

# **EXTRACTION OIL & GAS**

**WELD COUNTY, COLORADO (NAD 83)  
SW SE SEC. 32 T6N R65W 6th P.M.  
WAKE EAST 9C**

**ORIGINAL WELLBORE  
PROPOSAL #1**

## **Anticollision Report**

**15 March, 2017**



## Anticollision Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well WAKE EAST 9C
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 32 T6N R65W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	WAKE EAST 9C	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL #1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.0usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0 us	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b> 10/03/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	17,741.2	PROPOSAL #1 (ORIGINAL WELLBORE)	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
NW SE SEC. 32 T6N R65W 6th P.M.						
EXIST DD THERMO #5-5-32 - Wellbore #1 - Wellbore #1	1,429.3	1,437.3	263.0	256.6	41.053	CC, ES
EXIST DD THERMO #5-5-32 - Wellbore #1 - Wellbore #1	4,300.0	4,190.4	950.7	914.1	25.923	SF
EXIST HZ ISALND GROVE #2-32 - Wellbore #1 - Wellbore #1	2,511.3	3,212.0	3,062.1	3,042.6	156.914	CC
EXIST HZ ISALND GROVE #2-32 - Wellbore #1 - Wellbore #1	2,700.0	3,521.9	3,064.1	3,042.2	139.883	ES
EXIST HZ ISALND GROVE #2-32 - Wellbore #1 - Wellbore #1	13,600.0	8,730.0	9,920.1	9,705.4	46.204	SF
EXIST VERT ADAMS #1 - Wellbore #1 - Design #1	8,212.4	7,164.0	1,431.6	1,240.0	7.473	CC, ES
EXIST VERT ADAMS #1 - Wellbore #1 - Design #1	8,500.0	7,164.0	1,460.2	1,261.9	7.365	SF
EXIST VERT HARVEST #1 - Wellbore #1 - Design #1	7,382.8	6,810.8	684.5	497.8	3.665	CC
EXIST VERT HARVEST #1 - Wellbore #1 - Design #1	7,400.0	6,825.3	684.8	497.7	3.659	ES, SF
EXIST VERT HUNGENBERG #13-33 - Wellbore #1 - Design #1	6,009.5	5,602.0	1,210.3	1,060.5	8.080	CC
EXIST VERT HUNGENBERG #13-33 - Wellbore #1 - Design #1	6,100.0	5,681.4	1,211.0	1,058.8	7.956	ES
EXIST VERT HUNGENBERG #13-33 - Wellbore #1 - Design #1	8,400.0	7,140.0	1,404.5	1,208.9	7.179	SF
EXIST VERT HUNGENBERG #14-33 - Wellbore #1 - Design #1	4,047.4	3,872.1	2,164.3	2,067.8	22.425	CC
EXIST VERT HUNGENBERG #14-33 - Wellbore #1 - Design #1	4,300.0	4,093.7	2,167.7	2,064.4	20.985	ES
EXIST VERT HUNGENBERG #14-33 - Wellbore #1 - Design #1	9,400.0	7,131.0	2,881.0	2,660.3	13.057	SF
EXIST VERT JOHNSON OLY #1 - Wellbore #1 - Design #1	7,366.1	6,809.5	2,609.4	2,422.7	13.978	CC, ES
EXIST VERT JOHNSON OLY #1 - Wellbore #1 - Design #1	7,400.0	6,838.3	2,610.2	2,422.9	13.936	SF
EXIST VERT JOZ A #5-7-32 - Wellbore #1 - Design #1	1,400.0	1,396.0	275.7	244.9	8.963	CC
EXIST VERT JOZ A #5-7-32 - Wellbore #1 - Design #1	1,500.0	1,496.0	277.2	244.3	8.408	ES
EXIST VERT JOZ A #5-7-32 - Wellbore #1 - Design #1	2,000.0	1,993.2	321.9	278.4	7.391	SF
WAKE NORTH 1 - ORIGINAL WELLBORE - PROPOSAL #1	0.0	6.0	1,835.2			
WAKE NORTH 1 - ORIGINAL WELLBORE - PROPOSAL #1	100.0	100.0	1,835.3	1,835.1	9,720.440	ES
WAKE NORTH 1 - ORIGINAL WELLBORE - PROPOSAL #1	8,900.0	7,200.0	2,374.2	2,265.1	21.756	SF
WAKE NORTH 10 - ORIGINAL WELLBORE - PROPOSAL #1	7,457.8	7,356.9	277.6	191.0	3.208	CC, ES
WAKE NORTH 10 - ORIGINAL WELLBORE - PROPOSAL #1	7,500.0	7,363.5	280.9	193.3	3.205	SF
WAKE NORTH 11 - ORIGINAL WELLBORE - PROPOSAL #1	7,350.0	7,359.4	24.4	-61.9	0.283	Level 1, ES, SF
WAKE NORTH 11 - ORIGINAL WELLBORE - PROPOSAL #1	7,350.5	7,359.6	24.4	-61.7	0.283	Level 1, CC
WAKE NORTH 12 - ORIGINAL WELLBORE - PROPOSAL #1	7,400.0	7,418.0	228.0	139.1	2.564	ES, SF
WAKE NORTH 12 - ORIGINAL WELLBORE - PROPOSAL #1	7,408.2	7,422.1	227.9	139.2	2.571	CC
WAKE NORTH 13 - ORIGINAL WELLBORE - PROPOSAL #1	6,053.5	5,964.6	255.5	209.1	5.514	CC, ES
WAKE NORTH 13 - ORIGINAL WELLBORE - PROPOSAL #1	7,200.0	7,330.1	322.0	235.6	3.729	SF
WAKE NORTH 14 - ORIGINAL WELLBORE - PROPOSAL #1	5,588.2	5,526.1	195.3	151.6	4.465	CC
WAKE NORTH 14 - ORIGINAL WELLBORE - PROPOSAL #1	5,600.0	5,536.6	195.4	151.6	4.458	ES, SF
WAKE NORTH 15 - ORIGINAL WELLBORE - PROPOSAL #1	5,416.2	5,369.3	116.6	74.0	2.740	CC, ES, SF
WAKE NORTH 16 - ORIGINAL WELLBORE - PROPOSAL #1	5,140.3	5,113.5	150.9	109.6	3.658	CC, ES, SF
WAKE NORTH 17 - ORIGINAL WELLBORE - PROPOSAL #1	4,764.4	4,778.8	114.4	75.0	2.903	CC, ES, SF
WAKE NORTH 18 - ORIGINAL WELLBORE - PROPOSAL #1	4,560.7	4,595.9	65.1	27.0	1.706	CC, ES, SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Anticollision Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well WAKE EAST 9C
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 32 T6N R65W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	WAKE EAST 9C	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NW SE SEC. 32 T6N R65W 6th P.M.						
WAKE NORTH 19 - ORIGINAL WELLBORE - PROPOSAL	4,344.1	4,401.0	99.4	62.1	2.664	CC, ES, SF
WAKE NORTH 2 - ORIGINAL WELLBORE - PROPOSAL	7,677.8	7,109.1	1,767.5	1,681.6	20.564	CC
WAKE NORTH 2 - ORIGINAL WELLBORE - PROPOSAL	7,700.0	7,121.0	1,767.6	1,681.2	20.441	ES
WAKE NORTH 2 - ORIGINAL WELLBORE - PROPOSAL	8,500.0	7,168.5	1,962.5	1,863.8	19.872	SF
WAKE NORTH 20 - ORIGINAL WELLBORE - PROPOSAL	4,174.4	4,248.7	100.3	63.8	2.748	CC, ES, SF
WAKE NORTH 21 - ORIGINAL WELLBORE - PROPOSAL	3,932.9	4,040.9	59.5	24.3	1.690	CC, ES, SF
WAKE NORTH 22 - ORIGINAL WELLBORE - PROPOSAL	3,749.6	3,881.1	93.4	58.7	2.692	CC, ES, SF
WAKE NORTH 23 - ORIGINAL WELLBORE - PROPOSAL	3,562.0	3,720.2	94.1	60.1	2.770	CC, ES, SF
WAKE NORTH 24 - ORIGINAL WELLBORE - PROPOSAL	3,455.4	3,623.1	78.4	45.2	2.361	CC, ES, SF
WAKE NORTH 3 - ORIGINAL WELLBORE - PROPOSAL	7,713.3	7,200.0	1,568.0	1,479.9	17.813	CC
WAKE NORTH 3 - ORIGINAL WELLBORE - PROPOSAL	7,750.0	7,216.5	1,568.4	1,479.7	17.670	ES
WAKE NORTH 3 - ORIGINAL WELLBORE - PROPOSAL	7,900.0	7,263.3	1,580.1	1,489.7	17.465	SF
WAKE NORTH 4 - ORIGINAL WELLBORE - PROPOSAL	7,684.1	7,192.4	1,478.1	1,391.4	17.034	CC
WAKE NORTH 4 - ORIGINAL WELLBORE - PROPOSAL	7,700.0	7,200.0	1,478.2	1,391.1	16.960	ES
WAKE NORTH 4 - ORIGINAL WELLBORE - PROPOSAL	7,800.0	7,220.8	1,483.3	1,394.8	16.775	SF
WAKE NORTH 5 - ORIGINAL WELLBORE - PROPOSAL	7,660.6	7,250.0	1,183.1	1,095.8	13.550	CC, ES
WAKE NORTH 5 - ORIGINAL WELLBORE - PROPOSAL	7,750.0	7,261.9	1,187.2	1,098.9	13.443	SF
WAKE NORTH 6 - ORIGINAL WELLBORE - PROPOSAL	7,699.9	7,323.7	981.6	892.4	11.005	CC
WAKE NORTH 6 - ORIGINAL WELLBORE - PROPOSAL	7,700.0	7,323.7	981.6	892.4	11.005	ES
WAKE NORTH 6 - ORIGINAL WELLBORE - PROPOSAL	7,750.0	7,333.4	983.1	893.2	10.936	SF
WAKE NORTH 7 - ORIGINAL WELLBORE - PROPOSAL	7,608.7	7,295.8	880.0	793.0	10.114	CC, ES
WAKE NORTH 7 - ORIGINAL WELLBORE - PROPOSAL	7,650.0	7,300.0	881.2	793.7	10.067	SF
WAKE NORTH 8 - ORIGINAL WELLBORE - PROPOSAL	7,543.7	7,328.7	581.8	494.9	6.690	CC
WAKE NORTH 8 - ORIGINAL WELLBORE - PROPOSAL	7,550.0	7,329.5	581.9	494.8	6.681	ES
WAKE NORTH 8 - ORIGINAL WELLBORE - PROPOSAL	7,600.0	7,333.6	584.9	497.3	6.673	SF
WAKE NORTH 9 - ORIGINAL WELLBORE - PROPOSAL	7,599.3	7,400.0	375.2	286.2	4.218	CC
WAKE NORTH 9 - ORIGINAL WELLBORE - PROPOSAL	7,600.0	7,400.0	375.2	286.2	4.218	ES
WAKE NORTH 9 - ORIGINAL WELLBORE - PROPOSAL	7,650.0	7,408.0	378.9	288.9	4.211	SF

# Anticollision Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well WAKE EAST 9C
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 32 T6N R65W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	WAKE EAST 9C	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW SE SEC. 32 T6N R65W 6th P.M.						
ABDN VERT DAVIS #1 - Wellbore #1 - Design #1	9,639.0	7,130.0	2,504.0	2,277.2	11.040	CC
ABDN VERT DAVIS #1 - Wellbore #1 - Design #1	9,700.0	7,130.0	2,504.8	2,276.3	10.965	ES
ABDN VERT DAVIS #1 - Wellbore #1 - Design #1	10,400.0	7,130.0	2,617.1	2,369.9	10.587	SF
ABDN VERT HOSHIKO 6-33 - Wellbore #1 - Design #1	9,730.4	7,139.0	44.0	-185.4	0.192	Level 1, CC, ES, SF
ABDN VERT KOEHLER #1 - Wellbore #1 - Design #1	12,399.0	7,129.0	2,569.9	2,267.9	8.508	CC
ABDN VERT KOEHLER #1 - Wellbore #1 - Design #1	12,500.0	7,129.0	2,571.9	2,267.1	8.436	ES
ABDN VERT KOEHLER #1 - Wellbore #1 - Design #1	13,000.0	7,129.0	2,639.3	2,320.5	8.280	SF
ABDN VERT MT BICKLING 1-34 (NOBLE) - Wellbore #1	14,858.4	7,128.0	1,400.4	1,029.8	3.779	CC
ABDN VERT MT BICKLING 1-34 (NOBLE) - Wellbore #1	14,900.0	7,128.0	1,401.0	1,029.3	3.769	ES
ABDN VERT MT BICKLING 1-34 (NOBLE) - Wellbore #1	15,000.0	7,128.0	1,407.5	1,033.0	3.758	SF
EXIST DD KOEHLER E 33-09D (NOBLE) - Wellbore #1	12,294.1	7,372.1	1,228.2	1,054.1	7.055	CC
EXIST DD KOEHLER E 33-09D (NOBLE) - Wellbore #1	12,300.0	7,372.1	1,228.2	1,054.0	7.048	ES
EXIST DD KOEHLER E 33-09D (NOBLE) - Wellbore #1	12,500.0	7,370.7	1,245.4	1,065.6	6.926	SF
EXIST DD KOEHLER E 33-23D (NOBLE) - Wellbore #1	11,652.7	7,280.0	1,907.2	1,750.7	12.186	CC
EXIST DD KOEHLER E 33-23D (NOBLE) - Wellbore #1	11,700.0	7,280.0	1,907.7	1,749.9	12.089	ES
EXIST DD KOEHLER E 33-23D (NOBLE) - Wellbore #1	12,300.0	7,280.0	2,014.0	1,839.6	11.550	SF
EXIST DD KOEHLER E 34-32D (NOBLE) - Wellbore #1	13,043.9	7,531.0	685.8	483.6	3.393	CC, ES
EXIST DD KOEHLER E 34-32D (NOBLE) - Wellbore #1	13,100.0	7,531.0	688.1	484.4	3.378	SF
EXIST DD KOEHLER E 34-33D (NOBLE) - Wellbore #1	13,080.9	7,370.0	1,765.6	1,564.7	8.787	CC
EXIST DD KOEHLER E 34-33D (NOBLE) - Wellbore #1	13,100.0	7,370.0	1,765.7	1,564.3	8.765	ES
EXIST DD KOEHLER E 34-33D (NOBLE) - Wellbore #1	13,500.0	7,370.0	1,814.7	1,602.1	8.536	SF
EXIST HZ HEALY E34-69HN (NOBLE) - Wellbore #1 - V	16,017.5	13,770.0	1,976.4	1,520.2	4.333	CC
EXIST HZ HEALY E34-69HN (NOBLE) - Wellbore #1 - V	16,100.0	13,749.0	1,978.0	1,520.1	4.320	ES, SF
EXIST HZ LDS E35-79HC (NOBLE) - Wellbore #1 - Well	17,741.2	8,759.4	437.9	329.2	4.027	CC, ES, SF
EXIST VERT BLISS 10-33 - Wellbore #1 - Design #1	11,078.5	7,136.0	1,195.0	929.2	4.497	CC
EXIST VERT BLISS 10-33 - Wellbore #1 - Design #1	11,100.0	7,136.0	1,195.2	928.8	4.487	ES
EXIST VERT BLISS 10-33 - Wellbore #1 - Design #1	11,200.0	7,136.0	1,201.1	932.1	4.464	SF
EXIST VERT BLISS 13-34 (NOBLE) - Wellbore #1 - Wel	13,635.1	6,950.0	2,415.5	2,220.8	12.408	CC
EXIST VERT BLISS 13-34 (NOBLE) - Wellbore #1 - Wel	13,700.0	6,950.0	2,416.4	2,219.9	12.298	ES
EXIST VERT BLISS 13-34 (NOBLE) - Wellbore #1 - Wel	14,500.0	6,950.0	2,565.7	2,346.9	11.729	SF
EXIST VERT BLISS 15-33 (NOBLE) - Wellbore #1 - Wel	11,079.9	7,060.0	2,548.1	2,423.6	20.464	CC
EXIST VERT BLISS 15-33 (NOBLE) - Wellbore #1 - Wel	11,100.0	7,060.0	2,548.2	2,423.2	20.374	ES
EXIST VERT BLISS 15-33 (NOBLE) - Wellbore #1 - Wel	12,500.0	7,060.0	2,917.1	2,753.5	17.823	SF
EXIST VERT FLOS E34-6 (NOBLE) - Wellbore #1 - Well	14,901.3	6,950.0	193.3	107.8	2.260	CC, ES, SF
EXIST VERT HOSHIKO #1 - Wellbore #1 - Design #1	16,086.7	7,102.0	91.0	-290.4	0.238	Level 1, CC, ES, SF
EXIST VERT HOSHIKO 1-33 - Wellbore #1 - Design #1	12,339.7	7,142.0	1,254.1	953.5	4.173	CC
EXIST VERT HOSHIKO 1-33 - Wellbore #1 - Design #1	12,400.0	7,142.0	1,255.6	953.3	4.154	ES
EXIST VERT HOSHIKO 1-33 - Wellbore #1 - Design #1	12,500.0	7,142.0	1,264.3	959.3	4.145	SF
EXIST VERT HOSHIKO 2-33 - Wellbore #1 - Design #1	10,895.4	7,144.0	1,395.7	1,134.8	5.351	CC
EXIST VERT HOSHIKO 2-33 - Wellbore #1 - Design #1	10,900.0	7,144.0	1,395.7	1,134.7	5.348	ES
EXIST VERT HOSHIKO 2-33 - Wellbore #1 - Design #1	11,100.0	7,144.0	1,410.6	1,144.2	5.295	SF
EXIST VERT HOSHIKO 31-34 - Wellbore #1 - Design #1	16,177.0	7,139.0	1,262.0	854.5	3.097	CC
EXIST VERT HOSHIKO 31-34 - Wellbore #1 - Design #1	16,200.0	7,139.0	1,262.2	854.0	3.092	ES
EXIST VERT HOSHIKO 31-34 - Wellbore #1 - Design #1	16,300.0	7,139.0	1,268.0	857.0	3.085	SF
EXIST VERT HOSHIKO 3-33 (NOBLE) - Wellbore #1 - D	9,679.0	7,149.0	1,313.2	1,085.2	5.758	CC
EXIST VERT HOSHIKO 3-33 (NOBLE) - Wellbore #1 - D	9,700.0	7,149.0	1,313.4	1,084.8	5.745	ES
EXIST VERT HOSHIKO 3-33 (NOBLE) - Wellbore #1 - D	9,900.0	7,149.0	1,331.7	1,097.7	5.692	SF
EXIST VERT HOSHIKO 8-33 - Wellbore #1 - Design #1	12,407.5	7,135.0	74.1	-228.3	0.245	Level 1, CC, ES, SF
EXIST VERT HUNGENBERG 7-33 - Wellbore #1 - Desig	10,792.4	7,140.0	246.1	-11.9	0.954	Level 1, CC
EXIST VERT HUNGENBERG 7-33 - Wellbore #1 - Desig	10,800.0	7,140.0	246.2	-12.0	0.953	Level 1, ES, SF
EXIST VERT MININGER 1 - Wellbore #1 - Design #1	16,191.5	7,082.0	2,558.0	2,153.9	6.330	CC
EXIST VERT MININGER 1 - Wellbore #1 - Design #1	16,300.0	7,082.0	2,560.3	2,153.2	6.288	ES
EXIST VERT MININGER 1 - Wellbore #1 - Design #1	16,600.0	7,082.0	2,590.5	2,174.9	6.234	SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Anticollision Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well WAKE EAST 9C
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 32 T6N R65W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	WAKE EAST 9C	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW SE SEC. 32 T6N R65W 6th P.M.						
EXIST VERT MININGER 33-34 - Wellbore #1 - Design #	16,161.9	7,128.0	1,210.0	803.0	2.973	CC
EXIST VERT MININGER 33-34 - Wellbore #1 - Design #	16,200.0	7,128.0	1,210.6	802.5	2.966	ES
EXIST VERT MININGER 33-34 - Wellbore #1 - Design #	16,300.0	7,128.0	1,217.9	807.0	2.964	SF
EXIST VERT MININGER-BICKLING #1 - Wellbore #1 - C	14,972.5	7,116.0	2,597.9	2,224.3	6.955	CC
EXIST VERT MININGER-BICKLING #1 - Wellbore #1 - C	15,000.0	7,116.0	2,598.0	2,223.7	6.941	ES
EXIST VERT MININGER-BICKLING #1 - Wellbore #1 - C	15,500.0	7,116.0	2,650.9	2,262.6	6.827	SF
EXIST VERT SINGER E 34-1 (NOBLE) - Wellbore #1 - C	17,665.2	7,134.0	1,297.3	848.1	2.888	CC
EXIST VERT SINGER E 34-1 (NOBLE) - Wellbore #1 - C	17,700.0	7,134.0	1,297.8	847.5	2.883	ES
EXIST VERT SINGER E 34-1 (NOBLE) - Wellbore #1 - C	17,741.2	7,134.0	1,299.5	848.1	2.879	SF
EXIST VERT SINGER E 34-16 (NOBLE) - Wellbore #1 -	17,741.2	6,850.0	2,682.6	2,374.1	8.694	CC, ES, SF
EXIST VERT SINGER E 34-8 (NOBLE) - Wellbore #1 - C	17,728.0	7,127.0	22.3	-428.6	0.050	Level 1, CC, ES, SF
EXIST VERT SINGER E 34-9 (NOBLE) - Wellbore #1 - C	17,741.2	7,128.0	1,307.9	856.6	2.898	CC, ES, SF
EXIST VERT UHRICH E 34-4 (NOBLE) - Wellbore #1 - C	13,453.9	7,138.0	1,409.0	1,077.5	4.251	CC
EXIST VERT UHRICH E 34-4 (NOBLE) - Wellbore #1 - C	13,500.0	7,138.0	1,409.7	1,077.0	4.237	ES
EXIST VERT UHRICH E 34-4 (NOBLE) - Wellbore #1 - C	13,600.0	7,138.0	1,416.5	1,081.0	4.222	SF
EXIST VERT UHRICH E 34-5 (NOBLE) - Wellbore #1 - C	13,770.7	7,134.0	74.4	-265.9	0.219	Level 1, CC, ES, SF
EXIST VERT WINTERS 12-34 - Wellbore #1 - Design #1	13,768.0	7,067.0	1,111.5	773.4	3.287	CC
EXIST VERT WINTERS 12-34 - Wellbore #1 - Design #1	13,800.0	7,067.0	1,111.9	773.0	3.280	ES
EXIST VERT WINTERS 12-34 - Wellbore #1 - Design #1	13,900.0	7,067.0	1,119.3	777.5	3.275	SF
WAKE EAST 10N - ORIGINAL WELLBORE - PROPOSAL	1,300.0	1,300.0	19.5	13.9	3.490	CC
WAKE EAST 10N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,495.3	243.4	-183.3	0.570	Level 1, ES, SF
WAKE EAST 11N - ORIGINAL WELLBORE - PROPOSAL	1,200.0	1,199.0	36.2	31.1	7.052	CC
WAKE EAST 11N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,356.0	526.4	-53.2	0.908	Level 1, ES, SF
WAKE EAST 12C - ORIGINAL WELLBORE - PROPOSAL	1,100.0	1,099.0	55.8	51.1	11.916	CC
WAKE EAST 12C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,454.7	658.9	43.1	1.070	Level 2, ES, SF
WAKE EAST 13N - ORIGINAL WELLBORE - PROPOSAL	1,000.0	999.0	72.5	68.2	17.122	CC, ES
WAKE EAST 13N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,229.7	842.0	241.2	1.401	Level 3, SF
WAKE EAST 14N - ORIGINAL WELLBORE - PROPOSAL	900.0	898.0	89.2	85.4	23.581	CC, ES
WAKE EAST 14N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,137.6	1,167.7	560.3	1.923	SF
WAKE EAST 15C - ORIGINAL WELLBORE - PROPOSAL	800.0	798.0	108.6	105.3	32.609	CC, ES
WAKE EAST 15C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,269.8	1,317.9	703.4	2.145	SF
WAKE EAST 16N - ORIGINAL WELLBORE - PROPOSAL	700.0	698.0	125.3	122.4	43.490	CC, ES
WAKE EAST 16N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,060.6	1,496.0	886.6	2.455	SF
WAKE EAST 17N - ORIGINAL WELLBORE - PROPOSAL	600.0	597.0	144.8	142.4	59.593	CC, ES
WAKE EAST 17N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,010.7	1,821.6	1,211.2	2.984	SF
WAKE EAST 18C - ORIGINAL WELLBORE - PROPOSAL	200.0	197.0	217.2	216.5	343.817	CC, ES
WAKE EAST 18C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,147.4	1,980.4	1,368.6	3.237	SF
WAKE EAST 19N - ORIGINAL WELLBORE - PROPOSAL	100.0	97.0	233.9	233.7	1,257.460	CC, ES
WAKE EAST 19N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	16,955.8	2,151.4	1,542.3	3.532	SF
WAKE EAST 1N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,396.0	144.7	138.7	24.030	CC, ES
WAKE EAST 1N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,782.5	1,826.4	1,210.0	2.963	SF
WAKE EAST 20N - ORIGINAL WELLBORE - PROPOSAL	300.0	297.0	197.7	196.6	182.837	CC, ES
WAKE EAST 20N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	16,960.4	2,481.8	1,871.4	4.066	SF
WAKE EAST 21C - ORIGINAL WELLBORE - PROPOSAL	400.0	398.0	181.0	179.4	118.058	CC, ES
WAKE EAST 21C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,146.6	2,639.3	2,026.8	4.309	SF
WAKE EAST 22N - ORIGINAL WELLBORE - PROPOSAL	500.0	497.0	161.5	159.5	81.553	CC, ES
WAKE EAST 22N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	16,987.6	2,808.7	2,197.0	4.592	SF
WAKE EAST 2N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,397.0	125.3	119.2	20.787	CC, ES
WAKE EAST 2N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,521.4	1,496.9	881.6	2.433	SF
WAKE EAST 3C - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,398.0	108.6	102.5	18.009	CC, ES
WAKE EAST 3C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,582.7	1,322.5	704.5	2.140	SF
WAKE EAST 4N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,399.0	89.1	83.0	14.771	CC, ES
WAKE EAST 4N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,316.6	1,168.7	555.9	1.907	SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Anticollision Report



<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well WAKE EAST 9C
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC. 32 T6N R65W 6th P.M.	<b>MD Reference:</b>	KB-EST @ 4660.0usft (Original Well Elev)
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	WAKE EAST 9C	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

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						
SW SE SEC. 32 T6N R65W 6th P.M.						
WAKE EAST 5N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,399.0	72.4	66.3	12.001	CC, ES
WAKE EAST 5N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,083.0	846.2	239.0	1.394	Level 3, SF
WAKE EAST 6C - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,399.0	52.9	46.9	8.770	CC
WAKE EAST 6C - ORIGINAL WELLBORE - PROPOSAL	17,741.2	18,107.9	659.4	41.8	1.068	Level 2, ES, SF
WAKE EAST 7N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,399.0	36.2	30.2	6.001	CC
WAKE EAST 7N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,855.3	526.8	-60.2	0.898	Level 1, ES, SF
WAKE EAST 8N - ORIGINAL WELLBORE - PROPOSAL	1,400.0	1,400.0	16.7	10.7	2.769	CC
WAKE EAST 8N - ORIGINAL WELLBORE - PROPOSAL	17,741.2	17,675.0	243.5	-196.9	0.553	Level 1, ES, SF

Offset Design NW SE SEC. 32 T6N R65W 6th P.M. - EXIST DD THERMO #5-5-32 - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 usft	
Survey Program: 549-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)			
0.0	0.0	0.0	0.0	0.0	0.0	-119.79	-142.4	-248.9	286.8				
100.0	100.0	95.9	95.9	0.1	0.1	-119.75	-142.3	-248.9	286.8	286.6	0.20	1,419.521	
200.0	200.0	195.8	195.8	0.3	0.2	-119.65	-141.9	-249.2	286.8	286.3	0.54	532.240	
300.0	300.0	295.7	295.7	0.5	0.3	-119.48	-141.2	-249.7	286.9	286.0	0.88	327.606	
400.0	400.0	395.6	395.6	0.8	0.4	-119.24	-140.2	-250.4	287.0	285.8	1.21	236.699	
500.0	500.0	495.5	495.5	1.0	0.6	-118.93	-138.9	-251.3	287.2	285.6	1.55	185.348	
600.0	600.0	595.0	594.9	1.2	0.7	-118.57	-137.4	-252.4	287.4	285.5	1.93	148.774	
700.0	700.0	696.1	696.0	1.4	0.9	-118.12	-135.6	-253.8	287.8	285.4	2.37	121.254	
800.0	800.0	803.1	802.9	1.7	1.2	-117.08	-130.5	-255.3	286.8	284.0	2.84	101.004	
900.0	900.0	908.1	907.5	1.9	1.4	-115.35	-121.2	-255.9	283.4	280.1	3.32	85.468	
1,000.0	1,000.0	1,007.4	1,006.1	2.1	1.7	-113.13	-109.7	-256.8	279.5	275.7	3.79	73.716	
1,100.0	1,100.0	1,108.5	1,106.2	2.3	2.0	-110.21	-95.2	-258.7	275.9	271.6	4.29	64.249	
1,200.0	1,200.0	1,215.8	1,211.6	2.6	2.4	-106.28	-75.8	-259.5	270.7	265.9	4.85	55.879	
1,300.0	1,300.0	1,312.5	1,306.1	2.8	2.8	-101.97	-55.1	-260.0	266.0	260.6	5.41	49.203	
1,400.0	1,400.0	1,409.3	1,400.0	3.0	3.2	-96.93	-31.8	-261.2	263.2	257.2	6.02	43.688	
1,429.3	1,429.3	1,437.3	1,427.1	3.1	3.3	-132.16	-24.7	-261.7	263.0	256.6	6.41	41.053 CC, ES	
1,500.0	1,500.0	1,504.8	1,492.3	3.2	3.7	-128.53	-7.0	-263.0	264.2	257.4	6.89	38.372	
1,600.0	1,599.8	1,600.6	1,584.3	3.5	4.1	-123.58	19.6	-265.4	270.2	262.6	7.58	35.651	
1,600.2	1,600.0	1,600.8	1,584.4	3.5	4.2	-123.57	19.6	-265.4	270.2	262.6	7.58	35.648	
1,700.0	1,699.6	1,696.6	1,676.2	3.7	4.7	-119.00	47.3	-268.0	279.4	271.1	8.27	33.781	
1,700.2	1,699.8	1,696.8	1,676.3	3.7	4.7	-119.00	47.3	-268.0	279.4	271.2	8.27	33.779	
1,800.0	1,799.2	1,793.5	1,768.9	3.9	5.1	-114.83	75.1	-271.1	291.5	282.6	8.92	32.698	
1,900.0	1,898.5	1,891.8	1,863.2	4.2	5.6	-111.62	102.5	-274.2	305.9	296.4	9.54	32.064	
2,000.0	1,997.2	1,991.0	1,958.5	4.4	6.1	-109.24	129.8	-277.3	322.1	311.9	10.20	31.567	
2,100.0	2,095.4	2,086.7	2,050.1	4.7	6.6	-107.42	157.3	-279.7	339.5	328.6	10.92	31.095	
2,200.0	2,192.8	2,180.1	2,139.3	5.1	7.1	-106.16	185.1	-283.1	359.4	347.8	11.67	30.803	
2,300.0	2,289.4	2,282.7	2,237.5	5.4	7.7	-105.65	214.3	-287.6	380.7	368.2	12.49	30.484	
2,400.0	2,385.0	2,380.7	2,331.7	5.9	8.2	-105.74	241.3	-290.7	401.4	388.1	13.35	30.078	
2,500.0	2,479.6	2,479.6	2,426.2	6.4	8.7	-105.96	270.3	-293.6	423.4	409.1	14.31	29.596	
2,600.0	2,572.9	2,583.7	2,525.3	6.9	9.3	-106.39	302.2	-295.0	445.4	430.1	15.37	28.987	
2,700.0	2,665.0	2,678.1	2,615.0	7.5	9.8	-106.98	331.5	-295.5	467.9	451.4	16.45	28.438	
2,800.0	2,755.6	2,770.5	2,702.5	8.2	10.4	-107.65	361.5	-296.3	492.3	474.7	17.62	27.934	
2,900.0	2,844.7	2,865.2	2,792.2	9.0	11.0	-108.67	391.5	-297.9	518.5	499.6	18.83	27.532	
2,935.5	2,876.0	2,898.0	2,823.5	9.3	11.1	-109.13	401.5	-298.6	528.2	508.9	19.26	27.427	
3,000.0	2,932.5	2,957.2	2,879.9	9.8	11.5	-110.28	419.3	-300.1	546.2	526.2	20.06	27.231	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation