

# **Crestone Peak Resources**

**DJ BASIN**

**S25-T1N-R66W (LOCHBUIE LAND)**

**LOCHBUIE LAND 2G-25H-D166**

**OH**

**PLAN #1**

## **Anticollision Summary Report**

**25 May, 2018**

# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LAND 2G-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE LAND)	<b>MD Reference:</b>	KB @ 5100.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LOCHBUIE LAND 2G-25H-D166	<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 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>	5/25/2018		
<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	11,751.32	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
<b>Offset Well - Wellbore - Design</b>						
S25-T1N-R66W (LOCHBUIE LAND)						
AZUL 13-11HZ - KMG WELL - PLAN ONLY	8,606.25	12,171.49	1,839.71	1,758.91	22.768	CC
AZUL 13-11HZ - KMG WELL - PLAN ONLY	8,700.00	12,171.49	1,842.09	1,758.90	22.142	ES
AZUL 13-11HZ - KMG WELL - PLAN ONLY	9,200.00	12,171.49	1,933.15	1,829.84	18.712	SF
AZUL 13-12HZ - KMG WELL - PLAN ONLY	8,891.27	12,521.28	1,844.27	1,754.22	20.481	CC
AZUL 13-12HZ - KMG WELL - PLAN ONLY	8,900.00	12,521.28	1,844.29	1,754.08	20.446	ES
AZUL 13-12HZ - KMG WELL - PLAN ONLY	9,400.00	12,521.28	1,913.14	1,806.89	18.006	SF
AZUL 13-19HZ - KMG WELL - PLAN ONLY	10,242.57	12,512.25	1,833.50	1,699.37	13.670	CC, ES
AZUL 13-19HZ - KMG WELL - PLAN ONLY	10,800.00	12,512.25	1,916.37	1,769.38	13.037	SF
AZUL 13-1HZ - KMG WELL - PLAN ONLY	7,224.09	12,639.08	1,872.48	1,815.31	32.751	CC
AZUL 13-1HZ - KMG WELL - PLAN ONLY	7,300.00	12,639.08	1,874.59	1,815.22	31.573	ES
AZUL 13-1HZ - KMG WELL - PLAN ONLY	7,600.00	12,639.08	1,924.51	1,852.71	26.804	SF
AZUL 13-20HZ - KMG WELL - PLAN ONLY	9,935.04	12,681.44	1,859.73	1,737.23	15.182	CC
AZUL 13-20HZ - KMG WELL - PLAN ONLY	10,000.00	12,681.44	1,860.86	1,737.07	15.032	ES
AZUL 13-20HZ - KMG WELL - PLAN ONLY	10,400.00	12,681.44	1,916.97	1,781.60	14.162	SF
AZUL 13-21HZ - KMG WELL - PLAN ONLY	9,701.95	12,502.03	1,839.04	1,725.17	16.150	CC, ES
AZUL 13-21HZ - KMG WELL - PLAN ONLY	10,200.00	12,502.03	1,905.29	1,775.26	14.653	SF
AZUL 13-22HZ - KMG WELL - PLAN ONLY	9,472.17	12,413.56	1,833.39	1,727.70	17.347	CC
AZUL 13-22HZ - KMG WELL - PLAN ONLY	9,500.00	12,413.56	1,833.60	1,727.18	17.229	ES
AZUL 13-22HZ - KMG WELL - PLAN ONLY	10,000.00	12,413.56	1,907.86	1,782.55	15.226	SF
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,223.05	12,625.16	1,859.09	1,760.72	18.899	CC
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,300.00	12,625.16	1,860.68	1,759.81	18.445	ES
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,700.00	12,625.16	1,919.30	1,801.86	16.343	SF
AZUL 13-24HZ - KMG WELL - SURVEYS	11,751.32	13,242.00	1,867.66	1,645.07	8.391	CC, ES, SF
AZUL 13-25HZ - KMG WELL - SURVEYS	11,751.32	13,364.00	1,861.18	1,652.86	8.934	CC, ES, SF
AZUL 13-26HZ - KMG WELL - SURVEYS	11,552.32	12,966.00	1,831.38	1,637.94	9.467	CC, ES
AZUL 13-26HZ - KMG WELL - SURVEYS	11,600.00	12,966.00	1,832.00	1,638.40	9.463	SF
AZUL 13-27HZ - KMG WELL - SURVEYS	11,219.28	12,904.00	1,833.13	1,656.77	10.394	CC, ES
AZUL 13-27HZ - KMG WELL - SURVEYS	11,300.00	12,904.00	1,834.91	1,658.19	10.383	SF
AZUL 13-28HZ - KMG WELL - SURVEYS	10,894.63	12,857.00	1,860.69	1,699.39	11.535	CC
AZUL 13-28HZ - KMG WELL - SURVEYS	10,900.00	12,857.00	1,860.70	1,699.34	11.532	ES
AZUL 13-28HZ - KMG WELL - SURVEYS	11,200.00	12,857.00	1,885.59	1,720.91	11.450	SF
AZUL 13-29HZ - KMG WELL - SURVEYS	10,578.59	12,714.00	1,833.77	1,686.37	12.441	CC
AZUL 13-29HZ - KMG WELL - SURVEYS	10,600.00	12,714.00	1,833.90	1,686.26	12.422	ES
AZUL 13-29HZ - KMG WELL - SURVEYS	11,100.00	12,714.00	1,906.46	1,749.67	12.159	SF
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,425.04	12,395.56	1,880.69	1,822.74	32.455	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 LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LAND 2G-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE LAND)	<b>MD Reference:</b>	KB @ 5100.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LOCHBUIE LAND 2G-25H-D166	<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
S25-T1N-R66W (LOCHBUIE LAND)						
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,500.00	12,395.56	1,883.04	1,822.55	31.129	ES
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,700.00	12,395.56	1,911.58	1,842.49	27.671	SF
AZUL 13-3HZ - KMG WELL - PLAN ONLY	7,593.18	12,283.07	1,840.61	1,785.78	33.570	CC
AZUL 13-3HZ - KMG WELL - PLAN ONLY	7,700.00	12,283.07	1,844.25	1,785.51	31.396	ES
AZUL 13-3HZ - KMG WELL - PLAN ONLY	8,100.00	12,283.07	1,912.70	1,834.43	24.437	SF
AZUL 13-4HZ - KMG WELL - PLAN ONLY	7,926.30	12,546.66	1,844.80	1,783.73	30.208	CC
AZUL 13-4HZ - KMG WELL - PLAN ONLY	8,000.00	12,546.66	1,846.27	1,782.74	29.063	ES
AZUL 13-4HZ - KMG WELL - PLAN ONLY	8,500.00	12,546.66	1,931.95	1,844.79	22.167	SF
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,263.12	12,663.20	1,866.14	1,795.13	26.279	CC
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,300.00	12,663.20	1,866.51	1,794.43	25.895	ES
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,700.00	12,663.20	1,916.60	1,828.19	21.679	SF
BEIERLE 2 - KMG WELL - SURVEYS	2,040.33	1,945.64	1,397.46	1,390.96	215.044	CC, ES
BEIERLE 2 - KMG WELL - SURVEYS	4,700.00	4,150.90	1,914.51	1,895.87	102.719	SF
CRONIN 2 - RITTER OIL - NO SURVEYS	200.00	189.00	1,647.84	1,647.10	2,213.126	CC, ES
CRONIN 2 - RITTER OIL - NO SURVEYS	1,600.00	795.00	1,906.25	1,900.91	356.908	SF
JOHNSON 1N-65W-30-1S - VERDAD RESOURCES LL						Out of range
JOHNSON 1N-65W-30-2S - VERDAD RESOURCES LL						Out of range
LOCHBUIE LAND 2A-25H-D166 - OH - PLAN #1	200.00	201.00	60.00	59.51	121.259	CC, ES
LOCHBUIE LAND 2A-25H-D166 - OH - PLAN #1	11,751.32	11,959.12	1,319.80	1,021.26	4.421	SF
LOCHBUIE LAND 2B-25H-D166 - OH - PLAN #1	200.00	201.00	50.00	49.51	101.049	CC, ES
LOCHBUIE LAND 2B-25H-D166 - OH - PLAN #1	11,751.32	12,108.79	1,157.59	869.08	4.012	SF
LOCHBUIE LAND 2C-25H-D166 - OH - PLAN #1	0.00	0.99	40.00			
LOCHBUIE LAND 2C-25H-D166 - OH - PLAN #1	11,751.32	11,859.20	1,010.14	710.64	3.373	SF
LOCHBUIE LAND 2D-25H-D166 - OH - PLAN #1	200.00	200.00	30.00	29.51	60.848	CC, ES
LOCHBUIE LAND 2D-25H-D166 - OH - PLAN #1	11,751.32	11,906.73	631.72	340.83	2.172	SF
LOCHBUIE LAND 2E-25H-D166 - OH - PLAN #1	200.00	200.00	20.00	19.51	40.565	CC, ES
LOCHBUIE LAND 2E-25H-D166 - OH - PLAN #1	11,751.32	11,833.69	358.51	67.85	1.233	Level 2, SF
LOCHBUIE LAND 2F-25H-D166 - OH - PLAN #1	200.00	200.00	10.00	9.51	20.283	CC, ES
LOCHBUIE LAND 2F-25H-D166 - OH - PLAN #1	11,751.32	12,079.79	436.83	236.16	2.177	SF
LOCHBUIE LAND 2H-25H-D166 - OH - PLAN #1	200.00	200.00	10.00	9.51	20.283	CC
LOCHBUIE LAND 2H-25H-D166 - OH - PLAN #1	6,600.00	6,600.90	37.71	3.58	1.105	Level 2, ES, SF
LOCHBUIE LAND 2I-25H-D166 - OH - PLAN #1	200.00	199.00	20.00	19.51	40.712	CC
LOCHBUIE LAND 2I-25H-D166 - OH - PLAN #1	300.00	298.36	20.16	19.32	23.941	ES
LOCHBUIE LAND 2I-25H-D166 - OH - PLAN #1	11,751.32	11,871.44	328.35	40.22	1.140	Level 2, SF
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	200.00	199.00	30.00	29.51	61.069	CC
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	300.00	298.02	30.21	29.37	35.885	ES
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	11,751.32	12,140.82	647.16	388.20	2.499	SF
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	200.00	199.00	40.00	39.51	81.425	CC
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	300.00	297.68	40.22	39.38	47.810	ES
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	11,751.32	11,984.95	729.12	436.19	2.489	SF
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	200.00	199.00	50.00	49.51	101.781	CC
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	300.00	297.33	50.24	49.40	59.746	ES
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	11,751.32	11,962.07	978.43	679.19	3.270	SF
SAM 13-25 - CPR WELL - SURVEYS	7,417.93	7,263.88	1,886.33	1,840.51	41.173	CC
SAM 13-25 - CPR WELL - SURVEYS	7,500.00	7,286.67	1,887.65	1,840.14	39.738	ES
SAM 13-25 - CPR WELL - SURVEYS	7,800.00	7,307.63	1,917.67	1,862.83	34.971	SF
TEMPLIN 1 - VESSELS THOMAS G - SURVEYS	11,173.92	7,159.91	398.13	251.12	2.708	CC, ES
TEMPLIN 1 - VESSELS THOMAS G - SURVEYS	11,200.00	7,159.81	398.98	251.51	2.706	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 LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LAND 2G-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE LAND)	<b>MD Reference:</b>	KB @ 5100.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LOCHBUIE LAND 2G-25H-D166	<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)		Separation Factor	Warning
Offset Well - Wellbore - Design						
S25-T1N-R66W (SAM)						
SAM 3A-25H-M166 - OH - PLAN #2	11,751.32	12,000.03	1,383.39	1,084.61	4.630	CC, ES, SF
SAM 3A-25H-M166 - OH - SURVEYS						Out of range
SAM 3B-25H-M166 - OH - PLAN #2	11,746.60	12,151.68	1,544.71	1,250.57	5.252	CC, ES
SAM 3B-25H-M166 - OH - PLAN #2	11,751.32	12,147.94	1,544.73	1,250.58	5.251	SF
SAM 3B-25H-M166 - OH - SURVEYS						Out of range
SAM 3C-25H-M166 - OH - PLAN #2	11,751.32	11,903.56	1,620.22	1,319.96	5.396	CC, ES, SF
SAM 3C-25H-M166 - OH - SURVEYS						Out of range
SAM 3D-25H-M166 - OH - PLAN #2	11,743.49	11,941.22	1,844.88	1,544.82	6.148	CC
SAM 3D-25H-M166 - OH - PLAN #2	11,751.32	11,938.59	1,844.90	1,544.69	6.145	ES, SF
SAM 3E-25H-M166 - OH - PLAN #2						Out of range
SAM 3F-25H-M166 - OH - PLAN #2						Out of range
SAM 3F-25H-M166 - OH - SURVEYS						Out of range
SAM 3G-25H-M166 - OH - PLAN #1						Out of range
SAM 3H-25H-M166 - OH - PLAN #2						Out of range
SAM 3I-25H-M166 - OH - PLAN #3						Out of range
SAM 3J-25H-M166 - OH - PLAN #2						Out of range
SAM 3K-25H-M166 - OH - PLAN #2						Out of range
SAM 3L-25H-M166 - OH - PLAN #2						Out of range

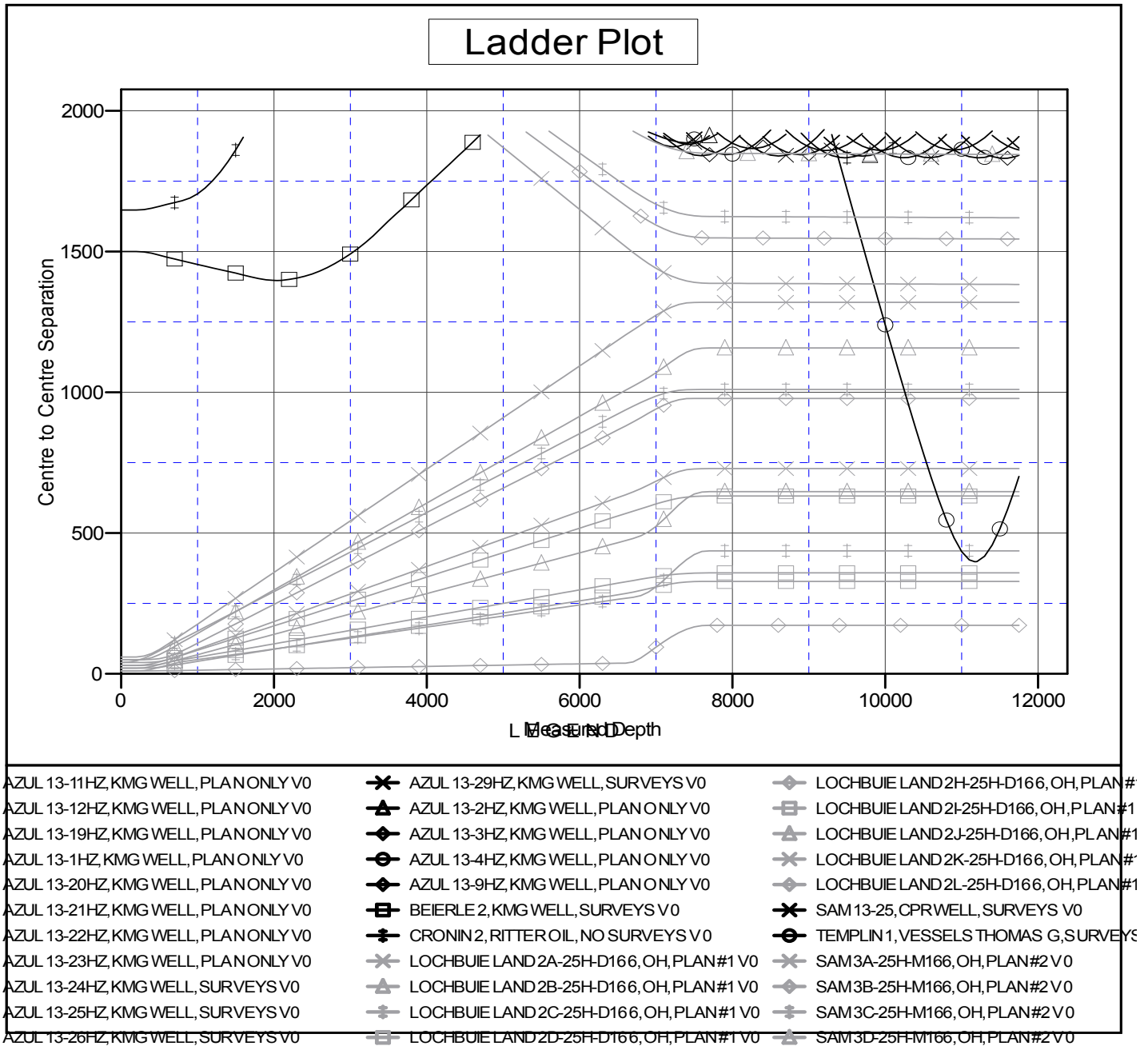
# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LAND 2G-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE LAND)	<b>MD Reference:</b>	KB @ 5100.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LOCHBUIE LAND 2G-25H-D166	<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 KB @ 5100.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LA  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.50°



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

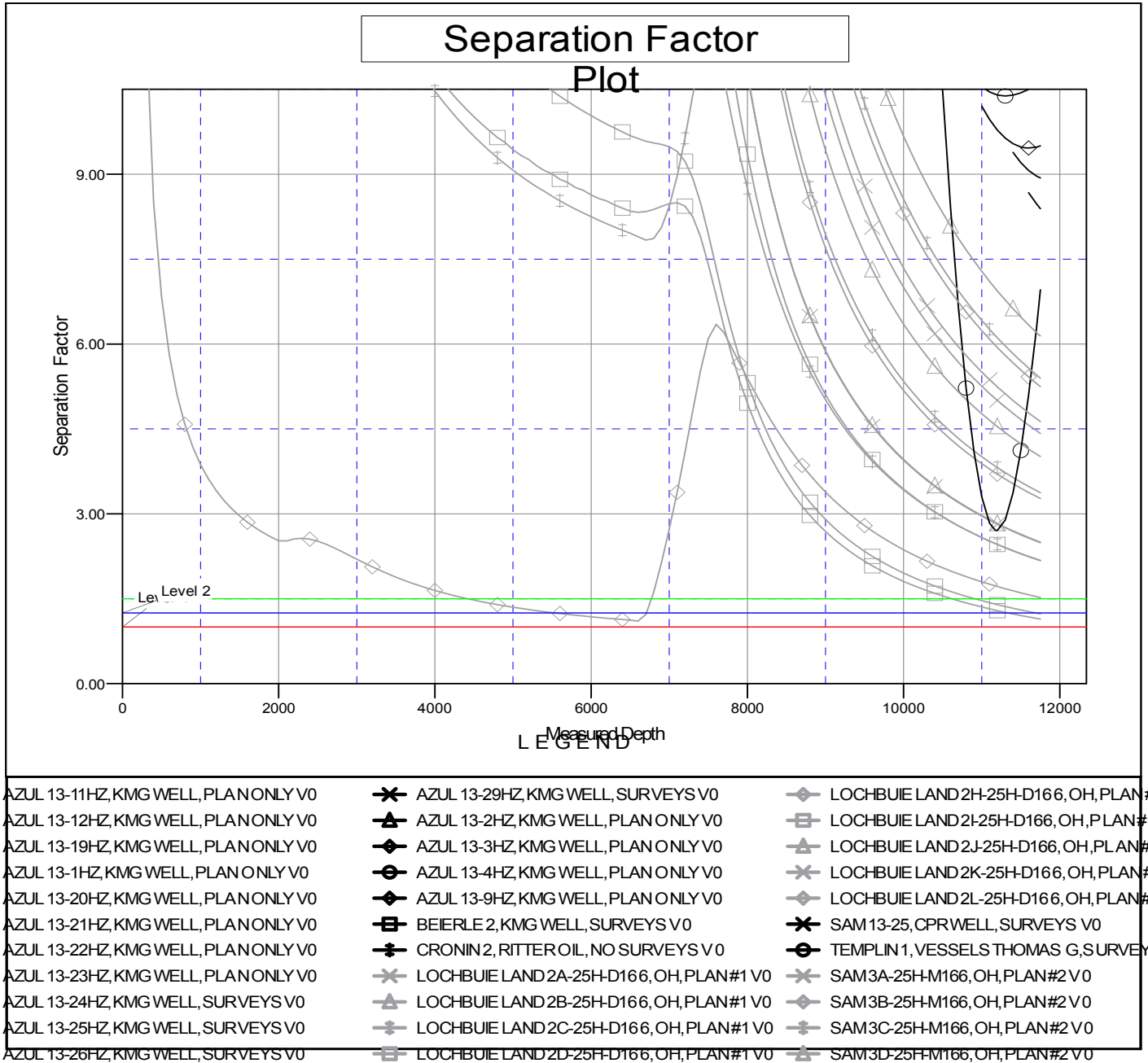
# Cathedral Energy Services

## Anticollision Summary Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LAND 2G-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE LAND)	<b>MD Reference:</b>	KB @ 5100.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LOCHBUIE LAND 2G-25H-D166	<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 KB @ 5100.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: LOCHBUIE LAND 2G-25H-D166 - Slot LOCHBUIE LA  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.50°



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