

# Occidental Petroleum

Project: Weld County, CO (UTM-NAD83)  
Site: 3N-67W-12 DB FARMS 40-12HZ  
Well: DB FARMS 12-5HZ  
Wellbore: OH  
Design: OH



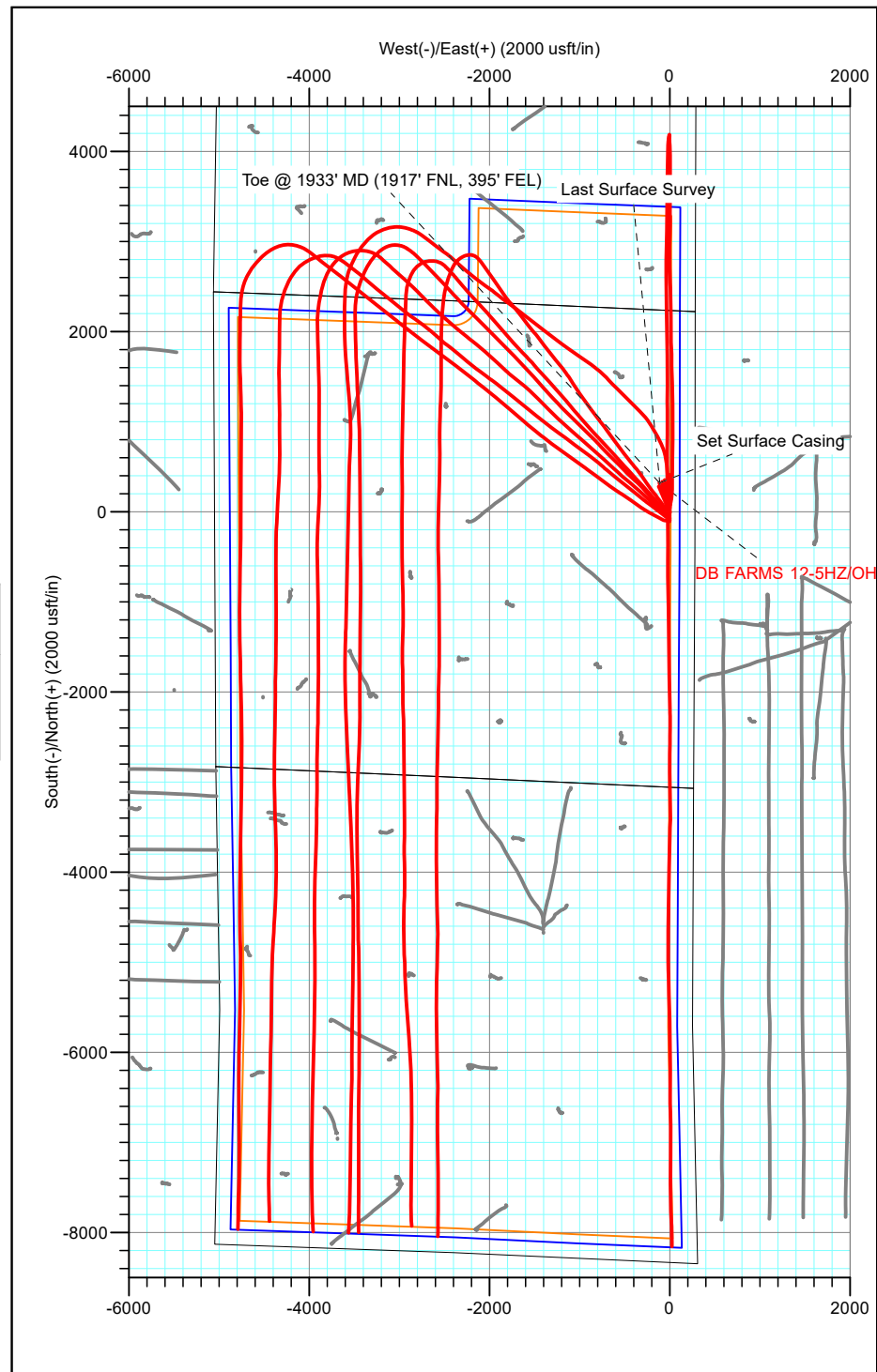
**ACTUAL LINE CALLS**  
**SHL: 2234' FNL, 279' FEL**  
**TOE: 1917' FNL, 395' FEL**

**SHL: Sec 12-T3N-R67W**  
**BHL: Sec 12-T3N-R67W**

## ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1868.00	20.78	342.88	1822.23	302.61	-108.21	-302.37	324.72	Last Surface Survey
1922.31	20.78	342.88	1873.00	321.03	-113.88	-320.77	343.99	Set Surface Casing
1933.00	20.78	342.88	1883.00	324.65	-115.00	-324.39	347.78	Toe @ 1933' MD (1917' FNL, 395' FEL)

PROJECT DETAILS: Weld County, CO (UTM-NAD83)  
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)



**TOTAL DIRECTIONAL SERVICES LLC**

Design: OH (DB FARMS 12-5HZ/OH)  
3N-67W-12 DB FARMS 40-12HZ  
Created By: Bethany Ball Date: 17:28, August 04 2022  
Date: \_\_\_\_\_  
Approved: \_\_\_\_\_ Date: \_\_\_\_\_

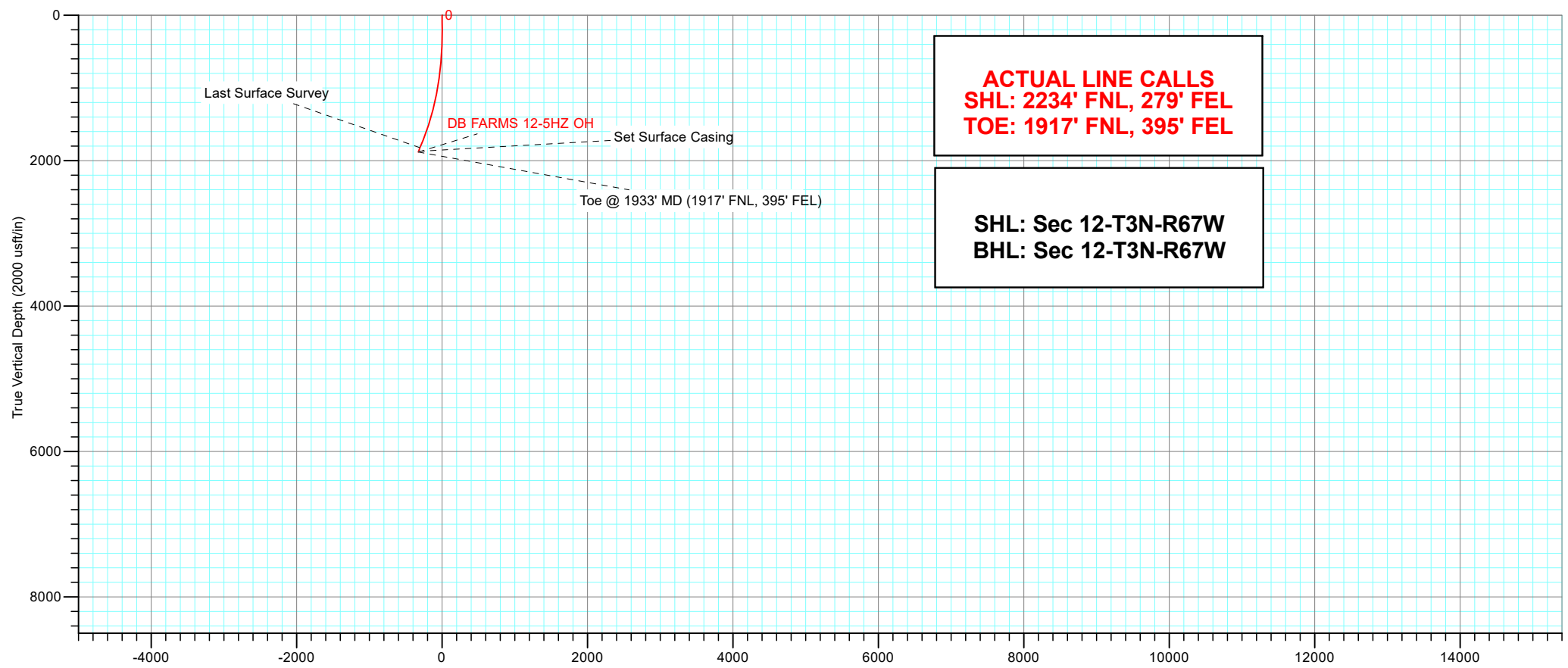
Occidental Petroleum

Project: Weld County, CO (UTM-NAD83)  
Site: 3N-67W-12 DB FARMS 40-12HZ  
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Geodetic System: Universal Transverse Mercator (US Survey Feet)
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Zone: Zone 13N (108 W to 102 W)
Ground Level



ANNOTATIONS								
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1868.00	20.78	342.88	1822.23	302.61	-108.21	-302.37	324.72	Last Surface Survey
1922.31	20.78	342.88	1873.00	321.03	-113.88	-320.77	343.99	Set Surface Casing
1933.00	20.78	342.88	1883.00	324.65	-115.00	-324.39	347.78	Toe @ 1933' MD (1917' FNL, 395' FEL)



**ACTUAL LINE CALLS**  
**SHL: 2234' FNL, 279' FEL**  
**TOE: 1917' FNL, 395' FEL**

**SHL: Sec 12-T3N-R67W**  
**BHL: Sec 12-T3N-R67W**

# **Occidental Petroleum**

**Weld County, CO (UTM-NAD83)**

**3N-67W-12 DB FARMS 40-12HZ**

**DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**04 August, 2022**

## Survey Report

<b>Company:</b>	Occidental Petroleum	<b>Local Co-ordinate Reference:</b>	Well DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Site:</b>	3N-67W-12 DB FARMS 40-12HZ	<b>MD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Well:</b>	DB FARMS 12-5HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Weld County, CO (UTM-NAD83)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		3N-67W-12 DB FARMS 40-12HZ				
Site Position:		Northing:	14,614,275.12	usft	Latitude:	40.2402777
From:	Map	Easting:	1,687,616.45	usft	Longitude:	-104.8308657
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"

Well	DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,614,215.14 usft	Latitude:	40.2401130
	+E/-W	0.00 usft	Easting:	1,687,616.11 usft	Longitude:	-104.8308673
Position Uncertainty		3.28 usft	Wellhead Elevation:	4,813.00 usft	Ground Level:	4,793.00 usft
Grid Convergence:		0.11 °				

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/3/2020	7.90	66.64	51,946.09331272

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.13	

<b>Survey Program</b>	<b>Date</b>	8/4/2022			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
97.00	1,933.00	Survey #1 (KB Adjusted) (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
97.00	0.47	134.73	97.00	-0.28	0.28	0.28	0.48	0.48	0.00	
188.00	0.59	69.53	188.00	-0.38	0.99	0.38	0.64	0.13	-71.65	
277.00	0.34	84.33	276.99	-0.19	1.68	0.19	0.31	-0.28	16.63	
369.00	1.07	357.45	368.99	0.69	1.91	-0.70	1.20	0.79	-94.43	
459.00	2.59	337.14	458.94	3.41	1.08	-3.41	1.81	1.69	-22.57	
549.00	3.74	333.38	548.80	7.90	-1.02	-7.90	1.30	1.28	-4.18	
639.00	5.02	341.64	638.54	14.27	-3.58	-14.26	1.58	1.42	9.18	
729.00	6.18	341.18	728.11	22.59	-6.38	-22.57	1.29	1.29	-0.51	

## Survey Report

<b>Company:</b>	Occidental Petroleum	<b>Local Co-ordinate Reference:</b>	Well DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Site:</b>	3N-67W-12 DB FARMS 40-12HZ	<b>MD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Well:</b>	DB FARMS 12-5HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
819.00	7.54	340.16	817.46	32.73	-9.95	-32.71	1.52	1.51	-1.13
909.00	8.98	342.00	906.52	44.96	-14.12	-44.93	1.63	1.60	2.04
999.00	10.56	340.91	995.22	59.44	-18.99	-59.40	1.77	1.76	-1.21
1,089.00	11.87	341.66	1,083.49	76.02	-24.60	-75.96	1.46	1.46	0.83
1,179.00	13.07	343.06	1,171.37	94.54	-30.48	-94.47	1.37	1.33	1.56
1,269.00	14.35	340.83	1,258.80	114.81	-37.10	-114.73	1.54	1.42	-2.48
1,359.00	15.24	337.93	1,345.82	136.31	-45.21	-136.21	1.29	0.99	-3.22
1,449.00	17.81	337.42	1,432.10	159.98	-54.94	-159.86	2.86	2.86	-0.57
1,539.00	19.19	338.60	1,517.44	186.46	-65.63	-186.32	1.59	1.53	1.31
1,629.00	23.14	338.31	1,601.36	216.68	-77.56	-216.50	4.39	4.39	-0.32
1,719.00	22.84	338.99	1,684.21	249.42	-90.36	-249.21	0.45	-0.33	0.76
1,809.00	22.24	342.45	1,767.34	281.97	-101.76	-281.73	1.62	-0.67	3.84
1,868.00	20.78	342.88	1,822.23	302.61	-108.21	-302.37	2.49	-2.47	0.73
Last Surface Survey									
1,922.31	20.78	342.88	1,873.00	321.03	-113.88	-320.77	0.00	0.00	0.00
Set Surface Casing									
1,933.00	20.78	342.88	1,883.00	324.65	-115.00	-324.39	0.00	0.00	0.00
Toe @ 1933' MD (1917' FNL, 395' FEL) - DB FARMS 12-5HZ LP (TPZ) - DB FARMS 12-5HZ BHL (BPZ)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,868.00	1,822.23	302.61	-108.21	Last Surface Survey
1,922.31	1,873.00	321.03	-113.88	Set Surface Casing
1,933.00	1,883.00	324.65	-115.00	Toe @ 1933' MD (1917' FNL, 395' FEL)

Checked By: _____	Approved By: _____	Date: _____
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# **Occidental Petroleum**

**Weld County, CO (UTM-NAD83)**

**3N-67W-12 DB FARMS 40-12HZ**

**DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ**

**OH**

**Design: OH**

## **Survey Report - Geographic**

**04 August, 2022**

# Survey Report - Geographic

<b>Company:</b>	Occidental Petroleum	<b>Local Co-ordinate Reference:</b>	Well DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Site:</b>	3N-67W-12 DB FARMS 40-12HZ	<b>MD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Well:</b>	DB FARMS 12-5HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Weld County, CO (UTM-NAD83)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		3N-67W-12 DB FARMS 40-12HZ			
Site Position:		Northing:	14,614,275.12 usft	Latitude:	40.2402777
From:	Map	Easting:	1,687,616.45 usft	Longitude:	-104.8308657
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well		DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,614,215.14 usft	Latitude:	40.2401130
	+E/-W	0.00 usft	Easting:	1,687,616.11 usft	Longitude:	-104.8308673
Position Uncertainty		3.28 usft	Wellhead Elevation:	4,813.00 usft	Ground Level:	4,793.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/3/2020	7.90	66.64	51,946.09331272

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.13	

<b>Survey Program</b>	<b>Date</b>	8/4/2022			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
97.00	1,933.00	Survey #1 (KB Adjusted) (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<b>Survey</b>									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.00	0.00	0.00	0.00	0.00	0.00	14,614,215.14	1,687,616.11	40.2401130	-104.8308673
97.00	0.47	134.73	97.00	-0.28	0.28	14,614,214.86	1,687,616.39	40.2401123	-104.8308663
188.00	0.59	69.53	188.00	-0.38	0.99	14,614,214.76	1,687,617.10	40.2401120	-104.8308638
277.00	0.34	84.33	276.99	-0.19	1.68	14,614,214.95	1,687,617.79	40.2401125	-104.8308613
369.00	1.07	357.45	368.99	0.69	1.91	14,614,215.83	1,687,618.02	40.2401149	-104.8308605
459.00	2.59	337.14	458.94	3.41	1.08	14,614,218.54	1,687,617.19	40.2401224	-104.8308635
549.00	3.74	333.38	548.80	7.90	-1.02	14,614,223.04	1,687,615.07	40.2401347	-104.8308710
639.00	5.02	341.64	638.54	14.27	-3.58	14,614,229.40	1,687,612.50	40.2401522	-104.8308802
729.00	6.18	341.18	728.11	22.59	-6.38	14,614,237.71	1,687,609.69	40.2401751	-104.8308902
819.00	7.54	340.16	817.46	32.73	-9.95	14,614,247.85	1,687,606.10	40.2402029	-104.8309030
909.00	8.98	342.00	906.52	44.96	-14.12	14,614,260.07	1,687,601.90	40.2402365	-104.8309179

## Survey Report - Geographic

<b>Company:</b>	Occidental Petroleum	<b>Local Co-ordinate Reference:</b>	Well DB FARMS 12-5HZ - Slot DB FARMS 12-5HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Site:</b>	3N-67W-12 DB FARMS 40-12HZ	<b>MD Reference:</b>	GE 4793' + KB 20' @ 4813.00usft
<b>Well:</b>	DB FARMS 12-5HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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
999.00	10.56	340.91	995.22	59.44	-18.99	14,614,274.54	1,687,597.01	40.2402762	-104.8309354
1,089.00	11.87	341.66	1,083.49	76.02	-24.60	14,614,291.11	1,687,591.36	40.2403218	-104.8309555
1,179.00	13.07	343.06	1,171.37	94.54	-30.48	14,614,309.62	1,687,585.45	40.2403726	-104.8309766
1,269.00	14.35	340.83	1,258.80	114.81	-37.10	14,614,329.88	1,687,578.78	40.2404283	-104.8310003
1,359.00	15.24	337.93	1,345.82	136.31	-45.21	14,614,351.36	1,687,570.64	40.2404873	-104.8310294
1,449.00	17.81	337.42	1,432.10	159.98	-54.94	14,614,375.01	1,687,560.86	40.2405524	-104.8310642
1,539.00	19.19	338.60	1,517.44	186.46	-65.63	14,614,401.48	1,687,550.13	40.2406251	-104.8311025
1,629.00	23.14	338.31	1,601.36	216.68	-77.56	14,614,431.67	1,687,538.13	40.2407080	-104.8311453
1,719.00	22.84	338.99	1,684.21	249.42	-90.36	14,614,464.38	1,687,525.27	40.2407979	-104.8311911
1,809.00	22.24	342.45	1,767.34	281.97	-101.76	14,614,496.91	1,687,513.81	40.2408873	-104.8312320
1,868.00	20.78	342.88	1,822.23	302.61	-108.21	14,614,517.54	1,687,507.32	40.2409440	-104.8312551
<b>Last Surface Survey</b>									
1,922.31	20.78	342.88	1,873.00	321.03	-113.88	14,614,535.95	1,687,501.62	40.2409946	-104.8312754
<b>Set Surface Casing</b>									
1,933.00	20.78	342.88	1,883.00	324.65	-115.00	14,614,539.57	1,687,500.49	40.2410045	-104.8312794
<b>Toe @ 1933' MD (1917' FNL, 395' FEL) - DB FARMS 12-5HZ LP (TPZ) - DB FARMS 12-5HZ BHL (BPZ)</b>									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,868.00	1,822.23	302.61	-108.21	Last Surface Survey	
1,922.31	1,873.00	321.03	-113.88	Set Surface Casing	
1,933.00	1,883.00	324.65	-115.00	Toe @ 1933' MD (1917' FNL, 395' FEL)	

Checked By: _____	Approved By: _____	Date: _____
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