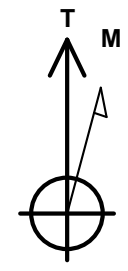




**Project: WELD COUNTY, COLORADO (TRUE)**  
**Site: SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)**  
**Well: GRAYS FEDERAL 4N**  
**Wellbore: ORIGINAL WELLBORE**  
**Design: PROPOSAL #1**

**ANNOTATIONS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	SHL
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft)
1030.9	8.62	13.07	1029.3	31.5	7.3	-5.3	32.3	EOB TO 8.62° INC
6215.4	8.62	13.07	6155.2	788.3	183.0	-131.6	809.2	KOP (8°/100ft)
7364.9	90.00	269.88	6888.0	894.9	-533.0	589.8	1550.9	HZ LADING POINT/EP
20221.6	90.00	269.88	6888.0	868.5	-13389.7	13417.8	14407.6	BHL

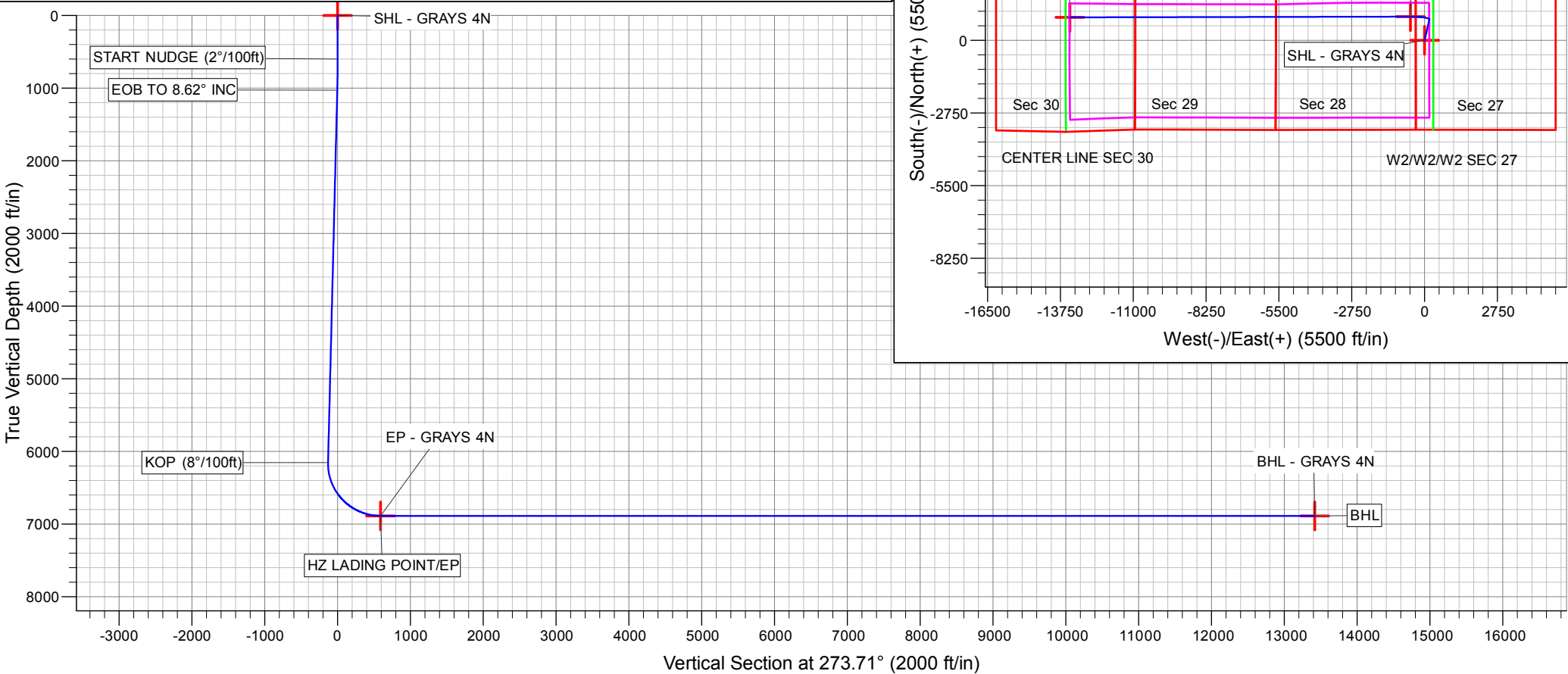
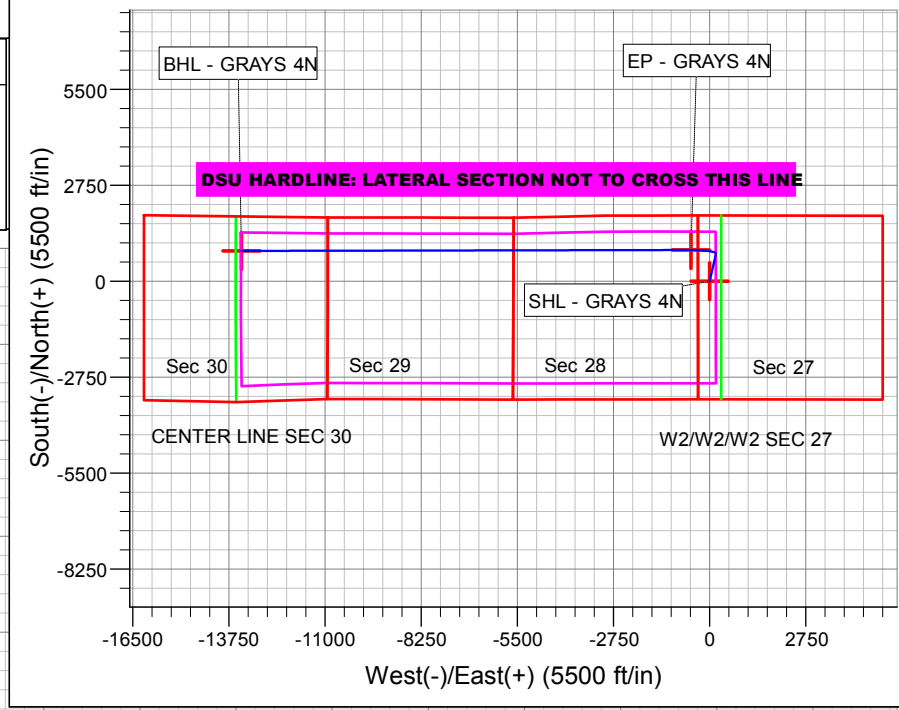


**Azimuths to True North**  
 Magnetic North: 8.01°  
**Magnetic Field**  
 Strength: 52237.7nT  
 Dip Angle: 66.81°  
 Date: 10/19/2018  
 Model: IGRF2015

SHL FOOTAGE: SEC 27			
1795	FNL	333	FWL
BHL FOOTAGE: SEC 30			
900	FNL	2470	FEL
EP FOOTAGE: SEC 28			
900	FNL	200	FEL

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SHL - GRAYS 4N	0.0	0.0	0.0	40.3726044	-104.6576686
BHL - GRAYS 4N	6888.0	868.5	-13389.7	40.3749782	-104.7057250
EP - GRAYS 4N	6888.0	894.9	-533.0	40.3750608	-104.6595816



# **PDC ENERGY**

**WELD COUNTY, COLORADO (TRUE)  
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)  
GRAYS FEDERAL 4N**

**ORIGINAL WELLBORE  
PROPOSAL #1**

## **Anticollision Report**

**11 April, 2019**



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<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>	4/10/2019		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	20,221.6	PROPOSAL #1 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance		Separation Factor	Warning
			Between Centres (ft)	Between Ellipses (ft)		
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)						
ABD VERT ERICKSON #21-12 - Wellbore #1 - Wellbore	11,714.8	6,856.1	1,789.8	1,648.9	12.702	CC
ABD VERT ERICKSON #21-12 - Wellbore #1 - Wellbore	11,800.0	6,856.4	1,791.8	1,648.2	12.476	ES
ABD VERT ERICKSON #21-12 - Wellbore #1 - Wellbore	12,100.0	6,857.6	1,830.8	1,680.2	12.163	SF
ABDN ADOLPH F21-14 - Wellbore #1 - Wellbore #1	10,337.5	6,855.4	1,392.2	1,289.8	13.587	CC
ABDN ADOLPH F21-14 - Wellbore #1 - Wellbore #1	10,400.0	6,856.0	1,393.6	1,289.1	13.329	ES
ABDN ADOLPH F21-14 - Wellbore #1 - Wellbore #1	10,700.0	6,858.9	1,438.7	1,327.0	12.888	SF
ABDN ADOLPH F21-25D - Wellbore #1 - Wellbore #1	10,971.5	6,936.7	1,896.1	1,775.2	15.680	CC
ABDN ADOLPH F21-25D - Wellbore #1 - Wellbore #1	11,000.0	6,936.5	1,896.3	1,774.5	15.561	ES
ABDN ADOLPH F21-25D - Wellbore #1 - Wellbore #1	11,400.0	6,934.2	1,943.9	1,811.8	14.716	SF
ABDN DD ALLES 33-01 - Wellbore #1 - Wellbore #1	0.0	0.0	4,965.6			
ABDN DD ALLES 33-01 - Wellbore #1 - Wellbore #1	12,000.0	6,600.0	6,651.2	6,539.1	59.365	SF
ABDN DD BOULTER #0-2-27 - Wellbore #1 - Wellbore #	3,833.2	3,946.9	0.9	-29.0	0.029	Level 1, CC, ES, SF
ABDN DD MAGNUSON #21-10B - Wellbore #1 - Wellbor	9,171.6	7,039.7	2,882.3	2,811.4	40.669	CC
ABDN DD MAGNUSON #21-10B - Wellbore #1 - Wellbor	9,300.0	7,038.7	2,885.1	2,810.4	38.589	ES
ABDN DD MAGNUSON #21-10B - Wellbore #1 - Wellbor	10,600.0	7,027.8	3,216.8	3,112.6	30.874	SF
ABDN DD MAGNUSON #21-15B - Wellbore #1 - Wellbor	7,900.0	6,931.9	1,980.1	1,109.5	2.274	SF
ABDN DD MAGNUSON #21-15B - Wellbore #1 - Wellbor	8,400.0	6,925.0	1,731.9	1,019.8	2.432	ES
ABDN DD MAGNUSON #21-15B - Wellbore #1 - Wellbor	9,071.5	6,916.3	1,596.5	1,217.5	4.212	CC
ABDN VERT ALLES 2 - Wellbore #1 - Wellbore #1	608.5	601.8	4,694.4	4,692.7	2,817.923	CC, ES
ABDN VERT ALLES 2 - Wellbore #1 - Wellbore #1	12,100.0	6,679.0	5,776.4	5,651.1	46.105	SF
ABDN VERT BOULTER #2-2-27 - Wellbore #1 - Design #	5,011.7	4,956.1	1,038.7	924.0	9.059	CC
ABDN VERT BOULTER #2-2-27 - Wellbore #1 - Design #	6,100.0	6,032.1	1,051.4	911.4	7.508	ES
ABDN VERT BOULTER #2-2-27 - Wellbore #1 - Design #	6,300.0	6,229.9	1,061.0	916.4	7.336	SF
ABDN VERT BRANTNER 30-16 - Wellbore #1 - Wellbore	18,364.5	6,700.0	3,495.0	3,168.3	10.699	CC
ABDN VERT BRANTNER 30-16 - Wellbore #1 - Wellbore	18,400.0	6,700.0	3,495.1	3,167.6	10.671	ES
ABDN VERT BRANTNER 30-16 - Wellbore #1 - Wellbore	18,800.0	6,700.0	3,522.0	3,187.0	10.513	SF
ABDN VERT GIBBS #2 - Wellbore #1 - Design #1	9,141.6	6,870.0	189.2	-15.9	0.923	Level 1, CC, ES, SF
ABDN VERT GIBBS #28-1 - Wellbore #1 - Design #1	10,470.7	6,863.0	1,090.2	848.6	4.512	CC
ABDN VERT GIBBS #28-1 - Wellbore #1 - Design #1	10,500.0	6,863.0	1,090.6	848.5	4.504	ES, SF
ABDN VERT GIBBS #3 - Wellbore #1 - Wellbore #1	100.0	75.3	1,018.3	1,018.2	8,368.327	CC
ABDN VERT GIBBS #3 - Wellbore #1 - Wellbore #1	500.0	473.1	1,019.4	1,018.0	735.883	ES
ABDN VERT GIBBS #3 - Wellbore #1 - Wellbore #1	8,200.0	6,818.4	1,285.4	1,245.3	32.021	SF
ABDN VERT GIBBS #4 - Wellbore #1 - Design #1	10,269.6	6,861.0	399.4	163.3	1.692	CC
ABDN VERT GIBBS #4 - Wellbore #1 - Design #1	10,300.0	6,861.0	400.5	163.1	1.687	ES, SF
ABDN VERT GIBBS 28-7 - Wellbore #1 - Design #1	9,141.7	6,875.0	1,132.8	1,049.7	13.621	CC, ES

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)						
ABDN VERT GIBBS 28-7 - Wellbore #1 - Design #1	9,300.0	6,875.0	1,143.8	1,058.4	13.382	SF
ABDN VERT GIBBS F #28-18 - Wellbore #1 - Wellbore #	9,906.3	6,834.4	493.7	403.4	5.468	CC, ES, SF
ABDN VERT GIBBS F #28-19D - Wellbore #1 - Wellbore	10,841.4	6,837.6	243.0	126.8	2.092	CC, ES, SF
ABDN VERT JOANN F 22-13 - Wellbore #1 - Wellbore #	6,836.9	6,684.3	1,410.3	1,392.0	76.908	CC
ABDN VERT JOANN F 22-13 - Wellbore #1 - Wellbore #	6,850.0	6,693.7	1,410.4	1,391.9	76.483	ES
ABDN VERT JOANN F 22-13 - Wellbore #1 - Wellbore #	8,000.0	6,858.1	1,895.0	1,857.2	50.120	SF
ABDN VERT LANE #1 - Wellbore #1 - Wellbore #1	7,772.8	6,861.7	367.1	333.3	10.867	CC
ABDN VERT LANE #1 - Wellbore #1 - Wellbore #1	7,800.0	6,861.9	368.1	333.1	10.516	ES
ABDN VERT LANE #1 - Wellbore #1 - Wellbore #1	7,900.0	6,862.8	388.5	350.1	10.108	SF
ABDN VERT MOKRAY/THORN #27-4 - Wellbore #1 - W	6,508.6	6,428.9	611.1	593.6	34.878	CC, ES
ABDN VERT MOKRAY/THORN #27-4 - Wellbore #1 - W	6,900.0	6,732.9	693.1	671.7	32.322	SF
ABDN VERT REYNOLDS 28-3 - Wellbore #1 - Wellbore	11,300.0	6,845.6	227.3	-56.6	0.801	Level 1, ES, SF
ABDN VERT REYNOLDS 28-3 - Wellbore #1 - Wellbore	11,318.5	6,845.6	226.5	-50.6	0.817	Level 1, CC
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Wellbore	0.0	0.0	3,044.7			
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Wellbore	600.0	573.9	3,045.8	3,044.3	2,082.448	ES
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Wellbore	12,500.0	2,700.0	8,339.2	8,265.5	113.213	SF
ABDN VERT TERESA #1-27 - Wellbore #1 - Design #1	6,259.4	6,178.7	1,515.3	1,372.3	10.599	CC, ES
ABDN VERT TERESA #1-27 - Wellbore #1 - Design #1	6,450.0	6,364.4	1,540.4	1,393.0	10.452	SF
ABDN VERT TRACY PM 22-13 - Wellbore #1 - Design #	6,725.7	6,592.0	1,596.2	1,565.4	51.689	CC, ES
ABDN VERT TRACY PM 22-13 - Wellbore #1 - Design #	7,800.0	6,856.0	1,994.4	1,945.9	41.118	SF
EXIST DD BRNATNER 30-9 - Wellbore #1 - Wellbore #1	18,294.3	7,290.0	2,486.1	2,160.0	7.623	CC
EXIST DD BRNATNER 30-9 - Wellbore #1 - Wellbore #1	18,300.0	7,290.0	2,486.2	2,159.9	7.620	ES
EXIST DD BRNATNER 30-9 - Wellbore #1 - Wellbore #1	18,500.0	7,290.0	2,494.6	2,164.7	7.562	SF
EXIST DD DICKENS F 32-17D - Wellbore #1 - Wellbore	13,667.6	7,000.3	5,559.5	5,347.2	26.198	CC
EXIST DD DICKENS F 32-17D - Wellbore #1 - Wellbore	13,800.0	6,999.3	5,561.0	5,345.2	25.769	ES
EXIST DD DICKENS F 32-17D - Wellbore #1 - Wellbore	15,500.0	6,986.0	5,853.6	5,603.1	23.368	SF
EXIST DD MAGNUSON F #28-27D - Wellbore #1 - Wellb	8,442.7	7,057.6	851.1	783.3	12.558	CC
EXIST DD MAGNUSON F #28-27D - Wellbore #1 - Wellb	8,500.0	7,057.1	853.0	782.5	12.098	ES
EXIST DD MAGNUSON F #28-27D - Wellbore #1 - Wellb	8,700.0	7,055.5	889.1	810.6	11.318	SF
EXIST DD MARKUS F #28-25 - Wellbore #1 - Wellbore #	11,092.6	6,909.3	3,078.0	2,953.6	24.747	CC
EXIST DD MARKUS F #28-25 - Wellbore #1 - Wellbore #	11,200.0	6,910.0	3,079.9	2,953.0	24.267	ES
EXIST DD MARKUS F #28-25 - Wellbore #1 - Wellbore #	12,000.0	6,915.9	3,209.0	3,068.2	22.804	SF
EXIST HZ BOULTER FARMS 27G-202 - Wellbore #1 - W	4,164.8	4,442.4	1,658.7	1,635.9	72.866	CC
EXIST HZ BOULTER FARMS 27G-202 - Wellbore #1 - W	4,200.0	4,472.7	1,658.7	1,635.8	72.264	ES
EXIST HZ BOULTER FARMS 27G-202 - Wellbore #1 - W	8,300.0	6,466.0	2,236.9	2,189.6	47.241	SF
EXIST HZ BOULTER FARMS 27G-232 - Wellbore #1 - W	884.5	1,055.9	1,764.1	1,760.2	454.594	CC
EXIST HZ BOULTER FARMS 27G-232 - Wellbore #1 - W	900.0	1,069.4	1,764.2	1,760.2	447.169	ES
EXIST HZ BOULTER FARMS 27G-232 - Wellbore #1 - W	8,700.0	6,291.0	2,813.1	2,759.4	52.432	SF
EXIST HZ BOULTER FARMS 27G-332 - Wellbore #1 - W	962.2	1,178.2	1,716.9	1,712.5	389.110	CC, ES
EXIST HZ BOULTER FARMS 27G-332 - Wellbore #1 - W	8,400.0	6,578.0	2,425.3	2,374.8	48.011	SF
EXIST HZ ELBERT 11N - Wellbore #1 - Wellbore #1	7,250.0	11,876.6	2,130.1	1,971.0	13.391	ES
EXIST HZ ELBERT 11N - Wellbore #1 - Wellbore #1	7,266.3	11,862.0	2,130.0	1,971.1	13.400	CC
EXIST HZ ELBERT 11N - Wellbore #1 - Wellbore #1	12,700.0	6,777.4	2,250.8	2,070.5	12.480	SF
EXIST HZ ELBERT 12N - Wellbore #1 - Wellbore #1	8,728.8	10,313.5	1,951.6	1,799.2	12.806	CC
EXIST HZ ELBERT 12N - Wellbore #1 - Wellbore #1	8,800.0	10,263.3	1,952.0	1,798.9	12.748	ES
EXIST HZ ELBERT 12N - Wellbore #1 - Wellbore #1	12,500.0	6,900.0	2,038.5	1,862.6	11.583	SF
EXIST HZ GEIB #26W-214 - Wellbore #1 - Wellbore #1	6,701.3	18,538.1	1,284.2	956.7	3.921	CC
EXIST HZ GEIB #26W-214 - Wellbore #1 - Wellbore #1	6,800.0	18,596.9	1,286.8	954.9	3.878	ES
EXIST HZ GEIB #26W-214 - Wellbore #1 - Wellbore #1	7,150.0	18,870.1	1,317.5	973.8	3.834	SF
EXIST HZ GEIB 26U-234 - Wellbore #1 - Wellbore #1	7,126.7	17,303.0	415.9	103.9	1.333	Level 3, CC, ES, SF
EXIST HZ GEIB 26U-304 - Wellbore #1 - Wellbore #1	7,153.5	17,147.0	701.6	394.9	2.288	CC, ES, SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<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	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)						
EXIST HZ GEIB 26V-214 - Wellbore #1 - Wellbore #1	6,858.4	16,764.1	167.9	-126.7	0.570	Level 1, CC
EXIST HZ GEIB 26V-214 - Wellbore #1 - Wellbore #1	6,900.0	16,795.9	170.1	-128.7	0.569	Level 1, ES, SF
EXIST HZ GEIB 26V-234 - Wellbore #1 - Wellbore #1	6,747.6	16,822.1	686.1	390.8	2.323	CC
EXIST HZ GEIB 26V-234 - Wellbore #1 - Wellbore #1	6,800.0	16,854.3	687.3	389.3	2.307	ES
EXIST HZ GEIB 26V-234 - Wellbore #1 - Wellbore #1	6,850.0	16,888.0	690.3	390.5	2.303	SF
EXIST HZ GEIB 26V-304 - Wellbore #1 - Wellbore #1	7,050.3	18,491.0	443.0	112.8	1.342	Level 3, CC
EXIST HZ GEIB 26V-304 - Wellbore #1 - Wellbore #1	7,100.0	18,534.9	443.7	109.4	1.327	Level 3, ES, SF
EXIST HZ GEIB 26V-314 - Wellbore #1 - Wellbore #1	7,126.9	18,894.0	67.5	-150.4	0.310	Level 1, CC, ES, SF
EXIST HZ GEIB 26V-334 - Wellbore #1 - Wellbore #1	6,887.7	18,707.9	987.1	654.3	2.966	CC
EXIST HZ GEIB 26V-334 - Wellbore #1 - Wellbore #1	7,000.0	18,786.0	990.2	651.8	2.926	ES
EXIST HZ GEIB 26V-334 - Wellbore #1 - Wellbore #1	7,150.0	18,909.7	1,000.6	655.9	2.903	SF
EXIST HZ GEIB 26W-304 - Wellbore #1 - Wellbore #1	6,799.2	16,905.0	1,519.2	1,224.3	5.151	CC
EXIST HZ GEIB 26W-304 - Wellbore #1 - Wellbore #1	6,900.0	16,975.7	1,520.7	1,221.8	5.087	ES
EXIST HZ GEIB 26W-304 - Wellbore #1 - Wellbore #1	7,100.0	17,095.0	1,530.8	1,225.4	5.013	SF
EXIST HZ IKENOUEY F #28-65HN - Wellbore #1 - Wellb	7,912.7	12,169.0	1,326.1	1,140.8	7.155	CC, ES
EXIST HZ IKENOUEY F #28-65HN - Wellbore #1 - Wellb	8,000.0	12,159.6	1,328.9	1,142.0	7.108	SF
EXIST HZ SAUER F33-76-1HN - Wellbore #1 - Wellbore	10,145.3	11,310.0	4,896.5	4,782.2	42.825	CC
EXIST HZ SAUER F33-76-1HN - Wellbore #1 - Wellbore	10,300.0	11,310.0	4,899.0	4,779.1	40.877	ES
EXIST HZ SAUER F33-76-1HN - Wellbore #1 - Wellbore	13,100.0	11,310.0	5,718.9	5,518.0	28.459	SF
EXIST HZ SAUER F33-77-1HC - Wellbore #1 - Wellbore	10,828.1	11,241.0	5,098.9	4,969.3	39.350	CC
EXIST HZ SAUER F33-77-1HC - Wellbore #1 - Wellbore	11,000.0	11,241.0	5,101.8	4,967.5	37.990	ES
EXIST HZ SAUER F33-77-1HC - Wellbore #1 - Wellbore	13,800.0	11,241.0	5,901.8	5,693.4	28.321	SF
EXIST HZ SAUER F33-77-1HNX - Wellbore #1 - Wellbor	10,840.9	10,971.0	5,098.4	4,969.1	39.434	CC
EXIST HZ SAUER F33-77-1HNX - Wellbore #1 - Wellbor	11,000.0	10,971.0	5,100.9	4,967.4	38.213	ES
EXIST HZ SAUER F33-77-1HNX - Wellbore #1 - Wellbor	13,800.0	10,971.0	5,894.9	5,687.6	28.441	SF
EXIST HZ SAUER F33-77HN - Wellbore #1 - Wellbore #	11,162.3	11,354.0	4,897.4	4,757.9	35.122	CC
EXIST HZ SAUER F33-77HN - Wellbore #1 - Wellbore #	11,300.0	11,354.0	4,899.3	4,756.9	34.402	ES
EXIST HZ SAUER F33-77HN - Wellbore #1 - Wellbore #	13,900.0	11,354.0	5,610.6	5,401.9	26.886	SF
EXIST HZ SAUER F33-78-1HC - OH - OH	11,498.2	7,188.0	9,274.0	9,123.2	61.505	CC
EXIST HZ SAUER F33-78-1HC - OH - OH	11,700.0	7,188.0	9,276.2	9,120.1	59.415	ES
EXIST HZ SAUER F33-78-1HC - OH - OH	15,200.0	7,188.0	9,985.5	9,752.5	42.857	SF
EXIST HZ SAUER F33-78-1HC - SDTCK - SDTCK	11,482.3	11,354.0	4,908.2	4,759.4	32.981	CC
EXIST HZ SAUER F33-78-1HC - SDTCK - SDTCK	11,600.0	11,354.0	4,909.6	4,758.6	32.515	ES
EXIST HZ SAUER F33-78-1HC - SDTCK - SDTCK	14,200.0	11,354.0	5,610.4	5,396.7	26.259	SF
EXIST HZ SAUER F33-78-1HN - Wellbore #1 - Wellbore	11,481.7	11,122.0	4,902.1	4,751.9	32.644	CC
EXIST HZ SAUER F33-78-1HN - Wellbore #1 - Wellbore	11,600.0	11,122.0	4,903.5	4,751.3	32.218	ES
EXIST HZ SAUER F33-78-1HN - Wellbore #1 - Wellbore	14,200.0	11,122.0	5,605.3	5,393.3	26.434	SF
EXIST HZ STELLA 1N - Wellbore #1 - Wellbore #1	11,353.7	16,105.9	1,743.1	1,354.7	4.488	CC
EXIST HZ STELLA 1N - Wellbore #1 - Wellbore #1	12,000.0	16,688.0	1,753.0	1,330.2	4.146	ES
EXIST HZ STELLA 1N - Wellbore #1 - Wellbore #1	12,100.0	16,688.0	1,759.5	1,334.9	4.143	SF
EXIST HZ STELLA 2N - Wellbore #1 - Wellbore #1	11,933.6	16,616.0	1,467.1	1,045.7	3.481	CC
EXIST HZ STELLA 2N - Wellbore #1 - Wellbore #1	12,000.0	16,616.0	1,468.6	1,045.4	3.470	ES, SF
EXIST HZ STELLA 3N - Wellbore #1 - Wellbore #1	8,664.2	13,428.1	1,208.0	968.7	5.048	CC
EXIST HZ STELLA 3N - Wellbore #1 - Wellbore #1	11,934.6	16,699.0	1,229.8	808.5	2.919	ES
EXIST HZ STELLA 3N - Wellbore #1 - Wellbore #1	12,000.0	16,699.0	1,231.5	808.6	2.912	SF
EXIST HZ STELLA 4N - Wellbore #1 - Wellbore #1	10,807.5	15,499.9	997.4	639.7	2.788	CC
EXIST HZ STELLA 4N - Wellbore #1 - Wellbore #1	11,934.5	16,627.0	998.6	577.9	2.374	ES
EXIST HZ STELLA 4N - Wellbore #1 - Wellbore #1	12,000.0	16,627.0	1,000.7	578.9	2.372	SF
EXIST VERT ALLES 33-3 - Wellbore #1 - Wellbore #1	10,751.0	6,763.9	4,996.7	4,882.9	43.907	CC
EXIST VERT ALLES 33-3 - Wellbore #1 - Wellbore #1	10,900.0	6,764.9	4,998.9	4,881.3	42.512	ES
EXIST VERT ALLES 33-3 - Wellbore #1 - Wellbore #1	13,000.0	6,779.0	5,479.5	5,322.3	34.869	SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)						
EXIST VERT ALLES F33-18 - Wellbore #1 - Design #1	600.0	598.0	5,510.3	5,498.1	452.659	CC
EXIST VERT ALLES F33-18 - Wellbore #1 - Design #1	9,800.0	6,886.0	5,598.8	5,375.7	25.090	ES
EXIST VERT ALLES F33-18 - Wellbore #1 - Design #1	11,900.0	6,886.0	6,012.4	5,744.1	22.416	SF
EXIST VERT BACON 11-34 - Wellbore #1 - Wellbore #1	617.5	629.2	4,354.5	4,352.9	2,574.347	CC, ES
EXIST VERT BACON 11-34 - Wellbore #1 - Wellbore #1	11,900.0	6,746.0	7,368.0	7,270.7	75.712	SF
EXIST VERT BAINBRIDGE - Wellbore #1 - Design #1	14,436.0	6,869.0	5,075.5	4,722.5	14.379	CC
EXIST VERT BAINBRIDGE - Wellbore #1 - Design #1	14,600.0	6,869.0	5,078.1	4,721.0	14.219	ES
EXIST VERT BAINBRIDGE - Wellbore #1 - Design #1	15,600.0	6,869.0	5,207.2	4,830.1	13.809	SF
EXIST VERT BOULTER 18-34 - Wellbore #1 - Wellbore	0.0	0.0	4,896.3			
EXIST VERT BOULTER 18-34 - Wellbore #1 - Wellbore	12,600.0	6,747.9	8,902.0	8,799.8	87.118	SF
EXIST VERT CITY OF GREELEY 1 - Wellbore #1 - Desi	20,221.6	6,887.0	2,858.4	2,350.8	5.631	CC, ES, SF
EXIST VERT CITY OF GREELEY 2-30 - Wellbore #1 - D	20,221.6	6,876.0	3,774.2	3,267.6	7.450	CC, ES, SF
EXIST VERT EVANS INDUSTRIAL PARK 1 - Wellbore #	19,710.2	6,872.0	3,509.7	3,008.7	7.004	CC
EXIST VERT EVANS INDUSTRIAL PARK 1 - Wellbore #	19,800.0	6,872.0	3,510.9	3,007.7	6.977	ES
EXIST VERT EVANS INDUSTRIAL PARK 1 - Wellbore #	20,100.0	6,872.0	3,531.3	3,022.7	6.943	SF
EXIST VERT FRANKLIN #2 - Wellbore #1 - Wellbore #1	9,130.7	6,800.0	2,415.7	2,346.4	34.871	CC
EXIST VERT FRANKLIN #2 - Wellbore #1 - Wellbore #1	9,200.0	6,800.0	2,416.7	2,345.8	34.110	ES
EXIST VERT FRANKLIN #2 - Wellbore #1 - Wellbore #1	10,000.0	6,800.0	2,567.3	2,482.8	30.358	SF
EXIST VERT FRANKLIN #28-9 - Wellbore #1 - Wellbore	100.0	68.9	1,775.0	1,774.9	10,000.000	CC, ES
EXIST VERT FRANKLIN #28-9 - Wellbore #1 - Wellbore	9,300.0	6,731.9	2,928.6	2,869.2	49.297	SF
EXIST VERT GIBBS F #28-17 - Wellbore #1 - Wellbore #	8,454.4	6,887.2	458.7	406.9	8.865	CC, ES, SF
EXIST VERT HAMBLIN - Wellbore #1 - Design #1	20,221.6	6,902.0	1,618.2	1,181.5	3.706	CC, ES, SF
EXIST VERT HAYS 2 - Wellbore #1 - Design #1	15,673.1	6,871.0	5,206.6	4,818.9	13.429	CC
EXIST VERT HAYS 2 - Wellbore #1 - Design #1	15,800.0	6,871.0	5,208.1	4,817.2	13.322	ES
EXIST VERT HAYS 2 - Wellbore #1 - Design #1	16,700.0	6,871.0	5,306.9	4,897.6	12.966	SF
EXIST VERT HAYS 31-1H5 - Wellbore #1 - Wellbore #1	18,437.7	6,950.0	5,057.8	4,728.5	15.360	CC
EXIST VERT HAYS 31-1H5 - Wellbore #1 - Wellbore #1	18,600.0	6,950.0	5,060.4	4,727.0	15.180	ES
EXIST VERT HAYS 31-1H5 - Wellbore #1 - Wellbore #1	19,400.0	6,950.0	5,148.5	4,800.3	14.787	SF
EXIST VERT HAYS 31-2H5 - Wellbore #1 - Wellbore #1	19,660.3	6,925.9	5,366.9	5,002.8	14.739	CC
EXIST VERT HAYS 31-2H5 - Wellbore #1 - Wellbore #1	19,800.0	6,925.7	5,368.7	5,001.1	14.603	ES
EXIST VERT HAYS 31-2H5 - Wellbore #1 - Wellbore #1	20,221.6	6,924.8	5,396.2	5,019.4	14.322	SF
EXIST VERT HAYS, THURMAN 1 - Wellbore #1 - Design	17,345.9	6,857.0	5,045.1	4,609.6	11.585	CC
EXIST VERT HAYS, THURMAN 1 - Wellbore #1 - Design	17,500.0	6,857.0	5,047.5	4,608.1	11.488	ES
EXIST VERT HAYS, THURMAN 1 - Wellbore #1 - Design	18,200.0	6,857.0	5,116.9	4,663.6	11.289	SF
EXIST VERT HAZEL 1-21 - Wellbore #1 - Wellbore #1	7,902.9	6,650.0	1,565.5	1,516.6	31.976	CC, ES
EXIST VERT HAZEL 1-21 - Wellbore #1 - Wellbore #1	8,700.0	6,650.0	1,756.8	1,688.3	25.650	SF
EXIST VERT IKENOUE F #29-23 - Wellbore #1 - Wellb	13,899.7	6,900.7	2,797.7	2,595.5	13.835	CC
EXIST VERT IKENOUE F #29-23 - Wellbore #1 - Wellb	14,000.0	6,900.7	2,799.5	2,595.0	13.686	ES
EXIST VERT IKENOUE F #29-23 - Wellbore #1 - Wellb	14,400.0	6,900.7	2,842.1	2,630.9	13.454	SF
EXIST VERT INDUSTRIAL PARK 2 - Wellbore #1 - Wellb	19,556.9	6,871.6	2,426.7	2,066.1	6.730	CC
EXIST VERT INDUSTRIAL PARK 2 - Wellbore #1 - Wellb	19,600.0	6,871.5	2,427.1	2,065.5	6.713	ES
EXIST VERT INDUSTRIAL PARK 2 - Wellbore #1 - Wellb	19,800.0	6,871.1	2,438.8	2,074.3	6.689	SF
EXIST VERT JOHN ALLES 1 - Wellbore #1 - Wellbore #1	11,819.6	6,683.3	5,254.8	5,111.0	36.546	CC
EXIST VERT JOHN ALLES 1 - Wellbore #1 - Wellbore #1	12,000.0	6,681.2	5,257.9	5,109.5	35.435	ES
EXIST VERT JOHN ALLES 1 - Wellbore #1 - Wellbore #1	13,900.0	6,661.0	5,651.6	5,467.4	30.680	SF
EXIST VERT KOWITZ #27-5 - Wellbore #1 - Wellbore #1	100.0	73.9	423.9	423.8	2,955.109	CC
EXIST VERT KOWITZ #27-5 - Wellbore #1 - Wellbore #1	611.6	586.3	424.0	422.1	231.346	ES
EXIST VERT KOWITZ #27-5 - Wellbore #1 - Wellbore #1	6,250.0	6,177.4	1,155.0	1,137.0	64.119	SF
EXIST VERT M LEAMING #27-24 - Wellbore #1 - Design	3,222.7	3,188.3	1,609.2	1,536.4	22.107	CC
EXIST VERT M LEAMING #27-24 - Wellbore #1 - Design	4,900.0	4,846.7	1,628.7	1,516.8	14.545	ES
EXIST VERT M LEAMING #27-24 - Wellbore #1 - Design	6,400.0	6,328.5	1,698.7	1,552.1	11.587	SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<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	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)						
EXIST VERT MARKUS #28-11 - Wellbore #1 - Wellbore	10,602.9	6,856.5	2,234.1	2,124.2	20.330	CC
EXIST VERT MARKUS #28-11 - Wellbore #1 - Wellbore	10,700.0	6,858.1	2,236.2	2,124.1	19.956	ES
EXIST VERT MARKUS #28-11 - Wellbore #1 - Wellbore	11,100.0	6,865.1	2,288.7	2,170.0	19.278	SF
EXIST VERT MCBAIN - Wellbore #1 - Design #1	13,135.0	6,855.0	4,824.9	4,508.7	15.256	CC
EXIST VERT MCBAIN - Wellbore #1 - Design #1	13,300.0	6,855.0	4,827.7	4,507.3	15.067	ES
EXIST VERT MCBAIN - Wellbore #1 - Design #1	14,300.0	6,855.0	4,963.6	4,622.9	14.572	SF
EXIST VERT REYNOLDS #1 - Wellbore #1 - Wellbore #1	11,773.1	6,863.7	2,348.4	2,206.0	16.494	CC
EXIST VERT REYNOLDS #1 - Wellbore #1 - Wellbore #1	11,800.0	6,863.5	2,348.5	2,205.5	16.423	ES
EXIST VERT REYNOLDS #1 - Wellbore #1 - Wellbore #1	12,200.0	6,860.2	2,386.9	2,236.8	15.908	SF
EXIST VERT REYNOLDS #2 - ORIGINAL WELLBORE -	11,674.2	6,600.0	1,198.1	1,061.1	8.748	CC
EXIST VERT REYNOLDS #2 - ORIGINAL WELLBORE -	11,700.0	6,600.0	1,198.3	1,060.9	8.721	ES
EXIST VERT REYNOLDS #2 - ORIGINAL WELLBORE -	11,800.0	6,600.0	1,204.6	1,066.0	8.692	SF
EXIST VERT SITZMAN 1 - Wellbore #1 - Wellbore #1	239.7	216.7	1,506.4	1,505.8	2,539.541	CC
EXIST VERT SITZMAN 1 - Wellbore #1 - Wellbore #1	500.0	472.6	1,507.0	1,505.6	1,137.532	ES
EXIST VERT SITZMAN 1 - Wellbore #1 - Wellbore #1	9,000.0	6,850.8	3,457.4	3,415.0	81.617	SF
EXIST VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	0.0	0.0	3,019.8			
EXIST VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	100.0	61.3	3,019.9	3,019.8	10,000.000	ES
EXIST VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	10,500.0	6,777.4	6,295.4	6,239.9	113.437	SF
GRAYS FEDERAL 10N - ORIGINAL WELLBORE - PRO	500.0	500.0	89.9	88.0	45.629	CC, ES
GRAYS FEDERAL 10N - ORIGINAL WELLBORE - PRO	20,221.6	20,124.9	1,500.4	746.0	1.989	SF
GRAYS FEDERAL 1N - ORIGINAL WELLBORE - PROP	300.0	300.0	45.0	44.0	41.999	CC
GRAYS FEDERAL 1N - ORIGINAL WELLBORE - PROP	19,900.0	20,061.0	748.6	14.8	1.020	Level 2, ES, SF
GRAYS FEDERAL 2N - ORIGINAL WELLBORE - PROP	400.0	399.0	30.0	28.5	19.757	CC
GRAYS FEDERAL 2N - ORIGINAL WELLBORE - PROP	19,864.8	19,947.8	494.9	-240.4	0.673	Level 1, ES, SF
GRAYS FEDERAL 3N - ORIGINAL WELLBORE - PROP	500.0	500.0	15.0	13.0	7.614	CC
GRAYS FEDERAL 3N - ORIGINAL WELLBORE - PROP	20,221.6	20,320.2	258.3	-473.2	0.353	Level 1, ES, SF
GRAYS FEDERAL 5N - ORIGINAL WELLBORE - PROP	600.0	600.0	15.0	12.6	6.185	CC
GRAYS FEDERAL 5N - ORIGINAL WELLBORE - PROP	20,221.6	20,256.7	258.2	-475.4	0.352	Level 1, ES, SF
GRAYS FEDERAL 6N - ORIGINAL WELLBORE - PROP	600.0	599.0	29.9	27.5	12.382	CC
GRAYS FEDERAL 6N - ORIGINAL WELLBORE - PROP	20,221.6	20,170.9	499.9	-255.2	0.662	Level 1, ES, SF
GRAYS FEDERAL 7N - ORIGINAL WELLBORE - PROP	600.0	599.0	45.0	42.6	18.604	CC
GRAYS FEDERAL 7N - ORIGINAL WELLBORE - PROP	20,221.6	20,228.4	753.2	0.9	1.001	Level 2, ES, SF
GRAYS FEDERAL 8N - ORIGINAL WELLBORE - PROP	300.0	300.0	60.0	58.9	55.935	CC
GRAYS FEDERAL 8N - ORIGINAL WELLBORE - PROP	400.0	399.6	60.3	58.8	40.065	ES
GRAYS FEDERAL 8N - ORIGINAL WELLBORE - PROP	20,221.6	20,154.8	999.7	244.8	1.324	Level 3, SF
GRAYS FEDERAL 9N - ORIGINAL WELLBORE - PROP	400.0	400.0	75.0	73.5	49.272	CC, ES
GRAYS FEDERAL 9N - ORIGINAL WELLBORE - PROP	20,221.6	20,230.2	1,251.6	497.7	1.660	SF

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<b>Database:</b>	EDM
<b>Reference Design:</b>	PROPOSAL #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SW SW SEC. 27 T5N R65W 6th P.M. (TORREYS)						
ABDN VERT DUMLER #10-27 - Wellbore #1 - Design #1	600.0	583.0	3,267.8	3,255.2	259.405	CC
ABDN VERT DUMLER #10-27 - Wellbore #1 - Design #1	900.0	882.5	3,271.0	3,251.7	169.265	ES
ABDN VERT DUMLER #10-27 - Wellbore #1 - Design #1	6,550.0	6,459.8	3,604.5	3,455.0	24.106	SF
ABDN VERT FRANKLIN #28-1 - Wellbore #1 - Wellbore	0.0	0.0	2,893.5			
ABDN VERT FRANKLIN #28-1 - Wellbore #1 - Wellbore	500.0	470.1	2,894.2	2,892.8	2,083.045	ES
ABDN VERT FRANKLIN #28-1 - Wellbore #1 - Wellbore	10,400.0	6,875.0	4,476.8	4,396.3	55.658	SF
ABDN VERT FRANKLIN #28-15 - Wellbore #1 - Wellbore	262.9	243.9	3,506.7	3,506.1	5,265.791	CC
ABDN VERT FRANKLIN #28-15 - Wellbore #1 - Wellbore	600.0	580.3	3,507.2	3,505.7	2,241.895	ES
ABDN VERT FRANKLIN #28-15 - Wellbore #1 - Wellbore	11,000.0	6,650.0	4,267.6	4,165.6	41.838	SF
ABDN VERT FRANKLIN F #28-23 - Wellbore #1 - Wellbo	0.0	0.0	2,592.2			
ABDN VERT FRANKLIN F #28-23 - Wellbore #1 - Wellbo	100.0	66.8	2,592.3	2,592.2	10,000.000	ES
ABDN VERT FRANKLIN F #28-23 - Wellbore #1 - Wellbo	10,100.0	6,759.6	3,482.3	3,402.4	43.541	SF
ABDN VERT IKENOUEYE #1 - Wellbore #1 - Wellbore #1	13,140.9	6,767.3	3,737.9	3,557.3	20.704	CC
ABDN VERT IKENOUEYE #1 - Wellbore #1 - Wellbore #1	13,200.0	6,766.8	3,738.3	3,556.3	20.540	ES
ABDN VERT IKENOUEYE #1 - Wellbore #1 - Wellbore #1	14,100.0	6,759.2	3,858.9	3,660.5	19.448	SF
ABDN VERT MOODY #13-29 - Wellbore #1 - Design #1	17,111.8	6,870.0	3,785.2	3,357.1	8.843	CC
ABDN VERT MOODY #13-29 - Wellbore #1 - Design #1	17,200.0	6,870.0	3,786.2	3,356.0	8.801	ES
ABDN VERT MOODY #13-29 - Wellbore #1 - Design #1	17,600.0	6,870.0	3,816.5	3,378.6	8.715	SF
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Design #1	600.0	577.0	3,043.0	3,031.1	254.625	CC
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Design #1	700.0	677.0	3,044.7	3,030.5	214.488	ES
ABDN VERT SITZMAN F27-13 - Wellbore #1 - Design #1	8,300.0	6,865.0	4,333.0	4,157.8	24.733	SF
ABDN VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	0.0	0.0	3,015.3			
ABDN VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	100.0	59.9	3,015.4	3,015.2	10,000.000	ES
ABDN VERT SITZMAN F27-14 - Wellbore #1 - Wellbore	10,500.0	6,775.8	6,290.0	6,234.5	113.346	SF
ABDN VERT SOCO #29-1 - Wellbore #1 - Wellbore #1	12,784.0	6,846.4	133.5	-37.4	0.781	Level 1, CC, ES, SF
ABDN VERT SOCO #29-2 - Wellbore #1 - Design #1	14,341.3	6,865.0	32.2	-317.6	0.092	Level 1, CC, ES, SF
ABDN VERT SOCO #29-7 - Wellbore #1 - Wellbore #1	14,305.7	6,600.0	1,140.7	932.2	5.471	CC, ES
ABDN VERT SOCO #29-7 - Wellbore #1 - Wellbore #1	14,400.0	6,600.0	1,144.6	935.1	5.463	SF
EXIST DD AGUILAR FED #29-11H5 - Wellbore #1 - Wel	15,724.2	7,062.0	2,372.7	2,118.8	9.344	CC
EXIST DD AGUILAR FED #29-11H5 - Wellbore #1 - Wel	15,800.0	7,062.0	2,374.0	2,118.4	9.288	ES
EXIST DD AGUILAR FED #29-11H5 - Wellbore #1 - Wel	16,000.0	7,062.0	2,388.7	2,130.0	9.232	SF
EXIST DD AGUILAR FED #29-12H5 - Wellbore #1 - Wel	17,180.8	7,355.6	2,319.5	2,021.4	7.781	CC
EXIST DD AGUILAR FED #29-12H5 - Wellbore #1 - Wel	17,200.0	7,354.8	2,319.6	2,021.0	7.770	ES
EXIST DD AGUILAR FED #29-12H5 - Wellbore #1 - Wel	17,400.0	7,347.3	2,329.8	2,028.0	7.719	SF
EXIST DD ALLES F #33-28D - Wellbore #1 - Wellbore #1	9,772.8	6,752.8	4,345.7	4,258.4	49.769	CC
EXIST DD ALLES F #33-28D - Wellbore #1 - Wellbore #1	9,900.0	6,752.2	4,347.6	4,257.1	48.044	ES
EXIST DD ALLES F #33-28D - Wellbore #1 - Wellbore #1	11,900.0	6,747.0	4,838.4	4,710.9	37.946	SF
EXIST DD ALLES F #33-29D - Wellbore #1 - Wellbore #1	11,278.8	6,800.0	4,572.9	4,443.6	35.379	CC
EXIST DD ALLES F #33-29D - Wellbore #1 - Wellbore #1	11,400.0	6,800.0	4,574.5	4,442.2	34.574	ES
EXIST DD ALLES F #33-29D - Wellbore #1 - Wellbore #1	13,100.0	6,800.0	4,922.2	4,758.3	30.038	SF
EXIST DD DICKENS F #32-27D - Wellbore #1 - Wellbore	13,777.1	7,349.0	4,287.1	4,068.4	19.604	CC
EXIST DD DICKENS F #32-27D - Wellbore #1 - Wellbore	13,900.0	7,348.1	4,288.8	4,066.7	19.305	ES
EXIST DD DICKENS F #32-27D - Wellbore #1 - Wellbore	15,000.0	7,349.4	4,458.0	4,211.6	18.091	SF
EXIST DD DICKENS F #32-28D - Wellbore #1 - Wellbore	15,062.0	7,448.7	4,416.4	4,160.2	17.236	CC
EXIST DD DICKENS F #32-28D - Wellbore #1 - Wellbore	15,200.0	7,450.7	4,418.5	4,159.4	17.051	ES
EXIST DD DICKENS F #32-28D - Wellbore #1 - Wellbore	16,000.0	7,462.8	4,514.9	4,242.8	16.596	SF
EXIST DD IKENOUEYE 29-10 - Wellbore #1 - Wellbore #1	14,493.7	7,025.0	2,324.8	2,105.0	10.578	CC
EXIST DD IKENOUEYE 29-10 - Wellbore #1 - Wellbore #1	14,500.0	7,025.0	2,324.8	2,104.9	10.571	ES
EXIST DD IKENOUEYE 29-10 - Wellbore #1 - Wellbore #1	14,800.0	7,022.7	2,344.9	2,119.8	10.420	SF
EXIST DD IKENOUEYE F #28-33 - Wellbore #1 - Wellbore	12,536.4	7,081.9	3,040.3	2,872.5	18.114	CC
EXIST DD IKENOUEYE F #28-33 - Wellbore #1 - Wellbore	12,600.0	7,081.3	3,041.0	2,871.6	17.955	ES

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<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 SW SEC. 27 T5N R65W 6th P.M. (TORREYS)						
EXIST DD IKENOUYE F #28-33 - Wellbore #1 - Wellbore	13,200.0	7,075.7	3,111.9	2,931.9	17.291	SF
EXIST DD IKENOUYE F #29-22 - Wellbore #1 - Wellbore	13,643.3	7,101.2	1,637.7	1,441.0	8.326	CC
EXIST DD IKENOUYE F #29-22 - Wellbore #1 - Wellbore	13,700.0	7,101.7	1,638.6	1,440.8	8.283	ES
EXIST DD IKENOUYE F #29-22 - Wellbore #1 - Wellbore	13,800.0	7,102.6	1,645.1	1,445.9	8.256	SF
EXIST DD LASALLE #14-29 - Wellbore #1 - Wellbore #1	15,691.0	7,270.0	3,833.9	3,579.8	15.091	CC
EXIST DD LASALLE #14-29 - Wellbore #1 - Wellbore #1	15,800.0	7,270.0	3,835.4	3,578.7	14.942	ES
EXIST DD LASALLE #14-29 - Wellbore #1 - Wellbore #1	16,400.0	7,270.0	3,898.9	3,631.4	14.577	SF
EXIST DD SOCO #29-8 - Wellbore #1 - Wellbore #1	13,290.4	7,100.0	1,014.0	828.1	5.454	CC
EXIST DD SOCO #29-8 - Wellbore #1 - Wellbore #1	13,300.0	7,100.0	1,014.1	828.0	5.450	ES, SF
EXIST HZ BOULTER FARMS 27H-202 - Wellbore #1 - W	0.0	0.0	1,839.4			
EXIST HZ BOULTER FARMS 27H-202 - Wellbore #1 - W	9,600.0	6,305.0	4,075.7	4,002.2	55.441	SF
EXIST HZ BOULTER FARMS 27H-212 - Wellbore #1 - W	0.0	0.0	1,810.2			
EXIST HZ BOULTER FARMS 27H-212 - Wellbore #1 - W	600.0	593.3	1,811.1	1,808.8	816.890	ES
EXIST HZ BOULTER FARMS 27H-212 - Wellbore #1 - W	9,200.0	6,345.2	3,444.8	3,381.1	54.064	SF
EXIST HZ BOULTER FARMS 27H-232 - Wellbore #1 - W	0.0	0.0	1,868.5			
EXIST HZ BOULTER FARMS 27H-232 - Wellbore #1 - W	10,200.0	6,398.0	4,814.7	4,725.8	54.158	SF
EXIST HZ BOULTER FARMS 27H-302 - Wellbore #1 - W	0.0	0.0	1,824.8			
EXIST HZ BOULTER FARMS 27H-302 - Wellbore #1 - W	9,400.0	6,349.8	3,763.3	3,694.5	54.670	SF
EXIST HZ BOULTER FARMS 27H-312 - Wellbore #1 - W	0.0	0.0	1,795.7			
EXIST HZ BOULTER FARMS 27H-312 - Wellbore #1 - W	400.0	396.1	1,796.9	1,795.6	1,328.131	ES
EXIST HZ BOULTER FARMS 27H-312 - Wellbore #1 - W	8,900.0	6,481.0	3,071.1	3,011.9	51.947	SF
EXIST HZ BOULTER FARMS 27H-332 - Wellbore #1 - W	0.0	0.0	1,853.9			
EXIST HZ BOULTER FARMS 27H-332 - Wellbore #1 - W	9,800.0	6,399.0	4,365.3	4,285.0	54.380	SF
EXIST HZ BOULTER FARMS 27I-312 - Wellbore #1 - We	0.0	0.0	1,883.0			
EXIST HZ BOULTER FARMS 27I-312 - Wellbore #1 - We	10,300.0	6,495.0	5,057.5	4,963.7	53.925	SF
EXIST HZ BUNTING 26Q-214 - Wellbore #1 - Wellbore #	6,305.9	14,599.8	3,982.1	3,750.6	17.205	CC
EXIST HZ BUNTING 26Q-214 - Wellbore #1 - Wellbore #	6,350.0	14,604.0	3,982.4	3,750.4	17.168	ES
EXIST HZ BUNTING 26Q-214 - Wellbore #1 - Wellbore #	6,700.0	14,722.0	4,001.3	3,764.0	16.857	SF
EXIST HZ BUNTING 26Q-304 - Wellbore #1 - Wellbore #	6,365.3	14,743.0	4,207.6	3,973.2	17.948	CC
EXIST HZ BUNTING 26Q-304 - Wellbore #1 - Wellbore #	6,400.0	14,743.0	4,207.8	3,973.0	17.925	ES
EXIST HZ BUNTING 26Q-304 - Wellbore #1 - Wellbore #	6,750.0	14,743.0	4,224.5	3,987.5	17.823	SF
EXIST VERT BUNTING #27-43 - Wellbore #1 - Wellbore	611.3	594.3	4,296.7	4,295.0	2,552.349	CC, ES
EXIST VERT BUNTING #27-43 - Wellbore #1 - Wellbore	11,700.0	6,815.4	8,845.2	8,788.5	156.024	SF
EXIST VERT DUMLER #20-27 - Wellbore #1 - Design #1	600.0	583.0	4,265.6	4,253.0	338.615	CC
EXIST VERT DUMLER #20-27 - Wellbore #1 - Design #1	800.0	782.8	4,267.7	4,250.6	249.850	ES
EXIST VERT DUMLER #20-27 - Wellbore #1 - Design #1	6,650.0	6,546.4	4,699.5	4,548.4	31.109	SF
EXIST VERT IKENOUYE #29-15 - Wellbore #1 - Wellbor	14,272.6	6,870.3	3,635.3	3,422.7	17.104	CC
EXIST VERT IKENOUYE #29-15 - Wellbore #1 - Wellbor	14,400.0	6,869.0	3,637.5	3,421.9	16.871	ES
EXIST VERT IKENOUYE #29-15 - Wellbore #1 - Wellbor	15,000.0	6,862.8	3,707.3	3,480.9	16.376	SF
EXIST VERT IKENOUYE #29-9 - Wellbore #1 - Wellbore	12,921.2	6,872.1	2,144.4	1,969.9	12.285	CC
EXIST VERT IKENOUYE #29-9 - Wellbore #1 - Wellbore	13,000.0	6,873.8	2,145.9	1,969.6	12.174	ES
EXIST VERT IKENOUYE #29-9 - Wellbore #1 - Wellbore	13,200.0	6,878.1	2,162.5	1,982.9	12.046	SF
EXIST VERT IKENOUYE F #29-23 - Wellbore #1 - Wellb	13,899.7	6,900.7	2,797.7	2,595.5	13.835	CC
EXIST VERT IKENOUYE F #29-23 - Wellbore #1 - Wellb	14,000.0	6,900.7	2,799.5	2,595.0	13.686	ES
EXIST VERT IKENOUYE F #29-23 - Wellbore #1 - Wellb	14,400.0	6,900.7	2,842.1	2,630.9	13.454	SF
EXIST VERT MARKUS #1 - Wellbore #1 - Wellbore #1	10,425.5	6,800.0	3,707.5	3,602.7	35.369	CC
EXIST VERT MARKUS #1 - Wellbore #1 - Wellbore #1	10,500.0	6,800.0	3,708.2	3,601.6	34.768	ES
EXIST VERT MARKUS #1 - Wellbore #1 - Wellbore #1	11,900.0	6,822.6	3,989.8	3,857.8	30.213	SF
EXIST VERT REYNOLDS #28-13 - Wellbore #1 - Wellbo	11,780.2	6,669.1	3,958.1	3,815.5	27.760	CC
EXIST VERT REYNOLDS #28-13 - Wellbore #1 - Wellbo	11,900.0	6,669.0	3,959.9	3,814.4	27.206	ES
EXIST VERT REYNOLDS #28-13 - Wellbore #1 - Wellbo	13,000.0	6,668.5	4,141.8	3,975.8	24.954	SF

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

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Site SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Reference Site:</b>	SW NW SEC. 27 T5N R65W 6th P.M. (GRAYS)	<b>MD Reference:</b>	KB 23' @ 4679.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	GRAYS FEDERAL 4N	<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>	ORIGINAL WELLBORE	<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	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
SW SW SEC. 27 T5N R65W 6th P.M. (TORREYS)						
TORREYS FEDERAL 10N - ORIGINAL WELLBORE - PR	215.6	218.6	2,886.1	2,885.4	4,125.189	CC
TORREYS FEDERAL 10N - ORIGINAL WELLBORE - PR	300.0	300.0	2,886.1	2,885.1	2,691.913	ES
TORREYS FEDERAL 10N - ORIGINAL WELLBORE - PR	20,200.0	20,410.1	4,226.5	3,475.4	5.627	SF
TORREYS FEDERAL 1N - ORIGINAL WELLBORE - PR	5,338.8	5,900.0	1,637.8	1,596.7	39.894	CC
TORREYS FEDERAL 1N - ORIGINAL WELLBORE - PR	20,221.6	20,981.2	1,873.8	1,111.5	2.458	ES, SF
TORREYS FEDERAL 2N - ORIGINAL WELLBORE - PR	5,344.7	5,845.7	1,960.4	1,922.3	51.417	CC
TORREYS FEDERAL 2N - ORIGINAL WELLBORE - PR	20,221.6	20,939.0	2,129.8	1,367.3	2.793	ES, SF
TORREYS FEDERAL 3N - ORIGINAL WELLBORE - PR	5,209.6	5,681.2	2,210.0	2,174.3	61.867	CC
TORREYS FEDERAL 3N - ORIGINAL WELLBORE - PR	19,600.0	20,162.4	2,372.7	1,646.8	3.269	ES
TORREYS FEDERAL 3N - ORIGINAL WELLBORE - PR	20,221.6	20,706.3	2,404.1	1,647.2	3.176	SF
TORREYS FEDERAL 4N - ORIGINAL WELLBORE - PR	5,217.7	5,670.8	2,451.7	2,417.5	71.580	CC
TORREYS FEDERAL 4N - ORIGINAL WELLBORE - PR	20,221.6	20,800.0	2,644.7	1,882.6	3.470	ES, SF
TORREYS FEDERAL 5N - ORIGINAL WELLBORE - PR	5,054.4	5,500.0	2,677.2	2,644.9	82.890	CC
TORREYS FEDERAL 5N - ORIGINAL WELLBORE - PR	20,221.6	20,700.0	2,889.0	2,126.4	3.788	ES, SF
TORREYS FEDERAL 6N - ORIGINAL WELLBORE - PR	600.0	603.0	2,826.1	2,823.7	1,164.226	CC
TORREYS FEDERAL 6N - ORIGINAL WELLBORE - PR	20,221.6	20,757.7	3,139.9	2,376.9	4.115	ES, SF
TORREYS FEDERAL 7N - ORIGINAL WELLBORE - PR	600.0	603.0	2,841.1	2,838.7	1,170.408	CC
TORREYS FEDERAL 7N - ORIGINAL WELLBORE - PR	20,221.6	20,666.6	3,392.3	2,628.9	4.443	ES, SF
TORREYS FEDERAL 8N - ORIGINAL WELLBORE - PR	600.0	603.0	2,856.0	2,853.6	1,176.545	CC, ES
TORREYS FEDERAL 8N - ORIGINAL WELLBORE - PR	20,221.6	20,742.7	3,655.0	2,891.2	4.785	SF
TORREYS FEDERAL 9N - ORIGINAL WELLBORE - PR	315.6	318.6	2,871.1	2,870.0	2,498.431	CC
TORREYS FEDERAL 9N - ORIGINAL WELLBORE - PR	500.0	493.9	2,871.3	2,869.3	1,476.066	ES
TORREYS FEDERAL 9N - ORIGINAL WELLBORE - PR	20,221.6	20,548.7	3,927.5	3,167.6	5.168	SF