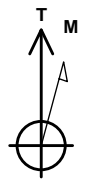


WHITING PETROLEUM CORPORATION

Project: Weld County, CO
 Site: Razor Federal #26J
 Well: 3509A
 Wellbore: OH
 Design: OH



Azimuths to True North
 Magnetic North: 8.02°

Magnetic Field
 Strength: 53044.9snT
 Dip Angle: 67.41°
 Date: 5/18/2014
 Model: BGGM2013



PROJECT DETAILS: Weld County, CO

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone

DESIGN TARGET DETAILS

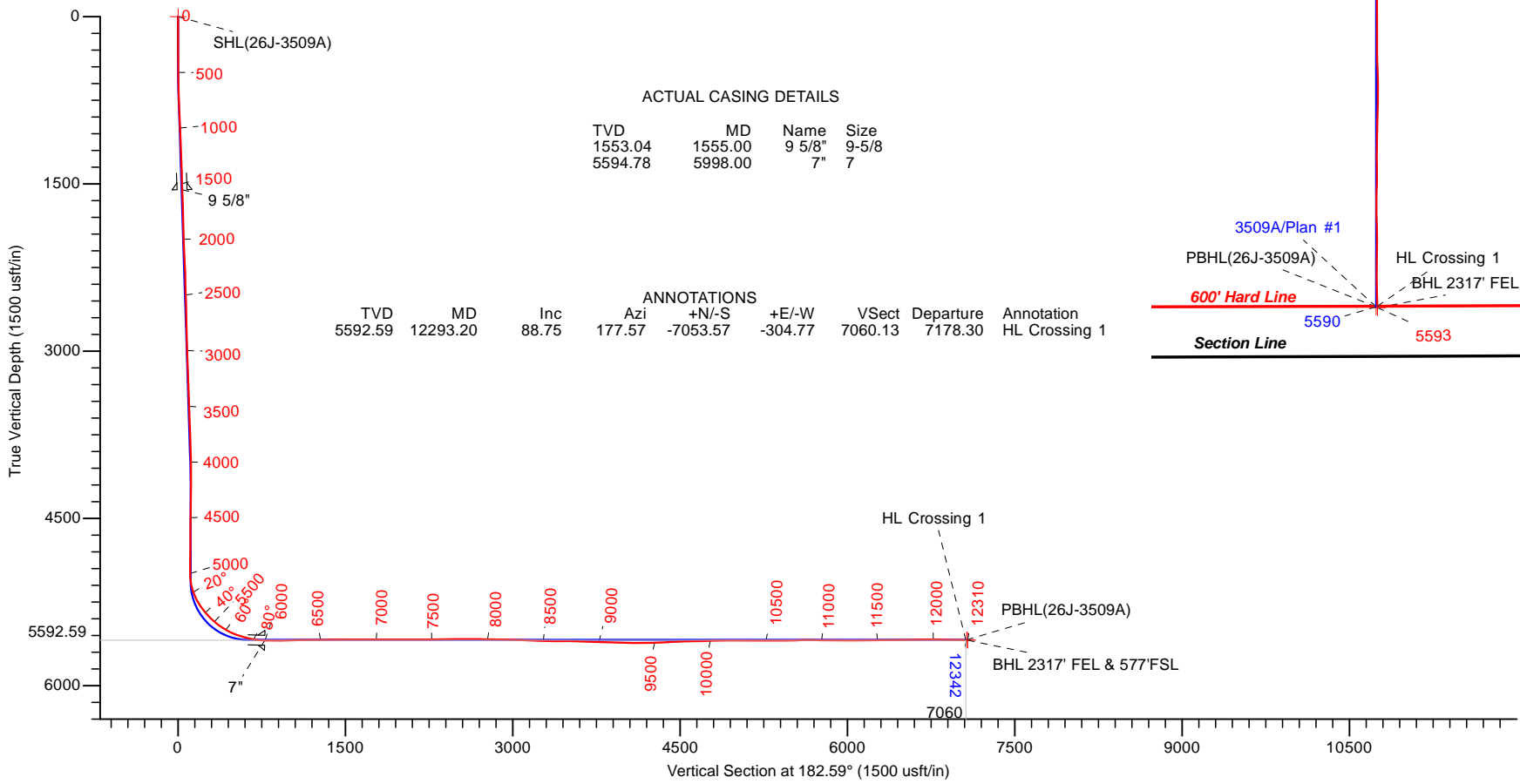
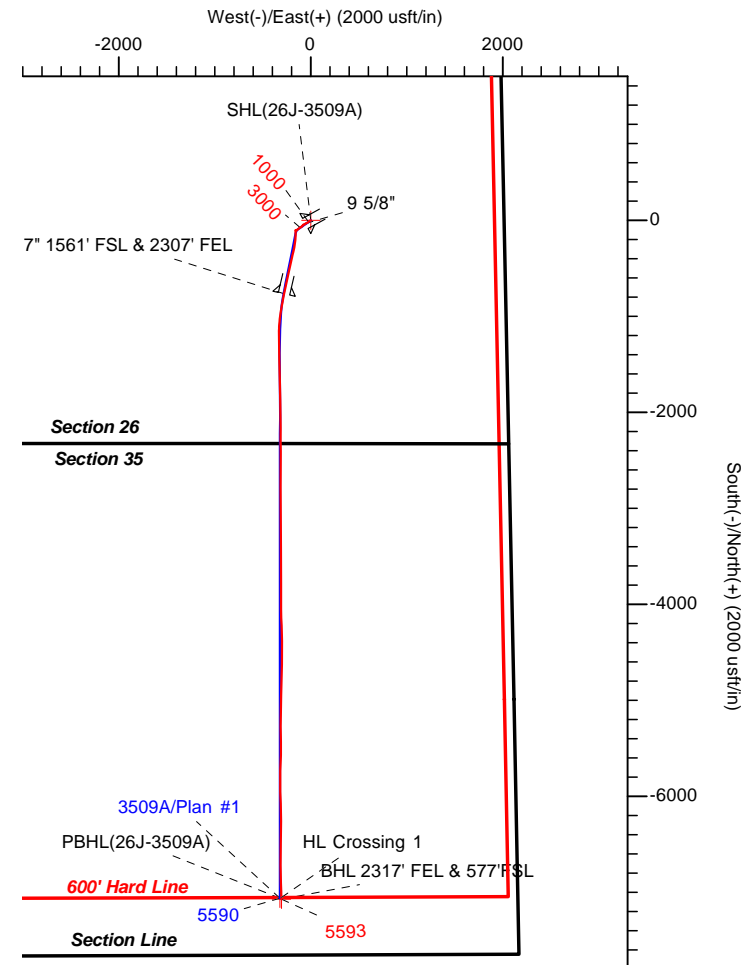
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL(26J-3509A)	0.00	0.00	0.00	1541830.75	3462319.75	40° 48' 31.522 N	103° 49' 47.489 W
PBHL(26J-3509A)	5590.00	-7061.00	-320.00	1534764.98	3462132.79	40° 47' 21.752 N	103° 49' 51.649 W
BHL(26J-3509A)	5592.96	-7070.35	-304.06	1534755.93	3462148.90	40° 47' 21.660 N	103° 49' 51.442 W

ACTUAL CASING DETAILS

TVD	MD	Name	Size
1553.04	1555.00	9 5/8"	9-5/8
5594.78	5998.00	7"	7

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
5592.59	12293.20	88.75	177.57	-7053.57	-304.77	7060.13	7178.30	HL Crossing 1



LEAM DRILLING SYSTEMS LLC
 2010 East Davis, Conroe, Texas 77301
 Phone: 936/756-7577, Fax: 936/756-7595

Design: OH (3509A/OH)
 Razor Federal #26J
 Created By: Michelle Walther
 Date: 15:39, July 08 2014
 Approved: _____ Date: _____

LEAM Drilling Systems LLC

Survey Report

Company: WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference: Well 3509A
Project: Weld County, CO	TVD Reference: GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site: Razor Federal #26J	MD Reference: GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well: 3509A	North Reference: True
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: OH	Database: EDM 5000.1 Single User Db

Project Weld County, CO	
Map System: US State Plane 1983	System Datum: Mean Sea Level
Geo Datum: North American Datum 1983	
Map Zone: Colorado Northern Zone	

Site Razor Federal #26J		
Site Position:	Northing: 1,541,830.76 usft	Latitude: 40° 48' 31.522 N
From: Lat/Long	Easting: 3,462,319.75 usft	Longitude: 103° 49' 47.489 W
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16 "	Grid Convergence: 1.08 °

Well 3509A		
Well Position +N/-S 0.00 usft	Northing: 1,541,830.76 usft	Latitude: 40° 48' 31.522 N
+E/-W 0.00 usft	Easting: 3,462,319.75 usft	Longitude: 103° 49' 47.489 W
Position Uncertainty 0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 4,726.00 usft

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	5/18/2014	8.02	67.41	53,045

Design OH					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00			
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	182.59	

Survey Program		Date 7/8/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
142.00	12,259.00	Survey #1 (OH)	LEAM_MWD	LEAM MWD
12,310.00	12,310.00	Survey #2 (OH)	Project	Projection

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142.00	0.17	257.68	142.00	-0.04	-0.21	0.05	0.12	0.12	0.00	
234.00	0.22	266.39	234.00	-0.09	-0.52	0.11	0.06	0.05	9.47	
326.00	0.35	225.65	326.00	-0.29	-0.89	0.33	0.25	0.14	-44.28	
418.00	0.24	224.65	418.00	-0.63	-1.23	0.68	0.12	-0.12	-1.09	
509.00	1.29	246.37	508.99	-1.17	-2.30	1.28	1.18	1.15	23.87	
600.00	2.19	249.54	599.94	-2.19	-4.87	2.41	0.99	0.99	3.48	
691.00	3.35	245.94	690.84	-3.88	-8.93	4.28	1.29	1.27	-3.96	
783.00	3.84	236.86	782.66	-6.66	-13.96	7.29	0.81	0.53	-9.87	
874.00	3.57	227.30	873.47	-10.25	-18.59	11.08	0.74	-0.30	-10.51	

LEAM Drilling Systems LLC

Survey Report

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
964.00	3.87	230.66	963.28	-14.08	-23.00	15.10	0.41	0.33	3.73	
1,056.00	4.00	221.98	1,055.06	-18.43	-27.55	19.66	0.66	0.14	-9.43	
1,148.00	3.18	223.34	1,146.88	-22.67	-31.45	24.07	0.90	-0.89	1.48	
1,240.00	3.00	245.44	1,238.75	-25.53	-35.39	27.10	1.30	-0.20	24.02	
1,332.00	3.75	247.60	1,330.59	-27.67	-40.36	29.47	0.83	0.82	2.35	
1,423.00	4.62	251.58	1,421.35	-29.97	-46.59	32.04	1.01	0.96	4.37	
1,515.00	3.50	243.97	1,513.11	-32.37	-52.63	34.71	1.35	-1.22	-8.27	
1,631.00	3.69	236.01	1,628.89	-36.01	-58.90	38.64	0.46	0.16	-6.86	
1,692.00	2.59	213.40	1,689.80	-38.26	-61.29	40.99	2.68	-1.80	-37.07	
1,753.00	2.77	230.75	1,750.73	-40.34	-63.19	43.16	1.36	0.30	28.44	
1,844.00	4.35	238.36	1,841.55	-43.54	-67.83	46.56	1.81	1.74	8.36	
1,935.00	3.43	270.93	1,932.35	-45.31	-73.49	48.58	2.58	-1.01	35.79	
2,026.00	2.73	243.67	2,023.23	-46.23	-78.16	49.71	1.76	-0.77	-29.96	
2,118.00	3.78	215.62	2,115.08	-49.66	-81.89	53.31	2.04	1.14	-30.49	
2,210.00	3.08	191.84	2,206.92	-54.55	-84.16	58.30	1.71	-0.76	-25.85	
2,302.00	2.68	232.44	2,298.81	-58.28	-86.37	62.12	2.21	-0.43	44.13	
2,394.00	2.33	232.74	2,390.73	-60.72	-89.57	64.71	0.38	-0.38	0.33	
2,485.00	2.37	223.05	2,481.65	-63.22	-92.32	67.32	0.44	0.04	-10.65	
2,577.00	2.15	219.15	2,573.58	-65.95	-94.71	70.16	0.29	-0.24	-4.24	
2,669.00	2.42	247.63	2,665.51	-68.02	-97.60	72.36	1.25	0.29	30.96	
2,761.00	2.46	247.57	2,757.42	-69.52	-101.22	74.02	0.04	0.04	-0.07	
2,853.00	2.37	250.72	2,849.34	-70.90	-104.84	75.56	0.17	-0.10	3.42	
2,946.00	2.99	233.12	2,942.24	-72.99	-108.59	77.82	1.10	0.67	-18.92	
3,038.00	3.69	225.46	3,034.09	-76.50	-112.62	81.52	0.90	0.76	-8.33	
3,129.00	2.95	234.58	3,124.93	-79.92	-116.62	85.10	1.00	-0.81	10.02	
3,221.00	2.99	232.44	3,216.81	-82.75	-120.45	88.11	0.13	0.04	-2.33	
3,314.00	3.16	228.64	3,309.68	-85.92	-124.30	91.45	0.29	0.18	-4.09	
3,405.00	3.30	230.65	3,400.53	-89.24	-128.20	94.94	0.20	0.15	2.21	
3,496.00	3.25	227.58	3,491.38	-92.64	-132.13	98.52	0.20	-0.05	-3.37	
3,588.00	3.30	234.96	3,583.23	-95.92	-136.23	101.98	0.46	0.05	8.02	
3,680.00	3.03	232.49	3,675.09	-98.92	-140.32	105.16	0.33	-0.29	-2.68	
3,772.00	2.64	224.54	3,766.98	-101.91	-143.74	108.30	0.60	-0.42	-8.64	
3,865.00	2.99	235.82	3,859.87	-104.80	-147.25	111.35	0.70	0.38	12.13	
3,958.00	2.64	251.06	3,952.76	-106.86	-151.28	113.59	0.88	-0.38	16.39	
4,050.00	1.54	236.63	4,044.70	-108.23	-154.32	115.09	1.32	-1.20	-15.68	
4,143.00	0.40	65.94	4,137.69	-108.78	-155.06	115.68	2.08	-1.23	-183.54	
4,234.00	0.97	37.76	4,228.68	-108.04	-154.30	114.91	0.71	0.63	-30.97	
4,326.00	0.66	352.25	4,320.67	-106.90	-153.90	113.75	0.75	-0.34	-49.47	
4,418.00	0.57	352.54	4,412.67	-105.92	-154.03	112.78	0.10	-0.10	0.32	
4,510.00	0.62	2.35	4,504.66	-104.97	-154.07	111.83	0.12	0.05	10.66	
4,602.00	0.88	339.25	4,596.65	-103.82	-154.30	110.68	0.43	0.28	-25.11	
4,694.00	0.97	305.33	4,688.64	-102.70	-155.18	109.61	0.59	0.10	-36.87	
4,786.00	0.75	316.72	4,780.63	-101.82	-156.23	108.77	0.30	-0.24	12.38	

LEAM Drilling Systems LLC

Survey Report

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,879.00	0.66	312.99	4,873.62	-101.01	-157.04	108.00	0.11	-0.10	-4.01	
4,970.00	0.62	4.99	4,964.62	-100.16	-157.38	107.17	0.62	-0.04	57.14	
5,062.00	6.07	172.61	5,056.46	-104.49	-156.71	111.47	7.26	5.92	182.20	
5,154.00	17.85	180.62	5,146.31	-123.48	-156.24	130.42	12.90	12.80	8.71	
5,246.00	28.26	181.92	5,230.85	-159.45	-157.12	166.39	11.33	11.32	1.41	
5,337.00	36.04	187.07	5,307.85	-207.63	-161.14	214.70	9.06	8.55	5.66	
5,368.00	38.51	188.30	5,332.52	-226.23	-163.66	233.40	8.32	7.97	3.97	
5,399.00	41.36	188.45	5,356.28	-245.92	-166.56	253.19	9.20	9.19	0.48	
5,429.00	44.04	188.43	5,378.33	-266.04	-169.55	273.43	8.93	8.93	-0.07	
5,460.00	46.81	189.78	5,400.08	-287.84	-173.05	295.37	9.46	8.94	4.35	
5,491.00	48.97	191.71	5,420.87	-310.43	-177.34	318.13	8.36	6.97	6.23	
5,521.00	51.74	193.10	5,440.01	-332.99	-182.31	340.89	9.90	9.23	4.63	
5,552.00	54.46	193.79	5,458.62	-357.10	-188.07	365.23	8.95	8.77	2.23	
5,583.00	56.62	193.57	5,476.16	-381.93	-194.12	390.31	6.99	6.97	-0.71	
5,613.00	58.99	193.88	5,492.14	-406.59	-200.14	415.22	7.95	7.90	1.03	
5,643.00	61.19	193.72	5,507.10	-431.84	-206.34	440.72	7.35	7.33	-0.53	
5,674.00	64.18	193.27	5,521.33	-458.62	-212.77	467.77	9.73	9.65	-1.45	
5,704.00	67.69	192.26	5,533.56	-485.33	-218.82	494.73	12.10	11.70	-3.37	
5,735.00	70.95	191.20	5,544.50	-513.73	-224.71	523.36	10.99	10.52	-3.42	
5,766.00	72.97	190.77	5,554.10	-542.66	-230.32	552.51	6.65	6.52	-1.39	
5,796.00	73.71	191.70	5,562.71	-570.85	-235.92	580.93	3.86	2.47	3.10	
5,827.00	74.90	191.96	5,571.09	-600.06	-242.04	610.38	3.92	3.84	0.84	
5,859.00	76.75	192.40	5,578.93	-630.39	-248.59	640.98	5.93	5.78	1.38	
5,889.00	79.30	191.22	5,585.15	-659.11	-254.59	669.94	9.33	8.50	-3.93	
5,920.00	82.95	191.72	5,589.93	-689.12	-260.68	700.20	11.88	11.77	1.61	
5,961.00	87.30	193.04	5,593.42	-729.01	-269.44	740.44	11.08	10.61	3.22	
6,055.00	90.29	192.81	5,595.39	-820.60	-290.46	832.89	3.19	3.18	-0.24	
6,145.00	91.21	188.95	5,594.21	-908.96	-307.44	921.92	4.41	1.02	-4.29	
6,234.00	90.77	186.26	5,592.68	-997.15	-319.22	1,010.56	3.06	-0.49	-3.02	
6,322.00	89.89	184.31	5,592.17	-1,084.77	-327.32	1,098.45	2.43	-1.00	-2.22	
6,409.00	90.64	180.54	5,591.77	-1,171.68	-331.00	1,185.44	4.42	0.86	-4.33	
6,495.00	91.03	178.17	5,590.51	-1,257.66	-330.03	1,271.28	2.79	0.45	-2.76	
6,582.00	91.08	179.66	5,588.91	-1,344.62	-328.39	1,358.09	1.71	0.06	1.71	
6,668.00	90.15	179.27	5,587.99	-1,430.61	-327.58	1,443.95	1.17	-1.08	-0.45	
6,758.00	90.24	178.49	5,587.68	-1,520.59	-325.83	1,533.76	0.87	0.10	-0.87	
6,845.00	90.37	177.77	5,587.22	-1,607.55	-322.99	1,620.50	0.84	0.15	-0.83	
6,931.00	89.67	179.13	5,587.19	-1,693.51	-320.66	1,706.27	1.78	-0.81	1.58	
7,016.00	89.32	178.59	5,587.94	-1,778.49	-318.97	1,791.09	0.76	-0.41	-0.64	
7,101.00	90.24	179.65	5,588.26	-1,863.48	-317.66	1,875.93	1.65	1.08	1.25	
7,186.00	89.85	178.84	5,588.20	-1,948.47	-316.54	1,960.78	1.06	-0.46	-0.95	
7,272.00	90.37	180.19	5,588.03	-2,034.47	-315.82	2,046.66	1.68	0.60	1.57	
7,363.00	90.29	178.91	5,587.51	-2,125.46	-315.10	2,137.53	1.41	-0.09	-1.41	
7,455.00	90.15	179.84	5,587.16	-2,217.45	-314.10	2,229.38	1.02	-0.15	1.01	

LEAM Drilling Systems LLC

Survey Report

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,547.00	91.38	180.05	5,585.93	-2,309.44	-314.01	2,321.27	1.36	1.34	0.23	
7,639.00	90.64	179.69	5,584.31	-2,401.43	-313.80	2,413.15	0.89	-0.80	-0.39	
7,730.00	90.55	180.77	5,583.36	-2,492.42	-314.17	2,504.07	1.19	-0.10	1.19	
7,820.00	89.14	180.73	5,583.60	-2,582.41	-315.34	2,594.02	1.57	-1.57	-0.04	
7,912.00	89.89	179.38	5,584.38	-2,674.40	-315.43	2,685.92	1.68	0.82	-1.47	
8,004.00	89.71	180.22	5,584.70	-2,766.40	-315.11	2,777.81	0.93	-0.20	0.91	
8,094.00	88.22	179.86	5,586.33	-2,856.38	-315.17	2,867.71	1.70	-1.66	-0.40	
8,185.00	89.14	179.16	5,588.43	-2,947.35	-314.40	2,958.55	1.27	1.01	-0.77	
8,277.00	87.91	179.54	5,590.79	-3,039.32	-313.35	3,050.37	1.40	-1.34	0.41	
8,369.00	87.08	177.73	5,594.82	-3,131.20	-311.16	3,142.06	2.16	-0.90	-1.97	
8,461.00	88.26	180.32	5,598.56	-3,223.10	-309.60	3,233.80	3.09	1.28	2.82	
8,553.00	89.67	180.64	5,600.22	-3,315.08	-310.37	3,325.72	1.57	1.53	0.35	
8,644.00	90.37	181.33	5,600.19	-3,406.06	-311.94	3,416.68	1.08	0.77	0.76	
8,736.00	88.62	178.78	5,601.00	-3,498.05	-312.02	3,508.58	3.36	-1.90	-2.77	
8,828.00	88.66	180.00	5,603.18	-3,590.02	-311.05	3,600.40	1.33	0.04	1.33	
8,921.00	87.69	179.69	5,606.14	-3,682.97	-310.79	3,693.25	1.09	-1.04	-0.33	
9,012.00	87.78	178.97	5,609.74	-3,773.89	-309.73	3,784.03	0.80	0.10	-0.79	
9,105.00	87.69	179.69	5,613.41	-3,866.81	-308.64	3,876.81	0.78	-0.10	0.77	
9,197.00	88.79	180.59	5,616.24	-3,958.76	-308.87	3,968.68	1.54	1.20	0.98	
9,288.00	90.37	179.90	5,616.91	-4,049.76	-309.26	4,059.59	1.89	1.74	-0.76	
9,380.00	89.58	177.48	5,616.95	-4,141.73	-307.15	4,151.37	2.77	-0.86	-2.63	
9,473.00	91.43	177.21	5,616.13	-4,234.62	-302.85	4,243.98	2.01	1.99	-0.29	
9,564.00	92.84	179.08	5,612.74	-4,325.50	-299.90	4,334.63	2.57	1.55	2.05	
9,655.00	92.53	179.91	5,608.47	-4,416.40	-299.10	4,425.40	0.97	-0.34	0.91	
9,747.00	91.74	180.88	5,605.05	-4,508.33	-299.74	4,517.27	1.36	-0.86	1.05	
9,839.00	91.52	181.31	5,602.43	-4,600.27	-301.49	4,609.20	0.52	-0.24	0.47	
9,931.00	91.56	181.47	5,599.96	-4,692.21	-303.72	4,701.15	0.18	0.04	0.17	
10,024.00	91.65	180.50	5,597.35	-4,785.16	-305.32	4,794.07	1.05	0.10	-1.04	
10,117.00	89.98	181.54	5,596.03	-4,878.13	-306.98	4,887.02	2.12	-1.80	1.12	
10,209.00	90.59	180.73	5,595.57	-4,970.11	-308.80	4,978.99	1.10	0.66	-0.88	
10,302.00	89.76	181.52	5,595.29	-5,063.09	-310.63	5,071.96	1.23	-0.89	0.85	
10,393.00	90.59	181.22	5,595.01	-5,154.07	-312.80	5,162.94	0.97	0.91	-0.33	
10,485.00	88.35	178.44	5,595.86	-5,246.05	-312.53	5,254.81	3.88	-2.43	-3.02	
10,577.00	90.07	179.62	5,597.13	-5,338.02	-310.97	5,346.62	2.27	1.87	1.28	
10,669.00	90.73	180.33	5,596.49	-5,430.02	-310.93	5,438.52	1.05	0.72	0.77	
10,761.00	92.09	180.33	5,594.22	-5,521.98	-311.46	5,530.42	1.48	1.48	0.00	
10,854.00	90.73	181.62	5,591.94	-5,614.94	-313.04	5,623.35	2.02	-1.46	1.39	
10,945.00	89.49	181.93	5,591.76	-5,705.89	-315.86	5,714.34	1.40	-1.36	0.34	
11,038.00	89.32	181.17	5,592.73	-5,798.85	-318.38	5,807.32	0.84	-0.18	-0.82	
11,129.00	89.05	178.50	5,594.02	-5,889.84	-318.12	5,898.19	2.95	-0.30	-2.93	
11,221.00	89.85	177.95	5,594.90	-5,981.79	-315.27	5,989.92	1.06	0.87	-0.60	
11,313.00	90.73	179.11	5,594.44	-6,073.75	-312.91	6,081.69	1.58	0.96	1.26	
11,405.00	89.36	178.16	5,594.37	-6,165.72	-310.71	6,173.47	1.81	-1.49	-1.03	
11,496.00	90.64	180.62	5,594.37	-6,256.71	-309.75	6,264.31	3.05	1.41	2.70	

LEAM Drilling Systems LLC

Survey Report

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,588.00	92.00	180.54	5,592.25	-6,348.68	-310.68	6,356.23	1.48	1.48	-0.09
11,680.00	90.95	180.78	5,589.88	-6,440.64	-311.74	6,448.15	1.17	-1.14	0.26
11,772.00	90.02	180.98	5,589.10	-6,532.62	-313.15	6,540.10	1.03	-1.01	0.22
11,863.00	91.65	180.76	5,587.77	-6,623.60	-314.53	6,631.05	1.81	1.79	-0.24
11,955.00	89.58	179.67	5,586.79	-6,715.59	-314.88	6,722.96	2.54	-2.25	-1.18
12,048.00	89.36	178.07	5,587.65	-6,808.56	-313.04	6,815.75	1.74	-0.24	-1.72
12,141.00	88.75	178.69	5,589.18	-6,901.51	-310.41	6,908.49	0.94	-0.66	0.67
12,233.00	88.66	177.48	5,591.26	-6,993.44	-307.34	7,000.18	1.32	-0.10	-1.32
12,259.00	88.75	177.57	5,591.85	-7,019.41	-306.22	7,026.07	0.49	0.35	0.35
12,310.00	88.75	177.57	5,592.96	-7,070.35	-304.06	7,076.86	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
SHL(26J-3509A) - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,541,830.76	3,462,319.75	40° 48' 31.522 N	103° 49' 47.489 W
PBHL(26J-3509A) - actual wellpath misses target center by 15.77usft at 12299.92usft MD (5592.74 TVD, -7060.28 N, -304.48 E) - Point	0.00	0.00	5,590.00	-7,061.00	-320.00	1,534,764.98	3,462,132.79	40° 47' 21.752 N	103° 49' 51.649 W
BHL(26J-3509A) - actual wellpath misses target center by 0.01usft at 12310.00usft MD (5592.96 TVD, -7070.35 N, -304.06 E) - Point	0.00	0.00	5,592.96	-7,070.35	-304.06	1,534,755.93	3,462,148.90	40° 47' 21.660 N	103° 49' 51.442 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,555.00	1,553.04	9	5/8"	9-5/8	12-1/4
5,998.00	5,594.78	7"		7	7-1/2

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,293.20	5,592.59	-7,053.57	-304.77	HL Crossing 1

LEAM Drilling Systems LLC

Survey Report - Geographic

Company: WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference: Well 3509A
Project: Weld County, CO	TVD Reference: GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site: Razor Federal #26J	MD Reference: GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well: 3509A	North Reference: True
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: OH	Database: EDM 5000.1 Single User Db

Project Weld County, CO		
Map System: US State Plane 1983	System Datum: Mean Sea Level	
Geo Datum: North American Datum 1983		
Map Zone: Colorado Northern Zone		

Site Razor Federal #26J		
Site Position:	Northing: 1,541,830.76 usft	Latitude: 40° 48' 31.522 N
From: Lat/Long	Easting: 3,462,319.75 usft	Longitude: 103° 49' 47.489 W
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16 "	Grid Convergence: 1.08 °

Well 3509A			
Well Position	+N/-S 0.00 usft	Northing: 1,541,830.76 usft	Latitude: 40° 48' 31.522 N
	+E/-W 0.00 usft	Easting: 3,462,319.75 usft	Longitude: 103° 49' 47.489 W
Position Uncertainty	0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 4,726.00 usft

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	5/18/2014	8.02	67.41	53,045

Design OH				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00		
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	182.59

Survey Program		Date 7/8/2014
From (usft)	To (usft)	Survey (Wellbore)
142.00	12,259.00	Survey #1 (OH)
12,310.00	12,310.00	Survey #2 (OH)
		Tool Name
		LEAM_MWD
		Description
		LEAM MWD
		Project
		Projection

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	1,541,830.76	3,462,319.75	40° 48' 31.522 N	103° 49' 47.489 W	
142.00	0.17	257.68	142.00	-0.04	-0.21	1,541,830.71	3,462,319.54	40° 48' 31.521 N	103° 49' 47.491 W	
234.00	0.22	266.39	234.00	-0.09	-0.52	1,541,830.66	3,462,319.23	40° 48' 31.521 N	103° 49' 47.496 W	
326.00	0.35	225.65	326.00	-0.29	-0.89	1,541,830.45	3,462,318.86	40° 48' 31.519 N	103° 49' 47.500 W	
418.00	0.24	224.65	418.00	-0.63	-1.23	1,541,830.11	3,462,318.53	40° 48' 31.515 N	103° 49' 47.505 W	
509.00	1.29	246.37	508.99	-1.17	-2.30	1,541,829.54	3,462,317.47	40° 48' 31.510 N	103° 49' 47.519 W	
600.00	2.19	249.54	599.94	-2.19	-4.87	1,541,828.47	3,462,314.92	40° 48' 31.500 N	103° 49' 47.552 W	
691.00	3.35	245.94	690.84	-3.88	-8.93	1,541,826.71	3,462,310.89	40° 48' 31.483 N	103° 49' 47.605 W	
783.00	3.84	236.86	782.66	-6.66	-13.96	1,541,823.83	3,462,305.91	40° 48' 31.456 N	103° 49' 47.670 W	
874.00	3.57	227.30	873.47	-10.25	-18.59	1,541,820.16	3,462,301.35	40° 48' 31.420 N	103° 49' 47.731 W	
964.00	3.87	230.66	963.28	-14.08	-23.00	1,541,816.25	3,462,297.01	40° 48' 31.382 N	103° 49' 47.788 W	

LEAM Drilling Systems LLC

Survey Report - Geographic

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,056.00	4.00	221.98	1,055.06	-18.43	-27.55	1,541,811.81	3,462,292.55	40° 48' 31.339 N	103° 49' 47.847 W	
1,148.00	3.18	223.34	1,146.88	-22.67	-31.45	1,541,807.50	3,462,288.73	40° 48' 31.298 N	103° 49' 47.898 W	
1,240.00	3.00	245.44	1,238.75	-25.53	-35.39	1,541,804.57	3,462,284.84	40° 48' 31.269 N	103° 49' 47.949 W	
1,332.00	3.75	247.60	1,330.59	-27.67	-40.36	1,541,802.33	3,462,279.91	40° 48' 31.248 N	103° 49' 48.014 W	
1,423.00	4.62	251.58	1,421.35	-29.97	-46.59	1,541,799.92	3,462,273.73	40° 48' 31.225 N	103° 49' 48.095 W	
1,515.00	3.50	243.97	1,513.11	-32.37	-52.63	1,541,797.40	3,462,267.74	40° 48' 31.202 N	103° 49' 48.173 W	
1,631.00	3.69	236.01	1,628.89	-36.01	-58.90	1,541,793.64	3,462,261.53	40° 48' 31.166 N	103° 49' 48.255 W	
1,692.00	2.59	213.40	1,689.80	-38.26	-61.29	1,541,791.35	3,462,259.19	40° 48' 31.143 N	103° 49' 48.286 W	
1,753.00	2.77	230.75	1,750.73	-40.34	-63.19	1,541,789.23	3,462,257.33	40° 48' 31.123 N	103° 49' 48.311 W	
1,844.00	4.35	238.36	1,841.55	-43.54	-67.83	1,541,785.94	3,462,252.75	40° 48' 31.091 N	103° 49' 48.371 W	
1,935.00	3.43	270.93	1,932.35	-45.31	-73.49	1,541,784.07	3,462,247.12	40° 48' 31.074 N	103° 49' 48.445 W	
2,026.00	2.73	243.67	2,023.23	-46.23	-78.16	1,541,783.07	3,462,242.47	40° 48' 31.065 N	103° 49' 48.505 W	
2,118.00	3.78	215.62	2,115.08	-49.66	-81.89	1,541,779.56	3,462,238.81	40° 48' 31.031 N	103° 49' 48.554 W	
2,210.00	3.08	191.84	2,206.92	-54.55	-84.16	1,541,774.63	3,462,236.63	40° 48' 30.983 N	103° 49' 48.583 W	
2,302.00	2.68	232.44	2,298.81	-58.28	-86.37	1,541,770.86	3,462,234.49	40° 48' 30.946 N	103° 49' 48.612 W	
2,394.00	2.33	232.74	2,390.73	-60.72	-89.57	1,541,768.36	3,462,231.34	40° 48' 30.922 N	103° 49' 48.654 W	
2,485.00	2.37	223.05	2,481.65	-63.22	-92.32	1,541,765.81	3,462,228.63	40° 48' 30.897 N	103° 49' 48.689 W	
2,577.00	2.15	219.15	2,573.58	-65.95	-94.71	1,541,763.04	3,462,226.29	40° 48' 30.870 N	103° 49' 48.720 W	
2,669.00	2.42	247.63	2,665.51	-68.02	-97.60	1,541,760.91	3,462,223.45	40° 48' 30.849 N	103° 49' 48.758 W	
2,761.00	2.46	247.57	2,757.42	-69.52	-101.22	1,541,759.35	3,462,219.86	40° 48' 30.835 N	103° 49' 48.805 W	
2,853.00	2.37	250.72	2,849.34	-70.90	-104.84	1,541,757.90	3,462,216.26	40° 48' 30.821 N	103° 49' 48.852 W	
2,946.00	2.99	233.12	2,942.24	-72.99	-108.59	1,541,755.74	3,462,212.55	40° 48' 30.800 N	103° 49' 48.901 W	
3,038.00	3.69	225.46	3,034.09	-76.50	-112.62	1,541,752.14	3,462,208.58	40° 48' 30.766 N	103° 49' 48.953 W	
3,129.00	2.95	234.58	3,124.93	-79.92	-116.62	1,541,748.66	3,462,204.65	40° 48' 30.732 N	103° 49' 49.005 W	
3,221.00	2.99	232.44	3,216.81	-82.75	-120.45	1,541,745.75	3,462,200.88	40° 48' 30.704 N	103° 49' 49.055 W	
3,314.00	3.16	228.64	3,309.68	-85.92	-124.30	1,541,742.51	3,462,197.09	40° 48' 30.673 N	103° 49' 49.105 W	
3,405.00	3.30	230.65	3,400.53	-89.24	-128.20	1,541,739.12	3,462,193.24	40° 48' 30.640 N	103° 49' 49.156 W	
3,496.00	3.25	227.58	3,491.38	-92.64	-132.13	1,541,735.64	3,462,189.38	40° 48' 30.606 N	103° 49' 49.207 W	
3,588.00	3.30	234.96	3,583.23	-95.92	-136.23	1,541,732.29	3,462,185.35	40° 48' 30.574 N	103° 49' 49.260 W	
3,680.00	3.03	232.49	3,675.09	-98.92	-140.32	1,541,729.21	3,462,181.31	40° 48' 30.544 N	103° 49' 49.314 W	
3,772.00	2.64	224.54	3,766.98	-101.91	-143.74	1,541,726.15	3,462,177.95	40° 48' 30.515 N	103° 49' 49.358 W	
3,865.00	2.99	235.82	3,859.87	-104.80	-147.25	1,541,723.20	3,462,174.50	40° 48' 30.486 N	103° 49' 49.404 W	
3,958.00	2.64	251.06	3,952.76	-106.86	-151.28	1,541,721.07	3,462,170.50	40° 48' 30.466 N	103° 49' 49.456 W	
4,050.00	1.54	236.63	4,044.70	-108.23	-154.32	1,541,719.64	3,462,167.49	40° 48' 30.452 N	103° 49' 49.496 W	
4,143.00	0.40	65.94	4,137.69	-108.78	-155.06	1,541,719.07	3,462,166.76	40° 48' 30.447 N	103° 49' 49.505 W	
4,234.00	0.97	37.76	4,228.68	-108.04	-154.30	1,541,719.82	3,462,167.51	40° 48' 30.454 N	103° 49' 49.495 W	
4,326.00	0.66	352.25	4,320.67	-106.90	-153.90	1,541,720.97	3,462,167.89	40° 48' 30.465 N	103° 49' 49.490 W	
4,418.00	0.57	352.54	4,412.67	-105.92	-154.03	1,541,721.95	3,462,167.74	40° 48' 30.475 N	103° 49' 49.492 W	
4,510.00	0.62	2.35	4,504.66	-104.97	-154.07	1,541,722.90	3,462,167.68	40° 48' 30.484 N	103° 49' 49.492 W	
4,602.00	0.88	339.25	4,596.65	-103.82	-154.30	1,541,724.05	3,462,167.43	40° 48' 30.496 N	103° 49' 49.495 W	
4,694.00	0.97	305.33	4,688.64	-102.70	-155.18	1,541,725.15	3,462,166.53	40° 48' 30.507 N	103° 49' 49.507 W	
4,786.00	0.75	316.72	4,780.63	-101.82	-156.23	1,541,726.02	3,462,165.46	40° 48' 30.515 N	103° 49' 49.520 W	
4,879.00	0.66	312.99	4,873.62	-101.01	-157.04	1,541,726.81	3,462,164.64	40° 48' 30.523 N	103° 49' 49.531 W	
4,970.00	0.62	4.99	4,964.62	-100.16	-157.38	1,541,727.65	3,462,164.28	40° 48' 30.532 N	103° 49' 49.535 W	
5,062.00	6.07	172.61	5,056.46	-104.49	-156.71	1,541,723.33	3,462,165.03	40° 48' 30.489 N	103° 49' 49.527 W	
5,154.00	17.85	180.62	5,146.31	-123.48	-156.24	1,541,704.35	3,462,165.86	40° 48' 30.301 N	103° 49' 49.521 W	
5,246.00	28.26	181.92	5,230.85	-159.45	-157.12	1,541,668.38	3,462,165.66	40° 48' 29.946 N	103° 49' 49.532 W	
5,337.00	36.04	187.07	5,307.85	-207.63	-161.14	1,541,620.13	3,462,162.54	40° 48' 29.470 N	103° 49' 49.584 W	
5,368.00	38.51	188.30	5,332.52	-226.23	-163.66	1,541,601.48	3,462,160.38	40° 48' 29.286 N	103° 49' 49.617 W	
5,399.00	41.36	188.45	5,356.28	-245.92	-166.56	1,541,581.74	3,462,157.85	40° 48' 29.092 N	103° 49' 49.655 W	
5,429.00	44.04	188.43	5,378.33	-266.04	-169.55	1,541,561.57	3,462,155.24	40° 48' 28.893 N	103° 49' 49.694 W	
5,460.00	46.81	189.78	5,400.08	-287.84	-173.05	1,541,539.71	3,462,152.15	40° 48' 28.677 N	103° 49' 49.739 W	
5,491.00	48.97	191.71	5,420.87	-310.43	-177.34	1,541,517.04	3,462,148.29	40° 48' 28.454 N	103° 49' 49.795 W	
5,521.00	51.74	193.10	5,440.01	-332.99	-182.31	1,541,494.39	3,462,143.74	40° 48' 28.231 N	103° 49' 49.860 W	
5,552.00	54.46	193.79	5,458.62	-357.10	-188.07	1,541,470.18	3,462,138.43	40° 48' 27.993 N	103° 49' 49.935 W	

LEAM Drilling Systems LLC

Survey Report - Geographic

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,583.00	56.62	193.57	5,476.16	-381.93	-194.12	1,541,445.24	3,462,132.86	40° 48' 27.748 N	103° 49' 50.013 W	
5,613.00	58.99	193.88	5,492.14	-406.59	-200.14	1,541,420.47	3,462,127.30	40° 48' 27.504 N	103° 49' 50.091 W	
5,643.00	61.19	193.72	5,507.10	-431.84	-206.34	1,541,395.10	3,462,121.57	40° 48' 27.255 N	103° 49' 50.172 W	
5,674.00	64.18	193.27	5,521.33	-458.62	-212.77	1,541,368.21	3,462,115.65	40° 48' 26.990 N	103° 49' 50.256 W	
5,704.00	67.69	192.26	5,533.56	-485.33	-218.82	1,541,341.39	3,462,110.11	40° 48' 26.726 N	103° 49' 50.334 W	
5,735.00	70.95	191.20	5,544.50	-513.73	-224.71	1,541,312.89	3,462,104.75	40° 48' 26.445 N	103° 49' 50.411 W	
5,766.00	72.97	190.77	5,554.10	-542.66	-230.32	1,541,283.85	3,462,099.68	40° 48' 26.160 N	103° 49' 50.484 W	
5,796.00	73.71	191.70	5,562.71	-570.85	-235.92	1,541,255.56	3,462,094.62	40° 48' 25.881 N	103° 49' 50.557 W	
5,827.00	74.90	191.96	5,571.09	-600.06	-242.04	1,541,226.24	3,462,089.05	40° 48' 25.592 N	103° 49' 50.636 W	
5,859.00	76.75	192.40	5,578.93	-630.39	-248.59	1,541,195.80	3,462,083.07	40° 48' 25.293 N	103° 49' 50.721 W	
5,889.00	79.30	191.22	5,585.15	-659.11	-254.59	1,541,166.97	3,462,077.61	40° 48' 25.009 N	103° 49' 50.800 W	
5,920.00	82.95	191.72	5,589.93	-689.12	-260.68	1,541,136.85	3,462,072.09	40° 48' 24.712 N	103° 49' 50.879 W	
5,961.00	87.30	193.04	5,593.42	-729.01	-269.44	1,541,096.80	3,462,064.08	40° 48' 24.318 N	103° 49' 50.993 W	
6,055.00	90.29	192.81	5,595.39	-820.60	-290.46	1,541,004.83	3,462,044.79	40° 48' 23.413 N	103° 49' 51.266 W	
6,145.00	91.21	188.95	5,594.21	-908.96	-307.44	1,540,916.17	3,462,029.48	40° 48' 22.540 N	103° 49' 51.487 W	
6,234.00	90.77	186.26	5,592.68	-997.15	-319.22	1,540,827.77	3,462,019.37	40° 48' 21.669 N	103° 49' 51.640 W	
6,322.00	89.89	184.31	5,591.17	-1,084.77	-327.32	1,540,740.01	3,462,012.91	40° 48' 20.803 N	103° 49' 51.745 W	
6,409.00	90.64	180.54	5,591.77	-1,171.68	-331.00	1,540,653.05	3,462,010.87	40° 48' 19.944 N	103° 49' 51.793 W	
6,495.00	91.03	178.17	5,590.51	-1,257.66	-330.03	1,540,567.11	3,462,013.46	40° 48' 19.095 N	103° 49' 51.780 W	
6,582.00	91.08	179.66	5,588.91	-1,344.62	-328.39	1,540,480.19	3,462,016.74	40° 48' 18.235 N	103° 49' 51.759 W	
6,668.00	90.15	179.27	5,587.99	-1,430.61	-327.58	1,540,394.23	3,462,019.16	40° 48' 17.386 N	103° 49' 51.749 W	
6,758.00	90.24	178.49	5,587.68	-1,520.59	-325.83	1,540,304.29	3,462,022.62	40° 48' 16.497 N	103° 49' 51.726 W	
6,845.00	90.37	177.77	5,587.22	-1,607.55	-322.99	1,540,217.41	3,462,027.09	40° 48' 15.637 N	103° 49' 51.689 W	
6,931.00	89.67	179.13	5,587.19	-1,693.51	-320.66	1,540,131.50	3,462,031.04	40° 48' 14.788 N	103° 49' 51.658 W	
7,016.00	89.32	178.59	5,587.94	-1,778.49	-318.97	1,540,046.57	3,462,034.33	40° 48' 13.948 N	103° 49' 51.636 W	
7,101.00	90.24	179.65	5,588.26	-1,863.48	-317.66	1,539,961.62	3,462,037.23	40° 48' 13.109 N	103° 49' 51.619 W	
7,186.00	89.85	178.84	5,588.20	-1,948.47	-316.54	1,539,876.67	3,462,039.95	40° 48' 12.269 N	103° 49' 51.605 W	
7,272.00	90.37	180.19	5,588.03	-2,034.47	-315.82	1,539,790.70	3,462,042.30	40° 48' 11.419 N	103° 49' 51.595 W	
7,363.00	90.29	178.91	5,587.51	-2,125.46	-315.10	1,539,699.74	3,462,044.73	40° 48' 10.520 N	103° 49' 51.586 W	
7,455.00	90.15	179.84	5,587.16	-2,217.45	-314.10	1,539,607.78	3,462,047.47	40° 48' 9.611 N	103° 49' 51.573 W	
7,547.00	91.38	180.05	5,585.93	-2,309.44	-314.01	1,539,515.81	3,462,049.29	40° 48' 8.702 N	103° 49' 51.572 W	
7,639.00	90.64	179.69	5,584.31	-2,401.43	-313.80	1,539,423.85	3,462,051.23	40° 48' 7.793 N	103° 49' 51.569 W	
7,730.00	90.55	180.77	5,583.36	-2,492.42	-314.17	1,539,332.86	3,462,052.58	40° 48' 6.894 N	103° 49' 51.574 W	
7,820.00	89.14	180.73	5,583.60	-2,582.41	-315.34	1,539,242.87	3,462,053.09	40° 48' 6.005 N	103° 49' 51.589 W	
7,912.00	89.89	179.38	5,584.38	-2,674.40	-315.43	1,539,150.89	3,462,054.74	40° 48' 5.096 N	103° 49' 51.590 W	
8,004.00	89.71	180.22	5,584.70	-2,766.40	-315.11	1,539,058.91	3,462,056.79	40° 48' 4.187 N	103° 49' 51.586 W	
8,094.00	88.22	179.86	5,586.33	-2,856.38	-315.17	1,538,968.94	3,462,058.42	40° 48' 3.298 N	103° 49' 51.587 W	
8,185.00	89.14	179.16	5,588.43	-2,947.35	-314.40	1,538,878.00	3,462,060.91	40° 48' 2.399 N	103° 49' 51.577 W	
8,277.00	87.91	179.54	5,590.79	-3,039.32	-313.35	1,538,786.08	3,462,063.69	40° 48' 1.490 N	103° 49' 51.563 W	
8,369.00	87.08	177.73	5,594.82	-3,131.20	-311.16	1,538,694.25	3,462,067.61	40° 48' 0.582 N	103° 49' 51.535 W	
8,461.00	88.26	180.32	5,598.56	-3,223.10	-309.60	1,538,602.40	3,462,070.90	40° 47' 59.674 N	103° 49' 51.514 W	
8,553.00	89.67	180.64	5,600.22	-3,315.08	-310.37	1,538,510.42	3,462,071.86	40° 47' 58.765 N	103° 49' 51.524 W	
8,644.00	90.37	181.33	5,600.19	-3,406.06	-311.94	1,538,419.42	3,462,072.01	40° 47' 57.866 N	103° 49' 51.545 W	
8,736.00	88.62	178.78	5,601.00	-3,498.05	-312.02	1,538,327.45	3,462,073.66	40° 47' 56.958 N	103° 49' 51.546 W	
8,828.00	88.66	180.00	5,603.18	-3,590.02	-311.05	1,538,235.52	3,462,076.37	40° 47' 56.049 N	103° 49' 51.533 W	
8,921.00	87.69	179.69	5,606.14	-3,682.97	-310.79	1,538,142.59	3,462,078.37	40° 47' 55.130 N	103° 49' 51.530 W	
9,012.00	87.78	178.97	5,609.74	-3,773.89	-309.73	1,538,051.70	3,462,081.15	40° 47' 54.232 N	103° 49' 51.516 W	
9,105.00	87.69	179.69	5,613.41	-3,866.81	-308.64	1,537,958.82	3,462,083.98	40° 47' 53.314 N	103° 49' 51.502 W	
9,197.00	88.79	180.59	5,616.24	-3,958.76	-308.87	1,537,866.88	3,462,085.49	40° 47' 52.405 N	103° 49' 51.505 W	
9,288.00	90.37	179.90	5,616.91	-4,049.76	-309.26	1,537,775.89	3,462,086.81	40° 47' 51.506 N	103° 49' 51.510 W	
9,380.00	89.58	177.48	5,616.95	-4,141.73	-307.15	1,537,683.98	3,462,090.65	40° 47' 50.597 N	103° 49' 51.482 W	
9,473.00	91.43	177.21	5,616.13	-4,234.62	-302.85	1,537,591.19	3,462,096.70	40° 47' 49.680 N	103° 49' 51.426 W	
9,564.00	92.84	179.08	5,612.74	-4,325.50	-299.90	1,537,500.37	3,462,101.36	40° 47' 48.782 N	103° 49' 51.388 W	
9,655.00	92.53	179.91	5,608.47	-4,416.40	-299.10	1,537,409.51	3,462,103.87	40° 47' 47.883 N	103° 49' 51.378 W	
9,747.00	91.74	180.88	5,605.05	-4,508.33	-299.74	1,537,317.58	3,462,104.97	40° 47' 46.975 N	103° 49' 51.386 W	

LEAM Drilling Systems LLC

Survey Report - Geographic

Company:	WHITING PETROLEUM CORPORATION	Local Co-ordinate Reference:	Well 3509A
Project:	Weld County, CO	TVD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Site:	Razor Federal #26J	MD Reference:	GE 4726' + KB 17' @ 4743.00usft (Xtreme 18)
Well:	3509A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,839.00	91.52	181.31	5,602.43	-4,600.27	-301.49	1,537,225.62	3,462,104.94	40° 47' 46.066 N	103° 49' 51.409 W	
9,931.00	91.56	181.47	5,599.96	-4,692.21	-303.72	1,537,133.65	3,462,104.45	40° 47' 45.158 N	103° 49' 51.438 W	
10,024.00	91.65	180.50	5,597.35	-4,785.16	-305.32	1,537,040.69	3,462,104.60	40° 47' 44.240 N	103° 49' 51.459 W	
10,117.00	89.98	181.54	5,596.03	-4,878.13	-306.98	1,536,947.71	3,462,104.69	40° 47' 43.321 N	103° 49' 51.480 W	
10,209.00	90.59	180.73	5,595.57	-4,970.11	-308.80	1,536,855.71	3,462,104.60	40° 47' 42.412 N	103° 49' 51.504 W	
10,302.00	89.76	181.52	5,595.29	-5,063.09	-310.63	1,536,762.71	3,462,104.53	40° 47' 41.493 N	103° 49' 51.527 W	
10,393.00	90.59	181.22	5,595.01	-5,154.07	-312.80	1,536,671.71	3,462,104.07	40° 47' 40.594 N	103° 49' 51.556 W	
10,485.00	88.35	178.44	5,595.86	-5,246.05	-312.53	1,536,579.75	3,462,106.07	40° 47' 39.686 N	103° 49' 51.552 W	
10,577.00	90.07	179.62	5,597.13	-5,338.02	-310.97	1,536,487.83	3,462,109.36	40° 47' 38.777 N	103° 49' 51.532 W	
10,669.00	90.73	180.33	5,596.49	-5,430.02	-310.93	1,536,395.85	3,462,111.13	40° 47' 37.868 N	103° 49' 51.531 W	
10,761.00	92.09	180.33	5,594.22	-5,521.98	-311.46	1,536,303.88	3,462,112.34	40° 47' 36.959 N	103° 49' 51.538 W	
10,854.00	90.73	181.62	5,591.94	-5,614.94	-313.04	1,536,210.92	3,462,112.51	40° 47' 36.041 N	103° 49' 51.559 W	
10,945.00	89.49	181.93	5,591.76	-5,705.89	-315.86	1,536,119.93	3,462,111.40	40° 47' 35.142 N	103° 49' 51.595 W	
11,038.00	89.32	181.17	5,592.73	-5,798.85	-318.38	1,536,026.93	3,462,110.64	40° 47' 34.223 N	103° 49' 51.628 W	
11,129.00	89.05	178.50	5,594.02	-5,889.84	-318.12	1,535,935.97	3,462,112.61	40° 47' 33.324 N	103° 49' 51.625 W	
11,221.00	89.85	177.95	5,594.90	-5,981.79	-315.27	1,535,844.09	3,462,117.19	40° 47' 32.416 N	103° 49' 51.588 W	
11,313.00	90.73	179.11	5,594.44	-6,073.75	-312.91	1,535,752.19	3,462,121.28	40° 47' 31.507 N	103° 49' 51.557 W	
11,405.00	89.36	178.16	5,594.37	-6,165.72	-310.71	1,535,660.27	3,462,125.21	40° 47' 30.598 N	103° 49' 51.528 W	
11,496.00	90.64	180.62	5,594.37	-6,256.71	-309.75	1,535,569.32	3,462,127.89	40° 47' 29.699 N	103° 49' 51.516 W	
11,588.00	92.00	180.54	5,592.25	-6,348.68	-310.68	1,535,477.35	3,462,128.69	40° 47' 28.791 N	103° 49' 51.528 W	
11,680.00	90.95	180.78	5,589.88	-6,440.64	-311.74	1,535,385.39	3,462,129.36	40° 47' 27.882 N	103° 49' 51.542 W	
11,772.00	90.02	180.98	5,589.10	-6,532.62	-313.15	1,535,293.39	3,462,129.68	40° 47' 26.973 N	103° 49' 51.560 W	
11,863.00	91.65	180.76	5,587.77	-6,623.60	-314.53	1,535,202.41	3,462,130.02	40° 47' 26.074 N	103° 49' 51.578 W	
11,955.00	89.58	179.67	5,586.79	-6,715.59	-314.88	1,535,110.43	3,462,131.40	40° 47' 25.165 N	103° 49' 51.582 W	
12,048.00	89.36	178.07	5,587.65	-6,808.56	-313.04	1,535,017.50	3,462,134.99	40° 47' 24.246 N	103° 49' 51.559 W	
12,141.00	88.75	178.69	5,589.18	-6,901.51	-310.41	1,534,924.62	3,462,139.37	40° 47' 23.328 N	103° 49' 51.524 W	
12,233.00	88.66	177.48	5,591.26	-6,993.44	-307.34	1,534,832.77	3,462,144.17	40° 47' 22.420 N	103° 49' 51.484 W	
12,259.00	88.75	177.57	5,591.85	-7,019.41	-306.22	1,534,806.83	3,462,145.78	40° 47' 22.163 N	103° 49' 51.470 W	
12,310.00	88.75	177.57	5,592.96	-7,070.35	-304.06	1,534,755.94	3,462,148.90	40° 47' 21.660 N	103° 49' 51.442 W	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)		Name	Casing Diameter (")	Hole Diameter (")	
1,555.00	1,553.04	9 5/8"		9-5/8	12-1/4	
5,998.00	5,594.78	7"		7	7-1/2	

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
12,293.20	5,592.59	-7,053.57	-304.77	HL Crossing 1	