



CRESTONE PEAK  
RESOURCES

Project: DJ BASIN  
Site: S25-T1N-R66W (SAM)  
Well: SAM 3A-25H-M166  
Wellbore: OH  
Design: PLAN #1

#### SECTION DETAILS

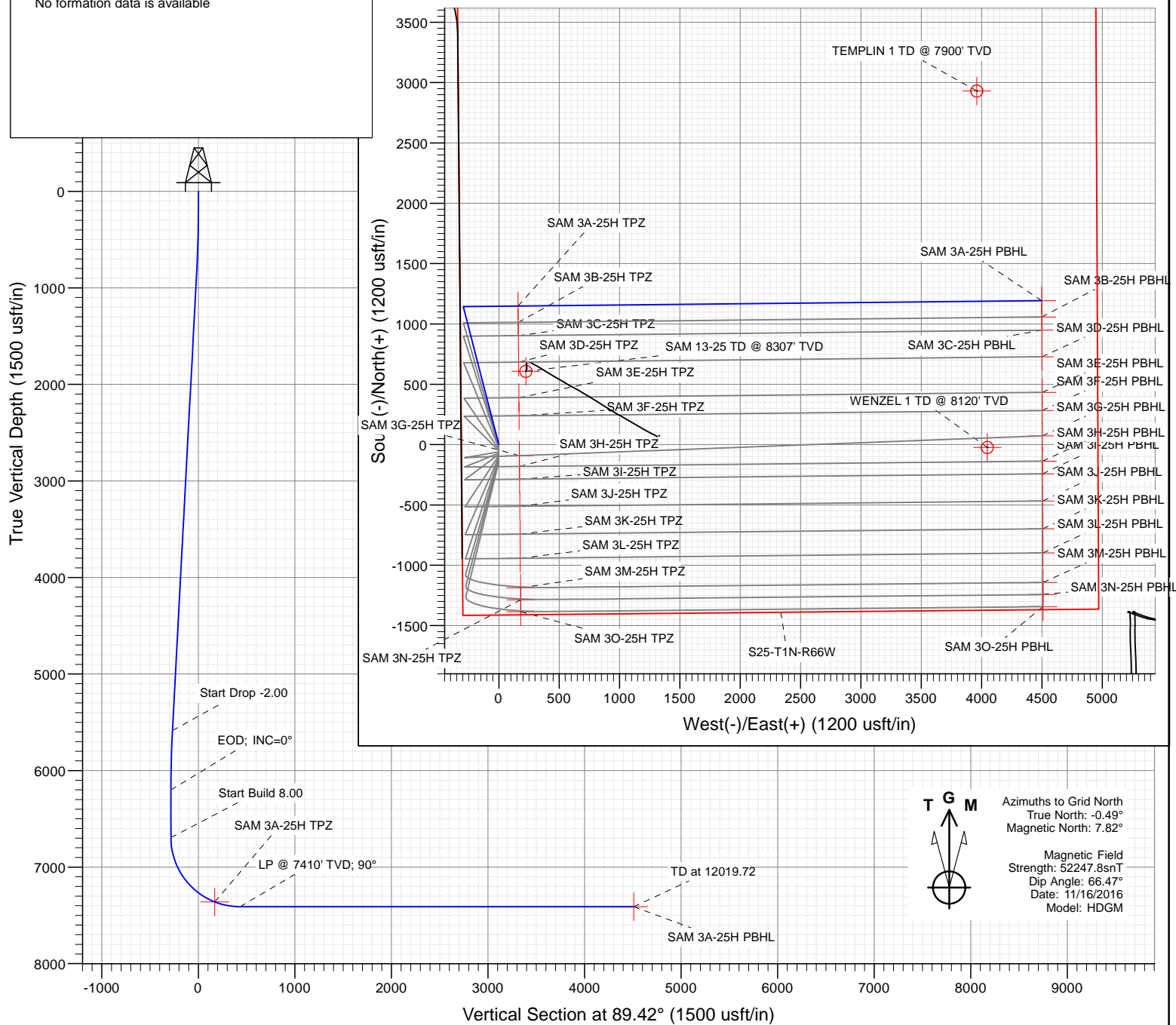
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	819.52	12.39	345.51	814.70	64.60	-16.70	2.00	345.51	-16.05	
4	5703.88	12.39	345.51	5585.30	1079.30	-279.00	0.00	0.00	-268.06	
5	6323.40	0.00	0.00	6200.00	1143.90	-295.70	2.00	180.00	-284.11	
6	6817.20	0.00	0.00	6693.80	1143.90	-295.70	0.00	0.00	-284.11	
7	7942.20	90.00	89.42	7410.00	1151.18	420.46	8.00	89.42	432.09	
8	12019.72	90.00	89.42	7410.00	1192.62	4497.76	0.00	0.00	4509.60	SAM 3A-25H PBHL

PLAN #1  
SAM 3A-25H-M166  
16XXX LR  
23 KB @ 5100.00usft  
Ground Level @ 5086.00  
North American Datum 1983  
Well SAM 3A-25H-M166, Grid North

Type	Target	From	From	From	From
User	No	Target	Target	Target	Target
Name	Target	From	From	From	From
SAM 3A-25H TPZ	7360.90	1148.53	159.24	40.022044	-104.733248
SAM 3A-25H PBHL	7410.00	1192.62	4497.76	40.022061	-104.717756

#### FORMATION TOP DETAILS

No formation data is available



#### WELL DETAILS: SAM 3A-25H-M166

+N/-S	+E/-W	Northing	Ground Level:	5086.00	Latitude	Longitude
0.00	0.00	1250656.76	Easting	3214576.98	40.018895	-104.733852

CATHEDRAL



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Company:</b>	Crestone Peak Resources	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Project:</b>	DJ BASIN	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site:</b>	S25-T1N-R66W (SAM)	<b>North Reference:</b>	Grid
<b>Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1		

<b>Project</b>	DJ BASIN		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		S25-T1N-R66W (SAM)			
Site Position:		Northing:	1,250,656.77 usft	Latitude:	40.018895
From:	Lat/Long	Easting:	3,214,576.98 usft	Longitude:	-104.733852
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.50 °

Well	SAM 3A-25H-M166					
Well Position	+N/-S	0.00 usft	Northing:	1,250,656.76 usft	Latitude:	40.018895
	+E/-W	0.00 usft	Easting:	3,214,576.98 usft	Longitude:	-104.733852
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,086.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	HDGM	11/16/2016	8.32	66.47	52,248

<b>Design</b>	PLAN #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	89.42

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
819.52	12.39	345.51	814.70	64.60	-16.70	2.00	2.00	0.00	345.51	
5,703.88	12.39	345.51	5,585.30	1,079.30	-279.00	0.00	0.00	0.00	0.00	
6,323.40	0.00	0.00	6,200.00	1,143.90	-295.70	2.00	-2.00	0.00	180.00	
6,817.20	0.00	0.00	6,693.80	1,143.90	-295.70	0.00	0.00	0.00	0.00	
7,942.20	90.00	89.42	7,410.00	1,151.18	420.46	8.00	8.00	0.00	89.42	
12,019.72	90.00	89.42	7,410.00	1,192.62	4,497.76	0.00	0.00	0.00	0.00	SAM 3A-25H PBHL

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Company:</b>	Crestone Peak Resources	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Project:</b>	DJ BASIN	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site:</b>	S25-T1N-R66W (SAM)	<b>North Reference:</b>	Grid
<b>Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	KOP @ 200'
300.00	2.00	345.51	299.98	1.69	-0.44	-0.42	2.00	2.00	
400.00	4.00	345.51	399.84	6.76	-1.75	-1.68	2.00	2.00	
500.00	6.00	345.51	499.45	15.19	-3.93	-3.77	2.00	2.00	
600.00	8.00	345.51	598.70	26.99	-6.98	-6.70	2.00	2.00	
700.00	10.00	345.51	697.47	42.14	-10.89	-10.47	2.00	2.00	
800.00	12.00	345.51	795.62	60.61	-15.67	-15.05	2.00	2.00	
819.52	12.39	345.51	814.70	64.60	-16.70	-16.05	2.00	2.00	EOB; INC=12.39°
900.00	12.39	345.51	893.31	81.32	-21.02	-20.20	0.00	0.00	
1,000.00	12.39	345.51	990.98	102.10	-26.39	-25.36	0.00	0.00	
1,100.00	12.39	345.51	1,088.65	122.87	-31.76	-30.52	0.00	0.00	
1,200.00	12.39	345.51	1,186.32	143.64	-37.13	-35.68	0.00	0.00	
1,300.00	12.39	345.51	1,283.99	164.42	-42.50	-40.84	0.00	0.00	
1,400.00	12.39	345.51	1,381.66	185.19	-47.87	-46.00	0.00	0.00	
1,500.00	12.39	345.51	1,479.33	205.97	-53.24	-51.16	0.00	0.00	
1,600.00	12.39	345.51	1,577.00	226.74	-58.61	-56.32	0.00	0.00	
1,700.00	12.39	345.51	1,674.67	247.52	-63.98	-61.48	0.00	0.00	
1,800.00	12.39	345.51	1,772.35	268.29	-69.35	-66.64	0.00	0.00	
1,900.00	12.39	345.51	1,870.02	289.06	-74.72	-71.79	0.00	0.00	
2,000.00	12.39	345.51	1,967.69	309.84	-80.10	-76.95	0.00	0.00	
2,100.00	12.39	345.51	2,065.36	330.61	-85.47	-82.11	0.00	0.00	
2,200.00	12.39	345.51	2,163.03	351.39	-90.84	-87.27	0.00	0.00	
2,300.00	12.39	345.51	2,260.70	372.16	-96.21	-92.43	0.00	0.00	
2,400.00	12.39	345.51	2,358.37	392.94	-101.58	-97.59	0.00	0.00	
2,500.00	12.39	345.51	2,456.04	413.71	-106.95	-102.75	0.00	0.00	
2,600.00	12.39	345.51	2,553.71	434.49	-112.32	-107.91	0.00	0.00	
2,700.00	12.39	345.51	2,651.38	455.26	-117.69	-113.07	0.00	0.00	
2,800.00	12.39	345.51	2,749.05	476.03	-123.06	-118.23	0.00	0.00	
2,900.00	12.39	345.51	2,846.72	496.81	-128.43	-123.39	0.00	0.00	
3,000.00	12.39	345.51	2,944.40	517.58	-133.80	-128.55	0.00	0.00	
3,100.00	12.39	345.51	3,042.07	538.36	-139.17	-133.71	0.00	0.00	
3,200.00	12.39	345.51	3,139.74	559.13	-144.54	-138.87	0.00	0.00	
3,300.00	12.39	345.51	3,237.41	579.91	-149.91	-144.03	0.00	0.00	
3,400.00	12.39	345.51	3,335.08	600.68	-155.28	-149.19	0.00	0.00	
3,500.00	12.39	345.51	3,432.75	621.45	-160.65	-154.35	0.00	0.00	
3,600.00	12.39	345.51	3,530.42	642.23	-166.02	-159.51	0.00	0.00	
3,700.00	12.39	345.51	3,628.09	663.00	-171.39	-164.67	0.00	0.00	
3,800.00	12.39	345.51	3,725.76	683.78	-176.76	-169.83	0.00	0.00	
3,900.00	12.39	345.51	3,823.43	704.55	-182.13	-174.99	0.00	0.00	
4,000.00	12.39	345.51	3,921.10	725.33	-187.50	-180.15	0.00	0.00	
4,100.00	12.39	345.51	4,018.77	746.10	-192.87	-185.31	0.00	0.00	
4,200.00	12.39	345.51	4,116.44	766.87	-198.24	-190.47	0.00	0.00	
4,300.00	12.39	345.51	4,214.12	787.65	-203.61	-195.63	0.00	0.00	
4,400.00	12.39	345.51	4,311.79	808.42	-208.98	-200.79	0.00	0.00	
4,500.00	12.39	345.51	4,409.46	829.20	-214.35	-205.95	0.00	0.00	
4,600.00	12.39	345.51	4,507.13	849.97	-219.72	-211.11	0.00	0.00	
4,700.00	12.39	345.51	4,604.80	870.75	-225.09	-216.27	0.00	0.00	
4,800.00	12.39	345.51	4,702.47	891.52	-230.46	-221.43	0.00	0.00	
4,900.00	12.39	345.51	4,800.14	912.29	-235.83	-226.59	0.00	0.00	
5,000.00	12.39	345.51	4,897.81	933.07	-241.20	-231.75	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Company:</b>	Crestone Peak Resources	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Project:</b>	DJ BASIN	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site:</b>	S25-T1N-R66W (SAM)	<b>North Reference:</b>	Grid
<b>Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1		

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,100.00	12.39	345.51	4,995.48	953.84	-246.57	-236.91	0.00	0.00	
5,200.00	12.39	345.51	5,093.15	974.62	-251.94	-242.07	0.00	0.00	
5,300.00	12.39	345.51	5,190.82	995.39	-257.31	-247.23	0.00	0.00	
5,400.00	12.39	345.51	5,288.49	1,016.17	-262.68	-252.38	0.00	0.00	
5,500.00	12.39	345.51	5,386.17	1,036.94	-268.06	-257.54	0.00	0.00	
5,600.00	12.39	345.51	5,483.84	1,057.71	-273.43	-262.70	0.00	0.00	
5,700.00	12.39	345.51	5,581.51	1,078.49	-278.80	-267.86	0.00	0.00	
5,703.88	12.39	345.51	5,585.30	1,079.30	-279.00	-268.06	0.00	0.00	Start Drop -2.00
5,800.00	10.47	345.51	5,679.51	1,097.74	-283.77	-272.64	2.00	-2.00	
5,900.00	8.47	345.51	5,778.14	1,113.66	-287.89	-276.60	2.00	-2.00	
6,000.00	6.47	345.51	5,877.29	1,126.24	-291.14	-279.72	2.00	-2.00	
6,100.00	4.47	345.51	5,976.83	1,135.47	-293.53	-282.02	2.00	-2.00	
6,200.00	2.47	345.51	6,076.64	1,141.33	-295.04	-283.47	2.00	-2.00	
6,300.00	0.47	345.51	6,176.60	1,143.81	-295.68	-284.09	2.00	-2.00	
6,323.40	0.00	0.00	6,200.00	1,143.90	-295.70	-284.11	2.00	-2.00	EOD; INC=0°
6,400.00	0.00	0.00	6,276.60	1,143.90	-295.70	-284.11	0.00	0.00	
6,500.00	0.00	0.00	6,376.60	1,143.90	-295.70	-284.11	0.00	0.00	
6,600.00	0.00	0.00	6,476.60	1,143.90	-295.70	-284.11	0.00	0.00	
6,700.00	0.00	0.00	6,576.60	1,143.90	-295.70	-284.11	0.00	0.00	
6,800.00	0.00	0.00	6,676.60	1,143.90	-295.70	-284.11	0.00	0.00	
6,817.20	0.00	0.00	6,693.80	1,143.90	-295.70	-284.11	0.00	0.00	Start Build 8.00
6,900.00	6.62	89.42	6,776.41	1,143.95	-290.92	-279.33	8.00	8.00	
7,000.00	14.62	89.42	6,874.62	1,144.13	-272.50	-260.91	8.00	8.00	
7,100.00	22.62	89.42	6,969.31	1,144.46	-240.60	-229.00	8.00	8.00	
7,200.00	30.62	89.42	7,058.63	1,144.91	-195.82	-184.22	8.00	8.00	
7,300.00	38.62	89.42	7,140.86	1,145.49	-139.05	-127.45	8.00	8.00	
7,400.00	46.62	89.42	7,214.38	1,146.18	-71.39	-59.79	8.00	8.00	
7,500.00	54.62	89.42	7,277.77	1,146.96	5.84	17.45	8.00	8.00	
7,600.00	62.62	89.42	7,329.79	1,147.83	91.14	102.76	8.00	8.00	
7,700.00	70.62	89.42	7,369.43	1,148.76	182.86	194.47	8.00	8.00	
7,800.00	78.62	89.42	7,395.93	1,149.74	279.19	290.82	8.00	8.00	
7,900.00	86.62	89.42	7,408.76	1,150.75	378.28	389.91	8.00	8.00	
7,942.20	90.00	89.42	7,410.00	1,151.18	420.46	432.09	8.00	8.00	LP @ 7410' TVD; 90°
8,000.00	90.00	89.42	7,410.00	1,151.76	478.25	489.88	0.00	0.00	
8,100.00	90.00	89.42	7,410.00	1,152.78	578.24	589.88	0.00	0.00	
8,200.00	90.00	89.42	7,410.00	1,153.80	678.24	689.88	0.00	0.00	
8,300.00	90.00	89.42	7,410.00	1,154.81	778.23	789.88	0.00	0.00	
8,400.00	90.00	89.42	7,410.00	1,155.83	878.23	889.88	0.00	0.00	
8,500.00	90.00	89.42	7,410.00	1,156.85	978.22	989.88	0.00	0.00	
8,600.00	90.00	89.42	7,410.00	1,157.86	1,078.22	1,089.88	0.00	0.00	
8,700.00	90.00	89.42	7,410.00	1,158.88	1,178.21	1,189.88	0.00	0.00	
8,800.00	90.00	89.42	7,410.00	1,159.89	1,278.21	1,289.88	0.00	0.00	
8,900.00	90.00	89.42	7,410.00	1,160.91	1,378.20	1,389.88	0.00	0.00	
9,000.00	90.00	89.42	7,410.00	1,161.93	1,478.20	1,489.88	0.00	0.00	
9,100.00	90.00	89.42	7,410.00	1,162.94	1,578.19	1,589.88	0.00	0.00	
9,200.00	90.00	89.42	7,410.00	1,163.96	1,678.19	1,689.88	0.00	0.00	
9,300.00	90.00	89.42	7,410.00	1,164.98	1,778.18	1,789.88	0.00	0.00	
9,400.00	90.00	89.42	7,410.00	1,165.99	1,878.18	1,889.88	0.00	0.00	
9,500.00	90.00	89.42	7,410.00	1,167.01	1,978.17	1,989.88	0.00	0.00	
9,600.00	90.00	89.42	7,410.00	1,168.02	2,078.17	2,089.88	0.00	0.00	
9,700.00	90.00	89.42	7,410.00	1,169.04	2,178.16	2,189.88	0.00	0.00	
9,800.00	90.00	89.42	7,410.00	1,170.06	2,278.16	2,289.88	0.00	0.00	

# Cathedral Energy Services

## Planning Report

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<b>Company:</b>	Crestone Peak Resources	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Project:</b>	DJ BASIN	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site:</b>	S25-T1N-R66W (SAM)	<b>North Reference:</b>	Grid
<b>Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1		

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,900.00	90.00	89.42	7,410.00	1,171.07	2,378.15	2,389.88	0.00	0.00	
10,000.00	90.00	89.42	7,410.00	1,172.09	2,478.15	2,489.88	0.00	0.00	
10,100.00	90.00	89.42	7,410.00	1,173.11	2,578.14	2,589.88	0.00	0.00	
10,200.00	90.00	89.42	7,410.00	1,174.12	2,678.14	2,689.88	0.00	0.00	
10,300.00	90.00	89.42	7,410.00	1,175.14	2,778.13	2,789.88	0.00	0.00	
10,400.00	90.00	89.42	7,410.00	1,176.15	2,878.13	2,889.88	0.00	0.00	
10,500.00	90.00	89.42	7,410.00	1,177.17	2,978.12	2,989.88	0.00	0.00	
10,600.00	90.00	89.42	7,410.00	1,178.19	3,078.12	3,089.88	0.00	0.00	
10,700.00	90.00	89.42	7,410.00	1,179.20	3,178.11	3,189.88	0.00	0.00	
10,800.00	90.00	89.42	7,410.00	1,180.22	3,278.10	3,289.88	0.00	0.00	
10,900.00	90.00	89.42	7,410.00	1,181.24	3,378.10	3,389.88	0.00	0.00	
11,000.00	90.00	89.42	7,410.00	1,182.25	3,478.09	3,489.88	0.00	0.00	
11,100.00	90.00	89.42	7,410.00	1,183.27	3,578.09	3,589.88	0.00	0.00	
11,200.00	90.00	89.42	7,410.00	1,184.28	3,678.08	3,689.88	0.00	0.00	
11,300.00	90.00	89.42	7,410.00	1,185.30	3,778.08	3,789.88	0.00	0.00	
11,400.00	90.00	89.42	7,410.00	1,186.32	3,878.07	3,889.88	0.00	0.00	
11,500.00	90.00	89.42	7,410.00	1,187.33	3,978.07	3,989.88	0.00	0.00	
11,600.00	90.00	89.42	7,410.00	1,188.35	4,078.06	4,089.88	0.00	0.00	
11,700.00	90.00	89.42	7,410.00	1,189.37	4,178.06	4,189.88	0.00	0.00	
11,800.00	90.00	89.42	7,410.00	1,190.38	4,278.05	4,289.88	0.00	0.00	
11,900.00	90.00	89.42	7,410.00	1,191.40	4,378.05	4,389.88	0.00	0.00	
12,000.00	90.00	89.42	7,410.00	1,192.42	4,478.04	4,489.88	0.00	0.00	
12,019.72	90.00	89.42	7,410.00	1,192.62	4,497.76	4,509.60	0.00	0.00	TD at 12019.72

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SAM 3A-25H TPZ	0.00	359.50	7,360.90	1,148.53	159.24	1,251,805.29	3,214,736.22	40.022044	-104.733248
- plan misses target center by 0.23usft at 7674.92usft MD (7360.70 TVD, 1148.52 N, 159.34 E)									
- Point									
SAM 3A-25H PBHL	0.00	359.49	7,410.00	1,192.62	4,497.76	1,251,849.37	3,219,074.73	40.022061	-104.717756
- plan hits target center									
- Point									

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
200.00	200.00	0.00	0.00	KOP @ 200'
819.52	814.70	64.60	-16.70	EOB; INC=12.39°
5,703.88	5,585.30	1,079.30	-279.00	Start Drop -2.00
6,323.40	6,200.00	1,143.90	-295.70	EOD; INC=0°
6,817.20	6,693.80	1,143.90	-295.70	Start Build 8.00
7,942.20	7,410.00	1,151.18	420.46	LP @ 7410' TVD; 90°
12,019.72	7,410.00	1,192.62	4,497.76	TD at 12019.72

# **Crestone Peak Resources**

**DJ BASIN**

**S25-T1N-R66W (SAM)**

**SAM 3A-25H-M166**

**OH**

**PLAN #1**

## **Anticollision Report**

**18 November, 2016**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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>	Stations	<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 1,500.00usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	11/18/2016		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	12,019.72	PLAN #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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 Offset Well - Wellbore - Design	Reference Measured	Offset Measured	Distance		Separation Factor	Warning
	Depth (usft)	Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
S25-T1N-R66W (SAM)						
Bare Spaces 11-36 (EXISTING) - CPR WELL - NO SURV						Out of range
Beierle 1 (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Beierle 1-A (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Beierle 2 (EXISTING) - CPR WELL - SURVEYS	4,393.67	4,351.37	649.87	616.54	19.496	CC
Beierle 2 (EXISTING) - CPR WELL - SURVEYS	4,400.00	4,357.32	649.88	616.48	19.458	ES
Beierle 2 (EXISTING) - CPR WELL - SURVEYS	4,700.00	4,625.93	665.70	629.76	18.523	SF
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,397.91	10,465.47	361.61	298.36	5.717	CC
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,400.00	10,465.47	361.62	298.12	5.695	ES
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,500.00	10,465.33	382.65	309.60	5.238	SF
Gilmore 1-30 (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Lehl 1 (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Lochbuie 1 (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Lochbuie 21-31 (EXISTING) - CPR WELL - GYRO						Out of range
Lochbuie 2A-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2B-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2C-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2D-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2E-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2F-31H-D165 (PLAN) - CPR WELL - PLAN ON						Out of range
Lochbuie 2G-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2H-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lutz 1-A (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Sam 1 (EXISTING) - CPR WELL - NO SURVEYS	200.00	161.00	1,327.82	1,327.14	1,971.694	CC
Sam 1 (EXISTING) - CPR WELL - NO SURVEYS	300.00	260.98	1,328.16	1,327.02	1,163.790	ES
Sam 1 (EXISTING) - CPR WELL - NO SURVEYS	1,100.00	500.00	1,465.45	1,459.96	266.735	SF
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	7,731.42	7,507.33	516.17	462.56	9.629	CC
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	7,750.00	7,512.29	516.45	462.32	9.541	ES
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	7,850.00	7,534.01	528.06	471.23	9.291	SF
SAM 3B-25H-M166 - OH - PLAN #1	200.00	200.00	10.21	9.22	10.284	CC, ES
SAM 3B-25H-M166 - OH - PLAN #1	12,019.72	12,170.36	217.17	14.96	1.074	Level 2, SF
SAM 3C-25H-M166 - OH - PLAN #1	200.00	200.00	20.04	19.04	20.179	CC
SAM 3C-25H-M166 - OH - PLAN #1	12,019.72	11,913.53	254.60	-35.44	0.878	Level 1, ES, SF
SAM 3D-25H-M166 - OH - PLAN #1	200.00	200.00	30.23	29.24	30.446	CC, ES
SAM 3D-25H-M166 - OH - PLAN #1	12,019.72	11,950.31	464.81	162.41	1.537	SF
SAM 3E-25H-M166 - OH - PLAN #1	200.00	200.00	40.07	39.07	40.351	CC, ES
SAM 3E-25H-M166 - OH - PLAN #1	12,019.72	11,848.32	763.10	462.48	2.538	SF
SAM 3F-25H-M166 - OH - PLAN #1	200.00	200.00	50.27	49.28	50.629	CC, ES
SAM 3F-25H-M166 - OH - PLAN #1	12,019.72	11,909.47	909.96	607.72	3.011	SF
SAM 3G-25H-M166 - OH - PLAN #1	200.00	200.00	60.10	59.11	60.529	CC, ES
SAM 3G-25H-M166 - OH - PLAN #1	12,019.72	11,825.78	1,122.34	821.69	3.733	SF
SAM 3H-25H-M166 - OH - PLAN #1	200.00	200.00	70.30	69.31	70.801	CC, ES
SAM 3H-25H-M166 - OH - PLAN #1	12,019.72	12,070.04	1,340.80	1,040.53	4.465	SF
SAM 3I-25H-M166 - OH - PLAN #1	200.00	200.00	80.14	79.15	80.706	CC, ES
SAM 3I-25H-M166 - OH - PLAN #1	12,019.72	11,906.06	1,434.89	1,134.19	4.772	SF
SAM 3J-25H-M166 - OH - PLAN #1	200.00	200.00	89.98	88.99	90.617	CC, ES
SAM 3J-25H-M166 - OH - PLAN #1	800.00	791.84	152.58	147.27	28.701	SF
SAM 3K-25H-M166 - OH - PLAN #1	200.00	200.00	100.17	99.18	100.884	CC, ES
SAM 3K-25H-M166 - OH - PLAN #1	700.00	693.32	144.14	139.54	31.382	SF
SAM 3L-25H-M166 - OH - PLAN #1	200.00	200.00	110.02	109.03	110.800	CC, ES
SAM 3L-25H-M166 - OH - PLAN #1	700.00	687.93	158.55	153.96	34.583	SF
SAM 3M-25H-M166 - OH - PLAN #1	200.00	200.00	120.21	119.22	121.063	CC, ES
SAM 3M-25H-M166 - OH - PLAN #1	700.00	681.47	176.53	171.93	38.327	SF
SAM 3N-25H-M166 - OH - PLAN #1	200.00	200.00	130.05	129.05	130.968	CC, ES

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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						
S25-T1N-R66W (SAM)						
SAM 3N-25H-M166 - OH - PLAN #1	700.00	673.85	197.34	192.68	42.337	SF
SAM 3O-25H-M166 - OH - PLAN #1	200.00	200.00	140.25	139.26	141.246	CC, ES
SAM 3O-25H-M166 - OH - PLAN #1	700.00	664.76	221.68	216.93	46.659	SF
State 7-36 CG (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Templin 1 (EXISTING) - CPR WELL - NO SURVEYS						Out of range
Wenzel 1 (EXISTING) - CPR WELL - NO SURVEYS	11,556.61	7,331.00	1,211.92	1,066.91	8.358	CC
Wenzel 1 (EXISTING) - CPR WELL - NO SURVEYS	11,600.00	7,331.00	1,212.69	1,066.53	8.297	ES
Wenzel 1 (EXISTING) - CPR WELL - NO SURVEYS	11,700.00	7,331.00	1,220.37	1,072.17	8.235	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Beierle 2 (EXISTING) - CPR WELL - SURVEYS												Offset Site Error:	0.00 usft
Survey Program: 1357-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
1,300.00	1,283.99	1,357.00	1,356.11	5.01	1.72	-8.93	1,536.59	-628.40	1,493.91	1,487.78	6.13	243.618	
1,400.00	1,381.66	1,450.42	1,449.35	5.47	1.94	-8.92	1,533.56	-623.52	1,467.81	1,461.11	6.70	218.928	
1,500.00	1,479.33	1,540.99	1,539.76	5.93	2.14	-8.91	1,531.03	-618.83	1,442.12	1,434.85	7.27	198.308	
1,600.00	1,577.00	1,635.71	1,634.33	6.39	2.34	-8.89	1,528.65	-614.00	1,416.71	1,408.87	7.84	180.778	
1,700.00	1,674.67	1,730.87	1,729.35	6.85	2.53	-8.88	1,526.31	-609.31	1,391.41	1,383.01	8.40	165.614	
1,800.00	1,772.35	1,881.16	1,879.27	7.31	2.88	-8.92	1,519.29	-601.81	1,364.04	1,354.96	9.08	150.229	
1,900.00	1,870.02	1,998.76	1,996.38	7.78	3.17	-9.13	1,509.29	-598.38	1,334.13	1,324.45	9.68	137.863	
2,000.00	1,967.69	2,092.95	2,089.96	8.24	3.39	-9.53	1,498.68	-599.67	1,303.45	1,293.23	10.22	127.499	
2,100.00	2,065.36	2,180.17	2,176.44	8.71	3.59	-10.04	1,488.11	-603.57	1,273.28	1,262.52	10.76	118.297	
2,200.00	2,163.03	2,296.83	2,291.77	9.17	3.87	-10.92	1,472.53	-611.57	1,243.17	1,231.82	11.35	109.490	
2,300.00	2,260.70	2,408.23	2,401.18	9.64	4.19	-11.98	1,454.05	-621.39	1,211.15	1,199.18	11.97	101.162	
2,400.00	2,358.37	2,517.39	2,507.64	10.11	4.54	-13.26	1,433.24	-633.64	1,178.35	1,165.71	12.64	93.236	
2,500.00	2,456.04	2,676.19	2,661.60	10.57	5.15	-15.31	1,397.81	-649.38	1,142.88	1,129.47	13.41	85.225	
2,600.00	2,553.71	2,810.08	2,789.83	11.04	5.79	-17.32	1,361.05	-660.78	1,102.95	1,088.76	14.20	77.700	
2,700.00	2,651.38	2,916.26	2,889.89	11.51	6.36	-19.28	1,327.10	-671.18	1,060.55	1,045.53	15.02	70.614	
2,800.00	2,749.05	2,985.27	2,955.06	11.97	6.71	-20.64	1,305.45	-677.98	1,019.59	1,003.79	15.80	64.522	
2,900.00	2,846.72	3,069.09	3,034.55	12.44	7.10	-22.36	1,280.13	-686.13	980.33	963.72	16.61	59.025	
3,000.00	2,944.40	3,139.90	3,101.78	12.91	7.44	-23.91	1,259.18	-693.49	942.84	925.39	17.45	54.032	
3,100.00	3,042.07	3,215.07	3,173.21	13.38	7.83	-25.69	1,237.61	-702.64	907.99	889.63	18.36	49.453	
3,200.00	3,139.74	3,297.97	3,251.60	13.84	8.28	-27.89	1,213.39	-714.50	875.27	855.90	19.37	45.188	
3,300.00	3,237.41	3,387.68	3,336.21	14.31	8.79	-30.46	1,186.72	-727.82	844.14	823.67	20.47	41.237	
3,400.00	3,335.08	3,478.10	3,421.56	14.78	9.29	-33.19	1,159.83	-740.77	814.53	792.93	21.59	37.720	
3,500.00	3,432.75	3,570.57	3,509.28	15.25	9.78	-36.05	1,133.05	-752.50	786.35	763.62	22.73	34.599	
3,600.00	3,530.42	3,657.81	3,592.09	15.72	10.26	-38.89	1,107.76	-763.25	759.99	736.09	23.90	31.805	
3,700.00	3,628.09	3,749.70	3,679.12	16.18	10.80	-42.10	1,080.58	-774.63	735.65	710.51	25.14	29.260	
3,800.00	3,725.76	3,837.38	3,762.03	16.65	11.33	-45.35	1,054.17	-785.40	713.57	687.16	26.41	27.023	
3,900.00	3,823.43	3,923.41	3,843.39	17.12	11.82	-48.68	1,028.27	-795.97	694.35	666.70	27.65	25.113	
4,000.00	3,921.10	4,012.49	3,927.75	17.59	12.33	-52.24	1,001.74	-806.68	678.15	649.25	28.89	23.470	
4,100.00	4,018.77	4,098.10	4,008.65	18.06	12.85	-55.83	975.72	-817.03	665.10	634.97	30.12	22.079	
4,200.00	4,116.44	4,180.34	4,086.21	18.52	13.34	-59.39	950.46	-827.44	656.00	624.73	31.27	20.976	
4,300.00	4,214.12	4,265.55	4,166.70	18.99	13.84	-63.10	924.84	-838.66	651.21	618.86	32.36	20.127	
4,393.67	4,305.61	4,351.37	4,247.81	19.43	14.33	-66.86	899.03	-849.64	649.87	616.54	33.33	19.496 CC	
4,400.00	4,311.79	4,357.32	4,253.44	19.46	14.37	-67.12	897.25	-850.38	649.88	616.48	33.40	19.458 ES	
4,500.00	4,409.46	4,448.27	4,339.57	19.93	14.90	-71.08	870.08	-861.14	651.52	617.17	34.35	18.969	
4,600.00	4,507.13	4,533.96	4,420.57	20.40	15.41	-74.82	844.04	-871.32	656.96	621.81	35.15	18.688	
4,700.00	4,604.80	4,625.93	4,507.14	20.87	15.99	-78.86	814.77	-881.64	665.70	629.76	35.94	18.523 SF	
4,800.00	4,702.47	4,711.62	4,587.54	21.34	16.55	-82.62	786.58	-890.80	677.92	641.37	36.55	18.547	
4,900.00	4,800.14	4,796.10	4,666.99	21.80	17.06	-86.16	759.41	-900.06	693.91	656.89	37.02	18.742	
5,000.00	4,897.81	4,883.63	4,749.78	22.27	17.55	-89.57	732.84	-910.14	713.17	675.74	37.42	19.057	
5,100.00	4,995.48	4,976.32	4,837.81	22.74	18.06	-92.92	705.87	-920.84	734.88	697.05	37.83	19.428	
5,200.00	5,093.15	5,073.80	4,930.76	23.21	18.59	-96.21	678.49	-931.47	758.19	719.95	38.24	19.827	
5,300.00	5,190.82	5,171.72	5,024.70	23.68	19.09	-99.23	652.82	-941.67	782.50	743.87	38.63	20.255	
5,400.00	5,288.49	5,270.73	5,120.30	24.15	19.56	-101.96	629.24	-952.03	807.59	768.56	39.03	20.692	
5,500.00	5,386.17	5,386.97	5,233.43	24.62	20.07	-104.76	605.31	-963.82	832.36	792.77	39.58	21.028	
5,600.00	5,483.84	5,516.07	5,360.30	25.09	20.55	-107.45	584.01	-974.51	854.66	814.46	40.20	21.260	
5,703.88	5,585.30	5,639.55	5,482.52	25.57	20.93	-109.69	568.52	-982.64	875.18	834.47	40.71	21.497	
5,800.00	5,679.51	5,741.65	5,583.94	26.01	21.21	-111.56	558.52	-988.90	892.49	851.38	41.10	21.714	
5,900.00	5,778.14	5,878.72	5,720.48	26.43	21.52	-113.39	548.82	-995.80	907.29	865.64	41.65	21.783	
6,000.00	5,877.29	6,016.89	5,858.51	26.82	21.74	-114.67	544.31	-999.59	916.95	874.81	42.14	21.760	
6,100.00	5,976.83	6,126.92	5,968.54	27.18	21.87	-115.38	543.48	-999.83	921.59	879.05	42.55	21.661	
6,200.00	6,076.64	6,226.83	6,068.44	27.51	21.99	-115.82	542.57	-999.83	924.81	881.85	42.95	21.530	
6,300.00	6,176.60	6,327.05	6,168.66	27.81	22.12	-116.06	541.42	-999.57	926.47	883.09	43.38	21.359	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Beierle 2 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error:	0.00 usft
Survey Program: 1357-ISCWSA MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
6,323.40	6,200.00	6,350.69	6,192.29	27.88	22.15	-130.58	541.11	-999.46	926.64	883.16	43.48	21.313		
6,400.00	6,276.60	6,428.62	6,270.21	28.09	22.25	-130.64	540.11	-999.05	926.97	883.16	43.81	21.158		
6,500.00	6,376.60	6,528.86	6,370.45	28.37	22.38	-130.73	538.79	-998.38	927.32	883.07	44.25	20.956		
6,600.00	6,476.60	6,626.00	6,467.57	28.65	22.51	-130.83	537.38	-997.59	927.66	882.97	44.68	20.760		
6,700.00	6,576.60	6,724.66	6,566.21	28.94	22.64	-130.94	535.71	-996.87	928.22	883.09	45.12	20.570		
6,800.00	6,676.60	6,820.46	6,661.99	29.22	22.78	-131.05	533.72	-996.45	929.24	883.68	45.56	20.396		
6,817.20	6,693.80	6,837.15	6,678.67	29.27	22.80	-131.07	533.34	-996.40	929.46	883.83	45.64	20.366		
6,850.00	6,726.59	6,868.94	6,710.46	29.36	22.85	139.45	532.59	-996.32	930.48	884.70	45.78	20.323		
6,900.00	6,776.41	6,917.27	6,758.77	29.49	22.92	139.35	531.40	-996.24	934.29	888.27	46.02	20.302		
6,950.00	6,825.84	6,965.19	6,806.68	29.62	22.99	139.24	530.15	-996.20	940.82	894.55	46.27	20.332		
7,000.00	6,874.62	7,012.48	6,853.95	29.74	23.07	139.10	528.86	-996.21	950.06	903.52	46.54	20.414		
7,050.00	6,922.52	7,059.02	6,900.47	29.86	23.14	138.93	527.50	-996.23	962.01	915.18	46.82	20.545		
7,100.00	6,969.31	7,104.46	6,945.89	29.96	23.22	138.71	526.09	-996.26	976.64	929.52	47.12	20.728		
7,150.00	7,014.75	7,148.58	6,989.99	30.06	23.29	138.42	524.62	-996.29	993.94	946.52	47.42	20.961		
7,200.00	7,058.63	7,191.18	7,032.56	30.16	23.36	138.04	523.12	-996.32	1,013.88	966.15	47.73	21.243		
7,250.00	7,100.73	7,231.69	7,073.03	30.24	23.43	137.53	521.62	-996.36	1,036.42	988.38	48.04	21.574		
7,300.00	7,140.86	7,270.12	7,111.44	30.32	23.50	136.87	520.15	-996.43	1,061.53	1,013.17	48.35	21.953		
7,350.00	7,178.80	7,306.40	7,147.69	30.39	23.56	136.02	518.71	-996.53	1,089.13	1,040.46	48.67	22.378		
7,400.00	7,214.38	7,340.36	7,181.62	30.45	23.63	134.94	517.32	-996.65	1,119.13	1,070.15	48.98	22.849		
7,450.00	7,247.42	7,371.81	7,213.05	30.50	23.68	133.58	516.00	-996.78	1,151.42	1,102.13	49.29	23.362		
7,500.00	7,277.77	7,401.94	7,243.14	30.55	23.73	131.92	514.70	-996.93	1,185.88	1,136.29	49.59	23.915		
7,550.00	7,305.27	7,432.66	7,273.84	30.58	23.79	129.99	513.39	-997.02	1,222.27	1,172.38	49.89	24.499		
7,600.00	7,329.79	7,460.29	7,301.44	30.62	23.84	127.59	512.23	-997.03	1,260.45	1,210.27	50.18	25.117		
7,650.00	7,351.21	7,484.66	7,325.79	30.64	23.88	124.61	511.23	-996.98	1,300.26	1,249.80	50.46	25.767		
7,700.00	7,369.43	7,505.60	7,346.72	30.67	23.92	120.90	510.38	-996.89	1,341.54	1,290.81	50.73	26.447		
7,750.00	7,384.36	7,522.99	7,364.09	30.72	23.95	116.34	509.68	-996.79	1,384.10	1,333.12	50.97	27.154		
7,800.00	7,395.93	7,536.68	7,377.77	31.01	23.97	110.77	509.14	-996.69	1,427.75	1,376.55	51.20	27.885		
7,850.00	7,404.07	7,546.55	7,387.64	31.71	23.99	104.09	508.75	-996.60	1,472.29	1,420.87	51.41	28.638		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Beierle KE 26-361HN - GWOG WELL - GWOG WELL													Offset Site Error: 0.00 usft		
Survey Program: 16-ISWWSA MWD														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis				Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning		
6,100.00	5,976.83	10,474.32	7,499.06	27.18	56.82	-165.91	1,135.23	-321.94	1,498.50	1,467.63	30.87	48.538			
6,200.00	6,076.64	10,468.45	7,499.06	27.51	56.74	-154.04	1,141.10	-321.99	1,398.68	1,367.79	30.89	45.273			
6,300.00	6,176.60	10,465.96	7,499.06	27.81	56.70	-99.40	1,143.58	-322.01	1,298.73	1,267.78	30.94	41.974			
6,323.40	6,200.00	10,465.87	7,499.06	27.88	56.70	-90.48	1,143.68	-322.01	1,275.33	1,244.37	30.96	41.197			
6,400.00	6,276.60	10,465.87	7,499.06	28.09	56.70	-90.48	1,143.68	-322.01	1,198.75	1,167.74	31.01	38.656			
6,500.00	6,376.60	10,465.87	7,499.06	28.37	56.70	-90.48	1,143.68	-322.01	1,098.77	1,067.68	31.09	35.341			
6,600.00	6,476.60	10,465.87	7,499.06	28.65	56.70	-90.48	1,143.68	-322.01	998.81	967.63	31.18	32.033			
6,700.00	6,576.60	10,465.87	7,499.06	28.94	56.70	-90.48	1,143.68	-322.01	898.84	867.56	31.28	28.731			
6,800.00	6,676.60	10,465.87	7,499.06	29.22	56.70	-90.48	1,143.68	-322.01	798.89	767.49	31.41	25.438			
6,817.20	6,693.80	10,465.87	7,499.06	29.27	56.70	-90.48	1,143.68	-322.01	781.70	750.27	31.43	24.872			
6,850.00	6,726.59	10,465.87	7,499.06	29.36	56.70	-179.95	1,143.68	-322.01	748.96	717.47	31.49	23.785			
6,900.00	6,776.41	10,465.86	7,499.06	29.49	56.70	-179.97	1,143.69	-322.01	699.34	667.68	31.65	22.093			
6,950.00	6,825.84	10,465.85	7,499.06	29.62	56.70	-179.97	1,143.70	-322.01	650.36	618.41	31.96	20.350			
7,000.00	6,874.62	10,465.83	7,499.06	29.74	56.70	-179.97	1,143.72	-322.01	602.48	569.98	32.50	18.539			
7,050.00	6,922.52	10,465.80	7,499.06	29.86	56.70	-179.97	1,143.74	-322.01	556.21	522.78	33.43	16.638			
7,100.00	6,969.31	10,465.77	7,499.06	29.96	56.70	-179.97	1,143.78	-322.01	512.26	477.30	34.97	14.650			
7,150.00	7,014.75	10,465.73	7,499.06	30.06	56.70	-179.96	1,143.81	-322.01	471.53	434.17	37.36	12.621			
7,200.00	7,058.63	10,465.69	7,499.06	30.16	56.70	-179.96	1,143.86	-322.01	435.13	394.31	40.82	10.660			
7,250.00	7,100.73	10,465.64	7,499.06	30.24	56.70	-179.95	1,143.90	-322.01	404.44	359.00	45.44	8.901			
7,300.00	7,140.86	10,465.59	7,499.06	30.32	56.70	-179.95	1,143.96	-322.01	381.01	329.93	51.08	7.458			
7,350.00	7,178.80	10,465.53	7,499.06	30.39	56.69	-179.94	1,144.02	-322.01	366.36	309.02	57.33	6.390			
7,397.91	7,212.94	10,465.47	7,499.06	30.44	56.69	-179.93	1,144.08	-322.01	361.61	298.36	63.25	5.717 CC			
7,400.00	7,214.38	10,465.47	7,499.06	30.45	56.69	-179.93	1,144.08	-322.01	361.62	298.12	63.50	5.695 ES			
7,450.00	7,247.42	10,465.40	7,499.06	30.50	56.69	-179.92	1,144.14	-322.01	367.21	298.33	68.88	5.331			
7,500.00	7,277.77	10,465.33	7,499.06	30.55	56.69	-179.90	1,144.22	-322.01	382.65	309.60	73.05	5.238 SF			
7,550.00	7,305.27	10,465.26	7,499.06	30.58	56.69	-179.89	1,144.29	-322.02	406.74	330.81	75.94	5.356			
7,600.00	7,329.79	10,465.18	7,499.06	30.62	56.69	-179.87	1,144.37	-322.02	437.97	360.21	77.76	5.632			
7,650.00	7,351.21	10,465.10	7,499.06	30.64	56.69	-179.84	1,144.45	-322.02	474.78	395.95	78.82	6.023			
7,700.00	7,369.43	10,465.01	7,499.06	30.67	56.69	-179.81	1,144.53	-322.02	515.82	436.42	79.40	6.497			
7,750.00	7,384.36	10,464.93	7,499.06	30.72	56.69	-179.76	1,144.62	-322.02	559.99	480.31	79.68	7.028			
7,800.00	7,395.93	10,464.84	7,499.06	31.01	56.68	-179.69	1,144.70	-322.02	606.42	526.61	79.81	7.598			
7,850.00	7,404.07	10,464.75	7,499.06	31.71	56.68	-179.57	1,144.79	-322.02	654.42	574.56	79.85	8.195			
7,900.00	7,408.76	10,464.67	7,499.06	32.51	56.68	-179.33	1,144.88	-322.02	703.46	623.59	79.86	8.808			
7,942.20	7,410.00	10,464.59	7,499.06	33.23	56.68	-178.83	1,144.96	-322.02	745.35	665.48	79.86	9.333			
8,000.00	7,410.00	10,464.49	7,499.06	34.28	56.68	-178.74	1,145.06	-322.02	802.94	723.08	79.86	10.054			
8,100.00	7,410.00	10,464.31	7,499.06	36.24	56.68	-178.59	1,145.24	-322.02	902.65	822.80	79.85	11.304			
8,200.00	7,410.00	10,464.13	7,499.06	38.37	56.67	-178.43	1,145.42	-322.02	1,002.41	922.57	79.84	12.555			
8,300.00	7,410.00	10,463.95	7,499.06	40.64	56.67	-178.27	1,145.59	-322.03	1,102.22	1,022.39	79.83	13.807			
8,400.00	7,410.00	10,463.77	7,499.06	43.03	56.67	-178.11	1,145.77	-322.03	1,202.06	1,122.24	79.82	15.059			
8,500.00	7,410.00	10,463.59	7,499.06	45.52	56.67	-177.96	1,145.95	-322.03	1,301.93	1,222.11	79.82	16.311			
8,600.00	7,410.00	10,463.42	7,499.06	48.10	56.66	-177.80	1,146.13	-322.03	1,401.81	1,322.00	79.81	17.564			

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Sam 1 (EXISTING) - CPR WELL - NO SURVEYS													Offset Site Error: 0.00 usft
Survey Program: 500-ISCWSA MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis		
0.00	0.00	0.00	0.00	0.00	0.00	86.84	73.19	1,325.80	1,328.39				
100.00	100.00	61.00	61.00	0.14	0.07	86.84	73.19	1,325.80	1,327.82	1,327.61	0.21	6,475.347	
200.00	200.00	161.00	161.00	0.50	0.18	86.84	73.19	1,325.80	1,327.82	1,327.14	0.67	1,971.694 CC	
300.00	299.98	260.98	260.98	0.86	0.29	101.40	73.19	1,325.80	1,328.16	1,327.02	1.14	1,163.790 ES	
400.00	399.84	360.84	360.84	1.22	0.40	101.60	73.19	1,325.80	1,329.21	1,327.59	1.61	825.190	
500.00	499.45	460.45	460.45	1.59	0.51	101.93	73.19	1,325.80	1,330.99	1,328.90	2.09	637.921	
600.00	598.70	500.00	500.00	1.96	0.55	102.04	73.19	1,325.80	1,334.91	1,332.37	2.54	525.594	
700.00	697.47	500.00	500.00	2.35	0.55	101.81	73.19	1,325.80	1,346.41	1,343.32	3.08	436.508	
800.00	795.62	500.00	500.00	2.77	0.55	101.43	73.19	1,325.80	1,365.85	1,362.15	3.70	369.211	
819.52	814.70	500.00	500.00	2.85	0.55	101.33	73.19	1,325.80	1,370.54	1,366.72	3.82	358.423	
900.00	893.31	500.00	500.00	3.20	0.55	101.33	73.19	1,325.80	1,392.67	1,388.34	4.33	321.813	
1,000.00	990.98	500.00	500.00	3.65	0.55	101.33	73.19	1,325.80	1,426.02	1,421.09	4.93	289.212	
1,100.00	1,088.65	500.00	500.00	4.10	0.55	101.33	73.19	1,325.80	1,465.45	1,459.96	5.49	266.735 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Sam 13-25 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error: 0.00 usft	
Survey Program: 1386-ISCWSA MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	87.12	66.16	1,312.97	1,314.75					
100.00	100.00	83.00	83.00	0.14	0.09	87.12	66.16	1,312.97	1,314.64	1,314.41	0.23	5,710.544		
200.00	200.00	183.00	183.00	0.50	0.20	87.12	66.16	1,312.97	1,314.64	1,313.94	0.70	1,878.675		
300.00	299.98	282.98	282.98	0.86	0.31	101.68	66.16	1,312.97	1,314.99	1,313.82	1.17	1,125.133		
400.00	399.84	382.84	382.84	1.22	0.43	101.88	66.16	1,312.97	1,316.06	1,314.42	1.64	802.734		
500.00	499.45	482.45	482.45	1.59	0.54	102.21	66.16	1,312.97	1,317.89	1,315.77	2.12	622.732		
600.00	598.70	581.70	581.70	1.96	0.65	102.67	66.16	1,312.97	1,320.53	1,317.93	2.60	507.180		
700.00	697.47	680.47	680.47	2.35	0.76	103.26	66.16	1,312.97	1,324.09	1,320.98	3.11	426.317		
800.00	795.62	778.62	778.62	2.77	0.86	103.96	66.16	1,312.97	1,328.65	1,325.03	3.63	366.348		
819.52	814.70	797.70	797.70	2.85	0.89	104.10	66.16	1,312.97	1,329.68	1,325.94	3.73	356.361		
900.00	893.31	876.31	876.31	3.20	0.97	104.81	66.16	1,312.97	1,334.08	1,329.92	4.16	320.326		
1,000.00	990.98	973.98	973.98	3.65	1.08	105.68	66.16	1,312.97	1,339.85	1,335.14	4.71	284.508		
1,100.00	1,088.65	1,071.65	1,071.65	4.10	1.19	106.54	66.16	1,312.97	1,345.93	1,340.67	5.26	255.973		
1,200.00	1,186.32	1,169.32	1,169.32	4.55	1.30	107.39	66.16	1,312.97	1,352.33	1,346.52	5.81	232.787		
1,300.00	1,283.99	1,266.99	1,266.99	5.01	1.41	108.24	66.16	1,312.97	1,359.03	1,352.67	6.36	213.624		
1,400.00	1,381.66	1,364.66	1,364.66	5.47	1.52	109.07	66.16	1,312.97	1,366.04	1,359.13	6.91	197.554		
1,500.00	1,479.33	1,454.94	1,454.94	5.93	1.69	109.83	66.25	1,313.17	1,373.56	1,366.03	7.53	182.384		
1,600.00	1,577.00	1,607.04	1,607.01	6.39	2.01	111.05	67.75	1,311.93	1,380.53	1,372.20	8.33	165.751		
1,700.00	1,674.67	1,820.91	1,820.16	6.85	2.49	112.61	75.04	1,296.81	1,381.27	1,371.97	9.30	148.601		
1,800.00	1,772.35	2,019.06	2,015.63	7.31	3.05	113.87	88.41	1,267.56	1,373.85	1,363.63	10.22	134.432		
1,900.00	1,870.02	2,203.91	2,195.13	7.78	3.76	114.75	110.12	1,229.37	1,360.05	1,348.91	11.14	122.131		
2,000.00	1,967.69	2,356.52	2,341.05	8.24	4.50	115.34	132.94	1,190.97	1,341.37	1,329.38	12.00	111.818		
2,100.00	2,065.36	2,480.55	2,458.33	8.71	5.18	115.82	152.46	1,155.69	1,319.20	1,306.41	12.79	103.169		
2,200.00	2,163.03	2,570.88	2,543.58	9.17	5.67	116.15	167.46	1,129.87	1,296.92	1,283.41	13.51	96.002		
2,300.00	2,260.70	2,662.39	2,630.18	9.64	6.16	116.51	182.13	1,104.17	1,275.30	1,261.07	14.23	89.614		
2,400.00	2,358.37	2,747.94	2,711.23	10.11	6.61	116.86	195.90	1,080.48	1,254.15	1,239.21	14.94	83.935		
2,500.00	2,456.04	2,843.18	2,801.88	10.57	7.14	117.28	210.53	1,055.21	1,234.32	1,218.65	15.67	78.751		
2,600.00	2,553.71	2,953.72	2,906.57	11.04	7.78	117.77	228.22	1,024.48	1,213.11	1,196.68	16.44	73.802		
2,700.00	2,651.38	3,052.17	2,999.86	11.51	8.36	118.24	243.50	996.98	1,192.01	1,174.83	17.18	69.397		
2,800.00	2,749.05	3,162.08	3,103.67	11.97	9.05	118.73	261.88	965.89	1,170.37	1,152.42	17.95	65.201		
2,900.00	2,846.72	3,273.00	3,207.88	12.44	9.79	119.19	281.64	933.44	1,147.54	1,128.80	18.74	61.244		
3,000.00	2,944.40	3,366.00	3,295.07	12.91	10.40	119.55	299.04	906.17	1,124.50	1,105.00	19.50	57.669		
3,100.00	3,042.07	3,457.15	3,380.72	13.38	10.96	119.94	315.66	879.79	1,101.98	1,081.74	20.24	54.445		
3,200.00	3,139.74	3,551.28	3,469.29	13.84	11.56	120.37	332.45	852.69	1,079.79	1,058.81	20.98	51.464		
3,300.00	3,237.41	3,648.54	3,560.82	14.31	12.17	120.82	349.93	824.85	1,057.80	1,036.07	21.72	48.694		
3,400.00	3,335.08	3,738.21	3,645.37	14.78	12.72	121.29	365.51	799.35	1,036.22	1,013.77	22.44	46.174		
3,500.00	3,432.75	3,833.58	3,735.41	15.25	13.32	121.79	382.18	772.71	1,015.18	992.01	23.17	43.821		
3,600.00	3,530.42	3,923.50	3,820.40	15.72	13.87	122.27	398.03	748.01	994.65	970.76	23.89	41.642		
3,700.00	3,628.09	4,022.45	3,914.13	16.18	14.48	122.87	414.54	720.91	974.56	949.98	24.58	39.642		
3,800.00	3,725.76	4,119.76	4,006.33	16.65	15.07	123.54	429.99	693.89	954.46	929.20	25.26	37.779		
3,900.00	3,823.43	4,215.16	4,096.73	17.12	15.66	124.20	445.47	667.63	934.60	908.65	25.95	36.019		
4,000.00	3,921.10	4,321.33	4,197.20	17.59	16.32	124.98	462.54	637.87	914.44	887.83	26.61	34.362		
4,100.00	4,018.77	4,415.18	4,286.02	18.06	16.91	125.79	476.46	610.99	894.25	866.99	27.26	32.806		
4,200.00	4,116.44	4,518.80	4,384.02	18.52	17.56	126.68	492.57	581.42	874.13	846.23	27.90	31.335		
4,300.00	4,214.12	4,629.87	4,488.49	18.99	18.31	127.59	511.52	548.82	852.82	824.29	28.53	29.891		
4,400.00	4,311.79	4,724.41	4,577.10	19.46	18.95	128.38	528.28	520.43	830.80	801.60	29.20	28.456		
4,500.00	4,409.46	4,808.22	4,656.07	19.93	19.49	129.13	542.55	496.25	810.31	780.44	29.87	27.127		
4,600.00	4,507.13	4,902.40	4,745.14	20.40	20.08	130.05	557.69	469.67	791.02	760.52	30.50	25.935		
4,700.00	4,604.80	5,005.47	4,842.48	20.87	20.75	131.07	574.94	440.51	771.61	740.51	31.11	24.805		
4,800.00	4,702.47	5,100.44	4,932.01	21.34	21.36	132.04	591.17	413.33	751.97	720.23	31.74	23.691		
4,900.00	4,800.14	5,186.57	5,013.56	21.80	21.90	132.95	605.62	389.64	733.73	701.34	32.39	22.650		
5,000.00	4,897.81	5,271.59	5,094.42	22.27	22.40	133.89	619.44	367.31	717.13	684.09	33.04	21.705		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Sam 13-25 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error: 0.00 usft	
Survey Program: 1386-ISCWSA MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,100.00	4,995.48	5,350.00	5,169.64	22.74	22.83	134.78	631.14	348.53	703.44	669.75	33.68	20.883		
5,200.00	5,093.15	5,422.90	5,240.19	23.21	23.18	135.66	640.73	332.94	693.16	658.86	34.30	20.209		
5,300.00	5,190.82	5,500.97	5,316.32	23.68	23.53	136.64	649.56	318.02	686.24	651.36	34.87	19.678		
5,400.00	5,288.49	5,579.55	5,393.41	24.15	23.84	137.68	656.96	304.76	682.55	647.14	35.41	19.274		
5,465.75	5,352.71	5,632.00	5,445.10	24.46	24.03	138.38	661.10	296.89	681.92	646.16	35.76	19.072		
5,500.00	5,386.17	5,660.84	5,473.59	24.62	24.12	138.77	663.16	292.86	682.08	646.15	35.93	18.983		
5,600.00	5,483.84	5,748.03	5,559.85	25.09	24.40	139.93	668.98	281.60	683.97	647.51	36.46	18.760		
5,703.88	5,585.30	5,838.69	5,649.75	25.57	24.66	141.14	674.13	271.03	687.99	650.99	37.00	18.593		
5,800.00	5,679.51	5,915.00	5,725.58	26.01	24.86	142.14	677.61	263.31	692.67	655.21	37.45	18.494		
5,900.00	5,778.14	6,009.00	5,819.17	26.43	25.08	143.14	681.18	255.31	696.76	658.77	37.99	18.343		
6,000.00	5,877.29	6,093.92	5,903.84	26.82	25.26	143.90	683.36	249.14	699.96	661.53	38.44	18.210		
6,100.00	5,976.83	6,177.42	5,987.19	27.18	25.40	144.50	684.29	244.42	702.63	663.79	38.84	18.088		
6,200.00	6,076.64	6,268.61	6,078.32	27.51	25.53	144.92	684.83	241.07	704.38	665.10	39.28	17.931		
6,300.00	6,176.60	6,360.44	6,170.12	27.81	25.65	145.18	684.70	238.44	704.40	664.69	39.70	17.742		
6,323.40	6,200.00	6,382.10	6,191.76	27.88	25.68	130.72	684.55	237.93	704.16	664.36	39.80	17.692		
6,400.00	6,276.60	6,455.12	6,264.76	28.09	25.76	130.85	683.87	236.39	703.40	663.27	40.13	17.527		
6,500.00	6,376.60	6,550.95	6,360.57	28.37	25.86	131.01	682.62	234.78	702.98	662.41	40.57	17.326		
6,527.99	6,404.58	6,577.97	6,387.58	28.45	25.89	131.06	682.18	234.37	702.97	662.27	40.70	17.272		
6,600.00	6,476.60	6,647.50	6,457.09	28.65	25.96	131.19	680.87	233.39	703.09	662.07	41.02	17.139		
6,700.00	6,576.60	6,743.74	6,553.30	28.94	26.06	131.39	678.62	232.19	703.70	662.23	41.47	16.970		
6,800.00	6,676.60	6,837.95	6,647.47	29.22	26.14	131.62	675.76	231.30	705.01	663.11	41.90	16.828		
6,817.20	6,693.80	6,854.16	6,663.66	29.27	26.15	131.66	675.19	231.18	705.32	663.35	41.97	16.806		
6,850.00	6,726.59	6,885.03	6,694.51	29.36	26.18	42.35	674.04	230.98	705.42	663.31	42.11	16.753		
6,900.00	6,776.41	6,932.01	6,741.45	29.49	26.22	42.79	672.13	230.75	703.62	661.30	42.32	16.628		
6,950.00	6,825.84	6,978.88	6,788.27	29.62	26.25	43.55	670.00	230.55	699.50	656.96	42.53	16.445		
7,000.00	6,874.62	7,025.10	6,834.43	29.74	26.28	44.64	667.66	230.35	693.13	650.37	42.76	16.211		
7,050.00	6,922.52	7,070.92	6,880.18	29.86	26.32	46.08	665.13	230.16	684.63	641.62	43.01	15.916		
7,100.00	6,969.31	7,116.14	6,925.33	29.96	26.35	47.87	662.53	230.02	674.14	630.83	43.31	15.565		
7,150.00	7,014.75	7,159.93	6,969.05	30.06	26.37	50.01	659.94	229.94	661.83	618.20	43.63	15.169		
7,200.00	7,058.63	7,202.08	7,011.11	30.16	26.40	52.48	657.39	229.95	647.99	604.01	43.99	14.732		
7,250.00	7,100.73	7,242.61	7,051.56	30.24	26.42	55.29	654.87	230.05	632.91	588.52	44.39	14.257		
7,300.00	7,140.86	7,281.34	7,090.22	30.32	26.45	58.41	652.42	230.22	616.94	572.07	44.87	13.751		
7,350.00	7,178.80	7,318.09	7,126.89	30.39	26.47	61.78	650.04	230.45	600.46	555.04	45.42	13.220		
7,400.00	7,214.38	7,351.82	7,160.55	30.45	26.49	65.29	647.79	230.71	583.96	537.90	46.06	12.677		
7,450.00	7,247.42	7,382.71	7,191.35	30.50	26.50	68.84	645.59	230.96	568.01	521.19	46.82	12.132		
7,500.00	7,277.77	7,411.11	7,219.67	30.55	26.52	72.34	643.45	231.20	553.17	505.46	47.72	11.593		
7,550.00	7,305.27	7,436.97	7,245.45	30.58	26.53	75.68	641.40	231.42	540.05	491.29	48.76	11.075		
7,600.00	7,329.79	7,460.20	7,268.60	30.62	26.54	78.74	639.48	231.63	529.25	479.29	49.96	10.593		
7,650.00	7,351.21	7,480.56	7,288.89	30.64	26.55	81.39	637.74	231.82	521.38	470.09	51.29	10.166		
7,700.00	7,369.43	7,497.95	7,306.21	30.67	26.55	83.53	636.21	231.99	516.97	464.27	52.70	9.810		
7,731.42	7,379.21	7,507.33	7,315.55	30.69	26.56	84.58	635.37	232.08	516.17	462.56	53.61	9.629 CC		
7,750.00	7,384.36	7,512.29	7,320.49	30.72	26.56	85.09	634.92	232.13	516.45	462.32	54.13	9.541 ES		
7,800.00	7,395.93	7,524.15	7,332.30	31.01	26.56	86.07	633.84	232.24	520.12	464.59	55.53	9.366		
7,850.00	7,404.07	7,534.01	7,342.11	31.71	26.57	86.50	632.96	232.32	528.06	471.23	56.84	9.291 SF		
7,900.00	7,408.76	7,539.62	7,347.71	32.51	26.57	86.12	632.48	232.35	540.22	482.28	57.94	9.323		
7,942.20	7,410.00	7,541.18	7,349.27	33.23	26.57	85.16	632.34	232.35	553.61	494.91	58.70	9.431		
8,000.00	7,410.00	7,541.39	7,349.47	34.28	26.57	85.19	632.32	232.35	576.35	516.85	59.49	9.687		
8,100.00	7,410.00	7,541.72	7,349.80	36.24	26.57	85.22	632.30	232.36	626.43	566.14	60.29	10.391		
8,200.00	7,410.00	7,542.04	7,350.12	38.37	26.57	85.26	632.27	232.36	687.49	626.96	60.53	11.359		
8,300.00	7,410.00	7,542.33	7,350.41	40.64	26.58	85.29	632.24	232.36	756.88	696.46	60.42	12.527		
8,400.00	7,410.00	7,542.61	7,350.69	43.03	26.58	85.32	632.22	232.36	832.53	772.40	60.13	13.846		
8,500.00	7,410.00	7,542.88	7,350.95	45.52	26.58	85.35	632.20	232.36	912.87	853.13	59.75	15.279		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design													S25-T1N-R66W (SAM) - Sam 13-25 (EXISTING) - CPR WELL - SURVEYS		Offset Site Error:		0.00 usft	
Survey Program:													1386-ISCWSA MWD		Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis				Distance						Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor						
8,600.00	7,410.00	7,543.13	7,351.20	48.10	26.58	85.38	632.18	232.36	996.78	937.44	59.34	16.799						
8,700.00	7,410.00	7,543.36	7,351.44	50.74	26.58	85.40	632.16	232.36	1,083.42	1,024.49	58.93	18.385						
8,800.00	7,410.00	7,543.59	7,351.66	53.45	26.58	85.43	632.14	232.36	1,172.19	1,113.65	58.54	20.023						
8,900.00	7,410.00	7,543.80	7,351.87	56.21	26.58	85.45	632.12	232.36	1,262.64	1,204.46	58.18	21.703						
9,000.00	7,410.00	7,544.01	7,352.08	59.01	26.58	85.48	632.10	232.36	1,354.43	1,296.59	57.85	23.414						
9,100.00	7,410.00	7,544.20	7,352.27	61.85	26.58	85.50	632.08	232.36	1,447.32	1,389.77	57.54	25.152						



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3B-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM											Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-178.92	-10.21	-0.19	10.21					
100.00	100.00	100.00	100.00	0.14	0.14	-178.92	-10.21	-0.19	10.21	9.94	0.28	36.997		
200.00	200.00	200.00	200.00	0.50	0.50	-178.92	-10.21	-0.19	10.21	9.22	0.99	10.284	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-166.68	-10.21	-0.19	11.90	10.19	1.71	6.955		
400.00	399.84	400.38	400.36	1.22	1.22	-169.50	-8.52	-0.68	15.32	12.86	2.46	6.228		
500.00	499.45	500.91	500.74	1.59	1.58	-170.99	-3.44	-2.15	18.77	15.53	3.24	5.796		
600.00	598.70	601.56	601.00	1.96	1.95	-171.75	5.02	-4.59	22.22	18.19	4.03	5.517		
700.00	697.47	702.33	701.01	2.35	2.32	-172.08	16.89	-8.01	25.66	20.84	4.82	5.322		
800.00	795.62	803.22	800.64	2.77	2.71	-172.13	32.14	-12.42	29.09	23.47	5.62	5.176		
819.52	814.70	822.93	820.03	2.85	2.79	-172.12	35.52	-13.39	29.75	23.98	5.78	5.150		
900.00	893.31	904.05	899.60	3.20	3.13	-171.73	50.70	-17.77	31.43	25.03	6.40	4.909		
1,000.00	990.98	1,004.05	997.51	3.65	3.55	-171.04	70.21	-23.41	32.68	25.56	7.13	4.586		
1,100.00	1,088.65	1,104.04	1,095.41	4.10	3.98	-170.39	89.73	-29.04	33.93	26.07	7.86	4.317		
1,200.00	1,186.32	1,204.03	1,193.32	4.55	4.42	-169.80	109.24	-34.68	35.19	26.59	8.61	4.089		
1,300.00	1,283.99	1,304.02	1,291.23	5.01	4.86	-169.24	128.76	-40.31	36.45	27.09	9.36	3.895		
1,400.00	1,381.66	1,404.01	1,389.13	5.47	5.30	-168.73	148.28	-45.95	37.72	27.60	10.12	3.727		
1,500.00	1,479.33	1,504.00	1,487.04	5.93	5.75	-168.24	167.79	-51.58	38.98	28.10	10.88	3.582		
1,600.00	1,577.00	1,603.99	1,584.94	6.39	6.20	-167.79	187.31	-57.21	40.25	28.60	11.65	3.455		
1,700.00	1,674.67	1,703.99	1,682.85	6.85	6.65	-167.36	206.82	-62.85	41.52	29.10	12.42	3.342		
1,800.00	1,772.35	1,803.98	1,780.76	7.31	7.10	-166.96	226.34	-68.48	42.80	29.60	13.20	3.243		
1,900.00	1,870.02	1,903.97	1,878.66	7.78	7.55	-166.58	245.86	-74.12	44.07	30.09	13.98	3.153		
2,000.00	1,967.69	2,003.96	1,976.57	8.24	8.00	-166.23	265.37	-79.75	45.35	30.59	14.76	3.073		
2,100.00	2,065.36	2,103.95	2,074.48	8.71	8.46	-165.89	284.89	-85.38	46.63	31.09	15.54	3.001		
2,200.00	2,163.03	2,203.94	2,172.38	9.17	8.91	-165.57	304.40	-91.02	47.91	31.58	16.32	2.935		
2,300.00	2,260.70	2,303.93	2,270.29	9.64	9.37	-165.27	323.92	-96.65	49.19	32.08	17.11	2.875		
2,400.00	2,358.37	2,403.93	2,368.20	10.11	9.82	-164.98	343.44	-102.29	50.47	32.57	17.90	2.820		
2,500.00	2,456.04	2,503.92	2,466.10	10.57	10.28	-164.71	362.95	-107.92	51.76	33.07	18.69	2.770		
2,600.00	2,553.71	2,603.91	2,564.01	11.04	10.73	-164.45	382.47	-113.56	53.04	33.57	19.48	2.723		
2,700.00	2,651.38	2,703.90	2,661.92	11.51	11.19	-164.20	401.98	-119.19	54.33	34.06	20.27	2.681		
2,800.00	2,749.05	2,803.89	2,759.82	11.97	11.64	-163.97	421.50	-124.82	55.62	34.56	21.06	2.641		
2,900.00	2,846.72	2,903.88	2,857.73	12.44	12.10	-163.74	441.02	-130.46	56.90	35.05	21.85	2.604		
3,000.00	2,944.40	3,003.87	2,955.64	12.91	12.56	-163.53	460.53	-136.09	58.19	35.55	22.65	2.569		
3,100.00	3,042.07	3,103.87	3,053.54	13.38	13.01	-163.32	480.05	-141.73	59.48	36.04	23.44	2.537		
3,200.00	3,139.74	3,203.86	3,151.45	13.84	13.47	-163.12	499.56	-147.36	60.77	36.53	24.24	2.507		
3,300.00	3,237.41	3,303.85	3,249.35	14.31	13.93	-162.94	519.08	-152.99	62.06	37.03	25.04	2.479		
3,400.00	3,335.08	3,403.84	3,347.26	14.78	14.38	-162.76	538.60	-158.63	63.36	37.52	25.83	2.453		
3,500.00	3,432.75	3,503.83	3,445.17	15.25	14.84	-162.58	558.11	-164.26	64.65	38.02	26.63	2.428		
3,600.00	3,530.42	3,603.82	3,543.07	15.72	15.30	-162.41	577.63	-169.90	65.94	38.51	27.43	2.404		
3,700.00	3,628.09	3,703.81	3,640.98	16.18	15.75	-162.25	597.14	-175.53	67.24	39.01	28.23	2.382		
3,800.00	3,725.76	3,803.81	3,738.89	16.65	16.21	-162.10	616.66	-181.17	68.53	39.50	29.03	2.361		
3,900.00	3,823.43	3,903.80	3,836.79	17.12	16.67	-161.95	636.18	-186.80	69.83	40.00	29.83	2.341		
4,000.00	3,921.10	4,003.79	3,934.70	17.59	17.13	-161.81	655.69	-192.43	71.12	40.49	30.63	2.322		
4,100.00	4,018.77	4,103.78	4,032.61	18.06	17.58	-161.67	675.21	-198.07	72.42	40.99	31.43	2.304		
4,200.00	4,116.44	4,203.77	4,130.51	18.52	18.04	-161.54	694.72	-203.70	73.71	41.48	32.23	2.287		
4,300.00	4,214.12	4,303.76	4,228.42	18.99	18.50	-161.41	714.24	-209.34	75.01	41.98	33.03	2.271		
4,400.00	4,311.79	4,403.76	4,326.33	19.46	18.96	-161.28	733.76	-214.97	76.31	42.47	33.83	2.255		
4,500.00	4,409.46	4,503.75	4,424.23	19.93	19.42	-161.16	753.27	-220.60	77.60	42.97	34.63	2.241		
4,600.00	4,507.13	4,603.74	4,522.14	20.40	19.87	-161.05	772.79	-226.24	78.90	43.46	35.44	2.226		
4,700.00	4,604.80	4,703.73	4,620.04	20.87	20.33	-160.93	792.30	-231.87	80.20	43.96	36.24	2.213		
4,800.00	4,702.47	4,803.72	4,717.95	21.34	20.79	-160.82	811.82	-237.51	81.50	44.45	37.04	2.200		
4,900.00	4,800.14	4,903.71	4,815.86	21.80	21.25	-160.72	831.34	-243.14	82.79	44.95	37.85	2.188		
5,000.00	4,897.81	5,003.70	4,913.76	22.27	21.71	-160.62	850.85	-248.77	84.09	45.44	38.65	2.176		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3B-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.00	4,995.48	5,103.70	5,011.67	22.74	22.16	-160.52	870.37	-254.41	85.39	45.94	39.45	2.164	
5,200.00	5,093.15	5,203.69	5,109.58	23.21	22.62	-160.42	889.88	-260.04	86.69	46.43	40.26	2.153	
5,300.00	5,190.82	5,303.68	5,207.48	23.68	23.08	-160.33	909.40	-265.68	87.99	46.93	41.06	2.143	
5,400.00	5,288.49	5,403.67	5,305.39	24.15	23.54	-160.24	928.92	-271.31	89.29	47.42	41.87	2.133	
5,500.00	5,386.17	5,503.66	5,403.30	24.62	24.00	-160.15	948.43	-276.95	90.59	47.92	42.67	2.123	
5,600.00	5,483.84	5,600.00	5,497.85	25.09	24.43	-160.33	966.15	-282.06	93.04	49.62	43.42	2.143	
5,703.88	5,585.30	5,701.73	5,598.30	25.57	24.85	-161.23	981.57	-286.51	98.87	54.77	44.10	2.242	
5,800.00	5,679.51	5,794.46	5,690.31	26.01	25.21	-162.32	992.63	-289.71	105.83	61.18	44.64	2.370	
5,900.00	5,778.14	5,890.71	5,786.15	26.43	25.56	-163.34	1,001.08	-292.14	112.94	67.80	45.15	2.502	
6,000.00	5,877.29	5,986.73	5,882.00	26.82	25.88	-164.26	1,006.42	-293.69	119.94	74.34	45.59	2.631	
6,100.00	5,976.83	6,082.53	5,977.77	27.18	26.17	-165.10	1,008.68	-294.34	126.80	80.82	45.98	2.758	
6,200.00	6,076.64	6,181.39	6,076.64	27.51	26.46	-165.79	1,008.76	-294.36	132.57	86.03	46.54	2.849	
6,300.00	6,176.60	6,281.36	6,176.60	27.81	26.75	-166.06	1,008.76	-294.36	135.05	87.88	47.18	2.863	
6,323.40	6,200.00	6,304.76	6,200.00	27.88	26.81	179.43	1,008.76	-294.36	135.14	87.82	47.33	2.855	
6,400.00	6,276.60	6,381.36	6,276.60	28.09	27.04	179.43	1,008.76	-294.36	135.14	87.31	47.83	2.825	
6,500.00	6,376.60	6,481.36	6,376.60	28.37	27.33	179.43	1,008.76	-294.36	135.14	86.65	48.49	2.787	
6,600.00	6,476.60	6,581.36	6,476.60	28.65	27.62	179.43	1,008.76	-294.36	135.14	86.00	49.15	2.750	
6,700.00	6,576.60	6,681.36	6,576.60	28.94	27.91	179.43	1,008.76	-294.36	135.14	85.33	49.81	2.713	
6,800.00	6,676.60	6,781.36	6,676.60	29.22	28.21	179.43	1,008.76	-294.36	135.14	84.67	50.47	2.678	
6,817.20	6,693.80	6,798.56	6,693.80	29.27	28.26	179.43	1,008.76	-294.36	135.14	84.56	50.59	2.672	
6,817.21	6,693.81	6,798.56	6,693.81	29.27	28.26	179.43	1,008.76	-294.36	135.14	84.56	50.59	2.672	
6,850.00	6,726.59	6,831.35	6,726.59	29.36	28.36	90.33	1,008.76	-294.36	135.15	84.32	50.82	2.659	
6,900.00	6,776.41	6,881.17	6,776.41	29.49	28.51	92.03	1,008.76	-294.36	135.23	83.96	51.27	2.637	
6,950.00	6,825.84	6,930.60	6,825.84	29.62	28.65	95.11	1,008.76	-294.36	135.70	83.85	51.86	2.617	
7,000.00	6,874.62	6,979.74	6,874.98	29.74	28.80	99.45	1,008.76	-294.27	137.11	84.49	52.62	2.606	
7,050.00	6,922.52	7,030.37	6,925.54	29.86	28.94	104.12	1,008.79	-291.70	139.60	86.06	53.55	2.607	
7,100.00	6,969.31	7,081.91	6,976.68	29.96	29.08	108.60	1,008.85	-285.41	143.01	88.54	54.47	2.625	
7,150.00	7,014.75	7,134.39	7,028.16	30.06	29.22	112.81	1,008.95	-275.25	147.23	91.93	55.30	2.663	
7,200.00	7,058.63	7,187.86	7,079.69	30.16	29.35	116.72	1,009.10	-261.05	152.13	96.19	55.94	2.720	
7,250.00	7,100.73	7,242.33	7,130.96	30.24	29.47	120.32	1,009.29	-242.67	157.57	101.24	56.33	2.797	
7,300.00	7,140.86	7,297.85	7,181.61	30.32	29.59	123.59	1,009.52	-219.99	163.40	106.97	56.43	2.896	
7,350.00	7,178.80	7,354.43	7,231.27	30.39	29.70	126.53	1,009.79	-192.91	169.48	113.24	56.24	3.014	
7,400.00	7,214.38	7,412.06	7,279.50	30.45	29.80	129.17	1,010.11	-161.38	175.65	119.90	55.75	3.151	
7,450.00	7,247.42	7,470.76	7,325.85	30.50	29.89	131.50	1,010.48	-125.39	181.78	126.78	55.00	3.305	
7,500.00	7,277.77	7,530.50	7,369.84	30.55	29.98	133.55	1,010.89	-85.00	187.74	133.71	54.03	3.475	
7,550.00	7,305.27	7,591.25	7,410.96	30.58	30.05	135.33	1,011.34	-40.30	193.40	140.49	52.91	3.655	
7,600.00	7,329.79	7,652.96	7,448.70	30.62	30.11	136.86	1,011.84	8.49	198.65	146.94	51.72	3.841	
7,650.00	7,351.21	7,715.56	7,482.54	30.64	30.17	138.16	1,012.37	61.13	203.40	152.85	50.55	4.024	
7,700.00	7,369.43	7,778.97	7,512.01	30.67	30.23	139.23	1,012.94	117.24	207.56	158.03	49.52	4.191	
7,750.00	7,384.36	7,843.07	7,536.64	30.72	30.33	140.09	1,013.54	176.40	211.04	162.29	48.74	4.329	
7,800.00	7,395.93	7,907.75	7,556.03	31.01	30.74	140.74	1,014.17	238.07	213.78	165.45	48.33	4.423	
7,850.00	7,404.07	7,972.87	7,569.85	31.71	31.59	141.19	1,014.82	301.68	215.74	167.36	48.38	4.459	
7,900.00	7,408.76	8,038.28	7,577.87	32.51	32.59	141.45	1,015.48	366.57	216.87	167.92	48.95	4.431	
7,942.20	7,410.00	8,093.59	7,580.00	33.23	33.51	141.52	1,016.04	421.83	217.17	167.32	49.86	4.356	
8,000.00	7,410.00	8,151.39	7,580.00	34.28	34.57	141.52	1,016.63	479.62	217.17	165.94	51.24	4.239	
8,100.00	7,410.00	8,251.39	7,580.00	36.24	36.52	141.52	1,017.64	579.62	217.17	163.40	53.77	4.039	
8,200.00	7,410.00	8,351.39	7,580.00	38.37	38.63	141.52	1,018.66	679.61	217.17	160.66	56.51	3.843	
8,300.00	7,410.00	8,451.39	7,580.00	40.64	40.88	141.52	1,019.67	779.61	217.17	157.76	59.41	3.655	
8,400.00	7,410.00	8,551.39	7,580.00	43.03	43.26	141.52	1,020.69	879.60	217.17	154.71	62.46	3.477	
8,500.00	7,410.00	8,651.39	7,580.00	45.52	45.73	141.52	1,021.71	979.60	217.17	151.54	65.63	3.309	
8,600.00	7,410.00	8,751.39	7,580.00	48.10	48.29	141.52	1,022.72	1,079.59	217.17	148.26	68.91	3.151	
8,700.00	7,410.00	8,851.39	7,580.00	50.74	50.93	141.52	1,023.74	1,179.59	217.17	144.88	72.29	3.004	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3B-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
8,800.00	7,410.00	8,951.39	7,580.00	53.45	53.62	141.52	1,024.75	1,279.58	217.17	141.43	75.74	2.867		
8,900.00	7,410.00	9,051.39	7,580.00	56.21	56.37	141.52	1,025.77	1,379.58	217.17	137.90	79.27	2.740		
9,000.00	7,410.00	9,151.39	7,580.00	59.01	59.16	141.52	1,026.79	1,479.57	217.17	134.32	82.86	2.621		
9,100.00	7,410.00	9,251.39	7,580.00	61.85	62.00	141.52	1,027.80	1,579.57	217.17	130.68	86.50	2.511		
9,200.00	7,410.00	9,351.39	7,580.00	64.73	64.87	141.52	1,028.82	1,679.56	217.17	126.99	90.18	2.408		
9,300.00	7,410.00	9,451.39	7,580.00	67.63	67.77	141.52	1,029.84	1,779.56	217.17	123.26	93.91	2.313		
9,400.00	7,410.00	9,551.39	7,580.00	70.57	70.69	141.52	1,030.85	1,879.55	217.17	119.50	97.68	2.223		
9,500.00	7,410.00	9,651.39	7,580.00	73.52	73.64	141.52	1,031.87	1,979.55	217.17	115.70	101.47	2.140		
9,600.00	7,410.00	9,751.39	7,580.00	76.50	76.61	141.52	1,032.88	2,079.54	217.17	111.87	105.30	2.062		
9,700.00	7,410.00	9,851.39	7,580.00	79.49	79.60	141.52	1,033.90	2,179.54	217.17	108.02	109.16	1.990		
9,800.00	7,410.00	9,951.39	7,580.00	82.50	82.60	141.52	1,034.92	2,279.53	217.17	104.14	113.03	1.921		
9,900.00	7,410.00	10,051.39	7,580.00	85.52	85.62	141.52	1,035.93	2,379.52	217.17	100.24	116.93	1.857		
10,000.00	7,410.00	10,151.39	7,580.00	88.55	88.65	141.52	1,036.95	2,479.52	217.17	96.33	120.85	1.797		
10,100.00	7,410.00	10,251.39	7,580.00	91.60	91.70	141.52	1,037.97	2,579.51	217.17	92.39	124.78	1.740		
10,200.00	7,410.00	10,351.39	7,580.00	94.66	94.75	141.52	1,038.98	2,679.51	217.17	88.44	128.73	1.687		
10,300.00	7,410.00	10,451.39	7,580.00	97.73	97.82	141.52	1,040.00	2,779.50	217.17	84.48	132.70	1.637		
10,400.00	7,410.00	10,551.39	7,580.00	100.80	100.89	141.52	1,041.01	2,879.50	217.17	80.50	136.67	1.589		
10,500.00	7,410.00	10,651.39	7,580.00	103.89	103.97	141.52	1,042.03	2,979.49	217.17	76.51	140.66	1.544		
10,600.00	7,410.00	10,751.39	7,580.00	106.98	107.06	141.52	1,043.05	3,079.49	217.17	72.51	144.66	1.501		
10,700.00	7,410.00	10,851.39	7,580.00	110.07	110.15	141.52	1,044.06	3,179.48	217.17	68.50	148.67	1.461 Level 3		
10,800.00	7,410.00	10,951.39	7,580.00	113.18	113.26	141.52	1,045.08	3,279.48	217.17	64.48	152.69	1.422 Level 3		
10,900.00	7,410.00	11,051.39	7,580.00	116.29	116.36	141.52	1,046.09	3,379.47	217.17	60.45	156.72	1.386 Level 3		
11,000.00	7,410.00	11,151.39	7,580.00	119.40	119.48	141.52	1,047.11	3,479.47	217.17	56.42	160.75	1.351 Level 3		
11,100.00	7,410.00	11,251.39	7,580.00	122.52	122.59	141.52	1,048.13	3,579.46	217.17	52.38	164.80	1.318 Level 3		
11,200.00	7,410.00	11,351.39	7,580.00	125.64	125.71	141.52	1,049.14	3,679.46	217.17	48.33	168.85	1.286 Level 3		
11,300.00	7,410.00	11,451.39	7,580.00	128.77	128.84	141.52	1,050.16	3,779.45	217.17	44.27	172.90	1.256 Level 3		
11,400.00	7,410.00	11,551.39	7,580.00	131.90	131.97	141.52	1,051.18	3,879.45	217.17	40.21	176.97	1.227 Level 2		
11,500.00	7,410.00	11,651.39	7,580.00	135.04	135.10	141.52	1,052.19	3,979.44	217.17	36.14	181.03	1.200 Level 2		
11,600.00	7,410.00	11,751.39	7,580.00	138.17	138.24	141.52	1,053.21	4,079.44	217.17	32.07	185.11	1.173 Level 2		
11,700.00	7,410.00	11,851.39	7,580.00	141.32	141.38	141.52	1,054.22	4,179.43	217.17	27.99	189.18	1.148 Level 2		
11,800.00	7,410.00	11,951.39	7,580.00	144.46	144.52	141.52	1,055.24	4,279.43	217.17	23.91	193.27	1.124 Level 2		
11,900.00	7,410.00	12,051.39	7,580.00	147.61	147.67	141.52	1,056.26	4,379.42	217.17	19.82	197.35	1.100 Level 2		
12,000.00	7,410.00	12,151.39	7,580.00	150.76	150.81	141.52	1,057.27	4,479.42	217.17	15.73	201.44	1.078 Level 2		
12,001.93	7,410.00	12,153.32	7,580.00	150.82	150.87	141.52	1,057.29	4,481.35	217.17	15.65	201.52	1.078 Level 2		
12,019.72	7,410.00	12,170.36	7,580.00	151.38	151.41	141.52	1,057.47	4,498.39	217.17	14.96	202.21	1.074 Level 2, SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3C-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.69	-20.04	-0.11	20.04					
100.00	100.00	100.00	100.00	0.14	0.14	-179.69	-20.04	-0.11	20.04	19.76	0.28	72.592		
200.00	200.00	200.00	200.00	0.50	0.50	-179.69	-20.04	-0.11	20.04	19.04	0.99	20.179 CC		
300.00	299.98	299.98	299.98	0.86	0.85	-166.37	-20.04	-0.11	21.73	20.02	1.71	12.697		
400.00	399.84	399.84	399.84	1.22	1.21	-168.98	-20.04	-0.11	26.84	24.41	2.43	11.024		
500.00	499.45	500.63	500.61	1.59	1.57	-171.08	-18.35	-0.64	33.73	30.55	3.18	10.610		
600.00	598.70	601.67	601.51	1.96	1.94	-172.18	-13.28	-2.27	40.64	36.69	3.95	10.291		
700.00	697.47	702.97	702.40	2.35	2.31	-172.71	-4.79	-4.98	47.56	42.82	4.73	10.047		
800.00	795.62	804.51	803.16	2.77	2.68	-172.89	7.12	-8.78	54.45	48.93	5.53	9.854		
819.52	814.70	824.36	822.81	2.85	2.76	-172.90	9.85	-9.66	55.80	50.11	5.68	9.817		
900.00	893.31	906.35	903.72	3.20	3.08	-172.71	22.48	-13.69	60.21	53.88	6.32	9.523		
1,000.00	990.98	1,007.00	1,002.62	3.65	3.48	-172.12	40.25	-19.37	63.32	56.25	7.07	8.957		
1,100.00	1,088.65	1,106.95	1,100.80	4.10	3.89	-171.55	58.08	-25.07	66.26	58.45	7.80	8.491		
1,200.00	1,186.32	1,206.91	1,198.99	4.55	4.31	-171.03	75.92	-30.77	69.20	60.65	8.55	8.098		
1,300.00	1,283.99	1,306.86	1,297.18	5.01	4.73	-170.55	93.75	-36.46	72.14	62.85	9.29	7.762		
1,400.00	1,381.66	1,406.82	1,395.36	5.47	5.16	-170.11	111.58	-42.16	75.09	65.04	10.05	7.473		
1,500.00	1,479.33	1,506.77	1,493.55	5.93	5.59	-169.70	129.42	-47.86	78.05	67.24	10.81	7.221		
1,600.00	1,577.00	1,606.73	1,591.73	6.39	6.02	-169.32	147.25	-53.56	81.01	69.43	11.57	7.001		
1,700.00	1,674.67	1,706.68	1,689.92	6.85	6.46	-168.97	165.08	-59.26	83.97	71.63	12.34	6.806		
1,800.00	1,772.35	1,806.64	1,788.11	7.31	6.89	-168.65	182.91	-64.95	86.93	73.83	13.11	6.633		
1,900.00	1,870.02	1,906.59	1,886.29	7.78	7.33	-168.34	200.75	-70.65	89.90	76.02	13.88	6.478		
2,000.00	1,967.69	2,006.54	1,984.48	8.24	7.76	-168.05	218.58	-76.35	92.87	78.22	14.65	6.339		
2,100.00	2,065.36	2,106.50	2,082.67	8.71	8.20	-167.79	236.41	-82.05	95.84	80.42	15.42	6.214		
2,200.00	2,163.03	2,206.45	2,180.85	9.17	8.64	-167.53	254.24	-87.74	98.81	82.61	16.20	6.099		
2,300.00	2,260.70	2,306.41	2,279.04	9.64	9.08	-167.30	272.08	-93.44	101.79	84.81	16.98	5.995		
2,400.00	2,358.37	2,406.36	2,377.22	10.11	9.52	-167.07	289.91	-99.14	104.77	87.01	17.76	5.900		
2,500.00	2,456.04	2,506.32	2,475.41	10.57	9.96	-166.86	307.74	-104.84	107.74	89.21	18.54	5.813		
2,600.00	2,553.71	2,606.27	2,573.60	11.04	10.40	-166.66	325.57	-110.54	110.72	91.41	19.32	5.732		
2,700.00	2,651.38	2,706.23	2,671.78	11.51	10.84	-166.47	343.41	-116.23	113.71	93.61	20.10	5.657		
2,800.00	2,749.05	2,806.18	2,769.97	11.97	11.28	-166.29	361.24	-121.93	116.69	95.81	20.88	5.588		
2,900.00	2,846.72	2,906.14	2,868.15	12.44	11.72	-166.12	379.07	-127.63	119.67	98.01	21.67	5.524		
3,000.00	2,944.40	3,006.09	2,966.34	12.91	12.17	-165.96	396.91	-133.33	122.66	100.21	22.45	5.464		
3,100.00	3,042.07	3,106.05	3,064.53	13.38	12.61	-165.80	414.74	-139.03	125.64	102.41	23.23	5.408		
3,200.00	3,139.74	3,206.00	3,162.71	13.84	13.05	-165.66	432.57	-144.72	128.63	104.61	24.02	5.355		
3,300.00	3,237.41	3,305.96	3,260.90	14.31	13.49	-165.51	450.40	-150.42	131.62	106.81	24.80	5.306		
3,400.00	3,335.08	3,405.91	3,359.08	14.78	13.93	-165.38	468.24	-156.12	134.60	109.01	25.59	5.260		
3,500.00	3,432.75	3,505.87	3,457.27	15.25	14.38	-165.25	486.07	-161.82	137.59	111.22	26.38	5.216		
3,600.00	3,530.42	3,605.82	3,555.46	15.72	14.82	-165.13	503.90	-167.51	140.58	113.42	27.16	5.175		
3,700.00	3,628.09	3,705.78	3,653.64	16.18	15.26	-165.01	521.73	-173.21	143.57	115.62	27.95	5.137		
3,800.00	3,725.76	3,805.73	3,751.83	16.65	15.71	-164.90	539.57	-178.91	146.56	117.82	28.74	5.100		
3,900.00	3,823.43	3,905.69	3,850.01	17.12	16.15	-164.79	557.40	-184.61	149.55	120.03	29.53	5.065		
4,000.00	3,921.10	4,005.64	3,948.20	17.59	16.59	-164.68	575.23	-190.31	152.55	122.23	30.31	5.032		
4,100.00	4,018.77	4,105.60	4,046.39	18.06	17.03	-164.58	593.07	-196.00	155.54	124.43	31.10	5.001		
4,200.00	4,116.44	4,205.55	4,144.57	18.52	17.48	-164.48	610.90	-201.70	158.53	126.64	31.89	4.971		
4,300.00	4,214.12	4,305.51	4,242.76	18.99	17.92	-164.39	628.73	-207.40	161.52	128.84	32.68	4.942		
4,400.00	4,311.79	4,405.46	4,340.94	19.46	18.36	-164.30	646.56	-213.10	164.52	131.05	33.47	4.915		
4,500.00	4,409.46	4,505.42	4,439.13	19.93	18.81	-164.21	664.40	-218.80	167.51	133.25	34.26	4.889		
4,600.00	4,507.13	4,605.37	4,537.32	20.40	19.25	-164.13	682.23	-224.49	170.50	135.45	35.05	4.865		
4,700.00	4,604.80	4,705.33	4,635.50	20.87	19.69	-164.05	700.06	-230.19	173.50	137.66	35.84	4.841		
4,800.00	4,702.47	4,805.28	4,733.69	21.34	20.14	-163.97	717.89	-235.89	176.49	139.86	36.63	4.818		
4,900.00	4,800.14	4,905.24	4,831.88	21.80	20.58	-163.90	735.73	-241.59	179.49	142.07	37.42	4.797		
5,000.00	4,897.81	5,005.19	4,930.06	22.27	21.03	-163.82	753.56	-247.28	182.48	144.27	38.21	4.776		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3C-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
5,100.00	4,995.48	5,105.15	5,028.25	22.74	21.47	-163.75	771.39	-252.98	185.48	146.48	39.00	4.756		
5,200.00	5,093.15	5,205.10	5,126.43	23.21	21.91	-163.69	789.22	-258.68	188.48	148.68	39.79	4.736		
5,300.00	5,190.82	5,305.06	5,224.62	23.68	22.36	-163.62	807.06	-264.38	191.47	150.89	40.58	4.718		
5,400.00	5,288.49	5,405.01	5,322.81	24.15	22.80	-163.56	824.89	-270.08	194.47	153.09	41.38	4.700		
5,500.00	5,386.17	5,504.96	5,420.99	24.62	23.24	-163.49	842.72	-275.77	197.47	155.30	42.17	4.683		
5,600.00	5,483.84	5,600.00	5,514.43	25.09	23.66	-163.48	859.24	-281.05	200.96	158.04	42.92	4.682		
5,703.88	5,585.30	5,700.00	5,613.26	25.57	24.08	-163.75	873.74	-285.69	207.55	163.88	43.67	4.753		
5,800.00	5,679.51	5,788.13	5,700.75	26.01	24.42	-164.17	883.79	-288.90	215.05	170.81	44.25	4.860		
5,900.00	5,778.14	5,881.10	5,793.36	26.43	24.76	-164.59	891.61	-291.40	222.59	177.79	44.81	4.968		
6,000.00	5,877.29	5,973.87	5,885.98	26.82	25.07	-165.02	896.56	-292.98	229.85	184.55	45.31	5.073		
6,100.00	5,976.83	6,066.44	5,978.52	27.18	25.36	-165.44	898.65	-293.64	236.83	191.09	45.74	5.178		
6,200.00	6,076.64	6,164.56	6,076.64	27.51	25.65	-165.82	898.72	-293.67	242.61	196.28	46.33	5.236		
6,300.00	6,176.60	6,264.53	6,176.60	27.81	25.95	-165.98	898.72	-293.67	245.09	198.10	46.99	5.216		
6,323.40	6,200.00	6,287.93	6,200.00	27.88	26.02	179.52	898.72	-293.67	245.18	198.04	47.14	5.201		
6,400.00	6,276.60	6,364.52	6,276.60	28.09	26.25	179.52	898.72	-293.67	245.18	197.54	47.64	5.146		
6,500.00	6,376.60	6,464.52	6,376.60	28.37	26.55	179.52	898.72	-293.67	245.18	196.88	48.31	5.076		
6,600.00	6,476.60	6,564.52	6,476.60	28.65	26.85	179.52	898.72	-293.67	245.18	196.21	48.97	5.007		
6,700.00	6,576.60	6,664.52	6,576.60	28.94	27.16	179.52	898.72	-293.67	245.18	195.55	49.63	4.940		
6,773.27	6,649.87	6,737.80	6,649.87	29.14	27.38	179.41	898.73	-293.19	245.18	195.07	50.11	4.893		
6,800.00	6,676.60	6,764.46	6,676.49	29.22	27.45	179.07	898.74	-291.73	245.19	194.93	50.25	4.879		
6,817.20	6,693.80	6,781.55	6,693.52	29.27	27.50	178.73	898.76	-290.27	245.20	194.87	50.33	4.872		
6,850.00	6,726.59	6,813.99	6,725.72	29.36	27.59	88.57	898.80	-286.38	245.26	194.79	50.47	4.860		
6,900.00	6,776.41	6,863.17	6,774.12	29.49	27.72	87.45	898.89	-277.72	245.43	194.78	50.65	4.846		
6,950.00	6,825.84	6,912.04	6,821.51	29.62	27.84	86.35	899.01	-265.84	245.68	194.87	50.81	4.835		
7,000.00	6,874.62	6,960.60	6,867.69	29.74	27.96	85.27	899.16	-250.86	246.02	195.07	50.95	4.829		
7,050.00	6,922.52	7,008.86	6,912.49	29.86	28.06	84.22	899.35	-232.91	246.44	195.37	51.07	4.825		
7,100.00	6,969.31	7,056.85	6,955.72	29.96	28.16	83.20	899.56	-212.11	246.92	195.75	51.18	4.825		
7,150.00	7,014.75	7,104.57	6,997.24	30.06	28.26	82.22	899.80	-188.61	247.47	196.19	51.27	4.827		
7,200.00	7,058.63	7,152.04	7,036.90	30.16	28.34	81.29	900.07	-162.53	248.05	196.69	51.36	4.830		
7,250.00	7,100.73	7,200.00	7,075.12	30.24	28.42	80.38	900.36	-133.58	248.68	197.20	51.48	4.831		
7,300.00	7,140.86	7,246.28	7,110.09	30.32	28.49	79.55	900.67	-103.28	249.32	197.77	51.55	4.836		
7,350.00	7,178.80	7,293.08	7,143.39	30.39	28.55	78.76	901.01	-70.40	249.98	198.29	51.69	4.836		
7,400.00	7,214.38	7,339.69	7,174.34	30.45	28.61	78.03	901.37	-35.57	250.64	198.77	51.87	4.832		
7,450.00	7,247.42	7,386.12	7,202.86	30.50	28.66	77.35	901.74	1.06	251.28	199.17	52.11	4.822		
7,500.00	7,277.77	7,432.40	7,228.87	30.55	28.71	76.73	902.13	39.32	251.90	199.46	52.44	4.803		
7,550.00	7,305.27	7,478.52	7,252.27	30.58	28.77	76.17	902.54	79.05	252.48	199.61	52.87	4.775		
7,600.00	7,329.79	7,524.52	7,273.02	30.62	28.85	75.68	902.96	120.10	253.02	199.60	53.42	4.736		
7,650.00	7,351.21	7,570.41	7,291.05	30.64	29.02	75.25	903.39	162.28	253.51	199.40	54.11	4.685		
7,700.00	7,369.43	7,616.20	7,306.31	30.67	29.40	74.89	903.84	205.44	253.93	198.99	54.94	4.622		
7,750.00	7,384.36	7,661.90	7,318.77	30.72	29.94	74.59	904.29	249.41	254.29	198.36	55.93	4.547		
7,800.00	7,395.93	7,707.55	7,328.38	31.01	30.58	74.35	904.74	294.02	254.57	197.50	57.07	4.461		
7,850.00	7,404.07	7,753.15	7,335.13	31.71	31.28	74.19	905.21	339.11	254.77	196.41	58.36	4.365		
7,900.00	7,408.76	7,800.00	7,339.06	32.51	32.05	74.09	905.68	385.78	254.89	195.06	59.83	4.260		
7,901.00	7,408.81	7,800.00	7,339.06	32.53	32.05	74.09	905.68	385.78	254.89	195.05	59.84	4.259		
7,942.20	7,410.00	7,837.20	7,340.00	33.23	32.70	74.06	906.07	422.97	254.92	193.80	61.12	4.171		
8,000.00	7,410.00	7,895.00	7,340.00	34.28	33.76	74.06	906.66	480.76	254.92	191.76	63.16	4.036		
8,100.00	7,410.00	7,995.00	7,340.00	36.24	35.75	74.06	907.68	580.76	254.91	187.92	66.99	3.805		
8,200.00	7,410.00	8,095.00	7,340.00	38.37	37.90	74.06	908.71	680.75	254.90	183.75	71.15	3.582		
8,300.00	7,410.00	8,195.00	7,340.00	40.64	40.20	74.06	909.73	780.74	254.89	179.30	75.59	3.372		
8,400.00	7,410.00	8,295.00	7,340.00	43.03	42.61	74.06	910.76	880.74	254.89	174.63	80.26	3.176		
8,500.00	7,410.00	8,395.00	7,340.00	45.52	45.12	74.06	911.78	980.73	254.88	169.76	85.12	2.994		
8,600.00	7,410.00	8,495.00	7,340.00	48.10	47.72	74.06	912.80	1,080.73	254.87	164.73	90.14	2.827		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3C-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor	
8,700.00	7,410.00	8,595.00	7,340.00	50.74	50.38	74.06	913.83	1,180.72	254.86	159.56	95.30		2.674	
8,800.00	7,410.00	8,695.00	7,340.00	53.45	53.10	74.06	914.85	1,280.72	254.85	154.28	100.57		2.534	
8,900.00	7,410.00	8,795.00	7,340.00	56.21	55.88	74.06	915.88	1,380.71	254.85	148.90	105.94		2.405	
9,000.00	7,410.00	8,895.00	7,340.00	59.01	58.70	74.06	916.90	1,480.71	254.84	143.44	111.40		2.288	
9,100.00	7,410.00	8,995.00	7,340.00	61.85	61.55	74.06	917.93	1,580.70	254.83	137.91	116.93		2.179	
9,200.00	7,410.00	9,095.00	7,340.00	64.73	64.44	74.06	918.95	1,680.70	254.82	132.31	122.51		2.080	
9,300.00	7,410.00	9,195.00	7,340.00	67.63	67.36	74.06	919.98	1,780.69	254.81	126.66	128.16		1.988	
9,400.00	7,410.00	9,295.00	7,340.00	70.57	70.30	74.05	921.00	1,880.69	254.81	120.96	133.85		1.904	
9,500.00	7,410.00	9,395.00	7,340.00	73.52	73.27	74.05	922.02	1,980.68	254.80	115.22	139.58		1.825	
9,600.00	7,410.00	9,495.00	7,340.00	76.50	76.25	74.05	923.05	2,080.68	254.79	109.44	145.35		1.753	
9,700.00	7,410.00	9,595.00	7,340.00	79.49	79.25	74.05	924.07	2,180.67	254.78	103.64	151.15		1.686	
9,800.00	7,410.00	9,695.00	7,340.00	82.50	82.27	74.05	925.10	2,280.67	254.78	97.80	156.98		1.623	
9,900.00	7,410.00	9,795.00	7,340.00	85.52	85.30	74.05	926.12	2,380.66	254.77	91.93	162.83		1.565	
10,000.00	7,410.00	9,895.00	7,340.00	88.55	88.34	74.05	927.15	2,480.66	254.76	86.05	168.71		1.510	
10,100.00	7,410.00	9,995.00	7,340.00	91.60	91.40	74.05	928.17	2,580.65	254.75	80.14	174.61		1.459 Level 3	
10,200.00	7,410.00	10,095.00	7,340.00	94.66	94.46	74.05	929.20	2,680.65	254.74	74.22	180.53		1.411 Level 3	
10,300.00	7,410.00	10,195.00	7,340.00	97.73	97.53	74.05	930.22	2,780.64	254.74	68.27	186.46		1.366 Level 3	
10,400.00	7,410.00	10,295.00	7,340.00	100.80	100.62	74.05	931.24	2,880.63	254.73	62.32	192.41		1.324 Level 3	
10,500.00	7,410.00	10,395.00	7,340.00	103.89	103.70	74.05	932.27	2,980.63	254.72	56.35	198.37		1.284 Level 3	
10,600.00	7,410.00	10,495.00	7,340.00	106.98	106.80	74.05	933.29	3,080.62	254.71	50.36	204.35		1.246 Level 2	
10,700.00	7,410.00	10,595.00	7,340.00	110.07	109.90	74.05	934.32	3,180.62	254.70	44.37	210.34		1.211 Level 2	
10,800.00	7,410.00	10,695.00	7,340.00	113.18	113.01	74.05	935.34	3,280.61	254.70	38.36	216.34		1.177 Level 2	
10,900.00	7,410.00	10,795.00	7,340.00	116.29	116.12	74.05	936.37	3,380.61	254.69	32.34	222.35		1.145 Level 2	
11,000.00	7,410.00	10,895.00	7,340.00	119.40	119.24	74.05	937.39	3,480.60	254.68	26.32	228.36		1.115 Level 2	
11,100.00	7,410.00	10,995.00	7,340.00	122.52	122.37	74.05	938.42	3,580.60	254.67	20.28	234.39		1.087 Level 2	
11,200.00	7,410.00	11,095.00	7,340.00	125.64	125.49	74.05	939.44	3,680.59	254.66	14.24	240.42		1.059 Level 2	
11,300.00	7,410.00	11,195.00	7,340.00	128.77	128.62	74.05	940.46	3,780.59	254.66	8.19	246.46		1.033 Level 2	
11,400.00	7,410.00	11,295.00	7,340.00	131.90	131.76	74.04	941.49	3,880.58	254.65	2.14	252.51		1.008 Level 2	
11,500.00	7,410.00	11,395.00	7,340.00	135.04	134.90	74.04	942.51	3,980.58	254.64	-3.92	258.56		0.985 Level 1	
11,600.00	7,410.00	11,495.00	7,340.00	138.17	138.04	74.04	943.54	4,080.57	254.63	-9.99	264.62		0.962 Level 1	
11,700.00	7,410.00	11,595.00	7,340.00	141.32	141.18	74.04	944.56	4,180.57	254.62	-16.06	270.69		0.941 Level 1	
11,800.00	7,410.00	11,695.00	7,340.00	144.46	144.33	74.04	945.59	4,280.56	254.62	-22.14	276.75		0.920 Level 1	
11,900.00	7,410.00	11,795.00	7,340.00	147.61	147.48	74.04	946.61	4,380.56	254.61	-28.22	282.83		0.900 Level 1	
12,000.00	7,410.00	11,895.00	7,340.00	150.76	150.63	74.04	947.64	4,480.55	254.60	-34.31	288.91		0.881 Level 1	
12,017.84	7,410.00	11,912.84	7,340.00	151.32	151.19	74.04	947.82	4,498.39	254.60	-35.39	289.99		0.878 Level 1	
12,019.72	7,410.00	11,913.53	7,340.00	151.38	151.21	74.04	947.83	4,499.08	254.60	-35.44	290.04		0.878 Level 1, ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3D-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-179.96	-30.23	-0.02	30.23					
100.00	100.00	100.00	100.00	0.14	0.14	-179.96	-30.23	-0.02	30.23	29.96	0.28	109.526		
200.00	200.00	200.00	200.00	0.50	0.50	-179.96	-30.23	-0.02	30.23	29.24	0.99	30.446 CC, ES		
300.00	299.98	299.98	299.98	0.86	0.85	-166.25	-30.23	-0.02	31.92	30.21	1.71	18.654		
400.00	399.84	399.84	399.84	1.22	1.21	-168.15	-30.23	-0.02	37.03	34.59	2.43	15.207		
500.00	499.45	499.45	499.45	1.59	1.57	-170.37	-30.23	-0.02	45.59	42.43	3.16	14.430		
600.00	598.70	600.61	600.59	1.96	1.93	-171.92	-28.60	-0.69	55.98	52.08	3.90	14.347		
700.00	697.47	702.15	701.98	2.35	2.30	-172.56	-23.64	-2.73	66.43	61.77	4.67	14.231		
800.00	795.62	804.06	803.49	2.77	2.67	-172.65	-15.32	-6.15	76.93	71.48	5.45	14.117		
819.52	814.70	824.00	823.31	2.85	2.74	-172.62	-13.31	-6.98	78.98	73.38	5.61	14.088		
900.00	893.31	906.44	905.07	3.20	3.05	-172.31	-3.61	-10.97	86.33	80.09	6.24	13.838		
1,000.00	990.98	1,006.87	1,004.39	3.65	3.43	-171.63	10.19	-16.64	93.39	86.41	6.98	13.378		
1,100.00	1,088.65	1,106.62	1,103.02	4.10	3.81	-171.04	23.98	-22.31	100.37	92.66	7.72	13.007		
1,200.00	1,186.32	1,206.37	1,201.65	4.55	4.21	-170.52	37.77	-27.98	107.36	98.90	8.46	12.691		
1,300.00	1,283.99	1,306.12	1,300.28	5.01	4.60	-170.07	51.57	-33.66	114.36	105.16	9.21	12.420		
1,400.00	1,381.66	1,405.87	1,398.91	5.47	5.00	-169.67	65.36	-39.33	121.37	111.41	9.96	12.186		
1,500.00	1,479.33	1,505.62	1,497.54	5.93	5.40	-169.31	79.16	-45.00	128.38	117.66	10.72	11.981		
1,600.00	1,577.00	1,605.38	1,596.17	6.39	5.81	-168.99	92.95	-50.67	135.39	123.92	11.47	11.800		
1,700.00	1,674.67	1,705.13	1,694.80	6.85	6.21	-168.70	106.74	-56.35	142.41	130.18	12.23	11.640		
1,800.00	1,772.35	1,804.88	1,793.43	7.31	6.62	-168.44	120.54	-62.02	149.43	136.44	13.00	11.498		
1,900.00	1,870.02	1,904.63	1,892.06	7.78	7.02	-168.20	134.33	-67.69	156.46	142.70	13.76	11.370		
2,000.00	1,967.69	2,004.38	1,990.69	8.24	7.43	-167.98	148.12	-73.36	163.48	148.96	14.53	11.254		
2,100.00	2,065.36	2,104.13	2,089.32	8.71	7.84	-167.78	161.92	-79.03	170.51	155.22	15.29	11.150		
2,200.00	2,163.03	2,203.88	2,187.95	9.17	8.25	-167.60	175.71	-84.71	177.54	161.48	16.06	11.055		
2,300.00	2,260.70	2,303.63	2,286.58	9.64	8.65	-167.43	189.50	-90.38	184.58	167.75	16.83	10.968		
2,400.00	2,358.37	2,403.38	2,385.21	10.11	9.06	-167.27	203.30	-96.05	191.61	174.01	17.60	10.888		
2,500.00	2,456.04	2,503.13	2,483.84	10.57	9.47	-167.13	217.09	-101.72	198.65	180.28	18.37	10.815		
2,600.00	2,553.71	2,602.89	2,582.47	11.04	9.88	-166.99	230.88	-107.39	205.68	186.54	19.14	10.747		
2,700.00	2,651.38	2,702.64	2,681.10	11.51	10.29	-166.86	244.68	-113.07	212.72	192.81	19.91	10.684		
2,800.00	2,749.05	2,802.39	2,779.73	11.97	10.70	-166.74	258.47	-118.74	219.76	199.08	20.68	10.626		
2,900.00	2,846.72	2,902.14	2,878.36	12.44	11.12	-166.63	272.26	-124.41	226.80	205.34	21.45	10.571		
3,000.00	2,944.40	3,001.89	2,976.99	12.91	11.53	-166.53	286.06	-130.08	233.84	211.61	22.23	10.521		
3,100.00	3,042.07	3,101.64	3,075.62	13.38	11.94	-166.43	299.85	-135.76	240.88	217.88	23.00	10.473		
3,200.00	3,139.74	3,201.39	3,174.25	13.84	12.35	-166.33	313.64	-141.43	247.92	224.15	23.77	10.429		
3,300.00	3,237.41	3,301.14	3,272.88	14.31	12.76	-166.25	327.44	-147.10	254.96	230.42	24.55	10.387		
3,400.00	3,335.08	3,400.89	3,371.51	14.78	13.17	-166.16	341.23	-152.77	262.01	236.69	25.32	10.348		
3,500.00	3,432.75	3,500.64	3,470.14	15.25	13.58	-166.08	355.02	-158.44	269.05	242.96	26.09	10.311		
3,600.00	3,530.42	3,600.40	3,568.77	15.72	14.00	-166.01	368.82	-164.12	276.09	249.22	26.87	10.276		
3,700.00	3,628.09	3,700.15	3,667.40	16.18	14.41	-165.94	382.61	-169.79	283.14	255.49	27.64	10.243		
3,800.00	3,725.76	3,799.90	3,766.03	16.65	14.82	-165.87	396.40	-175.46	290.18	261.76	28.42	10.211		
3,900.00	3,823.43	3,899.65	3,864.66	17.12	15.23	-165.81	410.20	-181.13	297.23	268.03	29.19	10.182		
4,000.00	3,921.10	3,999.40	3,963.29	17.59	15.64	-165.74	423.99	-186.80	304.27	274.31	29.97	10.153		
4,100.00	4,018.77	4,099.15	4,061.91	18.06	16.06	-165.69	437.79	-192.48	311.32	280.58	30.74	10.127		
4,200.00	4,116.44	4,198.90	4,160.54	18.52	16.47	-165.63	451.58	-198.15	318.36	286.85	31.52	10.101		
4,300.00	4,214.12	4,298.65	4,259.17	18.99	16.88	-165.58	465.37	-203.82	325.41	293.12	32.29	10.077		
4,400.00	4,311.79	4,398.40	4,357.80	19.46	17.29	-165.52	479.17	-209.49	332.46	299.39	33.07	10.053		
4,500.00	4,409.46	4,498.15	4,456.43	19.93	17.71	-165.47	492.96	-215.17	339.50	305.66	33.84	10.031		
4,600.00	4,507.13	4,597.91	4,555.06	20.40	18.12	-165.43	506.75	-220.84	346.55	311.93	34.62	10.010		
4,700.00	4,604.80	4,697.66	4,653.69	20.87	18.53	-165.38	520.55	-226.51	353.60	318.20	35.40	9.990		
4,800.00	4,702.47	4,797.41	4,752.32	21.34	18.95	-165.34	534.34	-232.18	360.65	324.47	36.17	9.970		
4,900.00	4,800.14	4,897.16	4,850.95	21.80	19.36	-165.30	548.13	-237.85	367.70	330.75	36.95	9.951		
5,000.00	4,897.81	4,996.91	4,949.58	22.27	19.77	-165.26	561.93	-243.53	374.74	337.02	37.73	9.933		

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3D-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.00	4,995.48	5,096.66	5,048.21	22.74	20.18	-165.22	575.72	-249.20	381.79	343.29	38.50	9.916	
5,200.00	5,093.15	5,196.41	5,146.84	23.21	20.60	-165.18	589.51	-254.87	388.84	349.56	39.28	9.900	
5,300.00	5,190.82	5,296.16	5,245.47	23.68	21.01	-165.14	603.31	-260.54	395.89	355.83	40.05	9.884	
5,400.00	5,288.49	5,395.91	5,344.10	24.15	21.42	-165.11	617.10	-266.21	402.94	362.11	40.83	9.868	
5,500.00	5,386.17	5,495.66	5,442.73	24.62	21.84	-165.07	630.89	-271.89	409.99	368.38	41.61	9.854	
5,600.00	5,483.84	5,595.41	5,541.36	25.09	22.25	-165.04	644.69	-277.56	417.03	374.65	42.38	9.839	
5,703.88	5,585.30	5,690.25	5,635.24	25.57	22.64	-165.05	657.14	-282.68	425.11	381.99	43.13	9.857	
5,800.00	5,679.51	5,774.36	5,718.80	26.01	22.96	-165.18	665.91	-286.29	433.61	389.87	43.74	9.913	
5,900.00	5,778.14	5,861.68	5,805.82	26.43	23.28	-165.34	672.61	-289.04	441.92	397.58	44.33	9.968	
6,000.00	5,877.29	5,948.83	5,892.85	26.82	23.59	-165.52	676.85	-290.79	449.66	404.79	44.86	10.023	
6,100.00	5,976.83	6,035.82	5,979.81	27.18	23.87	-165.72	678.64	-291.52	456.84	411.50	45.34	10.075	
6,200.00	6,076.64	6,132.65	6,076.64	27.51	24.18	-165.93	678.71	-291.55	462.63	416.67	45.96	10.066	
6,300.00	6,176.60	6,232.61	6,176.60	27.81	24.50	-166.01	678.71	-291.55	465.12	418.49	46.63	9.975	
6,323.40	6,200.00	6,256.01	6,200.00	27.88	24.57	179.49	678.71	-291.55	465.21	418.42	46.78	9.944	
6,400.00	6,276.60	6,332.61	6,276.60	28.09	24.81	179.49	678.71	-291.55	465.21	417.91	47.29	9.837	
6,500.00	6,376.60	6,432.61	6,376.60	28.37	25.13	179.49	678.71	-291.55	465.21	417.25	47.96	9.700	
6,600.00	6,476.60	6,532.61	6,476.60	28.65	25.45	179.49	678.71	-291.55	465.21	416.58	48.63	9.566	
6,700.00	6,576.60	6,632.61	6,576.60	28.94	25.77	179.49	678.71	-291.55	465.21	415.91	49.30	9.436	
6,800.00	6,676.60	6,732.61	6,676.60	29.22	26.10	179.49	678.71	-291.55	465.21	415.24	49.97	9.309	
6,817.20	6,693.80	6,749.81	6,693.80	29.27	26.15	179.49	678.71	-291.55	465.21	415.12	50.09	9.288	
6,850.00	6,726.59	6,782.64	6,726.62	29.36	26.25	90.07	678.72	-290.80	465.21	414.91	50.30	9.249	
6,900.00	6,776.41	6,832.68	6,776.48	29.49	26.40	90.07	678.76	-286.76	465.21	414.60	50.61	9.192	
6,950.00	6,825.84	6,882.72	6,825.95	29.62	26.54	90.07	678.83	-279.25	465.21	414.30	50.91	9.139	
7,000.00	6,874.62	6,932.76	6,874.77	29.74	26.68	90.07	678.95	-268.31	465.21	414.01	51.19	9.087	
7,050.00	6,922.52	6,982.81	6,922.71	29.86	26.80	90.07	679.09	-253.99	465.21	413.73	51.48	9.037	
7,100.00	6,969.31	7,032.85	6,969.52	29.96	26.93	90.07	679.27	-236.35	465.20	413.44	51.76	8.988	
7,150.00	7,014.75	7,082.88	7,015.00	30.06	27.04	90.06	679.49	-215.49	465.20	413.16	52.05	8.938	
7,200.00	7,058.63	7,132.92	7,058.90	30.16	27.14	90.06	679.73	-191.51	465.20	412.86	52.34	8.888	
7,250.00	7,100.73	7,182.96	7,101.02	30.24	27.24	90.06	680.01	-164.52	465.20	412.54	52.65	8.835	
7,300.00	7,140.86	7,232.99	7,141.15	30.32	27.33	90.06	680.32	-134.66	465.20	412.20	53.00	8.777	
7,350.00	7,178.80	7,283.02	7,179.10	30.39	27.42	90.05	680.65	-102.07	465.19	411.80	53.39	8.713	
7,400.00	7,214.38	7,333.05	7,214.68	30.45	27.50	90.05	681.01	-66.92	465.19	411.35	53.84	8.640	
7,450.00	7,247.42	7,383.08	7,247.72	30.50	27.58	90.04	681.39	-29.36	465.19	410.82	54.36	8.557	
7,500.00	7,277.77	7,433.11	7,278.06	30.55	27.68	90.04	681.80	10.40	465.18	410.20	54.98	8.461	
7,550.00	7,305.27	7,483.13	7,305.54	30.58	27.83	90.04	682.23	52.18	465.18	409.47	55.71	8.350	
7,600.00	7,329.79	7,533.15	7,330.04	30.62	28.09	90.03	682.68	95.78	465.18	408.62	56.55	8.225	
7,650.00	7,351.21	7,583.17	7,351.44	30.64	28.50	90.03	683.14	140.98	465.17	407.64	57.53	8.086	
7,700.00	7,369.43	7,633.19	7,369.63	30.67	29.02	90.02	683.62	187.55	465.17	406.52	58.64	7.932	
7,750.00	7,384.36	7,683.20	7,384.52	30.72	29.64	90.02	684.11	235.28	465.16	405.27	59.90	7.766	
7,800.00	7,395.93	7,733.21	7,396.05	31.01	30.33	90.01	684.60	283.93	465.16	403.88	61.28	7.590	
7,850.00	7,404.07	7,783.22	7,404.15	31.71	31.09	90.01	685.11	333.27	465.16	402.36	62.80	7.407	
7,900.00	7,408.76	7,833.22	7,408.79	32.51	31.91	90.00	685.62	383.04	465.15	400.73	64.42	7.220	
7,942.20	7,410.00	7,875.42	7,410.00	33.23	32.64	90.00	686.05	425.22	465.15	399.29	65.86	7.062	
8,000.00	7,410.00	7,933.22	7,410.00	34.28	33.72	90.00	686.64	483.02	465.14	397.16	67.98	6.842	
8,100.00	7,410.00	8,033.22	7,410.00	36.24	35.70	90.00	687.67	583.01	465.13	393.23	71.91	6.468	
8,200.00	7,410.00	8,133.22	7,410.00	38.37	37.85	90.00	688.69	683.00	465.13	388.95	76.18	6.106	
8,300.00	7,410.00	8,233.22	7,410.00	40.64	40.14	90.00	689.72	783.00	465.12	384.39	80.73	5.762	
8,400.00	7,410.00	8,333.22	7,410.00	43.03	42.55	90.00	690.74	882.99	465.11	379.59	85.52	5.439	
8,500.00	7,410.00	8,433.22	7,410.00	45.52	45.06	90.00	691.77	982.99	465.10	374.59	90.51	5.139	
8,600.00	7,410.00	8,533.22	7,410.00	48.10	47.65	90.00	692.79	1,082.98	465.09	369.42	95.67	4.861	
8,700.00	7,410.00	8,633.22	7,410.00	50.74	50.31	90.00	693.82	1,182.98	465.08	364.11	100.98	4.606	
8,800.00	7,410.00	8,733.22	7,410.00	53.45	53.04	90.00	694.84	1,282.97	465.08	358.67	106.41	4.371	

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3D-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
8,900.00	7,410.00	8,833.22	7,410.00	56.21	55.81	90.00	695.87	1,382.97	465.07	353.13	111.94	4.155		
9,000.00	7,410.00	8,933.22	7,410.00	59.01	58.63	90.00	696.89	1,482.96	465.06	347.50	117.56	3.956		
9,100.00	7,410.00	9,033.22	7,410.00	61.85	61.49	90.00	697.91	1,582.96	465.05	341.79	123.26	3.773		
9,200.00	7,410.00	9,133.22	7,410.00	64.73	64.38	90.00	698.94	1,682.95	465.04	336.02	129.02	3.604		
9,300.00	7,410.00	9,233.22	7,410.00	67.63	67.29	90.00	699.96	1,782.95	465.03	330.19	134.85	3.449		
9,400.00	7,410.00	9,333.22	7,410.00	70.57	70.24	90.00	700.99	1,882.94	465.03	324.30	140.72	3.305		
9,500.00	7,410.00	9,433.22	7,410.00	73.52	73.20	90.00	702.01	1,982.94	465.02	318.37	146.64	3.171		
9,600.00	7,410.00	9,533.22	7,410.00	76.50	76.19	90.00	703.04	2,082.93	465.01	312.41	152.60	3.047		
9,700.00	7,410.00	9,633.22	7,410.00	79.49	79.19	90.00	704.06	2,182.93	465.00	306.40	158.60	2.932		
9,800.00	7,410.00	9,733.22	7,410.00	82.50	82.21	90.00	705.09	2,282.92	464.99	300.37	164.63	2.825		
9,900.00	7,410.00	9,833.22	7,410.00	85.52	85.24	90.00	706.11	2,382.92	464.98	294.30	170.68	2.724		
10,000.00	7,410.00	9,933.22	7,410.00	88.55	88.28	90.00	707.14	2,482.91	464.98	288.21	176.76	2.631		
10,100.00	7,410.00	10,033.22	7,410.00	91.60	91.33	90.00	708.16	2,582.90	464.97	282.10	182.87	2.543		
10,200.00	7,410.00	10,133.22	7,410.00	94.66	94.40	90.00	709.18	2,682.90	464.96	275.97	188.99	2.460		
10,300.00	7,410.00	10,233.22	7,410.00	97.73	97.47	90.00	710.21	2,782.89	464.95	269.82	195.13	2.383		
10,400.00	7,410.00	10,333.22	7,410.00	100.80	100.56	90.00	711.23	2,882.89	464.94	263.65	201.29	2.310		
10,500.00	7,410.00	10,433.22	7,410.00	103.89	103.65	90.00	712.26	2,982.88	464.93	257.47	207.46	2.241		
10,600.00	7,410.00	10,533.22	7,410.00	106.98	106.74	90.00	713.28	3,082.88	464.93	251.27	213.65	2.176		
10,700.00	7,410.00	10,633.22	7,410.00	110.07	109.84	90.00	714.31	3,182.87	464.92	245.06	219.85	2.115		
10,800.00	7,410.00	10,733.22	7,410.00	113.18	112.95	90.00	715.33	3,282.87	464.91	238.84	226.07	2.057		
10,900.00	7,410.00	10,833.22	7,410.00	116.29	116.07	90.00	716.36	3,382.86	464.90	232.61	232.29	2.001		
11,000.00	7,410.00	10,933.22	7,410.00	119.40	119.19	90.00	717.38	3,482.86	464.89	226.37	238.53	1.949		
11,100.00	7,410.00	11,033.22	7,410.00	122.52	122.31	90.00	718.41	3,582.85	464.88	220.12	244.77	1.899		
11,200.00	7,410.00	11,133.22	7,410.00	125.64	125.44	90.00	719.43	3,682.85	464.88	213.85	251.02	1.852		
11,300.00	7,410.00	11,233.22	7,410.00	128.77	128.57	90.00	720.45	3,782.84	464.87	207.59	257.28	1.807		
11,400.00	7,410.00	11,333.22	7,410.00	131.90	131.70	90.00	721.48	3,882.84	464.86	201.31	263.55	1.764		
11,500.00	7,410.00	11,433.22	7,410.00	135.04	134.84	90.00	722.50	3,982.83	464.85	195.03	269.82	1.723		
11,600.00	7,410.00	11,533.22	7,410.00	138.17	137.98	90.00	723.53	4,082.83	464.84	188.74	276.10	1.684		
11,700.00	7,410.00	11,633.22	7,410.00	141.32	141.13	90.00	724.55	4,182.82	464.83	182.45	282.39	1.646		
11,800.00	7,410.00	11,733.22	7,410.00	144.46	144.27	90.00	725.58	4,282.82	464.83	176.15	288.68	1.610		
11,900.00	7,410.00	11,833.22	7,410.00	147.61	147.42	90.00	726.60	4,382.81	464.82	169.84	294.98	1.576		
12,000.00	7,410.00	11,933.22	7,410.00	150.76	150.58	90.00	727.63	4,482.81	464.81	163.53	301.28	1.543		
12,017.13	7,410.00	11,950.31	7,410.00	151.29	151.11	90.00	727.80	4,499.90	464.81	162.45	302.36	1.537		
12,019.72	7,410.00	11,950.31	7,410.00	151.38	151.11	90.00	727.80	4,499.90	464.81	162.41	302.40	1.537 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3E-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	179.91	-40.07	0.07	40.07					
100.00	100.00	100.00	100.00	0.14	0.14	179.91	-40.07	0.07	40.07	39.79	0.28	145.158		
200.00	200.00	200.00	200.00	0.50	0.50	179.91	-40.07	0.07	40.07	39.07	0.99	40.351 CC, ES		
300.00	299.98	299.98	299.98	0.86	0.85	-166.19	-40.07	0.07	41.76	40.05	1.71	24.401		
400.00	399.84	399.84	399.84	1.22	1.21	-167.69	-40.07	0.07	46.86	44.42	2.43	19.244		
500.00	499.45	499.45	499.45	1.59	1.57	-169.58	-40.07	0.07	55.41	52.25	3.16	17.535		
600.00	598.70	598.70	598.70	1.96	1.93	-171.42	-40.07	0.07	67.43	63.54	3.89	17.356		
700.00	697.47	700.01	699.99	2.35	2.29	-172.48	-38.62	-0.92	81.41	76.79	4.63	17.600		
800.00	795.62	801.78	801.62	2.77	2.65	-172.50	-34.20	-3.93	95.72	90.33	5.39	17.768		
819.52	814.70	821.70	821.48	2.85	2.73	-172.42	-32.98	-4.76	98.54	93.00	5.54	17.782		
900.00	893.31	903.52	902.96	3.20	3.02	-171.84	-26.83	-8.95	109.25	103.10	6.15	17.756		
1,000.00	990.98	1,002.72	1,001.66	3.65	3.38	-171.08	-18.64	-14.53	121.79	114.91	6.88	17.694		
1,100.00	1,088.65	1,101.92	1,100.37	4.10	3.75	-170.46	-10.46	-20.11	134.35	126.73	7.62	17.631		
1,200.00	1,186.32	1,201.12	1,199.07	4.55	4.12	-169.95	-2.27	-25.68	146.92	138.56	8.36	17.572		
1,300.00	1,283.99	1,300.32	1,297.77	5.01	4.49	-169.52	5.92	-31.26	159.50	150.39	9.11	17.516		
1,400.00	1,381.66	1,399.52	1,396.48	5.47	4.86	-169.15	14.10	-36.84	172.08	162.23	9.85	17.465		
1,500.00	1,479.33	1,498.72	1,495.18	5.93	5.24	-168.83	22.29	-42.42	184.68	174.07	10.60	17.418		
1,600.00	1,577.00	1,597.92	1,593.88	6.39	5.61	-168.55	30.48	-47.99	197.27	185.92	11.35	17.375		
1,700.00	1,674.67	1,697.12	1,692.59	6.85	5.99	-168.31	38.67	-53.57	209.88	197.77	12.11	17.335		
1,800.00	1,772.35	1,796.32	1,791.29	7.31	6.36	-168.09	46.85	-59.15	222.48	209.62	12.86	17.299		
1,900.00	1,870.02	1,895.51	1,889.99	7.78	6.74	-167.90	55.04	-64.73	235.09	221.47	13.62	17.265		
2,000.00	1,967.69	1,994.71	1,988.70	8.24	7.12	-167.72	63.23	-70.30	247.70	233.33	14.37	17.235		
2,100.00	2,065.36	2,093.91	2,087.40	8.71	7.49	-167.57	71.42	-75.88	260.31	245.18	15.13	17.206		
2,200.00	2,163.03	2,193.11	2,186.10	9.17	7.87	-167.43	79.60	-81.46	272.92	257.04	15.89	17.180		
2,300.00	2,260.70	2,292.31	2,284.81	9.64	8.25	-167.30	87.79	-87.04	285.54	268.90	16.64	17.156		
2,400.00	2,358.37	2,391.51	2,383.51	10.11	8.63	-167.18	95.98	-92.61	298.16	280.75	17.40	17.133		
2,500.00	2,456.04	2,490.71	2,482.21	10.57	9.01	-167.07	104.16	-98.19	310.77	292.61	18.16	17.112		
2,600.00	2,553.71	2,589.91	2,580.92	11.04	9.39	-166.97	112.35	-103.77	323.39	304.47	18.92	17.092		
2,700.00	2,651.38	2,689.11	2,679.62	11.51	9.76	-166.87	120.54	-109.35	336.01	316.33	19.68	17.074		
2,800.00	2,749.05	2,788.31	2,778.32	11.97	10.14	-166.79	128.73	-114.92	348.63	328.19	20.44	17.057		
2,900.00	2,846.72	2,887.51	2,877.02	12.44	10.52	-166.71	136.91	-120.50	361.26	340.06	21.20	17.040		
3,000.00	2,944.40	2,986.70	2,975.73	12.91	10.90	-166.63	145.10	-126.08	373.88	351.92	21.96	17.025		
3,100.00	3,042.07	3,085.90	3,074.43	13.38	11.28	-166.56	153.29	-131.66	386.50	363.78	22.72	17.011		
3,200.00	3,139.74	3,185.10	3,173.13	13.84	11.66	-166.50	161.47	-137.23	399.12	375.64	23.48	16.997		
3,300.00	3,237.41	3,284.30	3,271.84	14.31	12.04	-166.43	169.66	-142.81	411.75	387.50	24.24	16.984		
3,400.00	3,335.08	3,383.50	3,370.54	14.78	12.42	-166.38	177.85	-148.39	424.37	399.37	25.00	16.972		
3,500.00	3,432.75	3,482.70	3,469.24	15.25	12.80	-166.32	186.04	-153.97	437.00	411.23	25.76	16.961		
3,600.00	3,530.42	3,581.90	3,567.95	15.72	13.18	-166.27	194.22	-159.55	449.62	423.09	26.53	16.950		
3,700.00	3,628.09	3,681.10	3,666.65	16.18	13.56	-166.22	202.41	-165.12	462.25	434.96	27.29	16.940		
3,800.00	3,725.76	3,780.30	3,765.35	16.65	13.94	-166.18	210.60	-170.70	474.87	446.82	28.05	16.930		
3,900.00	3,823.43	3,879.50	3,864.06	17.12	14.32	-166.13	218.79	-176.28	487.50	458.69	28.81	16.920		
4,000.00	3,921.10	3,978.70	3,962.76	17.59	14.70	-166.09	226.97	-181.86	500.12	470.55	29.57	16.912		
4,100.00	4,018.77	4,077.89	4,061.46	18.06	15.08	-166.05	235.16	-187.43	512.75	482.41	30.33	16.903		
4,200.00	4,116.44	4,177.09	4,160.17	18.52	15.46	-166.01	243.35	-193.01	525.38	494.28	31.10	16.895		
4,300.00	4,214.12	4,276.29	4,258.87	18.99	15.84	-165.98	251.53	-198.59	538.00	506.14	31.86	16.887		
4,400.00	4,311.79	4,375.49	4,357.57	19.46	16.22	-165.94	259.72	-204.17	550.63	518.01	32.62	16.880		
4,500.00	4,409.46	4,474.69	4,456.28	19.93	16.60	-165.91	267.91	-209.74	563.26	529.87	33.38	16.872		
4,600.00	4,507.13	4,573.89	4,554.98	20.40	16.98	-165.88	276.10	-215.32	575.88	541.74	34.15	16.866		
4,700.00	4,604.80	4,673.09	4,653.68	20.87	17.36	-165.85	284.28	-220.90	588.51	553.60	34.91	16.859		
4,800.00	4,702.47	4,772.29	4,752.39	21.34	17.74	-165.82	292.47	-226.48	601.14	565.47	35.67	16.853		
4,900.00	4,800.14	4,871.49	4,851.09	21.80	18.12	-165.79	300.66	-232.05	613.77	577.33	36.43	16.847		
5,000.00	4,897.81	4,970.69	4,949.79	22.27	18.50	-165.77	308.85	-237.63	626.39	589.20	37.20	16.841		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3E-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.00	4,995.48	5,069.89	5,048.49	22.74	18.88	-165.74	317.03	-243.21	639.02	601.06	37.96	16.835	
5,200.00	5,093.15	5,169.08	5,147.20	23.21	19.26	-165.72	325.22	-248.79	651.65	612.93	38.72	16.830	
5,300.00	5,190.82	5,268.28	5,245.90	23.68	19.64	-165.69	333.41	-254.36	664.28	624.80	39.48	16.824	
5,400.00	5,288.49	5,367.48	5,344.60	24.15	20.02	-165.67	341.59	-259.94	676.91	636.66	40.25	16.819	
5,500.00	5,386.17	5,466.68	5,443.31	24.62	20.40	-165.65	349.78	-265.52	689.54	648.53	41.01	16.814	
5,600.00	5,483.84	5,565.88	5,542.01	25.09	20.78	-165.63	357.97	-271.10	702.16	660.39	41.77	16.810	
5,703.88	5,585.30	5,668.93	5,644.54	25.57	21.18	-165.61	366.47	-276.89	715.28	672.72	42.56	16.805	
5,800.00	5,679.51	5,759.98	5,735.14	26.01	21.53	-165.62	373.92	-281.97	725.95	682.69	43.26	16.780	
5,900.00	5,778.14	5,842.15	5,817.06	26.43	21.83	-165.65	379.23	-285.58	735.46	691.59	43.87	16.764	
6,000.00	5,877.29	5,924.22	5,899.03	26.82	22.13	-165.72	382.59	-287.87	743.98	699.54	44.44	16.743	
6,100.00	5,976.83	6,006.18	5,980.97	27.18	22.41	-165.83	384.01	-288.84	751.48	706.53	44.96	16.716	
6,200.00	6,076.64	6,101.85	6,076.64	27.51	22.73	-165.96	384.06	-288.87	757.29	711.69	45.59	16.609	
6,300.00	6,176.60	6,201.81	6,176.60	27.81	23.07	-166.02	384.06	-288.87	759.77	713.50	46.27	16.420	
6,323.40	6,200.00	6,225.21	6,200.00	27.88	23.15	179.48	384.06	-288.87	759.87	713.44	46.43	16.366	
6,400.00	6,276.60	6,301.81	6,276.60	28.09	23.41	179.48	384.06	-288.87	759.87	712.92	46.94	16.187	
6,500.00	6,376.60	6,401.81	6,376.60	28.37	23.75	179.48	384.06	-288.87	759.87	712.25	47.62	15.958	
6,600.00	6,476.60	6,501.81	6,476.60	28.65	24.09	179.48	384.06	-288.87	759.87	711.57	48.29	15.735	
6,700.00	6,576.60	6,601.81	6,576.60	28.94	24.43	179.48	384.06	-288.87	759.87	710.90	48.97	15.518	
6,782.92	6,659.52	6,684.74	6,659.52	29.17	24.70	179.42	384.07	-287.98	759.86	710.35	49.52	15.345	
6,800.00	6,676.60	6,701.78	6,676.52	29.22	24.76	179.34	384.08	-286.93	759.87	710.24	49.63	15.312	
6,817.20	6,693.80	6,718.88	6,693.56	29.27	24.81	179.23	384.10	-285.47	759.87	710.14	49.73	15.280	
6,850.00	6,726.59	6,751.33	6,725.77	29.36	24.91	89.57	384.14	-281.58	759.89	709.97	49.92	15.223	
6,900.00	6,776.41	6,800.54	6,774.20	29.49	25.05	89.21	384.23	-272.90	759.94	709.75	50.19	15.142	
6,950.00	6,825.84	6,849.43	6,821.62	29.62	25.19	88.85	384.35	-261.02	760.02	709.57	50.45	15.066	
7,000.00	6,874.62	6,898.02	6,867.82	29.74	25.32	88.50	384.50	-246.02	760.13	709.43	50.69	14.995	
7,050.00	6,922.52	6,946.31	6,912.64	29.86	25.44	88.16	384.68	-228.05	760.26	709.33	50.94	14.926	
7,100.00	6,969.31	6,994.32	6,955.89	29.96	25.55	87.83	384.89	-207.23	760.42	709.24	51.17	14.859	
7,150.00	7,014.75	7,042.07	6,997.42	30.06	25.67	87.51	385.13	-183.70	760.59	709.17	51.42	14.792	
7,200.00	7,058.63	7,089.56	7,037.09	30.16	25.78	87.20	385.40	-157.61	760.78	709.11	51.67	14.723	
7,250.00	7,100.73	7,136.81	7,074.75	30.24	25.89	86.90	385.69	-129.09	760.99	709.03	51.95	14.648	
7,300.00	7,140.86	7,183.83	7,110.28	30.32	26.02	86.62	386.00	-98.30	761.20	708.93	52.26	14.565	
7,350.00	7,178.80	7,230.65	7,143.58	30.39	26.17	86.35	386.33	-65.40	761.41	708.79	52.62	14.470	
7,400.00	7,214.38	7,277.28	7,174.53	30.45	26.36	86.11	386.69	-30.55	761.63	708.59	53.04	14.359	
7,450.00	7,247.42	7,323.72	7,203.05	30.50	26.60	85.88	387.06	6.10	761.84	708.31	53.54	14.230	
7,500.00	7,277.77	7,370.01	7,229.04	30.55	26.91	85.67	387.45	44.39	762.05	707.93	54.12	14.080	
7,550.00	7,305.27	7,416.15	7,252.44	30.58	27.27	85.48	387.85	84.14	762.25	707.43	54.81	13.906	
7,600.00	7,329.79	7,462.15	7,273.17	30.62	27.70	85.31	388.27	125.20	762.43	706.80	55.62	13.707	
7,650.00	7,351.21	7,508.05	7,291.18	30.64	28.19	85.16	388.70	167.41	762.59	706.04	56.55	13.484	
7,700.00	7,369.43	7,553.84	7,306.42	30.67	28.73	85.03	389.14	210.58	762.74	705.12	57.62	13.238	
7,750.00	7,384.36	7,600.00	7,318.96	30.72	29.35	84.92	389.59	254.99	762.86	704.04	58.82	12.970	
7,800.00	7,395.93	7,645.21	7,328.45	31.01	30.01	84.84	390.04	299.18	762.95	702.82	60.14	12.687	
7,850.00	7,404.07	7,690.81	7,335.17	31.71	30.73	84.78	390.50	344.27	763.03	701.44	61.58	12.390	
7,900.00	7,408.76	7,736.38	7,339.01	32.51	31.49	84.75	390.96	389.67	763.07	699.93	63.14	12.086	
7,942.20	7,410.00	7,774.91	7,340.00	33.23	32.16	84.74	391.35	428.18	763.08	698.57	64.52	11.828	
8,000.00	7,410.00	7,832.70	7,340.00	34.28	33.25	84.74	391.94	485.97	763.08	696.44	66.64	11.451	
8,100.00	7,410.00	7,932.70	7,340.00	36.24	35.25	84.74	392.95	585.97	763.08	692.50	70.58	10.811	
8,200.00	7,410.00	8,032.70	7,340.00	38.37	37.42	84.74	393.97	685.96	763.08	688.22	74.86	10.193	
8,300.00	7,410.00	8,132.70	7,340.00	40.64	39.73	84.74	394.99	785.96	763.08	683.65	79.43	9.607	
8,400.00	7,410.00	8,232.70	7,340.00	43.03	42.16	84.74	396.00	885.95	763.08	678.85	84.23	9.059	
8,500.00	7,410.00	8,332.70	7,340.00	45.52	44.68	84.74	397.02	985.94	763.08	673.85	89.23	8.552	
8,600.00	7,410.00	8,432.70	7,340.00	48.10	47.29	84.74	398.03	1,085.94	763.08	668.68	94.40	8.083	
8,700.00	7,410.00	8,532.70	7,340.00	50.74	49.97	84.74	399.05	1,185.93	763.08	663.37	99.71	7.653	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3E-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
8,800.00	7,410.00	8,632.70	7,340.00	53.45	52.71	84.74	400.07	1,285.93	763.08	657.94	105.14	7.258		
8,900.00	7,410.00	8,732.70	7,340.00	56.21	55.49	84.74	401.08	1,385.92	763.08	652.41	110.67	6.895		
9,000.00	7,410.00	8,832.70	7,340.00	59.01	58.32	84.74	402.10	1,485.92	763.08	646.79	116.29	6.562		
9,100.00	7,410.00	8,932.70	7,340.00	61.85	61.19	84.74	403.11	1,585.91	763.08	641.10	121.99	6.255		
9,200.00	7,410.00	9,032.70	7,340.00	64.73	64.09	84.74	404.13	1,685.91	763.08	635.33	127.75	5.973		
9,300.00	7,410.00	9,132.70	7,340.00	67.63	67.02	84.74	405.15	1,785.90	763.08	629.52	133.57	5.713		
9,400.00	7,410.00	9,232.70	7,340.00	70.57	69.97	84.74	406.16	1,885.90	763.08	623.65	139.43	5.473		
9,500.00	7,410.00	9,332.70	7,340.00	73.52	72.94	84.74	407.18	1,985.89	763.08	617.74	145.35	5.250		
9,600.00	7,410.00	9,432.70	7,340.00	76.50	75.94	84.74	408.20	2,085.89	763.08	611.79	151.29	5.044		
9,700.00	7,410.00	9,532.70	7,340.00	79.49	78.94	84.74	409.21	2,185.88	763.08	605.80	157.28	4.852		
9,800.00	7,410.00	9,632.70	7,340.00	82.50	81.97	84.74	410.23	2,285.88	763.08	599.79	163.29	4.673		
9,900.00	7,410.00	9,732.70	7,340.00	85.52	85.01	84.74	411.24	2,385.87	763.08	593.75	169.34	4.506		
10,000.00	7,410.00	9,832.70	7,340.00	88.55	88.06	84.74	412.26	2,485.87	763.08	587.68	175.40	4.350		
10,100.00	7,410.00	9,932.70	7,340.00	91.60	91.12	84.74	413.28	2,585.86	763.08	581.59	181.49	4.205		
10,200.00	7,410.00	10,032.70	7,340.00	94.66	94.19	84.74	414.29	2,685.86	763.08	575.49	187.60	4.068		
10,300.00	7,410.00	10,132.70	7,340.00	97.73	97.27	84.74	415.31	2,785.85	763.08	569.36	193.72	3.939		
10,400.00	7,410.00	10,232.70	7,340.00	100.80	100.35	84.74	416.32	2,885.85	763.08	563.22	199.87	3.818		
10,500.00	7,410.00	10,332.70	7,340.00	103.89	103.45	84.74	417.34	2,985.84	763.08	557.06	206.02	3.704		
10,600.00	7,410.00	10,432.70	7,340.00	106.98	106.55	84.74	418.36	3,085.84	763.08	550.89	212.19	3.596		
10,700.00	7,410.00	10,532.70	7,340.00	110.07	109.65	84.74	419.37	3,185.83	763.08	544.71	218.38	3.494		
10,800.00	7,410.00	10,632.70	7,340.00	113.18	112.77	84.74	420.39	3,285.83	763.08	538.51	224.57	3.398		
10,900.00	7,410.00	10,732.70	7,340.00	116.29	115.88	84.74	421.40	3,385.82	763.08	532.31	230.78	3.307		
11,000.00	7,410.00	10,832.70	7,340.00	119.40	119.01	84.74	422.42	3,485.82	763.08	526.09	236.99	3.220		
11,100.00	7,410.00	10,932.70	7,340.00	122.52	122.13	84.74	423.44	3,585.81	763.08	519.87	243.22	3.137		
11,200.00	7,410.00	11,032.70	7,340.00	125.64	125.26	84.74	424.45	3,685.81	763.08	513.64	249.45	3.059		
11,300.00	7,410.00	11,132.70	7,340.00	128.77	128.40	84.74	425.47	3,785.80	763.08	507.40	255.69	2.984		
11,400.00	7,410.00	11,232.70	7,340.00	131.90	131.53	84.74	426.49	3,885.80	763.08	501.15	261.93	2.913		
11,500.00	7,410.00	11,332.70	7,340.00	135.04	134.68	84.74	427.50	3,985.79	763.08	494.90	268.19	2.845		
11,600.00	7,410.00	11,432.70	7,340.00	138.17	137.82	84.74	428.52	4,085.78	763.09	488.64	274.45	2.780		
11,700.00	7,410.00	11,532.70	7,340.00	141.32	140.97	84.74	429.53	4,185.78	763.09	482.37	280.71	2.718		
11,800.00	7,410.00	11,632.70	7,340.00	144.46	144.12	84.74	430.55	4,285.77	763.09	476.10	286.98	2.659		
11,900.00	7,410.00	11,732.70	7,340.00	147.61	147.27	84.74	431.57	4,385.77	763.09	469.83	293.26	2.602		
12,000.00	7,410.00	11,832.70	7,340.00	150.76	150.42	84.74	432.58	4,485.76	763.09	463.55	299.54	2.548		
12,000.46	7,410.00	11,833.17	7,340.00	150.77	150.44	84.74	432.59	4,486.23	763.09	463.52	299.57	2.547		
12,019.72	7,410.00	11,848.32	7,340.00	151.38	150.91	84.74	432.74	4,501.38	763.10	462.48	300.62	2.538 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3F-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.86	-50.27	-0.13	50.27					
100.00	100.00	100.00	100.00	0.14	0.14	-179.86	-50.27	-0.13	50.27	50.00	0.28	182.133		
200.00	200.00	200.00	200.00	0.50	0.50	-179.86	-50.27	-0.13	50.27	49.28	0.99	50.629	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.84	-50.27	-0.13	51.96	50.25	1.71	30.364		
400.00	399.84	399.84	399.84	1.22	1.21	-167.10	-50.27	-0.13	57.05	54.62	2.43	23.431		
500.00	499.45	499.45	499.45	1.59	1.57	-168.77	-50.27	-0.13	65.58	62.42	3.16	20.755		
600.00	598.70	598.70	598.70	1.96	1.93	-170.48	-50.27	-0.13	77.57	73.68	3.89	19.966		
700.00	697.47	697.47	697.47	2.35	2.28	-172.03	-50.27	-0.13	93.04	88.42	4.61	20.176		
800.00	795.62	795.62	795.62	2.77	2.63	-173.34	-50.27	-0.13	111.97	106.63	5.34	20.976		
819.52	814.70	814.70	814.70	2.85	2.70	-173.57	-50.27	-0.13	116.07	110.58	5.49	21.160		
900.00	893.31	893.31	893.31	3.20	2.98	-174.40	-50.27	-0.13	133.24	127.18	6.06	21.983		
1,000.00	990.98	990.98	990.98	3.65	3.33	-175.18	-50.27	-0.13	154.62	147.84	6.78	22.809		
1,100.00	1,088.65	1,093.32	1,093.30	4.10	3.70	-175.50	-49.20	-1.21	174.83	167.30	7.52	23.234		
1,200.00	1,186.32	1,197.22	1,197.07	4.55	4.07	-175.11	-45.50	-4.95	192.16	183.88	8.29	23.189		
1,300.00	1,283.99	1,298.60	1,298.11	5.01	4.43	-174.29	-39.72	-10.80	207.07	198.03	9.04	22.914		
1,400.00	1,381.66	1,397.48	1,396.63	5.47	4.79	-173.54	-33.83	-16.75	221.73	211.96	9.77	22.688		
1,500.00	1,479.33	1,496.36	1,495.16	5.93	5.15	-172.88	-27.95	-22.71	236.43	225.92	10.51	22.489		
1,600.00	1,577.00	1,595.24	1,593.68	6.39	5.51	-172.30	-22.06	-28.66	251.15	239.90	11.26	22.314		
1,700.00	1,674.67	1,694.12	1,692.21	6.85	5.87	-171.79	-16.17	-34.62	265.90	253.90	12.00	22.159		
1,800.00	1,772.35	1,793.00	1,790.73	7.31	6.23	-171.33	-10.28	-40.57	280.66	267.91	12.75	22.020		
1,900.00	1,870.02	1,891.88	1,889.26	7.78	6.60	-170.91	-4.40	-46.52	295.44	281.95	13.49	21.896		
2,000.00	1,967.69	1,990.76	1,987.78	8.24	6.96	-170.54	1.49	-52.48	310.23	295.99	14.24	21.783		
2,100.00	2,065.36	2,089.64	2,086.31	8.71	7.33	-170.20	7.38	-58.43	325.04	310.05	14.99	21.680		
2,200.00	2,163.03	2,188.52	2,184.83	9.17	7.70	-169.89	13.27	-64.39	339.85	324.11	15.74	21.587		
2,300.00	2,260.70	2,287.40	2,283.36	9.64	8.06	-169.60	19.15	-70.34	354.68	338.18	16.50	21.502		
2,400.00	2,358.37	2,386.28	2,381.88	10.11	8.43	-169.34	25.04	-76.30	369.51	352.26	17.25	21.423		
2,500.00	2,456.04	2,485.16	2,480.41	10.57	8.80	-169.10	30.93	-82.25	384.35	366.35	18.00	21.351		
2,600.00	2,553.71	2,584.04	2,578.93	11.04	9.17	-168.87	36.82	-88.21	399.20	380.44	18.76	21.284		
2,700.00	2,651.38	2,682.92	2,677.46	11.51	9.54	-168.67	42.70	-94.16	414.05	394.54	19.51	21.222		
2,800.00	2,749.05	2,781.80	2,775.98	11.97	9.91	-168.47	48.59	-100.11	428.90	408.64	20.27	21.164		
2,900.00	2,846.72	2,880.68	2,874.51	12.44	10.28	-168.29	54.48	-106.07	443.76	422.74	21.02	21.110		
3,000.00	2,944.40	2,979.56	2,973.03	12.91	10.65	-168.12	60.37	-112.02	458.63	436.85	21.78	21.060		
3,100.00	3,042.07	3,078.44	3,071.56	13.38	11.02	-167.96	66.25	-117.98	473.50	450.96	22.53	21.013		
3,200.00	3,139.74	3,177.32	3,170.08	13.84	11.39	-167.82	72.14	-123.93	488.37	465.08	23.29	20.969		
3,300.00	3,237.41	3,276.20	3,268.61	14.31	11.76	-167.68	78.03	-129.89	503.24	479.20	24.05	20.927		
3,400.00	3,335.08	3,375.08	3,367.13	14.78	12.13	-167.54	83.92	-135.84	518.12	493.32	24.80	20.888		
3,500.00	3,432.75	3,473.96	3,465.66	15.25	12.50	-167.42	89.80	-141.80	533.00	507.44	25.56	20.851		
3,600.00	3,530.42	3,572.84	3,564.18	15.72	12.87	-167.30	95.69	-147.75	547.88	521.56	26.32	20.817		
3,700.00	3,628.09	3,671.72	3,662.71	16.18	13.24	-167.19	101.58	-153.70	562.77	535.69	27.08	20.784		
3,800.00	3,725.76	3,770.60	3,761.23	16.65	13.61	-167.08	107.47	-159.66	577.65	549.82	27.84	20.752		
3,900.00	3,823.43	3,869.48	3,859.76	17.12	13.98	-166.98	113.36	-165.61	592.54	563.95	28.59	20.723		
4,000.00	3,921.10	3,968.37	3,958.28	17.59	14.35	-166.89	119.24	-171.57	607.43	578.08	29.35	20.694		
4,100.00	4,018.77	4,067.25	4,056.81	18.06	14.72	-166.80	125.13	-177.52	622.32	592.21	30.11	20.667		
4,200.00	4,116.44	4,166.13	4,155.33	18.52	15.10	-166.71	131.02	-183.48	637.22	606.35	30.87	20.642		
4,300.00	4,214.12	4,265.01	4,253.86	18.99	15.47	-166.63	136.91	-189.43	652.11	620.48	31.63	20.617		
4,400.00	4,311.79	4,363.89	4,352.38	19.46	15.84	-166.55	142.79	-195.39	667.01	634.62	32.39	20.594		
4,500.00	4,409.46	4,462.77	4,450.91	19.93	16.21	-166.47	148.68	-201.34	681.90	648.76	33.15	20.572		
4,600.00	4,507.13	4,561.65	4,549.43	20.40	16.58	-166.40	154.57	-207.29	696.80	662.89	33.91	20.551		
4,700.00	4,604.80	4,660.53	4,647.96	20.87	16.95	-166.33	160.46	-213.25	711.70	677.03	34.67	20.530		
4,800.00	4,702.47	4,759.41	4,746.48	21.34	17.33	-166.26	166.34	-219.20	726.60	691.17	35.43	20.511		
4,900.00	4,800.14	4,858.29	4,845.01	21.80	17.70	-166.20	172.23	-225.16	741.50	705.31	36.19	20.492		
5,000.00	4,897.81	4,957.17	4,943.53	22.27	18.07	-166.14	178.12	-231.11	756.40	719.46	36.95	20.474		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3F-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.00	4,995.48	5,056.05	5,042.06	22.74	18.44	-166.08	184.01	-237.07	771.30	733.60	37.70	20.456	
5,200.00	5,093.15	5,154.93	5,140.58	23.21	18.81	-166.02	189.89	-243.02	786.21	747.74	38.46	20.440	
5,300.00	5,190.82	5,253.81	5,239.11	23.68	19.18	-165.97	195.78	-248.98	801.11	761.89	39.22	20.424	
5,400.00	5,288.49	5,352.69	5,337.63	24.15	19.56	-165.92	201.67	-254.93	816.02	776.03	39.98	20.408	
5,500.00	5,386.17	5,451.57	5,436.16	24.62	19.93	-165.87	207.56	-260.88	830.92	790.18	40.75	20.393	
5,600.00	5,483.84	5,550.45	5,534.69	25.09	20.30	-165.82	213.44	-266.84	845.83	804.32	41.51	20.379	
5,703.88	5,585.30	5,653.17	5,637.03	25.57	20.69	-165.77	219.56	-273.02	861.31	819.02	42.30	20.364	
5,800.00	5,679.51	5,748.42	5,731.95	26.01	21.05	-165.76	225.23	-278.76	874.09	831.07	43.02	20.317	
5,900.00	5,778.14	5,834.65	5,817.91	26.43	21.37	-165.74	229.91	-283.50	884.65	840.98	43.68	20.255	
6,000.00	5,877.29	5,916.30	5,899.46	26.82	21.66	-165.76	232.75	-286.36	893.79	849.52	44.26	20.193	
6,100.00	5,976.83	6,000.00	5,983.14	27.18	21.96	-165.85	233.95	-287.58	901.56	856.73	44.83	20.110	
6,200.00	6,076.64	6,093.50	6,076.64	27.51	22.28	-165.96	233.99	-287.62	907.37	861.91	45.46	19.960	
6,300.00	6,176.60	6,193.46	6,176.60	27.81	22.62	-166.01	233.99	-287.62	909.85	863.72	46.14	19.720	
6,323.40	6,200.00	6,216.86	6,200.00	27.88	22.70	179.49	233.99	-287.62	909.95	863.65	46.30	19.655	
6,400.00	6,276.60	6,293.46	6,276.60	28.09	22.97	179.49	233.99	-287.62	909.95	863.14	46.81	19.439	
6,500.00	6,376.60	6,393.46	6,376.60	28.37	23.31	179.49	233.99	-287.62	909.95	862.46	47.49	19.162	
6,600.00	6,476.60	6,493.46	6,476.60	28.65	23.66	179.49	233.99	-287.62	909.95	861.79	48.16	18.894	
6,700.00	6,576.60	6,593.46	6,576.60	28.94	24.00	179.49	233.99	-287.62	909.95	861.11	48.84	18.632	
6,800.00	6,676.60	6,693.46	6,676.60	29.22	24.35	179.49	233.99	-287.62	909.95	860.43	49.52	18.377	
6,817.20	6,693.80	6,710.66	6,693.80	29.27	24.41	179.49	233.99	-287.62	909.95	860.31	49.63	18.334	
6,850.00	6,726.59	6,743.51	6,726.64	29.36	24.52	90.07	233.99	-286.86	909.95	860.10	49.85	18.255	
6,900.00	6,776.41	6,793.59	6,776.55	29.49	24.67	90.07	234.04	-282.82	909.95	859.79	50.16	18.143	
6,950.00	6,825.84	6,843.67	6,826.05	29.62	24.82	90.07	234.11	-275.30	909.95	859.49	50.45	18.035	
7,000.00	6,874.62	6,893.75	6,874.90	29.74	24.97	90.07	234.22	-264.34	909.95	859.20	50.75	17.931	
7,050.00	6,922.52	6,943.83	6,922.87	29.86	25.11	90.07	234.37	-250.00	909.95	858.91	51.03	17.830	
7,100.00	6,969.31	6,993.90	6,969.72	29.96	25.24	90.07	234.55	-232.34	909.95	858.63	51.32	17.732	
7,150.00	7,014.75	7,043.98	7,015.22	30.06	25.38	90.07	234.76	-211.45	909.95	858.34	51.60	17.633	
7,200.00	7,058.63	7,094.05	7,059.14	30.16	25.51	90.06	235.01	-187.43	909.95	858.05	51.90	17.532	
7,250.00	7,100.73	7,144.12	7,101.28	30.24	25.65	90.06	235.28	-160.41	909.95	857.73	52.22	17.426	
7,300.00	7,140.86	7,194.18	7,141.42	30.32	25.80	90.06	235.58	-130.51	909.95	857.38	52.56	17.311	
7,350.00	7,178.80	7,244.24	7,179.38	30.39	25.97	90.05	235.92	-97.89	909.95	856.99	52.96	17.183	
7,400.00	7,214.38	7,294.30	7,214.96	30.45	26.18	90.05	236.27	-62.69	909.95	856.54	53.41	17.037	
7,450.00	7,247.42	7,344.35	7,247.99	30.50	26.44	90.05	236.65	-25.10	909.95	856.01	53.94	16.871	
7,500.00	7,277.77	7,394.40	7,278.31	30.55	26.74	90.04	237.06	14.70	909.95	855.39	54.56	16.678	
7,550.00	7,305.27	7,444.45	7,305.78	30.58	27.10	90.04	237.48	56.52	909.95	854.66	55.29	16.458	
7,600.00	7,329.79	7,494.49	7,330.26	30.62	27.53	90.03	237.93	100.15	909.95	853.81	56.14	16.209	
7,650.00	7,351.21	7,544.52	7,351.64	30.64	28.03	90.03	238.39	145.37	909.95	852.83	57.12	15.930	
7,700.00	7,369.43	7,594.55	7,369.80	30.67	28.60	90.02	238.86	191.97	909.95	851.70	58.24	15.624	
7,750.00	7,384.36	7,644.57	7,384.66	30.72	29.24	90.02	239.35	239.73	909.95	850.44	59.50	15.293	
7,780.20	7,391.76	7,674.79	7,392.01	30.83	29.66	90.02	239.64	269.03	909.95	849.60	60.34	15.080	
7,800.00	7,395.93	7,694.59	7,396.15	31.01	29.94	90.01	239.84	288.39	909.95	849.05	60.90	14.943	
7,850.00	7,404.07	7,744.61	7,404.22	31.71	30.71	90.01	240.34	337.74	909.95	847.53	62.42	14.578	
7,900.00	7,408.76	7,794.61	7,408.82	32.51	31.54	90.00	240.85	387.52	909.95	845.90	64.05	14.207	
7,942.20	7,410.00	7,836.82	7,410.00	33.23	32.28	90.00	241.28	429.70	909.95	844.44	65.50	13.892	
8,000.00	7,410.00	7,894.62	7,410.00	34.28	33.35	90.00	241.86	487.50	909.95	842.34	67.61	13.459	
8,100.00	7,410.00	7,994.62	7,410.00	36.24	35.35	90.00	242.88	587.49	909.95	838.38	71.56	12.716	
8,200.00	7,410.00	8,094.62	7,410.00	38.37	37.51	90.00	243.90	687.49	909.95	834.10	75.85	11.997	
8,300.00	7,410.00	8,194.62	7,410.00	40.64	39.82	90.00	244.91	787.48	909.95	829.53	80.42	11.315	
8,400.00	7,410.00	8,294.62	7,410.00	43.03	42.24	90.00	245.93	887.48	909.95	824.72	85.22	10.677	
8,500.00	7,410.00	8,394.62	7,410.00	45.52	44.76	90.00	246.94	987.47	909.95	819.71	90.23	10.085	
8,600.00	7,410.00	8,494.62	7,410.00	48.10	47.37	90.00	247.96	1,087.46	909.95	814.54	95.41	9.537	
8,700.00	7,410.00	8,594.62	7,410.00	50.74	50.04	90.00	248.98	1,187.46	909.95	809.22	100.73	9.034	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3F-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
8,800.00	7,410.00	8,694.62	7,410.00	53.45	52.78	90.00	249.99	1,287.45	909.95	803.78	106.16	8.571	
8,900.00	7,410.00	8,794.62	7,410.00	56.21	55.56	90.00	251.01	1,387.45	909.95	798.24	111.71	8.146	
9,000.00	7,410.00	8,894.62	7,410.00	59.01	58.39	90.00	252.03	1,487.44	909.95	792.61	117.34	7.755	
9,100.00	7,410.00	8,994.62	7,410.00	61.85	61.26	90.00	253.04	1,587.44	909.95	786.90	123.05	7.395	
9,200.00	7,410.00	9,094.62	7,410.00	64.73	64.15	90.00	254.06	1,687.43	909.95	781.13	128.82	7.064	
9,300.00	7,410.00	9,194.62	7,410.00	67.63	67.08	90.00	255.07	1,787.43	909.95	775.29	134.65	6.758	
9,400.00	7,410.00	9,294.62	7,410.00	70.57	70.03	90.00	256.09	1,887.42	909.95	769.41	140.53	6.475	
9,500.00	7,410.00	9,394.62	7,410.00	73.52	73.00	90.00	257.11	1,987.42	909.95	763.49	146.46	6.213	
9,600.00	7,410.00	9,494.62	7,410.00	76.50	75.99	90.00	258.12	2,087.41	909.95	757.52	152.43	5.970	
9,700.00	7,410.00	9,594.62	7,410.00	79.49	79.00	90.00	259.14	2,187.41	909.95	751.52	158.43	5.744	
9,800.00	7,410.00	9,694.62	7,410.00	82.50	82.02	90.00	260.15	2,287.40	909.95	745.49	164.46	5.533	
9,900.00	7,410.00	9,794.62	7,410.00	85.52	85.06	90.00	261.17	2,387.40	909.95	739.43	170.52	5.336	
10,000.00	7,410.00	9,894.62	7,410.00	88.55	88.11	90.00	262.19	2,487.39	909.95	733.34	176.61	5.152	
10,100.00	7,410.00	9,994.62	7,410.00	91.60	91.17	90.00	263.20	2,587.39	909.95	727.23	182.71	4.980	
10,200.00	7,410.00	10,094.62	7,410.00	94.66	94.24	90.00	264.22	2,687.38	909.95	721.11	188.84	4.819	
10,300.00	7,410.00	10,194.62	7,410.00	97.73	97.31	90.00	265.24	2,787.38	909.95	714.96	194.99	4.667	
10,400.00	7,410.00	10,294.62	7,410.00	100.80	100.40	90.00	266.25	2,887.37	909.95	708.80	201.15	4.524	
10,500.00	7,410.00	10,394.62	7,410.00	103.89	103.49	90.00	267.27	2,987.37	909.95	702.62	207.33	4.389	
10,600.00	7,410.00	10,494.62	7,410.00	106.98	106.59	90.00	268.28	3,087.36	909.95	696.43	213.52	4.262	
10,700.00	7,410.00	10,594.62	7,410.00	110.07	109.70	90.00	269.30	3,187.36	909.95	690.22	219.72	4.141	
10,800.00	7,410.00	10,694.62	7,410.00	113.18	112.81	90.00	270.32	3,287.35	909.95	684.01	225.94	4.027	
10,900.00	7,410.00	10,794.62	7,410.00	116.29	115.93	90.00	271.33	3,387.35	909.95	677.78	232.17	3.919	
11,000.00	7,410.00	10,894.62	7,410.00	119.40	119.05	90.00	272.35	3,487.34	909.95	671.54	238.40	3.817	
11,100.00	7,410.00	10,994.62	7,410.00	122.52	122.17	90.00	273.36	3,587.34	909.95	665.30	244.65	3.719	
11,200.00	7,410.00	11,094.62	7,410.00	125.64	125.30	90.00	274.38	3,687.33	909.95	659.04	250.90	3.627	
11,300.00	7,410.00	11,194.62	7,410.00	128.77	128.44	90.00	275.40	3,787.33	909.95	652.78	257.16	3.538	
11,400.00	7,410.00	11,294.62	7,410.00	131.90	131.58	90.00	276.41	3,887.32	909.95	646.51	263.43	3.454	
11,500.00	7,410.00	11,394.62	7,410.00	135.04	134.72	90.00	277.43	3,987.32	909.95	640.24	269.71	3.374	
11,600.00	7,410.00	11,494.62	7,410.00	138.17	137.86	90.00	278.45	4,087.31	909.95	633.96	275.99	3.297	
11,700.00	7,410.00	11,594.62	7,410.00	141.32	141.01	90.00	279.46	4,187.30	909.95	627.67	282.28	3.224	
11,800.00	7,410.00	11,694.62	7,410.00	144.46	144.15	90.00	280.48	4,287.30	909.95	621.37	288.57	3.153	
11,900.00	7,410.00	11,794.62	7,410.00	147.61	147.31	90.00	281.49	4,387.29	909.95	615.08	294.87	3.086	
12,000.00	7,410.00	11,894.62	7,410.00	150.76	150.46	90.00	282.51	4,487.29	909.95	608.77	301.18	3.021	
12,000.04	7,410.00	11,894.65	7,410.00	150.76	150.46	90.00	282.51	4,487.33	909.95	608.77	301.18	3.021	
12,019.72	7,410.00	11,909.47	7,410.00	151.38	150.93	90.00	282.66	4,502.14	909.96	607.72	302.24	3.011 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3G-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.96	-60.10	-0.04	60.10					
100.00	100.00	100.00	100.00	0.14	0.14	-179.96	-60.10	-0.04	60.10	59.83	0.28	217.749		
200.00	200.00	200.00	200.00	0.50	0.50	-179.96	-60.10	-0.04	60.10	59.11	0.99	60.529	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.86	-60.10	-0.04	61.79	60.08	1.71	36.109		
400.00	399.84	399.84	399.84	1.22	1.21	-166.94	-60.10	-0.04	66.88	64.45	2.43	27.468		
500.00	499.45	499.45	499.45	1.59	1.57	-168.40	-60.10	-0.04	75.40	72.24	3.16	23.863		
600.00	598.70	598.70	598.70	1.96	1.93	-169.96	-60.10	-0.04	87.37	83.49	3.89	22.489		
700.00	697.47	697.47	697.47	2.35	2.28	-171.44	-60.10	-0.04	102.82	98.20	4.61	22.296		
800.00	795.62	795.62	795.62	2.77	2.63	-172.72	-60.10	-0.04	121.72	116.38	5.34	22.803		
819.52	814.70	814.69	814.69	2.85	2.70	-172.93	-60.11	-0.08	125.82	120.33	5.48	22.942		
900.00	893.31	893.23	893.22	3.20	2.97	-173.18	-60.34	-1.54	142.99	136.94	6.05	23.624		
1,000.00	990.98	990.84	990.73	3.65	3.31	-172.49	-61.03	-5.90	164.40	157.65	6.76	24.328		
1,100.00	1,088.65	1,088.50	1,088.26	4.10	3.65	-171.83	-61.77	-10.66	185.85	178.38	7.47	24.879		
1,200.00	1,186.32	1,186.15	1,185.80	4.55	3.99	-171.31	-62.52	-15.42	207.31	199.12	8.19	25.320		
1,300.00	1,283.99	1,283.81	1,283.33	5.01	4.34	-170.89	-63.27	-20.18	228.78	219.87	8.91	25.680		
1,400.00	1,381.66	1,381.46	1,380.87	5.47	4.68	-170.54	-64.02	-24.95	250.27	240.63	9.63	25.977		
1,500.00	1,479.33	1,479.12	1,478.40	5.93	5.03	-170.24	-64.77	-29.71	271.76	261.40	10.36	26.227		
1,600.00	1,577.00	1,576.77	1,575.94	6.39	5.38	-169.99	-65.52	-34.47	293.26	282.17	11.09	26.440		
1,700.00	1,674.67	1,674.42	1,673.47	6.85	5.73	-169.77	-66.27	-39.23	314.76	302.94	11.82	26.624		
1,800.00	1,772.35	1,772.08	1,771.01	7.31	6.08	-169.59	-67.02	-43.99	336.27	323.71	12.56	26.783		
1,900.00	1,870.02	1,869.73	1,868.54	7.78	6.44	-169.42	-67.77	-48.76	357.78	344.49	13.29	26.922		
2,000.00	1,967.69	1,967.39	1,966.08	8.24	6.79	-169.27	-68.52	-53.52	379.29	365.27	14.02	27.045		
2,100.00	2,065.36	2,065.04	2,063.61	8.71	7.14	-169.14	-69.27	-58.28	400.81	386.05	14.76	27.155		
2,200.00	2,163.03	2,162.70	2,161.15	9.17	7.50	-169.02	-70.01	-63.04	422.32	406.83	15.50	27.253		
2,300.00	2,260.70	2,260.35	2,258.68	9.64	7.85	-168.91	-70.76	-67.80	443.84	427.61	16.23	27.341		
2,400.00	2,358.37	2,358.00	2,356.22	10.11	8.20	-168.82	-71.51	-72.56	465.36	448.39	16.97	27.420		
2,500.00	2,456.04	2,455.66	2,453.75	10.57	8.56	-168.73	-72.26	-77.33	486.88	469.17	17.71	27.492		
2,600.00	2,553.71	2,553.31	2,551.29	11.04	8.91	-168.65	-73.01	-82.09	508.40	489.95	18.45	27.558		
2,700.00	2,651.38	2,650.97	2,648.82	11.51	9.27	-168.57	-73.76	-86.85	529.92	510.74	19.19	27.619		
2,800.00	2,749.05	2,748.62	2,746.36	11.97	9.62	-168.50	-74.51	-91.61	551.45	531.52	19.93	27.674		
2,900.00	2,846.72	2,846.27	2,843.90	12.44	9.98	-168.44	-75.26	-96.37	572.97	552.31	20.67	27.725		
3,000.00	2,944.40	2,943.93	2,941.43	12.91	10.34	-168.38	-76.01	-101.14	594.50	573.09	21.41	27.773		
3,100.00	3,042.07	3,041.58	3,038.97	13.38	10.69	-168.32	-76.76	-105.90	616.02	593.88	22.15	27.817		
3,200.00	3,139.74	3,139.24	3,136.50	13.84	11.05	-168.27	-77.51	-110.66	637.55	614.66	22.89	27.857		
3,300.00	3,237.41	3,236.89	3,234.04	14.31	11.40	-168.23	-78.26	-115.42	659.07	635.45	23.63	27.895		
3,400.00	3,335.08	3,334.55	3,331.57	14.78	11.76	-168.18	-79.00	-120.18	680.60	656.23	24.37	27.931		
3,500.00	3,432.75	3,432.20	3,429.11	15.25	12.12	-168.14	-79.75	-124.95	702.13	677.02	25.11	27.964		
3,600.00	3,530.42	3,529.85	3,526.64	15.72	12.47	-168.10	-80.50	-129.71	723.65	697.80	25.85	27.995		
3,700.00	3,628.09	3,627.51	3,624.18	16.18	12.83	-168.06	-81.25	-134.47	745.18	718.59	26.59	28.025		
3,800.00	3,725.76	3,725.16	3,721.71	16.65	13.18	-168.03	-82.00	-139.23	766.71	739.38	27.33	28.052		
3,900.00	3,823.43	3,822.82	3,819.25	17.12	13.54	-167.99	-82.75	-143.99	788.24	760.16	28.07	28.078		
4,000.00	3,921.10	3,920.47	3,916.78	17.59	13.90	-167.96	-83.50	-148.76	809.76	780.95	28.81	28.103		
4,100.00	4,018.77	4,018.13	4,014.32	18.06	14.25	-167.93	-84.25	-153.52	831.29	801.74	29.56	28.126		
4,200.00	4,116.44	4,115.78	4,111.85	18.52	14.61	-167.90	-85.00	-158.28	852.82	822.52	30.30	28.148		
4,300.00	4,214.12	4,213.43	4,209.39	18.99	14.97	-167.88	-85.75	-163.04	874.35	843.31	31.04	28.169		
4,400.00	4,311.79	4,311.09	4,306.92	19.46	15.32	-167.85	-86.50	-167.80	895.88	864.10	31.78	28.189		
4,500.00	4,409.46	4,408.74	4,404.46	19.93	15.68	-167.83	-87.25	-172.56	917.41	884.89	32.52	28.208		
4,600.00	4,507.13	4,506.40	4,501.99	20.40	16.04	-167.80	-87.99	-177.33	938.94	905.67	33.27	28.226		
4,700.00	4,604.80	4,604.05	4,599.53	20.87	16.39	-167.78	-88.74	-182.09	960.47	926.46	34.01	28.243		
4,800.00	4,702.47	4,701.71	4,697.06	21.34	16.75	-167.76	-89.49	-186.85	982.00	947.25	34.75	28.259		
4,900.00	4,800.14	4,799.36	4,794.60	21.80	17.11	-167.74	-90.24	-191.61	1,003.53	968.03	35.49	28.275		
5,000.00	4,897.81	4,897.01	4,892.13	22.27	17.47	-167.72	-90.99	-196.37	1,025.06	988.82	36.23	28.290		

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3G-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference				Offset		Semi Major Axis				Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,100.00	4,995.48	4,994.67	4,989.67	22.74	17.82	-167.70	-91.74	-201.14	1,046.59	1,009.61	36.98	28.304		
5,200.00	5,093.15	5,092.32	5,087.20	23.21	18.18	-167.68	-92.49	-205.90	1,068.12	1,030.40	37.72	28.318		
5,300.00	5,190.82	5,189.98	5,184.74	23.68	18.54	-167.67	-93.24	-210.66	1,089.65	1,051.19	38.46	28.331		
5,400.00	5,288.49	5,287.63	5,282.28	24.15	18.89	-167.65	-93.99	-215.42	1,111.18	1,071.97	39.20	28.343		
5,500.00	5,386.17	5,385.29	5,379.81	24.62	19.25	-167.63	-94.74	-220.18	1,132.71	1,092.76	39.95	28.355		
5,600.00	5,483.84	5,482.94	5,477.35	25.09	19.61	-167.62	-95.49	-224.95	1,154.24	1,113.55	40.69	28.367		
5,703.88	5,585.30	5,584.38	5,578.66	25.57	19.98	-167.60	-96.26	-229.89	1,176.60	1,135.14	41.46	28.379		
5,800.00	5,679.51	5,678.57	5,672.74	26.01	20.32	-167.66	-96.99	-234.49	1,195.76	1,153.59	42.17	28.354		
5,900.00	5,778.14	5,777.16	5,771.21	26.43	20.68	-167.66	-97.74	-239.29	1,212.40	1,169.49	42.91	28.256		
6,000.00	5,877.29	5,876.25	5,870.17	26.82	21.05	-167.62	-98.50	-244.12	1,225.67	1,182.03	43.64	28.088		
6,100.00	5,976.83	5,975.71	5,969.52	27.18	21.41	-167.53	-99.27	-248.97	1,235.56	1,191.20	44.36	27.854		
6,200.00	6,076.64	6,075.43	6,069.11	27.51	21.78	-167.39	-100.03	-253.84	1,242.06	1,196.99	45.07	27.556		
6,300.00	6,176.60	6,175.28	6,168.85	27.81	22.14	-167.21	-100.80	-258.71	1,245.18	1,199.40	45.78	27.200		
6,323.40	6,200.00	6,198.66	6,192.19	27.88	22.23	178.35	-100.98	-259.85	1,245.42	1,199.47	45.94	27.108		
6,400.00	6,276.60	6,275.16	6,268.60	28.09	22.51	178.52	-101.56	-263.58	1,245.90	1,199.42	46.48	26.807		
6,500.00	6,376.60	6,375.04	6,368.36	28.37	22.87	178.75	-102.33	-268.45	1,246.55	1,199.38	47.18	26.423		
6,600.00	6,476.60	6,474.92	6,468.11	28.65	23.24	178.97	-103.10	-273.32	1,247.22	1,199.35	47.88	26.051		
6,700.00	6,576.60	6,574.80	6,567.87	28.94	23.60	179.20	-103.86	-278.19	1,247.91	1,199.34	48.58	25.689		
6,800.00	6,676.60	6,678.32	6,671.31	29.22	23.95	179.21	-104.48	-278.47	1,248.50	1,199.24	49.27	25.341		
6,817.20	6,693.80	6,696.20	6,689.14	29.27	24.01	179.14	-104.53	-277.06	1,248.57	1,199.19	49.38	25.284		
6,850.00	6,726.59	6,730.14	6,722.86	29.36	24.11	89.57	-104.58	-273.16	1,248.68	1,199.09	49.59	25.182		
6,900.00	6,776.41	6,781.60	6,773.52	29.49	24.26	89.35	-104.53	-264.21	1,248.77	1,198.89	49.88	25.034		
6,950.00	6,825.84	6,832.69	6,823.06	29.62	24.41	89.12	-104.35	-251.76	1,248.78	1,198.61	50.17	24.892		
7,000.00	6,874.62	6,883.43	6,871.26	29.74	24.55	88.90	-104.03	-235.93	1,248.71	1,198.26	50.44	24.754		
7,050.00	6,922.52	6,933.82	6,917.89	29.86	24.70	88.69	-103.59	-216.88	1,248.56	1,197.84	50.72	24.619		
7,100.00	6,969.31	6,983.85	6,962.75	29.96	24.84	88.48	-103.01	-194.76	1,248.33	1,197.34	50.98	24.485		
7,150.00	7,014.75	7,033.55	7,005.68	30.06	24.98	88.28	-102.31	-169.75	1,248.02	1,196.76	51.26	24.347		
7,200.00	7,058.63	7,082.91	7,046.50	30.16	25.14	88.09	-101.50	-142.03	1,247.64	1,196.09	51.55	24.203		
7,250.00	7,100.73	7,131.95	7,085.06	30.24	25.31	87.91	-100.58	-111.77	1,247.18	1,195.32	51.86	24.048		
7,300.00	7,140.86	7,180.67	7,121.24	30.32	25.51	87.74	-99.56	-79.16	1,246.65	1,194.43	52.21	23.876		
7,350.00	7,178.80	7,229.09	7,154.91	30.39	25.73	87.58	-98.44	-44.39	1,246.04	1,193.43	52.62	23.682		
7,400.00	7,214.38	7,277.22	7,185.98	30.45	25.99	87.43	-97.24	-7.66	1,245.37	1,192.28	53.08	23.460		
7,450.00	7,247.42	7,325.08	7,214.35	30.50	26.30	87.30	-95.95	30.84	1,244.63	1,190.99	53.63	23.206		
7,500.00	7,277.77	7,372.67	7,239.95	30.55	26.66	87.18	-94.58	70.92	1,243.82	1,189.54	54.28	22.916		
7,550.00	7,305.27	7,420.01	7,262.72	30.58	27.07	87.07	-93.14	112.40	1,242.95	1,187.92	55.03	22.586		
7,600.00	7,329.79	7,467.12	7,282.61	30.62	27.55	86.98	-91.64	155.07	1,242.02	1,186.12	55.90	22.218		
7,650.00	7,351.21	7,514.01	7,299.58	30.64	28.08	86.90	-90.09	198.74	1,241.03	1,184.13	56.90	21.812		
7,700.00	7,369.43	7,560.70	7,313.60	30.67	28.67	86.83	-88.49	243.24	1,239.98	1,181.96	58.02	21.371		
7,750.00	7,384.36	7,607.20	7,324.64	30.72	29.32	86.78	-86.85	288.37	1,238.89	1,179.61	59.27	20.901		
7,800.00	7,395.93	7,653.53	7,332.71	31.01	30.02	86.74	-85.17	333.96	1,237.74	1,177.09	60.65	20.409		
7,850.00	7,404.07	7,700.00	7,337.83	31.71	30.78	86.72	-83.45	380.10	1,236.55	1,174.41	62.14	19.900		
7,900.00	7,408.76	7,745.75	7,339.93	32.51	31.58	86.71	-81.74	425.76	1,235.32	1,171.60	63.72	19.386		
7,942.20	7,410.00	7,787.05	7,340.00	33.23	32.33	86.75	-80.18	467.03	1,234.22	1,169.04	65.19	18.934		
8,000.00	7,410.00	7,844.82	7,340.00	34.28	33.45	86.74	-78.00	524.76	1,232.63	1,165.27	67.35	18.301		
8,100.00	7,410.00	7,944.78	7,340.00	36.24	35.51	86.74	-74.22	624.65	1,229.87	1,158.50	71.36	17.234		
8,200.00	7,410.00	8,044.75	7,340.00	38.37	37.72	86.73	-70.44	724.54	1,227.11	1,151.41	75.70	16.210		
8,300.00	7,410.00	8,144.71	7,340.00	40.64	40.07	86.72	-66.66	824.44	1,224.35	1,144.03	80.32	15.244		
8,400.00	7,410.00	8,244.67	7,340.00	43.03	42.53	86.71	-62.88	924.33	1,221.59	1,136.43	85.16	14.345		
8,500.00	7,410.00	8,344.63	7,340.00	45.52	45.08	86.71	-59.10	1,024.22	1,218.83	1,128.64	90.19	13.513		
8,600.00	7,410.00	8,444.59	7,340.00	48.10	47.71	86.70	-55.33	1,124.11	1,216.07	1,120.68	95.39	12.748		
8,700.00	7,410.00	8,544.55	7,340.00	50.74	50.40	86.69	-51.55	1,224.00	1,213.31	1,112.59	100.73	12.046		
8,800.00	7,410.00	8,644.52	7,340.00	53.45	53.15	86.68	-47.77	1,323.89	1,210.55	1,104.38	106.18	11.401		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3G-25H-M166 - OH - PLAN #1												Offset Site Error: 0.00 usft	
Survey Program: O-MWD+HDGM												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor
8,900.00	7,410.00	8,744.48	7,340.00	56.21	55.95	86.68	-43.99	1,423.78	1,207.79	1,096.07	111.73	10.810	
9,000.00	7,410.00	8,844.44	7,340.00	59.01	58.78	86.67	-40.21	1,523.67	1,205.03	1,087.67	117.36	10.268	
9,100.00	7,410.00	8,944.40	7,340.00	61.85	61.66	86.66	-36.44	1,623.56	1,202.27	1,079.20	123.07	9.769	
9,200.00	7,410.00	9,044.36	7,340.00	64.73	64.56	86.65	-32.66	1,723.45	1,199.51	1,070.67	128.84	9.310	
9,300.00	7,410.00	9,144.33	7,340.00	67.63	67.49	86.65	-28.88	1,823.34	1,196.75	1,062.08	134.67	8.886	
9,400.00	7,410.00	9,244.29	7,340.00	70.57	70.44	86.64	-25.10	1,923.23	1,194.00	1,053.45	140.55	8.495	
9,500.00	7,410.00	9,344.25	7,340.00	73.52	73.41	86.63	-21.32	2,023.12	1,191.24	1,044.77	146.47	8.133	
9,600.00	7,410.00	9,444.21	7,340.00	76.50	76.40	86.62	-17.54	2,123.01	1,188.48	1,036.05	152.42	7.797	
9,700.00	7,410.00	9,544.17	7,340.00	79.49	79.41	86.61	-13.77	2,222.90	1,185.72	1,027.30	158.42	7.485	
9,800.00	7,410.00	9,644.13	7,340.00	82.50	82.43	86.61	-9.99	2,322.79	1,182.96	1,018.52	164.44	7.194	
9,900.00	7,410.00	9,744.10	7,340.00	85.52	85.46	86.60	-6.21	2,422.68	1,180.20	1,009.72	170.48	6.923	
10,000.00	7,410.00	9,844.06	7,340.00	88.55	88.51	86.59	-2.43	2,522.57	1,177.44	1,000.89	176.55	6.669	
10,100.00	7,410.00	9,944.02	7,340.00	91.60	91.56	86.58	1.35	2,622.46	1,174.68	992.04	182.65	6.431	
10,200.00	7,410.00	10,043.98	7,340.00	94.66	94.63	86.57	5.13	2,722.35	1,171.92	983.17	188.76	6.209	
10,300.00	7,410.00	10,143.94	7,340.00	97.73	97.70	86.57	8.90	2,822.24	1,169.16	974.28	194.89	5.999	
10,400.00	7,410.00	10,243.91	7,340.00	100.80	100.78	86.56	12.68	2,922.13	1,166.40	965.37	201.03	5.802	
10,500.00	7,410.00	10,343.87	7,340.00	103.89	103.86	86.55	16.46	3,022.02	1,163.64	956.45	207.19	5.616	
10,600.00	7,410.00	10,443.83	7,340.00	106.98	106.96	86.54	20.24	3,121.91	1,160.89	947.52	213.36	5.441	
10,700.00	7,410.00	10,543.79	7,340.00	110.07	110.06	86.53	24.02	3,221.80	1,158.13	938.58	219.55	5.275	
10,800.00	7,410.00	10,643.75	7,340.00	113.18	113.16	86.53	27.80	3,321.69	1,155.37	929.62	225.74	5.118	
10,900.00	7,410.00	10,743.71	7,340.00	116.29	116.27	86.52	31.57	3,421.58	1,152.61	920.66	231.95	4.969	
11,000.00	7,410.00	10,843.68	7,340.00	119.40	119.38	86.51	35.35	3,521.47	1,149.85	911.69	238.16	4.828	
11,100.00	7,410.00	10,943.64	7,340.00	122.52	122.50	86.50	39.13	3,621.37	1,147.09	902.70	244.39	4.694	
11,200.00	7,410.00	11,043.60	7,340.00	125.64	125.62	86.49	42.91	3,721.26	1,144.33	893.71	250.62	4.566	
11,300.00	7,410.00	11,143.56	7,340.00	128.77	128.75	86.48	46.69	3,821.15	1,141.57	884.71	256.86	4.444	
11,400.00	7,410.00	11,243.52	7,340.00	131.90	131.88	86.47	50.47	3,921.04	1,138.81	875.71	263.11	4.328	
11,500.00	7,410.00	11,343.48	7,340.00	135.04	135.01	86.47	54.24	4,020.93	1,136.06	866.70	269.36	4.218	
11,600.00	7,410.00	11,443.45	7,340.00	138.17	138.14	86.46	58.02	4,120.82	1,133.30	857.68	275.62	4.112	
11,700.00	7,410.00	11,543.41	7,340.00	141.32	141.28	86.45	61.80	4,220.71	1,130.54	848.66	281.88	4.011	
11,800.00	7,410.00	11,643.37	7,340.00	144.46	144.42	86.44	65.58	4,320.60	1,127.78	839.63	288.15	3.914	
11,900.00	7,410.00	11,743.33	7,340.00	147.61	147.56	86.43	69.36	4,420.49	1,125.02	830.60	294.43	3.821	
12,000.00	7,410.00	11,825.78	7,340.00	150.76	150.15	86.42	72.47	4,502.88	1,122.40	822.27	300.13	3.740	
12,013.45	7,410.00	11,825.78	7,340.00	151.18	150.15	86.42	72.47	4,502.88	1,122.32	821.83	300.49	3.735	
12,019.72	7,410.00	11,825.78	7,340.00	151.38	150.15	86.42	72.47	4,502.88	1,122.34	821.69	300.64	3.733 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3H-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.96	-70.30	0.05	70.30				
100.00	100.00	100.00	100.00	0.14	0.14	179.96	-70.30	0.05	70.30	70.03	0.28	254.699	
200.00	200.00	200.00	200.00	0.50	0.50	179.96	-70.30	0.05	70.30	69.31	0.99	70.801	CC, ES
300.00	299.98	299.98	299.98	0.86	0.85	-165.88	-70.30	0.05	71.99	70.28	1.71	42.069	
400.00	399.84	399.84	399.84	1.22	1.21	-166.81	-70.30	0.05	77.08	74.65	2.43	31.656	
500.00	499.45	499.45	499.45	1.59	1.57	-168.10	-70.30	0.05	85.59	82.43	3.16	27.089	
600.00	598.70	598.70	598.70	1.96	1.93	-169.54	-70.30	0.05	97.55	93.66	3.89	25.108	
700.00	697.47	697.47	697.47	2.35	2.28	-170.93	-70.30	0.05	112.97	108.36	4.61	24.498	
800.00	795.62	795.62	795.62	2.77	2.63	-172.18	-70.30	0.05	131.85	126.51	5.34	24.699	
819.52	814.70	814.70	814.70	2.85	2.70	-172.41	-70.30	0.05	135.94	130.46	5.49	24.781	
900.00	893.31	893.31	893.31	3.20	2.98	-173.26	-70.30	0.05	153.08	147.02	6.06	25.252	
1,000.00	990.98	989.68	989.66	3.65	3.32	-173.62	-70.83	-1.25	174.75	167.99	6.76	25.836	
1,100.00	1,088.65	1,085.70	1,085.57	4.10	3.64	-172.97	-72.57	-5.52	197.22	189.76	7.46	26.439	
1,200.00	1,186.32	1,183.00	1,182.68	4.55	3.98	-172.09	-74.85	-11.12	220.07	211.90	8.17	26.943	
1,300.00	1,283.99	1,280.31	1,279.80	5.01	4.32	-171.37	-77.14	-16.72	242.96	234.08	8.88	27.354	
1,400.00	1,381.66	1,377.61	1,376.92	5.47	4.66	-170.77	-79.42	-22.32	265.89	256.28	9.60	27.693	
1,500.00	1,479.33	1,474.91	1,474.03	5.93	5.01	-170.28	-81.70	-27.92	288.83	278.51	10.32	27.977	
1,600.00	1,577.00	1,572.22	1,571.15	6.39	5.35	-169.85	-83.99	-33.53	311.79	300.74	11.05	28.218	
1,700.00	1,674.67	1,669.52	1,668.26	6.85	5.70	-169.48	-86.27	-39.13	334.77	322.99	11.78	28.425	
1,800.00	1,772.35	1,766.82	1,765.38	7.31	6.05	-169.16	-88.55	-44.73	357.76	345.25	12.51	28.603	
1,900.00	1,870.02	1,864.13	1,862.49	7.78	6.40	-168.88	-90.84	-50.33	380.76	367.52	13.24	28.759	
2,000.00	1,967.69	1,961.43	1,959.61	8.24	6.76	-168.63	-93.12	-55.94	403.76	389.79	13.97	28.897	
2,100.00	2,065.36	2,058.73	2,056.72	8.71	7.11	-168.41	-95.40	-61.54	426.77	412.07	14.71	29.018	
2,200.00	2,163.03	2,156.04	2,153.84	9.17	7.47	-168.21	-97.69	-67.14	449.79	434.35	15.44	29.127	
2,300.00	2,260.70	2,253.34	2,250.95	9.64	7.82	-168.03	-99.97	-72.74	472.81	456.63	16.18	29.224	
2,400.00	2,358.37	2,350.65	2,348.07	10.11	8.18	-167.86	-102.25	-78.35	495.84	478.92	16.92	29.312	
2,500.00	2,456.04	2,447.95	2,445.18	10.57	8.53	-167.71	-104.53	-83.95	518.87	501.22	17.65	29.391	
2,600.00	2,553.71	2,545.25	2,542.30	11.04	8.89	-167.58	-106.82	-89.55	541.90	523.51	18.39	29.463	
2,700.00	2,651.38	2,642.56	2,639.41	11.51	9.24	-167.45	-109.10	-95.15	564.94	545.81	19.13	29.529	
2,800.00	2,749.05	2,739.86	2,736.53	11.97	9.60	-167.34	-111.38	-100.75	587.97	568.10	19.87	29.590	
2,900.00	2,846.72	2,837.16	2,833.65	12.44	9.96	-167.23	-113.67	-106.36	611.01	590.40	20.61	29.645	
3,000.00	2,944.40	2,934.47	2,930.76	12.91	10.32	-167.13	-115.95	-111.96	634.06	612.70	21.35	29.697	
3,100.00	3,042.07	3,031.77	3,027.88	13.38	10.67	-167.04	-118.23	-117.56	657.10	635.01	22.09	29.744	
3,200.00	3,139.74	3,129.07	3,124.99	13.84	11.03	-166.95	-120.52	-123.16	680.14	657.31	22.83	29.788	
3,300.00	3,237.41	3,226.38	3,222.11	14.31	11.39	-166.87	-122.80	-128.77	703.19	679.62	23.57	29.829	
3,400.00	3,335.08	3,323.68	3,319.22	14.78	11.75	-166.80	-125.08	-134.37	726.24	701.92	24.32	29.868	
3,500.00	3,432.75	3,420.98	3,416.34	15.25	12.11	-166.73	-127.37	-139.97	749.29	724.23	25.06	29.903	
3,600.00	3,530.42	3,518.29	3,513.45	15.72	12.47	-166.66	-129.65	-145.57	772.34	746.54	25.80	29.937	
3,700.00	3,628.09	3,615.59	3,610.57	16.18	12.82	-166.60	-131.93	-151.18	795.39	768.84	26.54	29.968	
3,800.00	3,725.76	3,712.90	3,707.68	16.65	13.18	-166.54	-134.22	-156.78	818.44	791.15	27.28	29.998	
3,900.00	3,823.43	3,810.20	3,804.80	17.12	13.54	-166.48	-136.50	-162.38	841.49	813.46	28.03	30.025	
4,000.00	3,921.10	3,907.50	3,901.91	17.59	13.90	-166.43	-138.78	-167.98	864.54	835.77	28.77	30.052	
4,100.00	4,018.77	4,004.81	3,999.03	18.06	14.26	-166.38	-141.07	-173.58	887.60	858.08	29.51	30.076	
4,200.00	4,116.44	4,102.11	4,096.14	18.52	14.62	-166.33	-143.35	-179.19	910.65	880.39	30.25	30.100	
4,300.00	4,214.12	4,199.41	4,193.26	18.99	14.98	-166.29	-145.63	-184.79	933.70	902.71	31.00	30.122	
4,400.00	4,311.79	4,296.72	4,290.38	19.46	15.34	-166.25	-147.92	-190.39	956.76	925.02	31.74	30.143	
4,500.00	4,409.46	4,394.02	4,387.49	19.93	15.70	-166.20	-150.20	-195.99	979.81	947.33	32.48	30.163	
4,600.00	4,507.13	4,491.32	4,484.61	20.40	16.06	-166.17	-152.48	-201.60	1,002.87	969.64	33.23	30.182	
4,700.00	4,604.80	4,588.63	4,581.72	20.87	16.42	-166.13	-154.76	-207.20	1,025.93	991.96	33.97	30.200	
4,800.00	4,702.47	4,685.93	4,678.84	21.34	16.78	-166.09	-157.05	-212.80	1,048.98	1,014.27	34.71	30.218	
4,900.00	4,800.14	4,783.23	4,775.95	21.80	17.14	-166.06	-159.33	-218.40	1,072.04	1,036.58	35.46	30.234	
5,000.00	4,897.81	4,880.54	4,873.07	22.27	17.50	-166.03	-161.61	-224.01	1,095.10	1,058.90	36.20	30.250	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3H-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference				Offset			Semi Major Axis			Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,100.00	4,995.48	4,977.84	4,970.18	22.74	17.86	-165.99	-163.90	-229.61	1,118.16	1,081.21	36.95	30.265		
5,200.00	5,093.15	5,075.15	5,067.30	23.21	18.22	-165.96	-166.18	-235.21	1,141.21	1,103.52	37.69	30.279		
5,300.00	5,190.82	5,172.45	5,164.41	23.68	18.58	-165.94	-168.46	-240.81	1,164.27	1,125.84	38.43	30.293		
5,400.00	5,288.49	5,269.75	5,261.53	24.15	18.94	-165.91	-170.75	-246.41	1,187.33	1,148.15	39.18	30.306		
5,500.00	5,386.17	5,367.06	5,358.64	24.62	19.30	-165.88	-173.03	-252.02	1,210.39	1,170.47	39.92	30.319		
5,600.00	5,483.84	5,464.36	5,455.76	25.09	19.66	-165.86	-175.31	-257.62	1,233.45	1,192.78	40.67	30.331		
5,703.88	5,585.30	5,565.44	5,556.64	25.57	20.03	-165.83	-177.69	-263.44	1,257.40	1,215.96	41.44	30.343		
5,800.00	5,679.51	5,659.31	5,650.33	26.01	20.38	-165.89	-179.89	-268.84	1,278.04	1,235.89	42.15	30.319		
5,900.00	5,778.14	5,757.61	5,748.45	26.43	20.74	-165.90	-182.19	-274.50	1,296.26	1,253.38	42.89	30.223		
6,000.00	5,877.29	5,861.61	5,852.25	26.82	21.13	-165.86	-184.57	-280.34	1,311.10	1,267.44	43.66	30.032		
6,100.00	5,976.83	5,981.47	5,972.05	27.18	21.55	-165.88	-185.96	-283.75	1,321.48	1,276.97	44.50	29.693		
6,200.00	6,076.64	6,086.06	6,076.64	27.51	21.90	-165.98	-186.01	-283.87	1,327.39	1,282.17	45.22	29.357		
6,300.00	6,176.60	6,186.02	6,176.60	27.81	22.24	-166.01	-186.01	-283.87	1,329.87	1,283.99	45.88	28.984		
6,323.40	6,200.00	6,209.43	6,200.00	27.88	22.31	179.49	-186.01	-283.87	1,329.96	1,283.93	46.04	28.888		
6,400.00	6,276.60	6,286.02	6,276.60	28.09	22.57	179.49	-186.01	-283.87	1,329.96	1,283.42	46.54	28.574		
6,500.00	6,376.60	6,386.02	6,376.60	28.37	22.90	179.49	-186.01	-283.87	1,329.96	1,282.76	47.21	28.172		
6,600.00	6,476.60	6,486.02	6,476.60	28.65	23.24	179.49	-186.01	-283.87	1,329.96	1,282.09	47.87	27.781		
6,700.00	6,576.60	6,586.02	6,576.60	28.94	23.58	179.49	-186.01	-283.87	1,329.96	1,281.42	48.54	27.400		
6,800.00	6,676.60	6,686.02	6,676.60	29.22	23.91	179.49	-186.01	-283.87	1,329.96	1,280.76	49.21	27.028		
6,817.20	6,693.80	6,703.23	6,693.80	29.27	23.97	179.49	-186.01	-283.87	1,329.96	1,280.64	49.32	26.965		
6,850.00	6,726.59	6,736.01	6,726.59	29.36	24.08	90.10	-186.01	-283.87	1,329.96	1,280.43	49.54	26.847		
6,900.00	6,776.41	6,785.84	6,776.41	29.49	24.25	90.28	-186.01	-283.87	1,329.98	1,280.12	49.86	26.673		
6,950.00	6,825.84	6,835.26	6,825.84	29.62	24.42	90.59	-186.01	-283.87	1,330.04	1,279.85	50.19	26.502		
7,000.00	6,874.62	6,884.43	6,875.01	29.74	24.58	91.04	-186.01	-283.79	1,330.19	1,279.68	50.51	26.335		
7,050.00	6,922.52	6,935.19	6,925.69	29.86	24.75	91.53	-185.99	-281.19	1,330.47	1,279.63	50.84	26.172		
7,100.00	6,969.31	6,986.86	6,976.96	29.96	24.90	92.03	-185.92	-274.88	1,330.84	1,279.68	51.16	26.013		
7,150.00	7,014.75	7,039.47	7,028.56	30.06	25.06	92.51	-185.82	-264.67	1,331.32	1,279.83	51.49	25.858		
7,200.00	7,058.63	7,093.08	7,080.22	30.16	25.22	93.00	-185.67	-250.39	1,331.88	1,280.06	51.81	25.705		
7,250.00	7,100.73	7,147.70	7,131.61	30.24	25.37	93.47	-185.48	-231.92	1,332.52	1,280.37	52.15	25.550		
7,300.00	7,140.86	7,203.36	7,182.37	30.32	25.53	93.92	-185.25	-209.12	1,333.23	1,280.73	52.51	25.392		
7,350.00	7,178.80	7,260.09	7,232.12	30.39	25.69	94.37	-184.98	-181.91	1,334.00	1,281.11	52.89	25.224		
7,400.00	7,214.38	7,317.87	7,280.43	30.45	25.86	94.79	-184.65	-150.23	1,334.80	1,281.50	53.30	25.041		
7,450.00	7,247.42	7,376.72	7,326.83	30.50	26.06	95.19	-184.29	-114.07	1,335.62	1,281.84	53.78	24.835		
7,500.00	7,277.77	7,436.60	7,370.85	30.55	26.30	95.57	-183.87	-73.49	1,336.45	1,282.11	54.33	24.598		
7,550.00	7,305.27	7,497.49	7,411.97	30.58	26.59	95.92	-183.42	-28.61	1,337.25	1,282.27	54.98	24.321		
7,600.00	7,329.79	7,559.33	7,449.67	30.62	26.96	96.23	-182.92	20.37	1,338.01	1,282.25	55.76	23.994		
7,650.00	7,351.21	7,622.05	7,483.46	30.64	27.42	96.51	-182.38	73.19	1,338.72	1,282.02	56.70	23.612		
7,700.00	7,369.43	7,685.56	7,512.83	30.67	27.99	96.75	-181.81	129.47	1,339.34	1,281.55	57.80	23.174		
7,750.00	7,384.36	7,749.75	7,537.33	30.72	28.68	96.95	-181.21	188.77	1,339.87	1,280.80	59.08	22.681		
7,800.00	7,395.93	7,814.50	7,556.56	31.01	29.50	97.11	-180.58	250.58	1,340.29	1,279.73	60.56	22.132		
7,850.00	7,404.07	7,879.67	7,570.21	31.71	30.43	97.21	-179.93	314.27	1,340.59	1,278.36	62.22	21.545		
7,900.00	7,408.76	7,945.11	7,578.03	32.51	31.47	97.27	-179.27	379.22	1,340.75	1,276.70	64.05	20.933		
7,942.20	7,410.00	7,999.91	7,580.00	33.23	32.41	97.28	-178.72	433.97	1,340.78	1,275.09	65.69	20.410		
8,000.00	7,410.00	8,057.71	7,580.00	34.28	33.50	97.28	-178.13	491.77	1,340.78	1,272.98	67.80	19.776		
8,100.00	7,410.00	8,157.71	7,580.00	36.24	35.48	97.28	-177.11	591.76	1,340.78	1,269.08	71.70	18.700		
8,200.00	7,410.00	8,257.71	7,580.00	38.37	37.63	97.28	-176.10	691.76	1,340.78	1,264.85	75.93	17.657		
8,300.00	7,410.00	8,357.71	7,580.00	40.64	39.93	97.28	-175.08	791.75	1,340.78	1,260.33	80.45	16.666		
8,400.00	7,410.00	8,457.71	7,580.00	43.03	42.34	97.28	-174.06	891.75	1,340.78	1,255.58	85.20	15.737		
8,500.00	7,410.00	8,557.71	7,580.00	45.52	44.85	97.28	-173.05	991.74	1,340.78	1,250.63	90.15	14.872		
8,600.00	7,410.00	8,657.71	7,580.00	48.10	47.45	97.28	-172.03	1,091.74	1,340.78	1,245.51	95.27	14.073		
8,700.00	7,410.00	8,757.71	7,580.00	50.74	50.12	97.28	-171.01	1,191.73	1,340.78	1,240.25	100.53	13.337		
8,800.00	7,410.00	8,857.71	7,580.00	53.45	52.84	97.28	-170.00	1,291.73	1,340.78	1,234.86	105.92	12.659		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3H-25H-M166 - OH - PLAN #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
8,900.00	7,410.00	8,957.71	7,580.00	56.21	55.62	97.28	-168.98	1,391.72	1,340.78	1,229.38	111.40	12.035		
9,000.00	7,410.00	9,057.71	7,580.00	59.01	58.45	97.28	-167.97	1,491.72	1,340.78	1,223.80	116.98	11.462		
9,100.00	7,410.00	9,157.71	7,580.00	61.85	61.31	97.28	-166.95	1,591.71	1,340.78	1,218.15	122.63	10.933		
9,200.00	7,410.00	9,257.71	7,580.00	64.73	64.20	97.28	-165.93	1,691.70	1,340.78	1,212.43	128.35	10.446		
9,300.00	7,410.00	9,357.71	7,580.00	67.63	67.12	97.28	-164.92	1,791.70	1,340.78	1,206.65	134.13	9.996		
9,400.00	7,410.00	9,457.71	7,580.00	70.57	70.07	97.28	-163.90	1,891.69	1,340.78	1,200.82	139.96	9.580		
9,500.00	7,410.00	9,557.71	7,580.00	73.52	73.04	97.28	-162.88	1,991.69	1,340.78	1,194.94	145.83	9.194		
9,600.00	7,410.00	9,657.71	7,580.00	76.50	76.02	97.28	-161.87	2,091.68	1,340.78	1,189.03	151.75	8.836		
9,700.00	7,410.00	9,757.71	7,580.00	79.49	79.03	97.28	-160.85	2,191.68	1,340.78	1,183.08	157.70	8.502		
9,800.00	7,410.00	9,857.71	7,580.00	82.50	82.05	97.28	-159.83	2,291.67	1,340.78	1,177.10	163.68	8.192		
9,900.00	7,410.00	9,957.71	7,580.00	85.52	85.08	97.28	-158.82	2,391.67	1,340.78	1,171.09	169.68	7.902		
10,000.00	7,410.00	10,057.71	7,580.00	88.55	88.13	97.28	-157.80	2,491.66	1,340.78	1,165.06	175.72	7.630		
10,100.00	7,410.00	10,157.71	7,580.00	91.60	91.19	97.28	-156.79	2,591.66	1,340.78	1,159.00	181.77	7.376		
10,200.00	7,410.00	10,257.71	7,580.00	94.66	94.25	97.28	-155.77	2,691.65	1,340.78	1,152.93	187.85	7.137		
10,300.00	7,410.00	10,357.71	7,580.00	97.73	97.33	97.28	-154.75	2,791.65	1,340.78	1,146.83	193.95	6.913		
10,400.00	7,410.00	10,457.71	7,580.00	100.80	100.41	97.28	-153.74	2,891.64	1,340.78	1,140.72	200.06	6.702		
10,500.00	7,410.00	10,557.71	7,580.00	103.89	103.50	97.28	-152.72	2,991.64	1,340.78	1,134.59	206.18	6.503		
10,600.00	7,410.00	10,657.71	7,580.00	106.98	106.60	97.28	-151.70	3,091.63	1,340.78	1,128.45	212.33	6.315		
10,700.00	7,410.00	10,757.71	7,580.00	110.07	109.71	97.28	-150.69	3,191.63	1,340.78	1,122.30	218.48	6.137		
10,800.00	7,410.00	10,857.71	7,580.00	113.18	112.82	97.28	-149.67	3,291.62	1,340.78	1,116.13	224.65	5.968		
10,900.00	7,410.00	10,957.71	7,580.00	116.29	115.93	97.28	-148.65	3,391.62	1,340.78	1,109.96	230.82	5.809		
11,000.00	7,410.00	11,057.71	7,580.00	119.40	119.05	97.28	-147.64	3,491.61	1,340.78	1,103.77	237.01	5.657		
11,100.00	7,410.00	11,157.71	7,580.00	122.52	122.18	97.28	-146.62	3,591.61	1,340.78	1,097.57	243.20	5.513		
11,200.00	7,410.00	11,257.71	7,580.00	125.64	125.31	97.28	-145.61	3,691.60	1,340.78	1,091.37	249.41	5.376		
11,300.00	7,410.00	11,357.71	7,580.00	128.77	128.44	97.28	-144.59	3,791.60	1,340.78	1,085.16	255.62	5.245		
11,400.00	7,410.00	11,457.71	7,580.00	131.90	131.58	97.28	-143.57	3,891.59	1,340.78	1,078.94	261.84	5.121		
11,500.00	7,410.00	11,557.71	7,580.00	135.04	134.72	97.28	-142.56	3,991.59	1,340.78	1,072.71	268.07	5.002		
11,600.00	7,410.00	11,657.71	7,580.00	138.17	137.86	97.28	-141.54	4,091.58	1,340.78	1,066.48	274.30	4.888		
11,700.00	7,410.00	11,757.71	7,580.00	141.32	141.00	97.28	-140.52	4,191.58	1,340.78	1,060.24	280.54	4.779		
11,800.00	7,410.00	11,857.71	7,580.00	144.46	144.15	97.28	-139.51	4,291.57	1,340.78	1,053.99	286.78	4.675		
11,900.00	7,410.00	11,957.71	7,580.00	147.61	147.30	97.28	-138.49	4,391.57	1,340.77	1,047.74	293.03	4.576		
12,000.00	7,410.00	12,057.71	7,580.00	150.76	150.46	97.28	-137.47	4,491.56	1,340.77	1,041.49	299.29	4.480		
12,012.18	7,410.00	12,069.89	7,580.00	151.14	150.84	97.28	-137.35	4,503.74	1,340.77	1,040.73	300.05	4.469		
12,019.72	7,410.00	12,070.04	7,580.00	151.38	150.84	97.28	-137.35	4,503.89	1,340.80	1,040.53	300.27	4.465 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3I-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	179.91	-80.14	0.13	80.14					
100.00	100.00	100.00	100.00	0.14	0.14	179.91	-80.14	0.13	80.14	79.86	0.28	290.331		
200.00	200.00	200.00	200.00	0.50	0.50	179.91	-80.14	0.13	80.14	79.15	0.99	80.706	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.90	-80.14	0.13	81.83	80.12	1.71	47.816		
400.00	399.84	399.84	399.84	1.22	1.21	-166.71	-80.14	0.13	86.91	84.48	2.43	35.695		
500.00	499.45	499.45	499.45	1.59	1.57	-167.88	-80.14	0.13	95.42	92.26	3.16	30.199		
600.00	598.70	598.70	598.70	1.96	1.93	-169.20	-80.14	0.13	107.37	103.48	3.89	27.635		
700.00	697.47	697.47	697.47	2.35	2.28	-170.52	-80.14	0.13	122.77	118.16	4.61	26.623		
800.00	795.62	795.62	795.62	2.77	2.63	-171.73	-80.14	0.13	141.63	136.29	5.34	26.530		
819.52	814.70	814.34	814.34	2.85	2.70	-171.94	-80.16	0.10	145.73	140.25	5.48	26.580		
900.00	893.31	890.76	890.75	3.20	2.96	-172.33	-81.00	-1.02	163.56	157.52	6.04	27.074		
1,000.00	990.98	985.07	984.94	3.65	3.28	-171.94	-83.70	-4.66	187.16	180.44	6.73	27.824		
1,100.00	1,088.65	1,079.32	1,078.88	4.10	3.60	-170.90	-88.20	-10.71	212.34	204.92	7.42	28.629		
1,200.00	1,186.32	1,175.88	1,175.06	4.55	3.94	-169.88	-93.34	-17.63	238.05	229.93	8.12	29.303		
1,300.00	1,283.99	1,272.44	1,271.23	5.01	4.28	-169.05	-98.48	-24.55	263.82	254.98	8.84	29.855		
1,400.00	1,381.66	1,369.00	1,367.41	5.47	4.63	-168.37	-103.62	-31.46	289.63	280.07	9.56	30.310		
1,500.00	1,479.33	1,465.56	1,463.58	5.93	4.98	-167.80	-108.76	-38.38	315.47	305.19	10.28	30.693		
1,600.00	1,577.00	1,562.12	1,559.76	6.39	5.34	-167.32	-113.90	-45.30	341.34	330.33	11.00	31.018		
1,700.00	1,674.67	1,658.68	1,655.93	6.85	5.69	-166.91	-119.04	-52.21	367.22	355.49	11.73	31.298		
1,800.00	1,772.35	1,755.24	1,752.11	7.31	6.05	-166.55	-124.18	-59.13	393.12	380.66	12.46	31.540		
1,900.00	1,870.02	1,851.80	1,848.28	7.78	6.41	-166.23	-129.32	-66.05	419.04	405.84	13.20	31.752		
2,000.00	1,967.69	1,948.36	1,944.45	8.24	6.77	-165.95	-134.46	-72.96	444.96	431.03	13.93	31.939		
2,100.00	2,065.36	2,044.92	2,040.63	8.71	7.13	-165.71	-139.60	-79.88	470.89	456.23	14.67	32.104		
2,200.00	2,163.03	2,141.48	2,136.80	9.17	7.49	-165.49	-144.74	-86.80	496.84	481.43	15.40	32.252		
2,300.00	2,260.70	2,238.04	2,232.98	9.64	7.86	-165.29	-149.88	-93.71	522.78	506.64	16.14	32.385		
2,400.00	2,358.37	2,334.60	2,329.15	10.11	8.22	-165.10	-155.02	-100.63	548.73	531.85	16.88	32.504		
2,500.00	2,456.04	2,431.15	2,425.33	10.57	8.59	-164.94	-160.16	-107.55	574.69	557.07	17.62	32.613		
2,600.00	2,553.71	2,527.71	2,521.50	11.04	8.95	-164.79	-165.30	-114.46	600.65	582.29	18.36	32.712		
2,700.00	2,651.38	2,624.27	2,617.68	11.51	9.32	-164.65	-170.44	-121.38	626.62	607.51	19.10	32.802		
2,800.00	2,749.05	2,720.83	2,713.85	11.97	9.68	-164.52	-175.58	-128.30	652.58	632.74	19.84	32.885		
2,900.00	2,846.72	2,817.39	2,810.03	12.44	10.05	-164.41	-180.72	-135.21	678.55	657.97	20.59	32.961		
3,000.00	2,944.40	2,913.95	2,906.20	12.91	10.41	-164.30	-185.86	-142.13	704.53	683.20	21.33	33.031		
3,100.00	3,042.07	3,010.51	3,002.37	13.38	10.78	-164.20	-191.00	-149.05	730.50	708.43	22.07	33.097		
3,200.00	3,139.74	3,107.07	3,098.55	13.84	11.15	-164.10	-196.14	-155.96	756.48	733.66	22.81	33.157		
3,300.00	3,237.41	3,203.63	3,194.72	14.31	11.52	-164.02	-201.28	-162.88	782.46	758.90	23.56	33.213		
3,400.00	3,335.08	3,300.19	3,290.90	14.78	11.88	-163.93	-206.42	-169.80	808.44	784.14	24.30	33.266		
3,500.00	3,432.75	3,396.75	3,387.07	15.25	12.25	-163.86	-211.56	-176.71	834.42	809.37	25.05	33.315		
3,600.00	3,530.42	3,493.31	3,483.25	15.72	12.62	-163.78	-216.70	-183.63	860.40	834.61	25.79	33.361		
3,700.00	3,628.09	3,589.87	3,579.42	16.18	12.99	-163.72	-221.84	-190.55	886.39	859.85	26.53	33.405		
3,800.00	3,725.76	3,686.43	3,675.60	16.65	13.35	-163.65	-226.98	-197.46	912.37	885.09	27.28	33.445		
3,900.00	3,823.43	3,782.99	3,771.77	17.12	13.72	-163.59	-232.12	-204.38	938.36	910.33	28.02	33.484		
4,000.00	3,921.10	3,879.55	3,867.95	17.59	14.09	-163.53	-237.26	-211.30	964.35	935.58	28.77	33.520		
4,100.00	4,018.77	3,976.11	3,964.12	18.06	14.46	-163.48	-242.40	-218.21	990.33	960.82	29.51	33.554		
4,200.00	4,116.44	4,072.67	4,060.30	18.52	14.83	-163.43	-247.54	-225.13	1,016.32	986.06	30.26	33.586		
4,300.00	4,214.12	4,169.23	4,156.47	18.99	15.20	-163.38	-252.68	-232.04	1,042.31	1,011.31	31.01	33.617		
4,400.00	4,311.79	4,265.79	4,252.64	19.46	15.57	-163.33	-257.82	-238.96	1,068.30	1,036.55	31.75	33.646		
4,500.00	4,409.46	4,362.35	4,348.82	19.93	15.94	-163.29	-262.96	-245.88	1,094.29	1,061.80	32.50	33.674		
4,600.00	4,507.13	4,458.91	4,444.99	20.40	16.30	-163.25	-268.10	-252.79	1,120.29	1,087.04	33.24	33.700		
4,700.00	4,604.80	4,555.47	4,541.17	20.87	16.67	-163.20	-273.24	-259.71	1,146.28	1,112.29	33.99	33.725		
4,800.00	4,702.47	4,652.03	4,637.34	21.34	17.04	-163.17	-278.38	-266.63	1,172.27	1,137.54	34.73	33.749		
4,900.00	4,800.14	4,748.59	4,733.52	21.80	17.41	-163.13	-283.52	-273.54	1,198.26	1,162.78	35.48	33.772		
5,000.00	4,897.81	4,876.22	4,860.81	22.27	17.89	-163.17	-288.90	-280.78	1,223.17	1,186.73	36.44	33.563		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3I-25H-M166 - OH - PLAN #1												Offset Site Error: 0.00 usft				
Survey Program: 0-MWD+HDGM												Offset Well Error: 0.00 usft				
Reference				Offset			Semi Major Axis					Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor				
5,100.00	4,995.48	5,009.27	4,993.82	22.74	18.36	-163.44	-290.91	-283.49	1,245.31	1,207.91	37.40	33.301				
5,200.00	5,093.15	5,108.61	5,093.15	23.21	18.68	-163.72	-290.92	-283.50	1,265.93	1,227.82	38.11	33.220				
5,300.00	5,190.82	5,206.28	5,190.82	23.68	19.00	-163.99	-290.92	-283.50	1,286.58	1,247.77	38.81	33.150				
5,400.00	5,288.49	5,303.95	5,288.49	24.15	19.31	-164.24	-290.92	-283.50	1,307.25	1,267.74	39.51	33.083				
5,500.00	5,386.17	5,401.62	5,386.17	24.62	19.63	-164.50	-290.92	-283.50	1,327.95	1,287.73	40.22	33.018				
5,600.00	5,483.84	5,499.30	5,483.84	25.09	19.95	-164.74	-290.92	-283.50	1,348.67	1,307.75	40.92	32.955				
5,703.88	5,585.30	5,600.75	5,585.30	25.57	20.28	-164.98	-290.92	-283.50	1,370.22	1,328.56	41.66	32.892				
5,800.00	5,679.51	5,694.97	5,679.51	26.01	20.59	-165.28	-290.92	-283.50	1,388.65	1,346.32	42.34	32.801				
5,900.00	5,778.14	5,793.60	5,778.14	26.43	20.92	-165.53	-290.92	-283.50	1,404.59	1,361.55	43.03	32.639				
6,000.00	5,877.29	5,892.74	5,877.29	26.82	21.25	-165.73	-290.92	-283.50	1,417.18	1,373.45	43.73	32.409				
6,100.00	5,976.83	5,992.28	5,976.83	27.18	21.58	-165.87	-290.92	-283.50	1,426.42	1,382.01	44.41	32.116				
6,200.00	6,076.64	6,092.10	6,076.64	27.51	21.91	-165.96	-290.92	-283.50	1,432.29	1,387.20	45.09	31.763				
6,300.00	6,176.60	6,192.06	6,176.60	27.81	22.24	-165.99	-290.92	-283.50	1,434.78	1,389.01	45.76	31.352				
6,323.40	6,200.00	6,215.46	6,200.00	27.88	22.32	179.51	-290.92	-283.50	1,434.87	1,388.95	45.92	31.248				
6,400.00	6,276.60	6,292.06	6,276.60	28.09	22.58	179.51	-290.92	-283.50	1,434.87	1,388.44	46.43	30.906				
6,500.00	6,376.60	6,392.06	6,376.60	28.37	22.91	179.51	-290.92	-283.50	1,434.87	1,387.78	47.09	30.469				
6,600.00	6,476.60	6,492.06	6,476.60	28.65	23.25	179.51	-290.92	-283.50	1,434.87	1,387.11	47.76	30.044				
6,700.00	6,576.60	6,592.06	6,576.60	28.94	23.58	179.51	-290.92	-283.50	1,434.87	1,386.44	48.43	29.629				
6,800.00	6,676.60	6,692.06	6,676.60	29.22	23.92	179.51	-290.92	-283.50	1,434.87	1,385.77	49.10	29.225				
6,817.20	6,693.80	6,709.26	6,693.80	29.27	23.98	179.51	-290.92	-283.50	1,434.87	1,385.66	49.21	29.157				
6,850.00	6,726.59	6,742.17	6,726.70	29.36	24.09	90.09	-290.91	-282.74	1,434.87	1,385.44	49.43	29.031				
6,900.00	6,776.41	6,792.33	6,776.69	29.49	24.24	90.09	-290.87	-278.69	1,434.87	1,385.13	49.73	28.850				
6,950.00	6,825.84	6,842.50	6,826.27	29.62	24.40	90.09	-290.79	-271.14	1,434.87	1,384.83	50.03	28.678				
7,000.00	6,874.62	6,892.66	6,875.20	29.74	24.54	90.09	-290.68	-260.15	1,434.87	1,384.54	50.33	28.512				
7,050.00	6,922.52	6,942.82	6,923.24	29.86	24.69	90.09	-290.53	-245.75	1,434.87	1,384.26	50.61	28.352				
7,100.00	6,969.31	6,992.97	6,970.15	29.96	24.83	90.09	-290.35	-228.04	1,434.87	1,383.98	50.89	28.195				
7,150.00	7,014.75	7,043.13	7,015.71	30.06	24.96	90.08	-290.14	-207.08	1,434.87	1,383.69	51.18	28.038				
7,200.00	7,058.63	7,093.27	7,059.68	30.16	25.10	90.08	-289.90	-183.00	1,434.87	1,383.40	51.47	27.878				
7,250.00	7,100.73	7,143.41	7,101.85	30.24	25.24	90.08	-289.62	-155.90	1,434.87	1,383.09	51.78	27.710				
7,300.00	7,140.86	7,193.54	7,142.02	30.32	25.39	90.07	-289.32	-125.92	1,434.87	1,382.74	52.13	27.527				
7,350.00	7,178.80	7,243.67	7,179.98	30.39	25.56	90.07	-288.98	-93.21	1,434.87	1,382.35	52.52	27.323				
7,400.00	7,214.38	7,293.79	7,215.56	30.45	25.77	90.07	-288.63	-57.93	1,434.87	1,381.90	52.97	27.091				
7,450.00	7,247.42	7,343.90	7,248.59	30.50	26.02	90.06	-288.24	-20.25	1,434.87	1,381.37	53.49	26.824				
7,500.00	7,277.77	7,394.00	7,278.89	30.55	26.32	90.05	-287.84	19.63	1,434.87	1,380.75	54.11	26.516				
7,550.00	7,305.27	7,444.09	7,306.32	30.58	26.68	90.05	-287.41	61.52	1,434.87	1,380.02	54.85	26.162				
7,600.00	7,329.79	7,494.17	7,330.76	30.62	27.11	90.04	-286.97	105.23	1,434.87	1,379.17	55.70	25.760				
7,650.00	7,351.21	7,544.24	7,352.08	30.64	27.61	90.04	-286.51	150.52	1,434.87	1,378.18	56.69	25.311				
7,700.00	7,369.43	7,594.30	7,370.18	30.67	28.18	90.03	-286.03	197.18	1,434.87	1,377.05	57.82	24.817				
7,750.00	7,384.36	7,644.35	7,384.97	30.72	28.82	90.02	-285.55	244.98	1,434.87	1,375.78	59.09	24.285				
7,800.00	7,395.93	7,694.39	7,396.38	31.01	29.54	90.02	-285.05	293.68	1,434.87	1,374.37	60.49	23.720				
7,850.00	7,404.07	7,744.41	7,404.37	31.71	30.32	90.01	-284.55	343.06	1,434.87	1,372.84	62.02	23.134				
7,900.00	7,408.76	7,794.43	7,408.89	32.51	31.16	90.01	-284.04	392.85	1,434.87	1,371.20	63.67	22.536				
7,942.20	7,410.00	7,836.64	7,410.00	33.23	31.91	90.00	-283.62	435.04	1,434.87	1,369.73	65.13	22.030				
8,000.00	7,410.00	7,894.43	7,410.00	34.28	32.99	90.00	-283.03	492.83	1,434.87	1,367.61	67.25	21.335				
8,100.00	7,410.00	7,994.43	7,410.00	36.24	35.01	90.00	-282.01	592.83	1,434.87	1,363.63	71.23	20.144				
8,200.00	7,410.00	8,094.43	7,410.00	38.37	37.20	90.00	-281.00	692.82	1,434.87	1,359.32	75.54	18.994				
8,300.00	7,410.00	8,194.43	7,410.00	40.64	39.53	90.00	-279.98	792.82	1,434.87	1,354.73	80.13	17.906				
8,400.00	7,410.00	8,294.43	7,410.00	43.03	41.98	90.00	-278.96	892.81	1,434.87	1,349.90	84.96	16.888				
8,500.00	7,410.00	8,394.43	7,410.00	45.52	44.52	90.00	-277.95	992.81	1,434.87	1,344.88	89.99	15.945				
8,600.00	7,410.00	8,494.43	7,410.00	48.10	47.14	90.00	-276.93	1,092.80	1,434.87	1,339.68	95.18	15.075				
8,700.00	7,410.00	8,594.43	7,410.00	50.74	49.83	90.00	-275.91	1,192.80	1,434.87	1,334.35	100.52	14.275				
8,800.00	7,410.00	8,694.43	7,410.00	53.45	52.58	90.00	-274.90	1,292.79	1,434.87	1,328.90	105.97	13.540				

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3I-25H-M166 - OH - PLAN #1												Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor
8,900.00	7,410.00	8,794.43	7,410.00	56.21	55.38	90.00	-273.88	1,392.78	1,434.87	1,323.34	111.52	12.866	
9,000.00	7,410.00	8,894.43	7,410.00	59.01	58.22	90.00	-272.87	1,492.78	1,434.87	1,317.70	117.17	12.246	
9,100.00	7,410.00	8,994.43	7,410.00	61.85	61.09	90.00	-271.85	1,592.77	1,434.87	1,311.98	122.89	11.676	
9,200.00	7,410.00	9,094.43	7,410.00	64.73	64.00	90.00	-270.83	1,692.77	1,434.87	1,306.19	128.67	11.151	
9,300.00	7,410.00	9,194.43	7,410.00	67.63	66.94	90.00	-269.82	1,792.76	1,434.87	1,300.35	134.51	10.667	
9,400.00	7,410.00	9,294.43	7,410.00	70.57	69.89	90.00	-268.80	1,892.76	1,434.86	1,294.46	140.40	10.220	
9,500.00	7,410.00	9,394.43	7,410.00	73.52	72.87	90.00	-267.78	1,992.75	1,434.86	1,288.53	146.34	9.805	
9,600.00	7,410.00	9,494.43	7,410.00	76.50	75.87	90.00	-266.77	2,092.75	1,434.86	1,282.55	152.31	9.421	
9,700.00	7,410.00	9,594.43	7,410.00	79.49	78.89	90.00	-265.75	2,192.74	1,434.86	1,276.55	158.32	9.063	
9,800.00	7,410.00	9,694.43	7,410.00	82.50	81.92	90.00	-264.74	2,292.74	1,434.86	1,270.51	164.36	8.730	
9,900.00	7,410.00	9,794.43	7,410.00	85.52	84.96	90.00	-263.72	2,392.73	1,434.86	1,264.44	170.42	8.419	
10,000.00	7,410.00	9,894.43	7,410.00	88.55	88.01	90.00	-262.70	2,492.73	1,434.86	1,258.35	176.51	8.129	
10,100.00	7,410.00	9,994.43	7,410.00	91.60	91.08	90.00	-261.69	2,592.72	1,434.86	1,252.24	182.63	7.857	
10,200.00	7,410.00	10,094.43	7,410.00	94.66	94.15	90.00	-260.67	2,692.72	1,434.86	1,246.11	188.76	7.602	
10,300.00	7,410.00	10,194.43	7,410.00	97.73	97.23	90.00	-259.65	2,792.71	1,434.86	1,239.96	194.91	7.362	
10,400.00	7,410.00	10,294.43	7,410.00	100.80	100.32	90.00	-258.64	2,892.71	1,434.86	1,233.79	201.08	7.136	
10,500.00	7,410.00	10,394.43	7,410.00	103.89	103.42	90.00	-257.62	2,992.70	1,434.86	1,227.61	207.26	6.923	
10,600.00	7,410.00	10,494.43	7,410.00	106.98	106.52	90.00	-256.61	3,092.70	1,434.86	1,221.41	213.45	6.722	
10,700.00	7,410.00	10,594.43	7,410.00	110.07	109.63	90.00	-255.59	3,192.69	1,434.86	1,215.20	219.66	6.532	
10,800.00	7,410.00	10,694.43	7,410.00	113.18	112.75	90.00	-254.57	3,292.69	1,434.86	1,208.98	225.88	6.352	
10,900.00	7,410.00	10,794.43	7,410.00	116.29	115.87	90.00	-253.56	3,392.68	1,434.86	1,202.75	232.11	6.182	
11,000.00	7,410.00	10,894.43	7,410.00	119.40	118.99	90.00	-252.54	3,492.68	1,434.86	1,196.51	238.35	6.020	
11,100.00	7,410.00	10,994.43	7,410.00	122.52	122.12	90.00	-251.52	3,592.67	1,434.86	1,190.27	244.60	5.866	
11,200.00	7,410.00	11,094.43	7,410.00	125.64	125.26	90.00	-250.51	3,692.67	1,434.86	1,184.01	250.86	5.720	
11,300.00	7,410.00	11,194.43	7,410.00	128.77	128.39	90.00	-249.49	3,792.66	1,434.86	1,177.74	257.12	5.581	
11,400.00	7,410.00	11,294.43	7,410.00	131.90	131.53	90.00	-248.48	3,892.66	1,434.86	1,171.47	263.39	5.448	
11,500.00	7,410.00	11,394.43	7,410.00	135.04	134.67	90.00	-247.46	3,992.65	1,434.86	1,165.19	269.67	5.321	
11,600.00	7,410.00	11,494.43	7,410.00	138.17	137.82	90.00	-246.44	4,092.65	1,434.86	1,158.91	275.95	5.200	
11,700.00	7,410.00	11,594.43	7,410.00	141.32	140.97	90.00	-245.43	4,192.64	1,434.86	1,152.62	282.24	5.084	
11,800.00	7,410.00	11,694.43	7,410.00	144.46	144.12	90.00	-244.41	4,292.63	1,434.86	1,146.32	288.54	4.973	
11,900.00	7,410.00	11,794.43	7,410.00	147.61	147.27	90.00	-243.40	4,392.63	1,434.86	1,140.02	294.84	4.867	
12,000.00	7,410.00	11,894.43	7,410.00	150.76	149.17	90.00	-242.38	4,492.62	1,434.86	1,134.98	299.89	4.785	
12,011.54	7,410.00	11,905.98	7,410.00	151.12	149.38	90.00	-242.26	4,504.17	1,434.86	1,134.40	300.46	4.776	
12,019.72	7,410.00	11,906.06	7,410.00	151.38	149.38	90.00	-242.26	4,504.25	1,434.89	1,134.19	300.70	4.772 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3J-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.96	-89.98	-0.06	89.98					
100.00	100.00	100.00	100.00	0.14	0.14	-179.96	-89.98	-0.06	89.98	89.70	0.28	325.986		
200.00	200.00	200.00	200.00	0.50	0.50	-179.96	-89.98	-0.06	89.98	88.99	0.99	90.617	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.73	-89.98	-0.06	91.67	89.96	1.71	53.566		
400.00	399.84	399.84	399.84	1.22	1.21	-166.47	-89.98	-0.06	96.75	94.32	2.43	39.735		
500.00	499.45	499.45	499.45	1.59	1.57	-167.54	-89.98	-0.06	105.24	102.09	3.16	33.309		
600.00	598.70	598.70	598.70	1.96	1.93	-168.78	-89.98	-0.06	117.18	113.29	3.89	30.159		
700.00	697.47	697.47	697.47	2.35	2.28	-170.04	-89.98	-0.06	132.56	127.95	4.61	28.744		
800.00	795.62	791.84	791.82	2.77	2.60	-170.83	-91.21	-0.87	152.58	147.27	5.32	28.701	SF	
819.52	814.70	810.04	810.02	2.85	2.67	-170.89	-91.74	-1.23	157.18	151.72	5.46	28.793		
900.00	893.31	884.57	884.45	3.20	2.92	-170.93	-94.94	-3.34	177.37	171.36	6.01	29.530		
1,000.00	990.98	976.03	975.60	3.65	3.23	-170.48	-101.07	-7.38	204.63	197.94	6.69	30.607		
1,100.00	1,088.65	1,070.91	1,069.99	4.10	3.56	-169.81	-109.06	-12.66	233.47	226.09	7.37	31.663		
1,200.00	1,186.32	1,166.62	1,165.21	4.55	3.90	-169.27	-117.16	-18.01	262.36	252.09	8.07	32.509		
1,300.00	1,283.99	1,262.32	1,260.43	5.01	4.25	-168.84	-125.26	-23.36	291.27	282.49	8.77	33.195		
1,400.00	1,381.66	1,358.03	1,355.64	5.47	4.60	-168.49	-133.36	-28.71	320.19	310.71	9.48	33.764		
1,500.00	1,479.33	1,453.74	1,450.86	5.93	4.95	-168.19	-141.46	-34.05	349.12	338.93	10.20	34.240		
1,600.00	1,577.00	1,549.45	1,546.07	6.39	5.31	-167.95	-149.56	-39.40	378.06	367.15	10.91	34.645		
1,700.00	1,674.67	1,645.16	1,641.29	6.85	5.67	-167.73	-157.66	-44.75	407.00	395.37	11.63	34.993		
1,800.00	1,772.35	1,740.87	1,736.51	7.31	6.03	-167.55	-165.76	-50.09	435.95	423.60	12.35	35.295		
1,900.00	1,870.02	1,836.58	1,831.72	7.78	6.40	-167.38	-173.86	-55.44	464.90	451.83	13.07	35.558		
2,000.00	1,967.69	1,932.29	1,926.94	8.24	6.76	-167.24	-181.96	-60.79	493.86	480.06	13.80	35.790		
2,100.00	2,065.36	2,028.00	2,022.15	8.71	7.12	-167.11	-190.06	-66.14	522.82	508.29	14.52	35.996		
2,200.00	2,163.03	2,123.71	2,117.37	9.17	7.49	-167.00	-198.16	-71.48	551.78	536.53	15.25	36.180		
2,300.00	2,260.70	2,219.42	2,212.59	9.64	7.86	-166.90	-206.26	-76.83	580.74	564.76	15.98	36.345		
2,400.00	2,358.37	2,315.13	2,307.80	10.11	8.23	-166.80	-214.35	-82.18	609.70	592.99	16.71	36.494		
2,500.00	2,456.04	2,410.84	2,403.02	10.57	8.59	-166.72	-222.45	-87.53	638.67	621.23	17.44	36.629		
2,600.00	2,553.71	2,506.55	2,498.23	11.04	8.96	-166.64	-230.55	-92.87	667.63	649.47	18.17	36.752		
2,700.00	2,651.38	2,602.26	2,593.45	11.51	9.33	-166.57	-238.65	-98.22	696.60	677.70	18.90	36.865		
2,800.00	2,749.05	2,697.97	2,688.67	11.97	9.70	-166.51	-246.75	-103.57	725.56	705.94	19.63	36.968		
2,900.00	2,846.72	2,793.68	2,783.88	12.44	10.07	-166.45	-254.85	-108.91	754.53	734.17	20.36	37.063		
3,000.00	2,944.40	2,889.38	2,879.10	12.91	10.44	-166.39	-262.95	-114.26	783.50	762.41	21.09	37.151		
3,100.00	3,042.07	2,985.09	2,974.32	13.38	10.81	-166.34	-271.05	-119.61	812.47	790.65	21.82	37.232		
3,200.00	3,139.74	3,080.80	3,069.53	13.84	11.18	-166.29	-279.15	-124.96	841.44	818.89	22.55	37.307		
3,300.00	3,237.41	3,176.51	3,164.75	14.31	11.55	-166.25	-287.25	-130.30	870.41	847.12	23.29	37.378		
3,400.00	3,335.08	3,272.22	3,259.96	14.78	11.93	-166.21	-295.35	-135.65	899.38	875.36	24.02	37.443		
3,500.00	3,432.75	3,367.93	3,355.18	15.25	12.30	-166.17	-303.45	-141.00	928.35	903.60	24.75	37.504		
3,600.00	3,530.42	3,463.64	3,450.40	15.72	12.67	-166.13	-311.54	-146.35	957.33	931.84	25.49	37.562		
3,700.00	3,628.09	3,559.35	3,545.61	16.18	13.04	-166.09	-319.64	-151.69	986.30	960.08	26.22	37.616		
3,800.00	3,725.76	3,655.06	3,640.83	16.65	13.41	-166.06	-327.74	-157.04	1,015.27	988.32	26.95	37.667		
3,900.00	3,823.43	3,750.77	3,736.04	17.12	13.78	-166.03	-335.84	-162.39	1,044.24	1,016.56	27.69	37.714		
4,000.00	3,921.10	3,846.48	3,831.26	17.59	14.16	-166.00	-343.94	-167.74	1,073.22	1,044.79	28.42	37.759		
4,100.00	4,018.77	3,942.19	3,926.48	18.06	14.53	-165.97	-352.04	-173.08	1,102.19	1,073.03	29.16	37.802		
4,200.00	4,116.44	4,037.90	4,021.69	18.52	14.90	-165.95	-360.14	-178.43	1,131.16	1,101.27	29.89	37.842		
4,300.00	4,214.12	4,133.61	4,116.91	18.99	15.27	-165.92	-368.24	-183.78	1,160.14	1,129.51	30.63	37.881		
4,400.00	4,311.79	4,229.32	4,212.12	19.46	15.65	-165.90	-376.34	-189.12	1,189.11	1,157.75	31.36	37.917		
4,500.00	4,409.46	4,325.03	4,307.34	19.93	16.02	-165.88	-384.44	-194.47	1,218.09	1,185.99	32.10	37.952		
4,600.00	4,507.13	4,420.74	4,402.56	20.40	16.39	-165.85	-392.54	-199.82	1,247.06	1,214.23	32.83	37.984		
4,700.00	4,604.80	4,516.44	4,497.77	20.87	16.76	-165.83	-400.64	-205.17	1,276.03	1,242.47	33.57	38.016		
4,800.00	4,702.47	4,612.15	4,592.99	21.34	17.14	-165.81	-408.73	-210.51	1,305.01	1,270.71	34.30	38.046		
4,900.00	4,800.14	4,707.86	4,688.20	21.80	17.51	-165.79	-416.83	-215.86	1,333.98	1,298.95	35.04	38.074		
5,000.00	4,897.81	4,803.57	4,783.42	22.27	17.88	-165.78	-424.93	-221.21	1,362.96	1,327.19	35.77	38.101		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design										S25-T1N-R66W (SAM) - SAM 3J-25H-M166 - OH - PLAN #1				Offset Site Error:		0.00 usft	
Survey Program:										0-MWD+HDGM				Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor					
5,100.00	4,995.48	4,899.28	4,878.64	22.74	18.26	-165.76	-433.03	-226.56	1,391.93	1,355.43	36.51	38.127					
5,200.00	5,093.15	4,994.99	4,973.85	23.21	18.63	-165.74	-441.13	-231.90	1,420.91	1,383.66	37.24	38.152					
5,300.00	5,190.82	5,090.70	5,069.07	23.68	19.00	-165.73	-449.23	-237.25	1,449.88	1,411.90	37.98	38.176					
5,400.00	5,288.49	5,186.41	5,164.29	24.15	19.38	-165.71	-457.33	-242.60	1,478.86	1,440.14	38.72	38.199					

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3K-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis				Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	179.99	-100.17	0.03	100.17					
100.00	100.00	100.00	100.00	0.14	0.14	179.99	-100.17	0.03	100.17	99.90	0.28	362.921		
200.00	200.00	200.00	200.00	0.50	0.50	179.99	-100.17	0.03	100.17	99.18	0.99	100.884	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.76	-100.17	0.03	101.87	100.15	1.71	59.524		
400.00	399.84	399.84	399.84	1.22	1.21	-166.42	-100.17	0.03	106.95	104.51	2.43	43.922		
500.00	499.45	499.45	499.45	1.59	1.57	-167.40	-100.17	0.03	115.44	112.28	3.16	36.535		
600.00	598.70	598.70	598.70	1.96	1.93	-168.55	-100.17	0.03	127.36	123.47	3.89	32.780		
700.00	697.47	693.32	693.30	2.35	2.25	-169.40	-101.57	-0.58	144.14	139.54	4.59	31.382	SF	
800.00	795.62	786.16	786.03	2.77	2.56	-169.73	-105.72	-2.37	167.14	161.85	5.29	31.568		
819.52	814.70	804.04	803.87	2.85	2.62	-169.75	-106.84	-2.86	172.34	166.91	5.44	31.694		
900.00	893.31	877.09	876.66	3.20	2.87	-169.73	-112.46	-5.29	195.14	189.15	5.99	32.580		
1,000.00	990.98	966.44	965.44	3.65	3.19	-169.38	-121.66	-9.26	225.86	219.19	6.67	33.869		
1,100.00	1,088.65	1,058.41	1,056.55	4.10	3.52	-168.86	-133.24	-14.27	258.70	251.36	7.35	35.215		
1,200.00	1,186.32	1,152.77	1,149.98	4.55	3.88	-168.43	-145.31	-19.49	291.76	283.73	8.03	36.339		
1,300.00	1,283.99	1,247.13	1,243.42	5.01	4.24	-168.08	-157.38	-24.71	324.83	316.11	8.72	37.234		
1,400.00	1,381.66	1,341.49	1,336.86	5.47	4.60	-167.80	-169.44	-29.93	357.91	348.48	9.42	37.979		
1,500.00	1,479.33	1,435.84	1,430.29	5.93	4.97	-167.56	-181.51	-35.14	390.99	380.86	10.13	38.605		
1,600.00	1,577.00	1,530.20	1,523.73	6.39	5.35	-167.37	-193.58	-40.36	424.08	413.24	10.84	39.136		
1,700.00	1,674.67	1,624.56	1,617.17	6.85	5.72	-167.20	-205.65	-45.58	457.17	445.63	11.55	39.592		
1,800.00	1,772.35	1,718.92	1,710.60	7.31	6.10	-167.05	-217.72	-50.80	490.27	478.01	12.26	39.987		
1,900.00	1,870.02	1,813.27	1,804.04	7.78	6.48	-166.92	-229.79	-56.02	523.37	510.39	12.98	40.332		
2,000.00	1,967.69	1,907.63	1,897.48	8.24	6.86	-166.81	-241.86	-61.24	556.47	542.77	13.69	40.636		
2,100.00	2,065.36	2,001.99	1,990.91	8.71	7.25	-166.71	-253.93	-66.46	589.57	575.16	14.41	40.905		
2,200.00	2,163.03	2,096.35	2,084.35	9.17	7.63	-166.62	-266.00	-71.67	622.67	607.54	15.13	41.145		
2,300.00	2,260.70	2,190.70	2,177.79	9.64	8.02	-166.54	-278.07	-76.89	655.78	639.92	15.86	41.361		
2,400.00	2,358.37	2,285.06	2,271.22	10.11	8.40	-166.47	-290.14	-82.11	688.89	672.31	16.58	41.555		
2,500.00	2,456.04	2,379.42	2,364.66	10.57	8.79	-166.40	-302.21	-87.33	721.99	704.69	17.30	41.731		
2,600.00	2,553.71	2,473.78	2,458.10	11.04	9.17	-166.34	-314.28	-92.55	755.10	737.07	18.03	41.892		
2,700.00	2,651.38	2,568.13	2,551.53	11.51	9.56	-166.29	-326.35	-97.77	788.21	769.46	18.75	42.038		
2,800.00	2,749.05	2,662.49	2,644.97	11.97	9.95	-166.23	-338.41	-102.99	821.32	801.84	19.48	42.172		
2,900.00	2,846.72	2,756.85	2,738.41	12.44	10.34	-166.19	-350.48	-108.20	854.43	834.23	20.20	42.296		
3,000.00	2,944.40	2,851.21	2,831.85	12.91	10.73	-166.14	-362.55	-113.42	887.54	866.61	20.93	42.410		
3,100.00	3,042.07	2,945.56	2,925.28	13.38	11.12	-166.10	-374.62	-118.64	920.65	898.99	21.65	42.516		
3,200.00	3,139.74	3,039.92	3,018.72	13.84	11.50	-166.07	-386.69	-123.86	953.76	931.38	22.38	42.614		
3,300.00	3,237.41	3,134.28	3,112.16	14.31	11.89	-166.03	-398.76	-129.08	986.87	963.76	23.11	42.705		
3,400.00	3,335.08	3,228.64	3,205.59	14.78	12.28	-166.00	-410.83	-134.30	1,019.98	996.14	23.84	42.790		
3,500.00	3,432.75	3,322.99	3,299.03	15.25	12.67	-165.97	-422.90	-139.52	1,053.09	1,028.53	24.57	42.869		
3,600.00	3,530.42	3,417.35	3,392.47	15.72	13.06	-165.94	-434.97	-144.73	1,086.20	1,060.91	25.29	42.944		
3,700.00	3,628.09	3,511.71	3,485.90	16.18	13.45	-165.91	-447.04	-149.95	1,119.32	1,093.29	26.02	43.014		
3,800.00	3,725.76	3,606.07	3,579.34	16.65	13.84	-165.89	-459.11	-155.17	1,152.43	1,125.68	26.75	43.080		
3,900.00	3,823.43	3,700.43	3,672.78	17.12	14.23	-165.86	-471.18	-160.39	1,185.54	1,158.06	27.48	43.141		
4,000.00	3,921.10	3,794.78	3,766.21	17.59	14.63	-165.84	-483.25	-165.61	1,218.65	1,190.44	28.21	43.200		
4,100.00	4,018.77	3,889.14	3,859.65	18.06	15.02	-165.82	-495.32	-170.83	1,251.77	1,222.83	28.94	43.255		
4,200.00	4,116.44	3,983.50	3,953.09	18.52	15.41	-165.80	-507.38	-176.05	1,284.88	1,255.21	29.67	43.307		
4,300.00	4,214.12	4,077.86	4,046.52	18.99	15.80	-165.78	-519.45	-181.26	1,317.99	1,287.59	30.40	43.357		
4,400.00	4,311.79	4,172.21	4,139.96	19.46	16.19	-165.76	-531.52	-186.48	1,351.11	1,319.98	31.13	43.404		
4,500.00	4,409.46	4,266.57	4,233.40	19.93	16.58	-165.74	-543.59	-191.70	1,384.22	1,352.36	31.86	43.448		
4,600.00	4,507.13	4,360.93	4,326.84	20.40	16.97	-165.73	-555.66	-196.92	1,417.33	1,384.74	32.59	43.491		
4,700.00	4,604.80	4,455.29	4,420.27	20.87	17.36	-165.71	-567.73	-202.14	1,450.45	1,417.13	33.32	43.531		
4,800.00	4,702.47	4,549.64	4,513.71	21.34	17.75	-165.70	-579.80	-207.36	1,483.56	1,449.51	34.05	43.569		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3L-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-179.91	-110.02	-0.17	110.02					
100.00	100.00	100.00	100.00	0.14	0.14	-179.91	-110.02	-0.17	110.02	109.74	0.28	398.592		
200.00	200.00	200.00	200.00	0.50	0.50	-179.91	-110.02	-0.17	110.02	109.03	0.99	110.800	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.63	-110.02	-0.17	111.71	110.00	1.71	65.276		
400.00	399.84	399.84	399.84	1.22	1.21	-166.25	-110.02	-0.17	116.79	114.35	2.43	47.964		
500.00	499.45	499.45	499.45	1.59	1.57	-167.16	-110.02	-0.17	125.27	122.11	3.16	39.648		
600.00	598.70	594.45	594.43	1.96	1.90	-167.95	-111.50	-0.66	138.70	134.83	3.87	35.822		
700.00	697.47	687.93	687.79	2.35	2.21	-168.39	-115.87	-2.11	158.55	153.96	4.58	34.583	SF	
800.00	795.62	779.37	778.93	2.77	2.53	-168.54	-122.94	-4.45	184.65	179.35	5.30	34.862		
819.52	814.70	796.94	796.40	2.85	2.59	-168.55	-124.61	-5.01	190.46	185.02	5.44	35.001		
900.00	893.31	868.61	867.60	3.20	2.84	-168.54	-132.50	-7.62	215.78	209.78	6.00	35.989		
1,000.00	990.98	956.09	954.16	3.65	3.16	-168.31	-144.41	-11.57	249.68	243.01	6.67	37.419		
1,100.00	1,088.65	1,049.29	1,046.17	4.10	3.53	-168.00	-158.55	-16.27	285.03	277.69	7.34	38.823		
1,200.00	1,186.32	1,142.83	1,138.50	4.55	3.89	-167.76	-172.75	-20.97	320.39	312.37	8.02	39.936		
1,300.00	1,283.99	1,236.36	1,230.83	5.01	4.27	-167.57	-186.94	-25.68	355.76	347.05	8.71	40.840		
1,400.00	1,381.66	1,329.89	1,323.16	5.47	4.65	-167.41	-201.14	-30.39	391.13	381.72	9.41	41.585		
1,500.00	1,479.33	1,423.42	1,415.48	5.93	5.04	-167.27	-215.33	-35.10	426.50	416.39	10.10	42.208		
1,600.00	1,577.00	1,516.95	1,507.81	6.39	5.42	-167.16	-229.53	-39.81	461.87	451.06	10.81	42.735		
1,700.00	1,674.67	1,610.48	1,600.14	6.85	5.81	-167.07	-243.72	-44.51	497.24	485.73	11.51	43.185		
1,800.00	1,772.35	1,704.01	1,692.47	7.31	6.20	-166.98	-257.92	-49.22	532.62	520.40	12.22	43.573		
1,900.00	1,870.02	1,797.55	1,784.79	7.78	6.60	-166.91	-272.11	-53.93	567.99	555.06	12.93	43.912		
2,000.00	1,967.69	1,891.08	1,877.12	8.24	6.99	-166.85	-286.31	-58.64	603.37	589.72	13.65	44.209		
2,100.00	2,065.36	1,984.61	1,969.45	8.71	7.39	-166.79	-300.51	-63.35	638.75	624.38	14.36	44.472		
2,200.00	2,163.03	2,078.14	2,061.78	9.17	7.78	-166.74	-314.70	-68.05	674.13	659.05	15.08	44.705		
2,300.00	2,260.70	2,171.67	2,154.11	9.64	8.18	-166.69	-328.90	-72.76	709.50	693.71	15.80	44.915		
2,400.00	2,358.37	2,265.20	2,246.43	10.11	8.58	-166.65	-343.09	-77.47	744.88	728.37	16.52	45.103		
2,500.00	2,456.04	2,358.73	2,338.76	10.57	8.98	-166.61	-357.29	-82.18	780.26	763.03	17.23	45.273		
2,600.00	2,553.71	2,452.27	2,431.09	11.04	9.38	-166.58	-371.48	-86.89	815.64	797.68	17.95	45.428		
2,700.00	2,651.38	2,545.80	2,523.42	11.51	9.78	-166.55	-385.68	-91.60	851.02	832.34	18.68	45.569		
2,800.00	2,749.05	2,639.33	2,615.75	11.97	10.18	-166.52	-399.87	-96.30	886.40	867.00	19.40	45.698		
2,900.00	2,846.72	2,732.86	2,708.07	12.44	10.58	-166.49	-414.07	-101.01	921.78	901.66	20.12	45.816		
3,000.00	2,944.40	2,826.39	2,800.40	12.91	10.98	-166.46	-428.26	-105.72	957.16	936.32	20.84	45.926		
3,100.00	3,042.07	2,919.92	2,892.73	13.38	11.38	-166.44	-442.46	-110.43	992.54	970.97	21.56	46.026		
3,200.00	3,139.74	3,013.45	2,985.06	13.84	11.78	-166.42	-456.66	-115.14	1,027.92	1,005.63	22.29	46.120		
3,300.00	3,237.41	3,106.99	3,077.39	14.31	12.18	-166.40	-470.85	-119.84	1,063.30	1,040.29	23.01	46.207		
3,400.00	3,335.08	3,200.52	3,169.71	14.78	12.58	-166.38	-485.05	-124.55	1,098.68	1,074.94	23.74	46.288		
3,500.00	3,432.75	3,294.05	3,262.04	15.25	12.98	-166.36	-499.24	-129.26	1,134.06	1,109.60	24.46	46.364		
3,600.00	3,530.42	3,387.58	3,354.37	15.72	13.39	-166.35	-513.44	-133.97	1,169.44	1,144.25	25.18	46.434		
3,700.00	3,628.09	3,481.11	3,446.70	16.18	13.79	-166.33	-527.63	-138.68	1,204.82	1,178.91	25.91	46.501		
3,800.00	3,725.76	3,574.64	3,539.03	16.65	14.19	-166.32	-541.83	-143.38	1,240.20	1,213.56	26.63	46.563		
3,900.00	3,823.43	3,668.17	3,631.35	17.12	14.59	-166.30	-556.02	-148.09	1,275.58	1,248.22	27.36	46.621		
4,000.00	3,921.10	3,761.71	3,723.68	17.59	15.00	-166.29	-570.22	-152.80	1,310.96	1,282.87	28.09	46.677		
4,100.00	4,018.77	3,855.24	3,816.01	18.06	15.40	-166.28	-584.41	-157.51	1,346.34	1,317.53	28.81	46.729		
4,200.00	4,116.44	3,948.77	3,908.34	18.52	15.80	-166.26	-598.61	-162.22	1,381.72	1,352.18	29.54	46.778		
4,300.00	4,214.12	4,042.30	4,000.67	18.99	16.20	-166.25	-612.81	-166.93	1,417.10	1,386.84	30.26	46.825		
4,400.00	4,311.79	4,135.83	4,092.99	19.46	16.61	-166.24	-627.00	-171.63	1,452.48	1,421.49	30.99	46.869		
4,500.00	4,409.46	4,229.36	4,185.32	19.93	17.01	-166.23	-641.20	-176.34	1,487.86	1,456.15	31.72	46.911		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3M-25H-M166 - OH - PLAN #1												Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-179.96	-120.21	-0.08	120.21				
100.00	100.00	100.00	100.00	0.14	0.14	-179.96	-120.21	-0.08	120.21	119.94	0.28	435.512	
200.00	200.00	200.00	200.00	0.50	0.50	-179.96	-120.21	-0.08	120.21	119.22	0.99	121.063 CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.66	-120.21	-0.08	121.90	120.19	1.71	71.231	
400.00	399.84	399.84	399.84	1.22	1.21	-166.22	-120.21	-0.08	126.98	124.54	2.43	52.150	
500.00	499.45	495.13	495.11	1.59	1.54	-166.82	-121.73	-0.52	137.03	133.88	3.15	43.468	
600.00	598.70	589.20	589.06	1.96	1.86	-167.21	-126.21	-1.81	153.60	149.72	3.88	39.605	
700.00	697.47	681.47	681.02	2.35	2.18	-167.40	-133.49	-3.90	176.53	171.93	4.61	38.327 SF	
800.00	795.62	771.43	770.39	2.77	2.50	-167.43	-143.32	-6.74	205.68	200.35	5.33	38.621	
819.52	814.70	788.68	787.49	2.85	2.57	-167.42	-145.51	-7.37	212.07	206.60	5.47	38.757	
900.00	893.31	858.98	857.02	3.20	2.83	-167.42	-155.47	-10.23	239.80	233.77	6.02	39.801	
1,000.00	990.98	951.71	948.52	3.65	3.20	-167.32	-169.92	-14.40	275.57	268.88	6.69	41.202	
1,100.00	1,088.65	1,045.09	1,040.66	4.10	3.57	-167.25	-184.49	-18.59	311.36	304.00	7.36	42.308	
1,200.00	1,186.32	1,138.47	1,132.80	4.55	3.95	-167.19	-199.05	-22.78	347.15	339.11	8.04	43.166	
1,300.00	1,283.99	1,231.84	1,224.94	5.01	4.34	-167.14	-213.62	-26.98	382.94	374.20	8.73	43.855	
1,400.00	1,381.66	1,325.22	1,317.08	5.47	4.73	-167.10	-228.18	-31.17	418.72	409.30	9.43	44.417	
1,500.00	1,479.33	1,418.60	1,409.21	5.93	5.12	-167.07	-242.75	-35.37	454.51	444.39	10.13	44.882	
1,600.00	1,577.00	1,511.97	1,501.35	6.39	5.52	-167.04	-257.31	-39.56	490.30	479.47	10.83	45.271	
1,700.00	1,674.67	1,605.35	1,593.49	6.85	5.91	-167.01	-271.88	-43.75	526.09	514.55	11.54	45.601	
1,800.00	1,772.35	1,698.72	1,685.63	7.31	6.31	-166.99	-286.44	-47.95	561.88	549.63	12.25	45.884	
1,900.00	1,870.02	1,792.10	1,777.77	7.78	6.71	-166.97	-301.01	-52.14	597.67	584.71	12.96	46.128	
2,000.00	1,967.69	1,885.48	1,869.90	8.24	7.10	-166.95	-315.57	-56.33	633.46	619.79	13.67	46.341	
2,100.00	2,065.36	1,978.85	1,962.04	8.71	7.50	-166.94	-330.14	-60.53	669.24	654.86	14.38	46.529	
2,200.00	2,163.03	2,072.23	2,054.18	9.17	7.90	-166.92	-344.70	-64.72	705.03	689.93	15.10	46.695	
2,300.00	2,260.70	2,165.61	2,146.32	9.64	8.30	-166.91	-359.27	-68.92	740.82	725.01	15.82	46.842	
2,400.00	2,358.37	2,258.98	2,238.46	10.11	8.71	-166.90	-373.83	-73.11	776.61	760.08	16.53	46.974	
2,500.00	2,456.04	2,352.36	2,330.59	10.57	9.11	-166.89	-388.40	-77.30	812.40	795.15	17.25	47.093	
2,600.00	2,553.71	2,445.73	2,422.73	11.04	9.51	-166.88	-402.96	-81.50	848.19	830.22	17.97	47.200	
2,700.00	2,651.38	2,539.11	2,514.87	11.51	9.91	-166.87	-417.53	-85.69	883.98	865.29	18.69	47.298	
2,800.00	2,749.05	2,632.49	2,607.01	11.97	10.31	-166.87	-432.09	-89.89	919.77	900.36	19.41	47.387	
2,900.00	2,846.72	2,725.86	2,699.15	12.44	10.72	-166.86	-446.66	-94.08	955.56	935.43	20.13	47.468	
3,000.00	2,944.40	2,819.24	2,791.28	12.91	11.12	-166.85	-461.22	-98.27	991.35	970.49	20.85	47.543	
3,100.00	3,042.07	2,912.62	2,883.42	13.38	11.52	-166.84	-475.79	-102.47	1,027.13	1,005.56	21.57	47.612	
3,200.00	3,139.74	3,005.99	2,975.56	13.84	11.93	-166.84	-490.35	-106.66	1,062.92	1,040.63	22.30	47.675	
3,300.00	3,237.41	3,099.37	3,067.70	14.31	12.33	-166.83	-504.92	-110.86	1,098.71	1,075.70	23.02	47.734	
3,400.00	3,335.08	3,192.74	3,159.84	14.78	12.73	-166.83	-519.48	-115.05	1,134.50	1,110.76	23.74	47.789	
3,500.00	3,432.75	3,286.12	3,251.97	15.25	13.14	-166.82	-534.05	-119.24	1,170.29	1,145.83	24.46	47.840	
3,600.00	3,530.42	3,379.50	3,344.11	15.72	13.54	-166.82	-548.61	-123.44	1,206.08	1,180.89	25.19	47.887	
3,700.00	3,628.09	3,472.87	3,436.25	16.18	13.94	-166.81	-563.18	-127.63	1,241.87	1,215.96	25.91	47.931	
3,800.00	3,725.76	3,566.25	3,528.39	16.65	14.35	-166.81	-577.74	-131.83	1,277.66	1,251.02	26.63	47.973	
3,900.00	3,823.43	3,659.63	3,620.53	17.12	14.75	-166.81	-592.31	-136.02	1,313.45	1,286.09	27.36	48.012	
4,000.00	3,921.10	3,753.00	3,712.66	17.59	15.16	-166.80	-606.87	-140.21	1,349.24	1,321.16	28.08	48.048	
4,100.00	4,018.77	3,846.38	3,804.80	18.06	15.56	-166.80	-621.44	-144.41	1,385.03	1,356.22	28.81	48.083	
4,200.00	4,116.44	3,939.76	3,896.94	18.52	15.97	-166.80	-636.00	-148.60	1,420.81	1,391.29	29.53	48.115	
4,300.00	4,214.12	4,033.13	3,989.08	18.99	16.37	-166.79	-650.57	-152.80	1,456.60	1,426.35	30.25	48.146	
4,400.00	4,311.79	4,126.51	4,081.22	19.46	16.78	-166.79	-665.13	-156.99	1,492.39	1,461.41	30.98	48.175	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3N-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	180.00	-130.05	0.00	130.05					
100.00	100.00	100.00	100.00	0.14	0.14	180.00	-130.05	0.00	130.05	129.77	0.28	471.143		
200.00	200.00	200.00	200.00	0.50	0.50	180.00	-130.05	0.00	130.05	129.05	0.99	130.968	CC, ES	
300.00	299.98	299.98	299.98	0.86	0.85	-165.69	-130.05	0.00	131.74	130.03	1.71	76.978		
400.00	399.84	395.41	395.39	1.22	1.18	-166.00	-131.58	-0.40	138.42	135.98	2.44	56.830		
500.00	499.45	489.92	489.78	1.59	1.51	-166.22	-136.13	-1.60	151.65	148.47	3.18	47.723		
600.00	598.70	582.91	582.45	1.96	1.84	-166.35	-143.54	-3.56	171.34	167.42	3.92	43.670		
700.00	697.47	673.85	672.79	2.35	2.17	-166.38	-153.60	-6.22	197.34	192.68	4.66	42.337	SF	
800.00	795.62	762.22	760.22	2.77	2.51	-166.34	-166.02	-9.50	229.46	224.08	5.38	42.629		
819.52	814.70	779.13	776.90	2.85	2.57	-166.32	-168.70	-10.21	236.43	230.90	5.53	42.758		
900.00	893.31	853.67	850.37	3.20	2.88	-166.39	-180.82	-13.41	265.74	259.68	6.06	43.857		
1,000.00	990.98	946.80	942.17	3.65	3.26	-166.46	-195.97	-17.41	302.17	295.45	6.72	44.995		
1,100.00	1,088.65	1,039.92	1,033.98	4.10	3.65	-166.51	-211.12	-21.41	338.59	331.20	7.39	45.815		
1,200.00	1,186.32	1,133.05	1,125.78	4.55	4.04	-166.55	-226.27	-25.41	375.02	366.95	8.07	46.449		
1,300.00	1,283.99	1,226.18	1,217.58	5.01	4.44	-166.58	-241.42	-29.42	411.45	402.69	8.76	46.948		
1,400.00	1,381.66	1,319.31	1,309.38	5.47	4.84	-166.61	-256.58	-33.42	447.88	438.42	9.46	47.347		
1,500.00	1,479.33	1,412.44	1,401.18	5.93	5.24	-166.64	-271.73	-37.42	484.30	474.15	10.16	47.670		
1,600.00	1,577.00	1,505.57	1,492.98	6.39	5.64	-166.66	-286.88	-41.42	520.73	509.87	10.86	47.937		
1,700.00	1,674.67	1,598.70	1,584.78	6.85	6.04	-166.68	-302.03	-45.42	557.16	545.59	11.57	48.159		
1,800.00	1,772.35	1,691.83	1,676.58	7.31	6.44	-166.69	-317.18	-49.43	593.59	581.31	12.28	48.347		
1,900.00	1,870.02	1,784.96	1,768.38	7.78	6.85	-166.71	-332.34	-53.43	630.02	617.03	12.99	48.506		
2,000.00	1,967.69	1,878.08	1,860.18	8.24	7.25	-166.72	-347.49	-57.43	666.44	652.74	13.70	48.643		
2,100.00	2,065.36	1,971.21	1,951.98	8.71	7.66	-166.73	-362.64	-61.43	702.87	688.46	14.41	48.762		
2,200.00	2,163.03	2,064.34	2,043.78	9.17	8.06	-166.74	-377.79	-65.43	739.30	724.17	15.13	48.866		
2,300.00	2,260.70	2,157.47	2,135.59	9.64	8.47	-166.75	-392.94	-69.44	775.73	759.88	15.84	48.957		
2,400.00	2,358.37	2,250.60	2,227.39	10.11	8.87	-166.76	-408.09	-73.44	812.16	795.59	16.56	49.038		
2,500.00	2,456.04	2,343.73	2,319.19	10.57	9.28	-166.77	-423.25	-77.44	848.58	831.31	17.28	49.110		
2,600.00	2,553.71	2,436.86	2,410.99	11.04	9.69	-166.77	-438.40	-81.44	885.01	867.02	18.00	49.174		
2,700.00	2,651.38	2,529.99	2,502.79	11.51	10.09	-166.78	-453.55	-85.44	921.44	902.72	18.72	49.231		
2,800.00	2,749.05	2,623.11	2,594.59	11.97	10.50	-166.79	-468.70	-89.45	957.87	938.43	19.44	49.283		
2,900.00	2,846.72	2,716.24	2,686.39	12.44	10.91	-166.79	-483.85	-93.45	994.30	974.14	20.16	49.330		
3,000.00	2,944.40	2,809.37	2,778.19	12.91	11.32	-166.80	-499.00	-97.45	1,030.73	1,009.85	20.88	49.373		
3,100.00	3,042.07	2,902.50	2,869.99	13.38	11.72	-166.80	-514.16	-101.45	1,067.15	1,045.56	21.60	49.412		
3,200.00	3,139.74	2,995.63	2,961.79	13.84	12.13	-166.81	-529.31	-105.46	1,103.58	1,081.26	22.32	49.448		
3,300.00	3,237.41	3,088.76	3,053.59	14.31	12.54	-166.81	-544.46	-109.46	1,140.01	1,116.97	23.04	49.480		
3,400.00	3,335.08	3,181.89	3,145.39	14.78	12.95	-166.81	-559.61	-113.46	1,176.44	1,152.68	23.76	49.510		
3,500.00	3,432.75	3,275.02	3,237.20	15.25	13.35	-166.82	-574.76	-117.46	1,212.87	1,188.38	24.48	49.538		
3,600.00	3,530.42	3,368.15	3,329.00	15.72	13.76	-166.82	-589.92	-121.46	1,249.29	1,224.09	25.21	49.564		
3,700.00	3,628.09	3,461.27	3,420.80	16.18	14.17	-166.83	-605.07	-125.47	1,285.72	1,259.79	25.93	49.588		
3,800.00	3,725.76	3,554.40	3,512.60	16.65	14.58	-166.83	-620.22	-129.47	1,322.15	1,295.50	26.65	49.610		
3,900.00	3,823.43	3,647.53	3,604.40	17.12	14.99	-166.83	-635.37	-133.47	1,358.58	1,331.20	27.37	49.630		
4,000.00	3,921.10	3,740.66	3,696.20	17.59	15.40	-166.83	-650.52	-137.47	1,395.01	1,366.91	28.10	49.650		
4,100.00	4,018.77	3,833.79	3,788.00	18.06	15.80	-166.84	-665.67	-141.47	1,431.44	1,402.61	28.82	49.667		
4,200.00	4,116.44	3,926.92	3,879.80	18.52	16.21	-166.84	-680.83	-145.48	1,467.86	1,438.32	29.54	49.684		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - SAM 3O-25H-M166 - OH - PLAN #1													Offset Site Error: 0.00 usft	
Survey Program: O-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-179.92	-140.25	-0.19	140.25					
100.00	100.00	100.00	100.00	0.14	0.14	-179.92	-140.25	-0.19	140.25	139.98	0.28	508.119		
200.00	200.00	200.00	200.00	0.50	0.50	-179.92	-140.25	-0.19	140.25	139.26	0.99	141.246	CC, ES	
300.00	299.98	295.36	295.34	0.86	0.83	-165.43	-141.79	-0.57	143.56	141.83	1.72	83.272		
400.00	399.84	390.09	389.95	1.22	1.16	-165.43	-146.38	-1.68	153.45	150.96	2.49	61.684		
500.00	499.45	483.61	483.15	1.59	1.49	-165.42	-153.88	-3.52	169.86	166.60	3.25	52.197		
600.00	598.70	575.34	574.27	1.96	1.84	-165.40	-164.10	-6.02	192.65	188.64	4.01	48.034		
700.00	697.47	664.76	662.73	2.35	2.19	-165.36	-176.79	-9.12	221.68	216.93	4.75	46.659	SF	
800.00	795.62	753.21	749.79	2.77	2.55	-165.30	-191.89	-12.81	256.65	251.19	5.46	47.036		
819.52	814.70	771.30	767.57	2.85	2.63	-165.30	-195.13	-13.60	263.99	258.40	5.59	47.200		
900.00	893.31	845.75	840.76	3.20	2.95	-165.44	-208.45	-16.85	294.53	288.42	6.10	48.244		
1,000.00	990.98	938.27	931.69	3.65	3.35	-165.59	-225.00	-20.89	332.47	325.70	6.77	49.131		
1,100.00	1,088.65	1,030.79	1,022.63	4.10	3.76	-165.71	-241.55	-24.94	370.42	362.98	7.44	49.804		
1,200.00	1,186.32	1,123.31	1,113.57	4.55	4.16	-165.80	-258.10	-28.98	408.36	400.24	8.12	50.308		
1,300.00	1,283.99	1,215.83	1,204.50	5.01	4.57	-165.88	-274.65	-33.03	446.31	437.50	8.80	50.692		
1,400.00	1,381.66	1,308.35	1,295.44	5.47	4.98	-165.95	-291.20	-37.07	484.26	474.76	9.50	50.989		
1,500.00	1,479.33	1,400.87	1,386.38	5.93	5.40	-166.01	-307.75	-41.11	522.20	512.01	10.19	51.224		
1,600.00	1,577.00	1,493.39	1,477.31	6.39	5.81	-166.06	-324.30	-45.16	560.15	549.26	10.90	51.411		
1,700.00	1,674.67	1,585.90	1,568.25	6.85	6.23	-166.10	-340.85	-49.20	598.10	586.50	11.60	51.561		
1,800.00	1,772.35	1,678.42	1,659.19	7.31	6.64	-166.14	-357.40	-53.24	636.05	623.74	12.31	51.685		
1,900.00	1,870.02	1,770.94	1,750.12	7.78	7.06	-166.17	-373.95	-57.29	674.00	660.98	13.02	51.786		
2,000.00	1,967.69	1,863.46	1,841.06	8.24	7.47	-166.20	-390.50	-61.33	711.95	698.22	13.73	51.871		
2,100.00	2,065.36	1,955.98	1,932.00	8.71	7.89	-166.23	-407.06	-65.37	749.90	735.46	14.44	51.941		
2,200.00	2,163.03	2,048.50	2,022.93	9.17	8.31	-166.25	-423.61	-69.42	787.85	772.69	15.15	52.001		
2,300.00	2,260.70	2,141.02	2,113.87	9.64	8.72	-166.27	-440.16	-73.46	825.80	809.93	15.86	52.052		
2,400.00	2,358.37	2,233.54	2,204.81	10.11	9.14	-166.29	-456.71	-77.51	863.74	847.16	16.58	52.095		
2,500.00	2,456.04	2,326.06	2,295.74	10.57	9.56	-166.31	-473.26	-81.55	901.69	884.40	17.30	52.132		
2,600.00	2,553.71	2,418.57	2,386.68	11.04	9.98	-166.33	-489.81	-85.59	939.64	921.63	18.01	52.165		
2,700.00	2,651.38	2,511.09	2,477.62	11.51	10.39	-166.35	-506.36	-89.64	977.59	958.86	18.73	52.192		
2,800.00	2,749.05	2,603.61	2,568.55	11.97	10.81	-166.36	-522.91	-93.68	1,015.54	996.10	19.45	52.217		
2,900.00	2,846.72	2,696.13	2,659.49	12.44	11.23	-166.37	-539.46	-97.72	1,053.49	1,033.33	20.17	52.238		
3,000.00	2,944.40	2,788.65	2,750.43	12.91	11.65	-166.39	-556.01	-101.77	1,091.44	1,070.56	20.89	52.256		
3,100.00	3,042.07	2,881.17	2,841.36	13.38	12.06	-166.40	-572.56	-105.81	1,129.39	1,107.79	21.61	52.273		
3,200.00	3,139.74	2,973.69	2,932.30	13.84	12.48	-166.41	-589.11	-109.86	1,167.34	1,145.02	22.33	52.287		
3,300.00	3,237.41	3,066.21	3,023.24	14.31	12.90	-166.42	-605.66	-113.90	1,205.29	1,182.25	23.05	52.300		
3,400.00	3,335.08	3,158.73	3,114.17	14.78	13.32	-166.43	-622.21	-117.94	1,243.24	1,219.48	23.77	52.311		
3,500.00	3,432.75	3,251.24	3,205.11	15.25	13.74	-166.44	-638.76	-121.99	1,281.19	1,256.71	24.49	52.321		
3,600.00	3,530.42	3,343.76	3,296.05	15.72	14.16	-166.45	-655.31	-126.03	1,319.14	1,293.94	25.21	52.329		
3,700.00	3,628.09	3,436.28	3,386.98	16.18	14.58	-166.45	-671.86	-130.07	1,357.10	1,331.17	25.93	52.337		
3,800.00	3,725.76	3,528.80	3,477.92	16.65	14.99	-166.46	-688.41	-134.12	1,395.05	1,368.39	26.65	52.344		
3,900.00	3,823.43	3,621.32	3,568.86	17.12	15.41	-166.47	-704.96	-138.16	1,433.00	1,405.62	27.37	52.350		
4,000.00	3,921.10	3,713.84	3,659.79	17.59	15.83	-166.48	-721.51	-142.20	1,470.95	1,442.85	28.10	52.356		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Crestone Peak Resources	<b>Local Co-ordinate Reference:</b>	Well SAM 3A-25H-M166
<b>Project:</b>	DJ BASIN	<b>TVD Reference:</b>	23' KB @ 5109.00usft
<b>Reference Site:</b>	S25-T1N-R66W (SAM)	<b>MD Reference:</b>	23' KB @ 5109.00usft
<b>Site Error:</b>	0.00usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	SAM 3A-25H-M166	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00usft	<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

Offset Design S25-T1N-R66W (SAM) - Wenzel 1 (EXISTING) - CPR WELL - NO SURVEYS													Offset Site Error: 0.00 usft
Survey Program: 8120-ISCWSA MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
10,700.00	7,410.00	7,331.00	7,331.00	110.07	8.23	90.00	-23.95	4,046.99	1,484.09	1,382.53	101.56	14.613	
10,800.00	7,410.00	7,331.00	7,331.00	113.18	8.23	90.00	-23.95	4,046.99	1,428.70	1,321.52	107.19	13.329	
10,900.00	7,410.00	7,331.00	7,331.00	116.29	8.23	90.00	-23.95	4,046.99	1,378.36	1,265.41	112.95	12.203	
11,000.00	7,410.00	7,331.00	7,331.00	119.40	8.23	90.00	-23.95	4,046.99	1,333.62	1,214.87	118.75	11.230	
11,100.00	7,410.00	7,331.00	7,331.00	122.52	8.23	90.00	-23.95	4,046.99	1,295.08	1,170.62	124.46	10.406	
11,200.00	7,410.00	7,331.00	7,331.00	125.64	8.23	90.00	-23.95	4,046.99	1,263.29	1,133.37	129.93	9.723	
11,300.00	7,410.00	7,331.00	7,331.00	128.77	8.23	90.00	-23.95	4,046.99	1,238.78	1,103.80	134.98	9.177	
11,400.00	7,410.00	7,331.00	7,331.00	131.90	8.23	90.00	-23.95	4,046.99	1,221.99	1,082.52	139.47	8.762	
11,500.00	7,410.00	7,331.00	7,331.00	135.04	8.23	90.00	-23.95	4,046.99	1,213.24	1,070.00	143.23	8.470	
11,556.61	7,410.00	7,331.00	7,331.00	136.81	8.23	90.00	-23.95	4,046.99	1,211.92	1,066.91	145.00	8.358 CC	
11,600.00	7,410.00	7,331.00	7,331.00	138.17	8.23	90.00	-23.95	4,046.99	1,212.69	1,066.53	146.16	8.297 ES	
11,700.00	7,410.00	7,331.00	7,331.00	141.32	8.23	90.00	-23.95	4,046.99	1,220.37	1,072.17	148.20	8.235 SF	
11,800.00	7,410.00	7,331.00	7,331.00	144.46	8.23	90.00	-23.95	4,046.99	1,236.11	1,086.79	149.32	8.278	
11,900.00	7,410.00	7,331.00	7,331.00	147.61	8.23	90.00	-23.95	4,046.99	1,259.63	1,110.05	149.58	8.421	
12,000.00	7,410.00	7,331.00	7,331.00	150.76	8.23	90.00	-23.95	4,046.99	1,290.48	1,141.42	149.06	8.657	
12,019.72	7,410.00	7,331.00	7,331.00	151.38	8.23	90.00	-23.95	4,046.99	1,297.39	1,148.51	148.88	8.714	



# Cathedral Energy Services

## Anticollision Report

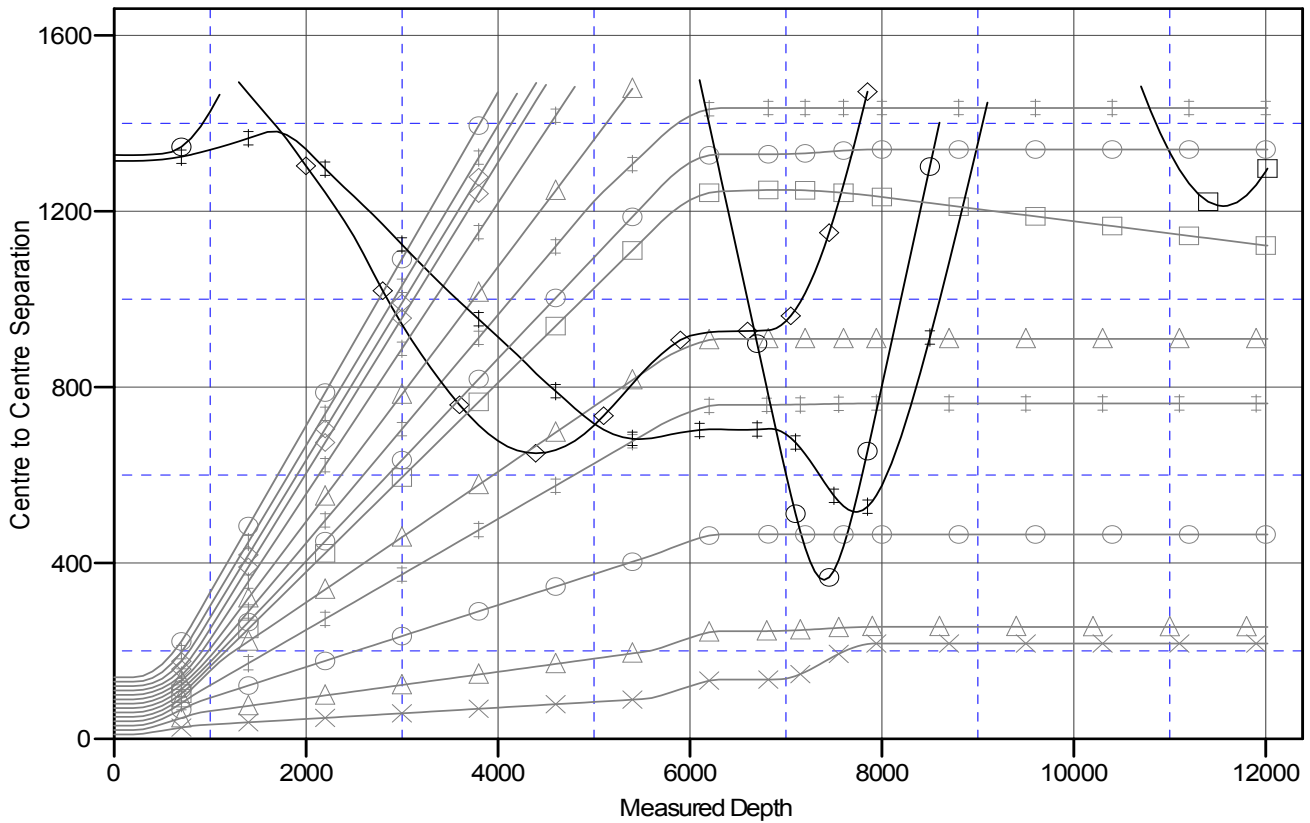
**Company:** Crestone Peak Resources  
**Project:** DJ BASIN  
**Reference Site:** S25-T1N-R66W (SAM)  
**Site Error:** 0.00usft  
**Reference Well:** SAM 3A-25H-M166  
**Well Error:** 0.00usft  
**Reference Wellbore:** OH  
**Reference Design:** PLAN #1

**Local Co-ordinate Reference:** Well SAM 3A-25H-M166  
**TVD Reference:** 23' KB @ 5109.00usft  
**MD Reference:** 23' KB @ 5109.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** USA EDM 5000 Multi Users DB  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to 23' KB @ 5109.00usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: SAM 3A-25H-M166  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.50°

### Ladder Plot



### LEGEND

M3F-25H-M166, OH, PLAN#1 V0  
 M3I-25H-M166, OH, PLAN#1 V0  
 M3O-25H-M166, OH, PLAN#1 V0  
 nzel 1 (EXISTING), CPR WELL, NO SURVEYS V0  
 n1 (EXISTING), CPR WELL, NO SURVEYS V0  
 ere 2 (EXISTING), CPR WELL, SURVEYS V0  
 M3C-25H-M166, OH, PLAN#1 V0

SAM3E-25H-M166, OH, PLAN#1 V0  
 SAM3J-25H-M166, OH, PLAN#1 V0  
 SAM3K-25H-M166, OH, PLAN#1 V0  
 Sam 13-25 (EXISTING), CPR WELL, SURVEYS V0  
 Beierle KE 26-361HN, GWOG WELL, GWOG WELL V0  
 SAM3G-25H-M166, OH, PLAN#1 V0  
 SAM3H-25H-M166, OH, PLAN#1 V0

SAM3L-25H-M166, OH, PLAN#1 V0  
 SAM3B-25H-M166, OH, PLAN#1 V0  
 SAM3N-25H-M166, OH, PLAN#1 V0  
 SAM3M-25H-M166, OH, PLAN#1 V0  
 SAM3D-25H-M166, OH, PLAN#1 V0