

# **Crestone Peak Resources**

**DJ BASIN**

**BIGHORN**

**BIGHORN 4N-17H-P267**

**OH**

**PLAN #2**

## **Anticollision Summary Report**

**12 April, 2018**

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #2		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.00usft	<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 2,237.05 usft	<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>	4/12/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	2,000.00	PLAN #2 (OH)	VESSI_GYROFLEX	VESSI Gyroflex Gyro	
2,001.00	15,405.24	PLAN #2 (OH)	MWD+HDGM	OWSG MWD + HDGM	

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						
BIGHORN						
BIGHORN 4A-17H-P267 - OH - PLAN #2	584.41	579.94	128.61	126.78	70.634	CC
BIGHORN 4A-17H-P267 - OH - PLAN #2	600.00	594.88	128.63	126.75	68.614	ES
BIGHORN 4A-17H-P267 - OH - PLAN #2	6,300.00	5,735.02	2,215.45	2,146.14	31.965	SF
BIGHORN 4AA-17H-P267 - OH - PLAN #1	200.00	199.00	159.94	159.46	332.020	CC, ES
BIGHORN 4AA-17H-P267 - OH - PLAN #1	5,400.00	4,770.01	2,202.34	2,152.37	44.076	SF
BIGHORN 4AB-17H-P267 - OH - PLAN #2	300.00	299.00	150.15	149.32	180.736	CC, ES
BIGHORN 4AB-17H-P267 - OH - PLAN #2	5,500.00	4,837.36	2,210.25	2,152.07	37.986	SF
BIGHORN 4AC-17H-P267 - OH - PLAN #1	400.00	399.00	140.09	138.91	118.733	CC, ES
BIGHORN 4AC-17H-P267 - OH - PLAN #1	5,800.00	5,172.54	2,192.68	2,131.86	36.049	SF
BIGHORN 4B-17H-P267 - OH - PLAN #2	772.83	766.56	114.60	112.12	46.147	CC
BIGHORN 4B-17H-P267 - OH - PLAN #2	800.00	792.97	114.67	112.09	44.462	ES
BIGHORN 4B-17H-P267 - OH - PLAN #2	6,600.00	6,107.30	2,127.66	2,055.82	29.615	SF
BIGHORN 4C-17H-P267 - OH - PLAN #1	200.00	199.00	110.17	109.68	228.698	CC, ES
BIGHORN 4C-17H-P267 - OH - PLAN #1	6,600.00	6,060.99	2,236.44	2,168.81	33.066	SF
BIGHORN 4D-17H-P267 - OH - PLAN #2	800.40	795.69	92.64	90.06	35.860	CC, ES
BIGHORN 4D-17H-P267 - OH - PLAN #2	6,600.00	6,201.80	1,930.77	1,856.83	26.114	SF
BIGHORN 4E-17H-P267 - OH - PLAN #1	252.83	251.83	90.03	89.37	135.099	CC
BIGHORN 4E-17H-P267 - OH - PLAN #1	300.00	298.95	90.05	89.22	108.331	ES
BIGHORN 4E-17H-P267 - OH - PLAN #1	6,700.00	6,358.98	1,863.10	1,794.00	26.965	SF
BIGHORN 4F-17H-P267 - OH - PLAN #1	830.05	827.00	72.05	69.36	26.754	CC, ES
BIGHORN 4F-17H-P267 - OH - PLAN #1	13,300.00	13,738.15	2,197.08	1,874.98	6.821	SF
BIGHORN 4G-17H-P267 - OH - PLAN #2	821.00	818.48	63.02	60.36	23.670	CC, ES
BIGHORN 4G-17H-P267 - OH - PLAN #2	15,200.00	15,680.08	2,025.36	1,590.56	4.658	SF
BIGHORN 4H-17H-P267 - OH - PLAN #1	239.35	238.35	60.11	59.50	97.070	CC
BIGHORN 4H-17H-P267 - OH - PLAN #1	300.00	298.93	60.15	59.32	72.365	ES
BIGHORN 4H-17H-P267 - OH - PLAN #1	13,400.00	13,327.19	1,735.79	1,413.16	5.380	SF
BIGHORN 4I-17H-P267 - OH - PLAN #1	338.31	337.31	50.05	49.08	51.884	CC
BIGHORN 4I-17H-P267 - OH - PLAN #1	400.00	398.93	50.10	48.92	42.450	ES
BIGHORN 4I-17H-P267 - OH - PLAN #1	13,100.00	13,444.66	1,306.31	988.53	4.111	SF
BIGHORN 4J-17H-P267 - OH - PLAN #3	400.00	399.00	39.98	38.81	33.890	CC, ES
BIGHORN 4J-17H-P267 - OH - PLAN #3	14,800.00	15,045.19	1,074.66	752.68	3.338	SF
BIGHORN 4K-17H-P267 - OH - PLAN #2	587.60	585.95	28.59	26.75	15.562	CC
BIGHORN 4K-17H-P267 - OH - PLAN #2	600.00	598.26	28.60	26.72	15.207	ES
BIGHORN 4K-17H-P267 - OH - PLAN #2	14,200.00	14,260.81	694.16	312.71	1.820	SF
BIGHORN 4L-17H-P267 - OH - PLAN #2	620.15	619.89	18.07	16.12	9.238	CC
BIGHORN 4L-17H-P267 - OH - PLAN #2	14,500.00	14,641.96	393.22	-6.88	0.983	Level 1, ES, SF

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

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
BIGHORN						
BIGHORN 4M-17H-P267 - OH - PLAN #1	207.34	207.34	10.07	9.56	19.773	CC
BIGHORN 4M-17H-P267 - OH - PLAN #1	14,300.00	14,511.66	333.74	-16.98	0.952	Level 1, ES, SF
BIGHORN 4O-17H-P267 - OH - PLAN #2	449.17	449.25	9.36	8.00	6.898	CC
BIGHORN 4O-17H-P267 - OH - PLAN #2	15,400.00	15,308.72	123.40	-253.12	0.328	Level 1, ES
BIGHORN 4O-17H-P267 - OH - PLAN #2	15,405.24	15,313.66	121.98	-252.91	0.325	Level 1, SF
BIGHORN 4P-17H-P267 - OH - PLAN #2	265.13	265.13	19.84	19.13	27.902	CC
BIGHORN 4P-17H-P267 - OH - PLAN #2	300.00	299.99	19.86	19.03	23.850	ES
BIGHORN 4P-17H-P267 - OH - PLAN #2	15,095.51	14,923.64	539.99	119.40	1.284	Level 3, SF
BIGHORN 4Q-17H-P267 - OH - PLAN #2	400.00	400.00	29.92	28.74	25.321	CC, ES
BIGHORN 4Q-17H-P267 - OH - PLAN #2	15,405.24	15,531.47	769.77	326.38	1.736	SF
BIGHORN 4R-17H-P267 - OH - PLAN #2	300.00	300.00	39.98	39.15	48.029	CC, ES
BIGHORN 4R-17H-P267 - OH - PLAN #2	15,405.24	15,275.30	1,033.44	584.06	2.300	SF
BIGHORN 4S-17H-P267 - OH - PLAN #3	200.00	200.00	50.05	49.57	103.526	CC, ES
BIGHORN 4S-17H-P267 - OH - PLAN #3	15,405.24	15,360.33	1,354.34	1,004.25	3.868	SF

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<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
S17-T2N-R67W (OFFSETS)						
ABBEY STATE V16-77HN - KMG WELL - SURVEYS						Out of range
ALFRED D SATER UNIT 2 - KMG WELL - GYRO						Out of range
ALVIN STATE 1 - PDC WELL - GYRO	425.02	436.34	1,493.64	1,492.33	1,139.230	CC, ES
ALVIN STATE 1 - PDC WELL - GYRO	9,000.00	7,404.60	2,220.46	2,154.43	33.627	SF
ASPEN STATE V16-75HN - KMG WELL - SURVEYS						Out of range
CHENG 3-8A - KMG WELL - SURVEYS						Out of range
CIRBO 4-6-5 - CPR WELL - SURVEYS						Out of range
CIRBO 6-4-5 - CPR WELL - SURVEYS						Out of range
DECHANT 2-16 - KMG WELL - GYRO						Out of range
DECHANT 6 - KPK WELL - NO SURVEYS						Out of range
DECHANT 7 - KPK WELL - NO SURVEYS	400.00	390.00	1,678.78	1,676.97	930.954	CC, ES
DECHANT 7 - KPK WELL - NO SURVEYS	3,400.00	3,326.27	2,228.19	2,209.56	119.584	SF
DECHANT 8 - GERRITY WELL - NO SURVEYS						Out of range
DECHANT STATE 1 - KPK WELL - SURVEYS						Out of range
DECHANT STATE GAS U 9 - KMG WELL - GYRO	414.30	445.21	1,830.18	1,828.89	1,416.598	CC, ES
DECHANT STATE GAS U 9 - KMG WELL - GYRO	4,200.00	4,172.98	2,232.77	2,212.49	110.079	SF
DECHANT STATE V 16-11JI - KMG WELL - GYRO						Out of range
DECHANT STATE V 16-12JI - KMG WELL - GYRO	271.24	266.24	1,776.05	1,775.31	2,409.068	CC
DECHANT STATE V 16-12JI - KMG WELL - GYRO	405.66	403.91	1,776.07	1,774.86	1,462.975	ES
DECHANT STATE V 16-12JI - KMG WELL - GYRO	10,100.00	7,266.90	2,037.88	1,946.01	22.183	SF
DECHANT STATE V 16-14JI - KMG WELL - GYRO						Out of range
DECHANT STATE V 16-4JI - KMG WELL - GYRO						Out of range
DECHANT STATE V 16-5JI - KMG WELL - GYRO	10,582.51	7,356.69	1,940.22	1,832.36	17.988	CC
DECHANT STATE V 16-5JI - KMG WELL - GYRO	10,600.00	7,356.37	1,940.30	1,831.98	17.914	ES
DECHANT STATE V 16-5JI - KMG WELL - GYRO	11,000.00	7,349.00	1,984.61	1,868.15	17.041	SF
DECHANT V 16-3JI - KMG WELL - GYRO						Out of range
DECHANT-STATE 2 - KPK WELL - NO SURVEYS						Out of range
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	400.00	402.00	1,522.38	1,520.53	826.355	CC
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	500.00	501.98	1,522.85	1,520.47	641.054	ES
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	5,300.00	5,100.00	2,044.50	2,007.37	55.069	SF
DECHANT-STATE 4 - KPK WELL - NO SURVEYS						Out of range
DECHANT-STATE 5 - KPK WELL - NO SURVEYS						Out of range
DIER 1 - CPR WELL - GYRO	14,888.21	7,345.94	750.08	529.76	3.404	CC, ES, SF
DIER 13-8 - CPR WELL - SURVEYS						Out of range
DIER 14-8 - CPR WELL - SURVEYS						Out of range
DIER 23-8 - CPR WELL - SURVEYS	14,606.19	7,531.66	1,697.44	1,481.22	7.850	CC
DIER 23-8 - CPR WELL - SURVEYS	14,700.00	7,528.21	1,700.84	1,480.69	7.726	ES
DIER 23-8 - CPR WELL - SURVEYS	14,900.00	7,521.23	1,730.50	1,504.09	7.643	SF
DIER 24-8 - CPR WELL - SURVEYS	13,303.27	7,613.90	1,703.89	1,518.05	9.168	CC, ES
DIER 24-8 - CPR WELL - SURVEYS	13,600.00	7,592.08	1,729.41	1,536.94	8.985	SF
DIER 33-8 - CPR WELL - GYRO	14,660.67	7,304.05	591.41	375.92	2.745	CC
DIER 33-8 - CPR WELL - GYRO	14,700.00	7,304.92	592.86	374.72	2.718	ES, SF
DIER 34-8 - CPR WELL - GYRO	13,324.10	7,302.15	804.00	622.62	4.433	CC, ES
DIER 34-8 - CPR WELL - GYRO	13,400.00	7,303.67	807.58	624.70	4.416	SF
DIER 44-8 - CPR WELL - GYRO	13,153.99	7,290.24	931.08	754.55	5.274	CC, ES
DIER 44-8 - CPR WELL - GYRO	13,200.00	7,288.80	932.21	754.72	5.252	SF
DIER 4-4-8 - CPR WELL - SURVEYS	15,058.16	7,359.79	1,263.48	1,034.88	5.527	CC
DIER 4-4-8 - CPR WELL - SURVEYS	15,100.00	7,360.46	1,264.34	1,033.03	5.466	ES
DIER 4-4-8 - CPR WELL - SURVEYS	15,300.00	7,363.62	1,291.77	1,050.90	5.363	SF
DIER 4-8 - CPR WELL - GYRO	13,900.00	7,285.87	2,208.42	2,011.43	11.211	CC, ES
DIER 4-8 - CPR WELL - GYRO	14,100.00	7,286.34	2,223.27	2,021.47	11.017	SF
DIER 8-4-8 - CPR WELL - SURVEYS	15,405.24	7,496.51	1,232.54	989.11	5.063	CC, ES, SF
DIER 8-6-8 - CPR WELL - SURVEYS	14,044.40	7,497.69	1,445.37	1,236.37	6.916	CC

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

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
S17-T2N-R67W (OFFSETS)						
DIER 8-6-8 - CPR WELL - SURVEYS	14,100.00	7,497.51	1,446.15	1,236.31	6.892	ES
DIER 8-6-8 - CPR WELL - SURVEYS	14,200.00	7,497.15	1,451.47	1,240.84	6.891	SF
DIER J1A - CPR WELL - GYRO	13,872.03	7,332.91	97.34	-99.08	0.496	Level 1, CC, ES, SF
ELKHORN CO B 3 - KPK WELL - NO SURVEYS						Out of range
ELKHORN CO UNIT 2 - KMG WELL - GYRO						Out of range
ELKHORN CO-B 6 - KPK WELL - NO SURVEYS	4,242.97	4,182.38	2,047.72	2,017.01	66.668	CC
ELKHORN CO-B 6 - KPK WELL - NO SURVEYS	4,700.00	4,628.09	2,050.21	2,014.75	57.813	ES
ELKHORN CO-B 6 - KPK WELL - NO SURVEYS	5,600.00	5,200.00	2,092.06	2,048.86	48.424	SF
ELKHORN CO-B 7 - KPK WELL - NO SURVEYS						Out of range
ELKHORN COMPANY B 2 - KMG WELL - GYRO						Out of range
FIRESTONE 20-29D - KMG WELL - SURVEYS						Out of range
FIRESTONE V 20-04D - KMG WELL - SURVEYS						Out of range
FIRESTONE V 20-08D - KMG WELL - SURVEYS	2,848.53	2,477.52	1,664.95	1,655.54	176.899	CC, ES
FIRESTONE V 20-08D - KMG WELL - SURVEYS	6,900.00	6,905.88	1,870.20	1,826.05	42.364	SF
FIRESTONE V 20-18D - KMG WELL - SURVEYS	6,870.90	6,838.24	1,556.58	1,514.02	36.574	CC, ES
FIRESTONE V 20-18D - KMG WELL - SURVEYS	6,900.00	6,866.75	1,556.98	1,514.37	36.537	SF
FIRESTONE V 20-2 - KMG WELL - GYRO	6,960.10	6,798.20	808.41	757.44	15.859	CC, ES, SF
FIRESTONE V 20-3 - KMG WELL - GYRO	7,000.00	6,875.41	1,934.09	1,894.51	48.865	SF
FIRESTONE V 20-3 - KMG WELL - GYRO	7,021.11	6,892.29	1,933.97	1,894.40	48.881	CC, ES
HOMESTEAD 22-4 - KMG WELL - SURVEYS						Out of range
HOMESTEAD 29-4 - KMG WELL - SURVEYS						Out of range
HOMESTEAD 31-4 - KMG WELL - SURVEYS						Out of range
HOMESTEAD 4-4 - KMG WELL - GYRO						Out of range
HSR-DODERO 6-4A - KMG WELL - GYRO						Out of range
HSR-MCHALE 7-5A - KMG WELL - GYRO						Out of range
HSR-RHOADES 8-5A - KMG WELL - GYRO						Out of range
HSR-SATER 1-8A - KMG WELL - GYRO						Out of range
HSR-VOGL 3-5A - KMG WELL - GYRO						Out of range
MAHONEY 1 - KPK WELL - NO SURVEYS	5,217.14	5,042.00	726.04	686.85	18.527	CC, ES, SF
MAHONEY 2 - KPK WELL - NO SURVEYS	5,565.10	5,100.00	2,021.14	1,984.06	54.515	CC, ES
MAHONEY 2 - KPK WELL - NO SURVEYS	5,800.00	5,100.00	2,034.74	1,996.93	53.820	SF
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	5,373.38	5,050.00	939.97	907.28	28.758	CC, ES
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	5,400.00	5,050.00	940.35	907.65	28.756	SF
MCCLAY 5-4A - KMG WELL - GYRO						Out of range
MCCOY 1 - CPR WELL - GYRO						Out of range
MCCOY 13-5 - CPR WELL - GYRO						Out of range
MCCOY 14-5 - CPR WELL - GYRO						Out of range
MCCOY 23-5 - CPR WELL - GYRO						Out of range
MCCOY 24-5 - CPR WELL - GYRO						Out of range
MCCOY 2-4-5 - CPR WELL - SURVEYS						Out of range
MCHALE 2-5 - KMG WELL - GYRO						Out of range
MCHALE UNIT 1 - KMG WELL - GYRO						Out of range
MCHALE-B 1 - AMOCO WELL - NO SURVEYS						Out of range
MERLE L MCHALE UNIT 2 - KMG WELL - GYRO						Out of range
MILLER 1 - EXTRACTION WELL - GYRO	11,724.53	7,326.74	435.09	296.98	3.150	CC, ES, SF
MILLER 11-17 - CPR WELL - SURVEYS						Out of range
MILLER 1-17 - CPR WELL - SURVEYS	11,711.04	6,654.02	1,508.12	1,379.54	11.729	CC, ES
MILLER 1-17 - CPR WELL - SURVEYS	11,900.00	6,644.11	1,519.82	1,387.65	11.499	SF
MILLER 12-17 - CPR WELL - SURVEYS						Out of range
MILLER 13-17 - CPR WELL - SURVEYS						Out of range
MILLER 14-17 - EXTRACTION WELL - NO SURVEYS						Out of range
MILLER 21-17 - CPR WELL - GYRO	12,209.74	7,311.24	1,945.87	1,794.73	12.875	CC
MILLER 21-17 - CPR WELL - GYRO	12,300.00	7,311.39	1,947.96	1,794.47	12.691	ES

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

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
S17-T2N-R67W (OFFSETS)						
MILLER 21-17 - CPR WELL - GYRO	12,600.00	7,311.87	1,984.62	1,825.48	12.471	SF
MILLER 2-17 - CPR WELL - GYRO	11,114.27	7,324.36	404.37	282.59	3.320	CC, ES, SF
MILLER 22-17 - CPR WELL - SURVEYS	10,681.79	7,845.66	1,853.04	1,724.54	14.421	CC
MILLER 22-17 - CPR WELL - SURVEYS	10,700.00	7,843.54	1,853.12	1,724.13	14.366	ES
MILLER 22-17 - CPR WELL - SURVEYS	11,100.00	7,797.46	1,899.03	1,761.77	13.835	SF
MILLER 23-17 - CPR WELL - SURVEYS	9,476.40	7,759.35	1,837.26	1,740.86	19.060	CC
MILLER 23-17 - CPR WELL - SURVEYS	9,500.00	7,759.87	1,837.41	1,740.57	18.974	ES
MILLER 23-17 - CPR WELL - SURVEYS	9,900.00	7,781.57	1,885.32	1,782.11	18.265	SF
MILLER 24-17 - CPR WELL - GYRO	8,290.79	7,324.47	1,851.28	1,797.67	34.529	CC
MILLER 24-17 - CPR WELL - GYRO	8,300.00	7,324.53	1,851.30	1,797.55	34.443	ES
MILLER 24-17 - CPR WELL - GYRO	9,100.00	7,329.36	2,020.41	1,954.70	30.750	SF
MILLER 2-4-17 - CPR WELL - SURVEYS						Out of range
MILLER 31-17C - EXTRACTION WELL - GYRO	12,096.95	7,287.20	442.44	294.40	2.989	CC
MILLER 31-17C - EXTRACTION WELL - GYRO	12,100.00	7,287.21	442.45	294.32	2.987	ES, SF
MILLER 3-17J - CPR WELL - GYRO	8,802.16	7,329.83	103.29	39.46	1.618	CC, ES, SF
MILLER 32-17 - EXTRACTION WELL - GYRO						Out of range
MILLER 33-17J - CPR WELL - SURVEYS	2,471.43	2,404.90	656.67	647.52	71.793	CC
MILLER 33-17J - CPR WELL - SURVEYS	9,500.00	7,603.55	677.58	583.25	7.183	ES
MILLER 33-17J - CPR WELL - SURVEYS	9,600.00	7,607.06	688.71	592.18	7.135	SF
MILLER 34-17J - CPR WELL - SURVEYS	8,042.12	7,372.85	517.04	464.53	9.847	CC, ES, SF
MILLER 41-17 - EXTRACTION WELL - GYRO						Out of range
MILLER 4-17J - CPR WELL - GYRO						Out of range
MILLER 42-17 - EXTRACTION WELL - NO SURVEYS						Out of range
MILLER 43-17 - EXTRACTION WELL - GYRO	418.72	407.34	1,059.84	1,058.58	842.339	CC, ES
MILLER 43-17 - EXTRACTION WELL - GYRO	5,200.00	5,074.05	2,006.95	1,985.08	91.791	SF
MILLER 43-17J - EXTRACTION WELL - GYRO	9,447.43	7,329.10	615.14	536.23	7.795	CC, ES
MILLER 43-17J - EXTRACTION WELL - GYRO	9,500.00	7,329.14	617.38	537.28	7.707	SF
MILLER 44-17J - CPR WELL - SURVEYS	2,399.62	2,357.31	480.03	471.32	55.092	CC
MILLER 44-17J - CPR WELL - SURVEYS	2,400.00	2,357.67	480.03	471.31	55.078	ES
MILLER 44-17J - CPR WELL - SURVEYS	8,200.00	7,369.73	955.95	901.25	17.477	SF
MILLER CJ 17-A - CPR WELL - SURVEYS						Out of range
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	3,209.66	3,137.64	307.86	287.85	15.385	CC
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	3,300.00	3,225.75	308.51	287.61	14.763	ES
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	3,900.00	3,810.90	343.63	317.54	13.175	SF
PACE 2 - TEXAS TEA WELL - NO SURVEYS	400.00	375.00	1,334.74	1,333.00	766.273	CC, ES
PACE 2 - TEXAS TEA WELL - NO SURVEYS	5,200.00	5,050.00	1,891.70	1,856.11	53.158	SF
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	625.93	615.70	340.71	337.71	113.619	CC
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	800.00	788.70	341.24	337.31	86.867	ES
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	5,100.00	4,984.19	1,018.70	987.25	32.398	SF
PERRIN GU 1 - KMG WELL - GYRO	6,768.13	6,652.52	800.70	760.37	19.853	CC, ES
PERRIN GU 1 - KMG WELL - GYRO	6,800.00	6,685.22	801.32	760.77	19.759	SF
PERRIN GU 2-20 - KMG WELL - GYRO						Out of range
PERRIN V 20-5D - KMG WELL - GYRO						Out of range
PERRIN V 20-7DI - KMG WELL - GYRO	6,810.91	6,690.00	1,973.66	1,942.45	63.222	CC, ES
PERRIN V 20-7DI - KMG WELL - GYRO	7,000.00	6,884.24	1,997.58	1,965.43	62.131	SF
PERRIN-MAHONEY 1 - KPK WELL - NO SURVEYS	5,654.45	5,100.00	2,016.24	1,982.56	59.863	CC, ES
PERRIN-MAHONEY 1 - KPK WELL - NO SURVEYS	5,800.00	5,100.00	2,021.49	1,987.50	59.469	SF
PROMINENCE 4-8 - KMG WELL - GYRO						Out of range
RHOADES 1-5A - KMG WELL - GYRO						Out of range
ROBERT E BALDWIN 2 - KMG WELL - GYRO						Out of range
RUCA 20-1HZ - KMG - PLAN ONLY	3,611.85	3,641.92	864.65	832.47	26.871	CC, ES
RUCA 20-1HZ - KMG - PLAN ONLY	8,200.00	7,634.18	1,201.35	1,123.14	15.362	SF
RUCA 20-2HZ - KMG - PLAN ONLY	3,814.75	3,864.82	712.57	678.80	21.101	CC, ES

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



# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
S17-T2N-R67W (OFFSETS)						
RUCA 20-2HZ - KMG - PLAN ONLY	8,100.00	7,661.34	844.88	770.23	11.317	SF
RUCA 20-3HZ - KMG - PLAN ONLY	3,899.11	3,969.64	602.28	567.79	17.462	CC
RUCA 20-3HZ - KMG - PLAN ONLY	7,702.41	7,792.89	621.42	553.71	9.178	ES
RUCA 20-3HZ - KMG - PLAN ONLY	7,800.00	7,731.28	626.11	557.20	9.086	SF
RUCA 20-4HZ - KMG - PLAN ONLY	7,632.24	7,757.65	367.72	301.65	5.566	CC, ES, SF
RUCA 20-5HZ - KMG - PLAN ONLY	7,805.72	7,689.15	117.78	50.58	1.753	CC, ES, SF
RUCA 20-6HZ - KMG - PLAN ONLY	7,685.28	7,695.64	62.98	-2.18	0.967	Level 1, CC, ES, SF
RUCA 20-7HZ - KMG - PLAN ONLY	4,003.13	4,114.84	187.14	152.45	5.395	CC, ES, SF
RUCA 20-8HZ - KMG - PLAN ONLY	3,780.85	3,906.29	416.23	383.57	12.744	CC
RUCA 20-8HZ - KMG - PLAN ONLY	3,800.00	3,922.31	416.37	383.49	12.666	ES
RUCA 20-8HZ - KMG - PLAN ONLY	8,000.00	7,533.26	821.37	752.92	11.998	SF
RUCA 20-9HZ - KMG - PLAN ONLY	3,660.56	3,776.35	594.72	563.43	19.006	CC
RUCA 20-9HZ - KMG - PLAN ONLY	3,700.00	3,809.21	595.12	563.38	18.750	ES
RUCA 20-9HZ - KMG - PLAN ONLY	8,100.00	7,443.25	1,096.58	1,027.15	15.794	SF
SATER 21-8 - KMG WELL - SURVEYS	15,405.24	7,417.95	1,877.98	1,699.86	10.543	CC, ES, SF
SATER 24-8 - KMG WELL - SURVEYS	15,405.24	7,443.95	90.07	33.57	1.594	CC, ES, SF
SATER 24C-5HZ - KMG WELL - SURVEYS	15,405.24	7,434.39	308.78	69.67	1.291	Level 3, CC, ES, SF
SATER 24N-5HZ - KMG WELL - SURVEYS	15,405.24	7,321.17	366.84	159.87	1.772	CC, ES, SF
SATER 25C-5HZ - KMG WELL - SURVEYS	15,110.33	7,130.42	1,077.34	851.71	4.775	CC
SATER 25C-5HZ - KMG WELL - SURVEYS	15,200.00	7,147.00	1,081.48	849.89	4.670	ES
SATER 25C-5HZ - KMG WELL - SURVEYS	15,300.00	7,172.23	1,095.67	858.93	4.628	SF
SATER 2-8 - KMG WELL - SURVEYS	15,405.24	7,707.76	2,093.44	1,994.13	21.080	CC, ES, SF
SATER 28-8 - KMG WELL - SURVEYS						Out of range
SATER 40N-5HZ - KMG WELL - SURVEYS	15,405.24	7,309.09	778.36	541.84	3.291	CC, ES, SF
SATER 7-8 - KMG WELL - SURVEYS	15,405.24	7,361.02	950.97	747.72	4.679	CC, ES, SF
SATER 8-8 - KMG WELL - SURVEYS	15,405.24	7,726.78	965.71	780.21	5.206	CC, ES, SF
SATER ALFRED D UNIT 1 (P&A) - KMG WELL - GYRO	15,405.24	7,265.19	1,052.29	983.15	15.221	CC, ES, SF
SCOTT 1C-32HZ - KMG WELL - SURVEYS						Out of range
SCOTT 26N-32HZ - KMG WELL - SURVEYS						Out of range
SCOTT 27N-32HZ - KMG WELL - SURVEYS						Out of range
SCOTT 28C-32HZ - KMG WELL - SURVEYS						Out of range
SHELEY 1 - CPR WELL - GYRO						Out of range
SHELEY 14-4 - CPR WELL - GYRO						Out of range
SHELEY 24-4 - MACHII-ROSS WELL - GYRO						Out of range
SHELEY 3A-4H - CPR WELL - SURVEYS						Out of range
SHELEY 3B-4H - CPR WELL - SURVEYS						Out of range
SHELEY 4-6-4 - CPR WELL - SURVEYS						Out of range
SPRAGUE 11-9 - CPR WELL - GYRO						Out of range
SPRAGUE 13-9 - CPR WELL - GYRO						Out of range
SPRAGUE 14-9 - CPR WELL - GYRO						Out of range
SPRAGUE 24-9 - CPR WELL - GYRO						Out of range
SPRAGUE 2-4-9 - CPR WELL - SURVEYS						Out of range
SPRAGUE 2-8-9 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3A-9H-N267 - CPR WELL - SURVEYS	15,405.24	9,704.10	1,873.40	1,603.44	6.939	CC, ES, SF
SPRAGUE 3AA-9H-N267 - CPR WELL - SURVEYS	15,405.24	9,881.61	1,658.91	1,388.11	6.126	CC, ES, SF
SPRAGUE 3B-9H-N267 - CPR WELL - SURVEYS	15,405.24	9,889.56	2,078.37	1,807.02	7.659	CC, ES, SF
SPRAGUE 3C-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3D-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3E-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3E-9HX1-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3F-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3G-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3H-9H-N267 - CPR WELL - SURVEYS						Out of range

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

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<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						
S17-T2N-R67W (OFFSETS)						
SPRAGUE 3I-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3J-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 4-6-9 - CPR WELL - SURVEYS						Out of range
SPRAGUE 4-8-9 - CPR WELL - SURVEYS						Out of range
STANLEY #2 - GERRITY WELL - NO SURVEYS	400.00	436.00	1,437.56	1,435.60	733.195	CC
STANLEY #2 - GERRITY WELL - NO SURVEYS	500.00	535.98	1,437.99	1,435.50	576.596	ES
STANLEY #2 - GERRITY WELL - NO SURVEYS	5,300.00	5,175.00	1,952.19	1,914.82	52.234	SF
STANLEY 3 - GERRITY WELL - NO SURVEYS						Out of range
TEETS PERRIN 1 - KPK WELL - NO SURVEYS						Out of range
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	5,564.57	5,100.00	2,117.28	2,078.86	55.107	CC, ES
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	5,900.00	5,100.00	2,143.69	2,104.15	54.214	SF
TEETS-PERRIN 3 - KPK WELL - NO SURVEYS						Out of range
TEETS-PERRIN 4 - KPK WELL - NO SURVEYS						Out of range
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,164.69	4,711.00	1,995.68	1,961.51	58.404	CC, ES
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,400.00	4,711.00	2,009.50	1,974.52	57.450	SF
TOWNSEND 33-5 - CPR WELL - GYRO						Out of range
TOWNSEND 34-5 - CPR WELL - GYRO						Out of range
TOWNSEND 43-5 - CPR WELL - GYRO						Out of range
TOWNSEND 44-5 - CPR WELL - GYRO						Out of range
VOGL 21-5 - KMG WELL - SURVEYS						Out of range
VOGL 21-5X - KMG WELL - SURVEYS						Out of range
VOGL 5-5 - KMG WELL - GYRO						Out of range
VOGL 5-8A - KMG WELL - GYRO						Out of range
VOGL 6-5A - KMG WELL - GYRO						Out of range
VOGL GEIST 2A-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL GEIST 2B-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL GEIST 2C-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL GEIST 2D-5H-F267 - CPR WELL - SURVEYS						Out of range
VOGL GEIST 2E-5H-F267 - CPR WELL - SURVEYS						Out of range
VOGL GEIST 2F-5H-F267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2A-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2B-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2C-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2D-5H-E267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2E-5H-F267 - CPR WELL - SURVEYS						Out of range
VOGL MCCOY 2F-5H-F267 - CPR WELL - SURVEYS	13,906.48	14,507.71	1,926.09	1,616.51	6.222	CC, ES
VOGL MCCOY 2F-5H-F267 - CPR WELL - SURVEYS	14,500.00	13,872.35	1,935.78	1,620.94	6.148	SF
VOGL MCCOY 2G-5H-F267 - CPR WELL - SURVEYS	13,994.64	13,995.09	1,559.88	1,249.80	5.031	CC
VOGL MCCOY 2G-5H-F267 - CPR WELL - SURVEYS	14,000.00	13,989.45	1,559.88	1,249.75	5.030	ES
VOGL MCCOY 2G-5H-F267 - CPR WELL - SURVEYS	14,500.00	13,436.58	1,572.00	1,258.28	5.011	SF
VOGL MCCOY 2H-5H-F267 - CPR WELL - SURVEYS	13,971.20	14,315.18	1,228.95	919.54	3.972	CC
VOGL MCCOY 2H-5H-F267 - CPR WELL - SURVEYS	14,200.00	14,048.39	1,229.49	918.93	3.959	ES
VOGL MCCOY 2H-5H-F267 - CPR WELL - SURVEYS	14,300.00	13,982.56	1,233.19	920.73	3.947	SF



# Cathedral Energy Services

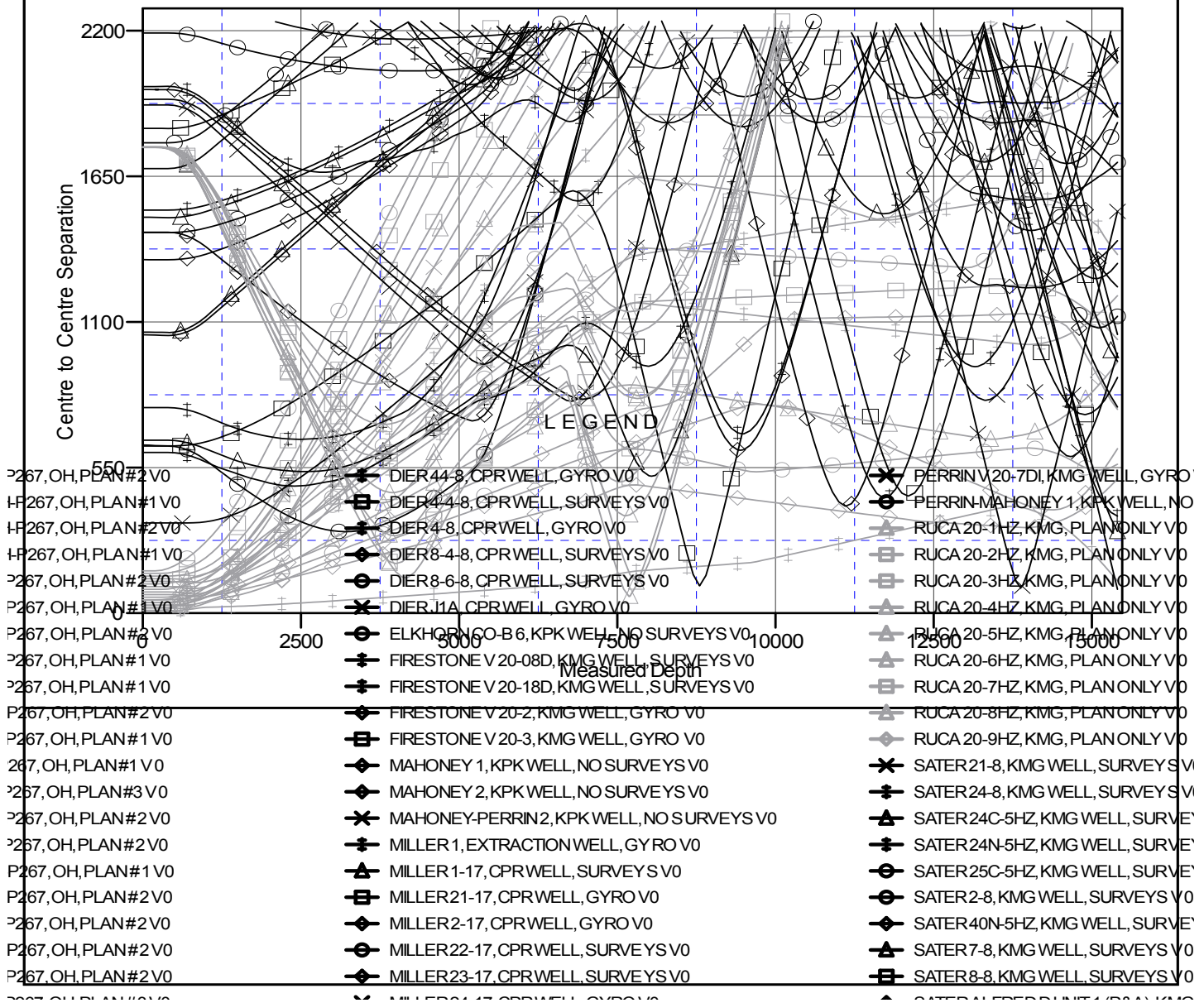
## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 23' KB @ 4983.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: BIGHORN 4N-17H-P267  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.38°

### Ladder Plot



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

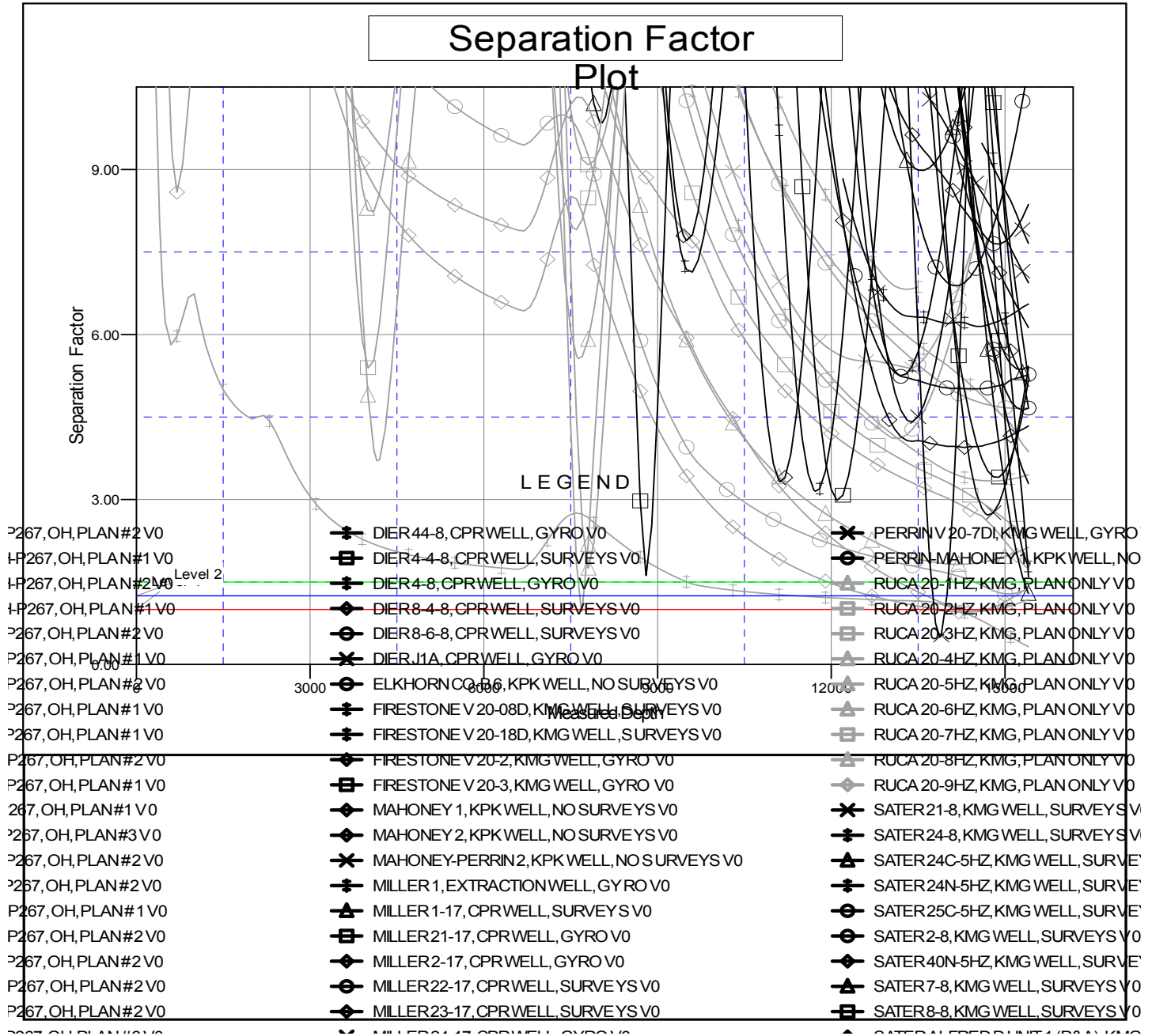
# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4N-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4983.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4983.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4N-17H-P267	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	PLAN #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 23' KB @ 4983.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: BIGHORN 4N-17H-P267  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.38°



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