

# ENSIGN

## Directional

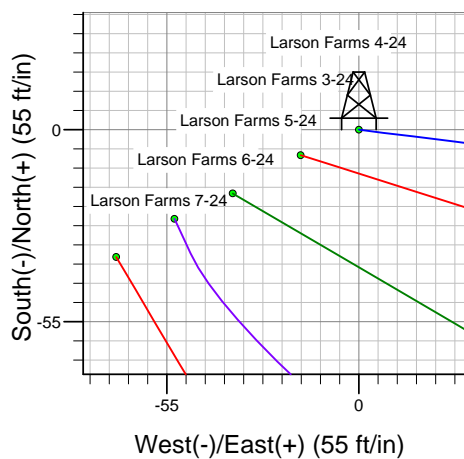
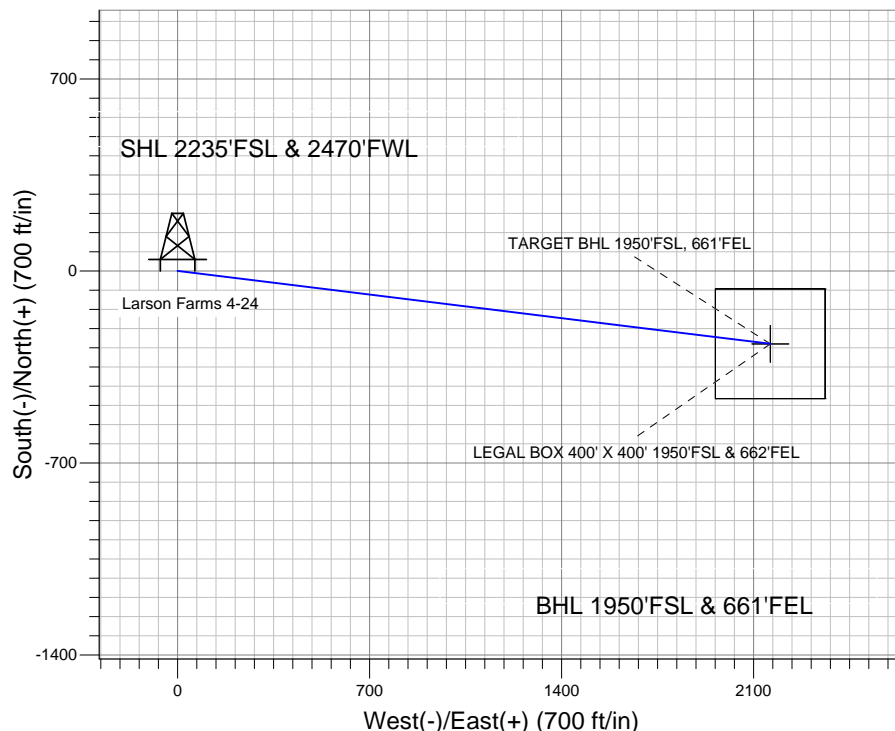
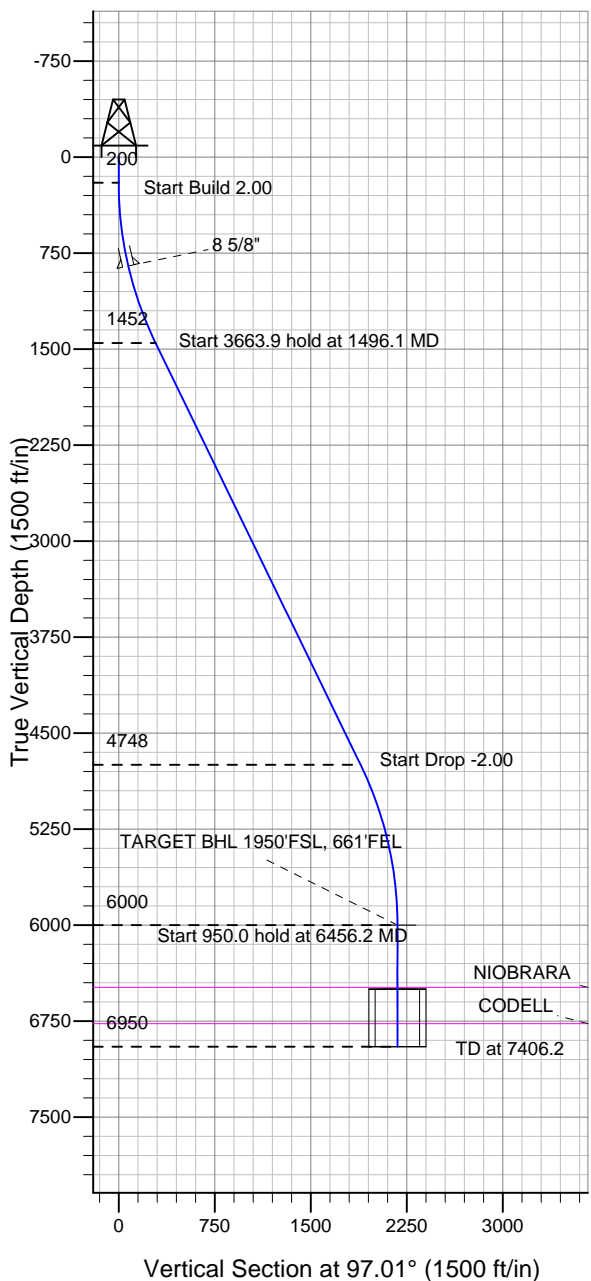
### Well Name: Larson Farms 4-24

Surface Location: Larson Farms 4-24 Pad Sec.24-T6N-R64W  
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

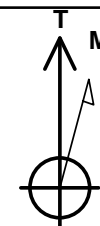
Ground Elevation: 4642.5

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1415935.86	3278513.93	40.470830	-104.498920	
Original Well Elev WELL @ 4655.5ft (Original Well Elev)						

### St. James, Weld County CO



Larson Farms 4-24 Pad Sec.24-T6N-R64W  
 Larson Farms 4-24  
 Plan #1 (7-21-11)  
 13:06, July 28 2011



Azimuths to True North  
 Magnetic North: 8.71°

Magnetic Field  
 Strength: 53186.1snT  
 Dip Angle: 67.15°  
 Date: 7/28/2011  
 Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1950'FSL, 661'FEL	6000.0	-265.8	2161.9	40.470100	-104.491150	Point
LEGAL BOX 400' X 400' 1950'FSL & 662'FEL	6500.0	-265.8	2160.9	40.470100	-104.491153	Rectangle (Sides: L400.0 W400.0)

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1496.1	25.92	97.01	1452.3	-35.2	286.1	2.00	97.01	288.2	
4	5160.1	25.92	97.01	4747.7	-230.7	1875.8	0.00	0.00	1889.9	
5	6456.2	0.00	0.00	6000.0	-265.8	2161.9	2.00	180.00	2178.2	TARGET BHL 1950'FSL, 661'FEL
6	7406.2	0.00	0.00	6950.0	-265.8	2161.9	0.00	0.00	2178.2	



## **Directional**

### **St. James, Weld County CO**

**SEC.24-T6N-R64W**

**Larson Farms 4-24 Pad Sec.24-T6N-R64W**

**Larson Farms 4-24**

**Wellbore #1**

**Plan: Plan #1 (7-21-11)**

### **Standard Planning Report**

**28 July, 2011**

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,496.1	25.92	97.01	1,452.3	-35.2	286.1	2.00	2.00	0.00	97.01	
5,160.1	25.92	97.01	4,747.7	-230.7	1,875.8	0.00	0.00	0.00	0.00	
6,456.2	0.00	0.00	6,000.0	-265.8	2,161.9	2.00	-2.00	0.00	180.00	TARGET BHL 1950
7,406.2	0.00	0.00	6,950.0	-265.8	2,161.9	0.00	0.00	0.00	0.00	

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Company:</b>	St. James, Weld County CO	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Project:</b>	SEC.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-21-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.80	97.01	240.0	0.0	0.3	0.3	2.00	2.00	0.00
280.0	1.60	97.01	280.0	-0.1	1.1	1.1	2.00	2.00	0.00
320.0	2.40	97.01	320.0	-0.3	2.5	2.5	2.00	2.00	0.00
360.0	3.20	97.01	359.9	-0.5	4.4	4.5	2.00	2.00	0.00
400.0	4.00	97.01	399.8	-0.9	6.9	7.0	2.00	2.00	0.00
440.0	4.80	97.01	439.7	-1.2	10.0	10.0	2.00	2.00	0.00
480.0	5.60	97.01	479.6	-1.7	13.6	13.7	2.00	2.00	0.00
520.0	6.40	97.01	519.3	-2.2	17.7	17.9	2.00	2.00	0.00
560.0	7.20	97.01	559.1	-2.8	22.4	22.6	2.00	2.00	0.00
600.0	8.00	97.01	598.7	-3.4	27.7	27.9	2.00	2.00	0.00
640.0	8.80	97.01	638.3	-4.1	33.5	33.7	2.00	2.00	0.00
680.0	9.60	97.01	677.8	-4.9	39.8	40.1	2.00	2.00	0.00
720.0	10.40	97.01	717.1	-5.7	46.7	47.1	2.00	2.00	0.00
760.0	11.20	97.01	756.4	-6.7	54.2	54.6	2.00	2.00	0.00
800.0	12.00	97.01	795.6	-7.6	62.1	62.6	2.00	2.00	0.00
840.0	12.80	97.01	834.7	-8.7	70.7	71.2	2.00	2.00	0.00
855.7	13.11	97.01	850.0	-9.1	74.2	74.7	2.00	2.00	0.00
8 5/8"									
880.0	13.60	97.01	873.6	-9.8	79.7	80.3	2.00	2.00	0.00
920.0	14.40	97.01	912.4	-11.0	89.3	90.0	2.00	2.00	0.00
960.0	15.20	97.01	951.1	-12.2	99.5	100.2	2.00	2.00	0.00
1,000.0	16.00	97.01	989.6	-13.5	110.1	111.0	2.00	2.00	0.00
1,040.0	16.80	97.01	1,028.0	-14.9	121.4	122.3	2.00	2.00	0.00
1,080.0	17.60	97.01	1,066.2	-16.4	133.1	134.1	2.00	2.00	0.00
1,120.0	18.40	97.01	1,104.3	-17.9	145.4	146.5	2.00	2.00	0.00
1,160.0	19.20	97.01	1,142.1	-19.4	158.2	159.3	2.00	2.00	0.00
1,200.0	20.00	97.01	1,179.8	-21.1	171.5	172.8	2.00	2.00	0.00
1,240.0	20.80	97.01	1,217.3	-22.8	185.3	186.7	2.00	2.00	0.00
1,280.0	21.60	97.01	1,254.6	-24.6	199.7	201.2	2.00	2.00	0.00
1,320.0	22.40	97.01	1,291.7	-26.4	214.5	216.2	2.00	2.00	0.00
1,360.0	23.20	97.01	1,328.6	-28.3	229.9	231.7	2.00	2.00	0.00
1,400.0	24.00	97.01	1,365.2	-30.2	245.8	247.7	2.00	2.00	0.00
1,440.0	24.80	97.01	1,401.6	-32.2	262.2	264.2	2.00	2.00	0.00
1,480.0	25.60	97.01	1,437.8	-34.3	279.1	281.2	2.00	2.00	0.00
1,496.1	25.92	97.01	1,452.3	-35.2	286.1	288.2	2.00	2.00	0.00
1,520.0	25.92	97.01	1,473.8	-36.5	296.4	298.7	0.00	0.00	0.00
1,560.0	25.92	97.01	1,509.8	-38.6	313.8	316.2	0.00	0.00	0.00
1,600.0	25.92	97.01	1,545.8	-40.7	331.2	333.6	0.00	0.00	0.00
1,640.0	25.92	97.01	1,581.8	-42.9	348.5	351.1	0.00	0.00	0.00
1,680.0	25.92	97.01	1,617.7	-45.0	365.9	368.6	0.00	0.00	0.00
1,720.0	25.92	97.01	1,653.7	-47.1	383.2	386.1	0.00	0.00	0.00
1,760.0	25.92	97.01	1,689.7	-49.3	400.6	403.6	0.00	0.00	0.00
1,800.0	25.92	97.01	1,725.7	-51.4	417.9	421.1	0.00	0.00	0.00
1,840.0	25.92	97.01	1,761.6	-53.5	435.3	438.6	0.00	0.00	0.00
1,880.0	25.92	97.01	1,797.6	-55.7	452.6	456.0	0.00	0.00	0.00
1,920.0	25.92	97.01	1,833.6	-57.8	470.0	473.5	0.00	0.00	0.00
1,960.0	25.92	97.01	1,869.6	-59.9	487.3	491.0	0.00	0.00	0.00
2,000.0	25.92	97.01	1,905.5	-62.1	504.7	508.5	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Company:</b>	St. James, Weld County CO	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Project:</b>	SEC.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-21-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,040.0	25.92	97.01	1,941.5	-64.2	522.1	526.0	0.00	0.00	0.00
2,080.0	25.92	97.01	1,977.5	-66.3	539.4	543.5	0.00	0.00	0.00
2,120.0	25.92	97.01	2,013.5	-68.5	556.8	561.0	0.00	0.00	0.00
2,160.0	25.92	97.01	2,049.4	-70.6	574.1	578.4	0.00	0.00	0.00
2,200.0	25.92	97.01	2,085.4	-72.7	591.5	595.9	0.00	0.00	0.00
2,240.0	25.92	97.01	2,121.4	-74.9	608.8	613.4	0.00	0.00	0.00
2,280.0	25.92	97.01	2,157.4	-77.0	626.2	630.9	0.00	0.00	0.00
2,320.0	25.92	97.01	2,193.3	-79.1	643.5	648.4	0.00	0.00	0.00
2,360.0	25.92	97.01	2,229.3	-81.3	660.9	665.9	0.00	0.00	0.00
2,400.0	25.92	97.01	2,265.3	-83.4	678.3	683.4	0.00	0.00	0.00
2,440.0	25.92	97.01	2,301.3	-85.5	695.6	700.9	0.00	0.00	0.00
2,480.0	25.92	97.01	2,337.2	-87.7	713.0	718.3	0.00	0.00	0.00
2,520.0	25.92	97.01	2,373.2	-89.8	730.3	735.8	0.00	0.00	0.00
2,560.0	25.92	97.01	2,409.2	-91.9	747.7	753.3	0.00	0.00	0.00
2,600.0	25.92	97.01	2,445.2	-94.1	765.0	770.8	0.00	0.00	0.00
2,640.0	25.92	97.01	2,481.1	-96.2	782.4	788.3	0.00	0.00	0.00
2,680.0	25.92	97.01	2,517.1	-98.3	799.7	805.8	0.00	0.00	0.00
2,720.0	25.92	97.01	2,553.1	-100.5	817.1	823.3	0.00	0.00	0.00
2,760.0	25.92	97.01	2,589.1	-102.6	834.5	840.7	0.00	0.00	0.00
2,800.0	25.92	97.01	2,625.0	-104.7	851.8	858.2	0.00	0.00	0.00
2,840.0	25.92	97.01	2,661.0	-106.9	869.2	875.7	0.00	0.00	0.00
2,880.0	25.92	97.01	2,697.0	-109.0	886.5	893.2	0.00	0.00	0.00
2,920.0	25.92	97.01	2,733.0	-111.1	903.9	910.7	0.00	0.00	0.00
2,960.0	25.92	97.01	2,769.0	-113.3	921.2	928.2	0.00	0.00	0.00
3,000.0	25.92	97.01	2,804.9	-115.4	938.6	945.7	0.00	0.00	0.00
3,040.0	25.92	97.01	2,840.9	-117.5	955.9	963.1	0.00	0.00	0.00
3,080.0	25.92	97.01	2,876.9	-119.7	973.3	980.6	0.00	0.00	0.00
3,120.0	25.92	97.01	2,912.9	-121.8	990.7	998.1	0.00	0.00	0.00
3,160.0	25.92	97.01	2,948.8	-123.9	1,008.0	1,015.6	0.00	0.00	0.00
3,200.0	25.92	97.01	2,984.8	-126.1	1,025.4	1,033.1	0.00	0.00	0.00
3,240.0	25.92	97.01	3,020.8	-128.2	1,042.7	1,050.6	0.00	0.00	0.00
3,280.0	25.92	97.01	3,056.8	-130.4	1,060.1	1,068.1	0.00	0.00	0.00
3,320.0	25.92	97.01	3,092.7	-132.5	1,077.4	1,085.5	0.00	0.00	0.00
3,360.0	25.92	97.01	3,128.7	-134.6	1,094.8	1,103.0	0.00	0.00	0.00
3,400.0	25.92	97.01	3,164.7	-136.8	1,112.1	1,120.5	0.00	0.00	0.00
3,440.0	25.92	97.01	3,200.7	-138.9	1,129.5	1,138.0	0.00	0.00	0.00
3,480.0	25.92	97.01	3,236.6	-141.0	1,146.8	1,155.5	0.00	0.00	0.00
3,520.0	25.92	97.01	3,272.6	-143.2	1,164.2	1,173.0	0.00	0.00	0.00
3,560.0	25.92	97.01	3,308.6	-145.3	1,181.6	1,190.5	0.00	0.00	0.00
3,600.0	25.92	97.01	3,344.6	-147.4	1,198.9	1,207.9	0.00	0.00	0.00
3,640.0	25.92	97.01	3,380.5	-149.6	1,216.3	1,225.4	0.00	0.00	0.00
3,680.0	25.92	97.01	3,416.5	-151.7	1,233.6	1,242.9	0.00	0.00	0.00
3,720.0	25.92	97.01	3,452.5	-153.8	1,251.0	1,260.4	0.00	0.00	0.00
3,760.0	25.92	97.01	3,488.5	-156.0	1,268.3	1,277.9	0.00	0.00	0.00
3,800.0	25.92	97.01	3,524.4	-158.1	1,285.7	1,295.4	0.00	0.00	0.00
3,840.0	25.92	97.01	3,560.4	-160.2	1,303.0	1,312.9	0.00	0.00	0.00
3,880.0	25.92	97.01	3,596.4	-162.4	1,320.4	1,330.3	0.00	0.00	0.00
3,920.0	25.92	97.01	3,632.4	-164.5	1,337.8	1,347.8	0.00	0.00	0.00
3,960.0	25.92	97.01	3,668.3	-166.6	1,355.1	1,365.3	0.00	0.00	0.00
4,000.0	25.92	97.01	3,704.3	-168.8	1,372.5	1,382.8	0.00	0.00	0.00
4,040.0	25.92	97.01	3,740.3	-170.9	1,389.8	1,400.3	0.00	0.00	0.00
4,080.0	25.92	97.01	3,776.3	-173.0	1,407.2	1,417.8	0.00	0.00	0.00
4,120.0	25.92	97.01	3,812.2	-175.2	1,424.5	1,435.3	0.00	0.00	0.00
4,160.0	25.92	97.01	3,848.2	-177.3	1,441.9	1,452.7	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Company:</b>	St. James, Weld County CO	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Project:</b>	SEC.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-21-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.0	25.92	97.01	3,884.2	-179.4	1,459.2	1,470.2	0.00	0.00	0.00
4,240.0	25.92	97.01	3,920.2	-181.6	1,476.6	1,487.7	0.00	0.00	0.00
4,280.0	25.92	97.01	3,956.1	-183.7	1,494.0	1,505.2	0.00	0.00	0.00
4,320.0	25.92	97.01	3,992.1	-185.8	1,511.3	1,522.7	0.00	0.00	0.00
4,360.0	25.92	97.01	4,028.1	-188.0	1,528.7	1,540.2	0.00	0.00	0.00
4,400.0	25.92	97.01	4,064.1	-190.1	1,546.0	1,557.7	0.00	0.00	0.00
4,440.0	25.92	97.01	4,100.0	-192.2	1,563.4	1,575.1	0.00	0.00	0.00
4,480.0	25.92	97.01	4,136.0	-194.4	1,580.7	1,592.6	0.00	0.00	0.00
4,520.0	25.92	97.01	4,172.0	-196.5	1,598.1	1,610.1	0.00	0.00	0.00
4,560.0	25.92	97.01	4,208.0	-198.6	1,615.4	1,627.6	0.00	0.00	0.00
4,600.0	25.92	97.01	4,243.9	-200.8	1,632.8	1,645.1	0.00	0.00	0.00
4,640.0	25.92	97.01	4,279.9	-202.9	1,650.2	1,662.6	0.00	0.00	0.00
4,680.0	25.92	97.01	4,315.9	-205.0	1,667.5	1,680.1	0.00	0.00	0.00
4,720.0	25.92	97.01	4,351.9	-207.2	1,684.9	1,697.6	0.00	0.00	0.00
4,760.0	25.92	97.01	4,387.9	-209.3	1,702.2	1,715.0	0.00	0.00	0.00
4,800.0	25.92	97.01	4,423.8	-211.4	1,719.6	1,732.5	0.00	0.00	0.00
4,840.0	25.92	97.01	4,459.8	-213.6	1,736.9	1,750.0	0.00	0.00	0.00
4,880.0	25.92	97.01	4,495.8	-215.7	1,754.3	1,767.5	0.00	0.00	0.00
4,920.0	25.92	97.01	4,531.8	-217.8	1,771.6	1,785.0	0.00	0.00	0.00
4,960.0	25.92	97.01	4,567.7	-220.0	1,789.0	1,802.5	0.00	0.00	0.00
5,000.0	25.92	97.01	4,603.7	-222.1	1,806.3	1,820.0	0.00	0.00	0.00
5,040.0	25.92	97.01	4,639.7	-224.2	1,823.7	1,837.4	0.00	0.00	0.00
5,080.0	25.92	97.01	4,675.7	-226.4	1,841.1	1,854.9	0.00	0.00	0.00
5,120.0	25.92	97.01	4,711.6	-228.5	1,858.4	1,872.4	0.00	0.00	0.00
5,160.0	25.92	97.01	4,747.6	-230.7	1,875.8	1,889.9	0.00	0.00	0.00
5,160.1	25.92	97.01	4,747.7	-230.7	1,875.8	1,889.9	0.00	0.00	0.00
5,200.0	25.12	97.01	4,783.7	-232.8	1,892.9	1,907.1	2.00	-2.00	0.00
5,240.0	24.32	97.01	4,820.0	-234.8	1,909.5	1,923.9	2.00	-2.00	0.00
5,280.0	23.52	97.01	4,856.6	-236.8	1,925.6	1,940.1	2.00	-2.00	0.00
5,320.0	22.72	97.01	4,893.4	-238.7	1,941.2	1,955.8	2.00	-2.00	0.00
5,360.0	21.92	97.01	4,930.4	-240.5	1,956.2	1,971.0	2.00	-2.00	0.00
5,400.0	21.12	97.01	4,967.6	-242.3	1,970.8	1,985.7	2.00	-2.00	0.00
5,440.0	20.32	97.01	5,005.0	-244.1	1,984.9	1,999.8	2.00	-2.00	0.00
5,480.0	19.52	97.01	5,042.6	-245.7	1,998.4	2,013.4	2.00	-2.00	0.00
5,520.0	18.72	97.01	5,080.4	-247.3	2,011.4	2,026.5	2.00	-2.00	0.00
5,560.0	17.92	97.01	5,118.4	-248.9	2,023.9	2,039.1	2.00	-2.00	0.00
5,600.0	17.12	97.01	5,156.5	-250.3	2,035.8	2,051.2	2.00	-2.00	0.00
5,640.0	16.32	97.01	5,194.8	-251.7	2,047.3	2,062.7	2.00	-2.00	0.00
5,680.0	15.52	97.01	5,233.3	-253.1	2,058.1	2,073.6	2.00	-2.00	0.00
5,720.0	14.72	97.01	5,271.9	-254.4	2,068.5	2,084.1	2.00	-2.00	0.00
5,760.0	13.92	97.01	5,310.7	-255.6	2,078.3	2,094.0	2.00	-2.00	0.00
5,800.0	13.12	97.01	5,349.6	-256.7	2,087.6	2,103.3	2.00	-2.00	0.00
5,840.0	12.32	97.01	5,388.6	-257.8	2,096.4	2,112.1	2.00	-2.00	0.00
5,880.0	11.52	97.01	5,427.7	-258.8	2,104.6	2,120.4	2.00	-2.00	0.00
5,920.0	10.72	97.01	5,467.0	-259.7	2,112.2	2,128.1	2.00	-2.00	0.00
5,960.0	9.92	97.01	5,506.3	-260.6	2,119.3	2,135.3	2.00	-2.00	0.00
6,000.0	9.12	97.01	5,545.8	-261.4	2,125.9	2,141.9	2.00	-2.00	0.00
6,040.0	8.32	97.01	5,585.3	-262.1	2,131.9	2,148.0	2.00	-2.00	0.00
6,080.0	7.52	97.01	5,624.9	-262.8	2,137.4	2,153.5	2.00	-2.00	0.00
6,120.0	6.72	97.01	5,664.6	-263.4	2,142.3	2,158.5	2.00	-2.00	0.00
6,160.0	5.92	97.01	5,704.4	-264.0	2,146.7	2,162.9	2.00	-2.00	0.00
6,200.0	5.12	97.01	5,744.2	-264.4	2,150.5	2,166.7	2.00	-2.00	0.00
6,240.0	4.32	97.01	5,784.0	-264.8	2,153.8	2,170.0	2.00	-2.00	0.00
6,280.0	3.52	97.01	5,823.9	-265.2	2,156.5	2,172.7	2.00	-2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Company:</b>	St. James, Weld County CO	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Project:</b>	SEC.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-21-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,320.0	2.72	97.01	5,863.9	-265.4	2,158.7	2,174.9	2.00	-2.00	0.00
6,360.0	1.92	97.01	5,903.9	-265.6	2,160.3	2,176.5	2.00	-2.00	0.00
6,400.0	1.12	97.01	5,943.8	-265.8	2,161.3	2,177.6	2.00	-2.00	0.00
6,440.0	0.32	97.01	5,983.8	-265.8	2,161.8	2,178.1	2.00	-2.00	0.00
6,456.2	0.00	0.00	6,000.0	-265.8	2,161.9	2,178.2	2.00	-2.00	0.00
TARGET BHL 1950'FSL, 661'FEL									
6,480.0	0.00	0.00	6,023.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,520.0	0.00	0.00	6,063.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,560.0	0.00	0.00	6,103.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,143.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,640.0	0.00	0.00	6,183.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,680.0	0.00	0.00	6,223.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,720.0	0.00	0.00	6,263.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,760.0	0.00	0.00	6,303.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,343.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,840.0	0.00	0.00	6,383.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,880.0	0.00	0.00	6,423.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,920.0	0.00	0.00	6,463.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
6,942.2	0.00	0.00	6,486.0	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
NIOBRARA									
6,956.2	0.00	0.00	6,500.0	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
LEGAL BOX 400' X 400' 1950'FSL & 662'FEL									
6,960.0	0.00	0.00	6,503.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,543.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,040.0	0.00	0.00	6,583.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,080.0	0.00	0.00	6,623.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,120.0	0.00	0.00	6,663.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,160.0	0.00	0.00	6,703.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,200.0	0.00	0.00	6,743.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,226.2	0.00	0.00	6,770.0	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
CODELL									
7,240.0	0.00	0.00	6,783.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,280.0	0.00	0.00	6,823.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,320.0	0.00	0.00	6,863.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,360.0	0.00	0.00	6,903.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,400.0	0.00	0.00	6,943.8	-265.8	2,161.9	2,178.2	0.00	0.00	0.00
7,406.2	0.00	0.00	6,950.0	-265.8	2,161.9	2,178.2	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET BHL 1950'F:	0.00	0.00	6,000.0	-265.8	2,161.9	1,415,694.46	3,280,678.58	40.470100	-104.491150
- plan hits target center									
- Point									
LEGAL BOX 400' X 400'	0.00	0.00	6,500.0	-265.8	2,160.9	1,415,694.49	3,280,677.61	40.470100	-104.491153
- plan misses target center by 1.0ft at 6956.2ft MD (6500.0 TVD, -265.8 N, 2161.9 E)									
- Rectangle (sides W400.0 H400.0 D450.0)									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Company:</b>	St. James, Weld County CO	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Project:</b>	SEC.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-21-11)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)		Name	Casing Diameter (")	Hole Diameter (")
855.7	850.0	8 5/8"		8-5/8	12-1/4

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,942.2	6,486.0	NIOBRARA		0.00		
7,226.2	6,770.0	CODELL		0.00		





## **Directional**

### **St. James, Weld County CO**

**SEC.24-T6N-R64W**

**Larson Farms 4-24 Pad Sec.24-T6N-R64W**

**Larson Farms 4-24**

**Wellbore #1**

**Plan #1 (7-21-11)**

## **Anticollision Report**

**28 July, 2011**



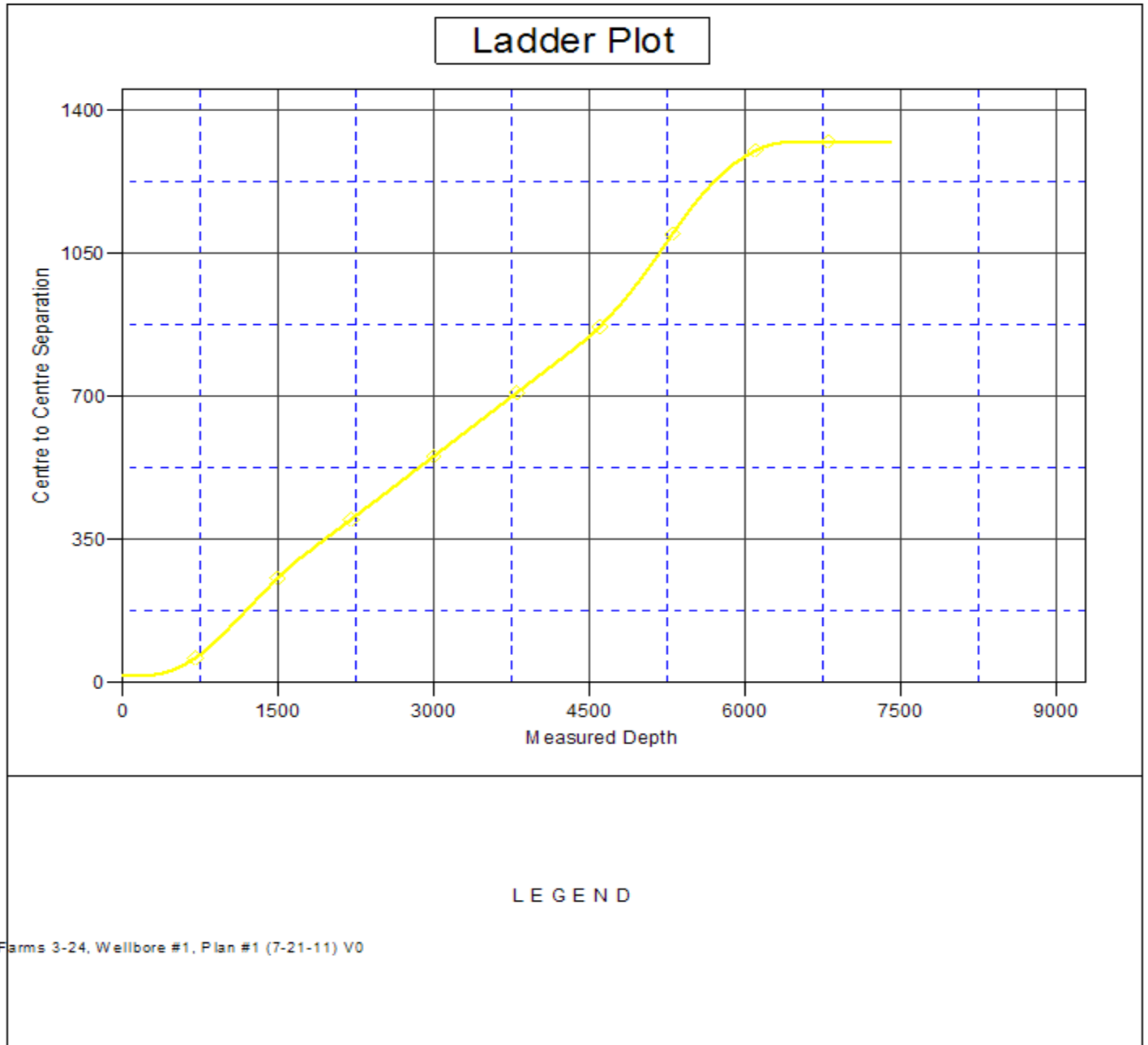
Offset Design		Larson Farms 4-24 Pad Sec.24-T6N-R64W - Larson Farms 3-24 - Wellbore #1 - Plan #1 (7-21-11)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
2,400.0	2,265.3	2,408.6	2,375.1	15.1	7.6	171.83	-92.8	254.3	438.0	425.3	12.73	34.400			
2,500.0	2,355.2	2,506.7	2,469.7	16.1	8.1	171.57	-100.6	278.9	457.4	444.0	13.46	33.993			
2,600.0	2,445.2	2,604.8	2,564.3	17.0	8.6	171.33	-108.3	303.5	476.8	462.6	14.19	33.614			
2,700.0	2,535.1	2,702.8	2,658.9	18.0	9.2	171.11	-116.1	328.1	496.2	481.3	14.92	33.261			
2,800.0	2,625.0	2,800.9	2,753.5	18.9	9.7	170.91	-123.9	352.8	515.6	500.0	15.66	32.931			
2,900.0	2,715.0	2,899.0	2,848.2	19.9	10.3	170.72	-131.6	377.4	535.0	518.6	16.40	32.624			
3,000.0	2,804.9	2,997.1	2,942.8	20.8	10.8	170.55	-139.4	402.0	554.5	537.3	17.15	32.337			
3,100.0	2,894.9	3,095.2	3,037.4	21.8	11.3	170.39	-147.2	426.6	573.9	556.0	17.90	32.068			
3,200.0	2,984.8	3,193.2	3,132.0	22.7	11.9	170.23	-155.0	451.3	593.3	574.7	18.65	31.816			
3,300.0	3,074.7	3,291.3	3,226.7	23.7	12.4	170.09	-162.7	475.9	612.8	593.4	19.40	31.579			
3,400.0	3,164.7	3,389.4	3,321.3	24.7	13.0	169.96	-170.5	500.5	632.2	612.0	20.16	31.357			
3,500.0	3,254.6	3,487.5	3,415.9	25.6	13.5	169.83	-178.3	525.1	651.7	630.7	20.92	31.148			
3,600.0	3,344.6	3,585.6	3,510.5	26.6	14.1	169.71	-186.0	549.8	671.1	649.4	21.68	30.950			
3,700.0	3,434.5	3,683.7	3,605.1	27.5	14.6	169.60	-193.8	574.4	690.5	668.1	22.45	30.764			
3,800.0	3,524.4	3,781.7	3,699.8	28.5	15.2	169.50	-201.6	599.0	710.0	686.8	23.21	30.588			
3,900.0	3,614.4	3,879.8	3,794.4	29.5	15.7	169.40	-209.4	623.6	729.5	705.5	23.98	30.421			
4,000.0	3,704.3	3,977.9	3,889.0	30.4	16.3	169.30	-217.1	648.3	748.9	724.2	24.75	30.263			
4,100.0	3,794.3	4,076.0	3,983.6	31.4	16.8	169.21	-224.9	672.9	768.4	742.8	25.52	30.113			
4,200.0	3,884.2	4,174.1	4,078.3	32.3	17.4	169.12	-232.7	697.5	787.8	761.5	26.29	29.970			
4,300.0	3,974.1	4,272.1	4,172.9	33.3	17.9	169.04	-240.4	722.1	807.3	780.2	27.06	29.835			
4,400.0	4,064.1	4,365.5	4,262.9	34.3	18.4	168.97	-247.8	745.5	826.8	799.0	27.81	29.734			
4,500.0	4,154.0	4,442.2	4,337.3	35.2	18.8	168.95	-253.5	763.4	848.1	819.6	28.44	29.814			
4,600.0	4,243.9	4,518.1	4,411.4	36.2	19.1	168.98	-258.4	779.2	871.7	842.7	29.05	30.013			
4,700.0	4,333.9	4,600.0	4,491.8	37.1	19.3	169.06	-263.2	794.1	897.8	868.2	29.63	30.300			
4,800.0	4,423.8	4,686.9	4,557.8	38.1	19.5	169.17	-266.5	804.7	926.2	896.0	30.16	30.708			
4,900.0	4,513.8	4,739.7	4,629.8	39.1	19.7	169.32	-269.6	814.6	956.9	926.2	30.68	31.189			
5,000.0	4,603.7	4,800.0	4,689.7	40.0	19.9	169.46	-271.8	821.4	989.9	958.7	31.17	31.761			
5,100.0	4,693.6	4,881.5	4,770.8	41.0	20.1	169.70	-274.1	828.7	1,025.0	993.3	31.65	32.384			
5,160.1	4,747.7	4,923.1	4,812.3	41.6	20.1	169.83	-275.0	831.6	1,047.1	1,015.2	31.93	32.798			
5,200.0	4,783.7	4,950.6	4,839.8	41.9	20.2	169.97	-275.5	833.2	1,062.0	1,029.9	32.12	33.064			
5,300.0	4,875.0	5,019.2	4,908.3	42.6	20.3	170.32	-276.4	836.1	1,098.5	1,066.0	32.55	33.751			
5,400.0	4,967.6	5,100.0	4,989.1	43.3	20.4	170.69	-276.8	837.5	1,134.1	1,101.1	32.93	34.436			
5,500.0	5,061.5	5,172.6	5,061.7	43.9	20.5	171.01	-276.8	837.5	1,167.9	1,134.6	33.28	35.097			
5,600.0	5,156.5	5,267.6	5,156.7	44.4	20.6	171.34	-276.8	837.5	1,198.6	1,165.0	33.60	35.674			
5,700.0	5,252.6	5,363.7	5,252.8	44.9	20.7	171.62	-276.8	837.5	1,226.1	1,192.2	33.90	36.173			
5,800.0	5,349.6	5,460.7	5,349.8	45.3	20.8	171.86	-276.8	837.5	1,250.3	1,216.1	34.16	36.601			
5,900.0	5,447.3	5,558.4	5,447.5	45.7	20.9	172.05	-276.8	837.5	1,271.1	1,236.7	34.39	36.963			
6,000.0	5,545.8	5,656.9	5,546.0	46.0	21.0	172.21	-276.8	837.5	1,288.5	1,253.9	34.58	37.262			
6,100.0	5,644.8	5,755.9	5,645.0	46.3	21.1	172.33	-276.8	837.5	1,302.5	1,267.8	34.73	37.502			
6,200.0	5,744.2	5,855.3	5,744.4	46.5	21.3	172.42	-276.8	837.5	1,313.1	1,278.2	34.84	37.684			
6,300.0	5,843.9	5,955.0	5,844.1	46.6	21.4	172.48	-276.8	837.5	1,320.2	1,285.3	34.92	37.811			
6,400.0	5,943.8	6,055.0	5,944.0	46.7	21.5	172.51	-276.8	837.5	1,323.9	1,288.9	34.95	37.884			
6,456.2	6,000.0	6,111.1	6,000.2	46.7	21.6	-90.48	-276.8	837.5	1,324.4	1,289.5	34.95	37.897			
6,500.0	6,043.8	6,155.0	6,044.0	46.8	21.6	-90.48	-276.8	837.5	1,324.4	1,289.4	35.08	37.755			
6,600.0	6,143.8	6,255.0	6,144.0	46.8	21.8	-90.48	-276.8	837.5	1,324.4	1,289.1	35.38	37.436			
6,700.0	6,243.8	6,355.0	6,244.0	46.9	21.9	-90.48	-276.8	837.5	1,324.4	1,288.8	35.68	37.118			
6,800.0	6,343.8	6,455.0	6,344.0	47.0	22.0	-90.48	-276.8	837.5	1,324.4	1,288.4	35.99	36.803			
6,900.0	6,443.8	6,555.0	6,444.0	47.0	22.2	-90.48	-276.8	837.5	1,324.4	1,288.1	36.30	36.491			
7,000.0	6,543.8	6,655.0	6,544.0	47.1	22.3	-90.48	-276.8	837.5	1,324.4	1,287.8	36.61	36.180			
7,100.0	6,643.8	6,755.0	6,644.0	47.2	22.4	-90.48	-276.8	837.5	1,324.4	1,287.5	36.92	35.873			
7,200.0	6,743.8	6,855.0	6,744.0	47.2	22.6	-90.48	-276.8	837.5	1,324.4	1,287.2	37.24	35.568			
7,300.0	6,843.8	6,955.0	6,844.0	47.3	22.7	-90.48	-276.8	837.5	1,324.4	1,286.9	37.56	35.266			

<b>Company:</b>	St. James, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Project:</b>	SEC.24-T6N-R64W	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Reference Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-21-11)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Larson Farms 4-24 Pad Sec.24-T6N-R64W - Larson Farms 3-24 - Wellbore #1 - Plan #1 (7-21-11)												<b>Offset Well Error:</b>	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,370.7	6,914.5	7,025.7	6,914.7	47.3	22.8	-90.48	-276.8	837.5	1,324.4	1,286.7	37.78	35.054	
7,406.2	6,950.0	7,060.9	6,950.0	47.4	22.9	-90.48	-276.8	837.5	1,324.4	1,286.5	37.90	34.949	

<b>Company:</b>	St. James, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Project:</b>	SEC.24-T6N-R64W	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Reference Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-21-11)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4655.5ft (Original Well Elev) Coordinates are relative to: Larson Farms 4-24  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.65°



<b>Company:</b>	St. James, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Larson Farms 4-24
<b>Project:</b>	SEC.24-T6N-R64W	<b>TVD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Reference Site:</b>	Larson Farms 4-24 Pad Sec.24-T6N-R64W	<b>MD Reference:</b>	WELL @ 4655.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Larson Farms 4-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-21-11)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4655.5ft (Original Well Elev) Coordinates are relative to: Larson Farms 4-24  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.65°

