



Project: **WELD COUNTY, COLORADO (TRUE)**  
Site: **SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)**  
Well: **CALIFORNIA 16N**  
Wellbore: **Wellbore #1**  
Design: **PROPOSAL #1**

#### ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.0	START NUDGE (2.00°/100FT)
367.5	1.35	107.01	367.5	-0.2	0.8	0.8	0.8	EOB TO 1.35° INC
6554.7	1.35	107.01	6553.0	-42.9	140.1	140.5	146.5	KOP (8.00°/100FT)
7666.2	90.21	90.44	7253.0	-53.0	858.7	859.2	865.2	HZ LANDING POINT/EP
16735.7	90.22	90.18	7218.0	-102.1	9927.9	9928.5	9934.6	BHL



Azimuths to True North  
Magnetic North: 8.02°

#### Magnetic Field

Strength: 52269.3nT  
Dip Angle: 66.94°  
Date: 4/25/2019  
Model: IGRF2015

#### SHL FOOTAGE: SEC 14

244	FSL	2281	FEL
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#### BHL FOOTAGE: SEC 18

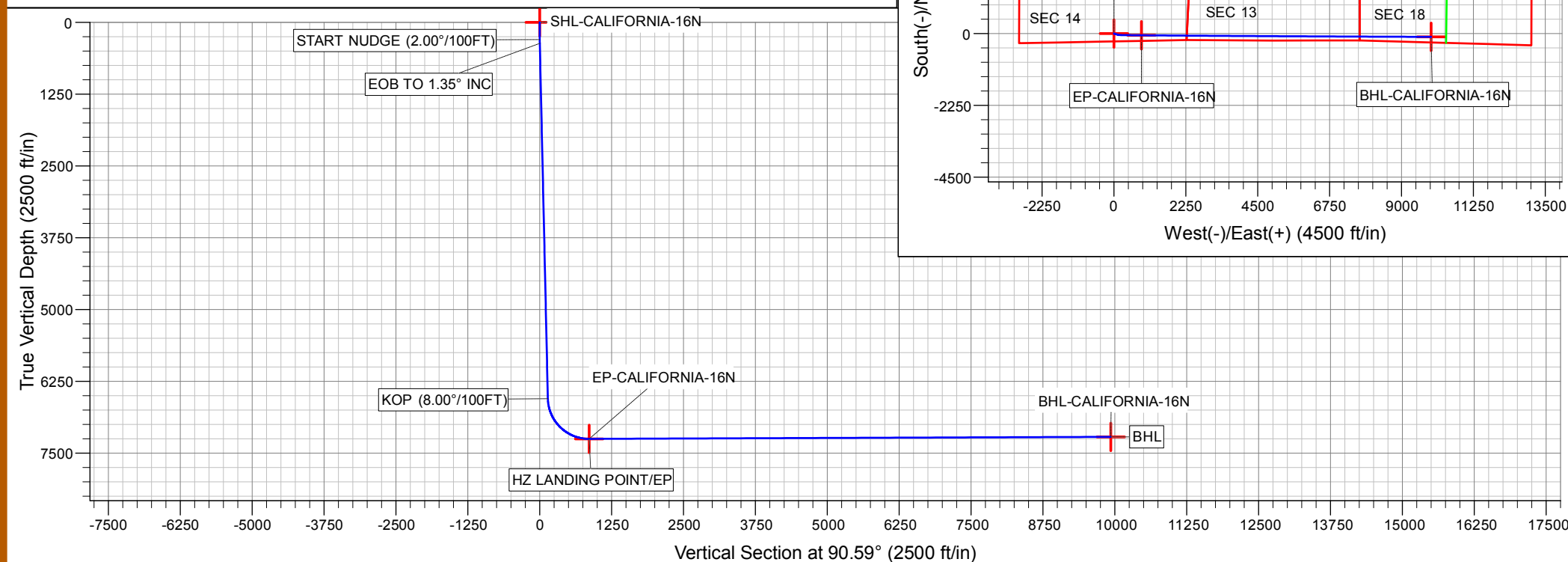
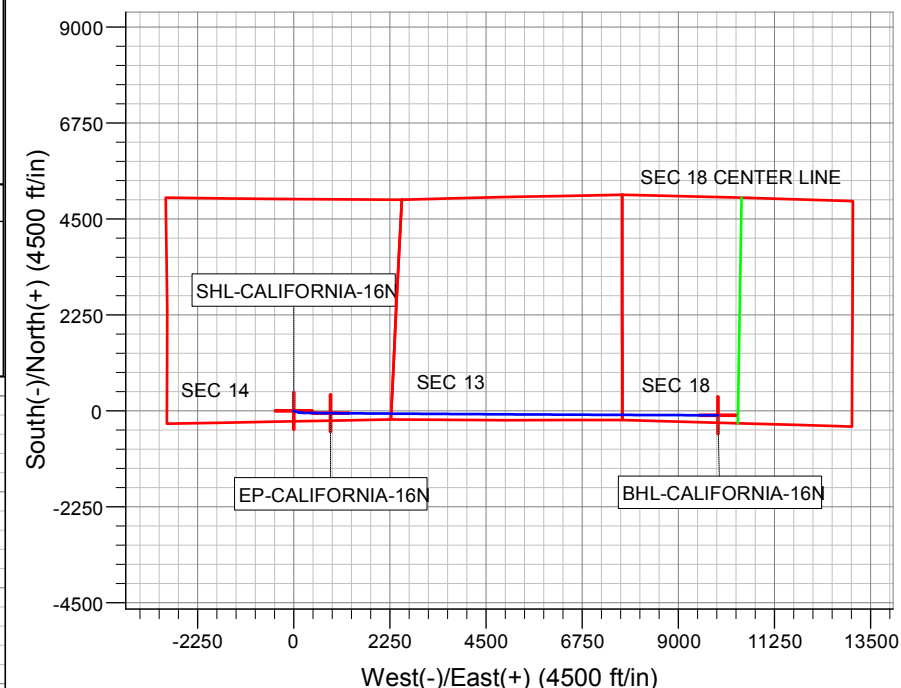
175	FSL	2240	FWL
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#### EP FOOTAGE: SEC 14

175	FSL	1421	FEL
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#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SHL-CALIFORNIA-16N	0.0	0.0	0.0	40.5688032	-104.7435225
BHL-CALIFORNIA-16N	7218.0	-102.1	9928.1	40.5685175	-104.7077876
EP-CALIFORNIA-16N	7253.0	-53.0	858.8	40.5686576	-104.7404313



# **PDC ENERGY**

**WELD COUNTY, COLORADO (TRUE)**

**SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)**

**CALIFORNIA 16N**

**Wellbore #1**

**PROPOSAL #1**

## **Anticollision Report**

**08 May, 2019**



**PDC Energy**  
Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well CALIFORNIA 16N - Slot CALIFORNIA 16N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CALIFORNIA 16N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM
<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>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum ellipse separation of 1,000.0 ft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b> 5/8/2019			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	16,735.7	PROPOSAL #1 (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)						
ABDN HZ WAAG 3 N/C - Wellbore #1 - Wellbore #1	16,735.8	7,482.1	642.4	347.7	2.180	CC, ES, SF
ABDN HZ WAAG 7 N/C - Wellbore #1 - Wellbore #1	13,599.6	10,854.3	1,445.6	1,160.4	5.068	CC
ABDN HZ WAAG 7 N/C - Wellbore #1 - Wellbore #1	13,600.0	10,854.0	1,445.6	1,160.3	5.068	ES
ABDN HZ WAAG 7 N/C - Wellbore #1 - Wellbore #1	13,900.0	10,626.2	1,451.3	1,163.8	5.049	SF
ABDN VERT ACHZIGER 1 - Wellbore #1 - Design #1	15,168.9	7,183.0	512.9	137.8	1.367	Level 3, CC, ES, SF
ABDN VERT GOODELL 1 - Wellbore #1 - Wellbore #1	0.0	35.5	9,409.2			
ABDN VERT GOODELL 1 - Wellbore #1 - Wellbore #1	7,300.0	6,983.2	9,972.5	9,952.5	498.583	SF
ABDN VERT PAWNEE HILLS BIG BEAR 1 - Wellbore #1	6,637.5	10,928.0	5,592.5	5,485.9	52.457	CC, ES
ABDN VERT PAWNEE HILLS BIG BEAR 1 - Wellbore #1	6,750.0	10,928.0	5,601.0	5,494.0	52.341	SF
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	7,257.0	7,066.9	2,055.4	2,022.2	61.855	CC
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	7,300.0	7,086.2	2,055.7	2,021.9	60.781	ES
ABDN VERT TRACY #32-23 - Wellbore #1 - Wellbore #1	8,700.0	7,159.5	2,491.0	2,432.6	42.620	SF
ABDN VERT TRACY 41-23 - Wellbore #1 - Wellbore #1	8,214.9	7,231.9	577.5	536.8	14.206	CC, ES
ABDN VERT TRACY 41-23 - Wellbore #1 - Wellbore #1	8,300.0	7,231.7	583.7	541.3	13.759	SF
CALIFORNIA 10N - Wellbore #1 - PROPOSAL #1	300.0	300.0	102.0	100.9	95.147	CC
CALIFORNIA 10N - Wellbore #1 - PROPOSAL #1	367.5	367.5	102.3	100.9	74.942	ES
CALIFORNIA 10N - Wellbore #1 - PROPOSAL #1	16,735.8	17,013.7	1,983.6	1,435.0	3.616	SF
CALIFORNIA 11C - Wellbore #1 - PROPOSAL #1	300.0	300.0	85.0	83.9	79.266	CC
CALIFORNIA 11C - Wellbore #1 - PROPOSAL #1	367.5	367.5	85.2	83.9	62.465	ES
CALIFORNIA 11C - Wellbore #1 - PROPOSAL #1	16,735.8	17,036.4	1,659.9	1,114.1	3.041	SF
CALIFORNIA 12N - Wellbore #1 - PROPOSAL #1	300.0	300.0	67.9	66.9	63.376	CC
CALIFORNIA 12N - Wellbore #1 - PROPOSAL #1	367.5	367.5	68.2	66.8	49.980	ES
CALIFORNIA 12N - Wellbore #1 - PROPOSAL #1	16,735.8	16,887.3	1,319.9	771.3	2.406	SF
CALIFORNIA 13N - Wellbore #1 - PROPOSAL #1	300.0	300.0	51.0	49.9	47.550	CC
CALIFORNIA 13N - Wellbore #1 - PROPOSAL #1	367.5	367.5	51.2	49.9	37.546	ES
CALIFORNIA 13N - Wellbore #1 - PROPOSAL #1	16,735.8	16,768.3	986.5	436.9	1.795	SF
CALIFORNIA 14N - Wellbore #1 - PROPOSAL #1	300.0	300.0	34.0	32.9	31.678	CC
CALIFORNIA 14N - Wellbore #1 - PROPOSAL #1	367.5	367.5	34.2	32.9	25.077	ES
CALIFORNIA 14N - Wellbore #1 - PROPOSAL #1	16,735.8	16,637.3	667.7	127.1	1.235	Level 2, SF
CALIFORNIA 15N - Wellbore #1 - PROPOSAL #1	300.0	300.0	17.0	15.9	15.863	CC
CALIFORNIA 15N - Wellbore #1 - PROPOSAL #1	16,735.8	16,812.7	357.7	-184.2	0.660	Level 1, ES, SF
CALIFORNIA 1C - Wellbore #1 - PROPOSAL #1	300.0	300.0	271.9	270.9	253.636	CC, ES
CALIFORNIA 1C - Wellbore #1 - PROPOSAL #1	9,200.0	7,100.0	2,393.4	2,296.4	24.662	SF
CALIFORNIA 2N - Wellbore #1 - PROPOSAL #1	300.0	300.0	254.9	253.9	237.781	CC
CALIFORNIA 2N - Wellbore #1 - PROPOSAL #1	367.5	367.5	255.2	253.8	187.013	ES

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

**PDC Energy**  
Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well CALIFORNIA 16N - Slot CALIFORNIA 16N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CALIFORNIA 16N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)						
CALIFORNIA 2N - Wellbore #1 - PROPOSAL #1	9,000.0	7,026.5	2,073.4	1,984.3	23.252	SF
CALIFORNIA 3C - Wellbore #1 - PROPOSAL #1	300.0	300.0	237.9	236.8	221.871	CC
CALIFORNIA 3C - Wellbore #1 - PROPOSAL #1	367.5	367.5	238.1	236.8	174.513	ES
CALIFORNIA 3C - Wellbore #1 - PROPOSAL #1	8,700.0	7,100.0	1,668.4	1,587.4	20.601	SF
CALIFORNIA 4N - Wellbore #1 - PROPOSAL #1	300.0	300.0	203.9	202.9	190.210	CC
CALIFORNIA 4N - Wellbore #1 - PROPOSAL #1	367.5	367.5	204.2	202.8	149.636	ES
CALIFORNIA 4N - Wellbore #1 - PROPOSAL #1	8,500.0	7,100.0	1,349.5	1,276.0	18.359	SF
CALIFORNIA 5N - Wellbore #1 - PROPOSAL #1	300.0	300.0	186.9	185.8	174.330	CC
CALIFORNIA 5N - Wellbore #1 - PROPOSAL #1	367.5	367.5	187.2	185.8	137.158	ES
CALIFORNIA 5N - Wellbore #1 - PROPOSAL #1	8,200.0	7,172.5	997.8	933.4	15.495	SF
CALIFORNIA 6N - Wellbore #1 - PROPOSAL #1	300.0	300.0	169.9	168.9	158.506	CC
CALIFORNIA 6N - Wellbore #1 - PROPOSAL #1	367.5	367.5	170.2	168.8	124.725	ES
CALIFORNIA 6N - Wellbore #1 - PROPOSAL #1	7,800.0	7,342.0	647.8	594.3	12.101	SF
CALIFORNIA 7N - Wellbore #1 - PROPOSAL #1	300.0	300.0	153.0	151.9	142.680	CC
CALIFORNIA 7N - Wellbore #1 - PROPOSAL #1	367.5	367.5	153.2	151.9	112.290	ES
CALIFORNIA 7N - Wellbore #1 - PROPOSAL #1	7,700.0	7,505.9	281.3	228.0	5.282	SF
CALIFORNIA 8N - Wellbore #1 - PROPOSAL #1	7,493.2	7,608.4	50.9	1.9	1.038	Level 2, CC, ES, SF
CALIFORNIA 9C - Wellbore #1 - PROPOSAL #1	300.0	300.0	118.9	117.9	110.926	CC
CALIFORNIA 9C - Wellbore #1 - PROPOSAL #1	367.5	367.5	119.2	117.8	87.340	ES
CALIFORNIA 9C - Wellbore #1 - PROPOSAL #1	16,735.8	17,197.2	2,321.8	1,774.9	4.246	SF
EXIST HZ (TO BE PLUGGED PDC WELL) TRACY 14P-	0.0	0.0	222.2			
EXIST HZ (TO BE PLUGGED PDC WELL) TRACY 14P-	100.0	88.7	222.2	222.1	1,253.463	ES
EXIST HZ (TO BE PLUGGED PDC WELL) TRACY 14P-	14,600.0	15,097.2	1,019.7	596.5	2.409	SF
EXIST HZ DALTON #24L-201 - Wellbore #1 - Wellbore #	10,300.0	11,689.0	641.7	518.9	5.224	SF
EXIST HZ DALTON #24L-201 - Wellbore #1 - Wellbore #	10,400.0	11,689.0	632.3	514.4	5.364	ES
EXIST HZ DALTON #24L-201 - Wellbore #1 - Wellbore #	10,410.2	11,689.0	632.2	514.7	5.383	CC
EXIST HZ DALTON #24L-441 - Wellbore #1 - Wellbore #	9,887.5	11,816.0	658.9	559.5	6.630	CC
EXIST HZ DALTON #24L-441 - Wellbore #1 - Wellbore #	9,900.0	11,816.0	659.0	559.4	6.617	ES
EXIST HZ DALTON #24L-441 - Wellbore #1 - Wellbore #	10,200.0	11,816.0	729.2	610.3	6.130	SF
EXIST HZ DALTON #24Q-441 - Wellbore #1 - Wellbore #	11,073.9	11,797.0	653.3	519.0	4.863	CC
EXIST HZ DALTON #24Q-441 - Wellbore #1 - Wellbore #	11,100.0	11,797.0	653.8	517.0	4.780	ES
EXIST HZ DALTON #24Q-441 - Wellbore #1 - Wellbore #	11,300.0	11,797.0	691.3	537.1	4.483	SF
EXIST HZ DALTON 24Q-241 - Wellbore #1 - Wellbore #1	11,470.7	11,637.0	634.0	490.1	4.407	CC
EXIST HZ DALTON 24Q-241 - Wellbore #1 - Wellbore #1	11,500.0	11,637.0	634.7	488.6	4.344	ES
EXIST HZ DALTON 24Q-241 - Wellbore #1 - Wellbore #1	11,700.0	11,637.0	674.2	511.8	4.150	SF
EXIST HZ DANIELSON 15G-412 - Wellbore #1 - Wellbor	6,681.1	12,034.0	4,567.3	4,470.0	46.958	CC, ES
EXIST HZ DANIELSON 15G-412 - Wellbore #1 - Wellbor	6,750.0	12,034.0	4,570.5	4,473.1	46.917	SF
EXIST HZ MAGNUSON #23I-221 - Wellbore #1 - Wellbo	6,685.4	11,715.0	3,086.6	2,989.8	31.909	CC, ES
EXIST HZ MAGNUSON #23I-221 - Wellbore #1 - Wellbo	6,800.0	11,715.0	3,097.6	2,999.9	31.732	SF
EXIST HZ MAGNUSON #23I-421 - Wellbore #1 - Wellbo	6,741.9	11,863.0	2,723.7	2,629.9	29.062	CC
EXIST HZ MAGNUSON #23I-421 - Wellbore #1 - Wellbo	6,750.0	11,863.0	2,723.7	2,629.9	29.035	ES
EXIST HZ MAGNUSON #23I-421 - Wellbore #1 - Wellbo	6,900.0	11,863.0	2,744.9	2,649.5	28.788	SF
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	6,745.3	11,736.0	2,057.4	1,968.4	23.133	CC
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	6,750.0	11,736.0	2,057.4	1,968.4	23.118	ES
EXIST HZ MAGNUSON 23L-201 - Wellbore #1 - Wellbor	6,900.0	11,736.0	2,078.6	1,987.8	22.897	SF
EXIST HZ MAGNUSON 23L-421 - Wellbore #1 - Wellbor	6,873.2	12,000.0	1,524.1	1,446.4	19.603	CC, ES
EXIST HZ MAGNUSON 23L-421 - Wellbore #1 - Wellbor	7,100.0	12,000.0	1,571.5	1,488.7	18.993	SF
EXIST HZ THORNTON 14K-441 - Wellbore #1 - Wellbor	0.0	14.1	2,968.6			
EXIST HZ THORNTON 14K-441 - Wellbore #1 - Wellbor	6,750.0	6,759.0	3,178.4	3,142.7	88.892	SF
EXIST HZ THORNTON 15Y-414 - Wellbore #1 - Wellbor	5,723.0	5,910.5	3,111.4	3,077.5	91.649	CC
EXIST HZ THORNTON 15Y-414 - Wellbore #1 - Wellbor	5,800.0	5,970.2	3,111.7	3,077.5	91.012	ES

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

**PDC Energy**  
Anticollision Report



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<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Reference Site:</b>	SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	CALIFORNIA 16N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SW SE SEC 14 T7N R66W 6th P.M. (CALIFORNIA)						
EXIST HZ THORNTON 15Y-414 - Wellbore #1 - Wellbor	6,700.0	6,765.4	3,157.9	3,120.9	85.170	SF
EXIST HZ THORNTON 18L-401 - Wellbore #1 - Wellbore	15,889.3	7,292.2	132.2	-89.1	0.597	Level 1, CC, ES, SF
EXIST HZ TRACY #23M-203 - Wellbore #1 - Wellbore #1	4,006.5	4,085.1	304.9	279.3	11.915	CC, ES
EXIST HZ TRACY #23M-203 - Wellbore #1 - Wellbore #1	4,200.0	4,268.9	310.0	283.2	11.566	SF
EXIST HZ TRACY #23U-203 - Wellbore #1 - Wellbore #1	9,110.1	7,140.2	499.3	425.1	6.729	CC, ES, SF
EXIST HZ TRACY #31-23H - Wellbore #1 - Wellbore #1	7,710.7	6,982.6	485.6	452.0	14.445	CC, ES
EXIST HZ TRACY #31-23H - Wellbore #1 - Wellbore #1	7,800.0	6,980.8	493.8	458.8	14.105	SF
EXIST HZ WAAG 1 N/C - Wellbore #1 - Wellbore #1	12,679.7	11,855.1	217.7	28.4	1.150	Level 2, CC
EXIST HZ WAAG 1 N/C - Wellbore #1 - Wellbore #1	13,700.0	10,830.6	235.2	21.2	1.099	Level 2, ES, SF
EXIST HZ WAAG 2 N/C - Wellbore #1 - Wellbore #1	15,609.4	8,519.8	283.2	-0.1	1.000	Level 1, CC, ES, SF
EXIST HZ WAAG 4 N/C - Wellbore #1 - Wellbore #1	16,243.8	8,181.0	798.3	515.6	2.824	CC
EXIST HZ WAAG 4 N/C - Wellbore #1 - Wellbore #1	16,300.0	8,142.3	798.9	515.5	2.819	ES, SF
EXIST HZ WAAG 5 N/C - Wellbore #1 - Wellbore #1	13,226.3	11,006.6	933.1	652.8	3.329	CC, ES
EXIST HZ WAAG 5 N/C - Wellbore #1 - Wellbore #1	13,300.0	10,943.0	933.8	653.3	3.329	SF
EXIST HZ WAAG 6 N/C - Wellbore #1 - Wellbore #1	14,508.1	9,797.6	1,290.6	1,003.3	4.493	CC
EXIST HZ WAAG 6 N/C - Wellbore #1 - Wellbore #1	14,600.0	9,734.8	1,291.7	1,003.3	4.479	ES, SF
EXIST VERT HERRELL 1-22 - Wellbore #1 - Wellbore #1	302.0	301.3	3,818.0	3,817.3	4,962.538	CC, ES
EXIST VERT HERRELL 1-22 - Wellbore #1 - Wellbore #1	7,050.0	6,957.8	4,250.1	4,231.9	234.605	SF
EXIST VERT HERRELL 17-22 - Wellbore #1 - Wellbore #	209.7	217.7	4,647.0	4,646.5	8,212.517	CC
EXIST VERT HERRELL 17-22 - Wellbore #1 - Wellbore #	300.0	304.2	4,647.1	4,646.3	5,898.088	ES
EXIST VERT HERRELL 17-22 - Wellbore #1 - Wellbore #	7,200.0	7,112.5	5,092.7	5,074.3	277.036	SF
EXIST VERT HERRELL 2-22 - Wellbore #1 - Wellbore #1	0.0	0.0	5,046.3			
EXIST VERT HERRELL 2-22 - Wellbore #1 - Wellbore #1	7,100.0	7,032.9	5,441.6	5,423.7	303.333	SF