

# **Crestone Peak Resources**

**DJ BASIN**

**BIGHORN**

**BIGHORN 4C-17H-P267**

**OH**

**PLAN #1**

## **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 4C-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 4C-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 #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1		
<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 #1 (OH)	VESSI_GYROFLEX	VESSI Gyroflex Gyro
2,001.00	13,438.97	PLAN #1 (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	339.74	339.61	19.18	18.21	19.692	CC
BIGHORN 4A-17H-P267 - OH - PLAN #2	13,438.97	13,896.26	202.96	-77.45	0.724	Level 1, ES, SF
BIGHORN 4AA-17H-P267 - OH - PLAN #1	200.00	200.00	49.77	49.29	102.948	CC, ES
BIGHORN 4AA-17H-P267 - OH - PLAN #1	13,438.97	14,400.90	999.58	706.50	3.411	SF
BIGHORN 4AB-17H-P267 - OH - PLAN #2	328.67	328.19	39.27	38.33	42.016	CC, ES
BIGHORN 4AB-17H-P267 - OH - PLAN #2	13,438.97	13,909.25	927.95	636.05	3.179	SF
BIGHORN 4AC-17H-P267 - OH - PLAN #1	368.13	367.91	28.99	27.92	26.988	CC, ES
BIGHORN 4AC-17H-P267 - OH - PLAN #1	13,438.97	14,054.43	675.10	373.45	2.238	SF
BIGHORN 4B-17H-P267 - OH - PLAN #2	298.06	301.99	9.46	8.62	11.338	CC, ES
BIGHORN 4B-17H-P267 - OH - PLAN #2	5,000.00	5,021.92	166.29	34.71	1.264	Level 3, SF
BIGHORN 4D-17H-P267 - OH - PLAN #2	200.00	200.00	10.07	9.58	20.820	CC, ES
BIGHORN 4D-17H-P267 - OH - PLAN #2	13,438.97	13,701.65	462.88	160.20	1.529	SF
BIGHORN 4E-17H-P267 - OH - PLAN #1	200.00	200.00	20.13	19.65	41.641	CC, ES
BIGHORN 4E-17H-P267 - OH - PLAN #1	13,435.43	13,530.66	585.10	281.20	1.925	SF
BIGHORN 4F-17H-P267 - OH - PLAN #1	200.00	200.00	30.20	29.71	62.461	CC, ES
BIGHORN 4F-17H-P267 - OH - PLAN #1	13,438.97	13,741.33	777.07	479.78	2.614	SF
BIGHORN 4G-17H-P267 - OH - PLAN #3	200.00	200.00	39.98	39.50	82.706	CC, ES
BIGHORN 4G-17H-P267 - OH - PLAN #3	13,438.97	13,577.99	1,056.53	748.90	3.434	SF
BIGHORN 4H-17H-P267 - OH - PLAN #1	200.00	200.00	50.05	49.57	103.526	CC, ES
BIGHORN 4H-17H-P267 - OH - PLAN #1	13,400.00	13,342.81	1,225.72	921.19	4.025	SF
BIGHORN 4I-17H-P267 - OH - PLAN #1	200.00	200.00	60.12	59.63	124.346	CC, ES
BIGHORN 4I-17H-P267 - OH - PLAN #1	13,438.97	13,423.99	1,640.29	1,336.38	5.397	SF
BIGHORN 4J-17H-P267 - OH - PLAN #3	200.00	200.00	70.18	69.70	145.167	CC, ES
BIGHORN 4J-17H-P267 - OH - PLAN #3	13,438.97	13,213.90	1,884.48	1,651.66	8.094	SF
BIGHORN 4K-17H-P267 - OH - PLAN #2	200.00	200.00	80.25	79.76	165.987	CC, ES
BIGHORN 4K-17H-P267 - OH - PLAN #2	12,900.00	12,505.54	2,233.19	1,957.86	8.111	SF
BIGHORN 4L-17H-P267 - OH - PLAN #2	200.00	201.00	90.04	89.55	185.562	CC, ES
BIGHORN 4L-17H-P267 - OH - PLAN #2	11,800.00	11,276.03	2,235.74	2,026.93	10.707	SF
BIGHORN 4M-17H-P267 - OH - PLAN #1	960.45	976.25	89.20	85.86	26.730	CC, ES
BIGHORN 4M-17H-P267 - OH - PLAN #1	1,300.00	1,315.01	106.32	101.70	23.011	SF
BIGHORN 4N-17H-P267 - OH - PLAN #2	200.00	201.00	110.17	109.68	227.053	CC, ES
BIGHORN 4N-17H-P267 - OH - PLAN #2	6,500.00	6,075.80	2,218.02	2,151.24	33.216	SF
BIGHORN 4O-17H-P267 - OH - PLAN #2	200.00	201.00	120.23	119.75	247.798	CC, ES
BIGHORN 4O-17H-P267 - OH - PLAN #2	6,300.00	5,853.87	2,229.79	2,167.13	35.587	SF
BIGHORN 4P-17H-P267 - OH - PLAN #2	200.10	201.10	130.02	129.53	267.780	CC, ES
BIGHORN 4P-17H-P267 - OH - PLAN #2	5,500.00	4,981.63	2,219.51	2,173.53	48.271	SF

CC - Min centre to center distance or covergent 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 4C-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 4C-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 #1	<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 4Q-17H-P267 - OH - PLAN #2	200.00	201.00	140.09	139.60	288.716	CC, ES
BIGHORN 4Q-17H-P267 - OH - PLAN #2	5,400.00	4,873.54	2,226.13	2,182.70	51.255	SF
BIGHORN 4R-17H-P267 - OH - PLAN #2	200.00	201.00	150.15	149.67	309.462	CC, ES
BIGHORN 4R-17H-P267 - OH - PLAN #2	4,900.00	4,306.23	2,225.41	2,189.82	62.518	SF
BIGHORN 4S-17H-P267 - OH - PLAN #3	200.00	201.00	160.22	159.73	330.207	CC, ES
BIGHORN 4S-17H-P267 - OH - PLAN #3	1,100.00	1,076.33	276.18	272.37	72.458	SF

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4C-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 4C-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 #1	<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)						
ABBNEY 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	262.91	278.62	1,603.84	1,603.09	2,142.239	CC
ALVIN STATE 1 - PDC WELL - GYRO	300.00	315.08	1,603.90	1,603.02	1,825.946	ES
ALVIN STATE 1 - PDC WELL - GYRO	2,500.00	2,358.32	2,217.26	2,208.26	246.316	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	200.00	209.00	1,766.56	1,765.75	2,201.084	CC, ES
DECHANT 7 - KPK WELL - NO SURVEYS	1,900.00	1,805.33	2,211.08	2,201.39	228.157	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	213.81	245.19	1,940.75	1,940.16	3,282.700	CC, ES
DECHANT STATE GAS U 9 - KMG WELL - GYRO	1,800.00	1,780.64	2,233.20	2,226.75	346.311	SF
DECHANT STATE V 16-11JI - KMG WELL - GYRO						Out of range
DECHANT STATE V 16-12JI - KMG WELL - GYRO	207.52	209.50	1,859.65	1,859.12	3,536.191	CC, ES
DECHANT STATE V 16-12JI - KMG WELL - GYRO	1,700.00	1,677.75	2,198.68	2,192.78	373.003	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	200.00	203.00	1,630.83	1,630.05	2,091.913	CC
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	300.00	302.95	1,631.05	1,629.74	1,242.168	ES
DECHANT-STATE 3 - KPK WELL - NO SURVEYS	2,500.00	2,335.10	2,235.53	2,222.25	168.324	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	13,438.97	6,835.11	1,388.94	1,245.18	9.661	CC, ES, SF
DIER 14-8 - CPR WELL - SURVEYS	13,438.97	7,410.17	409.05	266.44	2.868	CC, ES, SF
DIER 23-8 - CPR WELL - SURVEYS	13,438.97	7,283.14	2,222.36	2,051.83	13.032	CC, ES, SF
DIER 24-8 - CPR WELL - SURVEYS	13,438.97	7,211.46	1,221.40	1,048.47	7.063	CC, ES, SF
DIER 33-8 - CPR WELL - GYRO						Out of range
DIER 34-8 - CPR WELL - GYRO	13,438.97	7,273.76	2,137.13	1,972.46	12.978	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	13,438.97	7,221.19	1,111.68	943.16	6.597	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	1,131.84	1,133.93	2,198.89	2,192.98	371.726	CC, ES
ELKHORN CO-B 6 - KPK WELL - NO SURVEYS	1,500.00	1,480.60	2,229.42	2,221.36	276.436	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	7,084.45	6,371.24	198.17	69.65	1.542	CC, ES
FIRESTONE 20-29D - KMG WELL - SURVEYS	7,100.00	6,384.55	198.33	69.67	1.541	SF
FIRESTONE V 20-04D - KMG WELL - SURVEYS	7,684.33	6,959.38	899.12	772.20	7.084	CC
FIRESTONE V 20-04D - KMG WELL - SURVEYS	7,700.00	6,973.22	899.31	771.28	7.024	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 4C-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 4C-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 #1	<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)						
FIRESTONE V 20-04D - KMG WELL - SURVEYS	7,900.00	7,130.45	937.83	796.45	6.633	SF
FIRESTONE V 20-08D - KMG WELL - SURVEYS	2,044.82	1,906.37	1,697.86	1,690.47	229.652	CC, ES
FIRESTONE V 20-08D - KMG WELL - SURVEYS	3,900.00	2,871.74	2,219.06	2,177.93	53.949	SF
FIRESTONE V 20-18D - KMG WELL - SURVEYS	5,276.07	4,624.10	1,339.27	1,256.21	16.123	CC
FIRESTONE V 20-18D - KMG WELL - SURVEYS	5,300.00	4,635.39	1,339.42	1,255.71	16.002	ES
FIRESTONE V 20-18D - KMG WELL - SURVEYS	5,800.00	4,966.86	1,398.22	1,302.71	14.640	SF
FIRESTONE V 20-2 - KMG WELL - GYRO	4,214.89	3,854.68	1,018.78	956.20	16.280	CC
FIRESTONE V 20-2 - KMG WELL - GYRO	4,300.00	3,926.91	1,019.66	955.10	15.795	ES
FIRESTONE V 20-2 - KMG WELL - GYRO	5,000.00	4,533.30	1,091.71	1,014.80	14.194	SF
FIRESTONE V 20-3 - KMG WELL - GYRO	6,581.95	5,930.51	981.96	869.68	8.745	CC
FIRESTONE V 20-3 - KMG WELL - GYRO	6,600.00	5,943.02	982.03	869.39	8.718	ES
FIRESTONE V 20-3 - KMG WELL - GYRO	6,800.00	6,077.50	991.88	875.97	8.557	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	1,698.78	1,634.87	1,225.10	1,216.03	135.054	CC
MAHONEY 1 - KPK WELL - NO SURVEYS	1,700.00	1,635.96	1,225.10	1,216.02	134.941	ES
MAHONEY 1 - KPK WELL - NO SURVEYS	4,700.00	4,228.53	2,046.19	1,993.95	39.164	SF
MAHONEY 2 - KPK WELL - NO SURVEYS						Out of range
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	3,722.49	3,373.01	1,094.33	1,044.32	21.882	CC
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	3,800.00	3,439.90	1,095.03	1,043.06	21.068	ES
MAHONEY-PERRIN 2 - KPK WELL - NO SURVEYS	4,800.00	4,302.83	1,222.31	1,150.77	17.086	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	12,594.10	7,463.32	408.34	266.22	2.873	CC
MILLER 11-17 - CPR WELL - SURVEYS	12,600.00	7,463.12	408.38	265.68	2.862	ES
MILLER 11-17 - CPR WELL - SURVEYS	12,700.00	7,459.55	421.83	268.65	2.754	SF
MILLER 1-17 - CPR WELL - SURVEYS	11,740.62	8,187.33	877.26	773.07	8.419	CC
MILLER 1-17 - CPR WELL - SURVEYS	12,000.00	12,000.00	912.04	768.76	6.366	ES, SF
MILLER 12-17 - CPR WELL - SURVEYS	11,024.44	7,478.54	314.27	216.72	3.222	CC
MILLER 12-17 - CPR WELL - SURVEYS	11,100.00	7,480.71	323.22	215.38	2.997	ES
MILLER 12-17 - CPR WELL - SURVEYS	11,200.00	7,483.67	359.95	234.66	2.873	SF
MILLER 13-17 - CPR WELL - SURVEYS	9,880.84	7,416.57	363.77	286.27	4.693	CC
MILLER 13-17 - CPR WELL - SURVEYS	9,900.00	7,419.46	364.27	285.26	4.611	ES
MILLER 13-17 - CPR WELL - SURVEYS	10,100.00	7,446.50	423.63	311.42	3.775	SF
MILLER 14-17 - EXTRACTION WELL - NO SURVEYS	6,544.37	5,261.00	1,319.39	1,245.22	17.790	CC, ES
MILLER 14-17 - EXTRACTION WELL - NO SURVEYS	6,600.00	5,261.00	1,320.56	1,246.02	17.716	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 4C-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 4C-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 #1	<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)						
MILLER 21-17 - CPR WELL - GYRO	12,600.00	7,242.02	973.68	835.58	7.050	ES, SF
MILLER 21-17 - CPR WELL - GYRO	12,605.06	7,242.02	973.67	835.58	7.051	CC
MILLER 2-17 - CPR WELL - GYRO						Out of range
MILLER 22-17 - CPR WELL - SURVEYS	11,000.00	7,584.41	1,056.26	938.69	8.984	SF
MILLER 22-17 - CPR WELL - SURVEYS	11,116.53	7,566.43	1,049.98	933.19	8.990	CC, ES
MILLER 23-17 - CPR WELL - SURVEYS	9,829.31	7,399.02	1,052.83	973.03	13.194	CC, ES
MILLER 23-17 - CPR WELL - SURVEYS	10,500.00	7,535.02	1,242.56	1,124.53	10.527	SF
MILLER 24-17 - CPR WELL - GYRO	5,767.84	5,150.08	603.72	510.58	6.482	CC
MILLER 24-17 - CPR WELL - GYRO	5,800.00	5,178.06	603.92	510.06	6.434	ES
MILLER 24-17 - CPR WELL - GYRO	6,000.00	5,353.90	613.65	516.49	6.316	SF
MILLER 2-4-17 - CPR WELL - SURVEYS	10,300.00	7,480.96	343.51	238.11	3.259	SF
MILLER 2-4-17 - CPR WELL - SURVEYS	10,400.00	7,481.26	326.72	230.20	3.385	ES
MILLER 2-4-17 - CPR WELL - SURVEYS	10,406.29	7,481.28	326.66	230.29	3.390	CC
MILLER 31-17C - EXTRACTION WELL - GYRO						Out of range
MILLER 3-17J - CPR WELL - GYRO	228.27	213.58	551.71	551.13	955.218	CC, ES
MILLER 3-17J - CPR WELL - GYRO	3,500.00	3,188.29	1,123.55	1,096.85	42.081	SF
MILLER 32-17 - EXTRACTION WELL - GYRO	100.00	49.84	2,207.63	2,207.52	10,000.000	CC, ES
MILLER 32-17 - EXTRACTION WELL - GYRO	500.00	453.12	2,229.63	2,228.13	1,489.157	SF
MILLER 33-17J - CPR WELL - SURVEYS	2,477.91	2,298.58	241.97	227.04	16.200	CC
MILLER 33-17J - CPR WELL - SURVEYS	2,500.00	2,318.07	242.21	226.79	15.710	ES
MILLER 33-17J - CPR WELL - SURVEYS	2,700.00	2,495.14	264.37	245.42	13.953	SF
MILLER 34-17J - CPR WELL - SURVEYS	2,246.23	2,103.68	214.68	204.53	21.148	CC, ES
MILLER 34-17J - CPR WELL - SURVEYS	2,500.00	2,324.55	248.84	234.88	17.821	SF
MILLER 41-17 - EXTRACTION WELL - GYRO						Out of range
MILLER 4-17J - CPR WELL - GYRO	8,500.00	7,261.94	245.81	154.25	2.685	ES, SF
MILLER 4-17J - CPR WELL - GYRO	8,629.35	7,274.93	205.18	160.79	4.622	CC
MILLER 42-17 - EXTRACTION WELL - NO SURVEYS						Out of range
MILLER 43-17 - EXTRACTION WELL - GYRO	204.95	190.77	1,083.13	1,082.63	2,172.851	CC, ES
MILLER 43-17 - EXTRACTION WELL - GYRO	3,900.00	3,545.02	2,199.67	2,169.38	72.624	SF
MILLER 43-17J - EXTRACTION WELL - GYRO	215.16	212.57	1,062.88	1,062.33	1,925.167	CC, ES
MILLER 43-17J - EXTRACTION WELL - GYRO	4,100.00	3,790.24	2,209.15	2,175.47	65.592	SF
MILLER 44-17J - CPR WELL - SURVEYS	2,114.05	1,992.85	229.19	220.86	27.519	CC, ES
MILLER 44-17J - CPR WELL - SURVEYS	2,400.00	2,235.87	274.27	262.45	23.193	SF
MILLER CJ 17-A - CPR WELL - SURVEYS	9,149.03	7,268.87	477.77	414.86	7.595	CC
MILLER CJ 17-A - CPR WELL - SURVEYS	9,200.00	7,272.60	480.47	413.78	7.204	ES
MILLER CJ 17-A - CPR WELL - SURVEYS	9,500.00	7,293.00	592.31	481.07	5.325	SF
PACE 1 - GO PUMPING & CONS WELL - NO SURVEYS	2,075.63	1,953.89	41.46	30.08	3.643	CC, ES, SF
PACE 2 - TEXAS TEA WELL - NO SURVEYS	200.00	176.00	1,257.79	1,257.12	1,859.733	CC, ES
PACE 2 - TEXAS TEA WELL - NO SURVEYS	4,800.00	4,307.17	1,783.10	1,721.44	28.921	SF
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	631.09	618.44	438.79	435.75	144.199	CC
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	700.00	685.31	439.11	435.70	128.840	ES
PACE 3 - DENVER EAST MACHINERY WELL - NO SUR	1,600.00	1,538.44	620.50	612.19	74.604	SF
PERRIN GU 1 - KMG WELL - GYRO	2,032.06	1,942.05	1,669.04	1,661.28	214.983	CC
PERRIN GU 1 - KMG WELL - GYRO	2,100.00	2,003.58	1,669.34	1,661.24	206.269	ES
PERRIN GU 1 - KMG WELL - GYRO	5,100.00	4,592.44	2,230.35	2,170.93	37.530	SF
PERRIN GU 2-20 - KMG WELL - GYRO	7,420.42	6,592.44	1,743.56	1,610.55	13.109	CC
PERRIN GU 2-20 - KMG WELL - GYRO	7,500.00	6,669.75	1,744.65	1,609.71	12.929	ES
PERRIN GU 2-20 - KMG WELL - GYRO	7,600.00	6,756.42	1,758.88	1,621.73	12.825	SF
PERRIN V 20-5D - KMG WELL - GYRO	7,656.58	6,775.04	2,009.29	1,891.00	16.985	CC
PERRIN V 20-5D - KMG WELL - GYRO	7,700.00	6,808.32	2,010.70	1,890.57	16.738	ES
PERRIN V 20-5D - KMG WELL - GYRO	8,000.00	7,014.58	2,097.08	1,965.02	15.880	SF
PERRIN V 20-7DI - KMG WELL - GYRO						Out of range
PERRIN-MAHONEY 1 - KPK WELL - NO 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 4C-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 4C-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 #1	<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)						
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	4,400.00	4,546.36	418.75	367.13	8.111	SF
RUCA 20-1HZ - KMG - PLAN ONLY	4,568.83	4,699.77	412.78	363.14	8.316	CC, ES
RUCA 20-2HZ - KMG - PLAN ONLY	4,162.79	4,307.34	588.03	540.72	12.429	CC, ES, SF
RUCA 20-3HZ - KMG - PLAN ONLY	3,951.56	4,126.57	675.36	631.02	15.231	CC, ES
RUCA 20-3HZ - KMG - PLAN ONLY	4,000.00	4,169.41	675.74	631.25	15.188	SF
RUCA 20-4HZ - KMG - PLAN ONLY	3,569.38	3,751.33	755.27	715.59	19.035	CC
RUCA 20-4HZ - KMG - PLAN ONLY	3,600.00	3,777.95	755.42	715.46	18.907	ES
RUCA 20-4HZ - KMG - PLAN ONLY	3,800.00	3,951.83	763.82	722.46	18.470	SF
RUCA 20-5HZ - KMG - PLAN ONLY	3,262.11	3,463.44	840.39	805.51	24.091	CC
RUCA 20-5HZ - KMG - PLAN ONLY	3,300.00	3,504.35	840.63	805.20	23.730	ES
RUCA 20-5HZ - KMG - PLAN ONLY	3,700.00	3,835.71	871.45	832.31	22.269	SF
RUCA 20-6HZ - KMG - PLAN ONLY	3,100.06	3,316.66	979.82	947.82	30.621	CC, ES
RUCA 20-6HZ - KMG - PLAN ONLY	3,700.00	3,818.39	1,033.56	994.75	26.633	SF
RUCA 20-7HZ - KMG - PLAN ONLY	2,558.58	2,781.53	1,064.39	1,042.31	48.223	CC
RUCA 20-7HZ - KMG - PLAN ONLY	2,600.00	2,814.49	1,064.68	1,041.79	46.505	ES
RUCA 20-7HZ - KMG - PLAN ONLY	3,500.00	3,530.79	1,207.38	1,171.81	33.943	SF
RUCA 20-8HZ - KMG - PLAN ONLY	2,296.58	2,543.49	1,138.14	1,120.84	65.802	CC
RUCA 20-8HZ - KMG - PLAN ONLY	2,300.00	2,546.06	1,138.14	1,120.78	65.577	ES
RUCA 20-8HZ - KMG - PLAN ONLY	3,400.00	3,374.07	1,350.19	1,316.27	39.800	SF
RUCA 20-9HZ - KMG - PLAN ONLY	2,111.57	2,357.90	1,208.44	1,193.75	82.247	CC, ES
RUCA 20-9HZ - KMG - PLAN ONLY	3,400.00	3,306.68	1,498.46	1,464.69	44.373	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

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 4C-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 4C-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 #1	<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 3B-9H-N267 - CPR WELL - SURVEYS						Out of range
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
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	200.00	237.00	1,545.56	1,544.66	1,721.263	CC
STANLEY #2 - GERRITY WELL - NO SURVEYS	400.00	436.63	1,546.25	1,544.28	786.036	ES
STANLEY #2 - GERRITY WELL - NO SURVEYS	2,600.00	2,455.39	2,194.81	2,180.75	156.081	SF
STANLEY 3 - GERRITY WELL - NO SURVEYS						Out of range
TEETS PERRIN 1 - KPK WELL - NO SURVEYS	7,604.16	6,746.97	2,124.20	1,986.24	15.398	CC, ES
TEETS PERRIN 1 - KPK WELL - NO SURVEYS	7,900.00	6,987.73	2,188.73	2,040.22	14.738	SF
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	5,882.86	5,100.00	912.06	811.12	9.036	CC
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	5,900.00	5,100.00	912.22	810.96	9.009	ES
TEETS-PERRIN 2 - KPK WELL - NO SURVEYS	6,000.00	5,100.00	919.55	817.11	8.976	SF
TEETS-PERRIN 3 - KPK WELL - NO SURVEYS	6,490.48	5,060.00	1,536.77	1,476.12	25.336	CC
TEETS-PERRIN 3 - KPK WELL - NO SURVEYS	6,500.00	5,060.00	1,536.80	1,476.10	25.315	ES
TEETS-PERRIN 3 - KPK WELL - NO SURVEYS	6,600.00	5,060.00	1,540.67	1,479.54	25.204	SF
TEETS-PERRIN 4 - KPK WELL - NO SURVEYS	5,957.11	5,050.00	2,230.67	2,126.78	21.472	CC
TEETS-PERRIN 4 - KPK WELL - NO SURVEYS	6,000.00	5,050.00	2,231.08	2,126.30	21.293	ES
TEETS-PERRIN 4 - KPK WELL - NO SURVEYS	6,100.00	5,050.00	2,235.24	2,128.51	20.944	SF
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,448.03	4,711.00	958.92	869.15	10.682	CC, ES
TEETS-PERRIN 5 - KPK WELL - NO SURVEYS	5,600.00	4,711.00	970.89	879.21	10.591	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	13,438.97	14,819.00	681.59	409.14	2.502	CC, ES, SF
VOGL MCCOY 2B-5H-E267 - CPR WELL - SURVEYS	13,438.97	14,846.00	434.63	213.16	1.962	CC, ES, SF
VOGL MCCOY 2C-5H-E267 - CPR WELL - SURVEYS	13,438.97	14,648.00	201.07	34.59	1.208	Level 2, CC, ES, SF
VOGL MCCOY 2D-5H-E267 - CPR WELL - SURVEYS	13,438.97	15,056.00	486.59	215.41	1.794	CC, ES, SF
VOGL MCCOY 2E-5H-F267 - CPR WELL - SURVEYS	13,438.97	14,740.00	708.63	417.13	2.431	CC, ES, SF
VOGL MCCOY 2F-5H-F267 - CPR WELL - SURVEYS	13,438.97	15,187.00	1,041.38	751.08	3.587	CC, ES, SF
VOGL MCCOY 2G-5H-F267 - CPR WELL - SURVEYS	13,438.97	14,805.00	1,353.77	1,059.08	4.594	CC, ES, SF
VOGL MCCOY 2H-5H-F267 - CPR WELL - SURVEYS	13,438.97	15,000.00	1,727.83	1,435.04	5.901	CC, ES, SF

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



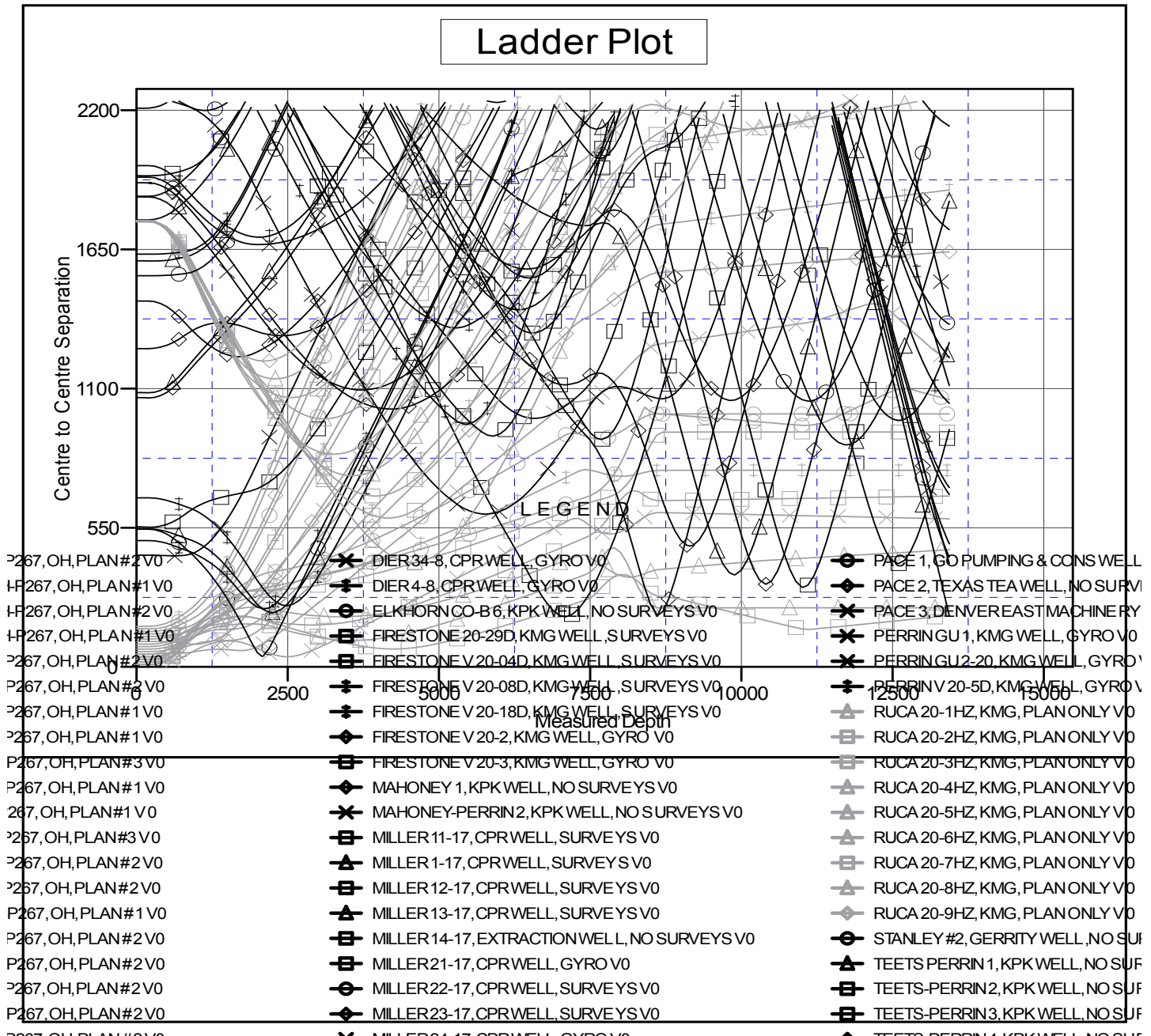
## Cathedral Energy Services

### Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4C-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 4C-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 #1	<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 4C-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 covergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well BIGHORN 4C-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 4C-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 #1	<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 4C-17H-P267  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.38°

