

# **Edge Energy LLC**

**Weld County, Co (NAD 83)**

**Sec. 10 Twn 4N Rng 63W**

**70 Ranch-10-11-2 - Slot A2**

**Hz**

**UWI:**

**WL:**

**Plan: #1**

## **Standard Planning Report**

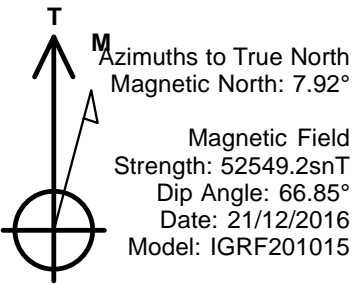
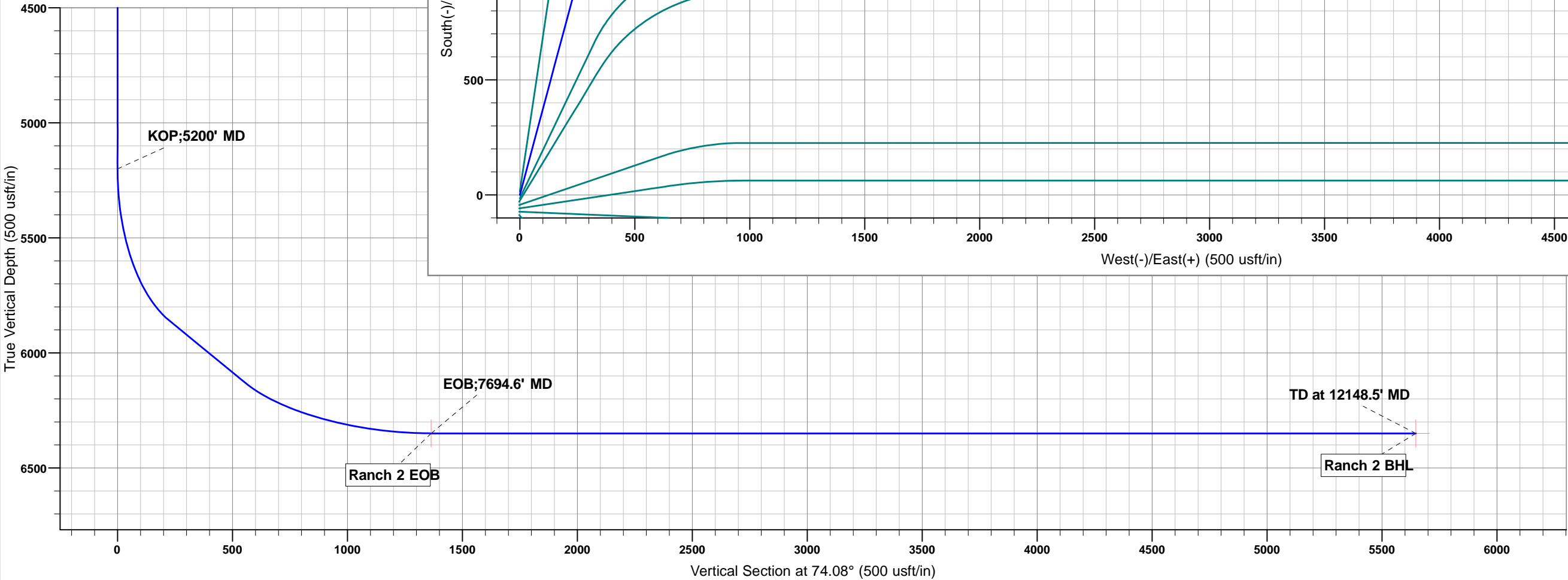
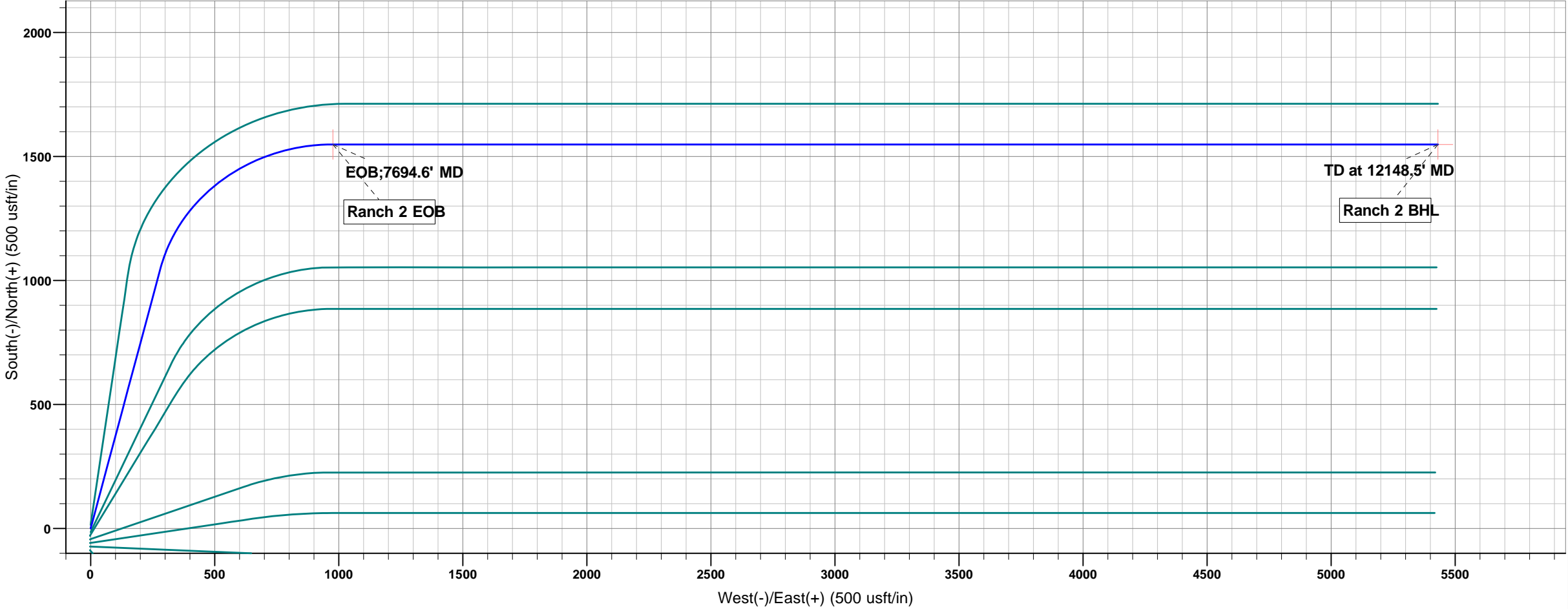
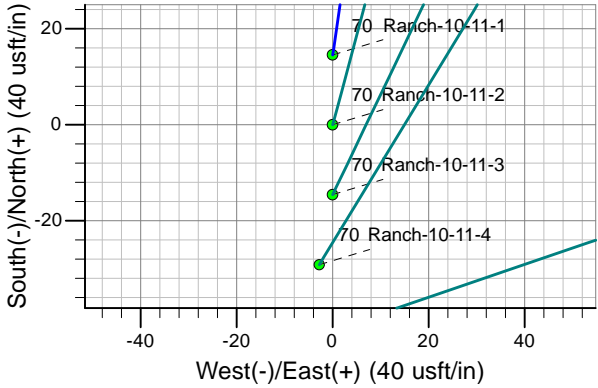
**28 December, 2016**

Project: Weld County, Co (NAD 83)  
Site: Sec. 10 TwN 4N Rng 63W  
Well: 70 Ranch-10-11-2  
Wellbore: Hz  
Plan: #1

Reference Details - WELL CENTRE  
Geodetic System: US State Plane 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
Northing: 1364007.75  
Easting: 3301963.90  
Latitude: 40° 19' 39.14384 N  
Longitude: 104° 25' 0.91200 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	6040.0	67.20	15.02	5860.2	423.6	113.7	8.00	15.02	225.5	
4	6742.4	67.20	15.02	6132.5	1049.1	281.5	0.00	0.00	558.5	
5	7694.6	90.00	90.00	6350.0	1548.8	977.0	8.00	84.06	1364.3	Ranch 2 EOB
6	12148.5	90.00	90.00	6350.0	1548.8	5430.8	0.00	0.00	5647.4	Ranch 2 BHL



# Planning Report

<b>Database:</b>	WellPlan Services	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Company:</b>	Edge Energy LLC	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Project:</b>	Weld County, Co (NAD 83)	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>North Reference:</b>	True
<b>Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	#1		

<b>Project</b>	Weld County, Co (NAD 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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-10-11-2 - Slot A2					
Well Position	+N/-S	-14.6 usft	Northing:	1,364,007.76 usft	Latitude:	40° 19' 39.14384 N
	+E/-W	0.0 usft	Easting:	3,301,963.90 usft	Longitude:	104° 25' 0.91200 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,605.0 usft

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

<b>Design</b>	#1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	74.08

<b>Plan Sections</b>										
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	
6,040.0	67.20	15.02	5,860.2	423.6	113.7	8.00	8.00	0.00	15.02	
6,742.4	67.20	15.02	6,132.5	1,049.1	281.5	0.00	0.00	0.00	0.00	
7,694.6	90.00	90.00	6,350.0	1,548.8	977.0	8.00	2.39	7.87	84.06	Ranch 2 EOB
12,148.5	90.00	90.00	6,350.0	1,548.8	5,430.8	0.00	0.00	0.00	0.00	Ranch 2 BHL

# Planning Report

<b>Database:</b>	WellPlan Services	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Company:</b>	Edge Energy LLC	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Project:</b>	Weld County, Co (NAD 83)	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>North Reference:</b>	True
<b>Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	#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
<b>KOP;5200' MD</b>										
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	15.02	5,299.7	674.7	6.7	1.8	3.6	8.00	8.00	0.00
5,400.0	16.00	15.02	5,397.4	772.4	26.8	7.2	14.3	8.00	8.00	0.00
5,500.0	24.00	15.02	5,491.3	866.3	59.8	16.0	31.8	8.00	8.00	0.00
5,600.0	32.00	15.02	5,579.5	954.5	105.1	28.2	56.0	8.00	8.00	0.00
5,700.0	40.00	15.02	5,660.4	1,035.4	161.8	43.4	86.2	8.00	8.00	0.00
5,800.0	48.00	15.02	5,732.2	1,107.2	228.9	61.4	121.8	8.00	8.00	0.00
5,900.0	56.00	15.02	5,793.8	1,168.8	304.9	81.8	162.3	8.00	8.00	0.00
6,000.0	64.00	15.02	5,843.7	1,218.7	388.5	104.3	206.8	8.00	8.00	0.00
6,040.0	67.20	15.02	5,860.2	1,235.2	423.6	113.7	225.5	8.00	8.00	0.00
6,100.0	67.20	15.02	5,883.5	1,258.5	477.1	128.0	254.0	0.00	0.00	0.00
6,200.0	67.20	15.02	5,922.2	1,297.2	566.1	151.9	301.4	0.00	0.00	0.00
6,300.0	67.20	15.02	5,961.0	1,336.0	655.2	175.8	348.8	0.00	0.00	0.00
6,400.0	67.20	15.02	5,999.8	1,374.8	744.2	199.7	396.2	0.00	0.00	0.00
6,500.0	67.20	15.02	6,038.5	1,413.5	833.2	223.6	443.6	0.00	0.00	0.00
6,600.0	67.20	15.02	6,077.3	1,452.3	922.3	247.5	491.0	0.00	0.00	0.00
6,700.0	67.20	15.02	6,116.0	1,491.0	1,011.3	271.4	538.4	0.00	0.00	0.00
6,742.4	67.20	15.02	6,132.5	1,507.5	1,049.1	281.5	558.5	0.00	0.00	0.00
6,800.0	67.75	19.97	6,154.5	1,529.5	1,099.8	297.5	587.7	8.00	0.96	8.60
6,900.0	69.06	28.46	6,191.4	1,566.4	1,184.5	335.7	647.6	8.00	1.31	8.49
7,000.0	70.78	36.78	6,225.8	1,600.8	1,263.4	386.3	718.0	8.00	1.72	8.32
7,100.0	72.87	44.91	6,257.0	1,632.0	1,335.2	448.4	797.4	8.00	2.09	8.13
7,200.0	75.27	52.85	6,284.5	1,659.5	1,398.4	520.8	884.3	8.00	2.40	7.94
7,300.0	77.94	60.60	6,307.7	1,682.7	1,451.7	602.0	977.1	8.00	2.67	7.75
7,400.0	80.82	68.20	6,326.2	1,701.2	1,494.1	690.6	1,073.9	8.00	2.88	7.60
7,500.0	83.85	75.67	6,339.5	1,714.5	1,524.7	784.8	1,172.8	8.00	3.03	7.47
7,600.0	86.99	83.05	6,347.5	1,722.5	1,543.1	882.6	1,272.0	8.00	3.14	7.38
<b>EOB;7694.6' MD</b>										
7,694.6	90.00	90.00	6,350.0	1,725.0	1,548.8	977.0	1,364.3	8.00	3.19	7.34
7,700.0	90.00	90.00	6,350.0	1,725.0	1,548.8	982.4	1,369.5	0.05	0.02	0.04
7,800.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,082.4	1,465.7	0.00	0.00	0.00
7,900.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,182.4	1,561.8	0.00	0.00	0.00
8,000.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,282.4	1,658.0	0.00	0.00	0.00
8,100.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,382.4	1,754.1	0.00	0.00	0.00
8,200.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,482.4	1,850.3	0.00	0.00	0.00
8,300.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,582.4	1,946.5	0.00	0.00	0.00
8,400.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,682.4	2,042.6	0.00	0.00	0.00
8,500.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,782.4	2,138.8	0.00	0.00	0.00
8,600.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,882.4	2,235.0	0.00	0.00	0.00
8,700.0	90.00	90.00	6,350.0	1,725.0	1,548.8	1,982.4	2,331.1	0.00	0.00	0.00
8,800.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,082.4	2,427.3	0.00	0.00	0.00
8,900.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,182.4	2,523.5	0.00	0.00	0.00
9,000.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,282.4	2,619.6	0.00	0.00	0.00
9,100.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,382.4	2,715.8	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	WellPlan Services	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Company:</b>	Edge Energy LLC	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Project:</b>	Weld County, Co (NAD 83)	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>North Reference:</b>	True
<b>Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	#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	6,350.0	1,725.0	1,548.8	2,482.4	2,812.0	0.00	0.00	0.00
9,300.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,582.4	2,908.1	0.00	0.00	0.00
9,400.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,682.4	3,004.3	0.00	0.00	0.00
9,500.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,782.4	3,100.5	0.00	0.00	0.00
9,600.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,882.4	3,196.6	0.00	0.00	0.00
9,700.0	90.00	90.00	6,350.0	1,725.0	1,548.8	2,982.4	3,292.8	0.00	0.00	0.00
9,800.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,082.4	3,389.0	0.00	0.00	0.00
9,900.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,182.4	3,485.1	0.00	0.00	0.00
10,000.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,282.4	3,581.3	0.00	0.00	0.00
10,100.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,382.4	3,677.5	0.00	0.00	0.00
10,200.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,482.4	3,773.6	0.00	0.00	0.00
10,300.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,582.4	3,869.8	0.00	0.00	0.00
10,400.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,682.4	3,966.0	0.00	0.00	0.00
10,500.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,782.4	4,062.1	0.00	0.00	0.00
10,600.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,882.4	4,158.3	0.00	0.00	0.00
10,700.0	90.00	90.00	6,350.0	1,725.0	1,548.8	3,982.4	4,254.5	0.00	0.00	0.00
10,800.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,082.4	4,350.6	0.00	0.00	0.00
10,900.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,182.4	4,446.8	0.00	0.00	0.00
11,000.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,282.4	4,543.0	0.00	0.00	0.00
11,100.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,382.4	4,639.1	0.00	0.00	0.00
11,200.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,482.4	4,735.3	0.00	0.00	0.00
11,300.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,582.4	4,831.4	0.00	0.00	0.00
11,400.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,682.4	4,927.6	0.00	0.00	0.00
11,500.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,782.4	5,023.8	0.00	0.00	0.00
11,600.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,882.4	5,119.9	0.00	0.00	0.00
11,700.0	90.00	90.00	6,350.0	1,725.0	1,548.8	4,982.4	5,216.1	0.00	0.00	0.00
11,800.0	90.00	90.00	6,350.0	1,725.0	1,548.8	5,082.4	5,312.3	0.00	0.00	0.00
11,900.0	90.00	90.00	6,350.0	1,725.0	1,548.8	5,182.4	5,408.4	0.00	0.00	0.00
12,000.0	90.00	90.00	6,350.0	1,725.0	1,548.8	5,282.4	5,504.6	0.00	0.00	0.00
12,100.0	90.00	90.00	6,350.0	1,725.0	1,548.8	5,382.4	5,600.8	0.00	0.00	0.00
TD at 12148.5' MD										
12,148.5	90.00	90.00	6,350.0	1,725.0	1,548.8	5,430.8	5,647.4	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
- hit/miss target										
- Shape										
Ranch 2 BHL	0.00	0.00	6,350.0	1,548.8	5,430.8	1,365,622.82	3,307,375.42	40° 19' 54.44396 N	104° 23' 50.78400 W	
- plan hits target center										
- Point										
Ranch 2 EOB	0.00	0.00	6,350.0	1,548.8	977.0	1,365,568.42	3,302,921.91	40° 19' 54.44966 N	104° 24' 48.29608 W	
- plan hits target center										
- Point										

# Planning Report

<b>Database:</b>	WellPlan Services	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Company:</b>	Edge Energy LLC	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Project:</b>	Weld County, Co (NAD 83)	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>North Reference:</b>	True
<b>Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	#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
7,694.6	6,350.0	1,548.8	977.0	EOB;7694.6' MD
12,148.5	6,350.0	1,548.8	5,430.8	TD at 12148.5' MD

# Anticollision Report

<b>Company:</b>	Edge Energy LLC	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Project:</b>	Weld County, Co (NAD 83)	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Reference Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	WellPlan Services
<b>Reference Design:</b>	#1	<b>Offset TVD Reference:</b>	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

<b>Survey Tool Program</b>	<b>Date</b>	28/12/2016		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	12,148.5	#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	5,000.0	4,999.0	14.6	-7.6	0.656	Level 1, CC, ES, SF
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-10-11-3 - Hz - #1	5,200.0	5,200.0	14.6	-8.5	0.631	Level 1, CC, ES, SF
70 Ranch-10-11-4 - Hz - #1	5,200.0	5,200.0	29.3	6.2	1.267	Level 3, CC, ES, SF
70 Ranch-10-11-5 - Hz - #1	5,200.0	5,200.0	43.8	20.7	1.896	CC, ES, SF
70 Ranch-10-11-6 - Hz - #1						Out of range
70 Ranch-10-11-7 - Hz - #1						Out of range
70 Ranch-10-11-8 - Hz - #1						Out of range
70 Ranch-10-11-9 - Hz - #1						Out of range

<b>Offset Design</b>	Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-1 - Hz - #1											<b>Offset Site Error:</b>	0.0 usft
<b>Survey Program:</b>	0-MWD											<b>Offset Well Error:</b>	0.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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	Warning
5,000.0	5,000.0	4,999.0	4,999.0	11.1	11.1	0.00	14.6	0.0	14.6	-7.6	22.20	0.656	Level 1, CC, ES, SF
5,025.6	5,025.6	5,024.2	5,024.2	11.2	11.2	0.19	14.9	0.0	14.9	-7.4	22.32	0.668	Level 1
5,050.0	5,050.0	5,048.2	5,048.1	11.2	11.2	0.70	15.9	0.2	15.9	-6.5	22.43	0.709	Level 1
5,100.0	5,100.0	5,097.0	5,096.8	11.3	11.3	2.27	19.8	0.8	20.0	-2.7	22.65	0.882	Level 1
5,150.0	5,150.0	5,145.3	5,144.6	11.4	11.4	3.82	26.4	1.8	26.8	3.9	22.87	1.172	Level 2
5,200.0	5,200.0	5,192.7	5,191.1	11.6	11.5	5.00	35.3	3.1	36.3	13.2	23.09	1.572	
5,250.0	5,250.0	5,239.4	5,236.4	11.7	11.6	-9.37	46.5	4.8	46.8	23.5	23.26	2.010	

## Anticollision Report

<b>Company:</b>	Edge Energy LLC	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Project:</b>	Weld County, Co (NAD 83)	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Reference Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	WellPlan Services
<b>Reference Design:</b>	#1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-3 - Hz - #1												<b>Offset Site Error:</b>	0.0 usft
Survey Program:    0-MWD												<b>Offset Well Error:</b>	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	-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, CC, ES, SF
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	166.54	-14.6	0.0	16.3	-7.0	23.29	0.699	Level 1
5,300.0	5,299.7	5,299.7	5,299.7	11.8	11.8	169.73	-14.6	0.0	21.4	-2.0	23.37	0.915	Level 1
5,350.0	5,348.9	5,348.9	5,348.9	11.9	11.9	172.60	-14.6	0.0	30.0	6.6	23.36	1.283	Level 3
5,400.0	5,397.4	5,397.4	5,397.4	12.0	12.0	174.63	-14.6	0.0	42.0	18.7	23.24	1.807	



## Anticollision Report

<b>Company:</b>	Edge Energy LLC	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Project:</b>	Weld County, Co (NAD 83)	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Reference Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	WellPlan Services
<b>Reference Design:</b>	#1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-4 - Hz - #1												<b>Offset Site Error:</b>	0.0 usft
Survey Program:    0-MWD												<b>Offset Well Error:</b>	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	-174.54	-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	-174.54	-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	-174.54	-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	-174.54	-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	-174.54	-29.1	-2.8	29.3	6.2	23.11	1.267	Level 3, CC, ES, SF
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	170.96	-29.1	-2.8	31.0	7.7	23.28	1.331	Level 3
5,300.0	5,299.7	5,299.7	5,299.7	11.8	11.8	172.20	-29.1	-2.8	36.2	12.8	23.37	1.548	
5,350.0	5,348.9	5,348.9	5,348.9	11.9	11.9	173.63	-29.1	-2.8	44.8	21.4	23.36	1.918	

## Anticollision Report

<b>Company:</b>	Edge Energy LLC	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Project:</b>	Weld County, Co (NAD 83)	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Reference Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	WellPlan Services
<b>Reference Design:</b>	#1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sec. 10 Twn 4N Rng 63W - 70 Ranch-10-11-5 - Hz - #1												<b>Offset Site Error:</b>	0.0 usft
Survey Program:    0-MWD												<b>Offset Well Error:</b>	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	-176.35	-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	-176.35	-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	-176.35	-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	-176.35	-43.7	-2.8	43.8	20.9	22.88	1.914	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-176.35	-43.7	-2.8	43.8	20.7	23.11	1.896 CC, ES, SF	
5,250.0	5,250.0	5,250.0	5,250.0	11.7	11.7	169.03	-43.7	-2.8	45.5	22.2	23.29	1.955	

## Anticollision Report

<b>Company:</b>	Edge Energy LLC	<b>Local Co-ordinate Reference:</b>	Well 70 Ranch-10-11-2 - Slot A2
<b>Project:</b>	Weld County, Co (NAD 83)	<b>TVD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Reference Site:</b>	Sec. 10 Twn 4N Rng 63W	<b>MD Reference:</b>	RKB @ 4625.0usft (kb;20')
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	70 Ranch-10-11-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	WellPlan Services
<b>Reference Design:</b>	#1	<b>Offset TVD Reference:</b>	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-10-11-2 - Slot A2  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.70°

