

# **Crestone Peak Resources**

**DJ BASIN**

**BIGHORN**

**BIGHORN 4D-17H-P267**

**OH**

**PLAN #3**

## **Anticollision Summary Report**

**24 May, 2018**

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #3		
<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 1,933.21 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>	5/24/2018		
<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 #3 (OH)	VESSI_GYROFLEX	VESSI Gyroflex Gyro
2,001.00	13,702.69	PLAN #3 (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	500.00	500.00	29.92	28.39	19.546	CC, ES
BIGHORN 4A-17H-P267 - OH - PLAN #2	13,702.69	13,823.39	647.86	339.74	2.103	SF
BIGHORN 4AA-17H-P267 - OH - PLAN #1	200.00	200.00	59.84	59.35	123.769	CC, ES
BIGHORN 4AA-17H-P267 - OH - PLAN #1	13,702.69	14,398.81	1,440.48	1,132.46	4.677	SF
BIGHORN 4AB-17H-P267 - OH - PLAN #2	300.00	300.00	50.05	49.22	60.119	CC, ES
BIGHORN 4AB-17H-P267 - OH - PLAN #2	13,702.69	13,907.15	1,382.88	1,080.96	4.580	SF
BIGHORN 4AC-17H-P267 - OH - PLAN #1	400.00	400.00	39.99	38.80	33.840	CC, ES
BIGHORN 4AC-17H-P267 - OH - PLAN #1	13,702.69	14,050.61	1,134.82	824.85	3.661	SF
BIGHORN 4B-17H-P267 - OH - PLAN #2	600.00	600.00	19.85	17.97	10.561	CC, ES
BIGHORN 4B-17H-P267 - OH - PLAN #2	13,702.69	14,159.88	556.18	256.61	1.857	SF
BIGHORN 4C-17H-P267 - OH - PLAN #1	200.00	200.00	10.07	9.58	20.820	CC, ES
BIGHORN 4C-17H-P267 - OH - PLAN #1	13,702.69	13,436.89	462.90	159.73	1.527	SF
BIGHORN 4E-17H-P267 - OH - PLAN #1	200.00	200.00	10.07	9.58	20.820	CC
BIGHORN 4E-17H-P267 - OH - PLAN #1	13,702.69	13,529.74	145.47	-126.62	0.535	Level 1, ES, SF
BIGHORN 4F-17H-P267 - OH - PLAN #1	700.00	700.00	20.13	17.90	9.033	CC, ES
BIGHORN 4F-17H-P267 - OH - PLAN #1	13,702.69	13,739.29	324.46	36.68	1.127	Level 2, SF
BIGHORN 4G-17H-P267 - OH - PLAN #4	700.00	700.00	29.92	27.69	13.424	CC, ES
BIGHORN 4G-17H-P267 - OH - PLAN #4	13,702.69	13,527.21	598.42	286.08	1.916	SF
BIGHORN 4H-17H-P267 - OH - PLAN #1	204.60	204.60	39.98	39.49	80.047	CC
BIGHORN 4H-17H-P267 - OH - PLAN #1	300.00	299.89	40.09	39.26	48.126	ES
BIGHORN 4H-17H-P267 - OH - PLAN #1	13,702.69	13,342.81	770.88	460.77	2.486	SF
BIGHORN 4I-17H-P267 - OH - PLAN #1	744.64	746.76	43.60	41.18	18.069	CC, ES
BIGHORN 4I-17H-P267 - OH - PLAN #1	13,702.69	13,429.80	1,177.52	864.99	3.768	SF
BIGHORN 4J-17H-P267 - OH - PLAN #3	1,000.23	1,004.99	32.56	29.23	9.774	CC, ES
BIGHORN 4J-17H-P267 - OH - PLAN #3	13,702.69	13,224.85	1,425.72	1,184.40	5.908	SF
BIGHORN 4K-17H-P267 - OH - PLAN #2	998.21	1,004.26	56.91	53.60	17.198	CC
BIGHORN 4K-17H-P267 - OH - PLAN #2	1,000.00	1,006.06	56.91	53.60	17.164	ES
BIGHORN 4K-17H-P267 - OH - PLAN #2	13,702.69	13,060.09	1,798.55	1,485.24	5.740	SF
BIGHORN 4L-17H-P267 - OH - PLAN #3	928.31	934.98	75.77	72.72	24.847	CC, ES
BIGHORN 4L-17H-P267 - OH - PLAN #3	13,400.00	12,644.34	1,929.26	1,637.91	6.622	SF
BIGHORN 4M-17H-P267 - OH - PLAN #1	729.01	733.95	78.88	76.51	33.211	CC, ES
BIGHORN 4M-17H-P267 - OH - PLAN #1	4,100.00	3,984.86	788.94	749.50	20.002	SF
BIGHORN 4N-17H-P267 - OH - PLAN #2	795.69	800.40	92.64	90.06	35.860	CC
BIGHORN 4N-17H-P267 - OH - PLAN #2	800.00	804.70	92.64	90.04	35.649	ES
BIGHORN 4N-17H-P267 - OH - PLAN #2	6,500.00	6,163.90	1,904.37	1,830.99	25.953	SF
BIGHORN 4O-17H-P267 - OH - PLAN #2	740.16	744.01	102.67	100.27	42.925	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 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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 4O-17H-P267 - OH - PLAN #2	6,300.00	5,943.21	1,925.86	1,855.98	27.559	SF
BIGHORN 4P-17H-P267 - OH - PLAN #3	348.85	349.92	119.89	118.88	119.168	CC
BIGHORN 4P-17H-P267 - OH - PLAN #3	400.00	400.95	119.93	118.74	101.179	ES
BIGHORN 4P-17H-P267 - OH - PLAN #3	5,400.00	4,984.73	1,913.02	1,860.27	36.267	SF
BIGHORN 4Q-17H-P267 - OH - PLAN #3	400.00	401.00	130.02	128.84	109.876	CC
BIGHORN 4Q-17H-P267 - OH - PLAN #3	600.00	600.42	130.40	128.52	69.300	ES
BIGHORN 4Q-17H-P267 - OH - PLAN #3	5,300.00	4,877.98	1,925.18	1,875.02	38.378	SF
BIGHORN 4R-17H-P267 - OH - PLAN #2	300.00	301.00	140.09	139.25	167.915	CC, ES
BIGHORN 4R-17H-P267 - OH - PLAN #2	4,700.00	4,232.18	1,892.59	1,851.70	46.289	SF
BIGHORN 4S-17H-P267 - OH - PLAN #3	200.00	201.00	150.15	149.67	309.462	CC, ES
BIGHORN 4S-17H-P267 - OH - PLAN #3	4,600.00	4,106.33	1,930.36	1,894.86	54.382	SF

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<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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)						
ABBAY 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	518.81	526.81	1,592.87	1,591.24	975.559	CC
ALVIN STATE 1 - PDC WELL - GYRO	600.00	598.32	1,593.12	1,591.22	839.657	ES
ALVIN STATE 1 - PDC WELL - GYRO	2,200.00	2,159.68	1,927.90	1,920.04	245.391	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	700.00	709.00	1,758.40	1,754.93	506.219	CC, ES
DECHANT 7 - KPK WELL - NO SURVEYS	1,700.00	1,670.82	1,927.13	1,918.43	221.462	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	707.06	739.41	1,929.65	1,927.33	831.949	CC, ES
DECHANT STATE GAS U 9 - KMG WELL - GYRO	800.00	830.73	1,931.06	1,928.41	730.856	SF
DECHANT STATE V 16-11JI - KMG WELL - GYRO						Out of range
DECHANT STATE V 16-12JI - KMG WELL - GYRO	752.37	780.87	1,847.50	1,845.01	743.934	CC, ES
DECHANT STATE V 16-12JI - KMG WELL - GYRO	1,400.00	1,428.74	1,916.96	1,912.19	402.140	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						Out of range
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	700.00	703.00	1,620.92	1,617.47	470.491	CC, ES
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	2,100.00	2,047.94	1,910.60	1,899.53	172.667	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						Out of range
DIER 13-8 - CPR WELL - SURVEYS	13,702.69	6,850.76	1,541.88	1,407.23	11.451	CC, ES, SF
DIER 14-8 - CPR WELL - SURVEYS	13,702.69	7,463.32	912.98	739.69	5.269	CC, ES, SF
DIER 23-8 - CPR WELL - SURVEYS						Out of range
DIER 24-8 - CPR WELL - SURVEYS	13,702.69	7,393.73	663.35	492.75	3.888	CC, ES, SF
DIER 33-8 - CPR WELL - GYRO						Out of range
DIER 34-8 - CPR WELL - GYRO	13,702.69	7,335.18	1,684.00	1,515.48	9.992	CC, ES, SF
DIER 44-8 - CPR WELL - GYRO						Out of range
DIER 4-4-8 - CPR WELL - SURVEYS						Out of range
DIER 4-8 - CPR WELL - GYRO	13,702.69	7,288.14	860.79	729.40	6.551	CC, ES, SF
DIER 8-4-8 - CPR WELL - SURVEYS						Out of range
DIER 8-6-8 - CPR WELL - SURVEYS						Out of range
DIER J1A - CPR WELL - GYRO						Out of range
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						Out of range
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	7,700.00	6,981.62	124.30	6.05	1.051	Level 2, ES, SF
FIRESTONE 20-29D - KMG WELL - SURVEYS	7,839.81	7,097.89	107.10	39.55	1.585	CC
FIRESTONE V 20-04D - KMG WELL - SURVEYS	7,831.53	7,172.62	867.98	796.94	12.218	CC
FIRESTONE V 20-04D - KMG WELL - SURVEYS	7,900.00	7,227.85	871.55	793.83	11.214	ES
FIRESTONE V 20-04D - KMG WELL - SURVEYS	8,200.00	7,431.76	975.24	869.70	9.240	SF
FIRESTONE V 20-08D - KMG WELL - SURVEYS	2,456.20	2,143.00	1,851.75	1,839.23	147.876	CC

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

# Cathedral Energy Services

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<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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
S17-T2N-R67W (OFFSETS)						
FIRESTONE V 20-08D - KMG WELL - SURVEYS	2,500.00	2,164.95	1,852.04	1,838.63	138.120	ES
FIRESTONE V 20-08D - KMG WELL - SURVEYS	3,100.00	2,486.00	1,913.11	1,886.91	73.029	SF
FIRESTONE V 20-18D - KMG WELL - SURVEYS	5,745.87	5,059.76	1,215.86	1,128.39	13.901	CC
FIRESTONE V 20-18D - KMG WELL - SURVEYS	5,800.00	5,091.91	1,216.56	1,127.52	13.662	ES
FIRESTONE V 20-18D - KMG WELL - SURVEYS	7,000.00	6,346.08	1,423.06	1,306.39	12.197	SF
FIRESTONE V 20-2 - KMG WELL - GYRO	4,986.54	4,580.95	894.86	816.22	11.378	CC
FIRESTONE V 20-2 - KMG WELL - GYRO	5,100.00	4,676.94	896.71	815.70	11.068	ES
FIRESTONE V 20-2 - KMG WELL - GYRO	5,500.00	5,020.85	931.70	844.46	10.680	SF
FIRESTONE V 20-3 - KMG WELL - GYRO	7,153.53	6,449.05	646.74	526.72	5.389	CC
FIRESTONE V 20-3 - KMG WELL - GYRO	7,200.00	6,488.75	647.17	526.16	5.348	ES
FIRESTONE V 20-3 - KMG WELL - GYRO	7,300.00	6,571.30	651.20	528.55	5.309	SF
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	2,312.15	2,227.59	1,376.27	1,361.90	95.731	CC
MAHONEY 1 - KPK WELL - NO SURVEYS	2,400.00	2,303.73	1,376.97	1,360.72	84.721	ES
MAHONEY 1 - KPK WELL - NO SURVEYS	5,000.00	4,557.02	1,921.57	1,859.12	30.768	SF
MAHONEY 2 - KPK WELL - NO SURVEYS						Out of range
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	4,535.52	4,142.48	1,034.58	966.86	15.279	CC
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	4,600.00	4,201.64	1,035.08	965.79	14.940	ES
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	5,300.00	4,805.02	1,102.64	1,020.21	13.375	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						Out of range
MILLER 11-17 - CPR WELL - SURVEYS	12,846.97	7,490.53	858.96	708.76	5.719	CC, ES
MILLER 11-17 - CPR WELL - SURVEYS	13,000.00	7,483.04	872.47	718.43	5.664	SF
MILLER 1-17 - CPR WELL - SURVEYS	12,079.68	7,948.86	500.66	390.28	4.536	CC
MILLER 1-17 - CPR WELL - SURVEYS	12,100.00	7,942.49	501.03	389.17	4.479	ES
MILLER 1-17 - CPR WELL - SURVEYS	12,300.00	7,857.51	541.06	412.21	4.199	SF
MILLER 12-17 - CPR WELL - SURVEYS	11,282.63	7,596.18	871.52	762.67	8.006	CC, ES
MILLER 12-17 - CPR WELL - SURVEYS	11,400.00	7,599.06	879.38	769.16	7.978	SF
MILLER 13-17 - CPR WELL - SURVEYS	9,800.00	7,397.28	840.56	737.66	8.169	SF
MILLER 13-17 - CPR WELL - SURVEYS	10,135.68	7,457.96	772.17	683.09	8.669	CC, ES
MILLER 14-17 - EXTRACTION WELL - NO SURVEYS	6,552.93	5,261.00	1,801.68	1,715.47	20.899	CC, ES
MILLER 14-17 - EXTRACTION WELL - NO SURVEYS	6,800.00	5,261.00	1,818.54	1,730.04	20.548	SF
MILLER 21-17 - CPR WELL - GYRO	12,878.29	7,309.46	527.69	380.86	3.594	CC
MILLER 21-17 - CPR WELL - GYRO	12,900.00	7,309.49	528.13	380.79	3.584	ES, SF
MILLER 2-17 - CPR WELL - GYRO						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 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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 22-17 - CPR WELL - SURVEYS	11,375.43	7,664.76	631.41	504.68	4.982	CC
MILLER 22-17 - CPR WELL - SURVEYS	11,400.00	7,661.47	631.88	504.30	4.953	ES
MILLER 22-17 - CPR WELL - SURVEYS	11,500.00	7,648.17	643.34	512.34	4.911	SF
MILLER 23-17 - CPR WELL - SURVEYS	10,136.07	7,584.21	663.86	568.84	6.987	CC
MILLER 23-17 - CPR WELL - SURVEYS	10,200.00	7,594.07	666.88	565.92	6.605	ES
MILLER 23-17 - CPR WELL - SURVEYS	10,500.00	7,630.98	755.69	627.48	5.894	SF
MILLER 24-17 - CPR WELL - GYRO	8,965.28	7,353.35	678.27	618.29	11.307	CC
MILLER 24-17 - CPR WELL - GYRO	9,000.00	7,353.55	679.16	615.26	10.628	ES
MILLER 24-17 - CPR WELL - GYRO	9,400.00	7,355.85	805.62	700.33	7.651	SF
MILLER 2-4-17 - CPR WELL - SURVEYS	10,670.49	7,548.50	88.38	-19.25	0.821	Level 1, CC, ES, SF
MILLER 31-17C - EXTRACTION WELL - GYRO						Out of range
MILLER 3-17J - CPR WELL - GYRO	1,786.59	1,740.69	516.62	510.53	84.898	CC
MILLER 3-17J - CPR WELL - GYRO	1,800.00	1,753.09	516.64	510.50	84.212	ES
MILLER 3-17J - CPR WELL - GYRO	3,100.00	2,897.22	806.65	786.37	39.770	SF
MILLER 32-17 - EXTRACTION WELL - GYRO						Out of range
MILLER 33-17J - CPR WELL - SURVEYS	2,783.32	2,623.92	161.16	140.32	7.734	CC
MILLER 33-17J - CPR WELL - SURVEYS	2,800.00	2,637.83	161.40	140.17	7.601	ES
MILLER 33-17J - CPR WELL - SURVEYS	2,900.00	2,723.59	172.27	149.52	7.573	SF
MILLER 34-17J - CPR WELL - SURVEYS	2,562.16	2,438.02	102.39	86.54	6.460	CC, ES
MILLER 34-17J - CPR WELL - SURVEYS	2,600.00	2,470.98	104.07	87.59	6.316	SF
MILLER 41-17 - EXTRACTION WELL - GYRO						Out of range
MILLER 4-17J - CPR WELL - GYRO	8,400.00	7,316.19	884.16	778.54	8.372	SF
MILLER 4-17J - CPR WELL - GYRO	8,800.00	7,347.64	735.99	669.68	11.099	ES
MILLER 4-17J - CPR WELL - GYRO	8,876.80	7,347.93	731.97	673.12	12.437	CC
MILLER 42-17 - EXTRACTION WELL - NO SURVEYS						Out of range
MILLER 43-17 - EXTRACTION WELL - GYRO	700.19	683.25	1,079.15	1,076.91	481.756	CC, ES
MILLER 43-17 - EXTRACTION WELL - GYRO	3,600.00	3,342.12	1,915.02	1,892.62	85.519	SF
MILLER 43-17J - EXTRACTION WELL - GYRO	716.98	709.36	1,058.60	1,056.28	457.154	CC, ES
MILLER 43-17J - EXTRACTION WELL - GYRO	3,700.00	3,432.86	1,897.41	1,873.02	77.791	SF
MILLER 44-17J - CPR WELL - SURVEYS	2,400.81	2,298.65	99.44	87.03	8.012	CC, ES, SF
MILLER CJ 17-A - CPR WELL - SURVEYS	9,400.00	7,380.84	56.83	-46.53	0.550	Level 1, ES, SF
MILLER CJ 17-A - CPR WELL - SURVEYS	9,420.92	7,381.77	52.85	-24.40	0.684	Level 1, CC
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	2,486.07	2,368.32	165.31	147.15	9.101	CC
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	2,500.00	2,380.39	165.46	146.99	8.956	ES
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	2,600.00	2,467.06	174.81	154.55	8.628	SF
PACE 2 - TEXAS TEA WELL - NO SURVEYS	2,281.21	2,178.77	1,191.27	1,177.58	87.068	CC
PACE 2 - TEXAS TEA WELL - NO SURVEYS	2,400.00	2,281.73	1,192.74	1,176.57	73.779	ES
PACE 2 - TEXAS TEA WELL - NO SURVEYS	4,500.00	4,101.69	1,626.20	1,572.75	30.422	SF
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	700.00	709.00	432.09	428.63	124.814	CC, ES
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	3,200.00	3,009.95	1,228.18	1,208.72	63.104	SF
PERRIN GU 1 - KMG WELL - GYRO	3,307.31	3,163.18	1,747.62	1,715.30	54.083	CC
PERRIN GU 1 - KMG WELL - GYRO	3,500.00	3,334.42	1,749.91	1,713.36	47.875	ES
PERRIN GU 1 - KMG WELL - GYRO	4,800.00	4,404.02	1,914.25	1,853.57	31.545	SF
PERRIN GU 2-20 - KMG WELL - GYRO	7,484.29	6,731.09	1,408.55	1,288.75	11.757	CC
PERRIN GU 2-20 - KMG WELL - GYRO	7,500.00	6,744.14	1,408.75	1,288.40	11.706	ES
PERRIN GU 2-20 - KMG WELL - GYRO	7,700.00	6,916.77	1,444.46	1,317.96	11.419	SF
PERRIN V 20-5D - KMG WELL - GYRO	7,695.83	6,893.34	1,911.02	1,828.66	23.203	CC
PERRIN V 20-5D - KMG WELL - GYRO	7,700.00	6,896.40	1,911.03	1,828.48	23.148	ES
PERRIN V 20-5D - KMG WELL - GYRO	7,800.00	6,970.38	1,918.79	1,831.37	21.949	SF
PERRIN V 20-7DI - KMG WELL - GYRO						Out of range
PERRIN-MAHONEY 1 - KPK WELL - NO SURVEYS						Out of range
PROMINENCE 4-8 - KMG WELL - GYRO						Out of range
RHOADES 1-5A - KMG WELL - GYRO						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 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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)						
ROBERT E BALDWIN 2 - KMG WELL - GYRO						Out of range
RUCA 20-1HZ - KMG - PLAN ONLY	4,600.00	4,708.49	182.84	125.10	3.166	SF
RUCA 20-1HZ - KMG - PLAN ONLY	4,681.52	4,762.44	178.37	124.22	3.294	CC, ES
RUCA 20-2HZ - KMG - PLAN ONLY	4,400.00	4,506.36	376.08	322.09	6.966	SF
RUCA 20-2HZ - KMG - PLAN ONLY	4,441.22	4,541.84	375.49	321.90	7.007	CC, ES
RUCA 20-3HZ - KMG - PLAN ONLY	4,274.01	4,407.28	476.68	425.20	9.258	CC, ES, SF
RUCA 20-4HZ - KMG - PLAN ONLY	3,979.16	4,126.28	589.17	540.80	12.181	CC, ES
RUCA 20-4HZ - KMG - PLAN ONLY	4,100.00	4,227.02	592.94	544.13	12.148	SF
RUCA 20-5HZ - KMG - PLAN ONLY	3,717.26	3,888.62	704.29	659.64	15.773	CC, ES
RUCA 20-5HZ - KMG - PLAN ONLY	3,900.00	4,037.57	712.20	666.01	15.418	SF
RUCA 20-6HZ - KMG - PLAN ONLY	3,598.76	3,783.94	863.54	820.82	20.210	CC
RUCA 20-6HZ - KMG - PLAN ONLY	3,600.00	3,784.94	863.54	820.80	20.202	ES
RUCA 20-6HZ - KMG - PLAN ONLY	3,900.00	4,025.73	882.04	836.12	19.209	SF
RUCA 20-7HZ - KMG - PLAN ONLY	3,086.26	3,286.79	1,018.12	984.29	30.094	CC
RUCA 20-7HZ - KMG - PLAN ONLY	3,100.00	3,302.67	1,018.16	984.04	29.836	ES
RUCA 20-7HZ - KMG - PLAN ONLY	3,700.00	3,757.25	1,091.75	1,049.17	25.642	SF
RUCA 20-8HZ - KMG - PLAN ONLY	2,798.17	3,028.10	1,128.07	1,099.78	39.871	CC
RUCA 20-8HZ - KMG - PLAN ONLY	2,800.00	3,029.43	1,128.07	1,099.74	39.816	ES
RUCA 20-8HZ - KMG - PLAN ONLY	3,600.00	3,608.92	1,256.23	1,215.43	30.787	SF
RUCA 20-9HZ - KMG - PLAN ONLY	2,608.45	2,838.17	1,229.31	1,204.95	50.451	CC
RUCA 20-9HZ - KMG - PLAN ONLY	2,700.00	2,902.30	1,231.05	1,204.66	46.654	ES
RUCA 20-9HZ - KMG - PLAN ONLY	3,600.00	3,532.79	1,418.41	1,377.81	34.937	SF
SATER 21-8 - KMG WELL - SURVEYS						Out of range
SATER 24-8 - KMG WELL - SURVEYS						Out of range
SATER 24C-5HZ - KMG WELL - SURVEYS						Out of range
SATER 24N-5HZ - KMG WELL - SURVEYS						Out of range
SATER 25C-5HZ - KMG WELL - SURVEYS						Out of range
SATER 2-8 - KMG WELL - SURVEYS						Out of range
SATER 28-8 - KMG WELL - SURVEYS						Out of range
SATER 40N-5HZ - KMG WELL - SURVEYS						Out of range
SATER 7-8 - KMG WELL - SURVEYS						Out of range
SATER 8-8 - KMG WELL - SURVEYS						Out of range
SATER ALFRED D UNIT 1 (P&A) - KMG WELL - GYRO						Out of range
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						Out of range
SPRAGUE 3AA-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3B-9H-N267 - CPR WELL - SURVEYS						Out of range
SPRAGUE 3C-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 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<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 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
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	700.00	737.00	1,535.69	1,532.12	430.933	CC, ES
STANLEY #2 - GERRITY WELL - NO SURVEYS	2,300.00	2,256.06	1,909.56	1,896.97	151.745	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	5,992.33	5,100.00	825.03	749.71	10.953	CC
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	6,000.00	5,100.00	825.07	749.68	10.944	ES, SF
TEETS-PERRIN 3 - KPK WELL - NO SURVEYS	6,601.06	5,060.00	1,773.06	1,733.96	45.342	CC, ES, SF
TEETS-PERRIN 4 - KPK WELL - NO SURVEYS						Out of range
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,563.08	4,711.00	904.32	834.77	13.003	CC, ES
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,600.00	4,711.00	905.07	835.21	12.954	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	13,702.69	14,819.00	1,129.86	837.81	3.869	CC, ES, SF
VOGL MCCOY 2B-5H-E267 - CPR WELL - SURVEYS	13,702.69	14,846.00	821.21	538.16	2.901	CC, ES, SF
VOGL MCCOY 2C-5H-E267 - CPR WELL - SURVEYS	13,702.69	14,648.00	494.89	223.91	1.826	CC, ES, SF
VOGL MCCOY 2D-5H-E267 - CPR WELL - SURVEYS	13,702.69	15,056.00	274.74	119.91	1.774	CC, ES, SF
VOGL MCCOY 2E-5H-F267 - CPR WELL - SURVEYS	13,702.69	14,740.00	307.40	70.51	1.298	Level 3, CC, ES, SF
VOGL MCCOY 2F-5H-F267 - CPR WELL - SURVEYS	13,702.69	15,187.00	595.97	314.89	2.120	CC, ES, SF
VOGL MCCOY 2G-5H-F267 - CPR WELL - SURVEYS	13,702.69	14,805.00	907.88	613.10	3.080	CC, ES, SF
VOGL MCCOY 2H-5H-F267 - CPR WELL - SURVEYS	13,702.69	15,000.00	1,273.21	978.63	4.322	CC, ES, SF

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



# Cathedral Energy Services

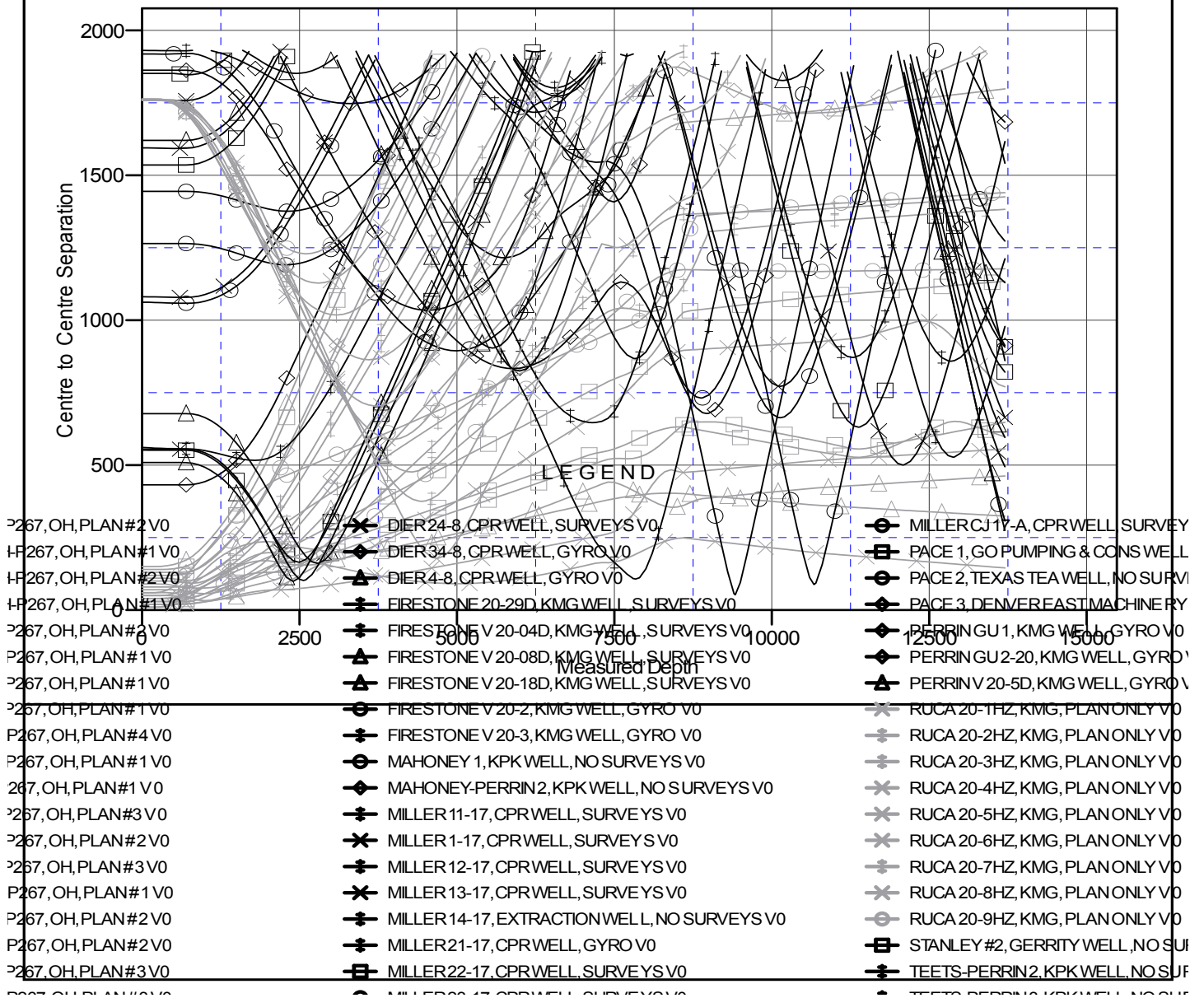
## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 23' KB @ 4982.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: BIGHORN 4D-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

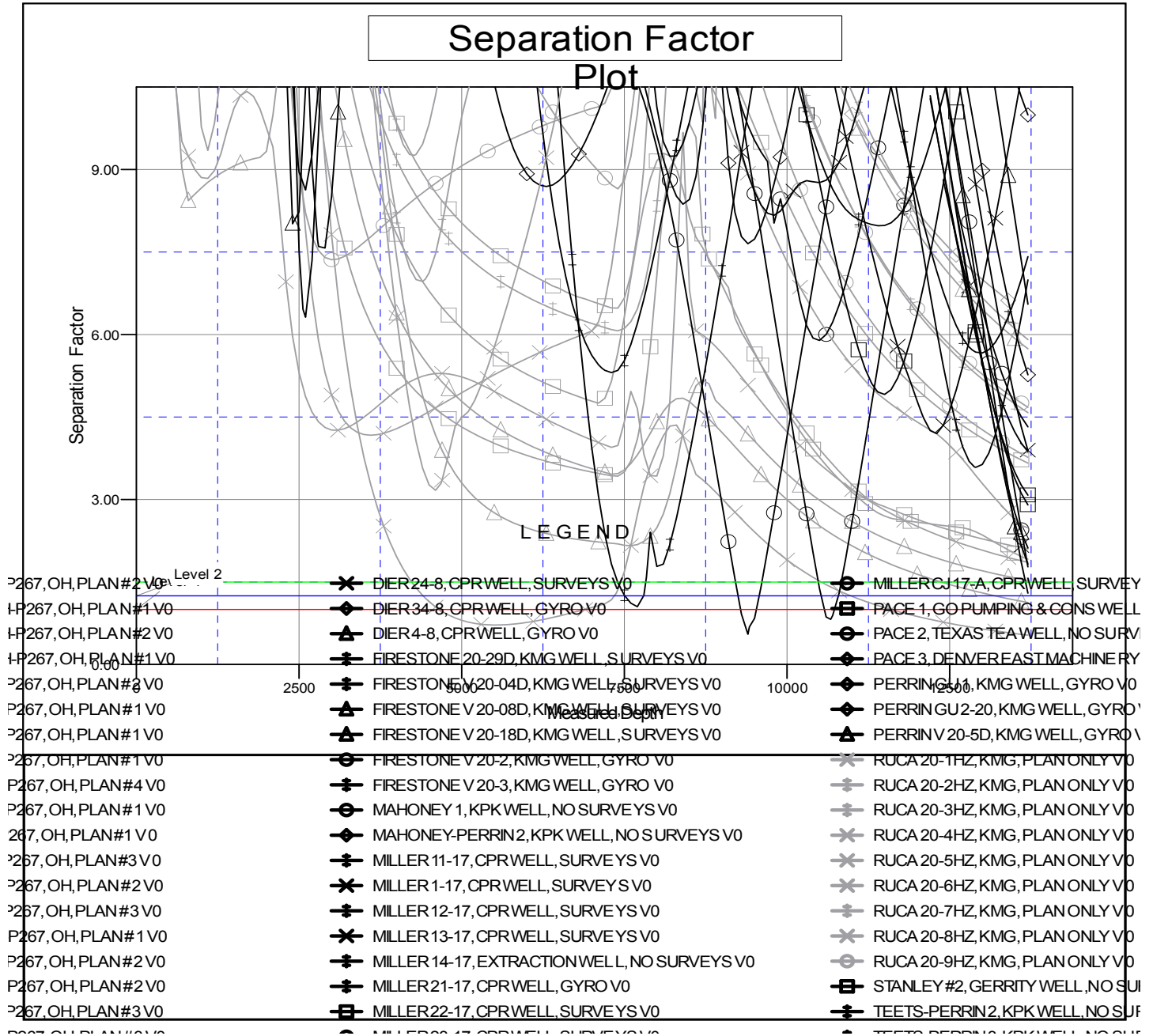
# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4D-17H-P267
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 4982.00usft
<b>Reference Site:</b>	BIGHORN	<b>MD Reference:</b>	23' KB @ 4982.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	BIGHORN 4D-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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 23' KB @ 4982.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: BIGHORN 4D-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