

# **Crestone Peak Resources**

**DJ BASIN**

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

**LOCHBUIE LAND 2H-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 2H-25H-D166 - Slot LOCHBUIE LAND 2H-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 2H-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	11,918.36	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
S25-T1N-R66W (LOCHBUIE LAND)						
AZUL 13-11HZ - KMG WELL - PLAN ONLY	8,773.59	12,171.49	1,884.89	1,804.85	23.548	CC
AZUL 13-11HZ - KMG WELL - PLAN ONLY	8,800.00	12,171.49	1,885.08	1,804.43	23.376	ES
AZUL 13-11HZ - KMG WELL - PLAN ONLY	9,200.00	12,171.49	1,932.52	1,837.62	20.364	SF
AZUL 13-12HZ - KMG WELL - PLAN ONLY	9,058.61	12,521.28	1,883.90	1,794.21	21.005	CC
AZUL 13-12HZ - KMG WELL - PLAN ONLY	9,100.00	12,521.28	1,884.35	1,793.89	20.831	ES
AZUL 13-12HZ - KMG WELL - PLAN ONLY	9,400.00	12,521.28	1,914.58	1,815.48	19.319	SF
AZUL 13-19HZ - KMG WELL - PLAN ONLY	10,409.90	12,512.25	1,878.58	1,744.61	14.022	CC, ES
AZUL 13-19HZ - KMG WELL - PLAN ONLY	10,800.00	12,512.25	1,918.66	1,777.01	13.546	SF
AZUL 13-1HZ - KMG WELL - PLAN ONLY	7,307.09	12,639.08	1,898.24	1,843.02	34.376	CC, ES
AZUL 13-1HZ - KMG WELL - PLAN ONLY	7,600.00	12,639.08	1,924.46	1,860.13	29.916	SF
AZUL 13-20HZ - KMG WELL - PLAN ONLY	10,102.38	12,681.44	1,886.61	1,763.71	15.351	CC, ES
AZUL 13-20HZ - KMG WELL - PLAN ONLY	10,500.00	12,681.44	1,928.05	1,794.68	14.456	SF
AZUL 13-21HZ - KMG WELL - PLAN ONLY	9,869.28	12,502.03	1,878.64	1,764.84	16.508	CC
AZUL 13-21HZ - KMG WELL - PLAN ONLY	9,900.00	12,502.03	1,878.89	1,764.41	16.413	ES
AZUL 13-21HZ - KMG WELL - PLAN ONLY	10,300.00	12,502.03	1,927.38	1,800.15	15.148	SF
AZUL 13-22HZ - KMG WELL - PLAN ONLY	9,639.50	12,413.56	1,878.20	1,772.70	17.802	CC
AZUL 13-22HZ - KMG WELL - PLAN ONLY	9,700.00	12,413.56	1,879.18	1,772.03	17.538	ES
AZUL 13-22HZ - KMG WELL - PLAN ONLY	10,000.00	12,413.56	1,912.48	1,794.54	16.215	SF
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,390.39	12,625.16	1,886.15	1,787.62	19.143	CC
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,500.00	12,625.16	1,889.33	1,787.10	18.481	ES
AZUL 13-23HZ - KMG WELL - PLAN ONLY	9,800.00	12,625.16	1,930.11	1,815.35	16.818	SF
AZUL 13-24HZ - KMG WELL - SURVEYS	11,918.36	13,242.00	1,913.72	1,690.87	8.588	CC, ES, SF
AZUL 13-25HZ - KMG WELL - SURVEYS	11,918.36	13,364.00	1,892.23	1,682.46	9.020	CC, ES, SF
AZUL 13-26HZ - KMG WELL - SURVEYS	11,719.65	12,966.00	1,876.49	1,682.93	9.695	CC, ES
AZUL 13-26HZ - KMG WELL - SURVEYS	11,800.00	12,966.00	1,878.21	1,684.45	9.694	SF
AZUL 13-27HZ - KMG WELL - SURVEYS	11,386.62	12,904.00	1,882.66	1,706.40	10.681	CC
AZUL 13-27HZ - KMG WELL - SURVEYS	11,400.00	12,904.00	1,882.71	1,706.39	10.678	ES
AZUL 13-27HZ - KMG WELL - SURVEYS	11,500.00	12,904.00	1,886.07	1,709.36	10.673	SF
AZUL 13-28HZ - KMG WELL - SURVEYS	11,061.97	12,857.00	1,888.90	1,726.77	11.651	CC, ES
AZUL 13-28HZ - KMG WELL - SURVEYS	11,300.00	12,857.00	1,903.84	1,739.42	11.579	SF
AZUL 13-29HZ - KMG WELL - SURVEYS	10,745.92	12,714.00	1,876.08	1,728.62	12.722	CC, ES
AZUL 13-29HZ - KMG WELL - SURVEYS	11,200.00	12,714.00	1,930.25	1,775.36	12.462	SF
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,548.17	12,395.56	1,902.67	1,846.39	33.805	CC
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,600.00	12,395.56	1,903.45	1,845.65	32.932	ES
AZUL 13-2HZ - KMG WELL - PLAN ONLY	7,800.00	12,395.56	1,924.34	1,858.59	29.265	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 2H-25H-D166 - Slot LOCHBUIE LAND 2H-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 2H-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 13-3HZ - KMG WELL - PLAN ONLY	7,741.88	12,283.07	1,885.68	1,831.87	35.046	CC
AZUL 13-3HZ - KMG WELL - PLAN ONLY	7,800.00	12,283.07	1,886.54	1,830.84	33.872	ES
AZUL 13-3HZ - KMG WELL - PLAN ONLY	8,100.00	12,283.07	1,918.74	1,849.61	27.755	SF
AZUL 13-4HZ - KMG WELL - PLAN ONLY	8,093.64	12,546.66	1,885.37	1,824.63	31.042	CC
AZUL 13-4HZ - KMG WELL - PLAN ONLY	8,200.00	12,546.66	1,888.37	1,823.94	29.311	ES
AZUL 13-4HZ - KMG WELL - PLAN ONLY	8,500.00	12,546.66	1,928.67	1,850.42	24.649	SF
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,430.45	12,663.20	1,892.83	1,822.15	26.783	CC
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,500.00	12,663.20	1,894.10	1,821.33	26.026	ES
AZUL 13-9HZ - KMG WELL - PLAN ONLY	8,800.00	12,663.20	1,928.56	1,843.53	22.680	SF
BEIERLE 2 - KMG WELL - SURVEYS	2,053.86	1,954.60	1,381.90	1,375.36	211.426	CC, ES
BEIERLE 2 - KMG WELL - SURVEYS	4,800.00	4,266.28	1,915.58	1,896.26	99.120	SF
CRONIN 2 - RITTER OIL - NO SURVEYS	200.00	189.00	1,657.64	1,656.89	2,226.270	CC, ES
CRONIN 2 - RITTER OIL - NO SURVEYS	1,600.00	795.00	1,919.51	1,914.17	359.290	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	70.00	69.51	141.468	CC, ES
LOCHBUIE LAND 2A-25H-D166 - OH - PLAN #1	11,918.36	11,958.83	1,359.47	1,058.55	4.518	SF
LOCHBUIE LAND 2B-25H-D166 - OH - PLAN #1	200.00	201.00	60.00	59.51	121.259	CC, ES
LOCHBUIE LAND 2B-25H-D166 - OH - PLAN #1	11,918.36	12,108.49	1,170.23	872.45	3.930	SF
LOCHBUIE LAND 2C-25H-D166 - OH - PLAN #1	0.00	0.98	50.00			
LOCHBUIE LAND 2C-25H-D166 - OH - PLAN #1	11,918.36	11,858.90	1,058.05	757.79	3.524	SF
LOCHBUIE LAND 2D-25H-D166 - OH - PLAN #1	200.00	200.00	40.00	39.51	81.131	CC, ES
LOCHBUIE LAND 2D-25H-D166 - OH - PLAN #1	11,918.36	11,906.43	659.70	358.97	2.194	SF
LOCHBUIE LAND 2E-25H-D166 - OH - PLAN #1	200.00	200.00	30.00	29.51	60.848	CC, ES
LOCHBUIE LAND 2E-25H-D166 - OH - PLAN #1	11,918.36	11,833.39	401.75	105.45	1.356	Level 3, SF
LOCHBUIE LAND 2F-25H-D166 - OH - PLAN #1	200.00	200.00	20.00	19.51	40.565	CC, ES
LOCHBUIE LAND 2F-25H-D166 - OH - PLAN #1	11,918.36	12,079.49	370.23	101.20	1.376	Level 3, SF
LOCHBUIE LAND 2G-25H-D166 - OH - PLAN #1	200.00	200.00	10.00	9.51	20.283	CC
LOCHBUIE LAND 2G-25H-D166 - OH - PLAN #1	6,600.00	6,600.81	37.71	3.58	1.105	Level 2, ES, SF
LOCHBUIE LAND 2I-25H-D166 - OH - PLAN #1	200.00	199.00	10.00	9.51	20.356	CC
LOCHBUIE LAND 2I-25H-D166 - OH - PLAN #1	11,918.36	11,871.15	272.96	-19.10	0.935	Level 1, ES, SF
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	200.00	199.00	20.00	19.51	40.712	CC
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	300.00	298.34	20.17	19.33	23.944	ES
LOCHBUIE LAND 2J-25H-D166 - OH - PLAN #1	11,918.36	12,140.53	530.95	245.80	1.862	SF
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	200.00	199.00	30.00	29.51	61.069	CC
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	300.00	298.01	30.18	29.34	35.855	ES
LOCHBUIE LAND 2K-25H-D166 - OH - PLAN #1	11,918.36	11,984.65	660.07	359.27	2.194	SF
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	200.00	199.00	40.00	39.51	81.425	CC
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	300.00	297.66	40.20	39.36	47.776	ES
LOCHBUIE LAND 2L-25H-D166 - OH - PLAN #1	11,918.36	11,961.77	926.37	626.09	3.085	SF
SAM 13-25 - CPR WELL - SURVEYS	7,578.06	7,404.76	1,847.77	1,801.46	39.905	CC
SAM 13-25 - CPR WELL - SURVEYS	7,600.00	7,410.75	1,847.99	1,801.29	39.576	ES
SAM 13-25 - CPR WELL - SURVEYS	8,100.00	7,445.49	1,908.09	1,849.45	32.543	SF
TEMPLIN 1 - VESSELS THOMAS G - SURVEYS	11,340.72	7,325.59	453.36	305.96	3.076	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 LOCHBUIE LAND 2H-25H-D166 - Slot LOCHBUIE LAND 2H-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 2H-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				Between Ellipses (usft)		
S25-T1N-R66W (SAM)						
SAM 3A-25H-M166 - OH - PLAN #2	11,918.36	11,999.68	1,323.49	1,022.81	4.402	CC, ES, SF
SAM 3A-25H-M166 - OH - SURVEYS						Out of range
SAM 3B-25H-M166 - OH - PLAN #2	11,915.03	12,152.73	1,467.82	1,168.88	4.910	CC, ES, SF
SAM 3B-25H-M166 - OH - SURVEYS						Out of range
SAM 3C-25H-M166 - OH - PLAN #2	11,918.36	11,903.21	1,568.98	1,268.58	5.223	CC, ES, SF
SAM 3C-25H-M166 - OH - SURVEYS						Out of range
SAM 3D-25H-M166 - OH - PLAN #2	11,912.11	11,942.45	1,787.49	1,486.27	5.934	CC
SAM 3D-25H-M166 - OH - PLAN #2	11,918.36	11,938.59	1,787.51	1,486.23	5.933	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

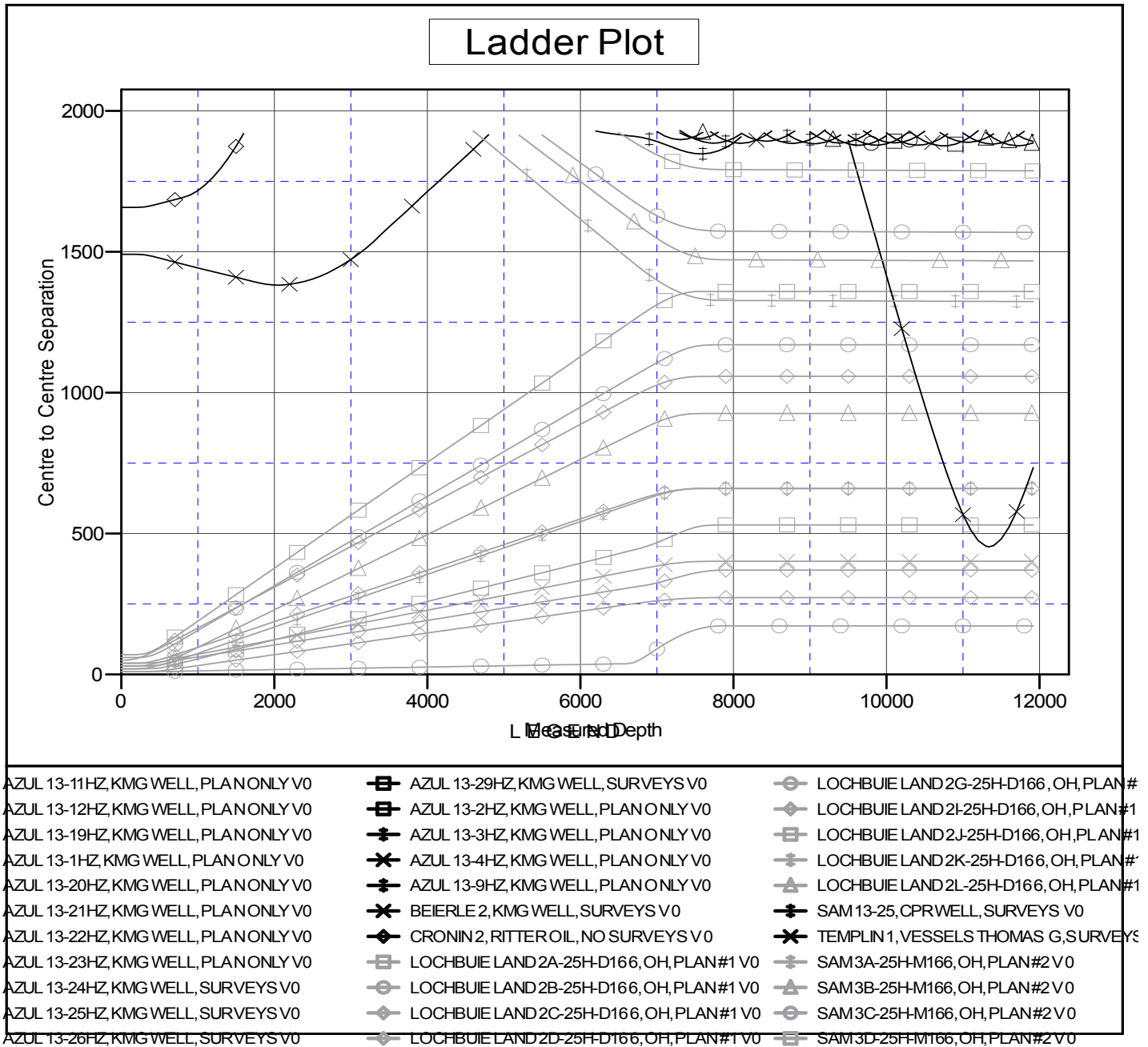
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<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well LOCHBUIE LAND 2H-25H-D166 - Slot LOCHBUIE LAND 2H-25H-D166 SHL
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	KB @ 5100.00usft
<b>Reference Site:</b>	S25-T1N-R66W (LOCHBUIE 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 2H-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 2H-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

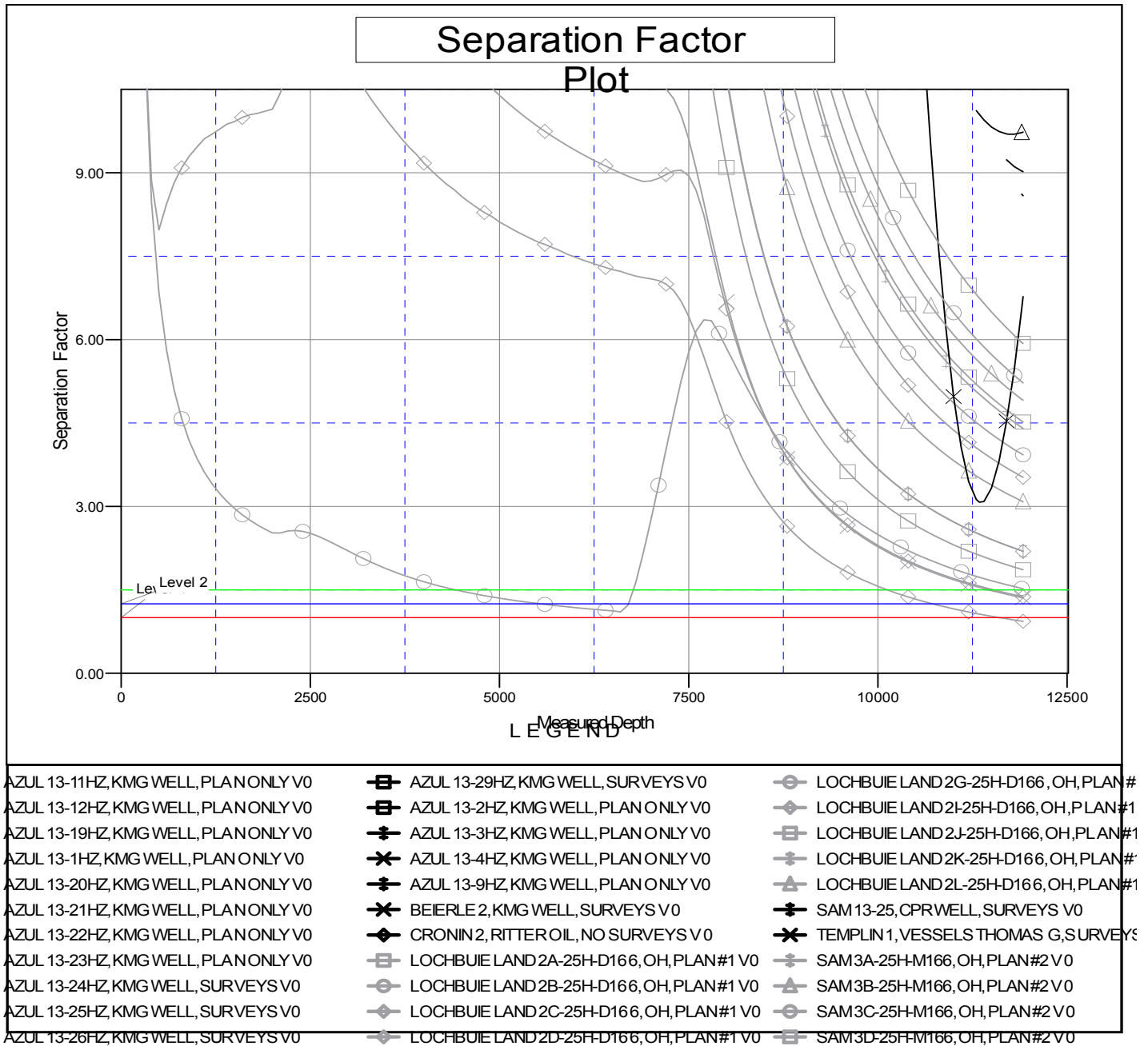
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<b>Reference Well:</b>	LOCHBUIE LAND 2H-25H-D166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference 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 2H-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