6,415.0	-1,474.8	5,409.2	0.00	0.00	0.00	0.00	Ranch 10 BHL

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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;5200' MD										
5,200.0	0.00	0.00	5,200.0	575.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	8.00	164.16	5,299.7	674.7	-6.7	1.9	3.6	8.00	8.00	0.00
5,400.0	16.00	164.16	5,397.4	772.4	-26.7	7.6	14.3	8.00	8.00	0.00
5,500.0	24.00	164.16	5,491.3	866.3	-59.6	16.9	32.0	8.00	8.00	0.00
5,600.0	32.00	164.16	5,579.5	954.5	-104.7	29.7	56.2	8.00	8.00	0.00
5,700.0	40.00	164.16	5,660.4	1,035.4	-161.2	45.7	86.5	8.00	8.00	0.00
5,800.0	48.00	164.16	5,732.2	1,107.2	-228.0	64.7	122.4	8.00	8.00	0.00
5,900.0	56.00	164.16	5,793.8	1,168.8	-303.7	86.2	163.0	8.00	8.00	0.00
5,990.0	63.20	164.16	5,839.3	1,214.3	-378.3	107.4	203.1	8.00	8.00	0.00
6,000.0	63.20	164.16	5,843.8	1,218.8	-386.9	109.8	207.7	0.00	0.00	0.00
6,100.0	63.20	164.16	5,888.9	1,263.9	-472.8	134.2	253.8	0.00	0.00	0.00
6,200.0	63.20	164.16	5,934.0	1,309.0	-558.7	158.5	299.9	0.00	0.00	0.00
6,300.0	63.20	164.16	5,979.0	1,354.0	-644.5	182.9	346.0	0.00	0.00	0.00
6,400.0	63.20	164.16	6,024.1	1,399.1	-730.4	207.3	392.1	0.00	0.00	0.00
6,500.0	63.20	164.16	6,069.2	1,444.2	-816.3	231.6	438.2	0.00	0.00	0.00
6,600.0	63.20	164.16	6,114.3	1,489.3	-902.1	256.0	484.3	0.00	0.00	0.00
6,700.0	63.20	164.16	6,159.4	1,534.4	-988.0	280.4	530.4	0.00	0.00	0.00
6,708.4	63.20	164.16	6,163.2	1,538.2	-995.2	282.4	534.2	0.00	0.00	0.00
6,800.0	64.36	156.09	6,203.7	1,578.7	-1,072.4	310.3	581.5	8.00	1.26	-8.81
6,900.0	66.12	147.49	6,245.7	1,620.7	-1,152.3	353.2	643.9	8.00	1.76	-8.60
7,000.0	68.34	139.15	6,284.4	1,659.4	-1,226.1	408.3	716.4	8.00	2.22	-8.34
7,100.0	70.96	131.09	6,319.3	1,694.3	-1,292.4	474.4	797.7	8.00	2.62	-8.06
7,200.0	73.92	123.29	6,349.5	1,724.5	-1,350.0	550.3	886.0	8.00	2.96	-7.80
7,300.0	77.16	115.74	6,374.5	1,749.5	-1,397.6	634.5	979.8	8.00	3.23	-7.56
7,400.0	80.60	108.38	6,393.8	1,768.8	-1,434.4	725.4	1,077.2	8.00	3.44	-7.36
7,500.0	84.19	101.16	6,407.0	1,782.0	-1,459.6	821.2	1,176.2	8.00	3.59	-7.21
7,600.0	87.88	94.04	6,413.9	1,788.9	-1,472.8	920.0	1,275.0	8.00	3.68	-7.12
EOB;7657.1' MD										
7,657.1	90.00	90.00	6,415.0	1,790.0	-1,474.8	977.0	1,330.5	8.00	3.71	-7.08
7,700.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,019.9	1,371.9	0.00	0.00	0.00
7,800.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,119.9	1,468.4	0.00	0.00	0.00
7,900.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,219.9	1,564.9	0.00	0.00	0.00
8,000.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,319.9	1,661.4	0.00	0.00	0.00
8,100.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,419.9	1,757.8	0.00	0.00	0.00
8,200.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,519.9	1,854.3	0.00	0.00	0.00
8,300.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,619.9	1,950.8	0.00	0.00	0.00
8,400.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,719.9	2,047.3	0.00	0.00	0.00
8,500.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,819.9	2,143.8	0.00	0.00	0.00
8,600.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	1,919.9	2,240.2	0.00	0.00	0.00
8,700.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,019.9	2,336.7	0.00	0.00	0.00
8,800.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,119.9	2,433.2	0.00	0.00	0.00
8,900.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,219.9	2,529.7	0.00	0.00	0.00
9,000.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,319.9	2,626.1	0.00	0.00	0.00
9,100.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,419.9	2,722.6	0.00	0.00	0.00

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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)
9,200.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,519.9	2,819.1	0.00	0.00	0.00
9,300.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,619.9	2,915.6	0.00	0.00	0.00
9,400.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,719.9	3,012.1	0.00	0.00	0.00
9,500.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,819.9	3,108.5	0.00	0.00	0.00
9,600.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	2,919.9	3,205.0	0.00	0.00	0.00
9,700.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,019.9	3,301.5	0.00	0.00	0.00
9,800.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,119.9	3,398.0	0.00	0.00	0.00
9,900.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,219.9	3,494.5	0.00	0.00	0.00
10,000.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,319.9	3,590.9	0.00	0.00	0.00
10,100.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,419.9	3,687.4	0.00	0.00	0.00
10,200.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,519.9	3,783.9	0.00	0.00	0.00
10,300.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,619.9	3,880.4	0.00	0.00	0.00
10,400.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,719.9	3,976.8	0.00	0.00	0.00
10,500.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,819.9	4,073.3	0.00	0.00	0.00
10,600.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	3,919.9	4,169.8	0.00	0.00	0.00
10,700.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,019.9	4,266.3	0.00	0.00	0.00
10,800.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,119.9	4,362.8	0.00	0.00	0.00
10,900.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,219.9	4,459.2	0.00	0.00	0.00
11,000.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,319.9	4,555.7	0.00	0.00	0.00
11,100.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,419.9	4,652.2	0.00	0.00	0.00
11,200.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,519.9	4,748.7	0.00	0.00	0.00
11,300.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,619.9	4,845.2	0.00	0.00	0.00
11,400.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,719.9	4,941.6	0.00	0.00	0.00
11,500.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,819.9	5,038.1	0.00	0.00	0.00
11,600.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	4,919.9	5,134.6	0.00	0.00	0.00
11,700.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	5,019.9	5,231.1	0.00	0.00	0.00
11,800.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	5,119.9	5,327.5	0.00	0.00	0.00
11,900.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	5,219.9	5,424.0	0.00	0.00	0.00
12,000.0	90.00	90.00	6,415.0	1,790.0	-1,474.8	5,319.9	5,520.5	0.00	0.00	0.00
TD at 12089.3' MD										
12,089.3	90.00	90.00	6,415.0	1,790.0	-1,474.8	5,409.2	5,606.7	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 10 EOB	0.00	0.00	6,415.0	-1,474.8	977.0	1,362,424.78	3,302,957.52	40° 19' 23.38162 N		104° 24' 48.33368 W
- plan hits target center										
- Point										
Ranch 10 BHL	0.00	0.00	6,415.0	-1,474.8	5,409.2	1,362,478.92	3,307,389.42	40° 19' 23.37596 N		104° 23' 51.10800 W
- plan hits target center										
- Point										

Planning Report

Database:	WellPlan Services	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	#1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,200.0	5,200.0	0.0	0.0	KOP;5200' MD
7,657.1	6,415.0	-1,474.8	977.0	EOB;7657.1' MD
12,089.3	6,415.0	-1,474.8	5,409.2	TD at 12089.3' MD

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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:	ISCWSA
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	12,089.3	#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-10-11-11 - Hz - #1	5,000.0	4,992.9	38.1	16.0	1.725	CC, ES, SF
70 Ranch-10-11-12 - Hz - #1	5,000.0	4,991.5	49.3	27.2	2.229	CC, ES, SF
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						Out of range
70 Ranch-10-11-5 - Hz - #1						Out of range
70 Ranch-10-11-6 - Hz - #1						Out of range
70 Ranch-10-11-7 - Hz - #1	5,200.0	5,200.0	47.4	24.3	2.050	CC, ES, SF
70 Ranch-10-11-8 - Hz - #1	5,200.0	5,200.0	32.8	9.7	1.419	Level 3, CC, ES, SF
70 Ranch-10-11-9 - Hz - #1	5,150.0	5,150.0	14.6	-8.3	0.637	Level 1, CC
70 Ranch-10-11-9 - Hz - #1	5,250.0	5,250.9	14.7	-8.6	0.630	Level 1, ES, SF

Offset Design	Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-11 - 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	4,992.9	4,991.1	11.1	11.0	174.49	-36.9	3.6	38.1	16.0	22.10	1.725	CC, ES, SF
5,026.5	5,026.5	5,017.4	5,014.8	11.2	11.0	173.99	-42.9	4.5	44.7	22.5	22.21	2.013	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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-10-11-12 - 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	4,991.5	4,990.2	11.1	11.0	179.60	-48.3	0.3	49.3	27.2	22.10	2.229 CC, ES, SF	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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						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	0.01	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	0.01	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	0.01	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	0.01	47.4	0.0	47.4	24.5	22.88	2.070	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	0.01	47.4	0.0	47.4	24.3	23.11	2.050 CC, ES, SF	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	-164.68	47.4	0.0	49.0	25.8	23.27	2.107	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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	0.00	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	0.00	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	0.00	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	0.00	32.8	0.0	32.8	9.9	22.88	1.433	Level 3
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	0.00	32.8	0.0	32.8	9.7	23.11	1.419	Level 3, CC, ES, SF
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	-164.92	32.8	0.0	34.5	11.2	23.27	1.481	Level 3
5,300.0	5,299.7	5,299.7	5,299.7	11.7	11.8	-166.79	32.8	0.0	39.5	16.2	23.33	1.694	
5,350.0	5,348.9	5,348.9	5,348.9	11.8	11.9	-169.03	32.8	0.0	48.0	24.7	23.30	2.062	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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		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	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, CC	
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	5,250.9	5,250.9	11.7	11.7	-162.95	12.9	0.8	14.7	-8.6	23.26	0.630 Level 1, ES, SF	
5,300.0	5,299.7	5,301.8	5,301.5	11.7	11.7	-159.40	8.1	3.2	14.9	-8.4	23.31	0.641 Level 1	
5,350.0	5,348.9	5,352.7	5,351.6	11.8	11.8	-153.85	0.0	7.1	15.6	-7.8	23.30	0.667 Level 1	
5,400.0	5,397.4	5,403.5	5,400.8	11.9	11.9	-146.88	-11.2	12.6	16.6	-6.7	23.29	0.713 Level 1	
5,450.0	5,445.0	5,454.3	5,449.0	12.0	12.0	-139.29	-25.6	19.6	18.3	-5.1	23.33	0.782 Level 1	
5,500.0	5,491.3	5,505.0	5,495.9	12.1	12.1	-131.84	-42.9	28.1	20.6	-2.9	23.47	0.877 Level 1	
5,550.0	5,536.2	5,555.6	5,541.2	12.2	12.3	-125.09	-63.1	38.0	23.6	-0.1	23.71	0.998 Level 1	
5,600.0	5,579.5	5,606.1	5,584.7	12.3	12.4	-119.28	-86.1	49.2	27.4	3.4	24.04	1.141 Level 2	
5,650.0	5,621.0	5,656.5	5,626.2	12.5	12.6	-114.40	-111.8	61.8	31.9	7.4	24.46	1.303 Level 3	
5,700.0	5,660.4	5,706.8	5,665.5	12.7	12.8	-110.37	-139.9	75.5	37.0	12.0	24.96	1.481 Level 3	
5,750.0	5,697.5	5,757.0	5,702.5	12.9	13.1	-107.03	-170.4	90.4	42.6	17.1	25.53	1.669	
5,800.0	5,732.2	5,807.0	5,736.9	13.2	13.4	-104.25	-203.0	106.4	48.8	22.6	26.19	1.863	

Anticollision Report

Company:	Edge Energy LLC	Local Co-ordinate Reference:	Well 70 Ranch-10-11-10 - Slot A10
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-10-11-10	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

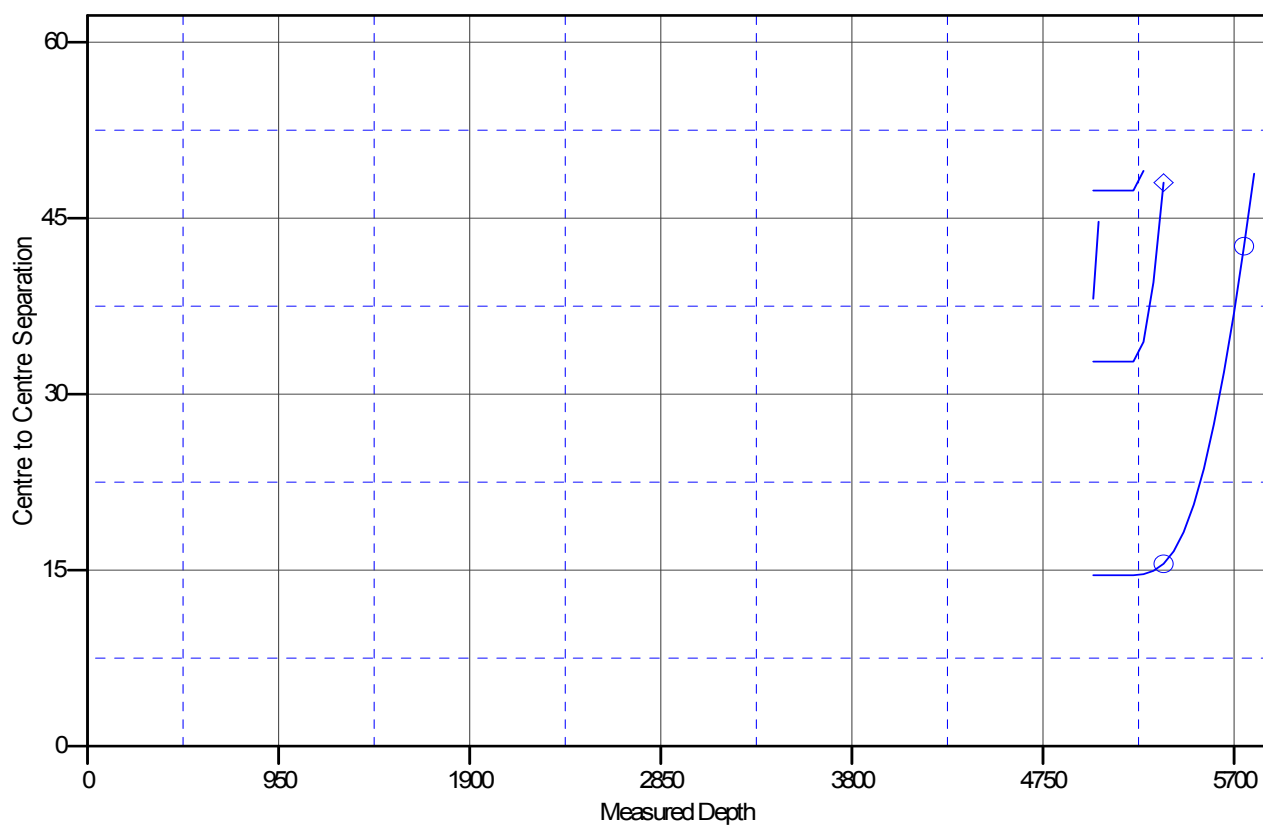
Central Meridian is 105° 30' 0.00000 W

Coordinates are relative to: 70 Ranch-10-11-10 - Slot A10

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.70°

Ladder Plot



LEGEND

- ◆ 70 Ranch-10-11-8, Hz, #1 V0
- ▲ 70 Ranch-10-11-11, Hz, #1 V0
- 70 Ranch-10-11-9, Hz, #1 V0
- ✕ 70 Ranch-10-11-7, Hz, #1 V0
- ✱ 70 Ranch-10-11-12, Hz, #1 V0